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PacketCable™ 2.0

E-UE Provisioning Data Model Specification

PKT-SP-EUE-DATA-I05-100527

ISSUED

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Work in Progress	An incomplete document, designed to guide discussion and generate feedback that may include several alternative requirements for consideration.
Draft	A document in specification format considered largely complete, but lacking review by Members and vendors. Drafts are susceptible to substantial change during the review process.
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1 SCOPE

1.1 Introduction and Purpose

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

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

1.2 Document Overview

The document is structured as follows:

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

1.3 Requirements

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

"MUST"	This word means that the item is an absolute requirement of this specification.
"MUST NOT"	This phrase means that the item is an absolute prohibition of this specification.
"SHOULD"	This word means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighed before choosing a different course.
"SHOULD NOT"	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.

"MAY"

This word means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

2 REFERENCES

2.1 Normative References

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

- [CL-MIB-BB] CableLabs Specifications, Battery Backup MIB Specification, CL-SP-MIB-BB-I03-090811, August 11, 2009, 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-I19-091002, October 2, 2009, Cable Television Laboratories, Inc.
- [PKT-EUE-PROV] PacketCable 2.0 E-UE Provisioning Specification, PKT-SP-EUE-PROV-I05-100527, May 27, 2010, Cable Television Laboratories, Inc.
- [PKT-SP-PROV1.5] PacketCable 1.5 Specification, MTA Device Provisioning, PKT-SP-PROV1.5-I04-090624, June 24, 2009, Cable Television Laboratories, Inc.
- [PKT-MEM1.5] PacketCable 1.5 Management Event Mechanism Specification, PKT-SP-MEM1.5-I05-100527, May 27, 2010, 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).
- [RFC3986] IETF RFC 3986, Uniform Resource Identifier (URI): Generic Syntax, January 2005.
- [RFC4113] IETF RFC 4113, Management Information Base for the User Datagram Protocol (UDP), June 2005.
- [RFC4291] IETF RFC 4291, IP Version 6 Addressing Architecture, February 2006.
- [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-V06-090528,
FRM TR] May 28, 2009, Cable Television Laboratories, Inc.

2.3 Reference Acquisition

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

3 TERMS AND DEFINITIONS

This specification uses the following terms:

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

4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

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

5 TECHNICAL OVERVIEW

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

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

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

5.1 Embedded User Equipment (E-UE)

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

5.2 E-UE Provisioning Framework

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

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

5.3 E-UE Provisioning Data Model

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

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

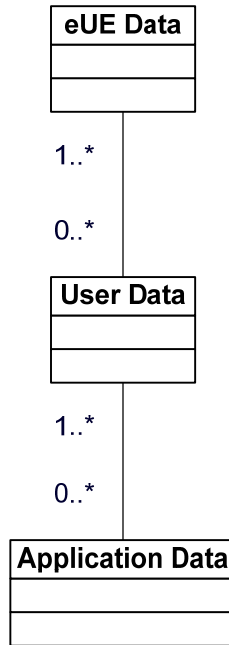


Figure 1 - E-UE Provisioning Data Model

6 E-UE PROVISIONING MIBS FRAMEWORK REQUIREMENTS

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

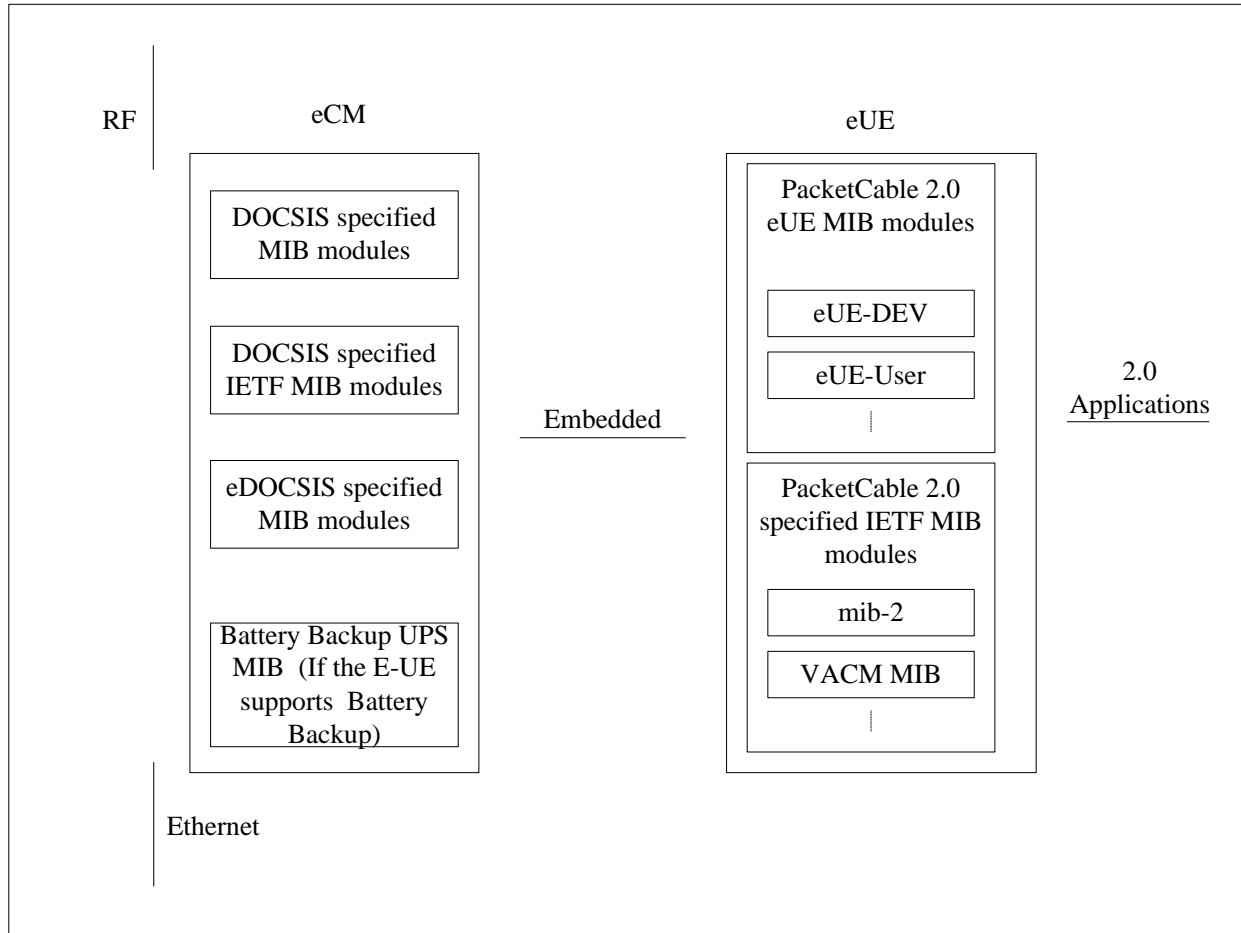


Figure 2 - E-UE Logical MIBs Framework

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

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

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

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

6.1 eCM MIB Requirements

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

6.1.1 DOCSIS MIB Modules

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

6.1.2 eDOCSIS MIB Modules

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

6.1.3 Battery Backup UPS MIB module

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

6.2 eUE MIB Requirements

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

6.2.1 eUE MIB Modules

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

6.2.2 IETF MIB Modules

The eUE MUST implement the following MIB modules:

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

6.2.3 eDOCSIS MIB Modules

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

6.2.4 SNMP MIB Requirements

6.2.4.1 eUEsysDescr Requirements

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

6.2.4.2 eUE ifTable Requirements

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

6.2.4.3 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'

6.2.4.4 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	""

usmUserTable ([RFC3414] [IETF STD62])	Row Entry
usmUserOwnPrivKeyChange	""
usmUserPublic	""
usmUserStorageType	volatile
usmUserStatus	active

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

6.2.4.5 eUE VACM Requirements

This section presents the PacketCable 2.0 eUE VACM requirements. For more information regarding View-based Access Control Model (VACM) for SNMP, please refer to [RFC3415].

