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**PacketCable™ 2.0**

### **E-UE Provisioning Data Model Specification**

**PKT-SP-EUE-DATA-I01-071106**

**ISSUED**

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## Document Status Sheet

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### Key to Document Status Codes

- 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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# Superseded

## 1 SCOPE

# by a later version of this document

### 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

### 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-I02-070119, January 19, 2007, 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-I13-070803, August 03, 2007, Cable Television Laboratories, Inc.
- [PKT-EUE-PROV] PacketCable 2.0 E-UE Provisioning Specification, PKT-SP-EUE-PROV-I01-071106, November 11, 2007, Cable Television Laboratories, Inc.
- [PKT-SP-PROV1.5] PacketCable 1.5 Specification, MTA Device Provisioning, PKT-SP-PROV1.5-I03-070412, April 12, 2007, Cable Television Laboratories, Inc.
- [PKT-MEM1.5] PacketCable 1.5 Management Event Mechanism Specification, PKT-SP-MEM1.5-I03-070412, April 12, 2007, Cable Television Laboratories, Inc.
- [RFC2863] IETF RFC 2863, The Interfaces Group MIB, June 2000.
- [RFC3410] IETF RFC 3410, Introduction and Applicability Statements for Internet Standard Management Framework, December 2002.
- [RFC3412] IETF RFC 3412/STD0062, Message Processing and Dispatching for the Simple Network Management Protocol (SNMP), December 2002
- [RFC3413] IETF RFC 3413/STD0062, Simple Network Management Protocol (SNMP) Applications, December 2002.
- [RFC3414] IETF RFC 3414/STD0062, User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3), December 2002.
- [RFC3415] IETF RFC 3415/STD0062, View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP), December 2002.
- [RFC3418] IETF RFC 3418, Management Information Base (MIB) for the Simple Network Management Protocol (SNMP).
- [RFC3665] IETF RFC 3665, Definitions of Managed Objects for the Ethernet-like Interface Types, September 2003.
- [RFC4113] IETF RFC 4113, Management Information Base for the User Datagram Protocol (UDP), June 2005.
- [RFC4293] IETF RFC 4293, Management Information Base for the Internet Protocol (IP), April 2006.
- [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.

## 2.2 Informative References

This specification uses the following informative references.

[ARCH- PacketCable Architecture Framework Technical Report, PKT-TR-ARCH-FRM-V04-071106,  
FRM TR] November 11, 2007, 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, 46000 Center Oak Plaza, Sterling, VA 20166, Phone +1-571-434-3500, Fax +1-571-434-3535, <http://www.ietf.org/>.

### 3 TERMS AND DEFINITIONS

This specification uses the following terms:

<b>eCM</b>	The logical DOCSIS CM component of a E-UE, complies with DOCSIS, eDOCSIS and PacketCable requirements.
<b>eUE</b>	The logical PacketCable UE component of an E-UE, complies with eSAFE and PacketCable requirements.
<b>E-UE</b>	Embedded User Equipment. A single physical device embedded with an eDOCSIS-compliant DOCSIS Cable Modem and a PacketCable eUE.
<b>Management Information Base</b>	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.
<b>Network Management</b>	The functions related to the management of data across the network.

## 4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

<b>CM</b>	DOCSIS Cable Modem – a DOCSIS-compliant device which provides data transport connectivity from RFI to IP networks.
<b>DOCSIS®</b>	Data-Over-Cable Service Interface Specifications.
<b>OID</b>	Object Identifier. The sequence of integer positive numbers uniquely identifying the position of each MIB Object in the MIB Hierarchy.
<b>MIB</b>	Management Information Base.
<b>RFC</b>	Request for Comments. Technical policy documents approved by the IETF which are available on the World Wide Web at <a href="http://www.ietf.cnri.reston.va.us/rfc.html">http://www.ietf.cnri.reston.va.us/rfc.html</a> .
<b>SNMP</b>	Simple Network Management Protocol. Refer to IETF STD 62.
<b>UDP</b>	User Datagram Protocol. A connectionless protocol built upon Internet Protocol (IP).
<b>VACM</b>	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

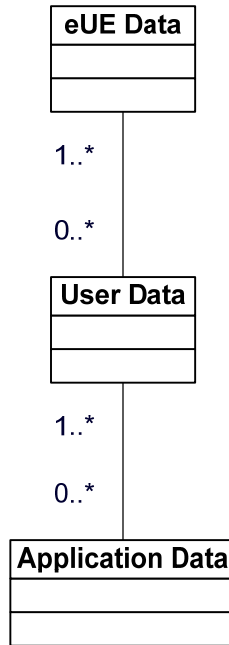
The E-UE Provisioning Framework is a PacketCable 2.0 configuration and management framework based on the PacketCable 1.5 Device Provisioning specification. For more information on the E-UE Provisioning Framework, please refer to [PKT-EUE-PROV].

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.

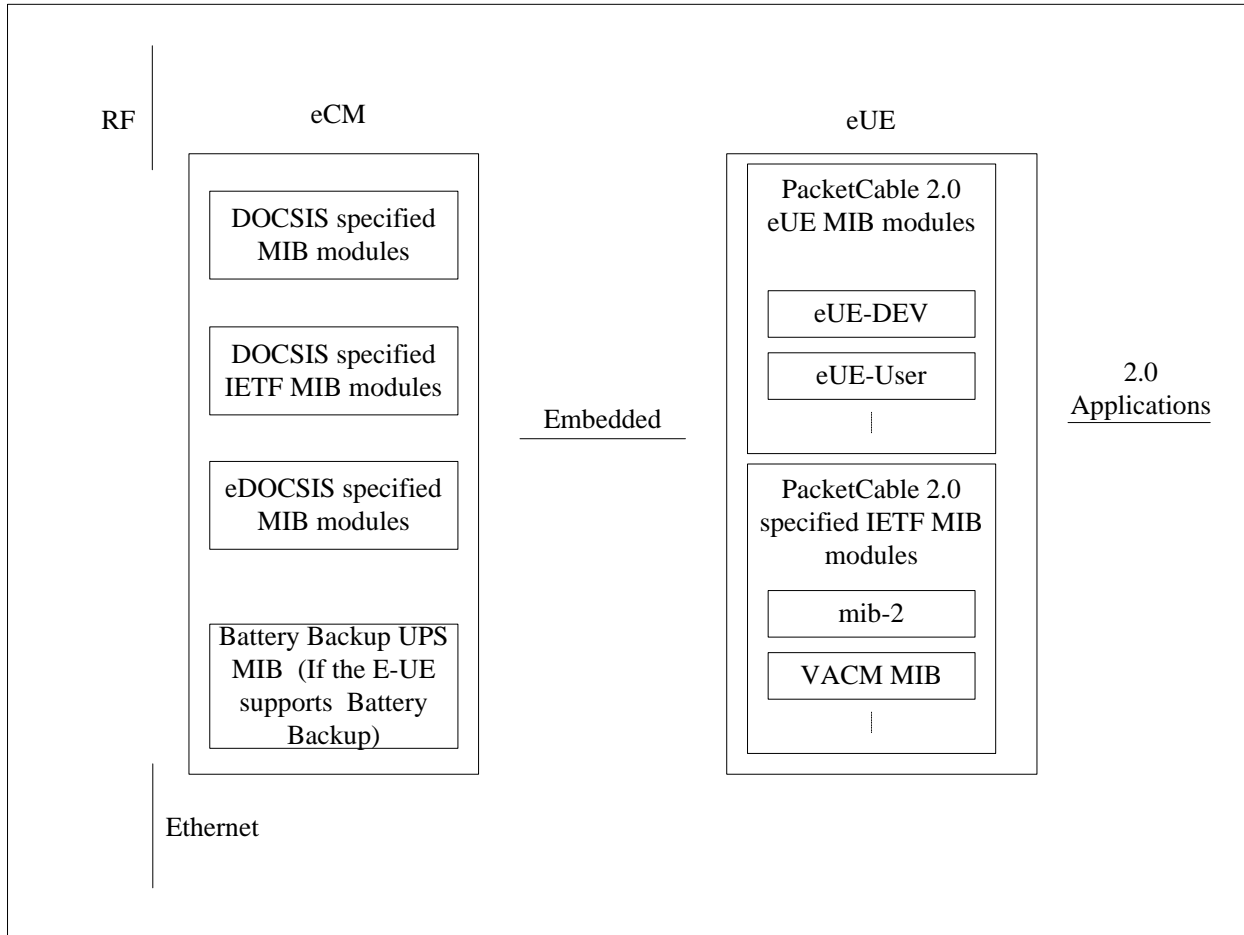
The logical representation of the E-UE Provisioning Data Model is specified in Figure 1.



