

PacketCable™ 2.0

E-UE Provisioning Data Model Specification

PKT-SP-EUE-DATA-I08-121030

ISSUED

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Work in Progress	An incomplete document, designed to guide discussion and generate feedback that may include several alternative requirements for consideration.
Draft	A document in specification format considered largely complete, but lacking review by Members and vendors. Drafts are susceptible to substantial change during the review process.
Issued	A stable document, which has undergone rigorous member and vendor review and is suitable for product design and development, cross-vendor interoperability, and for certification testing.
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1 SCOPE

1.1 Introduction and Purpose

This specification presents the data element definitions and associated requirements for use with the PacketCable 2.0 E-UE Provisioning Framework. Specifically, it defines data to be used for configuration and management of E-UEs, and associated users. For more information on the PacketCable 2.0 E-UE Provisioning Framework, please refer to [PKT-EUE-PROV].

This document does not consider PacketCable 2.0 application specific data within its scope. PacketCable 2.0 application-specifications are expected to specify such data.

1.2 Document Overview

The document is structured as follows:

- Section 2 – References
- Section 3 – Terms and Definitions
- Section 4 – Abbreviations
- Section 5 – Informative section providing a description of the PacketCable 2.0 E-UE Provisioning Data Model
- Section 6 – Normative section describing the data model requirements for PacketCable 2.0 E-UEs
- Annex A – PacketCable eUE Common Modules
- Annex B – PacketCable eUE Device Configuration Modules
- Annex C – PacketCable eUE Provisioning and Management Modules
- Annex D – PacketCable eUE Additional Modules
- Appendix I – Illustrative PacketCable Deployment Examples

1.3 Requirements

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

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

2 REFERENCES

2.1 Normative References

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

- [CL-MIB-BB] CableLabs Specifications, Battery Backup MIB Specification, CL-SP-MIB-BB-I04-100608, June 8, 2010, Cable Television Laboratories, Inc.
- [DOCSIS-RFI] DOCSIS Specification, Radio Frequency Interface Specification, CM-SP-RFIv1.1-C01-050907, September 7, 2005, Cable Television Laboratories, Inc.
- [eDOCSIS] eDOCSIS Specification, CM-SP-eDOCSIS-I24-120809, August 9, 2012, Cable Television Laboratories, Inc.
- [IETF STD58] IETF RFC 2578/STD0058, Structure of Management Information Version 2 (SMIv2), April 1999.
- [IETF STD62] IETF RFC 3411/STD0062, An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks, December 2002.
- [PKT-EUE-PROV] PacketCable 2.0 E-UE Provisioning Specification, PKT-SP-EUE-PROV-I07-110825, August 25, 2011, Cable Television Laboratories, Inc.
- [PKT-MEM1.5] PacketCable 1.5 Management Event Mechanism Specification, PKT-SP-MEM1.5-I05-100527, May 27, 2010, Cable Television Laboratories, Inc.
- [PKT-SP-PROV1.5] PacketCable 1.5 Specification, MTA Device Provisioning, PKT-SP-PROV1.5-I04-090624, June 24, 2009, Cable Television Laboratories, Inc.
- [RFC 2863] IETF RFC 2863, The Interfaces Group MIB, June 2000.
- [RFC 3410] IETF RFC 3410, Introduction and Applicability Statements for Internet Standard Management Framework, December 2002.
- [RFC 3412] IETF RFC 3412/STD0062, Message Processing and Dispatching for the Simple Network Management Protocol (SNMP), December 2002.
- [RFC 3413] IETF RFC 3413/STD0062, Simple Network Management Protocol (SNMP) Applications, December 2002.
- [RFC 3414] IETF RFC 3414/STD0062, User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3), December 2002.
- [RFC 3415] IETF RFC 3415/STD0062, View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP), December 2002.
- [RFC 3418] IETF RFC 3418, Management Information Base (MIB) for the Simple Network Management Protocol (SNMP).
- [RFC 3986] IETF RFC 3986, Uniform Resource Identifier (URI): Generic Syntax, January 2005.
- [RFC 4113] IETF RFC 4113, Management Information Base for the User Datagram Protocol (UDP), June 2005.
- [RFC 4291] IETF RFC 4291, IP Version 6 Addressing Architecture, February 2006.
- [RFC 4293] IETF RFC 4293, Management Information Base for the Internet Protocol (IP), April 2006.

2.2 Informative References

This specification uses the following informative references.

[ARCH-FRM TR] PacketCable Architecture Framework Technical Report, PKT-TR-ARCH-FRM-V06-090528, May 28, 2009, Cable Television Laboratories, Inc.

2.3 Reference Acquisition

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone +1-303-661-9100; Fax +1-303-661-9199; <http://www.cablelabs.com>.
- Internet Engineering Task Force (IETF) Secretariat, 48377 Fremont Blvd., Suite 117, Fremont, California 94538, USA, Phone: +1-510-492-4080, Fax: +1-510-492-4001, <http://www.ietf.org/>.

3 TERMS AND DEFINITIONS

This specification uses the following terms:

Cable Modem	DOCSIS-compliant device which provides data transport connectivity from RFI to IP networks.
Embedded Cable Modem (eCM)	An embedded Cable Modem that has been enhanced with the features of the CableLabs eDOCSIS specification.
eUE	The logical PacketCable UE component of an E-UE, complies with eSAFE and PacketCable requirements.
E-UE	Embedded User Equipment. A single physical device embedded with an eDOCSIS-compliant DOCSIS Cable Modem and a PacketCable eUE.
Management Information Base	The description of the data items used by the Network Management for management and configuration of the PacketCable compliant E-UE. Such description is done based on the formal meta-language SMI defined by the corresponding IETF standards.
Network Management	The functions related to the management of data across the network.
Object Identifier	The sequence of integer positive numbers uniquely identifying the position of each MIB Object in the MIB Hierarchy.
User Datagram Protocol	A connectionless protocol built upon Internet Protocol (IP).

4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

CM	Cable Modem.
DOCSIS®	Data-Over-Cable Service Interface Specifications
eCM	Embedded Cable Modem.
MIB	Management Information Base
OID	Object Identifier.
RFC	Request for Comments. Technical policy documents approved by the IETF which are available on the World Wide Web at http://www.ietf.cnri.reston.va.us/rfc.html .
SNMP	Simple Network Management Protocol. Refer to IETF STD 62
UDP	User Datagram Protocol
VACM	View-based Access Control Model

5 TECHNICAL OVERVIEW

PacketCable 2.0 is a CableLabs specification effort designed to support the convergence of voice, video, data, and mobility technologies. This document is part of the PacketCable 2.0 set of specifications and technical reports that define the base architecture and specifies the data elements required to configure and manage E-UEs, associated users and applications, using the PacketCable 2.0 E-UE Provisioning Framework. For more information about PacketCable 2.0, please refer to the PacketCable 2.0 Architecture Framework Technical Report [ARCH-FRM TR]. For more information on the PacketCable 2.0 E-UE Provisioning Framework, please refer to [PKT-EUE-PROV].

The PacketCable 2.0 E-UE Provisioning Framework relies on SNMP, as specified in [IETF STD62], for configuration and management. The data is specified using Structure of Management Information, Version 2 (SMIv2) Management Information Bases (MIBs), as specified in [IETF STD58]. Thus, this document specifies the configuration and management MIBs for use with the PacketCable 2.0 E-UE Provisioning Framework.

In this specification, the term "DOCSIS" is used to refer to DOCSIS version 1.1 or later, unless explicitly specified otherwise. Additionally, all references to PacketCable within this document are assumed to be PacketCable 2.0, unless stated otherwise.

5.1 Embedded User Equipment (E-UE)

The E-UE is a single physical device embedded with an eDOCSIS-compliant DOCSIS Cable Modem (eCM) and an eUE that complies with eDOCSIS eSAFE and PacketCable UE requirements. For more information on E-UEs please refer to [PKT-EUE-PROV].

5.2 E-UE Provisioning Framework

The E-UE Provisioning Framework is a PacketCable 2.0 configuration and management framework based on the PacketCable 1.5 Device Provisioning specification. For more information on the E-UE Provisioning Framework, please refer to [PKT-EUE-PROV].

This document is to be used in conjunction with the E-UE Provisioning Framework, and also relies on the PacketCable 1.5 Device Provisioning specification. For more information on the latter, please refer to [PKT-SP-PROV1.5].

5.3 E-UE Provisioning Data Model

The E-UE Provisioning Data Model serves eCMs, eUEs, users and associated applications. For the eCM component it borrows from the DOCSIS suite of specifications with no additional enhancements. The eUE, user, and application data are logically separated, and specified in this document. Given the use of SNMP for configuration and management, the eUE component is provided with data pertaining to itself, users, and applications.

The logical representation of the E-UE Provisioning Data Model is specified in Figure 1.

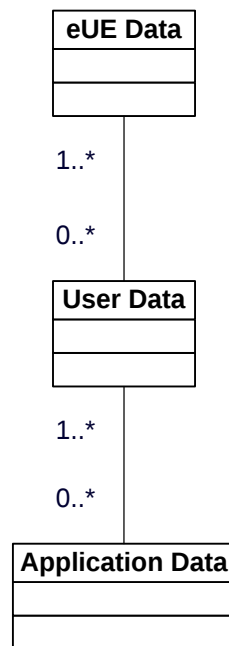


Figure 1 - E-UE Provisioning Data Model

6 E-UE PROVISIONING MIBS FRAMEWORK REQUIREMENTS

The E-UE MIBS framework provides the MIB module implementation requirements for the E-UE. An informative, logical framework depicting MIB modules in the E-UE components is presented in Figure 2. The rest of this section presents the specific requirements.

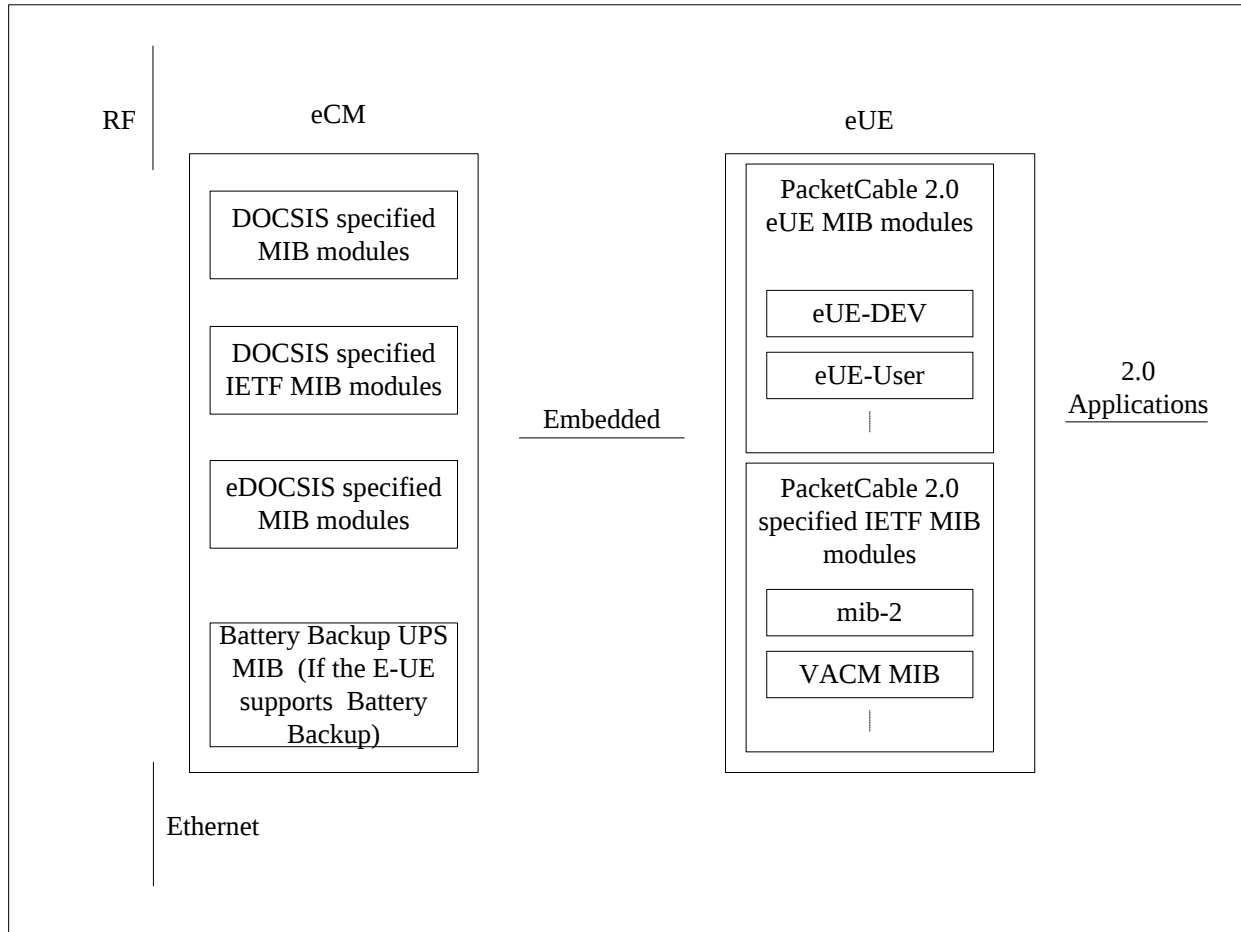


Figure 2 - E-UE Logical MIBs Framework

The eCM component of an E-UE needs to comply with the DOCSIS and eDOCSIS suite of specifications. The eUE component is required to support the data model that was informatively described in Section 5.3. To provide more information:

- The eUE can be associated with one or more Users.
- Each User can be associated with one or more applications.
- Each application has one more features; each feature has a set of configuration data.

Furthermore, each User can be associated with one or more eUEs. However, this is not possible to achieve using an SNMP-based framework that requires the data to be physically stored on a single client. In the E-UE Provisioning framework, this client is the eUE (for PacketCable data). Support for the other requirements is achieved by using an array of mappings:

- Association of an eUE with multiple Users,
- Association of a User with multiple Applications; each Application being associated with one Profile,
- Association of a Profile with multiple features; some of which could be shared with other Profiles belonging to the same Application.

6.1 eCM MIB Requirements

This section presents the MIB module requirements for the eCM component of the E-UE.

6.1.1 DOCSIS MIB Modules

The eCM component of an E-UE MUST comply with the DOCSIS MIB module requirements. For more information on the DOCSIS MIB modules, please refer to the DOCSIS specifications.

6.1.2 eDOCSIS MIB Modules

The eCM component of an E-UE MUST comply with the eDOCSIS MIB requirements. For more information on the eDOCSIS MIB module requirements, please refer to the eDOCSIS specification [eDOCSIS].

6.1.3 Battery Backup UPS MIB module

If the E-UE supports Battery Backup functionality, as specified in [CL-MIB-BB], the eCM component MUST support the Battery Backup and UPS MIB and associated requirements.

6.2 eUE MIB Requirements

This section presents the MIB module requirements for the eUE component of the E-UE.

6.2.1 eUE MIB Modules

The eUE component of the E-UE MUST comply with the PacketCable 2.0 specified eUE MIB configuration and management MIB modules specified in Annex B and Annex C, respectively. If an eUE supports PacketCable Presence, then the eUE MUST implement the eUE Presence MIB as specified in Annex D.2.

6.2.2 IETF MIB Modules

The eUE MUST implement the following MIB modules:

- MIB II system group as specified in [RFC 3418];
- IF MIB as specified in [RFC 2863];
- UDP MIB as specified in [RFC 4113]; and
- IP MIB as specified in [RFC 4293].

6.2.3 eDOCSIS MIB Modules

The eUE component of an E-UE MUST also comply with the eSAFE MIB requirements as specified in [eDOCSIS]; for example, requirements related to the implementation of MIB II.

6.2.4 SNMP MIB Requirements

6.2.4.1 eUESysDescr Requirements

The eUE's MIB II sysDescr MIB object MUST conform to the format specified in the DOCSIS specifications governing the eCM component.

6.2.4.2 eUE ifTable Requirements

The eUE MUST implement the row entry specified in Table 1 for the ifTable as specified in [RFC 2863].

Table 1 - eUE ifTable Requirements

ifTable ([RFC 2863])	Row Entry
IfIndex	1
ifDescr	"DOCSIS Embedded Interface"
IfType	other(1)
IfMtu	0
IfSpeed	0
ifPhysAddress	eUE MAC address
IfAdminStatus	up(1)
ifOperStatus	up(1)
IfLastChange	per [RFC 2863]
ifInOctets (optional)	(n) if implemented, else 0
IfInNUCastPkts	Deprecated
IfInDiscards	0
IfInErrors	0
IfUnknownProtos	0
ifOutOctets (optional)	(n) if implemented, else 0
ifOutUCastPkts (optional)	(n) if implemented, else 0
IfOutNUCastPkts	Deprecated
IfOutDiscards	0
IfOutErrors	0
IfOutQlen	Deprecated
IfSpecific	Deprecated

6.2.4.3 eUE ipNetToPhysicalTable Requirements

The eUE MUST implement the row entry specified in Table 2 for the ipNetToPhysicalTable as specified in [RFC 4293].

Table 2 - ipNetToPhysicalTable MIB Object Details

ipNetToPhysicalTable	CM device
ipNetToPhysicalIfIndex	1
ipNetToPhysicalPhysAddress	eCM MAC Address
ipNetToPhysicalNetAddressType	ipv4(1) or ipv6(2)
ipNetToPhysicalNetAddress	eCM IP Address

ipNetToPhysicalTable	CM device
ipNetToPhysicalLastUpdated	<refer to [RFC 4293]>
ipNetToPhysicalType	static(4)
ipNetToPhysicalState	<refer to [RFC 4293]>
ipNetToPhysicalRowStatus	'active'

6.2.4.4 eUE USM Requirements

This section presents the PacketCable 2.0 eUE USM requirements. Please refer to [RFC 3414] for more information on the User-based Security Model (USM) for SNMPv3.

An eUE, provisioned in the Secure Provisioning Flow, MUST configure the usmUserTable immediately after receiving the AP REPLY from the Provisioning Server, with the entry specified in Table 3.

Table 3 - eUE usmUserTable Entry

usmUserTable ([RFC 3414] [IETF STD62])	Row Entry
usmUserEngineID	The SNMP local engine id
usmUserName	eUE-Prov-xx:xx:xx:xx:xx:xx, where xx:xx:xx:xx:xx:xx represents the eUE's Mac address
usmUserSecurityName	eUE-Prov-xx:xx:xx:xx:xx:xx, where xx:xx:xx:xx:xx:xx represents the eUE's Mac address
usmUserCloneFrom	0.0
usmUserAuthProtocol	usmHMACMD5AuthProtocol or usmHMACSHAAuthProtocol
usmUserAuthKeyChange	""
usmUserOwnAuthKeyChange	""
usmUserPrivProtocol	usmDESPrivProtocol if privacy is indicated in AP REPLY usmNoPrivProtocol if privacy is not indicated in the AP REPLY
usmUserPrivKeyChange	""
usmUserOwnPrivKeyChange	""
usmUserPublic	""
usmUserStorageType	volatile
usmUserStatus	active

Initial authentication and privacy keys for this user are derived from the AP Reply message. The eUE MUST allow for cloning of users as specified in [IETF STD62]. This can be accomplished using the configuration file, or dynamically through SNMP SET operations.