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

Table 4 - eUE VacmSecurityToGroupTable

vacmSecurityToGroupTable ([RFC3415])	Row Entry
vacmSecurityModel	USM
vacmSecurityName	eUE-Prov-xx:xx:xx:xx:xx:xx
vacmGroupName	PacketCableFullAccess
vacmSecurityToGroupStorageType	volatile
vacmSecurityToGroupStatus	active

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

Table 5 - eUE vacmAccessTable

vacmAccessTable ([RFC3415])	Row Entry
vacmGroupName	PacketCableFullAccess
vacmAccessContextPrefix	""
vacmAccessSecurityModel	USM
vacmAccessSecurityLevel	authPriv or authNoPriv (depending on whether privacy has been specified)
vacmAccessContextMatch	exact
vacmAccessReadViewName	ReadOnlyView

vacmAccessTable ([RFC3415])	Row Entry
vacmAccessWriteViewName	FullAccessView
vacmAccessNotifyViewName	NotifyView
vacmAccessStorageType	volatile
vacmAccessStatus	active

The following requirements are associated with Table 5.

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

6.2.4.6 SNMPv2c Management Requirements

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

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

6.3 Configuration Data Element Requirements

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

6.3.1 Configuration File Requirements

This section provides the configuration data element requirements.

Table 6 - eUE Configuration Data Element Requirements

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

6.3.2 Certificate Bootstrapping File Requirements

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

Once an eUE receives an XML instance document during the Certificate Bootstrapping process, the eUE **MUST** make sure that it complies with the data element and attributes requirements stated in Table 7. If the Certificate Bootstrapping XML instance document complies with the stated requirements the eUE **MUST** process the XML instance data elements and modify the pktcEUEUsrIMPITable accordingly. The eUE **MUST** validate the XML instance document prior to acceptance or modification of the MIB table 'pktcEUEUsrIMPITable'. If the received Certificate Bootstrapping XML instance document is valid the eUE **MUST** process the document. If the Configuration File XML instance document fails to meet the requirements stated in Appendix D.1 or Table 7, then the eUE **MUST** ignore the Certificate Bootstrapping XML instance document and report the appropriate events (specified in Table 8), and continue to support PacketCable applications as configured.

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

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

Table 7 - eUE Configuration Bootstrapping File Requirements

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

6.4 Management Event Reporting Requirements

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

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

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

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

```
PROV-EV-16 = "DHCPv6_ERROR:" dhcpv6-message [ ";" error-info [ ";" ipv6-address-list ]
dhcpv6-message = 1*(VCHAR)
error-info = 1*(VCHAR)
ipv6-address-list = IPv6address [ "," (IPv6address) ]
; For definition of the 'IPv6address' element in ABNF refer to [RFC3986]
('IPv6address' element) and [RFC4291].
```

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

Table 8 - Additional eUE Management Events

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

6.5 E-UE MIB Objects Persistence Requirements

This section describes the persistence requirements for MIB object values.

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

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

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

Annex A PacketCable eUE Common Modules

A.1 Textual Conventions MIB Module

```

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

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

pktcEUETCMIB MODULE-IDENTITY
    LAST-UPDATED "200912140000Z" -- December 14, 2009
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
        Louisville, CO 80027, USA
        Phone: +1 303-661-9100
        Email: mibs@cablelabs.com

        Acknowledgements:
        Thomas Clack, Broadcom - Primary author,
        Sumanth Channabasappa, CableLabs
        Eduardo Cardona, CableLabs
        and members of the PacketCable PACM Focus Team."
    DESCRIPTION
        "This MIB module specifies the TEXTUAL CONVENTIONS
        for use in the definition of PacketCable E-UE
        MIB Objects."
    REVISION "200912140000Z" -- December 14, 2009
    DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-09.0602-3
        and published as I04"
    REVISION "200807100000Z" -- July 10, 2008
    DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-08.0524-5
        and published as I02"
    REVISION "200711060000Z" -- Nov 6, 2007
    DESCRIPTION
        "Initial version, published as part of the CableLabs
        E-UE Provisioning Data Model Specification
        PKT-SP-EUE-DATA-I01-071106
        Copyright 1999-2010 Cable Television Laboratories, Inc.
        All rights reserved."

    ::= { pktcEUEMibs 2 }

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

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

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

```

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

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

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

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

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

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

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

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

    UE implementations must ensure that
    PktcEUETCIDType objects and any dependent
    objects (e.g., PktcEUETCID objects) are
    consistent.

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

```

value.
In particular, PktcEUETCIDType/PktcEUEID pairs
MUST be changed together."
SYNTAX    INTEGER {
            other(1),
            gruu(2),
            publicIdentity(3),
            privateIdentity(4),
            publicPrivatePair(5),
            username(6),
            macaddress(7),
            packetcableIdentity(8)
          }
-----
-- TEXTUAL CONVENTION for defining activation status
-----
PktcEUETCAdminStatus ::= TEXTUAL-CONVENTION
STATUS    current
DESCRIPTION
  " This TEXTUAL CONVENTION is being defined to
  indicate activation status as defined in
  PacketCable.
  A value of 'active' indicates a status
  of active.
  A value of 'inactive' indicates a status
  of inactive."
SYNTAX    INTEGER {
            active(1),
            inactive(2)
          }

PktcEUETCOperStatus ::= TEXTUAL-CONVENTION
STATUS    current
DESCRIPTION
  " This TEXTUAL CONVENTION is being defined to
  indicate operational activation status as defined in
  PacketCable.
  A value of 'active' indicates a status
  of active.
  A value of 'inactive' indicates a status
  of inactive.
  A value of 'notPresent' indicates the particular
  activation status is not supported.
  A value of 'unknown' indicates the activation status
  could not be determine by the other values."
SYNTAX    INTEGER {
            active(1),
            inactive(2),
            notPresent(3),
            unknown(4)
          }

-----
-- TEXTUAL CONVENTION for defining activation status info
-----
PktcEUETCStatusInfo ::= TEXTUAL-CONVENTION
STATUS    current
DESCRIPTION
  " This TEXTUAL CONVENTION is being defined to provide
  additional activation status information."
SYNTAX    OCTET STRING (SIZE(0..31))
-----
-- TEXTUAL CONVENTION for User Element Indices
-----
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
  a particular application.

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

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

```

```

-----
-- TEXTUAL CONVENTION for defining App Identifier
-----

```

```

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

```

```

-----
-- TEXTUAL CONVENTION for App Indices
-----

```

```

PktcEUETCUsrAppIndexType ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
  " This TEXTUAL CONVENTION is being defined to
  indicate any indices related to PacketCable Applications.

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

```

```

-----
-- TEXTUAL CONVENTION for defining Credentials
-----

```

```

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

    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
        PktcEUEETCCreds 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 PktcEUEETCCreds 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 PktcEUEETCCreds
        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 PktcEUEETCCreds
        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 its 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, otherwise, ignored.

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

Bytes 4-8191: Contain the credential value."

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

END

Annex B PacketCable eUE Device Configuration Modules

B.1 Device Configuration MIB Module

```

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

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

    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF

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

pktcEUEDevMIB MODULE-IDENTITY
    LAST-UPDATED "201004260000Z" -- April 26, 2010
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
        Louisville, CO 80027, USA
        Phone: +1 303-661-9100
        Email: mibs@cablelabs.com

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

    DESCRIPTION
        "This MIB module contains Configuration MIB
        objects for the Embedded User Equipment (eUE) as
        required by the PacketCable E-UE Provisioning
        Framework Specification."

```

```

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

```

```

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

```

```

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

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

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

```

```

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

```

```

pktcEUEDevProfile      OBJECT IDENTIFIER ::= { pktcEUEDevObjects 1 }

```

```

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

-----
-- Operator Table
-----

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

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

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

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

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

          The conceptual rows MUST NOT persist across eUE resets."

