PacketCable™ Applications

DECT Provisioning Specification

PKT-SP-DECT-PROV-I02-090917

ISSUED

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1 SCOPE

1.1 Introduction and Purpose

PacketCable specifications [DECT-HDV], [DECT-NCS], and [DECT-SIP] specify requirements for PacketCable clients that support the PacketCable High Definition (HD) Voice features. This document specifies the use of the PacketCable Provisioning Framework to configure and manage PacketCable HD Voice capable clients. The PacketCable specifications leverage Digital Enhanced Cordless Telephone (DECT™) technologies to support HD Voice.

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 describing the HD Voice provisioning requirements
- Section 6 - Normative section providing HD Voice provisioning requirements
- Annex A - HD Voice Object models and Management Interfaces definitions
- Annex B - PacketCable Client Endpoint Object Model
- Appendix I - Examples of Telephony Service Delivery Endpoint Associations

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.


[UE-DATA] PacketCable 2.0 UE Provisioning Data Model, PKT-SP-UE-DATA-I01-080905, September 5, 2008, Cable Television Laboratories, Inc.

[EN 300 175-3] ETSI EN 300 175-3, Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer, V2.2.0, June 2008.

[EN 300 175-5] ETSI EN 300 175-5, Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer, V2.2.0, June 2008.

[EN 300 175-6] ETSI EN 300 175-6, Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing, V2.2.0, June 2008.


2.2 Informative References

This specification uses the following informative references:


[CANN] CableLabs Assigned Names and Numbers Specification, CL-SP-CANN-I03-090811, August 11, 2009, Cable television Laboratories, Inc.


2.3 Reference Acquisition

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International Organization for Standardization (ISO), 1, rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland, Phone +41 22 749 01 11; Fax +41 22 733 34 30; Internet: http://www.iso.org


Open Mobile Alliance (OMA), OMA Office, 4275 Executive Square, Suite 240, La Jolla, CA 92037, Fax +1-858-623-0743, Internet: http://www.openmobilealliance.com

International Telecommunications Union, (ITU), Place des Nations, CH-1211, Geneva 20, Switzerland; Phone +41-22-730-51-11; Fax +41-22-733-7256.
3 TERMS AND DEFINITIONS

This specification uses the following terms:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>The terms client and PacketCable client are used interchangeably in this specification.</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration is the process of defining and propagating data to network elements for providing services.</td>
</tr>
<tr>
<td>Data Model</td>
<td>An abstract model that describes representation of data in a system.</td>
</tr>
<tr>
<td>Description Framework</td>
<td>A specification for how to describe the management syntax and semantics for a particular device type.</td>
</tr>
<tr>
<td>DTMF Event</td>
<td>A DTMF Event is the detection of a DTMF digit.</td>
</tr>
<tr>
<td>Endpoint</td>
<td>The term endpoint used in this specification refers to a control signaling endpoint such as an NCS endpoint or a SIP client.</td>
</tr>
<tr>
<td>eUE</td>
<td>The logical PacketCable UE component of an E-UE, complies with eSAFE and PacketCable requirements.</td>
</tr>
<tr>
<td>E-UE</td>
<td>Embedded User Equipment. A single physical device embedded with an eDOCSIS-compliant DOCSIS Cable Modem and a PacketCable eUE.</td>
</tr>
<tr>
<td>FP</td>
<td>The Fixed Part is a portion of the cordless telephone base station defined in ETSI DECT specifications.</td>
</tr>
<tr>
<td>Management</td>
<td>Management refers to the protocols, methodologies and interfaces that enable oversight services in a Service Provider Network.</td>
</tr>
<tr>
<td>Management Information Base</td>
<td>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.</td>
</tr>
<tr>
<td>Management object</td>
<td>A management object (MO) is a subtree of the OMA DM management tree, which is intended to be a (possibly singleton) collection of nodes that are related in some way. For example, the ./DevInfo nodes form a management object. A simple management object may consist of one single node.</td>
</tr>
<tr>
<td>Management server</td>
<td>A network-based entity that issues OMA DM commands to devices and correctly interprets responses sent from the devices.</td>
</tr>
<tr>
<td>Node</td>
<td>A node is a single element in a management tree. There can be two kinds of nodes in a management tree: interior nodes and leaf nodes. The Format property of a node provides information about whether a node is a leaf or an interior node.</td>
</tr>
<tr>
<td>Off-hook Status for the client</td>
<td>Off-hook status at the client is when either the FP is in off-hook status, or the analog line is in off-hook status.</td>
</tr>
<tr>
<td>Off-hook Status for the FP</td>
<td>Off-hook status at the FP is when at least one PP is involved in a network call. Note that DECT internal calls do not affect the off-hook status of the FP.</td>
</tr>
<tr>
<td>On-hook Status for the client</td>
<td>On hook status at the client is when the FP status is on-hook and the analog line is on-hook or in analog intrusion denial state.</td>
</tr>
<tr>
<td>On-hook Status for the FP</td>
<td>On-hook status at the FP is when no PP is involved in a network call. Note that DECT internal calls do not effect the on-hook status of the FP.</td>
</tr>
</tbody>
</table>
PacketCable client: The PacketCable client is a PacketCable network signaling termination within the customer's CPE. Examples include the NCS endpoint within the PacketCable 1.5 E-MTA and the PacketCable 2.0 User Equipment.