6.2.4.5 eUE VACM Requirements

This section presents the PacketCable 2.0 eUE VACM requirements. For more information regarding View-based Access Control Model (VACM) for SNMP, please refer to [RFC 3415].

The eUE MUST configure the VacmSecurityToGroupTable with the entry specified in Table 4.

Table 4 - eUE VacmSecurityToGroupTable

vacmSecurityToGroupTable (RFC 3415)	Row Entry
vacmSecurityModel	USM
vacmSecurityName	eUE-Prov-xx:xx:xx:xx:xx:xx
vacmGroupName	PacketCableFullAccess
vacmSecurityToGroupStorageType	volatile
vacmSecurityToGroupStatus	active

The eUE MUST configure the vacmAccessTable with the entry specified in Table 5 and the associated requirements that follow. This configuration allows for read access of all MIB modules in the eUE, write access to PacketCable 2.0 eUE MIB modules, and notifications as specified in the PacketCable 2.0 eUE MIB modules.

Table 5 - eUE vacmAccessTable

vacmAccessTable (RFC 3415)	Row Entry
vacmGroupName	PacketCableFullAccess
vacmAccessContextPrefix	""
vacmAccessSecurityModel	USM
vacmAccessSecurityLevel	authPriv or authNoPriv (depending on whether privacy has been specified)
vacmAccessContextMatch	exact
vacmAccessReadViewName	ReadOnlyView
vacmAccessWriteViewName	FullAccessView
vacmAccessNotifyViewName	NotifyView
vacmAccessStorageType	volatile
vacmAccessStatus	active

The following requirements are associated with Table 5.

- The eUE's ReadOnlyView MUST consist of the entire MIB tree contained in the eUE.
- The eUE's FullAccessView MUST consist of all the PacketCable-specified MIB modules, the MIB-II system group, and the IF-MIB tree.
- The eUE's FullAccessView MAY include vendor-specific MIBs, VACM, USM, and Notifications MIB.
- The eUE's NotifyView MUST consist of all the PacketCable 2.0 specified MIB modules, the MIB-II system group, and the snmpTrapOID MIB tree.
- The eUE's NotifyView MAY include vendor-specific MIB trees.

6.2.4.6 SNMPv2c Management Requirements

The eUE MUST follow the SNMPv2c management requirements as specified in [PKT-SP-PROV1.5], "SNMPV2C MANAGEMENT REQUIREMENTS," with the following clarifications:

- The requirements applicable to the eMTA apply to the eUE.
- The string (or substring) "mta" is replaced with "eue" in snmpCommunityIndex, snmpCommunitySecurityName, snmpCommunityTransportTag, snmpTargetAddrName, snmpTargetAddrTagList, snmpTargetAddrParams, vacmSecurityName, vacmGroupName, VacmAccessReadViewName, VacmAccessWriteViewName, vacmAccessNotifyViewName, vacmViewTreeFamilyViewName, snmpTargetParamsName, snmpTargetParamsSecurityName, snmpNotifyName, snmpNotifyTag, snmpNotifyFilterProfileName and snmpNotifyFilterSubtree.
- Any references to MIB modules, such as pktcMtaNotification within the snmpNotifyFilterTable, applies to the PacketCable 2.0 E-UE MIB modules.

6.3 Configuration Data Element Requirements

The eCM MUST comply with the DOCSIS and eDOCSIS configuration data element requirements, including mandatory, optional, and prohibited MIB Objects. The eUE MUST report any configuration data elements deemed mandatory, and not provided in the respective configuration file as described either in Table 6, Section 6.4, and/or the respective data element specification.

6.3.1 Configuration File Requirements

This section provides the configuration data element requirements.

Table 6 - eUE Configuration Data Element Requirements

MIB Module (CL-PKTC-)	Data Element	Requirement	Additional Details
EUE-PROV-MGMT-MIB	pktcMtaDevEnabled	Mandatory	This element is always required.
EUE-PROV-MGMT-MIB	pktcMtaDevRealmOrgName	Conditionally Mandatory	This element is mandatory in the Secure Provisioning Flow.
EUE-DEV-MIB	pktcEUEDevOpTable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users associated with it.
EUE-DEV-MIB	pktcEUEDevDnsTable	Conditionally Mandatory	If absent in configuration the active user defaults to the eUE DNS server values (i.e., via DHCP or pktcMtaDevServerDns1, pktcMtaDevServerDns2 values).
EUE-DEV-MIB	pktcEUEDevPCSCFTable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users associated with it.
EUE-USER-MIB	pktcEUEUsrIMPTable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users associated with it.
EUE-USER-MIB	pktcEUEUsrIMPTable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users which need authentication for registration.
EUE-USER-MIB	pktcEUEUsrAppMapTable	Conditionally Mandatory	One table entry is mandatory if any active user has any applications associated with it.

6.3.2 Certificate Bootstrapping File Requirements

This section provides the Certificate Bootstrapping configuration data element requirements. An eUE that supports Certificate Bootstrapping MUST be capable of accepting the contents of an XML instance document that complies with the XML Schema specified in Annex D.1. A Certificate Bootstrapping Server that provides Certificate Bootstrapping MUST support XML instance documents that comply with the XML Schema specified in Annex D.1, and the data element requirements in Table 7.

Once an eUE receives an XML instance document during the Certificate Bootstrapping process, the eUE MUST make sure that it complies with the data element and attributes requirements stated in Table 7. If the Certificate Bootstrapping XML instance document complies with the stated requirements the eUE MUST process the XML instance data elements and modify the pktcEUEUsrIMPTable accordingly. The eUE MUST validate the XML

instance document prior to acceptance or modification of the MIB table 'pktcEUEUsrIMPITable'. If the received Certificate Bootstrapping XML instance document is valid the eUE MUST process the document. If the Configuration File XML instance document fails to meet the requirements stated in Appendix D.1 or Table 7, then the eUE MUST ignore the Certificate Bootstrapping XML instance document and report the appropriate events (specified in Table 8), and continue to support PacketCable applications as configured.

When the data element 'clearIMPIMIBTable' is present and set to a value of 'true', the eUE MUST process it prior to any IMPI elements and clear all the entries in the MIB table 'pktcEUEUsrIMPITable'. The attribute 'mibIMPIIndex' provides the index value reference to the MIB table 'pktcEUEUsrIMPITable'. Irrespective of the current row entry corresponding to that index, the eUE MUST update it with the information provided during Certificate Bootstrapping. If there are row entries in the MIB table 'pktcEUEUsrIMPITable' that are not present in the Certificate Bootstrapping XML instance file, the eUE MUST NOT modify them in any way as a result of the Certificate Bootstrapping process.

The Certificate Bootstrapping procedure may result in duplicate IMPI entries, e.g., if the entries provided previously are not cleared using the element 'clearIMPIMIBTable'. In such cases, the eUE MUST still accept a valid Certificate Bootstrapping XML instance and report the appropriate event as specified in the IMPI MIB table (see Table 8 for the actual event).

Table 7 - eUE Configuration Bootstrapping File Requirements

XML Schema	Data Element or Attribute	Requirement	Additional Details
D.1	//clearIMPIMIBTable	Mandatory, if '//IMPI' is absent.	If this element is absent, then the eUE will not clear the IMPI table.
D.1	//IMPI	Mandatory, if '//clearIMPIMIBTable' is absent.	An IMPI element is required for each IM Private Identifier (IMPI) that is being specified.
D.1	//IMPI/@mibIMPIIndex	Mandatory if the element '//IMPI' is present.	A mibIMPIIndex attribute is required for each IMPI/ID element.
D.1	//IMPI/ID	Mandatory if the element '//IMPI' is present.	An ID element is required for each IMPI that is being specified.
D.1	//IMPI/Creds	Mandatory if the element '//IMPI' is present.	A Creds element is required for each IMPI that is being specified.
D.1	//IMPI/ID/@idType	Mandatory if the element '//IMPI' is present.	An idType attribute is required for each IMPI/ID element.
D.1	//IMPI/Creds/@credsType	Mandatory if the element '//IMPI' is present.	A credsType attribute is required for each IMPI/Creds element. When the attribute 'credsType' indicates 'none', it implies that the corresponding IMPI is not associated with any credentials (however, this should not affect the use of the IMPI for purposes such as registration).

6.4 Management Event Reporting Requirements

The E-UE MUST support all the Management Events specified in [PKT-MEM1.5], Table 4, except for the following:

- PROV-EV-12
- PROV-EV-12.1
- PROV-EV-13
- PROV-EV-13.1
- PROV-EV-14
- PROV-EV-14.1

Also, given that a eUE supports IPv6 address mode and DHCPv6, the eUE MUST implement the following, enhanced, definition of PROV-EV-16 (originally specified in [PKT-MEM1.5]):

- For DHCPv4 operation, this event is generated as specified in [PKT-MEM1.5]).
- For DHCPv6 operation, this event is generated as described by the following ABNF:

```
PROV-EV-16 = "DHCPv6_ERROR:" dhcpv6-message [";"error-info] [";" ipv6-address-list]
dhcpv6-message = 1*(VCHAR)
error-info = 1*(VCHAR)
ipv6-address-list = IPv6address ["," (IPv6address)]
; For definition of the 'IPv6address' element in ABNF refer to [RFC 3986]
('IPv6address' element) and [RFC 4291].
```

In addition, the eUE MUST support the management events specified in Table 8.

Table 8 - Additional eUE Management Events

Event Name	Default Severity for Event	Default Display String	PacketCable Event ID	Comments
EUE-EV-1	error	"Registration did not comply with SigSecurity configuration for user <user IMPU>"	4000960000	The eUE MUST report this event if the directive specified in pktcEUEUsrIMPUSigSecurity is not met during registration of a user IMPU.
EUE-EV-2	critical	"Registration failed for user IMPU=<user IMPU>; IMPI=<user IMPI>; reason <reason>"	4000960001	The eUE MUST report this event if the registration for a specific user failed. The eUE MUST populate <user IMPU> with the user's IMPU and <user IMPI> with the user's IMPI.
EUE-EV-3	informational	"Certificate Bootstrapping Success"	4000960002	The eUE MUST report this event if a Certificate Bootstrapping procedure that was initiated was successfully completed.
EUE-EV-4	critical	"Certificate Bootstrapping Failure"	4000960003	The eUE MUST report this event if a Certificate Bootstrapping procedure was not successfully completed.
EUE-EV-5	critical	"Time unavailable from the ToD Server - Secure flow"	4000960004	The eUE MUST report this event if ToD is not available by the moment when the eUE completes its DHCP process and is required to attempt secure provisioning flow.
EUE-EV-6	warning	"Time unavailable from the ToD Server - Basic or Hybrid flow."	4000960005	The eUE MUST report this event if ToD is not available by the moment when the eUE completes its DHCP process and is required to attempt Basic or Hybrid provisioning flows.
EUE-EV-7	warning	"New time has been retrieved from ToD server."	4000960006	The eUE MUST report this event when the new value of the ToD has been retrieved for any reason, e.g., the ToD Server has been modified, the change of the Time Offset value in the corresponding DHCP option, or a previously non-responsive ToD Server becomes responsive.
EUE-EV-8	error	"Certificate Bootstrapping XML instance does not comply with the supported XML Schema"	4000960007	The eUE MUST report this event if it supports Certificate Bootstrapping and receives a Certificate Bootstrapping XML instance document that does not comply with the XML Schema specified in Annex D.1.
EUE-EV-9	error	"Certificate Bootstrapping XML instance document is compliant, but contains errors"	4000960008	The eUE MUST report this event if it supports Certificate Bootstrapping and receives a Certificate Bootstrapping XML instance document that complies with the XML Schema specified in Annex D.1, but the data elements do not meet the requirements specified in Table 7, or the data element values contain errors.
EUE-EV-10	warning	"Warning: Inconsistency in Table <X>." ;Where X is the name of the MIB table with inconsistencies.	4000960009	The eUE MUST report this event for inconsistencies in any MIB table that identifies potential inconsistencies that need to be reported as a warning, for example, unavailable IMPI index references in the IMPU table.
EUE-EV-11	Informational	"Info: Inconsistency in Table <X>." ;Where X is the name of the MIB table with inconsistencies.	4000960010	The eUE MUST report this event for inconsistencies in any MIB table that identifies potential inconsistencies that need to be reported as informational events, or are not explicitly required to be reported as 'warnings' within the MIB table description.

Event Name	Default Severity for Event	Default Display String	PacketCable Event ID	Comments
EUE-EV-12	Critical	"DAD_ERROR:" DAD-type "," IPv6address [","error-info]. Where DAD-type = "link-local" "global"	4000960011	DAD verification failed for LinkLocal address created by EUE or global address assigned by DHCPv6 server
EUE-EV-13	Critical	"RA_ERROR:" ERROR-type [","error-info]. Where ERROR-type = "link-local" "global" Error-info =	4000960012	Router Advertisement messages are not received or improperly formed.
EUE-EV-14	Critical	"error: Failed to acquire Secondary IP address ADD-type.	4000960013	Secondary address not acquired.
EUE-EV-15	Info	"info: Secondary IP address ADD-type acquired.	4000960014	Secondary address acquired.

The following ABNF [RFC 3986] syntax is used in Table 8:

ADD-type = "V4 | V6"

error-info= 1*(VCHAR)

;For definition of the 'IPv6address' element in ABNF refers to [RFC 3986].

The eUE MUST handle the events with a severity of 'emergency', 'alert', 'critical' and 'error' as "NV-Events" per [PKT-MEM1.5] .

6.5 E-UE MIB Objects Persistence Requirements

This section describes the persistence requirements for MIB object values.

A MIB Object is said to be "persistent" (e.g., stored in "non-volatile" memory) if its value is retained upon E-UE reset.

A MIB object is said to be "non-persistent" (e.g., stored in "volatile" memory) when its value is not retained upon E-UE reset.

The E-UE MUST consider all MIB objects as "non-persistent" unless otherwise explicitly stated by the MIB Object.

Annex A PacketCable eUE Common Modules

A.1 Textual Conventions MIB Module

CL-PKTC-EUE-TC-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY,
Unsigned32
FROM SNMPv2-SMI
TEXTUAL-CONVENTION
FROM SNMPv2-TC
pktcEUEMibs
FROM CLAB-DEF-MIB;

pktcEUETCMIB MODULE-IDENTITY

LAST-UPDATED "200912140000Z" -- December 14, 2009
ORGANIZATION "Cable Television Laboratories, Inc."
CONTACT-INFO

"Broadband Network Services
Cable Television Laboratories, Inc.
858 Coal Creek Circle,
Louisville, CO 80027, USA
Phone: +1 303-661-9100
Email: mibs@cablelabs.com

Acknowledgements:

Thomas Clack, Broadcom - Primary author,
Sumanth Channabasappa, CableLabs
Eduardo Cardona, CableLabs
and members of the PacketCable PACM Focus Team."

DESCRIPTION

"This MIB module specifies the TEXTUAL CONVENTIONS
for use in the definition of PacketCable E-UE
MIB Objects."

REVISION "200912140000Z" -- December 14, 2009

DESCRIPTION

"Revised Version includes ECN EUE-DATA-N-09.0602-3
and published as I04"

REVISION "200807100000Z" -- July 10, 2008

DESCRIPTION

"Revised Version includes ECN EUE-DATA-N-08.0524-5
and published as I02"

REVISION "200711060000Z" -- Nov 6, 2007

DESCRIPTION

"Initial version, published as part of the CableLabs
E-UE Provisioning Data Model Specification
PKT-SP-EUE-DATA-I01-071106
Copyright 1999-2010 Cable Television Laboratories, Inc.
All rights reserved."

::= { pktcEUEMibs 2 }

-- Administrative assignments

pktcEUETCNotifications OBJECT IDENTIFIER ::= { pktcEUETCMIB 0 }
pktcEUETCObjects OBJECT IDENTIFIER ::= { pktcEUETCMIB 1 }
pktcEUETCConformance OBJECT IDENTIFIER ::= { pktcEUETCMIB 2 }

pktcEUETCCompliances OBJECT IDENTIFIER ::= { pktcEUETCConformance 1 }
pktcEUETCGroups OBJECT IDENTIFIER ::= { pktcEUETCConformance 2 }

```
-- MIB Objects
pktcEUETCUsageObjs      OBJECT IDENTIFIER ::= { pktcEUETCObjects 1 }
```

```
-----
-- TEXTUAL CONVENTION for defining EUE Identifiers
-----
```

```
PktcEUETCID ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION is being defined
          to contain identities that can be used
          within the PacketCable eUE data models.

          It specifies a hex string that can be
          used to represent the various identities.

          The types of possible identities are
          specified by the TEXTUAL CONVENTION
          'PktcEUETCIDType'.

          The following rules apply:
          - All identities, except macaddress refer
            to either UEs or Users.
            Mac addresses are UE specific
          - When used as a pair, the public and
            private identities MUST be separated
            by a '#', with the private identity
            following the public identity."
    SYNTAX OCTET STRING(SIZE(0..1023))
```

```
-----
-- TEXTUAL CONVENTION for defining EUE Identifier type
-----
```

```
PktcEUETCIDType ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION is being defined
          as a way of indicating an identity
          specified by MIB Objects utilizing the
          TEXTUAL CONVENTION 'PktcEUETCID'.

          The defined types include:
          - other(1)
            for types not described by the options
            provided below
          - gruu(2)
            for Globally Routable User Agent (UA) URIs
          - publicIdentity(3)
            for Public Identities as defined by PacketCable
          - privateIdentity(4)
            for Private Identities as defined by PacketCable
          - publicPrivatePair(5)
            for Public and Private Identity pairs
            as defined by PacketCable
          - username(6)
            for username and password as defined by PacketCable
          - macaddress(7)
            for mac addresses
          - packetcableIdentity(8)
            for PacketCable specific types
```

UE implementations must ensure that

PktcEUETCIDType objects and any dependent objects (e.g., PktcEUETCID objects) are consistent.

In general, the UE MUST generate an 'inconsistentValue' error if an attempt to change a PktcEUETCIDType object would, for example, lead to an undefined PktcEUETCID value.

In particular, PktcEUETCIDType/PktcEUEID pairs MUST be changed together."

```
SYNTAX    INTEGER {
        other(1),
        gruu(2),
        publicIdentity(3),
        privateIdentity(4),
        publicPrivatePair(5),
        username(6),
        macaddress(7),
        packetcableIdentity(8)
    }
```

 -- TEXTUAL CONVENTION for defining activation status

PktcEUETCAdminStatus ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" This TEXTUAL CONVENTION is being defined to indicate activation status as defined in PacketCable.