    INDEX      { pktcEUEDevOpIndex }
    ::= { pktcEUEDevOpTable 1 }

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

```

```

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

    ::= { pktcEUEDevOpEntry 1 }

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

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

    DEFVAL     { unknown }
    ::= { pktcEUEDevOpEntry 3 }

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

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

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

    DEFVAL     { 0 }
    ::= { pktcEUEDevOpEntry 5 }

pktcEUEDevOpTURNAddrType OBJECT-TYPE
    SYNTAX      InetAddressType

```

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This data element identifies the data type of the
      value contained in 'pktcEUEDevOpTURNAddr'."

```

```

DEFVAL { unknown }
::= { pktcEUEDevOpEntry 6 }

```

```

pktcEUEDevOpTURNAddr OBJECT-TYPE

```

```

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

```

```

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

```

```

pktcEUEDevOpTURNAddrPort OBJECT-TYPE

```

```

SYNTAX InetPortNumber
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This data element contains the TURN server port
      associated with the server address identified in
      'pktcEUEDevOpTURNAddr'."

```

```

DEFVAL { 0 }
::= { pktcEUEDevOpEntry 8 }

```

```

pktcEUEDevOpTURNCreditsType OBJECT-TYPE

```

```

SYNTAX PktcEUEETCCreditsType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This data element contains the creds type
      associated with the STUN Relay creds identified in
      'pktcEUEDevOpTURNCredits'."

```

```

DEFVAL { none }
::= { pktcEUEDevOpEntry 9 }

```

```

pktcEUEDevOpTURNCredits OBJECT-TYPE

```

```

SYNTAX PktcEUEETCCredits
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This optional data element MAY contain suitable credentials
      related to STUN Relay access.

```

```

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

```

```

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

```

```

pktcEUEDevOpRowStatus OBJECT-TYPE

```

```

SYNTAX RowStatus

```

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    " This object defines the row status associated with the
      particular Operator in the pktcEUEDevOpTable.

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

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

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

 ::= { pktcEUEDevProfile 3 }

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

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

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

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

pktcEUEDevDnsIndex OBJECT-TYPE
SYNTAX Unsigned32(1..16)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    " A unique value used to identify an instance in this

```

```

        data table. The indices SHOULD be contiguous.
        When multiple entries are specified, the eUE MUST give
        precedence to the values indexed by lower indices."
 ::= { pktcEUEDevDnsEntry 1 }

pktcEUEDevDnsAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This data element contains the type of the data
        element contained in 'pktcEUEDevDnsAddr'.
        The only valid values are 'ipv4' or 'ipv6'.
        The value 'unknown' may be used for row creation
        if the value of 'pktcEUEDevDnsAddr' is not specified."
    DEFVAL     { unknown }
 ::= { pktcEUEDevDnsEntry 2 }

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

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

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

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

pktcEUEDevPCSCFTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEDevPCSCFEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This data table represents the eUE's knowledge

```

of suitable P-CSCFs information on a per Operator basis."

```
::= { pktcEUEDevProfile 4 }
```

pktcEUEDevPCSCFEntry OBJECT-TYPE

SYNTAX PktcEUEDevPCSCFEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" Each entry in this data table contains an instance of a P-CSCF Server entry for a given domain name. The information in this table MAY be configured by the Operator.

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

The conceptual rows MUST NOT persist across eUE resets."

INDEX { pktcEUEDevOpIndex, pktcEUEDevPCSCFIndex }

```
::= { pktcEUEDevPCSCFTable 1 }
```

PktcEUEDevPCSCFEntry ::=

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

pktcEUEDevPCSCFIndex OBJECT-TYPE

SYNTAX Unsigned32(1..16)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

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

pktcEUEDevPCSCFAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-create

```

STATUS      current
DESCRIPTION
    " This data element contains the type of the data
      element contained in 'pktcEUEDevPCSCFAddr'."

DEFVAL      { unknown }
::= { pktcEUEDevPCSCFEntry 2 }

pktcEUEDevPCSCFAddr OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " The IP address of a P-CSCF server associated with
      the domain name indicated by the primary index
      'pktcEUEDevOpIndex', for the instance indicated
      by the secondary index 'pktcEUEDevPCSCFIndex'."

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

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

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

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

pktcEUEDevPCSCFUsedInetAddress OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    " This MIB Object contains the IP Address of the
      P-CSCF used by the EUE. Only IPv4 and IPv6 addresses are

```

valid values for this MIB Object."
 ::= { pktcEUEDevPCSCFEntry 7 }

pktcEUEDevPCSCFTimerT1 OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the SIP Timer T1, an estimate for the round trip time in the system (UE to P-CSCF). Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229 for more information."

REFERENCE

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

DEFVAL {500}

::= { pktcEUEDevPCSCFEntry 8 }

pktcEUEDevPCSCFTimerT2 OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the SIP Timer T2, an estimate for the maximum retransmit interval for non-INVITE requests and INVITE responses. Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229 for more information."

REFERENCE

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

DEFVAL {4000}

::= { pktcEUEDevPCSCFEntry 9 }

pktcEUEDevPCSCFTimerT4 OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the SIP Timer TD, indicates the wait time for response retransmits. Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229 for more information."

REFERENCE

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

DEFVAL {5000}

::= { pktcEUEDevPCSCFEntry 10 }

```

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

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

          The value of the 'pktcEUEDevPCSCFAddrType' object MUST not be
          modified while this object is 'active'. The value of
          'pktcEUEDevPCSCFAddr' MAY be modified while this object is active
          if the value is consistent with the type specified by the
          'pktcEUEDevPCSCFAddrType' object."
    ::= { pktcEUEDevPCSCFEntry 12 }

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

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

          
$$TB = [(a1 - 1)^2 + (a2 - 1)^2 + \dots + (an - 1)^2] * T1$$


          a1 .. an = 1 ... n ;
          n: total number of INVITE attempts
          T1 = Timer T1

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

          
$$TB = [(1 - 1)^2 + (2 - 1)^2 + (3 - 1)^2] * 0.5 = 3.5 \text{ secs.}$$


```

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

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

REFERENCE

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

DEFVAL { 2 }

::= { pktcEUEDevPCSCFEntry 13 }

pktcEUEDevPCSCFMaxTime OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This is the 'max-time' SIP Registration Recovery Timer as defined in RFC 5626.

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

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

REFERENCE

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

DEFVAL {1800}

::= { pktcEUEDevPCSCFEntry 14 }

pktcEUEDevPCSCFBaseTimeAllFailed OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

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

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

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

REFERENCE

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

DEFVAL {30}

::= { pktcEUEDevPCSCFEntry 15 }

pktcEUEDevPCSCFBaseTimeAllNotFailed OBJECT-TYPE

SYNTAX Unsigned32

```

UNITS          "seconds"
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    " This is the 'base-time (if all have not failed)' SIP
      Registration Recovery Timer as defined in RFC 5626.
      Please refer to the PacketCable IMS Delta Session
      Initiation Protocol (SIP) and Session Description
      Protocol (SDP), Stage 3 Specification 3GPP TS 24.229,
      and RFC 5626 for more information.
      If the protocol used for a SIP Session is UDP this value is
      used for SIP Timer D, otherwise is ignored."

```

REFERENCE

```

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

```

```
DEFVAL {90}
```

```
::= { pktcEUEDevPCSCFEntry 16 }
```

```
pktcEUEDevPCSCFSubscribeRetry OBJECT-TYPE
```

```
SYNTAX      Unsigned32
```

```
UNITS       "seconds"
```

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