Permanent node: A node is permanent if the DDF property Scope is set to Permanent. If a node is not permanent, it is dynamic. A permanent node can never be deleted.

PP: The Portable Part is a portion of the cordless telephone handset defined in ETSI DECT specifications.

Provisioning: Provisioning refers to the processes involved in the initialization of user attributes and resources to provide services to a User. This involves protocols, methodologies, and interfaces to network elements such as: Order Entry and Workflow Systems that carry out business processes, Operational Support Elements that handle network resources, Application Servers that offer services and Use Equipment that offer services.

Request for Comments: Technical policy documents approved by the IETF, which are available on the World Wide Web at http://www.ietf.org
4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

**DDF**  
Device Description Framework

**DECT**  
Digital Enhanced Cordless Telephone

**DOCSIS®**  
Data-Over-Cable Service Interface Specifications

**DVA**  
Digital Voice Adapter

**E-DVA**  
Embedded DVA

**FP**  
Fix Part

**IMS**  
IP Multimedia Subsystem

**MIB**  
Management Information Base

**MO**  
Managed Objects

**MTA**  
Multimedia Terminal Adapter

**E-MTA**  
Embedded MTA

**OMA**  
Open Mobile Alliance

**OMA DM**  
OMA Device Management

**POTS**  
Plain Old Telephony Service

**PP**  
Portable Part

**RFC**  
Request for Comments

**RFI**  
Radio Frequency Interface

**RST**  
Residential SIP Telephony

**SIP**  
Session Initiation Protocol

**S-EDVA**  
Standalone DVA

**SMI**  
Structure of Management Information

**SNMP**  
Simple Network Management Protocol

**UML**  
Unified Modeling Language
5 TECHNICAL OVERVIEW

PacketCable is a CableLabs specification effort designed to support the convergence of voice, video, data, and mobility technologies. The PacketCable architecture describes a set of functional groups and logical entities, as well as a set of interfaces that support the information flows exchanged between entities. For more information about PacketCable, please refer to the PacketCable Architecture Framework Technical Report [ARCH-TR].

As part of these efforts, PacketCable specifies applications built upon the PacketCable architecture. One such application is extensions to support HD Voice application. This document describes the configuration and management requirements of the PacketCable HD Voice application for PacketCable 1.5 E-MTAs and PacketCable 2.0 User Equipment (UE). For details on the PacketCable HD Voice application architecture, see [DECT-HDV].

5.1 HD Voice PacketCable Client Provisioning Framework

The PacketCable client provisioning framework supports the management and configuration of embedded devices (e.g., E-MTA and E-DVA) and standalone devices (e.g., S-DVA). Embedded device provisioning requirements are specified in [PROV1.5] and [EUE-PROV], for PacketCable 1.5 and PacketCable 2.0, respectively. These specifications specify the use of SNMP [RFC 2578] for the provisioning and management of Embedded PacketCable clients. The UE Provisioning Framework ([UE-PROV]) specifies the use of OMA DM for provisioning and management, based on the OMA DM specifications ([OMA-DM]).