**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 Table 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.

### 6.2.2 IETF MIB Modules

The eUE MUST implement the following MIB modules:

- MIB II system group as specified in [RFC3418];
- IF MIB as specified in [RFC2863];
- Ethernet MIB as specified in [RFC3665];
- UDP MIB as specified in [RFC4113]; and
- IP MIB as specified in [RFC4293].

### 6.2.3 SNMP MIB Requirements

#### 6.2.3.1 eUESysDescr Requirements

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

#### 6.2.3.2 eUE ifTable Requirements

The eUE MUST implement the row entry specified in Table 1 for the ifTable as specified in [RFC2863].

**Table 1 - eUE ifTable Requirements**

ifTable ([RFC2863])	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 [RFC2863]
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

### 6.2.3.3 eUE ipNetToPhysicalTable Requirements

The eUE MUST implement the row entry specified in Table 2 for the ipNetToPhysicalTable as specified in [RFC4293].

**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
ipNetToPhysicalLastUpdated	<refer to [RFC4293]>
ipNetToPhysicalType	static(4)
ipNetToPhysicalState	<refer to [RFC4293]>
ipNetToPhysicalRowStatus	'active'

### 6.2.3.4 eUE USM Requirements

This section presents the PacketCable 2.0 eUE USM requirements. Please refer to [RFC3414] 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 ([RFC3414][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

<b>usmUserTable ([RFC3414][IETF STD62])</b>	<b>Row Entry</b>
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.

**6.2.3.5 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 [RFC3415].

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

**Table 4 - eUE VacmSecurityToGroupTable**

<b>VacmSecurityToGroupTable ([RFC3415])</b>	<b>Row Entry</b>
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**

<b>VacmSecurityToGroupTable ([RFC3415])</b>	<b>Row Entry</b>
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.

### 6.2.3.6 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.

### 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	One table entry is mandatory if the eUE has any active users associated with it.
EUE-DEV-MIB	pktcEUEDevPCSCFTable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users associated with it.

MIB Module (CL-PKTC-)	Data Element	Requirement	Additional Details
EUE-USER-MIB	pkcEUEUsrIMPTable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users associated with it.
EUE-USER-MIB	pkcEUEUsrIMPITable	Conditionally Mandatory	One table entry is mandatory if the eUE has any active users which need authentication for registration.
EUE-USER-MIB	pkcEUEUsrAppMapTable	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.

**Table 7 - eUE Configuration Bootstrapping Requirements**

XML Schema	Data Element	Requirement	Additional Details
CL-PKTC-CB	pkcEUEClearCurrentCredentials	Mandatory	At least one instance is required
CL-PKTC-CB	pkcEUEUsrIMPType	Conditionally Mandatory	Required for an instance of an IMPI
CL-PKTC-CB	pkcEUEUsrIMPI	Conditionally Mandatory	Required for an instance of an IMPI
CL-PKTC-CB	pkcEUEUsrIMPICredsType	Conditionally Mandatory	Required for an instance of an IMPI
CL-PKTC-CB	pkcEUEUsrIMPICreds	Conditionally Mandatory	Required for an instance of an IMPI

### 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

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

**Table 8 - Additional eUE Management Events**

<b>Event Name</b>	<b>Default Severity for Event</b>	<b>Default Display String</b>	<b>PacketCable Event ID</b>	<b>Comments</b>
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.

## Annex A PacketCable eUE Common Modules

### A.1 Textual Conventions MIB Module

```

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

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32
        FROM SNMPv2-SMI
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
    TEXTUAL-CONVENTION, TruthValue
        FROM SNMPv2-TC
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
    pktcEUEMibs
        FROM CLAB-DEF-MIB;

pktcEUETCMIB MODULE-IDENTITY
    LAST-UPDATED "200711060000Z"
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Sumanth Channabasappa
        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,
        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."
    ::= { 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  
'PktcEUEIDType'.

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  
-----

PktcEUEIDType ::= 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 'PktcEUEID'.

The defined types include:

- other(1)  
for types not described by the options provided below
- gruu(2)  
for Globally Routable Unique 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 PktcEUEIDType objects and any dependent objects (e.g., PktcEUEID objects) are consistent.

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

In particular, PktcEUEIDType/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  
 -----

```
PktcEUETCActStatus ::= TEXTUAL-CONVENTION
  STATUS current
  DESCRIPTION
    " This TEXTUAL CONVENTION is being defined to
    indicate activation status as defined in
    PacketCable.
    A value of true(1) indicates a status
    of 'active'.
    A value of false(2) indicates a status
    of 'inactive'."
  SYNTAX TruthValue
```

-----  
 -- TEXTUAL CONVENTION for defining activation status info  
 -----

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

-----  
 -- TEXTUAL CONVENTION for User Element Indices  
 -----

```
PktcEUETCUsrElementIndexType ::= 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 the
    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    INTEGER(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 (0..31)

```

```

-----
-- 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 'PktcEUEETCCredsType' and dependent objects with SYNTAX of 'PktcEUEETCCreds' are consistent.

In general, the UE MUST generate an 'inconsistentValue' error if an attempt to change an 'PktcEUEETCCredsType' object would, for example, lead to an undefined 'PktcEUEETCCreds' value."

```
SYNTAX    INTEGER {
        other(1),
        none(2),
        password(3),
        preSharedKey(4),
        certificate(5)
    }
```

PktcEUEETCCreds ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" This TEXTUAL CONVENTION allows for the definition of a credential.

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

The value of a PktcEUEETCCreds object must be consistent with the value of it's associated PktcEUEETCCredsType 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.

Bytes 2-3: Indicate the length of the credential.