A value of 'active' indicates a status of active.

A value of 'inactive' indicates a status of inactive."

```
SYNTAX    INTEGER {
        active(1),
        inactive(2)
    }
```

PktcEUETCOperStatus ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" This TEXTUAL CONVENTION is being defined to indicate operational activation status as defined in PacketCable.

A value of 'active' indicates a status of active.

A value of 'inactive' indicates a status of inactive.

A value of 'notPresent' indicates the particular activation status is not supported.

A value of 'unknown' indicates the activation status could not be determine by the other values."

```
SYNTAX    INTEGER {
        active(1),
        inactive(2),
        notPresent(3),
        unknown(4)
    }
```

 -- TEXTUAL CONVENTION for defining activation status info

```

-----
PktcEUETCStatusInfo ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION is being defined to provide
          additional activation status information."
    SYNTAX OCTET STRING (SIZE(0..31))

-----
-- TEXTUAL CONVENTION for User Element Indices
-----
PktcEUETCUsrElementType ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION is being defined to
          indicate any indices related to users, such as IMPUs
          and IMPIs, as defined in PacketCable.
          Such an instance can be referenced across
          tables to indicate an association.

          The values assigned for objects of this type SHOULD
          be sequential starting with the value of 1 and
          incrementing by 1 for each User. A value of '0',
          if allowed MUST be specified in the DESCRIPTION of
          any MIB Object using this data type."
    SYNTAX Unsigned32 (0..63)

-----
-- TEXTUAL CONVENTION for defining App Org
-----
PktcEUETCAppOrgIdentifier ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION is being defined to
          identify the organization specifying
          a particular application.

          Any MIB Object specified to be of this type
          MUST represent the IANA assigned Enterprise number.

          For CableLabs specified applications, it MUST be
          4491."
    REFERENCE "http://www.iana.org/assignments/enterprise-numbers"
    SYNTAX Unsigned32

-----
-- TEXTUAL CONVENTION for defining App Identifier
-----
PktcEUETCAppIdentifier ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION is being defined to
          identify the application id assigned by an
          organization.
          Each organization planning to specify an application
          MUST publish a registry which identifies each application
          and the corresponding ID that can be referenced."
    SYNTAX Unsigned32(1..127)

-----
-- TEXTUAL CONVENTION for App Indices
-----
PktcEUETCUsrAppIndexType ::= TEXTUAL-CONVENTION

```

```
STATUS current
DESCRIPTION
    " This TEXTUAL CONVENTION is being defined to
      indicate any indices related to PacketCable Applications.

      The values assigned for objects of this type SHOULD
      be sequential starting with the value of 1 and
      incrementing by 1 for each User. A value of '0',
      if allowed MUST be specified in the DESCRIPTION of
      any MIB Object using this data type."
SYNTAX Unsigned32
```

-- TEXTUAL CONVENTION for defining Credentials

```
PktcEUEtCCredsType ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
    " This TEXTUAL CONVENTION represents credential
      types. Each definition of PktcEUEtCCredsType MUST
      be accompanied by a definition of the textual
      convention PktcEUEtCCreds.

      The specified types include:
      - other(1)
        An unknown credentials type. It MAY be used to
        indicate Credentials that are not in one of the
        formats defined below such as a vendor-specific
        format.

      - none(2)
        A non-existent credentials type. This value MUST
        be used if the value of the corresponding
        PktcEUEtCCreds object is a zero-length string.
        It MAY be used when the credentials are no longer
        valid.

      - password(3)
        A password based credential. When this type is used
        the credential value contained in PktcEUEtCCreds MUST
        be an ASCII string representing a user-readable
        password.

      - presharedKey(4)
        A pre-shared key based credential. When this type is
        used the credential value contained in PktcEUEtCCreds
        MUST be interpreted as a pre-shared key represented
        as an octet string.

      - X509certificate(5)
        A certificate based credential. When this type is
        used the credential value contained in PktcEUEtCCreds
        MUST be interpreted as a private key and an accompanying
        X.509 certificate.

      Implementations must ensure that objects with
      SYNTAX of 'PktcEUEtCCredsType' and dependent objects
      with SYNTAX of 'PktcEUEtCCreds' are consistent.
```

In general, the UE MUST generate an
'inconsistentValue' error if an attempt
to change an 'PktcEUEtCCredsType' object would,

```
        for example, lead to an undefined 'PktcEUETCCreds'
        value."
SYNTAX    INTEGER {
                other(1),
                none(2),
                password(3),
                preSharedKey(4),
                certificate(5)
            }

PktcEUETCCreds ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " This TEXTUAL CONVENTION allows for the definition
        of a credential.

        A PktcEUETCCreds value must always be associated with
        and interpreted within the context of a corresponding
        PktcEUETCCredsType.

        The value of a PktcEUETCCreds object must be consistent
        with the value of its associated PktcEUETCCredsType
        object. Any attempt to SET an object when these values
        are not consistent must fail with an inconsistentValue
        error.

        An object of this type MUST be interpreted as follows
        (in network byte order):

        Bytes 0-1:  Reserved. The application must define the
                     usage of these bytes, otherwise, ignored.
        Bytes 2-3:  Indicate the length of the credential value.
        Bytes 4-8191: Contain the credential value."
SYNTAX    OCTET STRING (SIZE (0..8192))

END
```

Annex B PacketCable eUE Device Configuration Modules

B.1 Device Configuration MIB Module

```

CL-PKTC-EUE-DEV-MIB DEFINITIONS ::= BEGIN

IMPORTS
    PktcEUECCredsType,
    PktcEUECCreds
        FROM CL-PKTC-EUE-TC-MIB
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32
        FROM SNMPv2-SMI

    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF

    TEXTUAL-CONVENTION,
    RowStatus,
    TruthValue
        FROM SNMPv2-TC
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
    InetAddress,
    InetPortNumber,
    InetAddressDNS,
    InetAddressType,
    InetVersion
        FROM INET-ADDRESS-MIB
    pktcEUEMibs
        FROM CLAB-DEF-MIB;

pktcEUEDevMIB MODULE-IDENTITY
    LAST-UPDATED "201107110000Z" -- July 11, 2011
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
        Louisville, CO 80027, USA
        Phone: +1 303-661-9100
        Email: mibs@cablelabs.com

        Acknowledgements:
        Thomas Clack, Broadcom - Primary author,
        Eugene Nechamkin, Broadcom
        Sumanth Channabasappa, CableLabs
        John Berg, CableLabs
        Eduardo Cardona, CableLabs
        and members of the PacketCable PACM Focus Team."

    DESCRIPTION
        "This MIB module contains Configuration MIB
        objects for the Embedded User Equipment (eUE) as
        required by the PacketCable E-UE Provisioning
        Framework Specification."
    REVISION "201107110000Z" -- July 11, 2011
    DESCRIPTION

```

```

        "Revised Version includes ECN EUE-DATA-N-11.0661-6
        and published as I06"
REVISION "201012200000Z" -- Dec 20, 2010
DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-10.10.0644-2
        and published as I06"
REVISION "201004260000Z" -- April 26, 2010
DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-10.10.0633-2
        and published as I05"
REVISION "200912140000Z" -- December 14, 2009
DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-09.0605-5
        and published as I04"
REVISION "200905280000Z" -- May 28, 2009
DESCRIPTION
        "Revised Version includes ECNs
        EUE-DATA-N-08.0528-3
        EUE-DATA-N-09.0556-3
        and published as part of PKT-SP-EUE-DATA-I03-090528."
REVISION "200807100000Z" -- July 10, 2008
DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-08.0524-5
        and published as part of PKT-SP-EUE-DATA-I02-080710."
REVISION "200711060000Z" -- Nov 6, 2007
DESCRIPTION
        "Initial version, published as part of the CableLabs
        E-UE Provisioning Data Model Specification
        PKT-SP-EUE-DATA-I01-071106
        Copyright 1999-2010 Cable Television Laboratories, Inc.
        All rights reserved."
 ::= { pktcEUEMibs 3 }

-- -----
-- Pktc EUE DEV Textual Conventions
-- -----

PktcEUEDevSipProtID ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "This TEXTUAL CONVENTION is being defined
        as a way to enumerate the Protocols used for SIP."
    SYNTAX INTEGER {
        other(1),
        udp(2),
        tcp(3),
        tls(4)
    }

-- Administrative assignments
pktcEUEDevNotification OBJECT IDENTIFIER ::= { pktcEUEDevMIB 0 }
pktcEUEDevObjects       OBJECT IDENTIFIER ::= { pktcEUEDevMIB 1 }
pktcEUEDevConformance  OBJECT IDENTIFIER ::= { pktcEUEDevMIB 2 }

pktcEUEDevCompliances   OBJECT IDENTIFIER ::= { pktcEUEDevConformance 1 }
pktcEUEDevGroups        OBJECT IDENTIFIER ::= { pktcEUEDevConformance 2 }

-- -----
-- eUE Profile Information

```

```

-----
pktcEUEDevProfile          OBJECT IDENTIFIER ::= { pktcEUEDevObjects 1 }

pktcEUEDevProfileVersion OBJECT-TYPE
    SYNTAX      SnmpAdminString(SIZE(0..6))
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        " This MIB Object represents the Device Profile Version for this
          MIB module. The eUE MUST set this MIB Object to a value of '1.0'."
    ::= { pktcEUEDevProfile 1 }

-----
-- Operator Table
-----
pktcEUEDevOpTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEDevOpEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " This data table contains Operator specific information
          associated with the eUE."
    ::= { pktcEUEDevProfile 2 }

pktcEUEDevOpEntry OBJECT-TYPE
    SYNTAX      PktcEUEDevOpEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " Each entry in this data table describes Operator
          parameters associated with a specific domain name.

          For each Operator that is associated with a user,
          the corresponding parameters SHOULD be configured by
          the Operator.

          A domain name of '.' indicates any domain name.

          The eUE MUST use the values provided only for sessions
          established on behalf of the eUE identifier (e.g. eUE registration,
          eUE configuration, eUE Identifier based sessions).

          The conceptual rows MUST NOT persist across eUE resets."

    INDEX { pktcEUEDevOpIndex }
    ::= { pktcEUEDevOpTable 1 }

PktcEUEDevOpEntry ::=
    SEQUENCE {
        pktcEUEDevOpIndex          Unsigned32,
        pktcEUEDevOpDomain          InetAddressDNS,
        pktcEUEDevOpSTUNAddrType    InetAddressType,
        pktcEUEDevOpSTUNAddr        InetAddress,
        pktcEUEDevOpSTUNAddrPort    InetPortNumber,
        pktcEUEDevOpTURNAddrType    InetAddressType,
        pktcEUEDevOpTURNAddr        InetAddress,
        pktcEUEDevOpTURNAddrPort    InetPortNumber,
        pktcEUEDevOpTURNCreditsType PktcEUEETCCreditsType,
        pktcEUEDevOpTURNCredits     PktcEUEETCCredits,
        pktcEUEDevOpRowStatus        RowStatus
    }

```

```

pktcEUEDevOpIndex OBJECT-TYPE
    SYNTAX      Unsigned32(1..16)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " A unique value used to identify an instance of a set of
          values pertaining to an Operator domain identified
          by 'pktcEUEDevOpDomain'. The indices SHOULD be contiguous.
          When multiple entries are specified, the eUE MUST give
          precedence to the values indexed by lower indices."

    ::= { pktcEUEDevOpEntry 1 }

pktcEUEDevOpDomain OBJECT-TYPE
    SYNTAX      InetAddressDNS
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This data element contains the Operator's Domain or sub-domain
          name. A value of '.' indicates any domainName."
    ::= { pktcEUEDevOpEntry 2 }

pktcEUEDevOpSTUNAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This data element identifies the data type of the
          value contained in 'pktcEUEDevOpSTUNAddr'."

    DEFVAL     { unknown }
    ::= { pktcEUEDevOpEntry 3 }

pktcEUEDevOpSTUNAddr OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This data element contains the STUN server address
          associated with the domain name identified in
          'pktcEUEDevOpDomain'."

    DEFVAL     { "" }
    ::= { pktcEUEDevOpEntry 4 }

pktcEUEDevOpSTUNAddrPort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This data element contains the STUN server port
          associated with the server address identified in
          'pktcEUEDevOpSTUNAddr'."

    DEFVAL     { 0 }
    ::= { pktcEUEDevOpEntry 5 }

pktcEUEDevOpTURNAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION

```

" This data element identifies the data type of the value contained in 'pktcEUEDevOpTURNAddr'."

DEFVAL { unknown }
 ::= { pktcEUEDevOpEntry 6 }

pktcEUEDevOpTURNAddr OBJECT-TYPE

SYNTAX InetAddress
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

" This data element contains the TURN server address associated with the domain name identified in 'pktcEUEDevOpDomain'."

DEFVAL { "" }
 ::= { pktcEUEDevOpEntry 7 }

pktcEUEDevOpTURNAddrPort OBJECT-TYPE

SYNTAX InetPortNumber
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

" This data element contains the TURN server port associated with the server address identified in 'pktcEUEDevOpTURNAddr'."

DEFVAL { 0 }
 ::= { pktcEUEDevOpEntry 8 }

pktcEUEDevOpTURNCreditsType OBJECT-TYPE

SYNTAX PktcEUECreditsType
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

" This data element contains the creds type associated with the STUN Relay creds identified in 'pktcEUEDevOpTURNCredits'."

DEFVAL { none }
 ::= { pktcEUEDevOpEntry 9 }

pktcEUEDevOpTURNCredits OBJECT-TYPE

SYNTAX PktcEUECredits
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

" This optional data element MAY contain suitable credentials related to STUN Relay access.

If read this data element MUST always return an empty string value."

DEFVAL { "" }
 ::= { pktcEUEDevOpEntry 10 }

pktcEUEDevOpRowStatus OBJECT-TYPE

SYNTAX RowStatus
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

" This object defines the row status associated with the particular Operator in the pktcEUEDevOpTable.

The value of this object has no effect on whether columnar objects in this row can be modified."
 ::= { pktcEUEDevOpEntry 11 }

 -- Operator domain names associated with a eUE

pktcEUEDevDnsTable OBJECT-TYPE
 SYNTAX SEQUENCE OF PktcEUEDevDnsEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 " This data table represents the eUE's knowledge of suitable DNS Server information on a per Operator basis.

 The eUE MUST use the values provided only for sessions established on behalf of the eUE identifier (e.g. eUE P-CSCF Discovery, eUE registration, eUE configuration, eUE Identifier based sessions)."

 ::= { pktcEUEDevProfile 3 }

pktcEUEDevDnsEntry OBJECT-TYPE
 SYNTAX PktcEUEDevDnsEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 " Each entry in this data table contains an instance of a DNS Server entry for a given domain name as indicated by 'pktcEUEDevOpDomain'.

 The information in this table MAY be configured by the Operator.

 The conceptual rows MUST NOT persist across eUE resets."
 INDEX { pktcEUEDevOpIndex, pktcEUEDevDnsIndex }
 ::= { pktcEUEDevDnsTable 1 }

PktcEUEDevDnsEntry ::=

SEQUENCE {	
pktcEUEDevDnsIndex	Unsigned32,
pktcEUEDevDnsAddrType	InetAddressType,
pktcEUEDevDnsAddr	InetAddress,
pktcEUEDevDnsRowStatus	RowStatus
}	

pktcEUEDevDnsIndex OBJECT-TYPE
 SYNTAX Unsigned32(1..16)
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 " A unique value used to identify an instance in this data table. The indices SHOULD be contiguous. When multiple entries are specified, the eUE MUST give precedence to the values indexed by lower indices."
 ::= { pktcEUEDevDnsEntry 1 }

pktcEUEDevDnsAddrType OBJECT-TYPE
 SYNTAX InetAddressType
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 " This data element contains the type of the data

```

        element contained in 'pktcEUEDevDnsAddr'.
        The only valid values are 'ipv4' or 'ipv6'.
        The value 'unknown' may be used for row creation
        if the value of 'pktcEUEDevDnsAddr' is not specified."
DEFVAL    { unknown }
::= { pktcEUEDevDnsEntry 2 }

pktcEUEDevDnsAddr OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " The IP address of a DNS server associated with
      the domain name indicated by the primary index
      'pktcEUEDevOpIndex', for the instance indicated
      by the secondary index 'pktcEUEDevDnsIndex'.
      In the case this object is empty the eUE MUST use
      the DNS servers obtained via the DHCP process during
      provisioning."
DEFVAL      { "" }
::= { pktcEUEDevDnsEntry 3 }

pktcEUEDevDnsRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This object defines the row status associated with the
      particular Operator domain name in the pktcEUEDevDnsTable.

      The value of the 'pktcEUEDevDnsAddrType' object MUST not be
      modified while this object is 'active'. The value of
      'pktcEUEDevDnsAddr' MAY be modified while this object is active
      if the value is consistent with the type specified by the
      'pktcEUEDevDnsAddrType' object. The EUE MUST not allow the
      row to become 'active' unless the value of 'pktcEUEDevDnsAddr'
      is consistent with the value of 'pktcEUEDevDnsAddrType'."
::= { pktcEUEDevDnsEntry 4 }

-----
-- P-CSCFs associated with the eUE
-----

pktcEUEDevPCSCFTable OBJECT-TYPE
SYNTAX      SEQUENCE OF PktcEUEDevPCSCFEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    " This data table represents the eUE's knowledge
      of suitable P-CSCFs information on a per Operator
      basis."

::= { pktcEUEDevProfile 4 }

pktcEUEDevPCSCFEntry OBJECT-TYPE
SYNTAX      PktcEUEDevPCSCFEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    " Each entry in this data table contains an instance
      of a P-CSCF Server entry for a given domain name.
      The information in this table MAY be configured
      by the Operator.

```

The eUE MUST use the values provided only for sessions established on behalf of the eUE identifier (e.g. eUE registration, eUE configuration, eUE Identifier based sessions).