For the purpose of this specification, the HD Voice application provisioning requirements are based on PacketCable Provisioning frameworks. In addition, this specification presents a management protocol agnostic object model, to keep in extensible for future enhancements and for potential use with management protocols other than that specified in this document. See the [UE-DATA] specification for more information on the modeling methodology used in this specification.

5.2 HD Voice Provisioning Requirements Overview

The PacketCable HD Voice provisioning requirements are defined in three different specifications.

[DECT-HDV] specifies the High Definition voice service for PacketCable through the use of a Digital Enhanced Cordless Telephone (DECT) base station integrated with a PacketCable client. The provisioning requirements specified in this document and related to [DECT-HDV] apply to both PacketCable 1.5 and 2.0 clients.

[DECT-NCS] places requirements on PacketCable1.5 clients that interface to the FP for DECT and NCS interoperability. The provisioning requirements for the [DECT-NCS] specifications are applicable to PacketCable 1.5 E-MTAs.

[DECT-SIP] places requirements on the PacketCable 2.0 client that interface to the FP for DECT and SIP interoperability. The provisioning requirements for the [DECT-SIP] specification apply to devices that support the PacketCable Residential SIP Telephony [RSTF] and PacketCable Embedded DVA [E-DVA] specifications.

One of the essential requirements for the PacketCable HD Voice Provisioning is the ability to support the Multi-Line configuration and management model, so that the association between the handsets (e.g., POTS, DECT) and the service delivery lines (e.g., subscriber's telephone numbers) can be configured and managed by the network and the end-user (subscriber).
5.3 HD Voice Provisioning Object Model Components

Figure 1 represents the data model for the data element definitions in this document. Please refer to [UE-DATA] for details on the usage of UML models and subsequent derivation of management elements (e.g., SNMP MIB modules, and OMA DM MOs). The DECT Object Model specifies all the HD Voice Provisioning data elements (DECT, DECT-NCS, DECT-SIP) in a protocol agnostic manner. The HD Voice Object Model is then expanded to the PacketCable defined management protocol interface definitions (MIBs for SNMP, and DDFs for OMA DM). The management protocol interface definitions are then supported by PacketCable clients depending on their supported management protocols.

![Figure 1 - HD Voice Provisioning Model](image)

5.4 DHCP- and SNMP-based Provisioning & Management Interface

PacketCable specifies a DHCP- and SNMP-based framework for clients that are embedded with DOCSIS cable modems and are not behind NAT and Firewall devices (e.g., E-MTA, E-DVA). This framework is used for embedded devices that support HD Voice.

PacketCable HD Voice Embedded Devices represent the eSAFE class of devices as defined in the eDOCSIS Specification [eDOCSIS]. In addition to RJ11 POTS ports, the HD Voice Embedded Devices contain logical interfaces associated with the DECT handsets. The conceptual reference model for such devices is shown by the diagram in Figure 2. On this diagram, RJ11 Ports represent the telephony ports for connecting POTS Phones. DECT Ports represent the communication channels between each DECT Handset and the HD Voice Embedded Device.
5.5 OMA DM based Provisioning & Management Framework

OMA DM provides an interoperable framework for managing clients. The OMA management end points, termed OMA DM, specify a management interface between the following elements: DM client (e.g., end-user devices) and OMA DM Server (the management application, normally associated with a service provider or a third party organization). See [UE-PROV] for an overview of OMA DM overview.
6 HD VOICE MANAGEMENT MODEL

6.1 HD Voice PacketCable Service Delivery Model

This specification follows the model of [UE-DATA] to represent the HD Voice Provisioning and Management requirements. The HD Voice Object Model applies to any type of PacketCable clients that support HD Voice. For E-MTAs and E-DVAs, the HD Voice Object Model is mapped into SMIv2 MIB Modules (for SNMP), and OMA DM DDF documents for S-DVAs.