Bytes 4-8191: Contain the credential value."

```
SYNTAX    OCTET STRING (SIZE (0..8192))
```

-----  
-- Sample usage of TEXTUAL CONVENTIONS  
-----

pktcEUEETCSampleID OBJECT-TYPE

```
SYNTAX    PktcEUEETCID
MAX-ACCESS not-accessible
STATUS    obsolete
DESCRIPTION
```

" Sample MIB Object for use of 'PktcEUEETCID'."

```
::= { pktcEUEETCUsageObjs 2 }
```

pktcEUEETCSampleIDType OBJECT-TYPE

```
SYNTAX    PktcEUEETCIDType
MAX-ACCESS not-accessible
STATUS    obsolete
DESCRIPTION
```

" Sample MIB Object for use of 'PktcEUEETCIDType'."

```
::= { pktcEUEETCUsageObjs 3 }
```

pktcEUEETCSampleActStatus OBJECT-TYPE

```
SYNTAX    PktcEUEETCActStatus
```

```

MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTActStatus'."
 ::= { pktcEUECTUsageObjs 4 }

pktcEUECTSampleUsrRef OBJECT-TYPE
SYNTAX PktcEUECTUsrElementIndexType
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTUsrRef'."
 ::= { pktcEUECTUsageObjs 5 }

pktcEUECTSampleCredsType OBJECT-TYPE
SYNTAX PktcEUECTCredsType
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTCredsType'."
 ::= { pktcEUECTUsageObjs 6 }

pktcEUECTSampleCreds OBJECT-TYPE
SYNTAX PktcEUECTCreds
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTCreds'."
 ::= { pktcEUECTUsageObjs 7 }

pktcEUECTSampleAppRef OBJECT-TYPE
SYNTAX PktcEUECTUsrAppIndexType
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTUsrRef'."
 ::= { pktcEUECTUsageObjs 8 }

pktcEUECTSampleActStatusInfo OBJECT-TYPE
SYNTAX PktcEUECTActStatusInfo
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTActStatusInfo'."
 ::= { pktcEUECTUsageObjs 9 }

pktcEUECTAppIdentifier OBJECT-TYPE
SYNTAX PktcEUECTAppIdentifier
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTActStatusInfo'."
 ::= { pktcEUECTUsageObjs 10 }

pktcEUECTAppOrgIdentifier OBJECT-TYPE
SYNTAX PktcEUECTAppOrgIdentifier
MAX-ACCESS not-accessible
STATUS obsolete
DESCRIPTION
    " Sample MIB Object for use of 'PktcEUECTActStatusInfo'."
 ::= { pktcEUECTUsageObjs 11 }

-----
-- Compliance statements
-----
pktcEUECTMIBCompliance MODULE-COMPLIANCE

```

```
STATUS      current
DESCRIPTION
    " The compliance statement for implementations of the EUE TC MIB"
MODULE      -- this module

 ::= { pktcEUE TCCompliances 1 }

END
```

## Annex B PacketCable eUE Device Configuration Modules

### B.1 Device Configuration MIB Module

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

```
IMPORTS
```

```
  PktcEUEETCCredsType,
  PktcEUEETCCreds
  FROM CL-PKTC-EUE-TC-MIB
```

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

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

```
  RowStatus, TruthValue
  FROM SNMPv2-TC
```

```
  SnmpAdminString
  FROM SNMP-FRAMEWORK-MIB
```

```
  InetAddress,
  InetPortNumber,
  InetAddressDNS,
  InetAddressType
  FROM INET-ADDRESS-MIB
```

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

```
pktcEUEDevMIB MODULE-IDENTITY
```

```
  LAST-UPDATED "200711060000Z"
  ORGANIZATION "Cable Television Laboratories, Inc."
  CONTACT-INFO
```

```
    "Sumanth Channabasappa
    Cable Television Laboratories, Inc.
    858 Coal Creek Circle,
    Louisville, CO 80027, USA
    Phone: +1 303-661-9100
    Email: sumanth@cablelabs.com
```

```
  Acknowledgements:
  Thomas Clack, Broadcom - Primary author,
  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."
```

```
 ::= { pktcEUEMibs 3 }
```

```
-- 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)."

```
INDEX { pktcEUEDevOpIndex }
 ::= { pktcEUEDevOpTable 1 }
```

```
PktcEUEDevOpEntry ::=
```

```
SEQUENCE {
    pktcEUEDevOpIndex          Unsigned32,
    pktcEUEDevOpDomain        InetAddressDNS,
    pktcEUEDevOpSTUNAddrType  InetAddressType,
    pktcEUEDevOpSTUNAddr      InetAddress,
    pktcEUEDevOpSTUNAddrPort  InetPortNumber,
    pktcEUEDevOpSTUNRelayAddrType  InetAddressType,
    pktcEUEDevOpSTUNRelayAddr  InetAddress,
    pktcEUEDevOpSTUNRelayAddrPort  InetPortNumber,
    pktcEUEDevOpSTUNRelayCredsType  PktcEUEETCCredsType,
    pktcEUEDevOpSTUNRelayCreds  PktcEUEETCCreds,
    pktcEUEDevOpTimerT1        Unsigned32,
    pktcEUEDevOpTimerT2        Unsigned32,
    pktcEUEDevOpTimerT4        Unsigned32,
    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 a 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 }

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

DEFVAL      { unknown }
 ::= { pktcEUEDevOpEntry 6 }

pktcEUEDevOpSTUNRelayAddr OBJECT-TYPE
SYNTAX      InetAddress

```

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This data element contains the STUNRelay server address
    associated with the domain name identified in
    'pktcEUEDevOpDomain'."

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

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

DEFVAL { 0 }
 ::= { pktcEUEDevOpEntry 8 }

pktcEUEDevOpSTUNRelayCredsType OBJECT-TYPE
SYNTAX PktcEUETCCredsType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This data element contains the creds type
    associated with the STUN Relay creds identified in
    'pktcEUEDevOpSTUNRelayCreds'.
    Valid types include other(1), publicIdentity(2) and
    username(6). "
DEFVAL { none }
 ::= { pktcEUEDevOpEntry 9 }

pktcEUEDevOpSTUNRelayCreds OBJECT-TYPE
SYNTAX PktcEUETCCreds
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 }

pktcEUEDevOpTimerT1 OBJECT-TYPE
SYNTAX Unsigned32
UNITS "milliseconds"
MAX-ACCESS read-only
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 {2000}
 ::= { pktcEUEDevOpEntry 11 }

```

```

pktcEUEDevOpTimerT2 OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-only
    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 {1600}
    ::= { pktcEUEDevOpEntry 12 }

pktcEUEDevOpTimerT4 OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " This is the SIP Timer T4, 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."

    REFERENCE
        "PacketCable IMS Delta Session Initiation Protocol (SIP)
          and Session Description Protocol (SDP), Stage 3
          Specification 3GPP TS 24.229"
    DEFVAL {1700}
    ::= { pktcEUEDevOpEntry 13 }

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 14 }

-----
-- 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."

    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'."

    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'."

    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."
 ::= { 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)."

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

PktcEUEDevPCSCFEntry ::=
  SEQUENCE {
    pktcEUEDevPCSCFIndex      Unsigned32,
    pktcEUEDevPCSCFAddrType  InetAddressType,
    pktcEUEDevPCSCFAddr      InetAddress,
    pktcEUEDevPCSCFRowStatus RowStatus
  }

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."

  ::= { 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 DNS server associated with
      the domain name indicated by the primary index
      'pktcEUEDevOpIndex', for the instance indicated
      by the secondary index 'pktcEUEDevPCSCFIndex'."

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

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 4 }

-----
-- 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."

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

PktcEUEDevBSFEntry ::=
SEQUENCE {

