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</tr>
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**Work in Progress**
An incomplete document, designed to guide discussion and generate feedback that may include several alternative requirements for consideration.

**Draft**
A document in specification format considered largely complete, but lacking review by Members and vendors. Drafts are susceptible to substantial change during the review process.

**Issued**
A stable document, which has undergone rigorous member and vendor review and is suitable for product design and development, cross-vendor interoperability, and for certification testing.

**Closed**
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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.


[PKT-MEM1.5] PacketCable 1.5 Management Event Mechanism Specification, PKT-SP-MEM1.5-I05-100527, May 27, 2010, Cable Television Laboratories, Inc.

[PKT-SP-PROV1.5] PacketCable 1.5 Specification, MTA Device Provisioning, PKT-SP-PROV1.5-I04-090624, June 24, 2009, Cable Television Laboratories, Inc.


2.2 Informative References

This specification uses the following informative references.


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.
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:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM</td>
<td>Cable Modem.</td>
</tr>
<tr>
<td>DOCSIS®</td>
<td>Data-Over-Cable Service Interface Specifications</td>
</tr>
<tr>
<td>eCM</td>
<td>Embedded Cable Modem.</td>
</tr>
<tr>
<td>MIB</td>
<td>Management Information Base</td>
</tr>
<tr>
<td>OID</td>
<td>Object Identifier.</td>
</tr>
<tr>
<td>SNMP</td>
<td>Simple Network Management Protocol. Refer to IETF STD 62</td>
</tr>
<tr>
<td>UDP</td>
<td>User Datagram Protocol</td>
</tr>
<tr>
<td>VACM</td>
<td>View-based Access Control Model</td>
</tr>
</tbody>
</table>
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.

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

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

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

### 6.1 eCM MIB Requirements

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

#### 6.1.1 DOCSIS MIB Modules

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

#### 6.1.2 eDOCSIS MIB Modules

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

#### 6.1.3 Battery Backup UPS MIB module

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

### 6.2 eUE MIB Requirements

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

#### 6.2.1 eUE MIB Modules

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

#### 6.2.2 IETF MIB Modules

The eUE MUST implement the following MIB modules:

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

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

6.2.4 SNMP MIB Requirements

6.2.4.1 eUEsysDescr Requirements

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

6.2.4.2 eUE ifTable Requirements

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

<table>
<thead>
<tr>
<th>Table 1 - eUE ifTable Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>IfIndex</td>
</tr>
<tr>
<td>ifDescr</td>
</tr>
<tr>
<td>IfType</td>
</tr>
<tr>
<td>IfMtu</td>
</tr>
<tr>
<td>IfSpeed</td>
</tr>
<tr>
<td>ifPhysAddress</td>
</tr>
<tr>
<td>IfAdminStatus</td>
</tr>
<tr>
<td>ifOperStatus</td>
</tr>
<tr>
<td>IfLastChange</td>
</tr>
<tr>
<td>ifInOctets (optional)</td>
</tr>
<tr>
<td>IfInNUCastPkts</td>
</tr>
<tr>
<td>IfInDiscards</td>
</tr>
<tr>
<td>IfInErrors</td>
</tr>
<tr>
<td>IfUnknownProtos</td>
</tr>
<tr>
<td>ifOutOctets (optional)</td>
</tr>
<tr>
<td>ifOutUCastPkts (optional)</td>
</tr>
<tr>
<td>IfOutNUCastPkts</td>
</tr>
<tr>
<td>IfOutDiscards</td>
</tr>
<tr>
<td>IfOutErrors</td>
</tr>
<tr>
<td>IfOutQlen</td>
</tr>
<tr>
<td>IfSpecific</td>
</tr>
</tbody>
</table>
### 6.2.4.3 eUE ipNetToPhysicalTable Requirements

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

<table>
<thead>
<tr>
<th>ipNetToPhysicalTable</th>
<th>CM device</th>
</tr>
</thead>
<tbody>
<tr>
<td>ipNetToPhysicalIfIndex</td>
<td>1</td>
</tr>
<tr>
<td>ipNetToPhysicalPhysAddress</td>
<td>eCM MAC Address</td>
</tr>
<tr>
<td>ipNetToPhysicalNetAddressType</td>
<td>ipv4(1) or ipv6(2)</td>
</tr>
<tr>
<td>ipNetToPhysicalNetAddress</td>
<td>eCM IP Address</td>
</tr>
<tr>
<td>ipNetToPhysicalLastUpdated</td>
<td>&lt;refer to [RFC 4293]&gt;</td>
</tr>
<tr>
<td>ipNetToPhysicalType</td>
<td>static(4)</td>
</tr>
<tr>
<td>ipNetToPhysicalState</td>
<td>&lt;refer to [RFC 4293]&gt;</td>
</tr>
<tr>
<td>ipNetToPhysicalRowStatus</td>
<td>‘active’</td>
</tr>
</tbody>
</table>

### 6.2.4.4 eUE USM Requirements

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

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

<table>
<thead>
<tr>
<th>usmUserTable ([RFC 3414] [IETF STD62])</th>
<th>Row Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>usmUserEngineId</td>
<td>The SNMP local engine id</td>
</tr>
<tr>
<td>usmUserCloneFrom</td>
<td>0.0</td>
</tr>
<tr>
<td>usmUserAuthProtocol</td>
<td>usmHMACMD5AuthProtocol or usmHMACSHAAuthProtocol</td>
</tr>
<tr>
<td>usmUserAuthKeyChange</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>usmUserOwnAuthKeyChange</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>usmUserPrivProtocol</td>
<td>usmDESPrivProtocol if privacy is indicated in AP REPLY</td>
</tr>
<tr>
<td></td>
<td>usmNoPrivProtocol if privacy is not indicated in the AP REPLY</td>
</tr>
<tr>
<td>usmUserPrivKeyChange</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>
### 6.2.4.5 eUE VACM Requirements

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

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

#### Table 4 - eUE VacmSecurityToGroupTable

<table>
<thead>
<tr>
<th>vacmSecurityToGroupTable ([RFC 3415])</th>
<th>Row Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>vacmSecurityModel</td>
<td>USM</td>
</tr>
<tr>
<td>vacmGroupName</td>
<td>PacketCableFullAccess</td>
</tr>
<tr>
<td>vacmSecurityToGroupStorageType</td>
<td>volatile</td>
</tr>
<tr>
<td>vacmSecurityToGroupStatus</td>
<td>active</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>vacmAccessTable ([RFC 3415])</th>
<th>Row Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>vacmGroupName</td>
<td>PacketCableFullAccess</td>
</tr>
<tr>
<td>vacmAccessContextPrefix</td>
<td>***</td>
</tr>
<tr>
<td>vacmAccessSecurityModel</td>
<td>USM</td>
</tr>
<tr>
<td>vacmAccessSecurityLevel</td>
<td>authPriv or authNoPriv (depending on whether privacy has been specified)</td>
</tr>
<tr>
<td>vacmAccessContextMatch</td>
<td>exact</td>
</tr>
<tr>
<td>vacmAccessReadViewName</td>
<td>ReadOnlyView</td>
</tr>
</tbody>
</table>

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.
### vacmAccessTable (RFC 3415)