The conceptual rows MUST NOT persist across eUE resets."

```
INDEX { pktcEUEDevOpIndex, pktcEUEDevPCSCFIndex }
::= { pktcEUEDevPCSCFTable 1 }
```

```
PktcEUEDevPCSCFEntry ::=
```

```
SEQUENCE {
    pktcEUEDevPCSCFIndex                Unsigned32,
    pktcEUEDevPCSCFAddrType             InetAddressType,
    pktcEUEDevPCSCFAddr                 InetAddress,
    pktcEUEDevPCSCFSipPort              InetPortNumber,
    pktcEUEDevPCSCFUsedProtocol          PktcEUEDevSipProtID,
    pktcEUEDevPCSCFUsedInetAddressType  InetAddressType,
    pktcEUEDevPCSCFUsedInetAddress      InetAddress,
    pktcEUEDevPCSCFTimerT1              Unsigned32,
    pktcEUEDevPCSCFTimerT2              Unsigned32,
    pktcEUEDevPCSCFTimerT4              Unsigned32,
    pktcEUEDevPCSCFTimerTD              Unsigned32,
    pktcEUEDevPCSCFRowStatus            RowStatus,
    pktcEUEDevPCSCFInviteAttempts       Unsigned32,
    pktcEUEDevPCSCFMaxTime              Unsigned32,
    pktcEUEDevPCSCFBaseTimeAllFailed    Unsigned32,
    pktcEUEDevPCSCFBaseTimeAllNotFailed Unsigned32,
    pktcEUEDevPCSCFSubscribeRetry       Unsigned32
}
```

```
pktcEUEDevPCSCFIndex OBJECT-TYPE
```

```
SYNTAX      Unsigned32(1..16)
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
" A unique value used to identify an instance in this
data table. The indices SHOULD be contiguous.
When multiple entries are specified, the eUE MUST give
precedence to the values indexed by lower indices."
```

```
::= { pktcEUEDevPCSCFEntry 1 }
```

```
pktcEUEDevPCSCFAddrType OBJECT-TYPE
```

```
SYNTAX      InetAddressType
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
" This data element contains the type of the data
element contained in 'pktcEUEDevPCSCFAddr'."
```

```
DEFVAL      { unknown }
```

```
::= { pktcEUEDevPCSCFEntry 2 }
```

```
pktcEUEDevPCSCFAddr OBJECT-TYPE
```

```
SYNTAX      InetAddress
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
" The IP address of a P-CSCF server associated with
the domain name indicated by the primary index
'pktcEUEDevOpIndex', for the instance indicated
by the secondary index 'pktcEUEDevPCSCFIndex'."
```

```

    DEFVAL    { "" }
    ::= { pktcEUEDevPCSCFEntry 3 }

pktcEUEDevPCSCFSipPort    OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object contains a SIP Port to send the
          SIP requests to (for the P-CSCF indicated by the
          table entry).
          By default port 5060 is defined for SIP udp/tcp
          transports and 5061 for tls."
    ::= { pktcEUEDevPCSCFEntry 4 }

pktcEUEDevPCSCFUsedProtocol OBJECT-TYPE
    SYNTAX      PktcEUEDevSipProtID
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object contains a SIP Protocol which is
          used by the EUE to communicate with the P-CSCF."
    ::= { pktcEUEDevPCSCFEntry 5 }

pktcEUEDevPCSCFUsedInetAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object contains the Address Type of the P-CSCF
          IP address used by the EUE in communication with the P-CSCF.
          Only ipv4 and ipv6 address types are valid values
          for this MIB Object."
    ::= { pktcEUEDevPCSCFEntry 6 }

pktcEUEDevPCSCFUsedInetAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object contains the IP Address of the
          P-CSCF used by the EUE. Only IPv4 and IPv6 addresses are
          valid values for this MIB Object."
    ::= { pktcEUEDevPCSCFEntry 7 }

pktcEUEDevPCSCFTimerT1 OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS        "milliseconds"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This is the SIP Timer T1, an estimate for the round
          trip time in the system (UE to P-CSCF). Please
          refer to the PacketCable IMS Delta Session Initiation
          Protocol (SIP) and Session Description Protocol (SDP),
          Stage 3 Specification 3GPP TS 24.229 for more
          information."
    REFERENCE
        "PacketCable IMS Delta Session Initiation Protocol (SIP)
          and Session Description Protocol (SDP), Stage 3
          Specification 3GPP TS 24.229"
    DEFVAL {500}

```

```

 ::= { pktcEUEDevPCSCFEntry 8 }

pktcEUEDevPCSCFTimerT2 OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This is the SIP Timer T2, an estimate for the maximum
          retransmit interval for non-INVITE requests and INVITE
          responses. Please refer to the PacketCable IMS Delta
          Session Initiation Protocol (SIP) and Session Description
          Protocol (SDP), Stage 3 Specification 3GPP TS 24.229
          for more information."
    REFERENCE
        "PacketCable IMS Delta Session Initiation Protocol (SIP)
          and Session Description Protocol (SDP), Stage 3
          Specification 3GPP TS 24.229"
    DEFVAL {4000}
    ::= { pktcEUEDevPCSCFEntry 9 }

pktcEUEDevPCSCFTimerT4 OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This is the SIP Timer TD, indicates the wait time
          for response retransmits.
          Please refer to the PacketCable IMS Delta Session
          Initiation Protocol (SIP) and Session Description
          Protocol (SDP), Stage 3 Specification 3GPP TS 24.229
          for more information."
    REFERENCE
        "PacketCable IMS Delta Session Initiation Protocol (SIP)
          and Session Description Protocol (SDP), Stage 3
          Specification 3GPP TS 24.229"
    DEFVAL {5000}
    ::= { pktcEUEDevPCSCFEntry 10 }

pktcEUEDevPCSCFTimerTD OBJECT-TYPE
    SYNTAX      Unsigned32 (0|32000..4294967295)
    UNITS       "milliseconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This is the SIP Timer TD, an estimate for the maximum
          duration a message will remain in the network.
          Please refer to the PacketCable IMS Delta Session
          Initiation Protocol (SIP) and Session Description
          Protocol (SDP), Stage 3 Specification 3GPP TS 24.229
          for more information.
          If the protocol used for a SIP Session is UDP this value is
          used for SIP Timer D, otherwise is ignored."
    REFERENCE
        "PacketCable IMS Delta Session Initiation Protocol (SIP)
          and Session Description Protocol (SDP), Stage 3
          Specification 3GPP TS 24.229"
    DEFVAL {32000}
    ::= { pktcEUEDevPCSCFEntry 11 }

pktcEUEDevPCSCFRowStatus OBJECT-TYPE

```

SYNTAX RowStatus
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 " This object defines the row status associated with the particular P-CSCF Server entry for the particular domain name.

The value of the 'pktcEUEDevPCSCFAddrType' object MUST not be modified while this object is 'active'. The value of 'pktcEUEDevPCSCFAddr' MAY be modified while this object is active if the value is consistent with the type specified by the 'pktcEUEDevPCSCFAddrType' object."

::= { pktcEUEDevPCSCFEntry 12 }

pktcEUEDevPCSCFInviteAttempts OBJECT-TYPE

SYNTAX Unsigned32 (1..7)
 UNITS "attempts"
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 " This is the total number of INVITE message attempts before the SIP transaction is considered as failed due to no response.

The total Timer TB MUST be derived from the total number of SIP INVITE message attempts as follows:

$$TB = [2^{(n-1)} - 1] * T1$$

n: total number of INVITE attempts
 T1 = Timer T1

For example, if the number of INVITE attempts is 3, (initial INVITE + 2 retries)

$$TB = [2^{(3-1)} - 1] * 0.5 = 3 * 0.5 = 1.5 \text{ secs.}$$

When the number of attempts is 7, timer B matches the Timer B default value defined PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP).

Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229 for more information."

REFERENCE

"PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229"

DEFVAL { 2 }
 ::= { pktcEUEDevPCSCFEntry 13 }

pktcEUEDevPCSCFMaxTime OBJECT-TYPE

SYNTAX Unsigned32
 UNITS "seconds"
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 " This is the 'max-time' SIP Registration Recovery Timer as defined in RFC 5626.

Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229,

and RFC 5626 for more information.

If the protocol used for a SIP Session is UDP this value is used for SIP Timer D, otherwise is ignored."

REFERENCE

"PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229"

DEFVAL {1800}

::= { pktcEUEDevPCSCFEntry 14 }

pktcEUEDevPCSCFBaseTimeAllFailed OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the 'base-time (if all failed)' SIP Registration Recovery Timer as defined in RFC 5626.

Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229, and RFC 5626 for more information.

If the protocol used for a SIP Session is UDP this value is used for SIP Timer D, otherwise is ignored."

REFERENCE

"PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229"

DEFVAL {30}

::= { pktcEUEDevPCSCFEntry 15 }

pktcEUEDevPCSCFBaseTimeAllNotFailed OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the 'base-time (if all have not failed)' SIP Registration Recovery Timer as defined in RFC 5626.

Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229, and RFC 5626 for more information.

If the protocol used for a SIP Session is UDP this value is used for SIP Timer D, otherwise is ignored."

REFERENCE

"PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229"

DEFVAL {90}

::= { pktcEUEDevPCSCFEntry 16 }

pktcEUEDevPCSCFSubscribeRetry OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the retry period for the initial SUBSCRIBE due to error responses, the absence of a retry period in the Retry-After header response or a request timeout. Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP),

```

        Stage 3 Specification 3GPP TS 24.229 for more
        information."
REFERENCE
    "PacketCable IMS Delta Session Initiation Protocol (SIP)
    and Session Description Protocol (SDP), Stage 3
    Specification 3GPP TS 24.229"
DEFVAL {900}
::= { pktcEUEDevPCSCFEntry 17 }

-----
-- BSFs associated with a eUE
-----
pktcEUEDevBSFTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEDevBSFEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This data table represents the eUE's knowledge
          of suitable BSFs to contact."

    ::= { pktcEUEDevProfile 5 }

pktcEUEDevBSFEntry OBJECT-TYPE
    SYNTAX      PktcEUEDevBSFEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " Each entry in this data table contains an instance
          of a BSF, specific to a AS type, for a given Operator's
          Domain Name.
          The entries represent the eUE's knowledge
          of suitable BSFs to contact, as per the IMS GBA
          architecture to obtain credentials and enabling secure
          sessions to Application Servers. A list of
          BSFs for each Operator and application
          types MAY be configured by the Operator.

          The conceptual rows MUST NOT persist across eUE resets."

    INDEX { pktcEUEDevOpIndex, pktcEUEDevBSFASType, pktcEUEDevBSFIndex }
    ::= { pktcEUEDevBSFTable 1 }

PktcEUEDevBSFEntry ::=
    SEQUENCE {
        pktcEUEDevBSFASType      SnmpAdminString,
        pktcEUEDevBSFIndex       Unsigned32,
        pktcEUEDevBSFAddrType    InetAddressType,
        pktcEUEDevBSFAddr        InetAddress,
        pktcEUEDevBSFRowStatus   RowStatus
    }

pktcEUEDevBSFASType OBJECT-TYPE
    SYNTAX      SnmpAdminString (SIZE (0..108))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " A unique value used to indicate the AS type to
          which the BSFs correspond.
          Applications using GBA are required to specify
          such identifiers explicitly."

    ::= { pktcEUEDevBSFEntry 1 }

```

```

pktcEUEDevBSFIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..16)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " A unique value used to identify an instance in this
          data table. The indices SHOULD be contiguous.
          When multiple entries are specified, the eUE MUST give
          precedence to the values indexed by lower indices."

    ::= { pktcEUEDevBSFEntry 2 }

pktcEUEDevBSFAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " This data element contains the type of the data
          element contained in 'pktcEUEDevBSFAddr'."

    DEFVAL     { unknown }
    ::= { pktcEUEDevBSFEntry 3 }

pktcEUEDevBSFAddr OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " The address of a BSF server associated with
          the domain name indicated by the indices
          'pktcEUEDevOpIndex' (Operator Domain),
          'pktcEUEDevBSFASType' and 'pktcEUEDevBSFIndex'."

    DEFVAL     { "" }
    ::= { pktcEUEDevBSFEntry 4 }

pktcEUEDevBSFRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This object defines the row status associated with this
          instance of a BSF.

          The value of the 'pktcEUEDevBSFAddrType' object MUST not be
          modified while this object is 'active'. The value of
          'pktcEUEDevBSFAddr' MAY be modified while this object is active
          if the value is consistent with the type specified by the
          'pktcEUEDevBSFAddrType' object."
    ::= { pktcEUEDevBSFEntry 5 }

-- -----
-- Certificate Bootstrapping Data
-- -----

pktcEUECBSupport OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This MIB Object is used by the eUE to report
          support for Certificate Bootstrapping.
          If the MIB Object is set to a value of true(1)

```

```

        it indicates that the device supports Certificate
        Bootstrapping.
        If the MIB Object is set to a value of false(1)
        it indicates that the device does not support
        Certificate Bootstrapping."
 ::= { pktcEUEDevProfile 6 }

pktcEUECBEnable OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "This MIB Object is used to initiate the Certificate
        Bootstrapping procedure in an eUE.

        If this value is set to a value of true(1) and the
        MIB Object pktcEUECBData contains a non-zero HTTP/HTTPS
        URI, then the eUE MUST initiate the Certificate
        Bootstrapping procedure, if supported.

        If the eUE does not support the Certificate
        Bootstrapping procedure, it rejects any attempt
        to set this MIB Object to a value of true(1).
        The eUE MUST return a value of false(2) when this
        MIB Object is read.

        If the Certificate Bootstrapping procedure was
        successful, the eUE MUST act on the Certificate
        Bootstrapping configuration file provided.

        If the procedure was unsuccessful (e.g.,
        authentication error or unresponsive server),
        the eUE MUST report the corresponding management
        event."
    DEFVAL {false}
 ::= { pktcEUEDevProfile 7 }

pktcEUECBData OBJECT-TYPE
    SYNTAX      OCTET STRING(SIZE(0..1023))
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "This MIB Object contains a HTTP/HTTPS URI to be used for
        Certificate Bootstrapping. Any attempt to set it to
        anything other than a HTTP/HTTPS URI MUST be rejected
        by the eUE."
 ::= { pktcEUEDevProfile 8 }

-- -----
-- Scalar MIB Objects for the EUE Device
-- -----

pktcEUEDevSipPort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "This MIB Object contains the SIP Port to receive the
        SIP Requests on."
    DEFVAL { 5060 }
 ::= { pktcEUEDevProfile 9 }

```

```

pktcEUEPreferredCandidatePair OBJECT-TYPE
    SYNTAX      InetVersion
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This MIB Object identifies the preferred IP version to be used
        when selecting the valid candidate pair for a media stream.

        The following requirements apply depending on the value of
        this MIB Object:

        - 'ipv4'
        The eUE MUST prefer IPv4 for media.

        - 'ipv6'
        The eUE MUST prefer IPv6 for media.

        - 'unknown'
        The eUE MUST prefer the IP version for media that matches
        the IP version of the primary IP address."

    REFERENCE
        "PacketCable IMS Delta Session Initiation Protocol (SIP)
        and Session Description Protocol (SDP), Stage 3
        Specification 3GPP TS 24.229."

    DEFVAL { unknown }
    ::= { pktcEUEDevProfile 10 }

```

```

-- -----
-- Conformance Information
-- -----

```

```

-- -----
-- Compliance Statements
-- -----

```

```

pktcEUEDevMIBCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for implementations of the eUE MIB."
    MODULE
        MANDATORY-GROUPS {
            pktcEUEDevProfileGroup,
            pktcEUEDevOpGroup,
            pktcEUEDevDnsGroup,
            pktcEUEDevPCSCFGroup,
            pktcEUEDevBSFGroup,
            pktcEUEDevPerDeviceGroup
        }

        ::= { pktcEUEDevCompliances 1 }

pktcEUEDevProfileGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEDevProfileVersion
    }
    STATUS      current
    DESCRIPTION
        "The eUE Device Profile Group."
    ::= { pktcEUEDevGroups 1}

```

```
pktcEUEDevOpGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEDevOpDomain,
    pktcEUEDevOpSTUNAddrType,
    pktcEUEDevOpSTUNAddr,
    pktcEUEDevOpSTUNAddrPort,
    pktcEUEDevOpTURNAddrType,
    pktcEUEDevOpTURNAddr,
    pktcEUEDevOpTURNAddrPort,
    pktcEUEDevOpTURNCreditsType,
    pktcEUEDevOpTURNCredits,
    pktcEUEDevOpRowStatus
  }
  STATUS current
  DESCRIPTION
    "The eUE Operator Group."
    ::= { pktcEUEDevGroups 2}

pktcEUEDevDnsGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEDevDnsAddrType,
    pktcEUEDevDnsAddr,
    pktcEUEDevDnsRowStatus
  }
  STATUS current
  DESCRIPTION
    "The eUE DNS Group."
    ::= { pktcEUEDevGroups 3}

pktcEUEDevPCSCFGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEDevPCSCFAddrType,
    pktcEUEDevPCSCFAddr,
    pktcEUEDevPCSCFSipPort,
    pktcEUEDevPCSCFUsedProtocol,
    pktcEUEDevPCSCFUsedInetAddressType,
    pktcEUEDevPCSCFUsedInetAddress,
    pktcEUEDevPCSCFTimerT1,
    pktcEUEDevPCSCFTimerT2,
    pktcEUEDevPCSCFTimerT4,
    pktcEUEDevPCSCFTimerTD,
    pktcEUEDevPCSCFRowStatus,
    pktcEUEDevPCSCFInviteAttempts,
    pktcEUEDevPCSCFMaxTime,
    pktcEUEDevPCSCFBaseTimeAllFailed,
    pktcEUEDevPCSCFBaseTimeAllNotFailed,
    pktcEUEDevPCSCFSubscribeRetry
  }
  STATUS current
  DESCRIPTION
    "The eUE P-CSCF Group."
    ::= { pktcEUEDevGroups 4}

pktcEUEDevBSFGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEDevBSFAddrType,
    pktcEUEDevBSFAddr,
    pktcEUEDevBSFRowStatus
  }
  STATUS current
  DESCRIPTION
    "The eUE BSF Group."
```

```

 ::= { pktcEUEDevGroups 5}

pktcEUEDevPerDeviceGroup OBJECT-GROUP
    OBJECTS {
        pktcEUECBSupport,
        pktcEUECBEnable,
        pktcEUECBData,
        pktcEUEDevSipPort,
        pktcEUEPreferredCandidatePair
    }
    STATUS current
    DESCRIPTION
        "The eUE per Device list of objects Group."
    ::= { pktcEUEDevGroups 6}

END

```

B.2 User Configuration MIB Module

CL-PKTC-EUE-USER-MIB DEFINITIONS ::= BEGIN

IMPORTS

```

    PktcEUETCIDType,
    PktcEUETCID,
    PktcEUETCCredsType,
    PktcEUETCCreds,
    PktcEUETCUsrElementIndexType,
    PktcEUETCUsrAppIndexType,
    PktcEUETCAppOrgIdentifier,
    PktcEUETCAppIdentifier,
    PktcEUETCAdminStatus,
    PktcEUETCOperStatus,
    PktcEUETCStatusInfo
        FROM CL-PKTC-EUE-TC-MIB
    MODULE-IDENTITY,
    OBJECT-TYPE
        FROM SNMPv2-SMI
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
    TruthValue,
    RowStatus
        FROM SNMPv2-TC
    pktcEUEMibs
        FROM CLAB-DEF-MIB;

```

pktcEUEUserMIB MODULE-IDENTITY

```

    LAST-UPDATED "201005030000Z" -- May 3, 2010
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
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        Phone: +1 303-661-3307

```

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 and members of the PacketCable 2.0 Provisioning Focus Team."