```
STATUS      current
```

DESCRIPTION

```

" This is the retry period for the initial SUBSCRIBE due to error
  responses, the absence of a retry period in the Retry-After
  header response or a request timeout. Please
  refer to the PacketCable IMS Delta Session Initiation
  Protocol (SIP) and Session Description Protocol (SDP),
  Stage 3 Specification 3GPP TS 24.229 for more
  information."

```

REFERENCE

```

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

```

```
DEFVAL {900}
```

```
::= { pktcEUEDevPCSCFEntry 17 }
```

```
-----
-- BSFs associated with a eUE
-----
```

```
pktcEUEDevBSFTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF PktcEUEDevBSFEntry
```

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

```
STATUS      current
```

DESCRIPTION

```

" This data table represents the eUE's knowledge
  of suitable BSFs to contact."

```

```
::= { pktcEUEDevProfile 5 }
```

```
pktcEUEDevBSFEntry OBJECT-TYPE
```

```
SYNTAX      PktcEUEDevBSFEntry
```

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

```
STATUS      current
```

DESCRIPTION

```

" Each entry in this data table contains an instance
  of a BSF, specific to a AS type, for a given Operator's
  Domain Name.

```

The entries represent the eUE's knowledge of suitable BSFs to contact, as per the IMS GBA architecture to obtain credentials and enabling secure sessions to Application Servers. A list of BSFs for each Operator and application types MAY be configured by the Operator.

The conceptual rows MUST NOT persist across eUE resets."

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

```
PktcEUEDevBSFEntry ::=
```

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

```
pktcEUEDevBSFASType OBJECT-TYPE
```

```
SYNTAX      SnmpAdminString (SIZE (0..108))
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
" A unique value used to indicate the AS type to
which the BSFs correspond.
Applications using GBA are required to specify
such identifiers explicitly."
```

```
::= { pktcEUEDevBSFEntry 1 }
```

```
pktcEUEDevBSFIndex OBJECT-TYPE
```

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

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

```
STATUS      current
```

```
DESCRIPTION
```

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

```
::= { pktcEUEDevBSFEntry 2 }
```

```
pktcEUEDevBSFAddrType OBJECT-TYPE
```

```
SYNTAX      InetAddressType
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

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

```
DEFVAL      { unknown }
```

```
::= { pktcEUEDevBSFEntry 3 }
```

```
pktcEUEDevBSFAddr OBJECT-TYPE
```

```
SYNTAX      InetAddress
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

DESCRIPTION

" The address of a BSF server associated with the domain name indicated by the indices 'pktcEUEDevOpIndex' (Operator Domain), 'pktcEUEDevBSFASType' and 'pktcEUEDevBSFIndex'."

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

pktcEUEDevBSFRowStatus OBJECT-TYPE

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

DESCRIPTION

" This object defines the row status associated with this instance of a BSF.

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

```
::= { pktcEUEDevBSFEntry 5 }
```

-- Certificate Bootstrapping Data

pktcEUECBSupport OBJECT-TYPE

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

DESCRIPTION

"This MIB Object is used by the eUE to report support for Certificate Bootstrapping. If the MIB Object is set to a value of true(1) it indicates that the device supports Certificate Bootstrapping. If the MIB Object is set to a value of false(1) it indicates that the device does not support Certificate Bootstrapping."

```
::= { pktcEUEDevProfile 6 }
```

pktcEUECBEnable OBJECT-TYPE

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

DESCRIPTION

"This MIB Object is used to initiate the Certificate Bootstrapping procedure in an eUE.

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

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

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

If the procedure was unsuccessful (e.g., authentication error or unresponsive server), the eUE MUST report the corresponding management event."

```
DEFVAL {false}
 ::= { pktcEUEDevProfile 7 }
```

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

 -- Scalar MIB Objects for the EUE Device

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

 -- Conformance Information

 -- Compliance Statements

```
pktcEUEDevMIBCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        " The compliance statement for implementations of the eUE MIB."
    MODULE
        MANDATORY-GROUPS {
            pktcEUEDevProfileGroup,
            pktcEUEDevOpGroup,
            pktcEUEDevDnsGroup,
            pktcEUEDevPCSCFGroup,
            pktcEUEDevBSFGroup,
            pktcEUEDevPerDeviceGroup
        }
    ::= { pktcEUEDevCompliances 1 }
```

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

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

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

pktcEUEDevPCSCFGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEDevPCSCFAddrType,
    pktcEUEDevPCSCFAddr,
    pktcEUEDevPCSCFSipPort,
    pktcEUEDevPCSCFUsedProtocol,
    pktcEUEDevPCSCFUsedInetAddressType,
    pktcEUEDevPCSCFUsedInetAddress,
    pktcEUEDevPCSCFTimerT1,
    pktcEUEDevPCSCFTimerT2,
    pktcEUEDevPCSCFTimerT4,
    pktcEUEDevPCSCFTimerTD,
    pktcEUEDevPCSCFRowStatus,
    pktcEUEDevPCSCFInviteAttempts,
    pktcEUEDevPCSCFMaxTime,
    pktcEUEDevPCSCFBaseTimeAllFailed,
    pktcEUEDevPCSCFBaseTimeAllNotFailed,
    pktcEUEDevPCSCFSubscribeRetry
  }
  STATUS current
  DESCRIPTION
```

```

        "The eUE P-CSCF Group."
    ::= { pktcEUEDevGroups 4}

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

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

END

```

B.2 User Configuration MIB Module

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

```
IMPORTS
```

```

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

```

```

pkcEUEUserMIB MODULE-IDENTITY
    LAST-UPDATED "201005030000Z" -- May 3, 2010
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
        Louisville, CO 80027, USA
        Phone: +1 303-661-3307
        Email: mibs@cablelabs.com

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        Sumanth Channabasappa, CableLabs
        John Berg, CableLabs
        Eduardo Cardona, CableLabs
        and members of the PacketCable 2.0 Provisioning Focus Team."

    DESCRIPTION
        "This MIB module contains configuration MIB
        objects for the PacketCable Users as
        required by the PacketCable
        E-UE Provisioning Framework."
    REVISION "201005030000Z" -- May 3, 2010
    DESCRIPTION
        "Revised Version includes ECNs
        EUE-DATA-N-10.0631-3
        and published as part of PKT-SP-EUE-DATA-I05-100527."
    REVISION "200905280000Z" -- May 28, 2009
    DESCRIPTION
        "Revised Version includes ECNs
        EUE-DATA-N-08.0528-3
        EUE-DATA-N-09.0556-3
        and published as part of PKT-SP-EUE-DATA-I03-090528."
    REVISION "200807100000Z" -- July 10, 2008
    DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-08.0524-5
        and published as part of PKT-SP-EUE-DATA-I02-080710."
    REVISION "200711060000Z" -- Nov 6, 2007
    DESCRIPTION
        "Initial version, published as part of the CableLabs
        E-UE Provisioning Data Model Specification
        PKT-SP-EUE-DATA-I01-071106
        Copyright 1999-2010 Cable Television Laboratories, Inc.
        All rights reserved."

    ::= { pkcEUEMibs 4 }

-- Administrative assignments
pkcEUEUserNotification OBJECT IDENTIFIER ::= { pkcEUEUserMIB 0 }
pkcEUEUserObjects      OBJECT IDENTIFIER ::= { pkcEUEUserMIB 1 }
pkcEUEUserConformance OBJECT IDENTIFIER ::= { pkcEUEUserMIB 2 }

pkcEUEUserCompliances  OBJECT IDENTIFIER ::= { pkcEUEUserConformance 1 }
pkcEUEUserGroups       OBJECT IDENTIFIER ::= { pkcEUEUserConformance 2 }

-- -----
-- User Profile Information
-- -----
pkcEUEUserProfile      OBJECT IDENTIFIER ::= { pkcEUEUserObjects 1 }

pkcEUEUserProfileVersion OBJECT-TYPE
    SYNTAX      SnmpAdminString(SIZE(0..6))
    MAX-ACCESS  read-only