6.2 PacketCable HD Voice (HDV) Client Abstraction Model

This section specifies modeling considerations to enhance PacketCable client and endpoint architecture in support of HD Voice, in particular the way PacketCable 1.5 and 2.0 devices are provisioned. As an example, consider PacketCable 1.5 E-MTAs and PacketCable 2.0 E-DVAs.

HDV clients capable of single-line support require the implementation of a single analog port and a DECT FP. PPs within the FP and the analog port are seen as a single endpoint. The HDV client single-line capable only supports a single signaling endpoint (i.e., one NCS signaling point -aaln/1; a single SIP IMPU).

HDV clients that support the multi-line feature allow that arrangement of a subset of PPs and analog ports to be configured as separate signaling endpoints. In other words, HDV clients capable of multi-line support could configure every single PP as a single phone line (e.g., an NCS endpoint for each PP), or a subset of PPs and analog ports can be configured to be part of a phone line. See [DECT-HDV] for additional details on use cases pertaining to HD Voice.

As a consequence of the above considerations, the concept of endpoints needs to be adapted to support such scenarios.

The PacketCable HDV client Abstraction Model has the following objectives:

• Address and manage the telephony services delivery from the network side.

• Address and manage the telephony services delivery from the terminating client side.

• Provide the ability to group the telephony services on the terminating client side, based on those in the network side, for the purpose of service features control and management.

• Address compatibility with existing PacketCable 1.5 and PacketCable 2.0 data models for E-MTAs and E-UEs. The DECT Data Model needs to preserve the ability to control and manage both NCS and SIP data elements. For example, the notion of the NCS "end-points" (ifTable representation) should have adequate data elements. This is true for SIP Data Elements, such as "User Name", "IMPU", "IMPI", etc.

• Be generic in order to accommodate other types of PacketCable HDV clients in the future. When such clients are introduced, the corresponding specifications may need to consider the PacketCable Service Delivery Model defined in this specification.

• Support for backward compatible configuration when the Operator can upgrade the subscriber's device to PacketCable HDV client but the configuration file or its template should not be updated and would still be able to provide the reasonable configuration of the HDV client utilizing the HD-DECT features (e.g., single- or multi-line support).

Figure 3 depicts the HDV client abstraction model representing the delivery of the Services from the Network to Terminating Devices. This figure abstracts the Service Delivery without specifying which particular service type is being delivered to the user's terminating device (e.g., voice, video, or data). Moreover, as this figure shows, this
model also abstracts the particular types of communication channels between the HDV client and terminating devices (e.g., POTS Phone, DECT Handset, WiFi Phone). From this prospective, Figure 3 can be viewed as a generic model of delivering Media Services to the Terminating Devices.

While the HDV client abstraction model intends to cover a wider range of the services and Terminating Devices than currently defined by the PacketCable Architecture, the primary area of applicability of this model in this specification is limited to the telephony services.

Figure 3 shows the general "NxM" case of "N" Media Ports associated with "M" Network Service Interfaces, where a Media Port can be associated with zero or more Network Service Interfaces and in the opposite direction, one Network Service Interface can be associated with zero or more Media Ports.

The following sub-sections contain more detailed explanation and definitions of the PacketCable HDV client abstraction model used in this specification and describe some examples of how this model can be applied to some of the existing PacketCable configurations.

6.2.1 Terminating Devices

The PacketCable HDV client abstraction model uses the "Terminating Devices" concept to represent the collection of the physical clients (Customer Premises Equipment - CPE) used by the end-user to deliver the media services. For example, the POTS Phones are "Terminating Devices" for PacketCable 1.5 E-MTAs or PacketCable 2.0 E-DVAs. The DECT handsets are also the "Terminating Devices".

6.2.2 Media Ports and Media Delivery Interface

In this section, the concepts of Media Ports and Media Delivery Interface (MDI) are introduced. It addresses components that provide services and applications media to CPE.
PacketCable HD Voice client abstraction model uses "Media Ports" concept to represent the points of data originating and data terminating between the Terminating Device and the HD Voice Device. "Media Ports" represent a generalization of the "endpoints" introduced by the PacketCable architecture.