```

```

        pktcEUEDevBSFASType      SnmpAdminString,
        pktcEUEDevBSFIndex       Unsigned32,
        pktcEUEDevBSFAddrType    InetAddressType,
        pktcEUEDevBSFAddr        InetAddress,
        pktcEUEDevBSFRowStatus   RowStatus
    }

pktcEUEDevBSFASType OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " A unique value used to indicate the AS type to
          which the BSFs correspond.
          For example: To contact PACM application types,
          this would be labeled as 'GBA-PACM'.
          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 inresponsive 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 }

-----
-- Conformance Information

```

```

-----
pktcEUEDevMIBCompliances OBJECT IDENTIFIER ::= { pktcEUEDevConformance 1 }
pktcEUEDevMIBGroups      OBJECT IDENTIFIER ::= { pktcEUEDevConformance 2 }

-- -----
-- Compliance Statements
-- -----
pktcPACM2UEMIBCompliance MODULE-COMPLIANCE
    STATUS          current
    DESCRIPTION
        " The compliance statement for implementations of the eUE MIB "
    MODULE
        MANDATORY-GROUPS {
            pktcEUEDevProfileGroup,
            pktcEUEDevOpGroup,
            pktcEUEDevDnsGroup,
            pktcEUEDevPCSCFGroup,
            pktcEUEDevBSFGroup
        }
    ::= { pktcEUEDevMIBCompliances 1 }

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

pktcEUEDevOpGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEDevOpDomain,
        pktcEUEDevOpSTUNAddrType,
        pktcEUEDevOpSTUNAddr,
        pktcEUEDevOpSTUNAddrPort,
        pktcEUEDevOpSTUNRelayAddrType,
        pktcEUEDevOpSTUNRelayAddr,
        pktcEUEDevOpSTUNRelayAddrPort,
        pktcEUEDevOpSTUNRelayCredsType,
        pktcEUEDevOpSTUNRelayCreds,
        pktcEUEDevOpTimerT1,
        pktcEUEDevOpTimerT2,
        pktcEUEDevOpTimerT4,
        pktcEUEDevOpRowStatus
    }
    STATUS current
    DESCRIPTION
        "The eUE Operator Group."
    ::= { pktcEUEDevMIBGroups 2}

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

pktcEUEDevPCSCFGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEDevPCSCFAddrType,
        pktcEUEDevPCSCFAddr,

```

```

        pktcEUEDevPCSCFRowStatus
    }
    STATUS current
    DESCRIPTION
        "The eUE P-CSCF Group."
    ::= { pktcEUEDevMIBGroups 4}

pktcEUEDevBSFGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEDevBSFAddrType,
        pktcEUEDevBSFAddr,
        pktcEUEDevBSFRowStatus
    }
    STATUS current
    DESCRIPTION
        "The eUE BSF Group."
    ::= { pktcEUEDevMIBGroups 5}

pktcEUEDevCBGroup OBJECT-GROUP
    OBJECTS {
        pktcEUECBSupport,
        pktcEUECBEnable,
        pktcEUECBData
    }
    STATUS current
    DESCRIPTION
        "The eUE Certificate Bootstrapping Group."
    ::= { pktcEUEDevMIBGroups 6}

END

```

## B.2 User Configuration MIB Module

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

```

IMPORTS
    PktcEUETCIDType,
    PktcEUETCID,
    PktcEUETCCredsType,
    PktcEUETCCreds,
    PktcEUETCUsrElementIndexType,
    PktcEUETCUsrAppIndexType,
    PktcEUETCAppOrgIdentifier,
    PktcEUETCAppIdentifier,
    PktcEUETCActStatus,
    PktcEUETCActStatusInfo
        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 "200711060000Z"

```

ORGANIZATION "Cable Television Laboratories, Inc."  
CONTACT-INFO

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

## DESCRIPTION

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

::= { pktcEUEMibs 4 }

-- Administrative assignments

pktcEUEUserNotification OBJECT IDENTIFIER ::= { pktcEUEUserMIB 0 }  
pktcEUEUserObjects OBJECT IDENTIFIER ::= { pktcEUEUserMIB 1 }  
pktcEUEUserConformance OBJECT IDENTIFIER ::= { pktcEUEUserMIB 2 }

pktcEUEUserCompliances OBJECT IDENTIFIER ::= { pktcEUEUserConformance 1 }  
pktcEUEUserGroups OBJECT IDENTIFIER ::= { pktcEUEUserConformance 2 }

-----  
-- User Profile Information  
-----  
pktcEUEUserProfile OBJECT IDENTIFIER ::= { pktcEUEUserObjects 1 }

pktcEUEUserProfileVersion 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'. "  
::= { pktcEUEUserProfile 1 }

-----  
-- User table  
-----

pktcEUEUserIMPTable OBJECT-TYPE  
SYNTAX SEQUENCE OF PktcEUEUserIMPEntry  
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."  
::= { pktcEUEUserProfile 2 }

pktcEUEUserIMPEntry OBJECT-TYPE  
SYNTAX PktcEUEUserIMPEntry  
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 a IMPU Identifier.  
  
The eUE uses the entries in this table to register the

user in a PacketCable Network, provided they are enabled.

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

The eUE MAY store pre-configured associations in NVRAM."

```

INDEX { pktcEUEUsrIMPUIIndex }
 ::= { pktcEUEUsrIMPTable 1 }

PktcEUEUsrIMPUEEntry ::=
SEQUENCE {
    pktcEUEUsrIMPUIIndex          PktcEUETCUsrElementIndexType,
    pktcEUEUsrIMPUIIdType        PktcEUETCIDType,
    pktcEUEUsrIMPUIId            PktcEUETCID,
    pktcEUEUsrIMPUIIMPIIndexRef  PktcEUETCUsrElementIndexType,
    pktcEUEUsrIMPUIDispInfo      SnmpAdminString,
    pktcEUEUsrIMPUIOpIndexRefs   SnmpAdminString,
    pktcEUEUsrIMPUNWActStat      PktcEUETCActStatus,
    pktcEUEUsrIMPUNWActStatInfo  SnmpAdminString,
    pktcEUEUsrIMPUIUEActStat     PktcEUETCActStatus,
    pktcEUEUsrIMPUIUEActStatInfo SnmpAdminString,
    pktcEUEUsrIMPUISigSecurity   TruthValue,
    pktcEUEUsrIMPUIAdditionalInfo SnmpAdminString,
    pktcEUEUsrIMPUIRowStatus     RowStatus
}

pktcEUEUsrIMPUIIndex OBJECT-TYPE
SYNTAX      PktcEUETCUsrElementIndexType
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."
 ::= { pktcEUEUsrIMPUEEntry 1 }

pktcEUEUsrIMPUIIdType 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 'pktcEUEUsrIMPUIId'.

      Valid types include other(1), publicIdentity(2) and
      username(6). "
DEFVAL     { other }
 ::= { pktcEUEUsrIMPUEEntry 2 }

pktcEUEUsrIMPUIId OBJECT-TYPE
SYNTAX      PktcEUETCID
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 'pktcEUEUsrIMPUIIdType'."
DEFVAL     { "" }
 ::= { pktcEUEUsrIMPUEEntry 3 }

```

```

pktcEUEUsrIMPUIMPIIndexRef OBJECT-TYPE
    SYNTAX      PktcEUEUsrElementIndexType
    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 'pktcEUEUsrIMPITable'.

          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}
    ::= { pktcEUEUsrIMPUEEntry 4 }

pktcEUEUsrIMPUDispInfo 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 { "" }
    ::= { pktcEUEUsrIMPUEEntry 5 }

pktcEUEUsrIMPUPopIndexRefs 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 'pktcEUEUsrIMPUIID' 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 { "" }
    ::= { pktcEUEUsrIMPUEEntry 6 }

pktcEUEUsrIMPUNWActStat OBJECT-TYPE
    SYNTAX      PktcEUEUsrActStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This MIB Object contains the eUE activation status
          as determined by the network.

          The eUE MUST allow access to the User identified in
          'pktcEUEUsrIMPUIID' if the value is set to true(1),
          unless determined otherwise and reported in

```

pktcEUEUsrIMPUEActStat.

