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MULTIMEDIA SIGNALS

Multimedia over IP in cable

Cable assigned names and numbers

Recommendation ITU-T J.800.0

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Cable assigned names and numbers

Summary

Recommendation ITU-T J.800.0 describes a set of Cable industry registries and namespaces for Names and Numbers. Numerous protocol fields make use of identifiers with well-known names or number values. This Recommendation is a common repository to hold these values.

Source

Recommendation ITU-T J.800.0 was approved on 22 August 2008 by ITU-T Study Group 9 (2005-2008) under Recommendation ITU-T A.8 procedure.

FOREWORD

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Recommendation ITU-T J.800.0

Cable assigned names and numbers

1 Scope

This Recommendation is a set of Cable industry registries and namespaces for Names and Numbers. Numerous protocol fields make use of identifiers with well-known names or number values, for example, the IETF DHCP protocol and vendor specific option values, the IETF RADIUS and DIAMETER protocols and associated Cable attributes, etc. To ensure that such quantities have consistent values and interpretations in different implementations, their assignment must be administered by a central authority. For IETF protocols, that role is provided by the Internet Assigned Numbers Authority (IANA). For vendor-specific protocol fields that are defined by Cable industry Recommendations and specifications, or when the use of such protocol identifiers may be common to multiple Cable industry projects and specifications, that role is provided by CableLabs. This Recommendation is a common repository that holds these values.

This Recommendation uses some of the terminology and guidelines of [IETF RFC 2434].

The scope of this version of this Recommendation includes:

- A DHCP registry for protocol fields authoritatively assigned by CableLabs that are in use in eDOCSIS, DOCSIS, IPCable2Home, and IPCablecom, for both IPv4 and DHCPv6.
- An XML registry for XML namespaces for DOCSIS and IPCablecom.
- A DIAMETER registry for IPCablecom.
- A Receive Channel Profile (RCP) registry for CableLabs-defined Standard-RCPs and Vendor-defined Manufacturer-RCPs that are used in DOCSIS 3.0 and beyond to communicate the receiver capabilities of a cable modem.

NOTE – The structure and content of this Recommendation have been organized for ease of use by those familiar with the original source material; as such, the usual style of ITU-T recommendations has not been applied.

2 References

2.1 Normative references

- [IETF RFC 3588] IETF RFC 3588, *Diameter Base Protocol*, September 2003.
- [IETF RFC 2434] IETF RFC 2434/BCP0026, *Guidelines for Writing an IANA Considerations Section in RFCs*, October 1998.
- [IETF RFC 3315] IETF RFC 3315, *Dynamic Host Configuration Protocol for IPv6 (DHCPv6)*, July 2003.

2.2 Informative references

This Recommendation uses the following informative references.

- [CANN DHCP] Recommendation ITU-T J.800.1, *Cable DHCP Registry*.
- [CH CAP-MIB] Recommendation ITU-T J.192, *A residential gateway to support the delivery of cable data services Annex E.1 IPCable2Home Addressing Portal (CAP) MIB requirement*.
- [CH CDP-MIB] Recommendation ITU-T J.192, *A residential gateway to support the delivery of cable data services Annex E.2 IPCable2Home DHCP Portal (CDP) MIB requirement*.

[CH CTP-MIB]	Recommendation ITU-T J.192, <i>A residential gateway to support the delivery of cable data services Annex E.3 IP-Cable2Home Test Portal (CTP) MIB requirement.</i>
[CH PSDEV-MIB]	Recommendation ITU-T J.192, <i>A residential gateway to support the delivery of cable data services Annex E.4 IP-Cable2Home Portal Services Device (PSDev) MIB requirement.</i>
[CH QOS-MIB]	Recommendation ITU-T J.192, <i>A residential gateway to support the delivery of cable data services Annex E.7 IP-Cable2Home QoS Portal (CQP) MIB requirement.</i>
[CH SEC-MIB]	Recommendation ITU-T J.192, <i>A residential gateway to support the delivery of cable data services Annex E.5 IP-Cable2Home Security (SEC) MIB requirement.</i>
[CO CSA-MIB]	CableOffice Commercial Services Annex MIB Definition, CH-SP-CO-MIB-CSA-C01-060728, July 28, 2006, <i>Cable Television Laboratories, Inc.</i>
[DOCS TEST]	DOCSIS Testing MIB Specification, CM-SP-TestMIB-D04-070829, August 29, 2007, <i>Cable Television Laboratories, Inc.</i>
[DSG]	ANSI/SCTE 106 2007, <i>DOCSIS Set-top Gateway (DSG) Interface Specification.</i>
[eDOCSIS]	Recommendation ITU-T J.126, <i>Embedded Cable Modem device specification.</i>
[IANA EN]	IANA's Enterprise-Numbers: http://www.iana.org/assignments/enterprise-numbers .
[IANA AAA]	IANA's AAA parameters register: ftp://ftp.iana.org/assignments/aaa-parameters/ .
[L2VPN]	Recommendation ITU-T J.213, <i>Layer 2 virtual private networks for IP cable modem systems.</i>
[M-OSSI]	ANSI/SCTE 141 2007, <i>Modular Operations Support System Interface Specification.</i>
[MIB-BB]	Recommendation ITU-T J.199, <i>Battery backup for cable-based devices.</i>
[MIB-CLABDEF]	Recommendation ITU-T J.800.2 (2008), <i>Cable Definition MIB Specification.</i>
[MULPI]	Recommendation ITU-T J.222.2, <i>Third-generation transmission systems for interactive cable television services – IP cable modems: MAC and Upper Layer protocols.</i>
[OC MIB-HOST2.X]	OpenCable Host Device 2.X MIB Specification, OC-SP-MIB-HOST2.X-I03-071113, November 13, 2007, <i>Cable Television Laboratories, Inc.</i>
[OSSIV2.0]	ANSI/SCTE 79-2 2002 DOCSIS 2.0 <i>Data-Over-Cable Service Interface Specifications, Operations Support System Interface Specification.</i>
[OSSIV3.0]	ANSI/SCTE 135-4 2008 DOCSIS 3.0 <i>Operations Support System Interface Specification.</i>