DESCRIPTION

"This MIB module contains configuration MIB objects for the PacketCable Users as required by the PacketCable E-UE Provisioning Framework."

REVISION "201005030000Z" -- May 3, 2010

DESCRIPTION

"Revised Version includes ECNs EUE-DATA-N-10.0631-3 and published as part of PKT-SP-EUE-DATA-I05-100527."

REVISION "200905280000Z" -- May 28, 2009

DESCRIPTION

"Revised Version includes ECNs EUE-DATA-N-08.0528-3 EUE-DATA-N-09.0556-3 and published as part of PKT-SP-EUE-DATA-I03-090528."

REVISION "200807100000Z" -- July 10, 2008

DESCRIPTION

"Revised Version includes ECN EUE-DATA-N-08.0524-5 and published as part of PKT-SP-EUE-DATA-I02-080710."

REVISION "200711060000Z" -- Nov 6, 2007

DESCRIPTION

"Initial version, published as part of the CableLabs E-UE Provisioning Data Model Specification PKT-SP-EUE-DATA-I01-071106 Copyright 1999-2010 Cable Television Laboratories, Inc. All rights reserved."

::= { pktcEUEMibs 4 }

-- Administrative assignments

pktcEUEusrNotification OBJECT IDENTIFIER ::= { pktcEUEUserMIB 0 }
 pktcEUEusrObjects OBJECT IDENTIFIER ::= { pktcEUEUserMIB 1 }
 pktcEUEusrConformance OBJECT IDENTIFIER ::= { pktcEUEUserMIB 2 }

pktcEUEusrCompliances OBJECT IDENTIFIER ::= { pktcEUEusrConformance 1 }
 pktcEUEusrGroups OBJECT IDENTIFIER ::= { pktcEUEusrConformance 2 }

-- -----
 -- User Profile Information
 -- -----

pktcEUEusrProfile OBJECT IDENTIFIER ::= { pktcEUEusrObjects 1 }

pktcEUEusrProfileVersion OBJECT-TYPE

SYNTAX SnmpAdminString(SIZE(0..6))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This MIB Object represents the User Profile Version for this MIB module. The eUE MUST set this MIB Object to value of '1.0'."

::= { pktcEUEusrProfile 1 }

```

-----
-- User table
-----
pktcEUEUsrIMPTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEUsrIMPEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This data table represents Users associated with
          the eUE. Specifically it provides information related
          to the IM Public Identity (IMPU) of the User."
    ::= { pktcEUEUsrProfile 2 }

pktcEUEUsrIMPEntry OBJECT-TYPE
    SYNTAX      PktcEUEUsrIMPEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " Each entry in this data table describes an association
          of a user IMPU with the eUE, indexed by an IMPU Identifier.

          The eUE uses the entries in this table to register the
          user in a PacketCable Network.

          The credentials for registration are obtained using the
          association with an IMPI in the MIB table
          pktcEUEUsrIMPTable, referenced via the MIB Object
          pktcEUEUsrIMPIIndexRef.

          If two or more active entries have the same IMPU ID,
          the eUE uses the entry with the lowest Index.

          The conceptual rows MUST NOT persist across eUE resets."

    INDEX { pktcEUEUsrIMPIndex }
    ::= { pktcEUEUsrIMPTable 1 }

PktcEUEUsrIMPEntry ::=
    SEQUENCE {
        pktcEUEUsrIMPIndex          PktcEUEUsrIMPIndexType,
        pktcEUEUsrIMPIdType         PktcEUEUsrIMPIdType,
        pktcEUEUsrIMPId             PktcEUEUsrIMPId,
        pktcEUEUsrIMPIMPIIndexRef   PktcEUEUsrIMPIMPIIndexRef,
        pktcEUEUsrIMPUDispInfo      SnmpAdminString,
        pktcEUEUsrIMPUPopIndexRefs  SnmpAdminString,
        pktcEUEUsrIMPUPAdminStat     PktcEUEUsrIMPUPAdminStat,
        pktcEUEUsrIMPUPAdminStatInfo PktcEUEUsrIMPUPAdminStatInfo,
        pktcEUEUsrIMPUPOperStat      PktcEUEUsrIMPUPOperStat,
        pktcEUEUsrIMPUPOperStatInfo  PktcEUEUsrIMPUPOperStatInfo,
        pktcEUEUsrIMPUSigSecurity    TruthValue,
        pktcEUEUsrIMPUPAdditionalInfo SnmpAdminString,
        pktcEUEUsrIMPUPRowStatus     RowStatus
    }

pktcEUEUsrIMPIndex OBJECT-TYPE
    SYNTAX      PktcEUEUsrIMPIndexType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This MIB Object provides a user IMPU index.
          When the user IMPU is referenced elsewhere, such as

```

to associate the device and a user IMPU, this MIB Object MUST be used as an index reference. A value of '0' MUST NOT be used."

```
 ::= { pktcEUEUsrcIMPUEEntry 1 }
```

pktcEUEUsrcIMPUIIDType OBJECT-TYPE

```
SYNTAX      PktcEUEUsrcIMPUIIDType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This MIB Object MUST indicate the 'Identifier
      type' of the data value contained in 'pktcEUEUsrcIMPUIID'.
```

Valid types are other(1), publicIdentity(3) and username(6)."

```
DEFVAL      { other }
 ::= { pktcEUEUsrcIMPUEEntry 2 }
```

pktcEUEUsrcIMPUIID OBJECT-TYPE

```
SYNTAX      PktcEUEUsrcIMPUIID
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This MIB Object MUST identify the User IMPU being
      associated with the eUE.
```

The type of Identifier is indicated by the MIB Object 'pktcEUEUsrcIMPUIIDType'."

```
DEFVAL      { "" }
 ::= { pktcEUEUsrcIMPUEEntry 3 }
```

pktcEUEUsrcIMPUIIMPIIndexRef OBJECT-TYPE

```
SYNTAX      PktcEUEUsrcIMPUIIMPIIndexType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This MIB Object MUST provide an index reference
      to a IMPI associated with the corresponding IMPU
      specified in this table entry.
```

The index reference points to an entry in the MIB table 'pktcEUEUsrcIMPUIIMPIIndexTable'.

If this contains a value of '0', it indicates that the user IMPU is not yet associated with an IMPI and cannot be used in networks requiring authentication."

```
DEFVAL      {0}
 ::= { pktcEUEUsrcIMPUEEntry 4 }
```

pktcEUEUsrcIMPUIIDispInfo OBJECT-TYPE

```
SYNTAX      SnmpAdminString
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This optional MIB Object MAY contain human readable
      text describing User characteristics. Examples include
      User Display Name, Subscriber Identifier etc."
```

```
DEFVAL      { "" }
 ::= { pktcEUEUsrcIMPUEEntry 5 }
```

```

pktcEUEUsrIMPUOpIndexRefs OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This optional MIB Object MAY contain a list of comma
          separated Operator domain entries where the user specified
          in this entry 'pktcEUEUsrIMPUId' can be used.

          The entries MUST be index references to the operator
          table associated with the eUE.

          The eUE MAY attempt to use the user entry in a
          domain or sub-domain specified by the operator table,
          corresponding to the entries listed here.

          The eUE MUST NOT attempt to use the user entry in a
          domain that is not specified by this entry.

          If unspecified, the eUE MUST use the domain identified
          by the IMPU."
    DEFVAL      { "" }
    ::= { pktcEUEUsrIMPUEntry 6 }

pktcEUEUsrIMPUAdminStat OBJECT-TYPE
    SYNTAX      PktcEUETCAdminStatus
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object contains the administratively desired
          activation status of the user IMPU.

          The eUE MUST allow access to the User identified in
          'pktcEUEUsrIMPUId' if the value is set to 'active',
          unless determined otherwise and reported in
          pktcEUEUsrIMPUOperStat.

          The eUE SHOULD attempt to register a User identified in
          'pktcEUEUsrIMPUId' if the value is set to 'active'.
          PacketCable Applications can specify additional
          requirements for registration.

          If this object is set to 'inactive', all applicable
          sessions (e.g. SIP registration) are gracefully terminated.

          The eUE MUST disallow access to the User identified in
          'pktcEUEUsrIMPUId' if the value is set to 'inactive'"
    DEFVAL      { active }
    ::= { pktcEUEUsrIMPUEntry 7 }

pktcEUEUsrIMPUAdminStatInfo OBJECT-TYPE
    SYNTAX      PktcEUETCStatusInfo
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object MAY contain information that describes
          the activation status indicated in 'pktcEUEIMPUAdminStat'.
          Indicates Administratively added information associated
          with administrative status of the User IMPU.
          For example 'User temporarily deactivated for
          maintenance'."
    DEFVAL      { "" }
    ::= { pktcEUEUsrIMPUEntry 8 }

```

pktcEUEUsrIMPUOperStat OBJECT-TYPE
 SYNTAX PktcEUEUOperStatus
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION

" This MIB Object contains the operational activation status of the user IMPU.

This object returns the following values:

'active'

When pktcEUEUsrIMPUAdminStat is 'active' and there are no run-time conditions and/or configuration errors that prohibit the users from communicating with the operator.

'inactive'

When pktcEUEUsrIMPUAdminStat is 'inactive' or

When pktcEUEUsrIMPUAdminStat is 'active' and there are run-time conditions that prohibit the users from communicating with the operator.

'notPresent'

This value is not applicable.

'unknown'

Other conditions not covered by the previous values.

An example of run-time condition that can result in a value of 'inactive' is unsuccessful registration.

PacketCable applications can specify additional conditions for how an IMPU is considered 'active', 'inactive' or 'notPresent', and corresponding state machine."

::= { pktcEUEUsrIMPUEntry 9 }

pktcEUEUsrIMPUOperStatInfo OBJECT-TYPE
 SYNTAX PktcEUEUStatusInfo
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION

" This MIB Object contains information that describes the activation status indicated in 'pktcEUEUsrIMPUOperStat' or the zero-length string is not detail information is available.

For example 'User deactivated based on user interface input."

DEFVAL { "" }

::= { pktcEUEUsrIMPUEntry 10 }

pktcEUEUsrIMPUSigSecurity OBJECT-TYPE
 SYNTAX TruthValue
 MAX-ACCESS read-write
 STATUS current
 DESCRIPTION

" This element indicates the network requirement for SIP signaling with the P-CSCF.

If set to 'true', the UE MUST attempt secure SIP signaling with the P-CSCF.

If set to 'false', the UE MUST attempt to communicate

without a secure SIP communication channel with the P-CSCF.

The P-CSCF is considered to be authoritative and the UE will follow the requirements in PKT 24.229.

After the P-CSCF confirm or set the SIP secure mode the UE MUST report such state."

REFERENCE

"PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229"

DEFVAL {true}

::= { pktcEUEUsrIMPUEEntry 11 }

pktcEUEUsrIMPUEAdditionalInfo OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This MIB Object MAY contain information that describes additional information defined by PacketCable specifications, including those defining PacketCable features.

PacketCable specifications are expected to use this data element to obtain additional information.

To specify such additional info, the following rules apply:

- Each specification planning to use this MIB Object MUST specify data in the following format:
'<Keyword>#<value>', # being the delimiter
e.g. FEATURE_X#ABC
FEATURE_Y#<value of XYZ>.
- This MIB Object MUST be a semi-colon separated concatenation of such '<keyword>#<value>' pairs. e.g.
FEATURE_X#ABC;FEATURE_Z#DEF.
- Since the '#' and ';' characters are used as delimiters, they SHOULD not be specified in the keyword. If specified, any occurrence of these characters in the value field MUST be preceded by the escape character '\\' (e.g. FEATURE_X#A\C). Occurrences of '\\' MUST be preceded by itself (e.g. FEATURE_X#A\\C\#).

The following rules apply on the eUE:

- The eUE MUST first separate all the keyword value pairs, using a '#' that is not preceded by '\\' as the delimiter
- The eUE MUST, For all recognized keywords, decipher the value by interpreting the data after considering the use of '\\' as defined in this definition.
- The eUE MUST ignore and report all unrecognized keywords using PacketCable Management."

DEFVAL { "" }

::= { pktcEUEUsrIMPUEEntry 12 }

pktcEUEUsrIMPURowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

```

STATUS      current
DESCRIPTION
    " This MIB Object defines the row status associated with this
      particular User in the pktcEUEusrIMPTable.

      An entry in this table is not qualified for activation
      until the object instances of all corresponding columns
      have been initialized, either by default values or via
      explicit SET operations.  Until all object instances in
      this row are initialized, the status value for this realm
      must be 'notReady(3)'.

      In particular, two columnar objects must be SET: the
      'pktcEUEusrIMPIdType' and the 'pktcEUEusrIMPId'. Once these
      two objects have been set the row status may be SET to 'active(1)'
      The eUE MUST not allow these two objects to be changed while
      the row is 'active'. The value of this object has no effect on
      whether other columnar objects in this row can be modified."
 ::= { pktcEUEusrIMPEntry 13 }

```

```

-----
-- User IMPI Table
-----
pktcEUEusrIMPTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEusrIMPIEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This data table contains the user IMPI information
          associated with users provisioned on the device."

    ::= { pktcEUEusrProfile 3 }

pktcEUEusrIMPIEntry OBJECT-TYPE
    SYNTAX      PktcEUEusrIMPIEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry in this data table contains an instance
          of a user IMPI and associated credentials.

          Each IMPU provisioned in the eUE SHOULD be associated
          with an entry in this table. The exception is in networks
          where certain users are unauthenticated for application
          access.

          At boot time the eUE MUST populate conceptual rows in this
          order:
          - First, instances provisioned via device configuration (e.g.,
            config file, dynamically created via SNMP). These instances
            MUST NOT persist across reboots.
          - Second, entries provisioned via Certificate Bootstrapping
            File. These entries may appear again after device
            re-initialization, depending on Certificate Bootstrapping
            file persistence requirements defined elsewhere.

          As a side effect, if an instance loaded from a Certificate
          Bootstrapping file is updated via SNMP later on, those changes
          are not required to be reflected in the CB file persistence
          storage (if CB file persistence is supported). Instead, the
          trigger of a new CB file download is preferred to update CB
          information."

```

```

INDEX { pktcEUEUsrIMPIIndex }
 ::= { pktcEUEUsrIMPITable 1 }

PktcEUEUsrIMPIEntry ::=
  SEQUENCE {
    pktcEUEUsrIMPIIndex          PktcEUETCUsrElementIndexType,
    pktcEUEUsrIMPIIdType         PktcEUETCIDType,
    pktcEUEUsrIMPIId             PktcEUETCID,
    pktcEUEUsrIMPICredsType       PktcEUETCCredsType,
    pktcEUEUsrIMPICredentials     PktcEUETCCreds,
    pktcEUEUsrIMPIRowStatus       RowStatus
  }

pktcEUEUsrIMPIIndex OBJECT-TYPE
  SYNTAX      PktcEUETCUsrElementIndexType
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    " This MIB Object provides a user IMPI index.
      When the user IMPI is referenced elsewhere, such as
      to associate the IMPU and an IMPI, this
      MIB Object MUST be used as an index reference.
      A value of '0' MUST NOT be used."
  ::= { pktcEUEUsrIMPIEntry 1 }

pktcEUEUsrIMPIIdType OBJECT-TYPE
  SYNTAX      PktcEUETCIDType
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    " This MIB Object MUST indicate the 'Identifier
      type' of the data value contained in 'pktcEUEUsrIMPIId'.

      Valid types are other(1), privateKeyIdentity(4) and
      username(6). "
  DEFVAL     { other }
  ::= { pktcEUEUsrIMPIEntry 2 }

pktcEUEUsrIMPIId OBJECT-TYPE
  SYNTAX      PktcEUETCID
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    " This MIB Object MUST identify a User IMPI being
      specified in this table.

      The type of Identifier is indicated by the
      MIB Object 'pktcEUEUsrIMPIIdType'. "
  DEFVAL     { "" }
  ::= { pktcEUEUsrIMPIEntry 3 }

pktcEUEUsrIMPICredsType OBJECT-TYPE
  SYNTAX      PktcEUETCCredsType
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    " This MIB Object contains the type of credentials
      contained in the MIB Object 'pktcEUEUsrIMPICredentials'. "
  DEFVAL     { none }
  ::= { pktcEUEUsrIMPIEntry 4 }

pktcEUEUsrIMPICredentials OBJECT-TYPE

```

```

SYNTAX      PktcEUEUETCCreds
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This MIB Object allows the Operator to configure credentials
      associated with an IMPI. This value is used with, and must
      be consistent with, the value
      of the associated 'pktcEUEUsrcIMPIcredsType' object.

      If read this MIB Object MUST always return an empty
      string value for privacy reasons.

      An Operator SHOULD provide this MIB Object only
      over a secured configuration interface to avoid
      security threats due to compromised credentials."
DEFVAL      { "" }
 ::= { pktcEUEUsrcIMPIEntry 5 }

pktcEUEUsrcIMPIRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This MIB Object defines the row status associated with this
      entry.

      The value of the 'pktcEUEUsrcIMPIcredsType' object MUST NOT be
      modified while this object is 'active'.

      The value of 'pktcEUEUsrcIMPIcredentials' MAY be modified
      while this object is active if the value is consistent with
      the type specified by the 'pktcEUEUsrcIMPIcredsType' object."
 ::= { pktcEUEUsrcIMPIEntry 6 }

-- -----
-- User to Apps Mapping Table
-- -----
pktcEUEUsrcAppMapTable OBJECT-TYPE
SYNTAX      SEQUENCE OF PktcEUEUsrcAppMapEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    " This data table represents Applications associated with
      a User IMPU."
 ::= { pktcEUEUsrcProfile 4 }

pktcEUEUsrcAppMapEntry OBJECT-TYPE
SYNTAX      PktcEUEUsrcAppMapEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    " Each entry in this data table identifies an application
      associated with the user, the application profile index
      reference, administrative status and the operational
      status information.

      The conceptual rows MUST NOT persist across eUE resets."
INDEX      { pktcEUEUsrcIMPUIndex, pktcEUEUsrcAppMapAppIndex }
 ::= { pktcEUEUsrcAppMapTable 1 }

PktcEUEUsrcAppMapEntry ::=
    SEQUENCE {
        pktcEUEUsrcAppMapAppIndex          PktcEUEUETCUsrAppIndexType,

```

pktcEUEUsrcAppMapAppOrgID	PktcEUETCAppOrgIdentifier,
pktcEUEUsrcAppMapAppIdentifier	PktcEUETCAppIdentifier,
pktcEUEUsrcAppMapAppIndexRef	PktcEUETCUsrAppIndexType,
pktcEUEUsrcAppMapAppAdminStat	PktcEUETCAdminStatus,
pktcEUEUsrcAppMapAppAdminStatInfo	PktcEUETCStatusInfo,
pktcEUEUsrcAppMapAppOperStat	PktcEUETCOperStatus,
pktcEUEUsrcAppMapAppOperStatInfo	PktcEUETCStatusInfo,
pktcEUEUsrcAppMapRowStatus	RowStatus

```

    }

pktcEUEUsrcAppMapAppIndex OBJECT-TYPE
    SYNTAX      PktcEUETCUsrAppIndexType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This MIB Object represents an index to map
          an Application instance associated with the User
          IMPU."
    ::= { pktcEUEUsrcAppMapEntry 1 }

pktcEUEUsrcAppMapAppOrgID OBJECT-TYPE
    SYNTAX      PktcEUETCAppOrgIdentifier
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This MIB Object identifies the Organization
          specifying the app identifier contained in
          the MIB Object 'pktcEUEUsrcAppMapAppIdentifier'."
    ::= { pktcEUEUsrcAppMapEntry 2 }

pktcEUEUsrcAppMapAppIdentifier OBJECT-TYPE
    SYNTAX      PktcEUETCAppIdentifier
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This MIB Object represents the identifier
          for an Application associated with the User.
          The application identifier MUST represent
          an application specified by the organization
          specified in 'pktcEUEUsrcAppMapAppOrgID'."
    ::= { pktcEUEUsrcAppMapEntry 3 }

pktcEUEUsrcAppMapAppIndexRef OBJECT-TYPE
    SYNTAX      PktcEUETCUsrAppIndexType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This MIB Object represents the index reference
          to an application profile for the application
          identified by the MIB Object
          'pktcEUEUsrcAppMapAppIdentifier'.
          If this value is set to a value of '0' then
          the following conditions apply:
          - If the application has no specific configuration
            data, the network activation status MUST be
            considered by the eUE
          - If the application has configuration data elements
            the eUE MUST deactivate the application. The deactivation
            is reported by 'pktcEUEUsrcAppMapAppOperStat'."