```

```

STATUS      current
DESCRIPTION
    " This MIB Object represents the User Profile Version for this
      MIB module. The eUE MUST set this MIB Object to value of '1.0'."
 ::= { pktcEUEUsrProfile 1 }

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

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

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

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

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

          The conceptual rows MUST NOT persist across eUE resets."

    INDEX { pktcEUEUsrIMPIndex }
    ::= { pktcEUEUsrIMPTable 1 }

PktcEUEUsrIMPEntry ::=
    SEQUENCE {
        pktcEUEUsrIMPIndex                PktcEUEUsrElementIndexType,
        pktcEUEUsrIMPIDType                PktcEUEUsrElementIndexType,
        pktcEUEUsrIMPID                    PktcEUEUsrElementIndexType,
        pktcEUEUsrIMPIMPIIndexRef          PktcEUEUsrElementIndexType,
        pktcEUEUsrIMPUDispInfo              SnmpAdminString,
        pktcEUEUsrIMPUPopIndexRefs          SnmpAdminString,
        pktcEUEUsrIMPUPAdminStat            PktcEUEUsrAdminStatus,
        pktcEUEUsrIMPUPAdminStatInfo        PktcEUEUsrAdminStatusInfo,
        pktcEUEUsrIMPUPOperStat             PktcEUEUsrOperStatus,
        pktcEUEUsrIMPUPOperStatInfo         PktcEUEUsrOperStatusInfo,
        pktcEUEUsrIMPUSigSecurity           TruthValue,
        pktcEUEUsrIMPUPAdditionalInfo       SnmpAdminString,
        pktcEUEUsrIMPUPRowStatus            RowStatus
    }

pktcEUEUsrIMPIndex OBJECT-TYPE
    SYNTAX      PktcEUEUsrElementIndexType
    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      PktcEUEUETCIDType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This MIB Object MUST indicate the 'Identifier
        type' of the data value contained in 'pktcEUEUsrIMPUIID'.

        Valid types are other(1), publicIdentity(3) and
        username(6). "
    DEFVAL     { other }
    ::= { pktcEUEUsrIMPUEEntry 2 }

pktcEUEUsrIMPUIID OBJECT-TYPE
    SYNTAX      PktcEUEUETCID
    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 }

pktcEUEUsrIMPUIIMPIIndexRef OBJECT-TYPE
    SYNTAX      PktcEUEUETCUsrElementIndexType
    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 }

pktcEUEUsrIMPUIIDispInfo 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 }

pktcEUEUsrIMPUIOpIndexRefs 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 }
```

pktcEUEUsrIMPUIAdminStat OBJECT-TYPE

```
SYNTAX PktcEUEUsrIMPUIAdminStatus
```

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

```
STATUS current
```

DESCRIPTION

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

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

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

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

The eUE MUST disallow access to the User identified in 'pktcEUEUsrIMPUIID' if the value is set to 'inactive'."

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

pktcEUEUsrIMPUIAdminStatInfo OBJECT-TYPE

```
SYNTAX PktcEUEUsrIMPUIAdminStatInfo
```

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

```
STATUS current
```

DESCRIPTION

" This MIB Object MAY contain information that describes the activation status indicated in 'pktcEUEUsrIMPUIAdminStat'. Indicates Administratively added information associated with administrative status of the User IMPU. For example 'User temporarily deactivated for maintenance'."

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

pktcEUEUsrIMPUIOperStat OBJECT-TYPE

```
SYNTAX PktcEUEUsrIMPUIOperStatus
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

DESCRIPTION

" This MIB Object contains the operational activation status

of the user IMPU.

This object returns the following values:

'active'

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

'inactive'

When pktcEUEUsrIMPUAdminStat is 'inactive'
or

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

'notPresent'

This value is not applicable.

'unknown'

Other conditions not covered by the previous values.

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

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

```
::= { pktcEUEUsrIMPUEEntry 9 }
```

pktcEUEUsrIMPUPerStatInfo OBJECT-TYPE

SYNTAX PktcEUEUETCStatusInfo

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

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

DEFVAL { "" }

```
::= { pktcEUEUsrIMPUEEntry 10 }
```

pktcEUEUsrIMPUSigSecurity OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

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

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

If set to 'false', the UE MUST attempt to communicate without a secure SIP communication channel with the P-CSCF.

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

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

REFERENCE

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

DEFVAL {true}

```
::= { pktcEUEUsrIMPUEEntry 11 }
```

```
pktcEUEUsrIMPUEAdditionalInfo OBJECT-TYPE
```

```
SYNTAX      SnmpAdminString
```

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

```
STATUS      current
```

```
DESCRIPTION
```

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

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

```
To specify such additional info, the following rules apply:
```

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

```
The following rules apply on the eUE:
```

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

```
DEFVAL      { "" }
```

```
::= { pktcEUEUsrIMPUEEntry 12 }
```

```
pktcEUEUsrIMPURowStatus OBJECT-TYPE
```

```
SYNTAX      RowStatus
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
" This MIB Object defines the row status associated with this
particular User in the pktcEUEUsrIMPUETable.
```

```
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
'pktcEUEUsrIMPUIIDType' and the 'pktcEUEUsrIMPUIID'. 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.

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

        As a side effect, if an instance loaded from a Certificate
        Bootstrapping file is updated via SNMP later on, those changes
        are not required to be reflected in the CB file persistence
        storage (if CB file persistence is supported). Instead, the
        trigger of a new CB file download is preferred to update CB
        information."
    INDEX { pktcEUEUsrIMPIIndex }
    ::= { pktcEUEUsrIMPITable 1 }

PktcEUEUsrIMPIEntry ::=
    SEQUENCE {
        pktcEUEUsrIMPIIndex                PktcEUEUsrIMPIIndexType,
        pktcEUEUsrIMPIIdType                PktcEUEUsrIMPIIdType,
        pktcEUEUsrIMPIId                    PktcEUEUsrIMPIId,
        pktcEUEUsrIMPICredsType             PktcEUEUsrIMPICredsType,
        pktcEUEUsrIMPICredentials           PktcEUEUsrIMPICredentials,
        pktcEUEUsrIMPIRowStatus             PktcEUEUsrIMPIRowStatus
    }

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 }

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

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

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

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

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

pktcEUEUsrIMPICredentials OBJECT-TYPE
    SYNTAX      PktcEUETCCreds
    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 'pktcEUEUsrIMPICredsType' object.

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

          An Operator SHOULD provide this MIB Object only
          over a secured configuration interface to avoid
          security threats due to compromised credentials. "
    DEFVAL     { "" }
    ::= { 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 Applications 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, administrative status and the operational status information.

The conceptual rows MUST NOT persist across eUE resets."

INDEX { pktcEUEUsrIMPIndex, pktcEUEUsrAppMapAppIndex }

::= { pktcEUEUsrAppMapTable 1 }

PktcEUEUsrAppMapEntry ::=

```
SEQUENCE {
    pktcEUEUsrAppMapAppIndex          PktcEUEUETCAppIndexType,
    pktcEUEUsrAppMapAppOrgID         PktcEUEUETCAppOrgIdentifier,
    pktcEUEUsrAppMapAppIdentifier    PktcEUEUETCAppIdentifier,
    pktcEUEUsrAppMapAppIndexRef      PktcEUEUETCAppIndexType,
    pktcEUEUsrAppMapAppAdminStat     PktcEUEUETCAdminStatus,
    pktcEUEUsrAppMapAppAdminStatInfo PktcEUEUETCStatusInfo,
    pktcEUEUsrAppMapAppOperStat      PktcEUEUETCOperStatus,
    pktcEUEUsrAppMapAppOperStatInfo  PktcEUEUETCStatusInfo,
    pktcEUEUsrAppMapRowStatus        RowStatus
}
```

pktcEUEUsrAppMapAppIndex OBJECT-TYPE

SYNTAX PktcEUEUETCAppIndexType

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 PktcEUEUETCAppOrgIdentifier

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 an 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. The deactivation is reported by 'pktcEUEUsrAppMapAppOperStat'."