[PKT 29.229]	Recommendation ITU-T J.366.6, <i>Cx/Dx interfaces based on the Diameter protocol specification (3GPP TS-29.229)</i> .
[PKT ACCT]	Recommendation ITU-T J.363, <i>IPCablecom2 data collection to support accounting</i> .
[PKT ES-INF]	<i>PacketCable Electronic Surveillance – Intra-Network Functions Specification, PKT-SP-ES-INF-I03-070925, September 25, 2007, Cable Television Laboratories, Inc.</i>
[PKT ESP]	ANSI/SCTE 24-13 2006 <i>PacketCable Electronic Surveillance Specification</i> .
[PKT EUE-DATA]	Recommendation ITU-T J.370 (2008), <i>IPCablecom2 E-UE Provisioning data Model specification</i> .
[PKT EVE MIB1.5]	Recommendation ITU-T J.166 Annex D, <i>IPCablecom Management Event MIB Specification</i> .
[PKT MIB EXMTA1.5]	Recommendation ITU-T J.166 Annex E, <i>IPCablecom MTA Extension MIB Specification</i> .
[PKT MIB MTA1.5]	Recommendation ITU-T J.166 Annex B, <i>IPCablecom MTA MIB Specification</i> .
[PKT MIB SIG1.5]	Recommendation ITU-T J.166 Annex C, <i>IPCablecom 1.5 Signaling MIB Specification</i> .
[PKT RST-ACCT]	Recommendation ITU-T J.460.3 (2008), <i>IPCablecom2 Residential SIP Telephony: usage data recording</i> .
[PKT-SP-RSTF]	Recommendation ITU-T J.460.1 (2008), <i>IPCablecom2 Residential SIP Telephony Feature Specification</i> .
[PKT RST-EUE-PROV]	Recommendation ITU-T J.369 (2008), <i>IPCablecom2 E-UE Provisioning Framework specification</i> .
[TEI]	Recommendation ITU-T J.214, <i>Cable modem TDM emulation interface</i> .

2.3 Reference document acquisition

- Internet Engineering Task Force (IETF) Secretariat, 46000 Center Oak Plaza, Sterling, VA 20166, Phone +1-571-434-3500, Fax +1-571-434-3535, <http://www.ietf.org>.
- Internet Assigned Numbers Authority (IANA), <http://www.iana.org>.
- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027, Phone +1-303-661-9100; Fax +1-303-661-9199, [http:// www.cablelabs.com](http://www.cablelabs.com).

3 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AVP	Attribute-Value Pairs
CMTS	Cable Modem Termination System
DHCP	Dynamic Host Configuration Protocol
DOCSIS	Data Over Cable Service Interface Specification
DTD	Document Type Definition

RCC	Receive Channel Configurations
RCP	Receive Channel Profile
RST	Residential SIP Telephony
SMI	Structure of Management Information
URL	Uniform Resource Locator
XML	Extensible Markup Language
XSD	XML Schema Definition

4 Cable DHCP protocol field registry

4.1 Definition

This Recommendation describes the Cable DHCP registry and defines new name spaces associated with Cable DHCPv4 and DHCPv6 options:

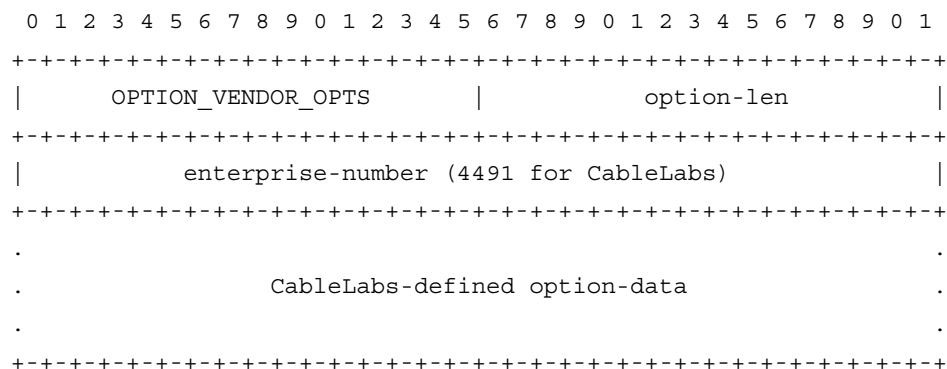
- Cable project codes,
- Sub-option codes for DHCPv4 options,
- Cable Vendor-specific Information Option codes for DHCPv6.

The Cable Assigned Name and Number authority (CableLabs) has established a registry of values for each of these name spaces which are found in [CANN DHCP].

4.2 Format of the DHCPv6 cable vendor-specific information option

DHCPv6 defines a Vendor-specific Information Option (see the option code `OPTION_VENDOR_OPTS` in Section 22.17 of [IETF RFC 3315]). This clause defines the structure or format of the option data for the Cable Vendor-specific Information Option.

The format of the DHCPv6 Cable Vendor-specific Information option is:



option-code `OPTION_VENDOR_OPTS` (17)

option-len 4 + length of option-data field

enterprise-number The CableLabs' registered Enterprise Number:
4491, as registered with IANA in the Private
Enterprise Numbers:
<http://www.iana.org/assignments/enterprise-numbers.html>

CableLabs-defined

option-data An object containing one or more
 CableLabs sub-options

The option-data field of the DHCPv6 CableLabs Vendor-specific Information option contains sub-option values. Each sub-option is structured as follows:

```

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   CableLabs sub-option-code   |   sub-option-len   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                               |
|               sub-option-data |
|               (sub-option-len |
|               octets)         |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
```

CableLabs sub-option-code:

```

0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7
+---+---+---+---+---+---+---+---+
| res | code | sub-option type |
+---+---+---+---+---+---+---+---+
```

res: reserved for CableLabs, do not use; bits must be zero value.

code: identifies the CableLabs project code for this sub-option. The null value for these 3 bits ('000') identifies a generic DHCPv6 option that may be common to multiple projects. See the Values for the CableLabs Project Codes clause of the Cable DHCP options recommendation for the values of the CableLabs Project Codes for DHCPv6 options.

sub-option type: defines the option type.

sub-option-len length of sub-option-data field

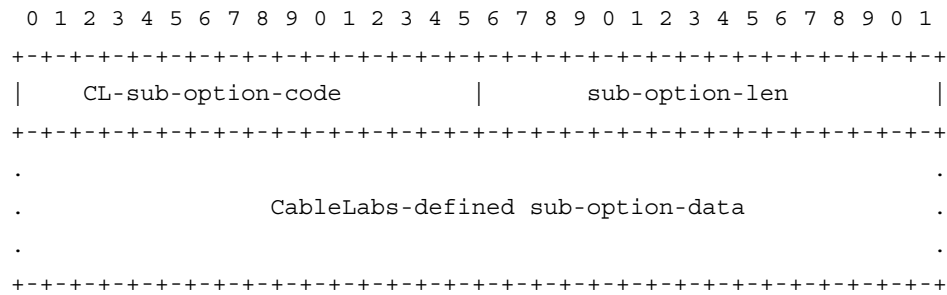
sub-option-data the value of the CableLabs sub-option.

4.3 Template for defining new DHCPv6 cable vendor-specific information option codes

Each request (in the form of a contribution to the SG responsible for this Recommendation) for a new definition of a DHCPv6 Cable Vendor-specific Information Option must include:

- A definition of the sub-option compliant with the format specified in this clause.
- A written request against the Cable DHCP registry requesting the addition of the new option.

New DHCPv6 Cable Vendor-specific Information Option code must be defined using the following format:



CL-sub-option-code CL_OPTION_xxxxxxx where xxxxxxxx is descriptive name of the sub-option being defined.

Sub-option-len length of sub-option-data field

CableLabs-defined
Sub-option-data An object definition with normative requirements on how a DHCP client and server must use this information.

CableLabs Project The requested CableLabs Project under which this new option should be assigned (a registered CableLabs Project code).