```

```
DEFVAL {0}
::= { pktcEUEUsrAppMapEntry 4 }
```

```
pktcEUEUsrAppMapAppAdminStat OBJECT-TYPE
    SYNTAX      PktcEUETCAdminStatus
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object contains the administratively desired
          activation status of this instance.

          If 'active' the User can use the application.
          If 'inactive' the user can not use the application."
    DEFVAL {active}
    ::= { pktcEUEUsrAppMapEntry 5 }
```

```
pktcEUEUsrAppMapAppAdminStatInfo OBJECT-TYPE
    SYNTAX      PktcEUETCStatusInfo
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object represents additional
          information for the status information
          represented by 'pktcEUEUsrAppMapAppAdminStat'."
    ::= { pktcEUEUsrAppMapEntry 6 }
```

```
pktcEUEUsrAppMapAppOperStat OBJECT-TYPE
    SYNTAX      PktcEUETCOperStatus
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object represents the current operational status
          of the user using the application specified in this entry.

          This object returns the following values:

          'active'
          When pktcEUEUsrAppMapAppAdminStat is 'active' and there are
          no run-time conditions and/or configuration errors that prohibit
          the IMPU to use this application.

          'inactive'
          When pktcEUEUsrAppMapAppAdminStat is 'inactive'
          or
          When pktcEUEUsrAppMapAppAdminStat is 'active' and there
          are run-time conditions and/or configuration errors that
          prohibit the IMPU to use this application.

          'notPresent'
          When the application is not available or unknown to the UE.

          'unknown'
          Other conditions not covered by the previous values.

          An example of a run-time condition that can result in a value
          of 'inactive' is unsuccessful user registration.

          PacketCable applications can specify additional conditions for
          how an application is considered 'active', 'inactive' or
          'notPresent' for an IMPU."
```

```

 ::= { pktcEUEUsrAppMapEntry 7 }

pktcEUEUsrAppMapAppOperStatInfo OBJECT-TYPE
    SYNTAX      PktcEUETCStatusInfo
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object represents additional
          information for the status information
          represented by 'pktcEUEUsrAppMapAppOperStat'.

          For example, the pktcEUEUsrAppMapAppOperStat value
          'notPresent' can report in this object the value
          'UE does not support this application'."
 ::= { pktcEUEUsrAppMapEntry 8 }

pktcEUEUsrAppMapRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        " This MIB Object defines the row status associated with this
          particular User in the pktcEUEUsrAppMapTable.

          An entry in this table is not qualified for activation
          until the object instances of all corresponding columns
          have been initialized, either by default values or via
          explicit SET operations. Until all object instances in
          this row are initialized, the status value for this realm
          must be 'notReady(3)'.

          In particular, two columnar objects must be SET: the
          'pktcEUEUsrAppMapAppOrgID' and pktcEUEUsrAppMapAppIdentifier.
          Once these two objects have been set the row status may be SET
          to 'active(1)'.

          The eUE MUST not allow these two objects to be changed while
          the row is 'active'. The value of this object has no effect on
          whether other columnar objects in this row can be modified."

 ::= { pktcEUEUsrAppMapEntry 9 }

-- -----
-- Conformance Information
-- -----

-- -----
-- Compliance Statements
-- -----

pktcEUEUsrMIBCompliance MODULE-COMPLIANCE
    STATUS       current
    DESCRIPTION
        "The compliance statement for implementations of the User Mib."
    MODULE      -- this module
        MANDATORY-GROUPS {
            pktcEUEUsrProfileGroup,
            pktcEUEUsrIMPUGroup,
            pktcEUEUsrIMPIGroup,
            pktcEUEUsrAppMapGroup
        }
 ::= { pktcEUEUsrCompliances 1 }

```

```
pktcEUEUsrProfileGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEUsrProfileVersion
  }
  STATUS current
  DESCRIPTION
    "The eUE Usr Profile Group."
  ::= { pktcEUEUsrGroups 1 }

pktcEUEUsrIMPUGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEUsrIMPUIIdType,
    pktcEUEUsrIMPUIId,
    pktcEUEUsrIMPUIMPIIndexRef,
    pktcEUEUsrIMPUDispInfo,
    pktcEUEUsrIMPUIOpIndexRefs,
    pktcEUEUsrIMPUIAdminStat,
    pktcEUEUsrIMPUIAdminStatInfo,
    pktcEUEUsrIMPUIOperStat,
    pktcEUEUsrIMPUIOperStatInfo,
    pktcEUEUsrIMPUSigSecurity,
    pktcEUEUsrIMPUIAdditionalInfo,
    pktcEUEUsrIMPUIRowStatus
  }
  STATUS current
  DESCRIPTION
    "The user IMPU Group."
  ::= { pktcEUEUsrGroups 2 }

pktcEUEUsrIMPIGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEUsrIMPICredType,
    pktcEUEUsrIMPICredentials,
    pktcEUEUsrIMPIIdType,
    pktcEUEUsrIMPIId,
    pktcEUEUsrIMPIRowStatus
  }
  STATUS current
  DESCRIPTION
    "The user IMPI Group."
  ::= { pktcEUEUsrGroups 3 }

pktcEUEUsrAppMapGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEUsrAppMapAppOrgID,
    pktcEUEUsrAppMapAppIdentifier,
    pktcEUEUsrAppMapAppIndexRef,
    pktcEUEUsrAppMapAppAdminStat,
    pktcEUEUsrAppMapAppAdminStatInfo,
    pktcEUEUsrAppMapAppOperStat,
    pktcEUEUsrAppMapAppOperStatInfo,
    pktcEUEUsrAppMapAppRowStatus
  }
  STATUS current
  DESCRIPTION
    "The User to Applications Mapping Group."
  ::= { pktcEUEUsrGroups 4 }

END
```

Annex C PacketCable eUE Provisioning and Management Modules

C.1 Provisioning and Management MIB Module

CL-PKTC-EUE-PROV-MGMT-MIB DEFINITIONS ::= BEGIN

IMPORTS

```

    OBJECT-TYPE,
    MODULE-IDENTITY,
    Unsigned32
        FROM SNMPv2-SMI

    OBJECT-GROUP,
    MODULE-COMPLIANCE
    SnmpAdminString
        FROM SNMPv2-CONF

    InetAddressType,
    InetAddress
        FROM SNMP-FRAMEWORK-MIB

    pktcEUEMibs
        FROM INET-ADDRESS-MIB
        FROM CLAB-DEF-MIB;
```

pktcEUEProvMgmtMIB MODULE-IDENTITY

LAST-UPDATED "201101170000Z" -- Jan 17, 2011

ORGANIZATION "Cable Television Laboratories, Inc."

CONTACT-INFO

```

    "Broadband Network Services
    Postal: Cable Television Laboratories, Inc
    858 Coal Creek Circle
    Louisville, CO 80027
    U.S.A.
    Phone: +1 303 661 9100
    Fax: +1 303 661 9199
    E-mail:mibs@cablelabs.com
```

Acknowledgements:

```

    Thomas Clack, Broadcom - Primary author
    Josh Littlefield, Cisco,
    Eugene Nechamkin, Broadcom
    Sumanth Channabasappa, CableLabs
    Eduardo Cardona, CableLabs
    and members of the PacketCable 2.0 Provisioning Focus Team."
```

DESCRIPTION

```

    "This MIB module provides the provisioning and management
    MIB module for the E-UE Provisioning Framework."
```

REVISION "201101170000Z" -- Jan 17, 2011

DESCRIPTION

```

    "Revised Version includes ECN EUE-DATA-N-11.0659-1
    and published as I06"
```

REVISION "200807100000Z" -- July 10, 2008

DESCRIPTION

```

    "Revised Version includes ECN EUE-DATA-N-08.0524-5
    and published as I02"
```

REVISION "200711060000Z" -- Nov 6, 2007

DESCRIPTION

```

    "Initial version, published as part of the CableLabs
    E-UE Provisioning Data Model Specification
    PKT-SP-EUE-DATA-I01-071106
    Copyright 1999-2007 Cable Television Laboratories, Inc.
    All rights reserved."
```

::= { pktcEUEMibs 5 }

```
-- Administrative assignments
pktcEUEProvMgmtNotifications OBJECT IDENTIFIER ::= { pktcEUEProvMgmtMIB 0 }
pktcEUEProvMgmtObjects OBJECT IDENTIFIER ::= { pktcEUEProvMgmtMIB 1 }
pktcEUEProvMgmtConformance OBJECT IDENTIFIER ::= { pktcEUEProvMgmtMIB 2 }
```

```
pktcEUEProvMgmtVersion OBJECT-TYPE
    SYNTAX      SnmpAdminString(SIZE(0..6))
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object represents the Provisioning and Management Module
          version. The eUE MUST set this MIB Object to value of '1.0'."
    ::= { pktcEUEProvMgmtObjects 1 }
```

```
-- DHCP Servers for IPv6
pktcEUEdhcipv6ServerId1 OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(0..32))
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object contains the primary DHCP Server identifier
          (DSS_ID)the E-UE was provided with, during provisioning.

          The eUE MUST populate this MIB Object with the first
          thirty-two bytes of the DHCPv6 Server identifier
          provided within the eCM's CL_OPTION_CCCV6 or CL_V4OPTION_CCCV6,
          sub-option 1."
    DEFVAL      { ''H }
    ::= { pktcEUEProvMgmtObjects 2 }
```

```
pktcEUEdhcipv6ServerId2 OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(0..32))
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This MIB Object contains the secondary DHCP Server identifier
          (DSS_ID) the E-UE was provided with, during provisioning.

          The eUE MUST populate this MIB Object with the first
          thirty-two bytes of the DHCPv6 Server identifier
          provided within the eCM's CL_OPTION_CCCV6 or CL_V4OPTION_CCCV6,
          sub-option 2."
    DEFVAL      { ''H }
    ::= { pktcEUEProvMgmtObjects 3 }
```

```
pktcEUEdhcipv6ServerAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This MIB Object contains the DHCP Server Address type
          contained in the MIB Object 'pktcEUEdhcipv6ServerAddress'.
          Valid values are 'ipv6(2)' and 'unknown(0)'."
    ::= { pktcEUEProvMgmtObjects 4 }
```

```
pktcEUEdhcipv6ServerAddress OBJECT-TYPE
    SYNTAX      InetAddress
```

```

MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This MIB Object contains the DHCPv6 Server address from
    which the eUE obtained its IPv6 address, if the eUE
    is in IPv6 mode, and can obtain the information."
    ::= { pktcEUEProvMgmtObjects 5 }

-- DNS Servers for IPv6
pktcEUEDnsV6ServerAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This MIB Object contains the DNS Server Address type
        contained in the MIB Object 'pktcEUEDnsV6ServerAddress'.
        Valid values are 'ipv6(2)' and 'unknown(0)'."
    ::= { pktcEUEProvMgmtObjects 6 }

pktcEUEDnsV6ServerAddress1 OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This MIB Object contains the primary DNSv6 Server address
        which the eUE obtained via DHCPv6, when the eUE
        is in IPv6 mode."
    ::= { pktcEUEProvMgmtObjects 7 }

pktcEUEDnsV6ServerAddress2 OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This MIB Object contains the secondary DNSv6 Server address
        which the eUE obtained via DHCPv6, when the eUE
        is in IPv6 mode."
    ::= { pktcEUEProvMgmtObjects 8 }

-- Object Groups
-- The object groups used in this MIB module are imported from
-- the PKTC-IETF-MTA-MIB MIB (RFC4682).

-- Conformance Statements
pktcEUEProvMgmtCompliances OBJECT IDENTIFIER ::= { pktcEUEProvMgmtConformance 1 }
pktcEUEProvMgmtGroups      OBJECT IDENTIFIER ::= { pktcEUEProvMgmtConformance 2 }

-- Compliance Statements
pktcEUEProvMgmtCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for PacketCable eUE devices
        that implement the PacketCable eUE Provisioning Framework.

        This compliance statement specifies, for the PacketCable
        eUE Provisioning framework, the required objects from the 'Multimedia
        Terminal Adapter(MTA)Management Information Base for
        PacketCable and IPCablecom-Compliant Devices'(RFC 4682)MIB.

        Some objects from RFC4682 have been enhanced for applicability
        to eUEs. Similarly, inapplicable objects are clearly indicated.

        As indicated in the eUE Provisioning specification, references

```

to E-MTA and eMTA in RFC4682 are to be understood to be applicable to E-UE and eUE, respectively."

REFERENCE

"PacketCable E-UE Provisioning Framework Specification"

```
MODULE    PKTC-IETF-MTA-MIB
    MANDATORY-GROUPS {
        pktcMtaGroup,
        pktcMtaNotificationGroup
    }
```

-- The following pktcEUEDevBase group describes the base eUE objects

OBJECT pktcMtaDevResetNow

DESCRIPTION

" This MIB Object controls the eUE software reset.
The eUE MUST return a value of 'false' upon an Object read.
The eUE MUST reset itself when this object is set to a value of 'true', and perform the following actions:
- All Services (if present) are immediately terminated.
- Any sessions (even on the behalf of Users) are gracefully terminated.
- The provisioning flow is started at step eUE-1.

If a value is written into an instance of 'pktcMtaDevResetNow', the agent MUST NOT retain the supplied value across eUE re-initializations or reboots."

```
-- OBJECT pktcMtaDevSerialNumber          - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevSwCurrentVers         - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevFQDN                  - Same as PKTC-IETF-MTA-MIB
```

OBJECT pktcMtaDevEndPntCount

MIN-ACCESS not-accessible

DESCRIPTION

" Object not applicable for the eUE."

OBJECT pktcMtaDevEnabled

DESCRIPTION

" This MIB Object contains the eUE Admin Status of this device.
If this object is set to 'true', the eUE is administratively enabled, and the eUE MUST be able to interact with the PacketCable entities, such as the Provisioning Server, KDC, and other eUEs on all PacketCable interfaces.

If this object is set to 'false', the eUE is administratively disabled and MUST do the following:
- All Services (if present) are immediately terminated.
- Any sessions (even on the behalf of Users) are gracefully terminated.

Additionally, the eUE MUST maintain the SNMP Interface for management and also the SNMP Key management interface. Also, the eUE MUST NOT continue Kerberized key management with any devices, except with the Provisioning server, until this object is set to 'true'.

If a value is written into an instance of pktcMtaDevEnabled, the agent MUST NOT retain the supplied value across eUE re-initializations or reboots."

```
-- OBJECT pktcMtaDevTypeIdentifier          - Same as PKTC-IETF-MTA-MIB
```

```
-- OBJECT pktcMtaDevProvisioningState          - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevHttpAccess                  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvisioningTimer           - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvisioningCounter         - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevErrorOidIndex               - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevErrorOid                   - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevErrorValue                  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevErrorReason                 - Same as PKTC-IETF-MTA-MIB
```

-- The following object group describes server access and parameters used.

OBJECT pktcMtaDevDhcpServerAddressType

DESCRIPTION

" This MIB Object is only required to support the DHCPv4 address type."

```
-- NOTE: pktcMtaDevServerDhcp1 and pktcMtaDevServerDhcp2 are intended for
--        IPv4 DHCP Servers per RFC 4682. IPv6 DHCP information is contained
--        in the prov-mgmt extension MIB module.
-- OBJECT pktcMtaDevServerDhcp1                  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevServerDhcp2                  - Same as PKTC-IETF-MTA-MIB
```

OBJECT pktcMtaDevDnsServerAddressType

DESCRIPTION

" This MIB Object is only required to support the DHCPv4 address type."

```
-- NOTE: pktcMtaDevServerDns1 and pktcMtaDevServerDns2 are intended for
--        IPv4 DNS Servers per RFC 4682. IPv6 DNS information is contained
--        in the prov-mgmt extension MIB module.
-- OBJECT pktcMtaDevServerDns1                    - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevServerDns2                    - Same as PKTC-IETF-MTA-MIB
```

OBJECT pktcMtaDevTimeServerAddressType

MIN-ACCESS not-accessible

DESCRIPTION

" This MIB Object is not applicable for the eUE."

OBJECT pktcMtaDevTimeServer

MIN-ACCESS not-accessible

DESCRIPTION

" This MIB Object not applicable for the eUE."

OBJECT pktcMtaDevProvConfigKey

DESCRIPTION

" When the key value is less than 32 octets the most significant unused bits must be set to zero.
For example, the key (text: 'ABCDEFGH') '4142434445464748'H is set as:
'004142434445464748'H."

```
-- OBJECT pktcMtaDevConfigFile                    - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevSnmpEntity                    - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvConfigHash                - Same as PKTC-IETF-MTA-MIB

-- OBJECT pktcMtaDevProvConfigEncryptAlg          - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvSolicitedKeyTimeout        - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvUnsolicitedKeyMaxTimeout  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvUnsolicitedKeyNomTimeout  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvUnsolicitedKeyMaxRetries  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvKerbRealmName             - Same as PKTC-IETF-MTA-MIB
```

-- OBJECT pktcMtaDevProvState - Same as PKTC-IETF-MTA-MIB

-- The following object group describes the security objects.