The eUE SHOULD attempt to register a User identified in 'pktcEUEUsrIMPUIId' if the value is set to true(1). PacketCable Applications can specify additional requirements for registration.

The eUE MUST disallow access to the User identified in 'pktcEUEUsrIMPUIId' if the value is set to false(2)"

```
DEFVAL { true }
 ::= { pktcEUEUsrIMPUEEntry 7 }
```

pktcEUEUsrIMPUNWActStatInfo OBJECT-TYPE

```
SYNTAX      SnmpAdminString
MAX-ACCESS  read-create
STATUS      current
```

DESCRIPTION

" This MIB Object MAY contain information that describes the activation status indicated in 'pktcEUEIMPUNWActStat'.

For example 'User temporarily deactivated for maintenance'."

```
DEFVAL { "" }
 ::= { pktcEUEUsrIMPUEEntry 8 }
```

pktcEUEUsrIMPUEActStat OBJECT-TYPE

```
SYNTAX      PktcEUEActStatus
MAX-ACCESS  read-only
STATUS      current
```

DESCRIPTION

" This MIB Object contains the eUE activation status as determined by the UE.

The eUE MUST allow access to the User identified in 'pktcEUEUsrIMPUIId' if the value is set to true(1).

The eUE SHOULD attempt to register a User identified in 'pktcEUEUsrIMPUIId' if the value is set to true(1). PacketCable Applications can specify additional requirements for registration.

The eUE MUST disallow access to the User identified in 'pktcEUEUsrIMPUIId' if the value is set to false(2)."

```
DEFVAL { true }
 ::= { pktcEUEUsrIMPUEEntry 9 }
```

pktcEUEUsrIMPUEActStatInfo OBJECT-TYPE

```
SYNTAX      SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
```

DESCRIPTION

" This MIB Object MAY contain information that describes the activation status indicated in 'pktcEUEUsrIMPUEActStat'.

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

```
DEFVAL { "" }
 ::= { pktcEUEUsrIMPUEEntry 10 }
```

pktcEUEUsrIMPUSigSecurity OBJECT-TYPE

```
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
```

DESCRIPTION

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

If set to 'true', the User SHOULD use

secure SIP signaling with the P-CSCF.

If set to 'false', the User MAY communicate without a secure SIP communication channel with the P-CSCF.

If the actual status of the communication channel differs from the value of this element, the UE MUST report the discrepancy, on behalf of the User, using the Management Data Element error reporting mechanism'."

```
DEFVAL      {true}
 ::= { pktcEUEUsrIMPUEEntry 11 }
```

pktcEUEUsrIMPAdditionalInfo 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 'pktcEUEUsrIMPUImpUIDType' and the 'pktcEUEUsrIMPUImpUID'. 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."

```
 ::= { pktcEUEUsrIMPUEEntry 13 }
```

```
-----  
-- User IMPI Table  
-----
```

```
pktcEUEUsrIMPITable 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."
```

```
INDEX { pktcEUEUsrIMPIIndex }  
 ::= { pktcEUEUsrIMPITable 1 }
```

```
PktcEUEUsrIMPIEntry ::=
```

```
SEQUENCE {  
    pktcEUEUsrIMPIIndex                PktcEUEUsrIMPIIndexType,  
    pktcEUEUsrIMPIIIDType              PktcEUEUsrIMPIIIDType,  
    pktcEUEUsrIMPIIID                  PktcEUEUsrIMPIIID,  
    pktcEUEUsrIMPICredsType            PktcEUEUsrIMPICredsType,  
    pktcEUEUsrIMPICredentials          PktcEUEUsrIMPICredentials,  
    pktcEUEUsrIMPIRowStatus            RowStatus  
}
```

```
pktcEUEUsrIMPIIndex OBJECT-TYPE
```

```
SYNTAX      PktcEUEUsrIMPIIndexType  
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 }
```

```
pktcEUEUsrIMPIIIDType OBJECT-TYPE
```

```

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

      Valid types include other(1), privateIdentity(2) and
      username(6). "
DEFVAL      { other }
 ::= { pktcEUEUsrIMPIEntry 2 }

pktcEUEUsrIMPIId OBJECT-TYPE
SYNTAX      PktcEUEETCID
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      PktcEUEETCCredsType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " This MIB Object contains the type of credentials
      contained in the MIB Object 'pktcEUEUsrIMPICredentials'.
      Valid types include other(1), privateIdentity(2) and
      username(6). "
DEFVAL      { none }
 ::= { pktcEUEUsrIMPIEntry 4 }

pktcEUEUsrIMPICredentials OBJECT-TYPE
SYNTAX      PktcEUEETCCreds
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 'pktcEUEUsrIMPIedsType' object.

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

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

pktcEUEUsrIMPIRowStatus 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 'pktcEUEUsrIMPICredsType' object MUST NOT be
      modified while this object is 'active'.

```

```

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

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

pktcEUEUsrAppMapEntry OBJECT-TYPE
    SYNTAX      PktcEUEUsrAppMapEntry
    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, the network status and UE status information"
    INDEX      { pktcEUEUsrIMPUIIndex, pktcEUEUsrAppMapAppIndex }
    ::= { pktcEUEUsrAppMapTable 1 }

PktcEUEUsrAppMapEntry ::=
    SEQUENCE    {
        pktcEUEUsrAppMapAppIndex          PktcEUETCUsrAppIndexType,
        pktcEUEUsrAppMapAppOrgID         PktcEUETCAppOrgIdentifier,
        pktcEUEUsrAppMapAppIdentifier    PktcEUETCAppIdentifier,
        pktcEUEUsrAppMapAppIndexRef     PktcEUETCUsrAppIndexType,
        pktcEUEUsrAppMapAppNWActStat    PktcEUETCActStatus,
        pktcEUEUsrAppMapAppNWActStatInfo PktcEUETCActStatusInfo,
        pktcEUEUsrAppMapAppUEActStat    PktcEUETCActStatus,
        pktcEUEUsrAppMapAppUEActStatInfo PktcEUETCActStatusInfo,
        pktcEUEUsrAppMapRowStatus       RowStatus
    }

pktcEUEUsrAppMapAppIndex 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."
    ::= { pktcEUEUsrAppMapEntry 1 }

pktcEUEUsrAppMapAppOrgID 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 'pktcEUEUsrAppMapAppIdentifier'."
    ::= { pktcEUEUsrAppMapEntry 2 }

pktcEUEUsrAppMapAppIdentifier OBJECT-TYPE
    SYNTAX      PktcEUETCAppIdentifier

```

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
  " This MIB Object represents the identifier
    for a Application associated with the User.
    The application identifier MUST represent
    an application specified by the organization
    specified in 'pktcEUEUsrAppMapAppOrgID'."
 ::= { pktcEUEUsrAppMapEntry 3 }

```

```

pktcEUEUsrAppMapAppIndexRef 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
    'pktcEUEUsrAppMapAppIdentifier'.
    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 and ignore
    the network activation status. The deactivation
    is accomplished using the MIB Object
    'pktcEUEUsrAppMapAppUEActStat'."
DEFVAL {0}
 ::= { pktcEUEUsrAppMapEntry 4 }

```