<table>
<thead>
<tr>
<th>Column</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>vacmAccessWriteViewName</td>
<td>FullAccessView</td>
</tr>
<tr>
<td>vacmAccessNotifyViewName</td>
<td>NotifyView</td>
</tr>
<tr>
<td>vacmAccessStorageType</td>
<td>volatile</td>
</tr>
<tr>
<td>vacmAccessStatus</td>
<td>active</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Row Entry</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>vacmAccessWriteViewName</td>
<td>FullAccessView</td>
</tr>
<tr>
<td>vacmAccessNotifyViewName</td>
<td>NotifyView</td>
</tr>
<tr>
<td>vacmAccessStorageType</td>
<td>volatile</td>
</tr>
<tr>
<td>vacmAccessStatus</td>
<td>active</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>MIB Module (CL-PKTC)</th>
<th>Data Element</th>
<th>Requirement</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUE-PROV-MGMT-MIB</td>
<td>pktcMtaDevEnabled</td>
<td>Mandatory</td>
<td>This element is always required.</td>
</tr>
<tr>
<td>EUE-PROV-MGMT-MIB</td>
<td>pktcMtaDevRealmOrgName</td>
<td>Conditionally Mandatory</td>
<td>This element is mandatory in the Secure Provisioning Flow.</td>
</tr>
<tr>
<td>EUE-DEV-MIB</td>
<td>pktcEUEDevOpTable</td>
<td>Conditionally Mandatory</td>
<td>One table entry is mandatory if the eUE has any active users associated with it.</td>
</tr>
<tr>
<td>EUE-DEV-MIB</td>
<td>pktcEUEDevDnsTable</td>
<td>Conditionally Mandatory</td>
<td>If absent in configuration the active user defaults to the eUE DNS server values (i.e., via DHCP or pktcMtaDevServerDns1, pktcMtaDevServerDns2 values).</td>
</tr>
<tr>
<td>EUE-DEV-MIB</td>
<td>pktcEUEDevPCSCFTable</td>
<td>Conditionally Mandatory</td>
<td>One table entry is mandatory if the eUE has any active users associated with it.</td>
</tr>
<tr>
<td>EUE-USER-MIB</td>
<td>pktcEUEUsrIMPUTable</td>
<td>Conditionally Mandatory</td>
<td>One table entry is mandatory if the eUE has any active users associated with it.</td>
</tr>
<tr>
<td>EUE-USER-MIB</td>
<td>pktcEUEUsrMPITable</td>
<td>Conditionally Mandatory</td>
<td>One table entry is mandatory if the eUE has any active users which need authentication for registration.</td>
</tr>
<tr>
<td>EUE-USER-MIB</td>
<td>pktcEUEUsrAppMapTable</td>
<td>Conditionally Mandatory</td>
<td>One table entry is mandatory if any active user has any applications associated with it.</td>
</tr>
</tbody>
</table>
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 pktcEUEUsrIMPITableName accordingly. The eUE MUST validate the XML instance document prior to acceptance or modification of the MIB table 'pktcEUEUsrIMPITableName'. 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 'clearIMPIIMIBTable' 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 pktcEUEUsrIMPITableName. The attribute 'mibIMPIIndex' provides the index value reference to the MIB table 'pktcEUEUsrIMPITableName'. 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 'pktcEUEUsrIMPITableName' 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 'clearIMPIIMIBTable'. 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>
<thead>
<tr>
<th>XML Schema</th>
<th>Data Element or Attribute</th>
<th>Requirement</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.1</td>
<td>//clearIMPIIMIBTable</td>
<td>Mandatory, if '//IMPI' is absent.</td>
<td>If this element is absent, then the eUE will not clear the IMPI table.</td>
</tr>
<tr>
<td>D.1</td>
<td>//IMPI</td>
<td>Mandatory, if '//clearIMPIIMIBTable' is absent.</td>
<td>An IMPI element is required for each IM Private Identifier (IMPI) that is being specified.</td>
</tr>
<tr>
<td>D.1</td>
<td>//IMPI/@mibIMPIIndex</td>
<td>Mandatory if the element '//IMPI' is present.</td>
<td>A mibIMPIIndex attribute is required for each IMPI/ID element.</td>
</tr>
<tr>
<td>D.1</td>
<td>//IMPI/ID</td>
<td>Mandatory if the element '//IMPI' is present.</td>
<td>An ID element is required for each IMPI that is being specified.</td>
</tr>
<tr>
<td>D.1</td>
<td>//IMPI/Creds</td>
<td>Mandatory if the element '//IMPI' is present.</td>
<td>A Creds element is required for each IMPI that is being specified.</td>
</tr>
<tr>
<td>D.1</td>
<td>//IMPI/ID/@idType</td>
<td>Mandatory if the element '//IMPI' is present.</td>
<td>An idType attribute is required for each IMPI/ID element.</td>
</tr>
<tr>
<td>D.1</td>
<td>//IMPI/Creds/@credsType</td>
<td>Mandatory if the element '//IMPI' is present.</td>
<td>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).</td>
</tr>
</tbody>
</table>
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:

\[
\text{PROV-EV-16} = \text{"DHCPv6 ERROR:" dhcpv6-message \[";" error-info \[";" ipv6-address-list\] dhcpv6-message = 1*(VCHAR) error-info = 1*(VCHAR) ipv6-address-list = IPv6address \["," IPv6address\] ; \text{For definition of the 'IPv6address' element in ABNF refer to [RFC 3986] ('IPv6address' element) and [RFC 4291].}
\]

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

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Default Severity for Event</th>
<th>Default Display String</th>
<th>PacketCable Event ID</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUE-EV-1</td>
<td>error</td>
<td>&quot;Registration did not comply with SigSecurity configuration for user &lt;user IMPU&gt;&quot;</td>
<td>4000960000</td>
<td>The eUE MUST report this event if the directive specified in pktcEUEUsrIMPUSigSecurity is not met during registration of a user IMPU.</td>
</tr>
<tr>
<td>EUE-EV-2</td>
<td>critical</td>
<td>&quot;Registration failed for user IMPU=&lt;user IMPU&gt;; IMPI=&lt;user IMPI&gt;; reason &lt;reason&gt;&quot;</td>
<td>4000960001</td>
<td>The eUE MUST report this event if the registration for a specific user failed. The eUE MUST populate &lt;user IMPU&gt; with the user's IMPU and &lt;user IMPI&gt; with the user's IMPI.</td>
</tr>
<tr>
<td>EUE-EV-3</td>
<td>informational</td>
<td>&quot;Certificate Bootstrapping Success&quot;</td>
<td>4000960002</td>
<td>The eUE MUST report this event if a Certificate Bootstrapping procedure that was initiated was successfully completed.</td>
</tr>
<tr>
<td>EUE-EV-4</td>
<td>critical</td>
<td>&quot;Certificate Bootstrapping Failure&quot;</td>
<td>4000960003</td>
<td>The eUE MUST report this event if a Certificate Bootstrapping procedure was not successfully completed.</td>
</tr>
<tr>
<td>EUE-EV-5</td>
<td>critical</td>
<td>&quot;Time unavailable from the ToD Server - Secure flow&quot;</td>
<td>4000960004</td>
<td>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.</td>
</tr>
<tr>
<td>EUE-EV-6</td>
<td>warning</td>
<td>&quot;Time unavailable from the ToD Server - Basic or Hybrid flow.&quot;</td>
<td>4000960005</td>
<td>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.</td>
</tr>
<tr>
<td>EUE-EV-7</td>
<td>warning</td>
<td>&quot;New time has been retrieved from ToD server.&quot;</td>
<td>4000960006</td>
<td>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.</td>
</tr>
</tbody>
</table>
### Event Name | Default Severity for Event | Default Display String | PacketCable Event ID | Comments
--- | --- | --- | --- | ---
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.
EUE-EV-12 | Critical | "DAD_ERROR:" DAD-type ";IPv6address [";error-info]. Where DAD-type = "link-local" | 4000960011 | DAD verification failed for LinkLocal address created by EUE or global address assigned by DHCPv6 server.
EUE-EV-13 | Critical | "RA_ERROR:" ERROR-type ";IPv6address [";error-info]. Where ERROR-type = "link-local" | 4000960012 | Router Advertisement messages are not received or improperly formed.
EUE-EV-14 | Critical | "error: Failed to acquire Secondary IP address ADD-type.