- An HDV client contains a collection of Media Ports which are sources or sinks of data being transferred between CPE and HD Voice Device. Similar to "endpoints", Media Ports can be "physical" or "virtual". Using the examples of "endpoints" described in the NCS Specification [NCS], the example of a "physical Media Port" is an interface in a HDV client that terminates an analog POTS connection to a phone. An example of a virtual "Media Port" is an audio source in an audio-content server.

- From this perspective, the Media Ports on Figure 3 which represent the connections to the POTS phones, are physical Media Ports, while the Media Ports representing the connections to the DECT Handsets are virtual Media Ports.

**Note:** Media Ports may be of different complexity and different physical nature. For example, it may be as simple as a POTS telephone handset providing a mere transformation of the acoustic signal to the electrical one, or vice-versa. Or, it may be as complex as DECT Handsets providing, in addition, the CODEC transformations.

- "Media Delivery Interface" represents the collection of the "Media Ports" used to deliver the media data to and from the terminating devices.

**6.2.3 Network Delivery Interface**

"Network Delivery Interface" provides the means for the operations on passing the electrical signals with the voice data over the IP networks with the corresponding addressing abilities. These operations as a whole are referred to as Network Delivery Interface (NDI) on Figure 3.

**Note:** Networking operations include the functionality of the OSI Network Layers (PHY, DATA, IP).

- On the other hand, "Network Delivery Interface" represents the abstraction of the process of delivery of the Services from the Service Provider (Operator) to the subscriber (end-user) over the IP networks. NDI comprises the following network abstracts: "Network Service Lines" and "Network Logical Interface".

- "Network Service Lines" (NSL) is an abstraction of an addressing schema used to identify the particular service delivery path of the voice related information from the Service Provider to a set of the "Terminating Devices" via corresponding "Media Ports". For the telephony (voice) services, each NSL is represented as a subscriber's Telephone number. For other types of services, the NSL interpretation should be specified in the corresponding specifications describing these services.

- "Network Logical Interface" represents an abstraction of the MDI to the network. Network Logical Interface allows the Service Provider to monitor and control various parameters related to each MDI Port from the network side (e.g., administrative and operational status, associated port type, etc.). For the HDV embedded clients, the Network Logical Interface is shown in Figure 2 and is represented by "ifTable" MIB Object as defined in the following PacketCable Specifications: [MIBS1.5] and [EUE-DATA]. For other types of the HD Voice devices, Network Logical Interface can be represented by different means which provide one-to-one relationship with the MDI Ports. Such representation should be established and described by the corresponding specifications for these devices.

**6.2.4 Relationships between MDI and NSL**

As stated previously, the HDV client capable of multi-line support requires the support of the MxN association between the Network Service Lines and the Media Ports. An Operator should be able to configure and/or monitor such association to control and manage different services types offered to subscribers according to operator's business policies. An Operator needs to be able to configure the DECT HDV client with single-line support so all DECT PPs are associated with a single phone line (NSL). The Operator also needs to be able to configure one or more Media Ports to one or more phone lines for HDV client with multi-line support.
Examples of various potential relationships between the NSLs and Media Ports and the corresponding configurations are shown on Figure 3, Figure 4, and Figure 5.

On Figure 3, a diverse number of Media Ports are associated with one or more Network Service Lines. The NSL-1 depicted in Figure 3, is associated with the Logical Interfaces 1, 3, and 4 which are terminated with "POTS Port-1", "DECT Port-1", and "DECT Port-2". Similarly, the NSL-2 is associated only with Logical Interface 2, terminated with "POTS Port-2", and the NSL-3 is associated with Logical Interfaces 1 and 5 terminated with "POTS Port-1", and "WiFi Port-1".

In addition, each NSL can be connected to a different type of Network PHY Ports (e.g., DOCSIS, Ethernet, etc.) depending on the network access or device types (CM embedded and non-embedded devices).

In Figure 4, a single NSL is associated with all four Logical Interfaces, each of which is terminated by a corresponding Media Port. This configuration models the single-line support of the HDV client.