```

pktcEUEUsrAppMapAppNWActStat OBJECT-TYPE
SYNTAX PktcEUETCActStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
  " This MIB Object represents the network
    activation status for the application
    specified in 'pktcEUEUsrAppMapAppOrgID'."
DEFVAL {true}
 ::= { pktcEUEUsrAppMapEntry 5 }

```

```

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

```

```

pktcEUEUsrAppMapAppUEActStat OBJECT-TYPE
SYNTAX PktcEUETCActStatus
MAX-ACCESS read-only
STATUS current
DESCRIPTION
  " This MIB Object represents the UE
    activation status for the application
    specified in 'pktcEUEUsrAppMapAppOrgID'."
DEFVAL {true}
 ::= { pktcEUEUsrAppMapEntry 7 }

```

```

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

          For example '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
-----

pktcEUEUsrMIBCompliances OBJECT IDENTIFIER ::= { pktcEUEUsrConformance 1 }
pktcEUEUsrMIBGroups      OBJECT IDENTIFIER ::= { pktcEUEUsrConformance 2 }

-----
-- 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
        }
    ::= { pktcEUEUsrMIBCompliances 1 }

pktcEUEUsrProfileGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEUsrProfileVersion
    }

```

```
    }
    STATUS current
    DESCRIPTION
        "The eUE Usr Profile Group."
    ::= { pktcEUEUusrMIBGroups 1 }

pktcEUEUusrIMPUGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEUusrIMPUIIdType,
        pktcEUEUusrIMPUIId,
        pktcEUEUusrIMPUIImpIIndexRef,
        pktcEUEUusrIMPUIDispInfo,
        pktcEUEUusrIMPUIOpIndexRefs,
        pktcEUEUusrIMPUNWActStat,
        pktcEUEUusrIMPUNWActStatInfo,
        pktcEUEUusrIMPUIUEActStat,
        pktcEUEUusrIMPUIUEActStatInfo,
        pktcEUEUusrIMPUSigSecurity,
        pktcEUEUusrIMPUIAdditionalInfo,
        pktcEUEUusrIMPUIRowStatus
    }
    STATUS current
    DESCRIPTION
        "The user IMPU Group."
    ::= { pktcEUEUusrMIBCompliances 2}

pktcEUEUusrIMPIGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEUusrIMPICredsType,
        pktcEUEUusrIMPICredentials,
        pktcEUEUusrIMPUIIdType,
        pktcEUEUusrIMPUIId,
        pktcEUEUusrIMPUIRowStatus
    }
    STATUS current
    DESCRIPTION
        "The user IMPI Group."
    ::= { pktcEUEUusrMIBCompliances 3}

pktcEUEUusrAppMapGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEUusrAppMapAppOrgID,
        pktcEUEUusrAppMapAppIdentifier,
        pktcEUEUusrAppMapAppIndexRef,
        pktcEUEUusrAppMapAppNWActStat,
        pktcEUEUusrAppMapAppNWActStatInfo,
        pktcEUEUusrAppMapAppUEActStat,
        pktcEUEUusrAppMapAppUEActStatInfo,
        pktcEUEUusrAppMapAppRowStatus
    }
    STATUS current
    DESCRIPTION
        "The User to Applications Mapping Group."
    ::= { pktcEUEUusrMIBCompliances 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
        FROM SNMPv2-SMI
    OBJECT-GROUP,
    MODULE-COMPLIANCE
    SnmpAdminString
        FROM SNMPv2-CONF
    InetAddressType,
    InetAddress
        FROM INET-ADDRESS-MIB
    pktcEUEMibs
        FROM CLAB-DEF-MIB;

pktcEUEProvMgmtMIB MODULE-IDENTITY
    LAST-UPDATED "200711060000Z"
    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:
        Eugene Nechamkin, Broadcom
        Thomas Clack, Broadcom - Primary author
        Josh Littlefield, Cisco,
        and members of the PacketCable PACM Focus Team. "

    DESCRIPTION
        "This MIB module provides the provisioning and management
        MIB module for the E-UE Provisioning Framework."
    ::= { 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
pktcEUE Dhcpv6ServerId1 OBJECT-TYPE
    SYNTAX OCTET STRING(SIZE(0..31))
    MAX-ACCESS read-only
    STATUS current

```

```

DESCRIPTION
  " This MIB Object contains the primary DHCP Server identifier
    the EUE 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."
 ::= { pktcEUEProvMgmtObjects 2 }

pktcEUEDhcpv6ServerId2 OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  " This MIB Object contains the secondary DHCP Server identifier
    the EUE 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."
 ::= { pktcEUEProvMgmtObjects 3 }

pktcEUEDhcpv6ServerAddressType 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 'pktcEUEDhcpv6ServerAddress'.
  Valid values are 'ipv6(2)' and 'unknown(0)'."
 ::= { pktcEUEProvMgmtObjects 4 }

pktcEUEDhcpv6ServerAddress 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 DHCP Server Address type
  contained in the MIB Object 'pktcEUEDhcpv6ServerAddress'.
  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
    'false', 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:
    - Deregister any users;
    - Stop any applications.

    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 pktcMtaDevConfigFile           - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevSnmpEntity           - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvConfigHash      - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvConfigKey       - 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 pktcMtaDevProvProvState       - 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
MIN-ACCESS not-accessible
DESCRIPTION
    " Object not applicable for the eUE."

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

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

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

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

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

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

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

OBJECT pktcMtaDevRealmStatus

```

```
MIN-ACCESS read-write
DESCRIPTION
    " Support for the values notInService(2), notReady(3), createAndGo(4),
      createAndWait(5), and destroy(6) is not required.

      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,
        pktcEUEDhcpv6ServerId1,
        pktcEUEDhcpv6ServerId2,
        pktcEUEDhcpv6ServerAddressType,
        pktcEUEDhcpv6ServerAddress,
        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
    FROM SNMP-FRAMEWORK-MIB
    pktcEUEMibs FROM CLAB-DEF-MIB;

```

```

pktcEUEEventMIB MODULE-IDENTITY
    LAST-UPDATED "200711060000Z"
    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."
 ::= { 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 }

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"?>
<!--(C) 2007 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 corresponds to the list of Private Identifiers (IMPIs)
      as specified in the User Configuration. Please refer to the MIB
      CL-PKTC-EUE-User for more information. The requirements specified in
      the MIB table are also applicable to the data elements specified
      in this XML Schema.