Error-info =" | 4000960013 | Secondary address not acquired.
EUE-EV-15 | Info | "Info: Secondary IP address ADD-type acquired." | 4000960014 | Secondary address acquired.

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

ADD-type = "V4 | V6"

error-info= 1*(VCHAR)

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

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

### 6.5 E-UE MIB Objects Persistence Requirements

This section describes the persistence requirements for MIB object values.

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

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

The E-UE MUST consider all MIB objects as "non-persistent" unless otherwise explicitly stated by the MIB Object.
Annex A  PacketCable eUE Common Modules

A.1  Textual Conventions MIB Module

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

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

pktcEUETCMIB MODULE-IDENTITY
    LAST-UPDATED "200912140000Z" -- December 14, 2009
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Broadband Network Services
        Cable Television Laboratories, Inc.
        858 Coal Creek Circle,
        Louisville, CO 80027, USA
        Phone: +1 303-661-9100
        Email: mibs@cablelabs.com"
    ACKNOWLEDGEMENTS: Thomas Clack, Broadcom - Primary author,
    Sumanth Channabasappa, CableLabs
    Eduardo Cardona, CableLabs
    and members of the PacketCable PACM Focus Team."
    DESCRIPTION
        "This MIB module specifies the TEXTUAL CONVENTIONs
        for use in the definition of PacketCable E-UE
        MIB Objects."
    REVISION "20091214000002" -- December 14, 2009
    DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-09.0602-3
        and published as I04"
    REVISION "20080710000002" -- July 10, 2008
    DESCRIPTION
        "Revised Version includes ECN EUE-DATA-N-08.0524-5
        and published as I02"
    REVISION "20071106000002" -- 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 determined 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
--- ---------------------------------------------------------------------
PktcEUETCUeUserElementIndexType ::= 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

-- -----------------------------------------------------
-- TEXTUAL CONVENTION for defining App Org

PktcEUETCApplOrgIdentifier ::= 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

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

PktcEUETCApplIdentifier ::= 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

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

PktcEUETCUeUserAppIndexType ::= 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

-- -----------------------------------------------------
-- TEXTUAL CONVENTION for defining Credentials
--- ---------------------------------------------------------------------
PktcEUETCCredsType ::= TEXTUAL-CONVENTION
  STATUS current
  DESCRIPTION
    "This TEXTUAL CONVENTION represents credential types. Each definition of PktcEUETCCredsType MUST be accompanied by a definition of the textual convention PktcEUETCCreds.

    The specified types include:
    - other(1)
      An unknown credentials type. It MAY be used to indicate Credentials that are not in one of the formats defined below such as a vendor-specific format.
    - none(2)
      A non-existent credentials type. This value MUST be used if the value of the corresponding PktcEUETCCreds object is a zero-length string. It MAY be used when the credentials are no longer valid.
    - password(3)
      A password based credential. When this type is used the credential value contained in PktcEUETCCreds MUST be an ASCII string representing a user-readable password.
    - preSharedKey(4)
      A pre-shared key based credential. When this type is used the credential value contained in PktcEUETCCreds MUST be interpreted as a pre-shared key represented as an octet string.
    - X509certificate(5)
      A certificate based credential. When this type is used the credential value contained in PktcEUETCCreds MUST be interpreted as a private key and an accompanying X.509 certificate.

    Implementations must ensure that objects with SYNTAX of 'PktcEUETCCredsType' and dependent objects with SYNTAX of 'PktcEUETCCreds' are consistent.

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

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

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

    A PktcEUETCCreds value must always be associated with and interpreted within the context of a corresponding PktcEUETCCredsType."
The value of a PktcEUETCCreds object must be consistent with the value of its associated PktcEUETCCredsType object. Any attempt to SET an object when these values are not consistent must fail with an inconsistentValue error.

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

Bytes 0-1: Reserved. The application must define the usage of these bytes, otherwise, ignored.
Bytes 2-3: Indicate the length of the credential value.
Bytes 4-8191: Contain the credential value.”

SYNTAX  OCTET STRING (SIZE (0..8192))
Annex B   PacketCable eUE Device Configuration Modules

B.1  Device Configuration MIB Module

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

IMPORTS
   PktcEUETCCredsType,
   PktcEUETCCreds
   FROM CL-PKTC-EUE-TC-MIB
   MODULE-IDENTITY,
   OBJECT-TYPE,
   Unsigned32
   FROM SNMPv2-SMI
   OBJECT-GROUP,
   MODULE-COMPLIANCE
   FROM SNMPv2-CONF
   TEXTUAL-CONVENTION,
   RowStatus,
   TruthValue
   FROM SNMPv2-TC
   SnmpAdminString
   FROM SNMP-FRAMEWORK-MIB
   InetAddress,
   InetPortNumber,
   InetAddressDNS,
   InetAddressType,
   InetVersion
   FROM INET-ADDRESS-MIB
   pktcEUEMibs
   FROM CLAB-DEF-MIB;

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

Acknowledgements:
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Sumanth Channabasappa, CableLabs
John Berg, CableLabs
Eduardo Cardona, CableLabs
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DESCRIPTION
"This MIB module contains Configuration MIB
objects for the Embedded User Equipment (eUE) as
required by the PacketCable E-UE Provisioning
Framework Specification."