DEFVAL {0}

```
 ::= { pktcEUEUsrAppMapEntry 4 }
```

pktcEUEUsrAppMapAppAdminStat OBJECT-TYPE

SYNTAX PktcEUETCAdminStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This MIB Object contains the administratively desired activation status of this instance.

If 'active' the User can use the application.

If 'inactive' the user can not use the application."

DEFVAL {active}

```
 ::= { pktcEUEUsrAppMapEntry 5 }
```

pktcEUEUsrAppMapAppAdminStatInfo OBJECT-TYPE

SYNTAX PktcEUETCStatusInfo

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This MIB Object represents additional information for the status information represented by 'pktcEUEUsrAppMapAppAdminStat'."

```
 ::= { pktcEUEUsrAppMapEntry 6 }
```

pktcEUEUsrAppMapAppOperStat OBJECT-TYPE

SYNTAX PktcEUETCOperStatus

MAX-ACCESS read-only

```

STATUS      current
DESCRIPTION
  " This MIB Object represents the current operational status
    of the user using the application specified in this entry.

    This object returns the following values:

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

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

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

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

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

    PacketCable applications can specify additional conditions for
    how an application is considered 'active', 'inactive' or
    'notPresent' for an IMPU."
 ::= { pktcEUEUsrAppMapEntry 7 }

```

```

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

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

```

```

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

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

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

    The eUE MUST not allow these two objects to be changed while

```

```

    the row is 'active'. The value of this object has no effect on
    whether other columnar objects in this row can be modified."

 ::= { pktcEUEUsrAppMapEntry 9 }

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

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

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

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

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

pktcEUEUsrIMPIGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEUsrIMPICredsType,
    pktcEUEUsrIMPICredentials,
    pktcEUEUsrIMPUIdtype,
    pktcEUEUsrIMPUIId,
    pktcEUEUsrIMPUIRowStatus
  }
  STATUS      current
  DESCRIPTION
    "The user IMPI Group."
  ::= { pktcEUEUsrGroups 3 }

```

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

END
```

Annex C PacketCable eUE Provisioning and Management Modules

C.1 Provisioning and Management MIB Module

```

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

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

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

    InetAddressType,
    InetAddress
        FROM SNMP-FRAMEWORK-MIB

    InetAddressType,
    InetAddress
        FROM INET-ADDRESS-MIB

    pktcEUEMibs
        FROM CLAB-DEF-MIB;

pktcEUEProvMgmtMIB MODULE-IDENTITY
    LAST-UPDATED "200807100000Z" -- July 10, 2008
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Postal: Cable Television Laboratories, Inc
        858 Coal Creek Circle
        Louisville, CO 80027
        U.S.A.
        Phone: +1 303 661 9100
        Fax: +1 303 661 9199
        E-mail:mibs@cablelabs.com

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

    DESCRIPTION
        "This MIB module provides the provisioning and management
        MIB module for the E-UE Provisioning Framework."
    REVISION "200807100000Z" -- July 10, 2008
    DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-08.0524-5
        and published as I02"
    REVISION "200711060000Z" -- Nov 6, 2007
    DESCRIPTION
        "Initial version, published as part of the CableLabs
        E-UE Provisioning Data Model Specification
        PKT-SP-EUE-DATA-I01-071106
        Copyright 1999-2007 Cable Television Laboratories, Inc.
        All rights reserved."
    ::= { pktcEUEMibs 5 }

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

```

```

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

-- DHCP Servers for IPv6
pktcEUEdHcpv6ServerId1  OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(0..32))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " This MIB Object contains the primary DHCP Server identifier
          (DSS_ID)the E-UE was provided with, during provisioning.

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

pktcEUEdHcpv6ServerId2  OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(0..32))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " This MIB Object contains the secondary DHCP Server identifier
          (DSS_ID) the E-UE was provided with, during provisioning.

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

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 DNS Server Address type
    contained in the MIB Object 'pktcEUEdsv6ServerAddress'.
    Valid values are 'ipv6(2)' and 'unknown(0)'."
 ::= { pktcEUEProvMgmtObjects 6 }

pktcEUEdsv6ServerAddress1 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 }

pktcEUEdsv6ServerAddress2 OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "This MIB Object contains the secondary DNSv6 Server address
    which the eUE obtained via DHCPv6, when the eUE
    is in IPv6 mode."
 ::= { pktcEUEProvMgmtObjects 8 }

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

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

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

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

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

    As indicated in the eUE Provisioning specification, references
    to E-MTA and eMTA in RFC4682 are to be understood to be applicable
    to E-UE and eUE, respectively."
REFERENCE
    "PacketCable E-UE Provisioning Framework Specification"

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

-- The following pktcEUEDevBase group describes the base eUE objects

OBJECT      pktcMtaDevResetNow
DESCRIPTION

```

" This MIB Object controls the eUE software reset.
 The eUE MUST return a value of 'false' upon an Object read.
 The eUE MUST reset itself when this object is set to a value of
 'true', and perform the following actions:

- All Services (if present) are immediately terminated.
- Any sessions (even on the behalf of Users) are gracefully terminated.
- The provisioning flow is started at step eUE-1.

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

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

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

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

If this object is set to 'false', the eUE is
 administratively disabled and MUST do the following:

- All Services (if present) are immediately terminated.
- Any sessions (even on the behalf of Users) are gracefully terminated.

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

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

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

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

```
OBJECT pktcMtaDevDhcpServerAddressType
DESCRIPTION
  " This MIB Object is only required to support the DHCPv4 address type."
```

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

```

-- OBJECT pktcMtaDevServerDhcp2 - Same as PKTC-IETF-MTA-MIB

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

-- NOTE: pktcMtaDevServerDns1 and pktcMtaDevServerDns2 are intended for
-- IPv4 DNS Servers per RFC 4682. IPv6 DNS information is contained
-- in the prov-mgmt extension MIB module.

-- OBJECT pktcMtaDevServerDns1 - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevServerDns2 - Same as PKTC-IETF-MTA-MIB

OBJECT pktcMtaDevTimeServerAddressType
MIN-ACCESS not-accessible
DESCRIPTION
  " This MIB Object is not applicable for the eUE."

OBJECT pktcMtaDevTimeServer
MIN-ACCESS not-accessible
DESCRIPTION
  " This MIB Object not applicable for the eUE."

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

-- The following object group describes the security objects.