-- OBJECT pktcMtaDevManufacturerCertificate - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevCertificate - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevCorrelationId - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevTelephonyRootCertificate - Same as PKTC-IETF-MTA-MIB

OBJECT pktcMtaDevRealmAvailSlot
SYNTAX Unsigned32 (0)
MIN-ACCESS read-only
DESCRIPTION
" eUE will report 0 available rows since eUE will
have one row entry for pktcMtaDevRealmTable."

OBJECT pktcMtaDevRealmName
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one row entry for this object."

OBJECT pktcMtaDevRealmPkinitGracePeriod
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one read-only row entry for this object."

OBJECT pktcMtaDevRealmTgsGracePeriod
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one read-only row entry for this object."

OBJECT pktcMtaDevRealmOrgName
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one read-only row entry for this object."

OBJECT pktcMtaDevRealmUnsolicitedKeyMaxTimeout
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one read-only row entry for this object."

OBJECT pktcMtaDevRealmUnsolicitedKeyNomTimeout
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one read-only row entry for this object."

OBJECT pktcMtaDevRealmUnsolicitedKeyMaxRetries
MIN-ACCESS read-only
DESCRIPTION
" eUE will only have one read-only row entry for this object."

OBJECT pktcMtaDevRealmStatus
MIN-ACCESS not-accessible
DESCRIPTION
" eUE will only have one row entry for this object."

This table only has one row."

OBJECT pktcMtaDevCmsAvailSlot
MIN-ACCESS not-accessible

```

DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsFqdn
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsKerbRealmName
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsMaxClockSkew
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsSolicitedKeyTimeout
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsUnsolicitedKeyMaxTimeout
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsUnsolicitedKeyNomTimeout
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsUnsolicitedKeyMaxRetries
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsIpsecCtrl
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevCmsStatus
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

OBJECT pktcMtaDevResetKrbTickets
SYNTAX BITS {
    invalidateProvOnReboot (0)
}
DESCRIPTION
    " the eUE only support the
      invalidateProvOnReboot bit (bit 0) for this object. The
      invalidateAllCmsOnReboot bit (bit 1) is not supported."

MODULE
    MANDATORY-GROUPS {
        pktcEUEProvMgmtGroup
    }
    ::= { pktcEUEProvMgmtCompliances 1 }

```

```

pktcEUEProvMgmtGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEProvMgmtVersion,
        pktcEUEHcpv6ServerId1,
        pktcEUEHcpv6ServerId2,
        pktcEUEHcpv6ServerAddressType,
        pktcEUEHcpv6ServerAddress,
        pktcEUEDnsv6ServerAddressType,
        pktcEUEDnsv6ServerAddress1,
        pktcEUEDnsv6ServerAddress2
    }
    STATUS current
    DESCRIPTION
        "The eUE Operator Group."
    ::= { pktcEUEProvMgmtGroups 1}

-- Notifications
-- pktcMtaDevProvisioningEnrollment NOTIFICATION-TYPE
-- Same as PKTC-IETF-MTA-MIB
-- pktcMtaDevProvisioningStatus NOTIFICATION-TYPE
-- Same as PKTC-IETF-MTA-MIB

END

```

C.2 Management Event MIB Module

```
CL-PKTC-EUE-EVENT-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```

    OBJECT-TYPE,
    MODULE-IDENTITY      FROM SNMPv2-SMI
    OBJECT-GROUP,
    MODULE-COMPLIANCE    FROM SNMPv2-CONF
    SnmpAdminString
    pktcEUEMibs           FROM CLAB-DEF-MIB;

```

```

pktcEUEEventMIB MODULE-IDENTITY
    LAST-UPDATED "201210300000Z" -- October 30, 2012
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Sumanth Channabasappa
        Postal: Cable Television Laboratories, Inc
        858 Coal Creek Circle
        Louisville, CO 80027
        U.S.A.
        Phone: +1 303 661 9100
        Fax: +1 303 661 9199
        E-mail:mibs@cablelabs.com

        Acknowledgements:
        Thomas Clack, Broadcom - Primary author,
        and members of the PacketCable PACM Focus Team."

    DESCRIPTION
        "This MIB module provides the management objects for the
        Management Event mechanism as specified by the PacketCable
        E-UE Provisioning Framework."

```

```

REVISION "201210300000Z" -- October 30, 2012
DESCRIPTION
    "Revised Version includes ECN EUE-DATA-N-11.0686-1
    and published as I06"
REVISION "200711060000Z" -- Nov 6, 2007
DESCRIPTION
    "Initial version, published as part of the CableLabs
    E-UE Provisioning Data Model Specification
    PKT-SP-EUE-DATA-I01-071106
    Copyright 1999-2007 Cable Television Laboratories, Inc.
    All rights reserved."
::= { pktcEUEMibs 6 }

-- Administrative assignments
pktcEUEEventNotifications OBJECT IDENTIFIER ::= { pktcEUEEventMIB 0 }
pktcEUEEventObjects OBJECT IDENTIFIER ::= { pktcEUEEventMIB 1 }
pktcEUEEventConformance OBJECT IDENTIFIER ::= { pktcEUEEventMIB 2 }

pktcEUEMEMVersion OBJECT-TYPE
    SYNTAX      SnmpAdminString(SIZE(0..6))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " This MIB Object represents the Management Event Reporting Module
        version. The eUE MUST set this MIB Object to value of '1.0'."
    ::= { pktcEUEEventObjects 1 }

-- Object Groups
-- The object groups used in this MIB module are imported from
-- the PKTC-EVENT-MIB (PKT-SP-EVEMIB1.5).

-- Conformance Statements
pktcEUEEventCompliances OBJECT IDENTIFIER ::= { pktcEUEEventConformance 1 }
pktcEUEEventGroups OBJECT IDENTIFIER ::= { pktcEUEEventConformance 2 }

-- Compliance Statements
pktcEUEEventCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for CableLabs compliant eUE devices
        that implement the PacketCable E-UE Provisioning Framework.

        This compliance statement specifies, for PacketCable
        E-UE Provisioning, the required objects from the PKTC-EVENT-MIB
        defined in the PacketCable 1.5 Specifications Management Event
        MIB Specification, PKT-SP-EVEMIB1.5-I02-050812.

        Some objects from RFC4682 have been enhanced for applicability
        to eUEs. Similarly, inapplicable objects are clearly indicated."

REFERENCE
    "PacketCable Embedded UE Provisioning Framework Specification"

MODULE PKTC-EVENT-MIB
    MANDATORY-GROUPS {
        pktcEventGroup,
        pktcEventNotificationGroup
    }

-- Event Reporting control objects
-- OBJECT pktcDevEvControl - Same as PKTC-EVENT-MIB

```

```

-- OBJECT pktcDevEvSyslogAddressType      - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvSyslogAddress          - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvSyslogUdpPort          - Same as PKTC-EVENT-MIB

-- Event throttling control

-- OBJECT pktcDevEvThrottleAdminStatus
-- OBJECT pktcDevEvThrottleThreshold      - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvThrottleInterval      - Same as PKTC-EVENT-MIB

-- Status Reporting

-- OBJECT pktcDevEvTransmissionStatus    - Same as PKTC-EVENT-MIB

-- Event Descriptions

-- OBJECT pktcDevEventDescrId            - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEventDescrEnterprise    - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEventDescrFacility      - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEventDescrLevel        - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEventDescrReporting    - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEventDescrText         - Same as PKTC-EVENT-MIB

-- Events generated

-- OBJECT pktcDevEvLogIndex              - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogTime                - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogEnterprise          - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogId                 - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogText               - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogEndpointName        - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogType               - Same as PKTC-EVENT-MIB

OBJECT pktcDevEvLogTargetInfo
DESCRIPTION
    "This MIB Object contains a comma separated list of the
    actions taken for external notifications, along with the
    target IP address for the generated events. Locally
    stored events must not be recorded in this MIB Object.

    The syntax is as:
    <action-1/IP>,<action-2/IP>,<action-3/IP>

    Where <action-n/IP> is to be denoted as follows:
    For syslog events:
        syslog/<IP address of the syslog Server>
    For SNMP traps:
        snmpTrap/<IP address of the SNMP Server>
    For SNMP INFORMS:
        snmpInform/<IP address of the SNMP Server>

    If there are multiple targets for the same type (SNMP
    Traps sent to multiple IP addresses) or if there are
    multiple messages sent to the same IP (syslog and SNMP
    sent to the same IP address) they need to be reported
    individually."

-- OBJECT pktcDevEvLogCorrelationId      - Same as PKTC-EVENT-MIB
-- OBJECT pktcDevEvLogAdditionalInfo      - Same as PKTC-EVENT-MIB

```

```

MODULE
    MANDATORY-GROUPS {
        pktcEUEMEMGroup
    }
    ::= { pktcEUEEventCompliances 1 }

pktcEUEEventEuroCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for implementations of the EUE Event
        MIB Module that implement the PacketCable E-UE Provisioning
        Framework with the European Technology Option."

    MODULE      PKTC-IETF-EVENT-MIB -- Group of MIB Objects from RFC 5428
        MANDATORY-GROUPS {
            pktcEventGroup,
            pktcEventNotificationGroup
        }

    MODULE      -- this module
        MANDATORY-GROUPS {
            pktcEUEMEMGroup
        }

    ::= { pktcEUEEventCompliances 2 }

pktcEUEMEMGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEMEMVersion
    }
    STATUS      current
    DESCRIPTION
        "The eUE Operator Group."
    ::= { pktcEUEEventGroups 1}

-- Notifications

-- pktcDevEvInform NOTIFICATION-TYPE          - Same as PKTC-EVENT-MIB
-- OBJECTS {pktcDevEvLogIndex, pktcDevEvLogTime,
-- pktcDevEvLogEnterprise,pktcDevEvLogId,
-- pktcDevEvLogEndpointName,pktcDevEvLogCorrelationId,ifPhysAddress}

-- pktcDevEvTrap NOTIFICATION-TYPE            - Same as PKTC-EVENT-MIB
-- OBJECTS {pktcDevEvLogIndex, pktcDevEvLogTime,
-- pktcDevEvLogEnterprise,pktcDevEvLogId,
-- pktcDevEvLogEndpointName,pktcDevEvLogCorrelationId,ifPhysAddress}

END

```

Annex D PacketCable eUE Additional Modules

D.1 Certificate Bootstrapping XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<!--(C) 2008 CableLabs. All rights reserved -->
<!--PacketCable E-UE Provisioning Certificate Bootstrapping XML Schema -->
<xsd:schema
    xmlns="http://www.cablelabs.com/namespaces/PacketCable/2.0/XSD/v1/CL-PKTC-CB"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"

    targetNamespace="http://www.cablelabs.com/namespaces/PacketCable/2.0/XSD/v1/CL-PKTC-
    CB"
    elementFormDefault="qualified" attributeFormDefault="unqualified"
    xml:lang="en">

    <xsd:annotation>
        <xsd:documentation>
            This XML Schema is specified for use with the PacketCable E-UE Certificate
            Bootstrapping procedure.

            It is used to transmit IM Private Identifiers (IMPIs) and associated
            credentials.
        </xsd:documentation>
    </xsd:annotation>

    <xsd:element name="pktcEUECreds">
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element name="clearIMPIMIBTable" type="xsd:boolean" minOccurs="0"
maxOccurs="1"/>
                <xsd:element minOccurs="0" maxOccurs="unbounded" ref="IMPI"/>
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>

    <xsd:element name="IMPI" type="IMPITYPE">
        <xsd:unique name="uniqueIMPIIndex">
            <xsd:selector xpath="./pktcEUECreds"/>
            <xsd:field xpath="@mibIMPIIndex"/>
        </xsd:unique>
    </xsd:element>

    <xsd:complexType name="IMPITYPE">
        <xsd:sequence>
            <xsd:element ref="ID"/>
            <xsd:element ref="Creds"/>
        </xsd:sequence>
        <xsd:attribute name="mibIMPIIndex" use="required" type="xsd:positiveInteger"/>
    </xsd:complexType>

    <xsd:element name="ID">
        <xsd:complexType mixed="true">
            <xsd:attribute name="idType" use="required" type="IDTYPE"/>
        </xsd:complexType>
    </xsd:element>

    <xsd:element name="Creds">
        <xsd:complexType mixed="true">
```

```

        <xsd:attribute name="credsType" use="required" type="CREDENTIALTYPE"/>
    </xsd:complexType>
</xsd:element>

<xsd:simpleType name="IDTYPE">
    <xsd:restriction base="xsd:NMTOKEN">
        <xsd:enumeration value="privateIdentity"/>
    </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="CREDENTIALTYPE">
    <xsd:restriction base="xsd:NMTOKEN">
        <xsd:enumeration value="none"/>
        <xsd:enumeration value="password"/>
        <xsd:enumeration value="presharedkey"/>
        <xsd:enumeration value="certificate"/>
    </xsd:restriction>
</xsd:simpleType>

</xsd:schema>

```

D.2 Presence Configuration MIB

CL-PKTC-EUE-PRS-MIB DEFINITIONS ::= BEGIN

IMPORTS

```

    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32
        FROM SNMPv2-SMI

    RowStatus
        FROM SNMPv2-TC

    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF

    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB

    pktcEUEDevOpIndex
        FROM CL-PKTC-EUE-DEV-MIB

    pktcEUEUsrIMPUIndex
        FROM CL-PKTC-EUE-USER-MIB

    pktcEUEMibs
        FROM CLAB-DEF-MIB;

```

pktcEUEPrsMIB MODULE-IDENTITY

```

    LAST-UPDATED "200905280000Z" -- May 28, 2009
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
        Louisville, CO 80027, USA
        Phone: +1 303-661-9100
        Email: mibs@cablelabs.com

```

```

    Acknowledgements:
    Thomas Clack, Broadcom - Primary author,
    Zu Qiang, Ericsson
    Sumanth Channabasappa, CableLabs

```

```

        Eduardo Cardona, CableLabs
        and members of the PacketCable PACM Focus Team."
DESCRIPTION
    "This MIB module contains the configuration MIB
    objects for the Presence Service feature as defined
    by the PacketCable E-UE Provisioning Framework
    Specification."
REVISION "200905280000Z" -- May 28, 2009
DESCRIPTION
    "Revised Version includes ECNs
    EUE-DATA-N-08.0528-3
    EUE-DATA-N-09.0556-3
    and published as part of PKT-SP-EUE-DATA-I03-090528."
REVISION "200807100000Z" -- July 10, 2008
DESCRIPTION
    "Initial version published as part of the CableLabs
    E-UE Provisioning Data Model Specification (PKT-SP-EUE-DATA).
    Included in ECN EUE-DATA-N-08.0504-7 and published as part of
    PKT-SP-EUE-DATA-I02-080710."
::= { pktcEUEMibs 7 }

-- Administrative assignments
pktcEUEPRSNNotifications OBJECT IDENTIFIER ::= { pktcEUEPrsMIB 0 }
pktcEUEPRSObjects OBJECT IDENTIFIER ::= { pktcEUEPrsMIB 1 }
pktcEUEPRSConformance OBJECT IDENTIFIER ::= { pktcEUEPrsMIB 2 }

pktcEUEPRSCompliances OBJECT IDENTIFIER ::= { pktcEUEPRSConformance 1 }
pktcEUEPRSGroups OBJECT IDENTIFIER ::= { pktcEUEPRSConformance 2 }

--
-- The NETWORK-Indexed Presence Configuration Table
--
pktcEUEPRSNwCfgTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEPRSNwCfgEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        " This data table represents the network-based Presence entries."

    REFERENCE "PacketCable E-UE Provisioning Framework Specification,
        OMA Presence SIMPLE Specification"
    ::= { pktcEUEPRSObjects 1 }

pktcEUEPRSNwCfgEntry OBJECT-TYPE
    SYNTAX      PktcEUEPRSNwCfgEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        " Each entry in this table represents a Presence configuration
        parameter within the scope of a Device Operator.

        The conceptual rows MUST NOT persist across eUE resets."
    INDEX {pktcEUEDevOpIndex}
    ::= { pktcEUEPRSNwCfgTable 1 }

PktcEUEPRSNwCfgEntry ::=
    SEQUENCE {
        pktcEUEPRSNwProvID      SnmpAdminString,
        pktcEUEPRSNwAppName     SnmpAdminString,
        pktcEUEPRSNwStatus      RowStatus
    }

```

```

pktcEUEPRSNwProvID OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This element identifies the Presence Service Provider.
          This value corresponds to the 'PROVIDER-ID' object
          defined in the OMA Presence SIMPLE specification.

          This element is optional."
    DEFVAL {""}
    ::= { pktcEUEPRSNwCfgEntry 1 }

pktcEUEPRSNwAppName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This element provides a user displayable name for the Presence
          Framework. This value corresponds to the 'NAME' object defined
          in the OMA Presence SIMPLE specification.

          This element is optional."
    DEFVAL {""}
    ::= { pktcEUEPRSNwCfgEntry 2 }

pktcEUEPRSNwStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This object defines the row status associated with this
          particular row in the MIB table.