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DESCRIPTION
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REVISION "201004260000Z" -- April 26, 2010
DESCRIPTION
"Revised Version includes ECN EUE-DATA-N-10.10.0633-2 and published as I05"

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DESCRIPTION
"Revised Version includes ECN EUE-DATA-N-09.0605-5 and published as I04"

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DESCRIPTION
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DESCRIPTION
"Initial version, published as part of the CableLabs E-UE Provisioning Data Model Specification PKT-SP-EUE-DATA-I01-071106Copyright 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 }

-- Administrative assignments

-- 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,
pktcEUEDevOpTURNCredsType PktcEUETCCredsType,
pktcEUEDevOpTURNCreds PktcEUETCCreds,
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 }

pktcEUEDevOpTURNCredsType  OBJECT-TYPE
SYNTAX      PktcEUETCCredsType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  
   " This data element contains the creds type
associated with the STUN Relay creds identified in
   'pktcEUEDevOpTURNCreds'."
DEFVAL   { none }
 ::= { pktcEUEDevOpEntry 9 }

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

   If read this data element MUST always return an empty
string value."
DEFVAL   { "" }
 ::= { pktcEUEDevOpEntry 10 }

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:
\[ TB = \left[ 2^{(n - 1)} - 1 \right] \times T1 \]
\( n: \) total number of INVITE attempts
\( T1 = \) Timer T1
For example, if the number of INVITE attempts is 3, (initial
INVITE + 2 retries)
\[ TB = \left[ 2^{(3 - 1)} - 1 \right] \times 0.5 = 3 \times 0.5 = 1.5 \text{ secs.} \]
When the number of attempts is 7, timer B matches the Timer B
default value defined PacketCable IMS Delta Session Initiation
Protocol (SIP) and Session Description Protocol (SDP).

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

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

DEFVAL { 2 } ::= { pktcEUEDevPCSCFEntry 13 }

pktcEUEDevPCSCFMaxTime OBJECT-TYPE
SYNTAX     Unsigned32
UNITS       "seconds"
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "This is the 'max-time' SIP Registration Recovery Timer as defined in RFC 5626. Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229, and RFC 5626 for more information. If the protocol used for a SIP Session is UDP this value is used for SIP Timer D, otherwise is ignored."

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

DEFVAL {1800} ::= { pktcEUEDevPCSCFEntry 14 }

pktcEUEDevPCSCFBaseTimeAllFailed OBJECT-TYPE
SYNTAX     Unsigned32
UNITS       "seconds"
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "This is the 'base-time (if all failed)' SIP Registration Recovery Timer as defined in RFC 5626. Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229, and RFC 5626 for more information. If the protocol used for a SIP Session is UDP this value is used for SIP Timer D, otherwise is ignored."

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

DEFVAL {30} ::= { pktcEUEDevPCSCFEntry 15 }

pktcEUEDevPCSCFBaseTimeAllNotFailed OBJECT-TYPE
SYNTAX     Unsigned32
UNITS       "seconds"
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "This is the 'base-time (if all have not failed)' SIP Registration Recovery Timer as defined in RFC 5626. Please refer to the PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229, and RFC 5626 for more information. If the protocol used for a SIP Session is UDP this value is used for SIP Timer D, otherwise is ignored."

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

pktcEUEDevPCSCFSUBSCRIBE retry 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, pktcEUEDevBSFASSType, pktcEUEDevBSFIndex }
 ::= { pktcEUEDevBSFTable 1 }

PktcEUEDevBSFEntry ::= 
SEQUENCE {
  pktcEUEDevBSFASSType        SnmpAdminString,
  pktcEUEDevBSFIndex          Unsigned32,
pktcEUEDevBSFType OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE (0..108))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
 "A unique value used to indicate the AS type to which the BSFs correspond. Applications using GBA are required to specify such identifiers explicitly."
 ::= { pktcEUEDevBSFEntry 1 }

pktcEUEDevBSFIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1..16)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
 "A unique value used to identify an instance in this data table. The indices SHOULD be contiguous. When multiple entries are specified, the eUE MUST give precedence to the values indexed by lower indices."
 ::= { pktcEUEDevBSFEntry 2 }

pktcEUEDevBSFAddrType OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This data element contains the type of the data element contained in 'pktcEUEDevBSFAddr'."
DEFVAL   { unknown }
 ::= { pktcEUEDevBSFEntry 3 }

pktcEUEDevBSFAddr OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "The address of a BSF server associated with the domain name indicated by the indices 'pktcEUEDevOpIndex' (Operator Domain), '
 pktcEUEDevBSFASType' and 'pktcEUEDevBSFIndex'."
DEFVAL   { "" }
 ::= { pktcEUEDevBSFEntry 4 }

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

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

pktcEUECBSupport OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This MIB Object is used by the eUE to report support for Certificate Bootstrapping.
  If the MIB Object is set to a value of true(1) it indicates that the device supports Certificate Bootstrapping.
  If the MIB Object is set to a value of false(1) it indicates that the device does not support Certificate Bootstrapping."
 ::= { pktcEUEDevProfile 6 }

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

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

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

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

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

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

-- Scalar MIB Objects for the EUE Device

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

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

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

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

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

  - 'unknown'
    The eUE MUST prefer the IP version for media that matches
    the IP version of the primary IP address."
REFERENCE
  "PacketCable IMS Delta Session Initiation Protocol (SIP)
  and Session Description Protocol (SDP), Stage 3
  Specification 3GPP TS 24.229."
DEFVAL { unknown }
::= { pktcEUEDevProfile 10 }
PKT-SP-EUE-DATA-I07-110825 PacketCable™ 2.0

STATUS  current
DESCRIPTION
"The eUE Device Profile Group."
::= { pktcEUEDevGroups 1}

pktcEUEDevOpGroup OBJECT-GROUP
OBJECTS {
pktcEUEDevOpDomain,
pktcEUEDevOpSTUNAddrType,
pktcEUEDevOpSTUNAddr,
pktcEUEDevOpSTUNAddrPort,
pktcEUEDevOpTURNAddrType,
pktcEUEDevOpTURNAddr,
pktcEUEDevOpTURNAddrPort,
pktcEUEDevOpTURNCredsType,
pktcEUEDevOpTURNCreds,
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,
pktcEUEDevPCSCFSubsctibeRetry
}
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,
pcktEUECEnable,
pktcEUECBData,
pktcEUEDevSipPort,
pktcEUEPreferredCandidatePair
}
STATUS     current
DESCRIPTION
  "The eUE per Device list of objects Group."
::= { pktcEUEDevGroups 6}
END

B.2 User Configuration MIB Module

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

IMPORTS
  PktcEUETCIDType,
PktcEUETCID,
PktcEUETCCredsType,
PktcEUETCCreds,
PktcEUETCUserElementIndexType,
PktcEUETCUsrAppIndexType,
PktcEUETCAppOrgIdentifier,
PktcEUETCAppIdentifier,
PktcEUETCAdminStatus,
PktcEUETCOperStatus,
PktcEUETCStatusInfo
FROM CL-PKTC-EUE-TC-MIB

MODULE-IDENTITY,
OBJECT-TYPE
FROM SNMPv2-SMI

OBJECT-GROUP,
MODULE-COMPLIANCE
FROM SNMPv2-CONF

SnmpAdminString
FROM SNMP-FRAMEWORK-MIB

TruthValue,
RowStatus
FROM SNMPv2-TC

pktcEUEMibs
FROM CLAB-DEF-MIB;

pktcEUEUserMIB MODULE-IDENTITY
LAST-UPDATED "201005030000Z" -- May 3, 2010
ORGANIZATION "Cable Television Laboratories, Inc."
CONTACT-INFO
  "Broadband Network Services
  Cable Television Laboratories, Inc.
  858 Coal Creek Circle,
  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."