4.4 List of relevant specifications

The following list includes Cable and IETF specifications that contain definitions of DHCP option field values, or, references to the values defined in this Recommendation:

- Cable DHCP Options [CANN DHCP]

5 Cable XML registry

5.1 Guidelines

This clause provides guidelines for the definition of new XML namespaces under Cable management and some recommendations to align the target namespaces and to allow consistent versioning.

It is RECOMMENDED to define Cable XML namespaces as follows:

Organization Identifier/Identifier/Cable Project Name/Version/Type of Document/Identifier /XSD Identifier

- The Organization Identifier is "www.cableLabs.com"
- The Identifier is "namespace"
- The Cable Project Name could be DOCSIS or IPCablecom or IPCable2home, for example
- Version is the current release of the specification (e.g. 2.0).
- The Type of Document could be "DTD" or "XSD"
- Identifier could be "smi" or "reg" or "ipdr" or "netconf".

5.2 Examples

A few examples of the above are:

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/>

<http://www.cablelabs.com/namespaces/PacketCable/2.0/xsd/smi/>

5.3 Registered XML name spaces

The following name spaces are registered.

5.3.1 DOCSIS

5.3.1.1 DOCSIS IPDR service definition namespaces

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-SAMIS-TYPE-1>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-SAMIS-TYPE-2>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CMTS-CM-US-STATS-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CMTS-CM-REG-STATUS-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CMTS-TOPOLOGY-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-SPECTRUM-MEASUREMENT-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CPE-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-DIAG-LOG-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-DIAG-LOG-EVENT-TYPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-DIAG-LOG-DETAIL-TYPE>

5.3.1.2 DOCSIS auxiliary schema namespaces

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CMTS>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CM>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CPE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-QOS>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-REC>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CMTS-CM-US>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-CMTS-CM-NODE-CH>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-MD-NODE>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-SPECTRUM>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-DIAG-LOG>

<http://www.cablelabs.com/namespaces/DOCSIS/3.0/xsd/ipdr/DOCSIS-DIAG-LOG-DETAIL>

5.3.2 IPCablecom

5.3.2.1 IPCablecom2 PACM namespaces

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/SMI/v1/CL-PKTC-UE>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/SMI/v1/CL-PKTC-User>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/SMI/v1/CL-PKTC-TC>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-ACL>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-BASE-SVC>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/SMI/v1/CL-PKTC-RST>

5.3.2.2 IPCablecom2 auxiliary namespaces

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/CLAB-DEF-MIB>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/SNMP-FRAMEWORK-MIB>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/SNMPv2-TC>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/SMI>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/SNMPv2-SMI>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/INET-ADDRESS-MIB>

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/smi/SNMPv2-CONF>

6 Cable diameter AVP registry

This clause lists IANA assigned Cable specific DIAMETER applications and Command Codes as well as CableLabs assigned DIAMETER protocol codes, including the Attribute-Value Pairs (AVP) and Experimental result codes.

For assignment of DIAMETER applications, command codes, AVP and result codes, please see the procedures in clause 6.6.

6.1 Application identifiers

The Diameter applications are identified with the application identifiers as specified in [IETF RFC 3588]. There are two kinds of applications: IETF standards track applications and vendor-specific applications. All application identifiers are assigned by [IANA AAA]. This clause lists the application identifiers assigned by IANA to all Cable Diameter applications.

The application identifiers are transferred in Diameter command's header in the Application-ID field.

6.1.1 Cable specific application identifiers

There are no Cable specific application identifiers at this time.

6.2 Command codes

The command codes are used for communicating the command associated with the Diameter message. The command code is carried in the Diameter header's Command-Code field. The command codes can be divided into standard command codes allocated by IANA and experimental command codes for testing purposes only.

6.2.1 Command codes allocated for cable

There are no Cable specific command codes at this time.

6.3 Vendor identifier

The vendor identifier (also known as Enterprise number) indicates the vendor specific attributes, result codes and application identifiers in Diameter commands. The vendor identifier is used in the Vendor-ID field of the AVP header and in the Vendor-Id AVP. The Vendor-Id AVP is used to identify the vendor in the Vendor-Specific-Application-Id and Experimental-Result-Code grouped AVPs.

6.3.1 Cable vendor identifier

The IANA has allocated a vendor identifier value 4491 for CableLabs [IANA EN].

6.4 Attribute-value pair codes

The AVP codes are used together with the vendor identifier to identify each attribute uniquely. There are multiple AVP namespaces. The IETF IANA namespace, that is, the AVPs with vendor identifier zero or without vendor identifier, is controlled by IANA. Each vendor controls the AVP codes within their AVP namespaces.

6.4.1 Cable specific AVP codes

The Cable specific AVPs have the Vendor-Specific bit ('V' bit) set in the AVP header and they carry the Cable vendor identifier in the Vendor-ID field of the AVP header. The Cable specific AVP codes are presented in Table 1. AVP Names of "Obsolete" indicate that the AVP Code was previously assigned but is no longer used and re-assignment of the AVP Code should be avoided.