      In addition:
      - If 'pktcEUEUsrIMPIClearAllCredentials' is set to a value of 'true',
      then the eUE MUST clear all the current IMPI entries in the IMPI table
      and add the new entries provided, in any.
      - If 'pktcEUEUsrIMPIClearAllCredentials' is set to a value of 'false',
      then the eUE MUST modify any existing entries (identified by the
      IMPIId) and add any new entries to the IMPI table.
    </xsd:documentation>
  </xsd:annotation>

  <!-- List of credentials-->
  <xsd:element name="pktcEUEUsrCredentials" type="pktcEUEUsrIMPICredentialList"/>

  <!-- pktcEUEUsrIMPICredentialList: Credentials list and clear
  credentials directive -->
  <xsd:complexType name="pktcEUEUsrIMPICredentialList">
    <xsd:sequence maxOccurs="unbounded">
      <xsd:element name="pktcEUEClearCurrentUsrCredentials" type="xsd:boolean"/>
      <xsd:element name="pktcEUEUsrCredentialsList"
        type="pktcEUEUsrIMPICredentialsList"/>
      <xsd:any namespace="##other" processContents="lax"
        minOccurs="0" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>

  <!-- pktcEUEUsrIMPICredentialsList: Credentials list -->
  <xsd:complexType name="pktcEUEUsrIMPICredentialsList">
    <xsd:complexContent>
      <xsd:extension base="pktcEUEUsrIMPICredentialListType">
        <xsd:attribute name="pktcEUEUsrIMPICredentialInstanceID"
          type="xsd:integer"/>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>

  <!-- pktcEUEUsrIMPICredentialListType: Credential contents -->
  <xsd:complexType name="pktcEUEUsrIMPICredentialListType">
    <xsd:sequence minOccurs="0">
      <xsd:element name="pktcEUEUsrIMPIDType" type="pktcEUEIDType"/>
      <xsd:element name="pktcEUEUsrIMPID" type="pktcEUEID"/>
      <xsd:element name="pktcEUEUsrIMPICredsType" type="pktcEUEUsrCredsType"/>
      <xsd:element name="pktcEUEUsrIMPICreds" type="pktcEUEUsrCreds"/>
    </xsd:sequence>
  </xsd:complexType>

```

```
        <xsd:any namespace="##other" processContents="lax"
            minOccurs="0" maxOccurs="unbounded"/>
    </xsd:sequence>
</xsd:complexType>

<!-- Definitions required for credential elements -->
<xsd:simpleType name="pktcEUEIdType">
    <xsd:restriction base="xsd:NMTOKEN">
        <xsd:enumeration value="other"/>
        <xsd:enumeration value="gruu"/>
        <xsd:enumeration value="publicIdentity"/>
        <xsd:enumeration value="privateIdentity"/>
        <xsd:enumeration value="publicPrivatePair"/>
        <xsd:enumeration value="username"/>
        <xsd:enumeration value="macaddress"/>
        <xsd:enumeration value="packetcableIdentity"/>
    </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="pktcEUEId">
    <xsd:restriction base="xsd:hexBinary">
        <xsd:minLength value="0"/>
        <xsd:maxLength value="1023"/>
    </xsd:restriction>
</xsd:simpleType>

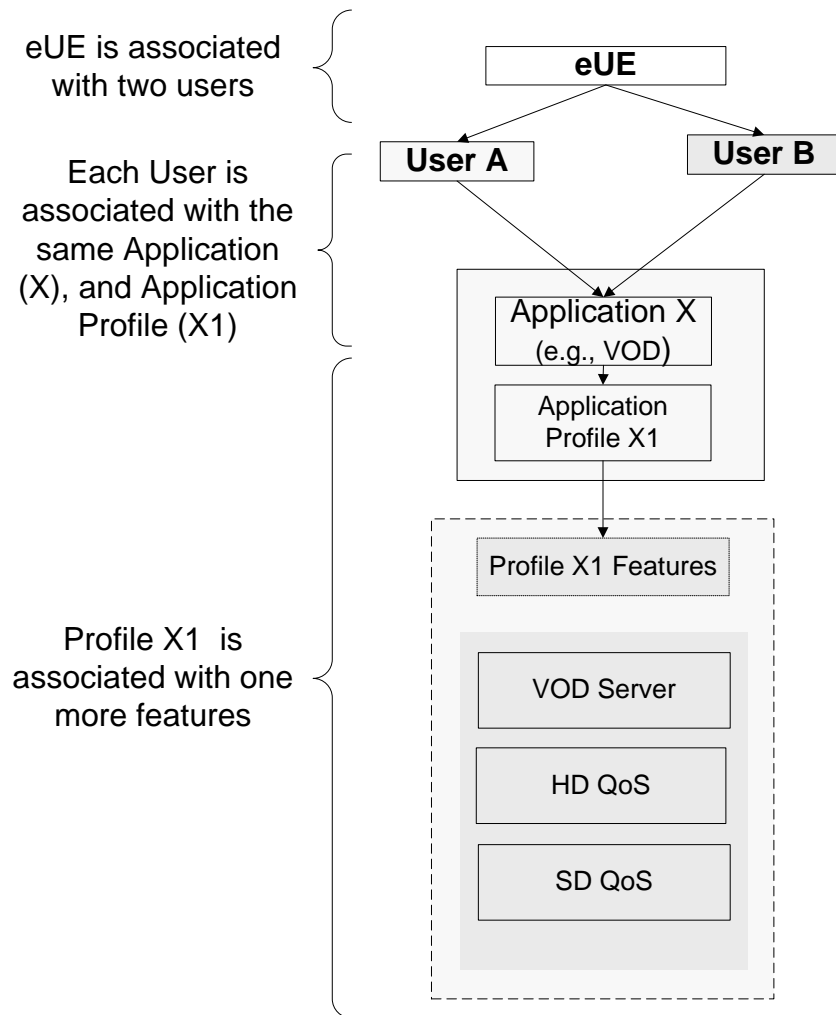
<xsd:simpleType name="pktcEUEUsrCredsType">
    <xsd:annotation>
        <xsd:documentation>
            </xsd:documentation>
        </xsd:annotation>
    <xsd:restriction base="xsd:NMTOKEN">
        <xsd:enumeration value="other"/>
        <xsd:enumeration value="none"/>
        <xsd:enumeration value="password"/>
        <xsd:enumeration value="presharedkey"/>
        <xsd:enumeration value="certificate"/>
    </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="pktcEUEUsrCreds">
    <xsd:restriction base="xsd:hexBinary">
        <xsd:minLength value="0"/>
        <xsd:maxLength value="8192"/>
    </xsd:restriction>
</xsd:simpleType>
</xsd:schema>
```

## 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.1.1.3(AppOrgID)           = 4491 (CableLabs)
UsrAppMapTable.1.1.4(AppIdentifier)       = 1     (App X, VOD)
UsrAppMapTable.1.1.5(AppIndexRef)        = 10    (Profile X1)

```

(Mapping of User B to an application profile)

```

UsrAppMapTable.2.1.3(AppOrgID)           = 4491 (CableLabs)
UsrAppMapTable.2.1.4(AppIdentifier)       = 1     (App X, VOD)
UsrAppMapTable.2.1.5(AppIndexRef)        = 10    (Profile X1)

```

**Application Profile to Features Mapping Table (Application X)**(Profile X1)

```

XAppProfileToFeatureMapTable.10.1.3 (AppFeatureIdentifier) =1(VOD Server)
XAppProfileToFeatureMapTable.10.1.4 (AppFeatureTableIndexRef)=5

```

```

XAppProfileToFeatureMapTable.10.2.3 (AppFeatureIdentifier) =2(HD QoS)
XAppProfileToFeatureMapTable.10.2.4 (AppFeatureTableIndexRef)=5

```

```

XAppProfileToFeatureMapTable.10.3.3 (AppFeatureIdentifier) =3(SD QoS)
XAppProfileToFeatureMapTable.10.3.4 (AppFeatureTableIndexRef)=5