::= { pktcEUEMibs 4 }

-- Administrative assignments
pktcEUEUserNotification OBJECT IDENTIFIER ::= { pktcEUEUserMIB 0 }
pktcEUEUserObjects OBJECT IDENTIFIER ::= { pktcEUEUserMIB 1 }
pktcEUEUserConformance OBJECT IDENTIFIER ::= { pktcEUEUserMIB 2 }
pktcEUEUserCompliances OBJECT IDENTIFIER ::= { pktcEUEUserConformance 1 }
pktcEUEUserGroups OBJECT IDENTIFIER ::= { pktcEUEUserConformance 2 }

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

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

-- User table
-- ---------------------------------------------------------------------
pktcEUEUserImpUTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcEUEUserImpUEntry
MAX-ACCESS not-accessible
This data table represents Users associated with the uUE. Specifically, it provides information related to the IM Public Identity (IMPU) of the User.

```
::= { pktcEUEUsrProfile 2 }
```

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

The uUE 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 pktcEUEUsrIMPIIndexRef.

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

The conceptual rows MUST NOT persist across uUE resets."

INDEX { pktcEUEUsrIMPUIndex } ::= { pktcEUEUsrIMPUTable 1 }
```

```
PktcEUEUsrIMPUEntry ::= SEQUENCE {
  pktcEUEUsrIMPUIndex              PktcEUETCUsrElementIndexType,
  pktcEUEUsrIMPUIdType             PktcEUETCIDType,
  pktcEUEUsrIMPUId                 PktcEUETCID,
  pktcEUEUsrIMPUIMPIIndexRef       PktcEUETCUsrElementIndexType,
  pktcEUEUsrIMPUDispInfo           SnmpAdminString,
  pktcEUEUsrIMPUOpIndexRefs        SnmpAdminString,
  pktcEUEUsrIMPUAdminStat          PktcEUETCAdminStatus,
  pktcEUEUsrIMPUAdminStatInfo      PktcEUETCStatusInfo,
  pktcEUEUsrIMPUOperStat           PktcEUETCOperStatus,
  pktcEUEUsrIMPUOperStatInfo       PktcEUETCStatusInfo,
  pktcEUEUsrIMPUSigSecurity        TruthValue,
  pktcEUEUsrIMPUAdditionalInfo     SnmpAdminString,
  pktcEUEUsrIMPURowStatus          RowStatus
}
```

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

 ::= { pktcEUEUsrIMPUEntry 1 }
```

```
pktcEUEUsrIMPUIdType 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 'pktcEUEUsrIMPUId'.
```
Valid types are other(1), publicIdentity(3) and username(6)."
DEFVAL { other }
::= { pktcEUEUsrIMPUEntry 2 }

pktcEUEUsrIMPUId OBJECT-TYPE
SYNTAX PktcEUETCID
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This MIB Object MUST identify the User IMPU being
associated with the eUE.

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

pktcEUEUsrIMPUIMPIIndexRef OBJECT-TYPE
SYNTAX PktcEUETCUsrElementIndexType
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}
::= { pktcEUEUsrIMPUEntry 4 }

pktcEUEUsrIMPUDispInfo OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This optional MIB Object MAY contain human readable
text describing User characteristics. Examples include
User Display Name, Subscriber Identifier etc."
DEFVAL {"" }
::= { pktcEUEUsrIMPUEntry 5 }

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

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

The eUE MAY attempt to use the user entry in a
domain or sub-domain specified by the operator table,
corresponding to the entries listed here."
The eUE MUST NOT attempt to use the user entry in a domain that is not specified by this entry.

If unspecified, the eUE MUST use the domain identified by the IMPU.

DEFVAL { "" }
::= { pktcEUEUsrIMPUEntry 6 }

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

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

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

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

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

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

pktcEUEUsrIMPUOperStat OBJECT-TYPE
SYNTAX PktcEUETCOperStatus
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This MIB Object contains the operational activation status of the user IMPU.

This object returns the following values:

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

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

'notPresent'
This value is not applicable.

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

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

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

::= { pktcEUEUsrIMPUEntry 9 }

pktcEUEUsrIMPUOperStatInfo OBJECT-TYPE
SYNTAX PktcEUETCStatusInfo
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This MIB Object contains information that describes the activation status indicated in 'pktcEUEUsrIMPUOperStat' or the zero-length string is not detail information is available.

For example 'User deactivated based on user interface input'."
DEFVAL { "" }
::= { pktcEUEUsrIMPUEntry 10 }

pktcEUEUsrIMPUSigSecurity OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This element indicates the network requirement for SIP signaling with the P-CSCF.

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

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

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

After the P-CSCF confirm or set the SIP secure mode the UE MUST report such state."
REFERENCE "PacketCable IMS Delta Session Initiation Protocol (SIP) and Session Description Protocol (SDP), Stage 3 Specification 3GPP TS 24.229"
DEFVAL { true }
::= { pktcEUEUsrIMPUEntry 11 }

pktcEUEUsrIMPUAdditionalInfo 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 { "" }
 ::= { pktcEUEUsrIMPUEntry 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 pktcEUEUsrIMPUTable.

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 'pktcEUEUsrIMPUIdType' and the 'pktcEUEUsrIMPUId. 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."
 ::= { pktcEUEUsrIMPUEntry 13 }
```

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

pktcEUEusrIMPITable OBJECT-TYPE
SYNTAX      SEQUENCE OF PktcEUEusrIMPIEntry
MAX-ACCESS  not-accessible
STATUS      current

```

08/25/11
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 }
 ::= { pktcEUEUsrIMPTable 1 }

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

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

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

CableLabs®
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."
::= { pktcEUEUsrIMPIEntry 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  { pktcEUEusrIMPUIndex, pktcEUEusrAppMapAppIndex }
 ::= { pktcEUEusrAppMapTable 1 }

PktcEUEusrAppMapEntry ::= SEQUENCE {
  pktcEUEusrAppMapAppIndex PktcEUETCUsrAppIndexType,
  pktcEUEusrAppMapAppOrgID PktcEUETCAppOrgIdentifier,
  pktcEUEusrAppMapAppIdentifier PktcEUETCAppIdentifier,
  pktcEUEusrAppMapAppIndexRef PktcEUETCUsrAppIndexType,
  pktcEUEusrAppMapAppAdminStat PktcEUETCAdminStatus,
  pktcEUEusrAppMapAppAdminStatInfo PktcEUETCStatusInfo,
  pktcEUEusrAppMapAppOperStat PktcEUETCOperStatus,
  pktcEUEusrAppMapAppOperStatInfo PktcEUETCStatusInfo,
  pktcEUEusrAppMapRowStatus RowStatus
}

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

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

pktcEUEusrAppMapAppIdentifier OBJECT-TYPE
SYNTAX  PktcEUETCAppIdentifier
MAX-ACCESS read-create
STATUS  current
DESCRIPTION "This MIB Object represents the identifier for an Application associated with the User.
The application identifier MUST represent an application specified by the organization specified in "pktcEUEUsrAppMapAppOrgID.'"

```plaintext
::= { pktcEUEUsrAppMapEntry 3 }
```

**pktcEUEUsrAppMapAppIndexRef OCTET-TYPE**

<table>
<thead>
<tr>
<th>SYNTAX</th>
<th>PktcEUETCUsrAppIndexType</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX-ACCESS</td>
<td>read-create</td>
</tr>
<tr>
<td>STATUS</td>
<td>current</td>
</tr>
</tbody>
</table>