Table 1 – Cable specific AVP codes

AVP Name	AVP Code	Specification Reference	Data Type	AVP Flag rules Note:				
				Must	May	Should not	Must not	May Encr.
BCID	200	[PKT ES-INF]	UTF8String	V, M	P			N
Call-Transfer	201	[PKT RST-ACCT]	Group	V, M	P			N
Correlate-Reason	202	[PKT ES-INF]	Enumerated	V, M	P			N
Dialog-Id	203	[PKT ES-INF]	UTF8String	V, M	P			N
Digest-Algorithm	204	[PKT 29.229]	UTF8String	V			M	N
Digest-Auth-Param	205	[PKT 29.229]	OctetString	V			M	N
Digest-Domain	206	[PKT 29.229]	UTF8String	V			M	N
Digest-HA1	207	[PKT 29.229]	OctetString	V			M	N
Digest-QoP	208	[PKT 29.229]	UTF8String	V			M	N
Digest-Realm	209	[PKT 29.229]	UTF8String	V			M	N
Direction	210	[PKT ES-INF]	Enumerated	V, M	P			N
Direct-Message	211	[PKT ES-INF]	Enumerated	V, M	P			N
Element-ID	212	[PKT ES-INF]	UTF8String	V, M	P			N
Element-Type	213	[PKT ES-INF]	Enumerated	V, M	P			N
Event-Message-Type	214	[PKT ES-INF]	Enumerated	V, M	P			N
Location-Routing-Number	215	[PKT ACCT]	UTF8String	V, M	P			N

Table 1 – Cable specific AVP codes

AVP Name	AVP Code	Specification Reference	Data Type	AVP Flag rules Note:				
				Must	May	Should not	Must not	May Encr.
LRN-Source-Indicator	216	[PKT ACCT]	Integer32	V, M	P			N
LRN-Query-Status	217	[PKT ACCT]	Integer32	V, M	P			N
LI-Information	218	[PKT ES-INF]	Grouped	V, M	P			N
New-Dialog-Id	219	[PKT ES-INF]	UTF8String	V, M	P			N
NP-Data	220	[PKT ACCT]	Grouped	V, M	P			N
Obsolete (previously PCMM BCID)	221	[PKT ACCT]						
PCMM-Information	222	[PKT ACCT]	Grouped	V, M	P			N
Refer-To	223	[PKT RST-ACCT], [PKT ACCT]	UTF8String	V, M	P			N
RST-Information	224	[PKT RST-ACCT]	Grouped	V, M	P			N
RST-Subscriber-ID	225	[PKT RST-ACCT]	UTF8String	V, M	P			N
Server-Role	226	[PKT RST-ACCT]	Enumerated	V, M	P			N
Session-Type	227	[PKT RST-ACCT]	Enumerated	V, M	P			N
SIP-Digest-Authenticate	228	[PKT 29.229]	Grouped	V			M	N
SIP-Message	229	[PKT ES-INF]	OctetString	V, M	P			N
Target	230	[PKT RST-ACCT], [PKT ACCT]	UTF8String	V, M	P			N
Tap-Id	231	[PKT ES-INF]	UTF8String	V, M	P			N
Transfer-Session-Call-ID	232	[PKT RST-ACCT]	UTF8String	V, M	P			N
NOTE – The AVP flag rules and the meaning of the specific code values of V, M, P and N are contained in [IETF RFC 3588].								

6.5 Experimental result codes

The Diameter answer messages must carry either Result-Code AVP or Experimental-Result AVP. The values of Result-Code AVP are controlled by IANA. The Experimental-Result AVP is a grouped AVP containing the Vendor-Id AVP and Experimental-Result-Code AVP, thus the experimental result codes are controlled in a vendor-specific manner.

6.5.1 Cable specific experimental result codes

There are no Cable specific result codes at this time.

6.6 Assignment of the diameter codes and identifiers

This clause describes the procedure to assign Diameter Codes and Identifiers.

6.6.1 Application identifiers

If a specification determines it will require a new application identifier based on the rules defined in [IETF RFC 3588], a request for an application identifier should be sent to IANA. When the application identifier is received, an Engineering Change Request needs to be submitted against this Recommendation adding the newly assigned application identifier.

6.6.2 Command codes

If a specification determines there is a need for a new command code(s) and no Cable allocated command code values are available, the procedures defined in [IETF RFC 3588] need to be followed.

It should be noted that the standard command codes allocated for 3GPP are scarce resource and getting new ones would require IETF specification work to be done. Therefore, it is recommended to use the existing command codes whenever possible.

Once a new command code is assigned, a contribution should be submitted against this Recommendation adding the newly assigned command codes.