          The values of the objects 'pktcEUEPRSNwAppName' and
          'pktcEUEPRSNwProvID' MUST not be modified while this row is set to
          'active'."
    ::= { pktcEUEPRSNwCfgEntry 3 }

--
-- The USER-Indexed Presence Configuration Table
--

pktcEUEPRSUsrCfgTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEPRSUsrCfgEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This data table represents the user-based Presence entries
          "
    REFERENCE "PacketCable E-UE Provisioning Framework Specification,
              OMA Presence SIMPLE Specification"

    ::= { pktcEUEPRSObjects 2 }

pktcEUEPRSUsrCfgEntry OBJECT-TYPE
    SYNTAX      PktcEUEPRSUsrCfgEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " Each entry in this table represents a Presence configuration
          parameter within the scope of a User.

```

The conceptual rows MUST NOT persist across eUE resets."
 INDEX {pktcEUEUsrIMPUIndex}
 ::= { pktcEUEPRUsrCfgTable 1 }

PktcEUEPRUsrCfgEntry ::=

```
SEQUENCE {
    pktcEUEPRUsrClientObjDataLim    Unsigned32,
    pktcEUEPRUsrContSvrURI          SnmpAdminString,
    pktcEUEPRUsrSrcThrottlePub      Unsigned32,
    pktcEUEPRUsrMaxPrsSubs          Unsigned32,
    pktcEUEPRUsrMaxSubsPrsList      Unsigned32,
    pktcEUEPRUsrSvcURITemplate      SnmpAdminString,
    pktcEUEPRUsrStatus              RowStatus
}
```

pktcEUEPRUsrClientObjDataLim OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" A Presence Source may use either direct or indirect content. Direct Content is the delivery of the Presence document as MIME content within a SIP message. Indirect content is the redirection of the Presence watcher by the Presence source to a Content Server for the delivery of the Presence document.

Should the Presence source make use of direct content then this object MUST be used for determining the size limit, in bytes, of the MIME Content delivered in a SIP method.

If the Presence source makes use of indirect content then this configuration element MUST be ignored.

This element is mandatory in the specifications however direct content is an optional capability."

DEFVAL {4096}

::= { pktcEUEPRUsrCfgEntry 1 }

pktcEUEPRUsrContSvrURI OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" If the Presence Source makes use of content indirection as described in the 'OMA Presence SIMPLE Specification', then this object MUST be used as the HTTP or HTTPS URI of the Content Server on which the MIME object containing the Presence document will be stored. The Presence source will then use the content indirection mechanism defined in RFC 4483 to provide the watcher with the URI of the stored content.

This element is optional"

DEFVAL {""}

::= { pktcEUEPRUsrCfgEntry 2 }

pktcEUEPRUsrSrcThrottlePub OBJECT-TYPE

SYNTAX Unsigned32 (1..3600)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This element defines the minimum time interval in seconds between two

consecutive publications of a Presence document from a Presence Source using a SIP PUBLISH request.

This element is optional"

DEFVAL {60}

::= { pktcEUEPRSUsrcfgEntry 3 }

pktcEUEPRSUsrcfgEntry OBJECT-TYPE

SYNTAX Unsigned32 (1..1000)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This element defines the maximum number of subscriptions to the presence event package that a watcher may have.

Should a service provider wish to limit the number of subscriptions to different Presence sources from a Presence watcher then this element MUST be used.

This is in effect the maximum number of discrete Public Identities from which a watcher can obtain Presence information.

This element is optional"

DEFVAL {100}

::= { pktcEUEPRSUsrcfgEntry 4 }

pktcEUEPRSUsrcfgEntryList OBJECT-TYPE

SYNTAX Unsigned32 (1..1000)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" A Presence watcher may subscribe to multiple Presence sources that are represented by a single Resource List, see RFC 4662. A Resource List Server in the network then handles the discrete individual subscriptions to the elements within the list.

Should a service provider wish to limit the number of elements within a resource list to which a watcher can subscribe (thus limiting the number of SIP subscriptions) then this element MUST be used.

This element is optional"

DEFVAL {100}

::= { pktcEUEPRSUsrcfgEntry 5 }

pktcEUEPRSUsrcfgEntryTemplate OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This element defines the syntax of the service URI. The Service URI Template MUST be a URI Template as specified in [OMA XDM-CORE].

This element is optional"

DEFVAL {"<xui>;presence-list=<id>"}

::= { pktcEUEPRSUsrcfgEntry 6 }

pktcEUEPRSUsrcfgEntryStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object defines the row status associated with this particular row in the MIB table.

```

        The values of any objects in this row MUST not be
        modified while this row is set to 'active'."
    ::= { pktcEUEPRSUsrcfgEntry 7 }

-----
-- Conformance Information
-----
pktcEUEPrsMIBCompliances OBJECT IDENTIFIER ::= { pktcEUEPRSCompliances 1 }
pktcEUEPrsMIBGroups      OBJECT IDENTIFIER ::= { pktcEUEPRSGroups 2 }

-- Compliance Statements
pktcEUEPrsMIBCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for implementations of the EUE-PRS MIB."
    MODULE      -- this module
        MANDATORY-GROUPS {
            pktcEUEPRSRReqObjGroup
        }
    -- optional groups
    GROUP      pktcEUEPRSOptObjGroup
    DESCRIPTION
        "This group is of optional support."

    ::= { pktcEUEPrsMIBCompliances 1 }

pktcEUEPRSRReqObjGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEPRSUsrcClientObjDataLim
    }
    STATUS      current
    DESCRIPTION
        "The group of required objects."
    ::= { pktcEUEPrsMIBGroups 1}

pktcEUEPRSOptObjGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEPRSNwAppName,
        pktcEUEPRSNwProvID,
        pktcEUEPRSNwStatus,
        pktcEUEPRSUsrcContSvrURI,
        pktcEUEPRSUsrcThrottlePub,
        pktcEUEPRSUsrcMaxPrsSubs,
        pktcEUEPRSUsrcMaxSubsPrsList,
        pktcEUEPRSUsrcSvcURITemplate,
        pktcEUEPRSUsrcStatus
    }
    STATUS      current
    DESCRIPTION
        "The group of optional objects."
    ::= { pktcEUEPrsMIBGroups 2}

END

```

Appendix I Illustrative PacketCable Deployment Examples

I.1 Example 1: Deployment with multiple Users and one PacketCable Application

An example of an eUE associated with two users, each associated with the same application, is illustrated in Figure 3. As a note, the use of Video On Demand (VOD) as an application is only an illustrative example, not an actual PacketCable application.

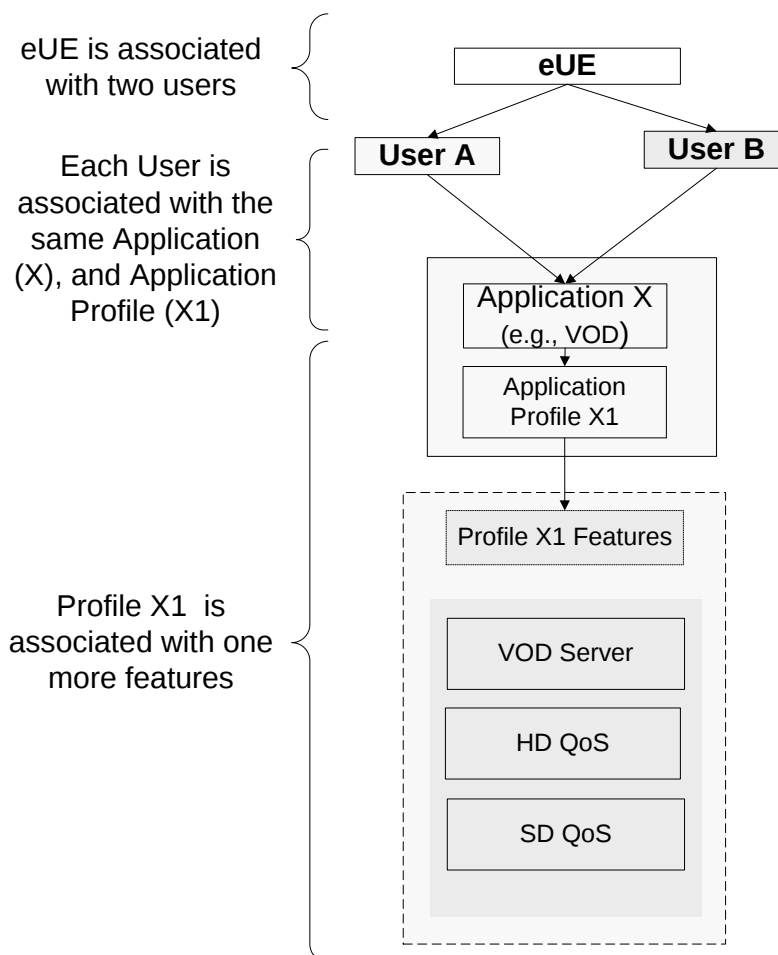


Figure 3 - Deployment with multiple users and one PacketCable application

The MIB table assignments for the illustration in Figure 3 is given below, with the following assumptions:

- Application X has specified the Application Profile to Features Mapping Table, and Feature Tables.
- User identifiers 1 and 2 represent Users A and B, respectively.
- Application identifier 1 identifies Application X (VOD).
- Feature identifiers 1, 2, and 3 identify features VOD Server, HD QoS, and SD QoS, respectively.

User to Application Profile Mapping Table

(Mapping of User A to an application profile)

UsrAppMapTable entries

```
AppOrgID.1.1      = 4491 (CableLabs)
AppIdentifier.1.1  = 1    (App X, VOD)
AppIndexRef.1.1   = 10   (Profile X1)
```

(Mapping of User B to an application profile)

UsrAppMapTable entries

```
AppOrgID.2.1.3    = 4491 (CableLabs)
AppIdentifier.2.1  = 1    (App X, VOD)
AppIndexRef.2.1   = 10   (Profile X1)
```

Application Profile to Features Mapping Table (Application X)

(Profile X1)

XAppProfileToFeatureMapTable entries

```
AppFeatureIdentifier.10.1 =1(VOD Server)
AppFeatureTableIndexRef.10.1=5
```

```
AppFeatureIdentifier.10.2 =2(HD QoS)
AppFeatureTableIndexRef.10.2=5
```

```
AppFeatureIdentifier.10.3 =3(SD QoS)
AppFeatureTableIndexRef.10.3=5
```

Feature Tables

(VOD Server Table).5="vod.example.com"

(HD QoS Table).5="VIDEOCODEC=VX; AUDIOCODEC=AX; BANDWIDTH=XMBPS"

(SD QoS Table).5="VIDEOCODEC=VY; AUDIOCODEC=AY; BANDWIDTH=YMBPS"

I.2 Example 2: Deployment with multiple Users and multiple PacketCable Applications

An example of an eUE associated with multiple users, each with one or more applications, is illustrated in Figure 4. As a note, the use of voice as an application is only an illustrative example, not an actual PacketCable application.

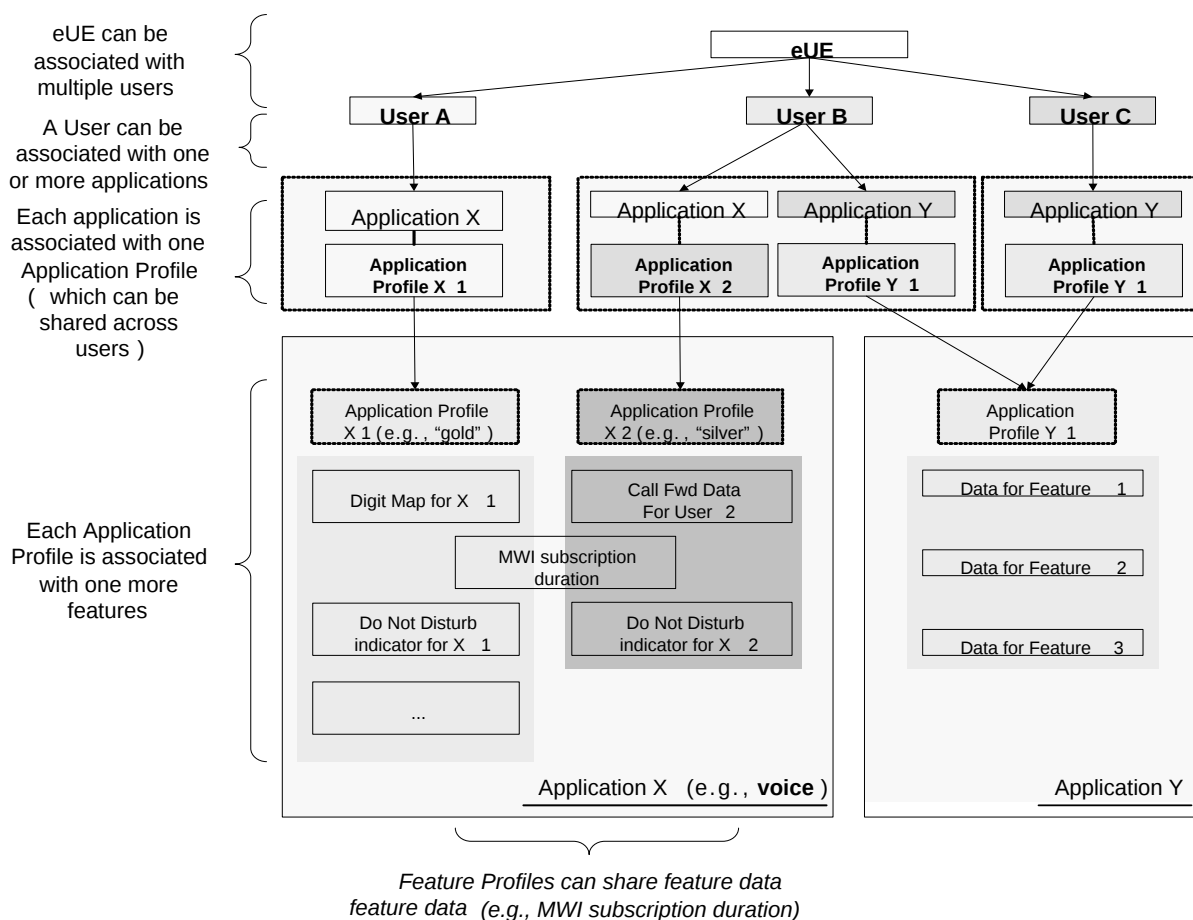


Figure 4 - Deployment with multiple users and multiple PacketCable applications

The MIB table assignments for the illustration in Figure 4 is given below, with the following assumptions:

- Applications X and Y have specified the Application Profile to Features Mapping Table, as required by this document
- User identifiers 1, 2 and 3 represent Users A, B and C, respectively
- Application identifiers 1 and 99 identify Applications X and Y, respectively
- Feature identifiers 1, 2, and 3 identify features Digit Map, MWI, and DND, respectively

User to Application Profile Mapping Table:

(Mapping of User A to an application profile)

UsrAppMapTable entries

AppOrgID.1.1	= 4491 (CableLabs)
AppIdentifier.1.1	= 1 (App X)
AppIndexRef.1.1	= 11 (Profile X1)

(Mapping of User B to an application profile)

UsrAppMapTable entries

AppOrgID.2.1	= 4491 (CableLabs)
AppIdentifier.2.1	= 1 (App X)
AppIndexRef.2.1	= 12 (Profile X2)

```

AppOrgID.2.2          = 4491 (CableLabs)
AppIdentifier.2.2      = 99 (App Y)
AppIndexRef.2.2       = 20 (Profile Y1)

```

(Mapping of User C to an application profile)

UsrAppMapTable entries

```

AppOrgID.3.1          = 4491 (CableLabs)
AppIdentifier.3.1      = 99 (App Y)
AppIndexRef.3.1       = 20 (Profile Y1)

```

Application Profile to Features Mapping Table (Application X):

(Profile X1)

XAppProfileToFeatureMapTable entries

```

AppFeatureIdentifier.11.1 = 1(DIGIT MAP)
AppFeatureTableIndexRef.11.1= 1

```

```

AppFeatureIdentifier.11.2 = 2(MWI SUB)
AppFeatureTableIndexRef.11.2= 11

```

```

AppFeatureIdentifier.11.3 = 3(DND)
AppFeatureTableIndexRef.11.3= 3

```

(Profile X2)

XAppProfileToFeatureMapTable entries

```

AppFeatureIdentifier.12.1 = 1(DIGIT MAP)
AppFeatureTableIndexRef.12.1= 2

```

```

AppFeatureIdentifier.12.2 = 2(MWI SUB)
AppFeatureTableIndexRef.12.2= 11

```

```

AppFeatureIdentifier.12.3 = 3(DND)
AppFeatureTableIndexRef.12.3= 4

```

Application Profile to Features Mapping Table (Application Y):

(Profile Y1)

YAppProfileToFeatureMapTable entries

```

AppFeatureIdentifier.20.1 = 1
AppFeatureTableIndexRef.20.1= 25

```

```

AppFeatureIdentifier.20.2 = 2
AppFeatureTableIndexRef.20.2= 0
AppNWFeatureStatus.20.2   = False

```

Note: An IndexRef of 0 can indicate that there are only activation controls for the feature; see also additional note for the next feature

YAppProfileToFeatureMapTable entries

```

AppFeatureIdentifier.20.1 = 3
AppFeatureTableIndexRef.20.1= 0

```

Note: An IndexRef of 0 can also indicate other settings such as per Operator data

Application X Feature Tables

```

(DIGIT MAP).1="<<DIGIT MAP ABC>>"
(DIGIT MAP).2="<<DIGIT MAP XYZ>>"
(MWI SUB).11="60 secs"
(DND).3="True"
(DND).4="False"

```

Application Y Feature Tables

(Feature 1 has a Feature Table)

(Feature 1).**25**="<<Feature 1 data>>"

(Feature 2 has no configuration data)

(Feature 3 is per Operator configuration)

(Feature 3).**Operator**="<<Feature 3 data>>"

Appendix II Acknowledgements

CableLabs wishes to thank the PacketCable PACM focus team participants for various contributions and efforts that led to the development of this specification. Specifically, the following individuals are thanked for their direct contributions.

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Special appreciation is extended to Eugene for his role as primary editor of the document and for coordinating the contributions and Thomas for his role as the primary author of the MIB modules.

Eduardo Cardona and the PacketCable Architects, CableLabs, Inc.

Appendix III Revision History

The following Engineering Change Notices were incorporated in PKT-SP-EUE-DATA-I02-080710.

ECN	ECN Date	Summary
EUE-DATA-N-08.0504-7	5/27/2008	Incorporation of feedback from vendor and ATP focus teams
EUE-DATA-N-08.0524-5	5/27/2008	Alignment of management requirements between PacketCable 1.5 and PacketCable 2.0

The following Engineering Change Notices were incorporated in PKT-SP-EUE-DATA-I03-090528.

ECN	ECN Date	Summary
EUE-DATA-N-08.0528-3	12/8/2008	Updates to EUE DATA MIB
EUE-DATA-N-08.0556-3	4/27/2009	EUE MIB Objects Persistency requirements

The following Engineering Change Notices were incorporated in PKT-SP-EUE-DATA-I04-100120.

ECN	ECN Date	Summary
EUE-DATA-N-09.0602-3	11/30/2009	Clarifications on PktcEUEtCCreds Textual Convention
EUE-DATA-N-09.0603-2	11/30/2009	Clarifications on Configuration Data Element Requirements
EUE-DATA-N-09.0605-5	12/14/2009	Clarifications and Enhancements to the EUE Device MIB

The following Engineering Change Notices were incorporated in PKT-SP-EUE-DATA-I05-100527.

ECN	ECN Date	Summary
EUE-DATA-N-10.0633-2	4/26/2010	Updates to EUE DEVICE MIB
EUE-DATA-N-10.0631-3	5/3/2010	Updates on User Configuration MIB: IMPI Persistence & IMPU Implicit Registration Clarifications

The following Engineering Change Notices were incorporated in PKT-SP-EUE-DATA-I06-110127.

ECN	ECN Date	Summary
EUE-DATA-N-10.0644-2	12/20/2010	Corrections on Device Configuration MIB
EUE-DATA-N-11.0659-1	1/17/2011	ECR to correct Change#2 in EUE-DATA-N-10.0644-2

The following Engineering Change Notices was incorporated in PKT-SP-EUE-DATA-I07-110825.

ECN	ECN Date	Summary
EUE-DATA-N-11.0661-6	7/11/2011	Media IP stack preference in SDP - Dual IP stack new features

The following Engineering Change Notice was incorporated in PKT-SP-EUE-DATA-I08-121030.

ECN	ECN Date	Summary
EUE-DATA-N-12.0686-1	7/16/2012	Compliance of CL-PKTC-EUE-EVENT-MIB Module with European requirements