**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** 

```plaintext
{0}
```

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

**pktcEUEUsrAppMapAppAdminStat OCTET-TYPE**

<table>
<thead>
<tr>
<th>SYNTAX</th>
<th>PktcEUETCAdminStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX-ACCESS</td>
<td>read-create</td>
</tr>
<tr>
<td>STATUS</td>
<td>current</td>
</tr>
</tbody>
</table>

**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**

```plaintext
{active}
```

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

**pktcEUEUsrAppMapAppAdminStatInfo OCTET-TYPE**

<table>
<thead>
<tr>
<th>SYNTAX</th>
<th>PktcEUETCStatusInfo</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX-ACCESS</td>
<td>read-create</td>
</tr>
<tr>
<td>STATUS</td>
<td>current</td>
</tr>
</tbody>
</table>

**DESCRIPTION**

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

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

**pktcEUEUsrAppMapAppOperStat OCTET-TYPE**

<table>
<thead>
<tr>
<th>SYNTAX</th>
<th>PktcEUETCOperStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX-ACCESS</td>
<td>read-only</td>
</tr>
<tr>
<td>STATUS</td>
<td>current</td>
</tr>
</tbody>
</table>

**DESCRIPTION**

"This MIB Object represents the current operational status of the user using the application specified in this entry. This object returns the following values:
- 'active'
  When pktcEUEUsrAppMapAppAdminStat is 'active' and there are no run-time conditions and/or configuration errors that prohibit the IMPU to use this application."
'inactive'
When pktcEUEusrAppMapAppAdminStat is 'inactive'
or
When pktcEUEusrAppMapAppAdminStat is 'active' and there
are run-time conditions and/or configuration errors that
prohibit the IMPU to use this application.

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

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

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

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

::= { pktcEUEUsrAppMapEntry 7 }

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

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

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

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

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

The eUE MUST not allow these two objects to be changed while
the row is 'active'. The value of this object has no effect on
whether other columnar objects in this row can be modified."
::= { pktcEUEUsrAppMapEntry 9 }

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

-- ----------------------
pktcEUEUsrMIBCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION "The compliance statement for implementations of the User Mib."

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

pktcEUEUsrIMPUGroup OBJECT-GROUP
OBJECTS {
    pktcEUEUsrIMPUIdType,
    pktcEUEUsrIMPUId,
    pktcEUEUsrIMPIIMPIIndexRef,
    pktcEUEUsrIMPUDispInfo,
    pktcEUEUsrIMPUOpIndexRefs,
    pktcEUEUsrIMPUAdminStat,
    pktcEUEUsrIMPUAdminStatInfo,
    pktcEUEUsrIMPUOperStat,
    pktcEUEUsrIMPUOperStatInfo,
    pktcEUEUsrIMPUSigSecurity,
    pktcEUEUsrIMPUAdditionalInfo,
    pktcEUEUsrIMPURowStatus
}
STATUS current
DESCRIPTION "The user IMPU Group."

pktcEUEUsrIMPIGroup OBJECT-GROUP
OBJECTS {
    pktcEUEUsrIMPICredsType,
    pktcEUEUsrIMPICredentials,
    pktcEUEUsrIMPIIdType,
    pktcEUEUsrIMPIId,
    pktcEUEUsrIMPIRowStatus
}
STATUS current
DESCRIPTION "The user IMPI Group."

pktcEUEUsrAppMapGroup OBJECT-GROUP
OBJECTS {
    pktcEUEUsrAppMapAppOrgID,
    pktcEUEUsrAppMapAppIdentifier,
    pktcEUEUsrAppMapAppIndexRef,
    pktcEUEUsrAppMapAppAdminStat,
    pktcEUEUsrAppMapAppAdminStatInfo,
    pktcEUEUsrAppMapAppOperStat,
    pktcEUEUsrAppMapAppOperStatInfo,
    pktcEUEUsrAppMapAppAdditionalInfo,
pktcEUEusrAppMapAppOperStatInfo,  
pktcEUEusrAppMapRowStatus  
}  
STATUS current  
DESCRIPTION  
"The User to Applications Mapping Group."
::= { pktcEUEusrGroups 4 }
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
    FROM SNMPv2-CONF

SnmpAdminString
    FROM SNMP-FRAMEWORK-MIB

InetAddressType,
  InetAddress
    FROM INET-ADDRESS-MIB

pktcEUEMibs
    FROM CLAB-DEF-MIB;

pktcEUEProvMgmtMIB

  MODULE-IDENTITY
    LAST-UPDATED "201101170000Z" -- Jan 17, 2011
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
      "Broadband Network Services
      Postal: Cable Television Laboratories, Inc
      858 Coal Creek Circle
      Louisville, CO 80027
      U.S.A.
      Phone: +1 303 661 9100
      Fax: +1 303 661 9199
      E-mail:mibs@cablelabs.com"
    DESCRIPTION
      "This MIB module provides the provisioning and management
      MIB module for the E-UE Provisioning Framework."
    REVISION "201101170000Z" -- Jan 17, 2011
    DESCRIPTION
      "Revised Version includes ECN EUE-DATA-N-11.0659-1
      and published as I06"
    REVISION "200807100000Z" -- July 10, 2008
    DESCRIPTION
      "Revised Version includes ECN EUE-DATA-N-08.0524-5
      and published as I02"
    REVISION "200711060000Z" -- Nov 6, 2007
    DESCRIPTION
      "Initial version, published as part of the CableLabs
      E-UE Provisioning Data Model Specification
      PKT-SP-EUE-DATA-I01-071106
      Copyright 1999-2007 Cable Television Laboratories, Inc.
      All rights reserved."

 ::= { pktcEUEMibs 5 }

-- Administrative assignments
pktcEUEProvMgmtNotifications

OBJECT IDENTIFIER ::= { pktcEUEProvMgmtMIB 0 }
pktcEUEProvMgmtObjects OBJECT IDENTIFIER ::= { pktcEUEProvMgmtMIB 1 }
pktcEUEProvMgmtConformance OBJECT IDENTIFIER ::= { pktcEUEProvMgmtMIB 2 }

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

-- DHCP Servers for IPv6
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 'pktcEUEDnsv6ServerAddress'. Valid values are 'ipv6(2)' and 'unknown(0)'."
::= { pktcEUEProvMgmtObjects 6}

pktcEUEDnsv6ServerAddress1  OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"This MIB Object contains the primary DNSv6 Server address which the eUE obtained via DHCPv6, when the eUE is in IPv6 mode."
::= { pktcEUEProvMgmtObjects 7 }

pktcEUEDnsv6ServerAddress2  OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"This MIB Object contains the secondary DNSv6 Server address which the eUE obtained via DHCPv6, when the eUE is in IPv6 mode."
::= { pktcEUEProvMgmtObjects 8 }

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

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

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

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

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

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

MODULE   PKTC-IETF-MTA-MIB
MANDATORY-GROUPS {
    pktcMtaGroup,
    pktcMtaNotificationGroup
}
-- The following pktcEUEDevBase group describes the base eUE objects

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

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

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

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

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

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

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

If a value is written into an instance of pktcMtaDevEnabled, the agent MUST NOT retain the supplied value across eUE re-initializations or reboots."
-- NOTE: pktcMtaDevServerDhcp1 and pktcMtaDevServerDhcp2 are intended for
-- IPv4 DHCP Servers per RFC 4682. IPv6 DHCP information is contained
-- in the prov-mgmt extension MIB module.
-- OBJECT pktcMtaDevServerDhcp1                   - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevServerDhcp2                   - Same as PKTC-IETF-MTA-MIB

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

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

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

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

OBJECT  pktcMtaDevProvConfigKey
DESCRIPTION
" When the key value is less than 32 octets the most significant
unused bits must be set to zero.
For example, the key (text: 'ABCDEFGH') '4142434445464748'H is
set as:
'000000000000000000000000000000000000000000000000000142434445464748'H."