In Figure 5, two NSLs are associated with a single Logical Interface, each of which is terminated by a single Media Port ("POTS Port-1" and "POTS Port-2"). This configuration models the PacketCable 1.5 embedded clients (E-MTAs).
6.2.5 PacketCable HDV client

The PacketCable client performs all necessary operations to interface between the two layers - MDI and NDI (e.g., operations such as networking, signaling, and management). Examples of PacketCable clients include E-MTA, E-DVA, and S-DVA.

Annex C describes the MDI and NDI Object model and the corresponding mappings to different Management protocols supported by PacketCable clients.

6.3 General Description of the Data Model

This section presents a general description of the Data Model and its Objects corresponding to the PacketCable HDV client Abstraction Model of Section 6.2.

Along with that, the Data Model includes the necessary objects allowing the HDV client to accommodate the "List access service" as defined in [TS 102 527-3]. The data objects corresponding to the DECT List Access Service are presented in Annex B.

6.3.1 Media Delivery Interface (MDI) Data Model

"Media Delivery Interface" Data Model is represented by the Mdi object where the number of entries is equal to the number of all media ports (e.g., analog POTS and DECT handsets - for the voice media). The table is populated by the device based on the device design and presence of the POTS and DECT handsets. As described in Section 6.2.3, the Mdi object is an extension of the Interface object (e.g., an extension of the "ifTable" in case of the HD Voice embedded devices). The detailed description of the MDI object model is presented in Annex C.
6.3.2 Network Logical Interface Data Model

As stated in Section 6.2.3, for embedded HDV clients such as PacketCable 1.5 E-MTAs and PacketCable 2.0 E-DVAs, the Network Logical Interface is implemented as "ifTable" MIB Object (as per [RFC 2863]). In this case, each POTS and DECT Port is represented as an instance in the ifTable and qualified with an interface type (ifType of 'voiceOverCable' with numerical value of 198) as specified in [MIBS1.5] and [RST-EUE-PROV].

The Network Logical Interface Data Model for other types of the HDV clients is outside of the scope of this specification.

6.3.3 Network Service Lines (NSL) Data Model

"Network Service Lines" Data Model is represented by the Nsl Object where the number of entries is equal to the number of Service Lines (e.g., telephone numbers) assigned to the end-user and configured to the HDV client. The "nslTable" Data Object maps each Network Service Line to the particular set of the Media Delivery Ports for inbound and outgoing calls separately. The detailed description of the MDI Data Model is presented in Annex C.

6.4 PacketCable HDV Client Requirements

This section provides the detailed requirements for the following types of the PacketCable HDV clients: E-MTA, E-DVA (as described in Section 5.4) and S-DVA (as described in [DECT-HDV]). For other types of the PacketCable HDV clients, the requirements for the Network Logical Interface, Network Service Lines and Media Ports should be described and determined by the corresponding specifications.

The PacketCable HD Voice E-MTA, E-DVA, and S-DVA clients are further referred to as "HDV clients", unless stated otherwise.

6.4.1 PacketCable Client DECT Capabilities

An HDV client, within the scope of this specification has to indicate its capability of supporting one FP, even in cases where the client supports more than one physical FP (e.g., expand the handset capacity). An HDV client MUST at minimum indicate the support of a single FP in its capabilities (See Annex A).

6.4.2 Network Logical Interface Configuration and Provisioning Requirements

The configuration of the Network Logical Interface of the HDV clients is a part of the overall HDV client provisioning process.

To configure the Network Logical Interface, the HDV client MUST implement the Network Logical Interface in compliance with the IETF Interfaces Group MIB requirements ([RFC 2863]), so that, each POTS ports ("physical ports") and DECT ports ("virtual ports") are reported as an interface instance of type 'voiceOverCable'. The Interface information is populated by the device based on the design and presence of the POTS ports and on the number of DECT handsets which have been registered (paired) with the HDV client.