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

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

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

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

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

OBJECT pktcMtaDevRealmOrgName

```

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

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

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

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

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

    This table only has one row."

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

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

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

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

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

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

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

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

OBJECT pktcMtaDevCmsIpsecCtrl
```

```

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

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

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

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

pktcEUEProvMgmtGroup OBJECT-GROUP
    OBJECTS {
        pktcEUEProvMgmtVersion,
        pktcEUEdHcpv6ServerId1,
        pktcEUEdHcpv6ServerId2,
        pktcEUEdHcpv6ServerAddressType,
        pktcEUEdHcpv6ServerAddress,
        pktcEUEdDnsv6ServerAddressType,
        pktcEUEdDnsv6ServerAddress1,
        pktcEUEdDnsv6ServerAddress2
    }
    STATUS    current
    DESCRIPTION
        "The eUE Operator Group."
    ::= { pktcEUEProvMgmtGroups 1}

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

END

```

C.2 Management Event MIB Module

```

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

IMPORTS

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

pktcEUEEventMIB MODULE-IDENTITY

```

```

LAST-UPDATED "200711060000Z"
ORGANIZATION "Cable Television Laboratories, Inc."
CONTACT-INFO
    "Sumanth Channabasappa
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     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" encoding="UTF-8"?>
<!--(C) 2008 CableLabs. All rights reserved -->
<!--PacketCable E-UE Provisioning Certificate Bootstrapping XML Schema -->
<xsd:schema
  xmlns="http://www.cablelabs.com/namespaces/PacketCable/2.0/XSD/v1/CL-PKTC-CB"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"

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

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

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

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

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

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

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

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

```

```

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

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

</xsd:schema>

```

D.2 Presence Configuration MIB

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

```
IMPORTS
```

```

  MODULE-IDENTITY,
  OBJECT-TYPE,
  Unsigned32
  RowStatus
  FROM SNMPv2-SMI
  FROM SNMPv2-TC
  OBJECT-GROUP,
  MODULE-COMPLIANCE
  FROM SNMPv2-CONF
  SnmpAdminString
  FROM SNMP-FRAMEWORK-MIB
  pktcEUEDevOpIndex
  FROM CL-PKTC-EUE-DEV-MIB
  pktcEUEUsrIMPUIIndex
  FROM CL-PKTC-EUE-USER-MIB
  pktcEUEMibs
  FROM CLAB-DEF-MIB;

```

```
pktcEUEPrsMIB MODULE-IDENTITY
```

```

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

```

```
Acknowledgements:
```

```

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

```

```
DESCRIPTION
```

```

  "This MIB module contains the configuration MIB
  objects for the Presence Service feature as defined
  by the PacketCable E-UE Provisioning Framework
  Specification."

```

```
REVISION "200905280000Z" -- May 28, 2009
```

```

DESCRIPTION
    "Revised Version includes ECNs
    EUE-DATA-N-08.0528-3
    EUE-DATA-N-09.0556-3
    and published as part of PKT-SP-EUE-DATA-I03-090528."
REVISION "200807100000Z" -- July 10, 2008
DESCRIPTION
    "Initial version published as part of the CableLabs
    E-UE Provisioning Data Model Specification (PKT-SP-EUE-DATA).
    Included in ECN EUE-DATA-N-08.0504-7 and published as part of
    PKT-SP-EUE-DATA-I02-080710."
 ::= { pktcEUEMibs 7 }

-- Administrative assignments
pktcEUEPRSNotifications OBJECT IDENTIFIER ::= { pktcEUEPrsMIB 0 }
pktcEUEPRSOjects OBJECT IDENTIFIER ::= { pktcEUEPrsMIB 1 }
pktcEUEPRSConformance OBJECT IDENTIFIER ::= { pktcEUEPrsMIB 2 }

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

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

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

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

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

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

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

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

```

```

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

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

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

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

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

pktcEUEPRSUsrcfgTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcEUEPRSUsrcfgEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        " This data table represents the user-based Presence entries
          "
    REFERENCE  "PacketCable E-UE Provisioning Framework Specification,
              OMA Presence SIMPLE Specification"
    ::= { pktcEUEPRSOjects 2 }

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

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

PktcEUEPRSUsrcfgEntry ::=
    SEQUENCE {
        pktcEUEPRSUsrcfgClientObjDataLim      Unsigned32,
        pktcEUEPRSUsrcfgContSvrURI           SnmpAdminString,
        pktcEUEPRSUsrcfgSrcThrottlePub       Unsigned32,
        pktcEUEPRSUsrcfgMaxPrsSubs          Unsigned32,
        pktcEUEPRSUsrcfgMaxSubsPrsList      Unsigned32,
        pktcEUEPRSUsrcfgSvcURITemplate      SnmpAdminString,
        pktcEUEPRSUsrcfgStatus              RowStatus
    }

```

```
pktcEUEPRSUsrcObjDataLim OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " A Presence Source may use either direct or indirect content. Direct
        Content is the delivery of the Presence document as MIME content
        within a SIP message. Indirect content is the redirection of the
        Presence watcher by the Presence source to a Content Server for the
        delivery of the Presence document.

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

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

        This element is mandatory in the specifications however direct content
        is an optional capability."
    DEFVAL {4096}
    ::= { pktcEUEPRSUsrcCfgEntry 1 }

pktcEUEPRSUsrcContSvrURI OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " If the Presence Source makes use of content indirection as described
        in the 'OMA Presence SIMPLE Specification', then this object MUST be
        used as the HTTP or HTTPS URI of the Content Server on which the MIME
        object containing the Presence document will be stored.
        The Presence source will then use the content indirection mechanism
        defined in RFC 4483 to provide the watcher with the URI of the stored
        content.

        This element is optional"
    DEFVAL {""}
    ::= { pktcEUEPRSUsrcCfgEntry 2 }

pktcEUEPRSUsrcThrottlePub OBJECT-TYPE
    SYNTAX      Unsigned32 (1..3600)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This element defines the minimum time interval in seconds between two
        consecutive publications of a Presence document from a Presence Source
        using a SIP PUBLISH request.

        This element is optional"
    DEFVAL {60}
    ::= { pktcEUEPRSUsrcCfgEntry 3 }

pktcEUEPRSUsrcMaxPrsSubs OBJECT-TYPE
    SYNTAX      Unsigned32 (1..1000)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This element defines the maximum number of subscriptions
        to the presence event package that a watcher may have.

        Should a service provider wish to limit the number of subscriptions
        to different Presence sources from a Presence watcher then this
        element MUST be used.
        This is in effect the maximum number of discrete Public Identities
        from which a watcher can obtain Presence information.
```

```

        This element is optional"
    DEFVAL {100}
    ::= { pktcEUEPRSUsrcfgEntry 4 }

pktcEUEPRSUsrcfgEntryMaxSubsPrsList OBJECT-TYPE
    SYNTAX      Unsigned32 (1..1000)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " A Presence watcher may subscribe to multiple Presence sources that
        are represented by a single Resource List, see RFC 4662. A Resource
        List Server in the network then handles the discrete individual
        subscriptions to the elements within the list.
        Should a service provider wish to limit the number of elements within
        a resource list to which a watcher can subscribe (thus limiting the
        number of SIP subscriptions) then this element MUST be used.

        This element is optional"
    DEFVAL {100}
    ::= { pktcEUEPRSUsrcfgEntry 5 }

pktcEUEPRSUsrcfgEntrySvcURITemplate OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " This element defines the syntax of the service URI.
        The Service URI Template MUST be a URI Template as
        specified in [OMA XDM-CORE].

        This element is optional"
    DEFVAL {"<xui>;presence-list=<id>"}
    ::= { pktcEUEPRSUsrcfgEntry 6 }

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

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

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

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

```

```
 ::= { pktcEUEPrsMIBCompliances 1 }

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

pktcEUEPRSOptObjGroup OBJECT-GROUP
  OBJECTS {
    pktcEUEPRSNwAppName,
    pktcEUEPRSNwProvID,
    pktcEUEPRSNwStatus,
    pktcEUEPRSUsrContSvrURI,
    pktcEUEPRSUsrSrcThrottlePub,
    pktcEUEPRSUsrMaxPrsSubs,
    pktcEUEPRSUsrMaxSubsPrsList,
    pktcEUEPRSUsrSvcURITemplate,
    pktcEUEPRSUsrStatus
  }
  STATUS current
  DESCRIPTION
    "The group of optional objects."
  ::= { pktcEUEPrsMIBGroups 2}

END
```