-- OBJECT pktcMtaDevConfigFile                    - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevSnmpEntity                    - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvConfigHash                - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvConfigEncryptAlg          - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvSolicitedKeyTimeout       - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvUnsolicitedKeyMaxTimeout  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvUnsolicitedKeyNomTimeout  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvUnsolicitedKeyMaxRetries  - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvKerbRealmName             - Same as PKTC-IETF-MTA-MIB
-- OBJECT pktcMtaDevProvState                     - Same as PKTC-IETF-MTA-MIB

-- The following object group describes the security objects.

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

OBJECT  pktcMtaDevRealmAvailSlot
SYNTAX      Unsigned32 (0)
MIN-ACCESS  read-only
DESCRIPTION
" eUE will report 0 available rows since eUE will
have one row entry for pktcMtaDevRealmTable."
<table>
<thead>
<tr>
<th>OBJECT</th>
<th>MIN-ACCESS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>pktcMtaDevRealmName</td>
<td>read-only</td>
<td>&quot;eUE will only have one row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmPkinitGracePeriod</td>
<td>read-only</td>
<td>&quot;eUE will only have one read-only row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmTgsGracePeriod</td>
<td>read-only</td>
<td>&quot;eUE will only have one read-only row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmOrgName</td>
<td>read-only</td>
<td>&quot;eUE will only have one read-only row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmUnsolicitedKeyMaxTimeout</td>
<td>read-only</td>
<td>&quot;eUE will only have one read-only row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmUnsolicitedKeyNomTimeout</td>
<td>read-only</td>
<td>&quot;eUE will only have one read-only row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmUnsolicitedKeyMaxRetries</td>
<td>read-only</td>
<td>&quot;eUE will only have one read-only row entry for this object.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevRealmStatus</td>
<td>not-accessible</td>
<td>&quot;eUE will only have one row entry for this object. This table only has one row.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevCmsAvailSlot</td>
<td>not-accessible</td>
<td>&quot;Object not applicable for the eUE.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevCmsFqdn</td>
<td>not-accessible</td>
<td>&quot;Object not applicable for the eUE.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevCmsKerbRealmName</td>
<td>not-accessible</td>
<td>&quot;Object not applicable for the eUE.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevCmsMaxClockSkew</td>
<td>not-accessible</td>
<td>&quot;Object not applicable for the eUE.&quot;</td>
</tr>
<tr>
<td>pktcMtaDevCmsSolicitedKeyTimeout</td>
<td>not-accessible</td>
<td>&quot;Object not applicable for the eUE.&quot;</td>
</tr>
</tbody>
</table>
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,
   pktcEUDnsV6ServerAddressType,
   pktcEUDnsV6ServerAddress1,
   pktcEUDnsV6ServerAddress2
}
STATUS  current
DESCRIPTION
   "The eUE Operator Group."
::= { pktcEUEProvMgmtGroups 1}

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

END
C.2 Management Event MIB Module

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

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

pktcEUEEventMIB MODULE-IDENTITY
    LAST-UPDATED "200711060000Z"
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
        "Sumanth Channabasappa
        Postal: Cable Television Laboratories, Inc
        858 Coal Creek Circle
        Louisville, CO 80027
        U.S.A.
        Phone: +1 303 661 9100
        Fax: +1 303 661 9199
        E-mail:mibs@cablelabs.com

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

    DESCRIPTION
        "This MIB module provides the management objects for the
        Management Event mechanism as specified by the PacketCable
        E-UE Provisioning Framework."
    ::= { pktcEUEMibs 6 }

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

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

-- Object Groups
-- The object groups used in this MIB module are imported from
-- the PKTC-EVENT-MIB (PKT-SP-EVMIB1.5).

-- 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 {
    ptkcEventGroup,
    ptkcEventNotificationGroup
}

-- Event Reporting control objects

-- OBJECT ptkcDevEvControl - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvSyslogAddressType - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvSyslogAddress - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvSyslogUdpPort - Same as PKTC-EVENT-MIB

-- Event throttling control

-- OBJECT ptkcDevEvThrottleAdminStatus
-- OBJECT ptkcDevEvThrottleThreshold - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvThrottleInterval - Same as PKTC-EVENT-MIB

-- Status Reporting

-- OBJECT ptkcDevEvTransmissionStatus - Same as PKTC-EVENT-MIB

-- Event Descriptions

-- OBJECT ptkcDevEventDescrId - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEventDescrEnterprise - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEventDescrFacility - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEventDescrLevel - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEventDescrReporting - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEventDescrText - Same as PKTC-EVENT-MIB

-- Events generated

-- OBJECT ptkcDevEvLogIndex - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvLogTime - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvLogEnterprise - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvLogId - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvLogText - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvLogEndpointName - Same as PKTC-EVENT-MIB
-- OBJECT ptkcDevEvLogType - Same as PKTC-EVENT-MIB

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

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

</xsd:schema>

D.2 Presence Configuration MIB

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

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

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

Acknowledgements:
  Thomas Clack, Broadcom - Primary author,
  Zu Qiang, Ericsson
  Sumanth Channabasappa, CableLabs
  Eduardo Cardona, CableLabs
  and members of the PacketCable PACM Focus Team."
DESCRIPTION
 "This MIB module contains the configuration MIB
  objects for the Presence Service feature as defined
  by the PacketCable E-UE Provisioning Framework
  Specification."
REVISION "200905280000Z" -- May 28, 2009
DESCRIPTION
"Revised Version includes ECN
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 }
pktcEUEPRSOObjects OBJECT IDENTIFIER ::= { pktcEUEprsMIB 1 }
pktcEUEPRSConformance OBJECT IDENTIFIER ::= { pktcEUEprsMIB 2 }
pktcEUEPRSComiiances 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"
::= { pktcEUEPRSOObjects 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
--

pktcEUEPRSSrCfgTable OBJECT-TYPE
SYNTAX   SEQUENCE OF PktcEUEPRSSrCfgEntry
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"
::= { pktcEUEPRSSObjects 2 }