To configure the Network Logical Interface, the HDV client MUST start all instances corresponding to the "physical ports" (POTS ports) available on the HDV client, beginning from interface index 9 and then sequentially incrementing the interface index for additional POTS ports.

To configure the Network Logical Interface, the HDV client MUST start all instances, corresponding to the "virtual ports" (e.g., DECT Handsets) registered (paired) with the HDV client assigned the interface index based on the DECT Port Interface Index capability (Annex A) and sequentially incremented for each virtual port based on the Number of PPs capability (Annex A).
To configure the Network Logical Interface, the HDV client MUST follow the E-MTA and E-DVA requirements described in [MIBS1.5] and [EUE-DATA] for populating all other conceptual columns of the interface object.

To configure the Network Logical Interface, the HDV client MUST de-register the additional PPs beyond the maximum number of allowed PPs to register. Selection of the PPs to be deleted is vendor specific.

To configure the Network Logical Interface, the HDV client MUST delete the corresponding Interface object instances when a PP de-registers from the FP, with the exception of operator-initiated PP.RegCtrl set to 'deregister' where the PP is temporarily de-registered, but the operator is expected to initiate a new pairing process for that PP.

To configure the Network Logical Interface, the HDV client MUST add the corresponding Interface object instances when a new PP registers from the FP.

6.4.3 MDI Configuration and Provisioning Requirements

The MDI configuration is a part of the overall HDV client provisioning process.

The following MDI configuration requirements apply to the HDV client:

- The HDV client MUST populate the Mdi object with instances corresponding to the media delivery interface types known to the device (e.g., POTS and PPs).
- The HDV client MUST persist the value of the interface index of each MDI instance corresponding to a registered PP. This requirement is generated by the dynamic nature of the DECT handsets and provides the possibility for the Operator to configure the DECT handsets.
- The HDV client MAY reuse the value of the interface index only after the PP has been deregistered with the FP.
- The HDV client MUST report the value of the PP Interface operational status as 'up' whenever the value of PP.Status object attribute of the PP is 'activeLocked' or 'idleLocked'. Otherwise, the HDV client MUST report the value of the interface operational status as 'down'.

Note: When Zero Emission is enabled this value may not be accurate.

- The HDV client MUST delete the corresponding instance of the Mdi object when a PP de-registers from the FP and made the instance index available for re-use in future PP pairing processes.
- The HDV client MUST add the corresponding instance of the Mdi object when a new PP registers from the FP.
- Depending on the type of the Media Port, the HDV clients MUST populate by default the MDI object instances as indicated in Table 1.

<table>
<thead>
<tr>
<th>Media Port Type</th>
<th>Interface Index</th>
<th>Type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTS Port</td>
<td>[Per Section 6.4.2]</td>
<td>'pots'</td>
<td>&quot;POTS &lt;ifIndex-num&gt;&quot; (*)</td>
</tr>
<tr>
<td>DECT Port</td>
<td>[Per Section 6.4.2]</td>
<td>'dectPP'</td>
<td>&quot;DECT Handset &lt;term-id-num&gt;&quot;(**)</td>
</tr>
</tbody>
</table>

Notes:
(* "POTS <ifIndex-num>" (without quotation marks) consists of the word POTS, the SPACE character and the interface index number of the MDI port
(**) "DECT Handset <term-id-num>" (without quotation marks) consists of the words DECT Handset, SPACE character and the DECT Terminal and corresponds to the DECT "Internal names list" "number" field [TS 102 527-2].

6.4.4 Configuration Requirements for HDV Clients with Single-line Support

The requirements in this section apply to the HDV clients that support Single Line Configuration and do not support the multi-line feature.
The HDV client reuses the endpoint configuration models of [PROV1.5], [RST-EUE-PROV] and [RST-UE-PROV]. In those specifications, the endpoint defines a one-to-one relationship of signaling endpoint and analog port configuration. To support single-line capable HDV clients, this specification defines rules to allow the configuration of single signaling endpoint while supporting one or more analog ports. As a rule, the signaling endpoint requirements are tied to interface index = 9 irrespective of the number of analog ports. In addition, requirements for per POTS port for the single-line device are provided.