6.6.3 AVP codes

If a specification determines a Diameter application needs new Cable specific AVP code(s), a contribution needs to be submitted against this Recommendation adding the newly assigned AVP code value. AVP codes are available on a first come first served basis and are assigned in numerical order. Skipping AVP code values is discouraged as blocks of AVP codes are reserved for further assignment. Given the possibility for multiple contributions to assign AVP codes at the same time, conflicts may occur. As such, AVP code values are only guaranteed to be unique and allocated once the contribution becomes accepted. To ensure unique AVP code values, oversight of the allocation process is required and is the responsibility of CableLabs.

Re-using of the existing AVPs is recommended, but special attention should be paid on the use of enumerated AVPs. Defining new values for an enumerated AVP should be agreed case by case with the specification group responsible of the particular enumerated AVP.

6.6.4 Result codes

If a specification determines a Diameter application needs new Cable specific result code(s), a contribution needs to be submitted against this Recommendation adding the newly assigned result code value. Result codes are available on a first come first served basis and are assigned in numerical order. Skipping result code values is discouraged as blocks of result codes are reserved for further assignment. Given the possibility for multiple contributions to assign result codes at the same time, conflicts may occur. As such, result code values are only guaranteed to be unique and allocated once the contribution is accepted by the Study Group. To ensure unique result code values, oversight of the allocation process is required and is the responsibility of CableLabs.

7 Cable RCP registry

This clause discusses the definition, format and process for defining and allocating new receive channel profiles.

7.1 Definition

This clause describes a Cable Receive Channel Profile (RCP) registry. RCPs are used by DOCSIS 3.0 cable modems to advertise their receiver capabilities. RCPs can be "Standard RCPs" defined by CableLabs (and existing in the CableLabs RCP namespace) or "Manufacturer RCPs" defined by the Manufacturer of a cable modem or cable modem silicon (and existing in the Manufacturer's RCP namespace).

DOCSIS 3.0 Cable Modem Termination Systems (CMTSs) support the cable operator configuration of Receive Channel Configurations (RCCs) based on the deployed downstream channel lineup and the details of a CM's receiver capabilities as described in an RCP encoding. Each RCC in the CMTS is indexed by the RCP-ID of the RCP upon which it is based. The CM itself may only advertise the RCP-ID, which is then used by the CMTS to match the CM to an appropriate RCC at Registration time. This registry provides the detailed RCP encoding associated with each RCP-ID to allow proper configuration of RCCs by the cable operator.

7.2 Format

Two encoding formats are defined for an RCP. The first is an XML encoding defined in [OSSIV3.0], the second is a Type-Length-Value encoding defined in [MULPI]. The encoding format used for the Cable RCP registry is the XML format.

7.3 Process for defining and allocating new Receive Channel Profiles

Each request (in the form of a contribution to the SG responsible for this Recommendation) for a new entry in the Cable RCP registry must include the full XML encoding of the RCP, including an RCP-ID using either the Cable OUI (for a proposed new Standard RCP) or the Vendor's OUI (for a Manufacturer RCP), and an RCP Name.

8 Cable ASN.1 Codes registry

8.1 Definition

This clause describes a Cable ASN.1 Codes registry. The purpose of this registry is to define a common repository for assignment of ASN.1 codes value of the type Object Identifier (OID) for Cable projects. Typically this registry contains the MIB Module Identities within the Cable enterprise branch, for use within the Simple Network Management Protocol (SNMP), but can also contain any other ASN.1 definition used by other protocols or specifications.

A request for a new assignment of an OID for Cable projects should be submitted in the form of a contribution to the SG responsible for this Recommendation.

8.2 SMI Network Management Codes

For the following tables:

- Decimal is the allocated value.
- Name is the name assigned to that value.
- Description is a very short description of the item.
- "Used in" column includes the specifications where these values are used.

8.2.1 CableLabs Enterprise Number

Prefix:

`iso.org.dod.internet.private.enterprises.cableLabs (1.3.6.1.4.1.4491)`

Table 2 – CableLabs Enterprise Number Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	clabFunction	CableLabs	[MIB-CLABDEF]
2	clabProject	CableLabs Projects	[MIB-CLABDEF]
3	clabSecurity	CableLabs Security	[MIB-CLABDEF]
4	clabCommonMibs	CableLabs common SMI information	[MIB-CLABDEF]

8.2.2 DOCSIS Project

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjDocsis
(1.3.6.1.4.1.4491.2.1)