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

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

PktcEUEPRSSrCfgEntry ::= SEQUENCE {
   pktcEUEPRSSrClientObjDataLim          Unsigned32,
   pktcEUEPRSSrContSvrURI                SnmpAdminString,
   pktcEUEPRSSrSrcThrottlePub            Unsigned32,
   pktcEUEPRSSrMaxPrsSubs                Unsigned32,
   pktcEUEPRSSrMaxSubsPrsList            Unsigned32,
   pktcEUEPRSSrSvcURITemplate            SnmpAdminString,
   pktcEUEPRSSrStatus                    RowStatus
}
pktcEUEPRSUsrClientObjDataLim 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}
 ::= { pktcEUEPRSUsrCfgEntry 1 }

pktcEUEPRSUsrContSvrURI 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 {""}
 ::= { pktcEUEPRSUsrCfgEntry 2 }

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

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

pktcEUEPRSUsrMaxPrsSubs 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 }

pktcEUEPRSUsrMaxSubsPrsList 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
submissions 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 }

pktcEUEPRSUsrSvcURITemplate 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 }

pktcEUEPRSUsrStatus 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
-- Conformance Information

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

-- Compliance Statements
pktcEUEPRSCompliance MODULE-COMPLIANCE
STATUS     current
DESCRIPTION
"The compliance statement for implementations of the EUE-PRS MIB."
MODULE -- this module
MANDATORY-GROUPS {
pktcEUEPRSMandatoryGroups
}
-- optional groups
GROUP pktcEUEPRSOptObjGroup
DESCRIPTION
"This group is of optional support."
 ::= { pktcEUEPrsMIBCompliances 1 }

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

pktcEUEPRSOptObjGroup OBJECT-GROUP
 OBJECTS {
     pktcEUEPRSNwAppName,
     pktcEUEPRSNwProvID,
     pktcEUEPRSNwStatus,
     pktcEUEPRSUrsContSvrURI,
     pktcEUEPRSUrsSrcThrottlePub,
     pktcEUEPRSUrsMaxPrsSubs,
     pktcEUEPRSUrsMaxSubsPrsList,
     pktcEUEPRSUrsSvcURITemplate,
     pktcEUEPRSUrsSvcStatus
 }
 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.

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.
(Mapping of User A to an application profile)

UsrAppMapTable entries

<table>
<thead>
<tr>
<th>AppOrgID.1.1</th>
<th>= 4491 (CableLabs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AppIdentifier.1.1</td>
<td>= 1 (App X, VOD)</td>
</tr>
<tr>
<td>AppIndexRef.1.1</td>
<td>= 10 (Profile X1)</td>
</tr>
</tbody>
</table>

(Mapping of User B to an application profile)

UsrAppMapTable entries

<table>
<thead>
<tr>
<th>AppOrgID.2.1.3</th>
<th>= 4491 (CableLabs)</th>
</tr>
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<tr>
<td>AppIdentifier.2.1</td>
<td>= 1 (App X, VOD)</td>
</tr>
<tr>
<td>AppIndexRef.2.1</td>
<td>= 10 (Profile X1)</td>
</tr>
</tbody>
</table>

Application Profile to Features Mapping Table (Application X)

(Profile X1)

XAppProfileToFeatureMapTable entries

<table>
<thead>
<tr>
<th>AppFeatureIdentifier.10.1</th>
<th>= 1 (VOD Server)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AppFeatureTableIndexRef.10.1</td>
<td>= 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AppFeatureIdentifier.10.2</th>
<th>= 2 (HD QoS)</th>
</tr>
</thead>
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<tr>
<td>AppFeatureTableIndexRef.10.2</td>
<td>= 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AppFeatureIdentifier.10.3</th>
<th>= 3 (SD QoS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AppFeatureTableIndexRef.10.3</td>
<td>= 5</td>
</tr>
</tbody>
</table>

Feature Tables

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

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

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

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

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

**User to Application Profile Mapping Table:**

- **(Mapping of User A to an application profile)**
  - UsrAppMapTable entries
    - AppOrgID.1.1 = 4491 (CableLabs)
    - AppIdentifier.1.1 = 1 (App X)
    - AppIndexRef.1.1 = 11 (Profile X1)

- **(Mapping of User B to an application profile)**
  - UsrAppMapTable entries
    - AppOrgID.2.1 = 4491 (CableLabs)
    - AppIdentifier.2.1 = 1 (App X)
    - AppIndexRef.2.1 = 12 (Profile X2)
AppOrgID.2.2 = 4491 (CableLabs)
AppIdentifier.2.2 = 99 (App Y)
AppIndexRef.2.2 = 20 (Profile Y1)

(Mapping of User C to an application profile)

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

Application Profile to Features Mapping Table (Application X):

(Profile X1)
XAppProfileToFeatureMapTable entries
  AppFeatureIdentifier.11.1 = 1 (DIGIT MAP)
  AppFeatureTableIndexRef.11.1 = 1
  AppFeatureIdentifier.11.2 = 2 (MWI SUB)
  AppFeatureTableIndexRef.11.2 = 11
  AppFeatureIdentifier.11.3 = 3 (DND)
  AppFeatureTableIndexRef.11.3 = 3

(Profile X2)
XAppProfileToFeatureMapTable entries
  AppFeatureIdentifier.12.1 = 1 (DIGIT MAP)
  AppFeatureTableIndexRef.12.1 = 2
  AppFeatureIdentifier.12.2 = 2 (MWI SUB)
  AppFeatureTableIndexRef.12.2 = 11
  AppFeatureIdentifier.12.3 = 3 (DND)
  AppFeatureTableIndexRef.12.3 = 4

Application Profile to Features Mapping Table (Application Y):

(Profile Y1)
YAppProfileToFeatureMapTable entries
  AppFeatureIdentifier.20.1 = 1
  AppFeatureTableIndexRef.20.1 = 25
  AppFeatureIdentifier.20.2 = 2
  AppFeatureTableIndexRef.20.2 = 0
  AppNWFeatureStatus.20.2 = False

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

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

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

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

Application Y Feature Tables
(Feature 1 has a Feature Table)
(Feature 1).25 = "<<Feature 1 data>>"
(Feature 2 has no configuration data)

(Feature 3 is per Operator configuration)
(Feature 3).Operator="<<Feature 3 data>>"
Appendix II  Acknowledgements

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

    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.

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<tr>
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<td>EUE-DATA-N-08.0504-7</td>
<td>5/27/2008</td>
<td>Incorporation of feedback from vendor and ATP focus teams</td>
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<tr>
<td>EUE-DATA-N-08.0524-5</td>
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<td>Alignment of management requirements between PacketCable 1.5 and PacketCable 2.0</td>
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<td>Updates to EUE DATA MIB</td>
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<td>EUE-DATA-N-08.0556-3</td>
<td>4/27/2009</td>
<td>EUE MIB Objects Persistency requirements</td>
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The following Engineering Change Notices were incorporated in PKT-SP-EUE-DATA-I04-100120.

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<td>Clarifications on Configuration Data Element Requirements</td>
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<td>EUE-DATA-N-11.0659-1</td>
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<td>ECR to correct Change#2 in EUE-DATA-N-10.0644-2</td>
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The following Engineering Change Notices was incorporated in PKT-SP-EUE-DATA-I07-110825.

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<th>ECN</th>
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<td>EUE-DATA-N-11.0661-6</td>
<td>7/11/2011</td>
<td>Media IP stack preference in SDP - Dual IP stack new features</td>
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