```

**Feature Tables**

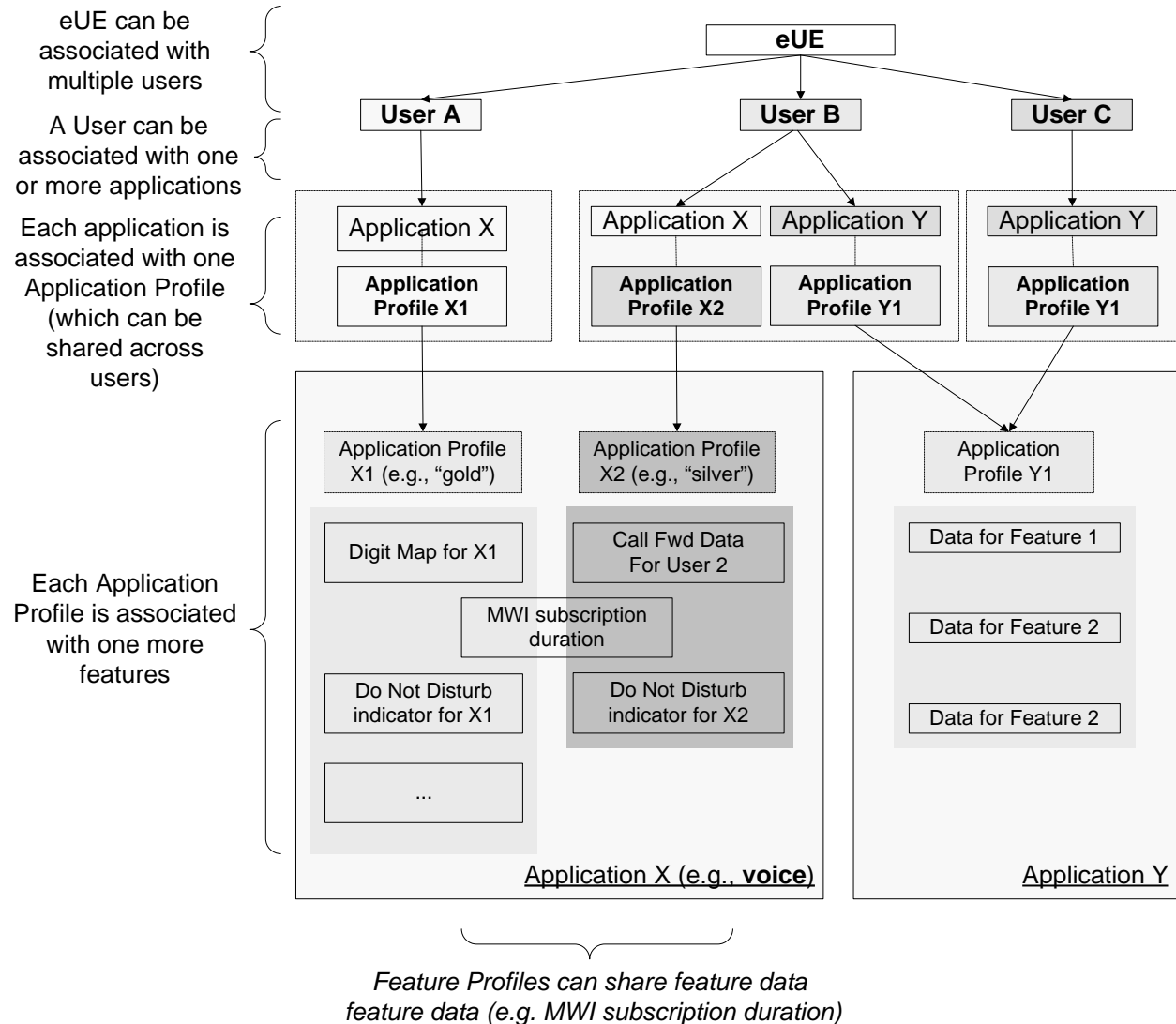
```

(VOD Server Table).5="vod.example.com"
(HD QoS Table).5="VIDEODEC=VX; AUDIOCODEC=AX; BANDWIDTH=XMBPS"
(SD QoS Table).5="VIDEODEC=VY; AUDIOCODEC=AY; BANDWIDTH=YMBPS"

```

**I.2 Example 2: Deployment with multiple Users, and multiple PacketCable Application**

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 Application**

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.1.1.3(AppOrgID) = 4491 (CableLabs)  
 UsrAppMapTable.1.1.4(AppIdentifier) = 1 (App X)  
 UsrAppMapTable.1.1.5(AppIndexRef) = 11 (Profile X1)

(Mapping of User B to an application profile)

UsrAppMapTable.2.1.3(AppOrgID) = 4491 (CableLabs)  
 UsrAppMapTable.2.1.4(AppIdentifier) = 1 (App X)  
 UsrAppMapTable.2.1.5(AppIndexRef) = 12 (Profile X2)

UsrAppMapTable.2.2.3(AppOrgID) = 4491 (CableLabs)  
 UsrAppMapTable.2.2.4(AppIdentifier) = 99 (App Y)  
 UsrAppMapTable.2.2.5(AppIndexRef) = 20 (Profile Y1)

(Mapping of User C to an application profile)

UsrAppMapTable.3.1.3(AppOrgID) = 4491 (CableLabs)  
 UsrAppMapTable.3.1.4(AppIdentifier) = 99 (App Y)  
 UsrAppMapTable.3.1.5(AppIndexRef) = 20 (Profile Y1)

#### **Application Profile to Features Mapping Table (Application X):**

(Profile X1)

XAppProfileToFeatureMapTable.11.1.3 (AppFeatureIdentifier) = 1(DIGIT MAP)  
 XAppProfileToFeatureMapTable.11.1.4 (AppFeatureTableIndexRef)= 1

XAppProfileToFeatureMapTable.11.2.3 (AppFeatureIdentifier) = 2(MWI SUB)  
 XAppProfileToFeatureMapTable.11.2.4 (AppFeatureTableIndexRef)= 11

XAppProfileToFeatureMapTable.11.3.3 (AppFeatureIdentifier) = 3(DND)  
 XAppProfileToFeatureMapTable.11.3.4 (AppFeatureTableIndexRef)= 3

(Profile X2)

XAppProfileToFeatureMapTable.12.1.3 (AppFeatureIdentifier) = 1(DIGIT MAP)  
 XAppProfileToFeatureMapTable.12.1.4 (AppFeatureTableIndexRef)= 2

XAppProfileToFeatureMapTable.12.2.3 (AppFeatureIdentifier) = 2(MWI SUB)  
 XAppProfileToFeatureMapTable.12.2.4 (AppFeatureTableIndexRef)= 11

XAppProfileToFeatureMapTable.12.3.3 (AppFeatureIdentifier) = 3(DND)  
 XAppProfileToFeatureMapTable.12.3.4 (AppFeatureTableIndexRef)= 4

#### **Application Profile to Features Mapping Table (Application Y):**

(Profile Y1)

YAppProfileToFeatureMapTable.20.1.3 (AppFeatureIdentifier) = 1  
 YAppProfileToFeatureMapTable.20.1.4 (AppFeatureTableIndexRef)= 25

YAppProfileToFeatureMapTable.20.2.3 (AppFeatureIdentifier) = 2  
 YAppProfileToFeatureMapTable.20.2.4 (AppFeatureTableIndexRef)= 0  
 YAppProfileToFeatureMapTable.20.2.5 (AppNWFeatureStatus) = **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.20.1.3 (AppFeatureIdentifier) = 3  
 YAppProfileToFeatureMapTable.20.1.4 (AppFeatureTableIndexRef)= 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>>

## Acknowledgements

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*Sumanth Channabasappa and the PacketCable Architects, CableLabs, Inc.*

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