Table 3 – CableLabs DOCSIS Project Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	dsgMIB	DSG-MIB	
2	docsLoadBalanceMib	DOCS-LOADBAL-MIB	[OSSIv2.0]
3	dsgIfMIB	DSG-IF-MIB	[DSG]
4	dsgIfStdMib	DSG-IF-STD-MIB	[DSG]
5	docsIfExt2Mib	DOCS-IF-EXT2-MIB	[OSSIv2.0]
6	docsIfMCmtsMib	DOCS-IF-M-CMTS-MIB	[M-OSSI]
7	dtiMib	DTI-MIB	[M-OSSI]
8	docsL2vpnMIB	DOCS-L2VPN-MIB	[L2VPN]
9	docsDiagMib	DOCS-DIAG-MIB	[OSSIv3.0]
10	docsSubmgt3Mib	DOCS-SUBMGT3-MIB	[OSSIv3.0]
11	docsSecMib	DOCS-SEC-MIB	[OSSIv3.0]
12	docsTestMIB	DOCS-TEST-MIB	[DOCS TEST]
13	sledMib	SLED-MIB	[eDOCSIS]
14	esafeMib	ESAFE-MIB	[eDOCSIS]
15	teaPwMIB	TEA-PW-MIB	[IETF RFC 2434]
16	teaPwTDMIB	TEA-PW-TDM-MIB	[IETF RFC 2434]
17	teaPwTcMIB	TEA-PW-TC-MIB	[IETF RFC 2434]
18	docsMcastMib	DOCS-MCAST-MIB	[OSSIv3.0]
19	docsMcastAuthMib	DOCS-MCAST-AUTH-MIB	[OSSIv3.0]

Table 3 – CableLabs DOCSIS Project Codes

Decimal	Name	Description	Used in
20	docsIf3Mib	DOCS-IF3-MIB	[OSSIv3.0]
21	docsQos3Mib	DOCS-QOS3-MIB	[OSSIv3.0]
22	docsLoadbal3Mib	DOCS-LOADBAL3-MIB	[OSSIv3.0]
23	docsDrfMib	DOCS-DRF-MIB	[M-OSSI]

8.2.3 IPCablecom Project

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable
(1.3.6.1.4.1.4491.2.2)

Table 4 – IPCablecom Project Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcMtaMib	PKTC-MTA-MIB	[PKT MIB MTA1.5]
2	pktcSigMib	PKTC-SIG-MIB	[PKT MIB SIG1.5]
3	pktcEventMib	PKTC-EVENT-MIB	[PKT EVE MIB1.5]
4	pktcSecurity	IPCablecom Security Node	[MIB-CLABDEF]
5	pktcLawfulIntercept	IPCablecom Lawful intercept node	[MIB-CLABDEF]
6	pktcEnhancements	IPCablecom Enhancements node	[MIB-CLABDEF]
7	pktcPACMMibs	IPCablecom PACM node	[MIB-CLABDEF]
8	pktcApplicationMibs	IPCablecom Service node	[MIB-CLABDEF]
9	pktcSupportMibs	IPCablecom Support node	[MIB-CLABDEF]
10	pktcEUEMibs	IPCablecom EUE node	[MIB-CLABDEF]

8.2.3.1 IPCablecom Project Lawful Intercept Codes

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.
pktcLawfulIntercept (1.3.6.1.4.1.4491.2.2.5)

Table 5 – IPCablecom Project Electronic Surveillance Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pcesp	PCESP	[PKT ESP]

8.2.3.2 IPCablecom Project Enhancements

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.
pktcEnhancements (1.3.6.1.4.1.4491.2.2.6)

Table 6 – IPCablecom Project Enhancements Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcEnMtaMib	PKTC-EN-MTA-MIB	[PKT MIB EXMTA1.5]
2	pktcEnSigMib	PKTC-EN-SIG-MIB	[PKT MIB SIG1.5]
3	pktcEnEventMib	Reserved for future use	
4	pktcEnSecurityMib	Reserved for future use	
5	pktcEnEUEMib	Reserved for future use	

8.2.3.3 IPCablecom Project PACM

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.
pktcPACMMibs (1.3.6.1.4.1.4491.2.2.7)

Table 7 – IPCablecom Project PACM Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcPACMTC	Reserved – withdrawn	
2	pktcPACMUEMib	Reserved – withdrawn	
3	pktcPACMUserMib	Reserved – withdrawn	
4		Reserved for future use	
5		Reserved for future use	
6	pktcPACMMgtMIB	Reserved – withdrawn	
7	pktcPACMEventMib	Reserved – withdrawn	

CableLabs PacketCable Project Application

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.
pktcApplicationMibs (1.3.6.1.4.1.4491.2.2.8)

Table 8 – IPCablecom Project Application Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1		Reserved for future use	
2	pktcEUESTMIB	CL-PKTC-EUE-RST-MIB	[PKT RST-EUE-PROV]

8.2.3.4 IPCablecom Project Support

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.pktcSupportMibs (1.3.6.1.4.1.4491.2.2.9)

Table 9 – IPCablecom Project Support Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcESSupportMibs	IPCablecom ES node	[MIB-CLABDEF]