Appendix I Illustrative PacketCable Deployment Examples

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

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

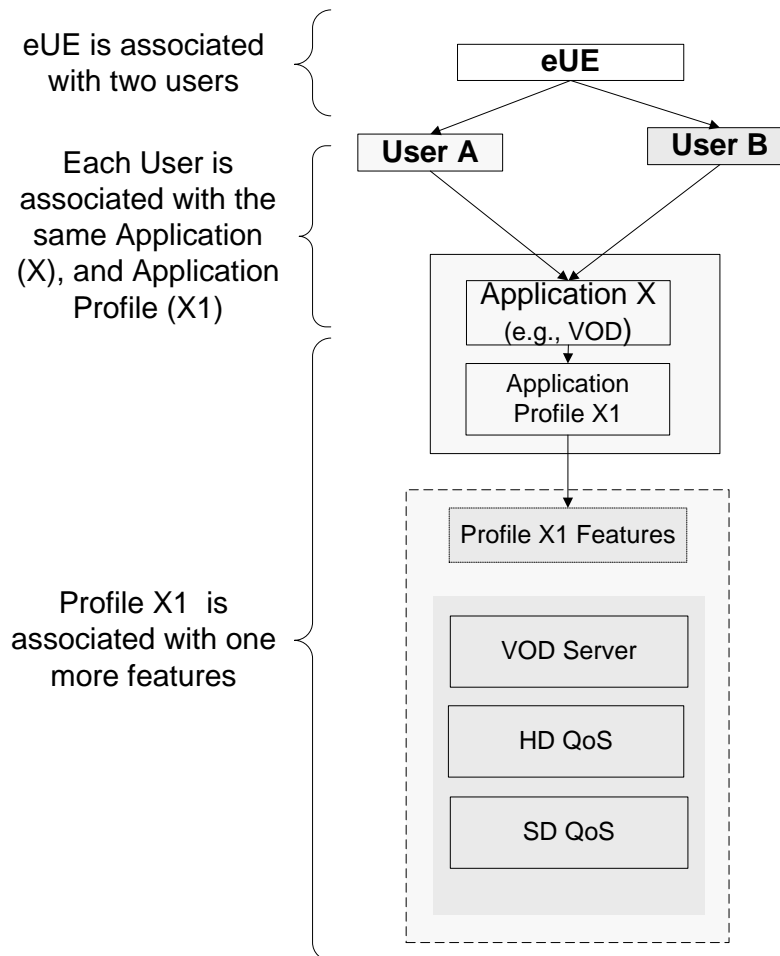


Figure 3 - Deployment with multiple users and one PacketCable Application

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

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

User to Application Profile Mapping Table

(Mapping of User A to an application profile)

UsrAppMapTable entries

```

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

```

(Mapping of User B to an application profile)

UsrAppMapTable entries

```

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

```

Application Profile to Features Mapping Table (Application X)

(Profile X1)

XAppProfileToFeatureMapTable entries

```

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

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

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

```

Feature Tables

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

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

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

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

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

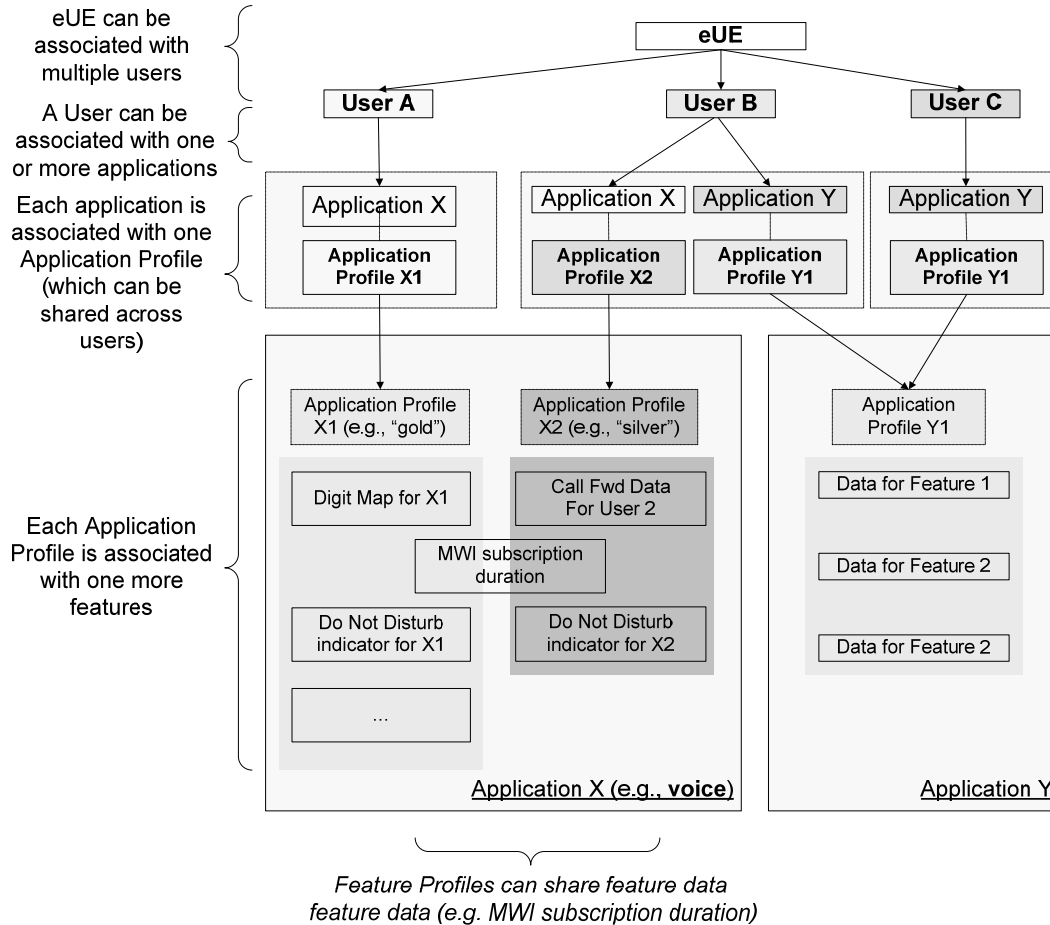


Figure 4 - Deployment with multiple users and multiple PacketCable Application

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

(Mapping of User B to an application profile)

```

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

```

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

```

(Mapping of User C to an application profile)

```

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

```

Application Profile to Features Mapping Table (Application X):

(Profile X1)

```

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

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

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

```

(Profile X2)

```

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

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

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

```

Application Profile to Features Mapping Table (Application Y):

(Profile Y1)

```

YAppProfileToFeatureMapTable entries
AppFeatureIdentifier.20.1 = 1
AppFeatureTableIndexRef.20.1= 25

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

```

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

```

YAppProfileToFeatureMapTable entries
AppFeatureIdentifier.20.1 = 3
AppFeatureTableIndexRef.20.1= 0

```

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

Application X Feature Tables

```

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

```

Application Y Feature Tables

```

(Feature 1 has a Feature Table)
(Feature 1).25="<<Feature 1 data>>"

```

(Feature 2 has no configuration data)

(Feature 3 is per Operator configuration)

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

Appendix II Acknowledgements

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

- Eugene Nechamkin (Broadcom)
- Thomas Clack (Broadcom)
- John Berg (CableLabs)
- Josh Littlefield (Cisco)

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

Eduardo Cardona and the PacketCable Architects, CableLabs, Inc.

Appendix III Revision History

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

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

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

ECN	ECN Date	Summary
EUE-DATA-N-08.0528-3	12/8/2008	Updates to EUE DATA MIB
EUE-DATA-N-08.0556-3	04/27/2009	EUE MIB Objects Persistency requirements

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

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

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

ECN	ECN Date	Summary
EUE-DATA-N-10.0633-2	4/26/10	Updates to EUE DEVICE MIB
EUE-DATA-N-10.0631-3	5/3/10	Updates on User Configuration MIB: IMPI Persistence & IMPU Implicit Registration Clarifications