8.2.3.4.1 IPCablecom Project Support Electronic Surveillance

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.pktcSupportMibs.pktcESSupportMibs (1.3.6.1.4.1.4491.2.2.9.1)

Table 10 – IPCablecom Project Support Electronic Surveillance Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcESTapMib	PKTC-ES-TAP-MIB	[PKT ES-INF]
2	pktcESIpTapMIB	PKTC-ES-IPTAP-MIB	[PKT ES-INF]

8.2.3.5 IPCablecom Project EUE

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.pktcEUEMibs (1.3.6.1.4.1.4491.2.2.10)

Table 11 – IPCablecom Project EUE Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcEUEDeviceMibs	IPCablecom EUE Device node	[MIB-CLABDEF]
2	pktcEUETCMIB	CL-PKTC-EUE-TC-MIB	[PKT EUE-DATA]
3	pktcEUEDevMIB	CL-PKTC-EUE-DEV-MIB	[PKT EUE-DATA]
4	pktcEUEUserMIB	CL-PKTC-EUE-USER-MIB	[PKT EUE-DATA]
5	pktcEUEProvMgmtMIB	CL-PKTC-EUE-PROV-MGMT-MIB	[PKT EUE-DATA]
6	pktcEUEEventMIB	CL-PKTC-EUE-EVENT-MIB	[PKT EUE-DATA]
7	pktcEUEPrsMIB	CL-PKTC-EUE-PRS-MIB	[PKT EUE-DATA]

8.2.3.5.1 IPCablecom Project EUE Specific

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjPacketCable.pktcEUEMibs.pktcEUEDeviceMibs (1.3.6.1.4.1.4491.2.2.10.1)

Table 12 – IPCablecom Project EUE Device Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	pktcEDVAMIB	CL-PKTC-EUE-EDVA-MIB	[PKT RST-EUE-PROV]

8.2.4 OpenCable Project

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjOpenCable
(1.3.6.1.4.1.4491.2.3)

Table 13 – OpenCable Project Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	ocStbHostMibModule	OC-STB-HOST-MIB	[OC MIB-HOST2.X]

8.2.5 IPCable2Home Project

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabProject.clabProjCableHome
(1.3.6.1.4.1.4491.2.4)

Table 14 – IPCable2Home Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	cabhPsDevMib	CABH-PS-DEV-MIB	[CH PSDEV-MIB]
2	cabhSecMib	CABH-SEC-MIB	[CH SEC-MIB]
3	cabhCapMib	CABH-CAP-MIB	[CH CAP-MIB]
4	cabhCdpMib	CABH-CDP-MIB	[CH CDP-MIB]
5	cabhCtpMib	CABH-CTP-MIB	[CH CTP-MIB]
6	cabhQosMib	CABH-QOS-MIB Reserved	
7	cabhCsaMib	CABH-CSA-MIB	[CO CSA-MIB]
8	cabhQos2Mib	CABH-QOS2-MIB	[CH QOS-MIB]

8.2.6 Security

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabSecurity (1.3.6.1.4.1.4491.3)

Table 15 – Security Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	clabSecCertObject	Security Certificates node	[MIB-CLABDEF]

8.2.7 Common SMI MIB Modules

Prefix:

iso.org.dod.internet.private.enterprises.cableLabs.clabCommonMibs (1.3.6.1.4.1.4491.4)

Table 16 – Common Codes

Decimal	Name	Description	Used in
0		Reserved for future use	
1	clabUpsMib	CLAB-UPS-MIB	[MIB-BB]
2	clabTopoMib	CLAB-TOPO-MIB	[OSSIV3.0]

9 Cable Applications Registry

This clause contains CableLabs assigned application identifiers, represented as unique integer values, to identify applications specified for cable clients. Each application identifier is accompanied by the Cable project specifying the application, the name of the application, an integer value representing the application identifier, and a reference specification. The principal use for application identifiers is within data definitions, such as MIB modules.

As an example, the IPCablecom application identifier "1" represents the IPCablecom RST application. Within IPCablecom MIBs, it is used within the user MIB to associate specific users with the Cable RST application. Using the MIBs specified in [PKT EUE-DATA], specifically the MIB table pktcEUEUsrAppMapAppTable, the following row entries are of relevance:

pktcEUEUsrAppMapAppOrgID.<user A>.<application index>=4491 (identifies CableLabs)

pktcEUEUsrAppMapAppIdentifier.<user A>.<application index>=1 (identifies RST)

The above example specifies that user A is associated with the Cable specified application, RST.

The registry is specified in Table 17.

Table 17 – IPCablecom Application Identifiers

Project	Application	Identifier	Reference Specification
IPCablecom	Residential SIP Telephony (RST)	1	[PKT-SP-RSTF]

A request for a new assignment of a new application identifier Cable specified application should be submitted in the form of a contribution to the SG responsible for this Recommendation.

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