An HDV client that supports single-line configuration MUST configure the Network Logical Interface as described in Section 6.4.2

An HDV client that supports single-line configuration MUST configure the Mdi object as described in Section 6.4.3.

An HDV client that supports single-line configuration MUST configure the NSL object with a single instance (Nsl.Index=1) corresponding to a single telephone line available to a user, and provide read and write operations for the NSL object instance.

An HDV client that supports single-line configuration MUST reject all management operations that request the creation or deletion of instances in the NSL object, by indicating an error as required by the management protocol defined in Section 6.4.8.

An HDV client that supports single-line configuration MUST populate by default the Nsl.Name single instance with a user defined value of the 'Line settings list' field 'Line name', or the default value "Line n" (without the quotes) where n is the Nsl.Index value.

An HDV client that supports single-line configuration MUST ignore set operations to the NSL object and log the warning condition based on the requirements in Section 6.4.8.

An HDV client that supports single-line configuration MUST associate the Media Ports listed in the Mdi object with the attributes Nsl.PortListIn and Nsl.ListOut of the Nsl object instance. Post initialization requirements of the single-line HDV client Mdi object are described in Sections 6.4.2 and 6.4.3.

A PacketCable 1.5 HDV client that supports single-line configuration MUST use the configuration of the NCS endpoint "aaln/1" (NCS endpoint configuration ifIndex = 9) for the single NSL, e.g., when configuring pktcSigEndPntConfigTable, pktcNcsEndPntConfigTable, pktcEnNcsEndPntConfigTable, pktcEnNcsEndPntLVMgmtTable.

A PacketCable 1.5 HDV client that supports single-line configuration MUST ignore the configuration of any NCS endpoint different of "aaln/1" and log the warning condition based on the requirements in Section 6.4.8.

A PacketCable 1.5 HDV client that supports single-line configuration MUST use by default the configuration of the instance denoted by ifIndex = 9 of pktcEnEndPntInfoTable for each POTS port not configured.

A PacketCable 2.0 HDV client that supports single-line configuration MUST use the first IMPU instance in the configuration (i.e., lowest index or key entry) for the assignment to the single phone, ignore additional IMPU instances, and log the warning condition based on the requirements in Section 6.4.8.

A PacketCable 2.0 HDV client that supports single-line configuration MUST use the configuration of the 'IMPU Additional Info' noted as NSL#N, in case both NSL#N and IEP#N/OEP#M notations are present in the configuration.

A PacketCable 2.0 HDV client that supports single-line configuration MUST use the configuration of the instance denoted by interface index = 9 of pktcEnNcsEndPntLVMgmtTable, pktcEDVANetDiscTable, and pktcEDVAEndPntConfigTable, pktcEDVAPrLossTable and pktcEDVAMWISignalTypesTable.
A PacketCable 2.0 HDV client that supports single-line configuration MUST ignore any instance of pktcEnNcsEndPntLVmgmtTable, pktcEDVANetDiscTable, pktcEDVAEndPntConfigTable, pktcEDVAPrLossTable, and pktcEDVAMWISignalTypesTable different than the one identified by interface index = 9, and log the warning condition based on the requirements in Section 6.4.8.

A PacketCable 2.0 HDV client that supports single-line configuration MUST use by default the configuration of the instance denoted by ifIndex = 9 of pktcEnEndPntInfoTable for each POTS port not configured.

Note: The notation for single-line configuration defined above provides backward compatibility with single-line E-MTA and E-DVA configuration. No phone line service is provided for the MTA if the aaln/1 endpoint is not configured or if the E-DVA IMPU has no explicit association with the NSL or endpoint (IEP, OEP).

6.4.5 Configuration Requirements for HDV Clients with Multi-line Support

The requirements for the configuration and provisioning of the HDV clients described in this section are applicable only to HDV clients capable of multi-line support.

To support multi-line capable HDV clients, this specification defines rules to allow the configuration of each signaling endpoint separated of the analog ports. For example, for the multi-line HDV client this specification requires the association of the interface index with MDI ports and the NCS signaling identifiers directly associated with the NSL identifier by conventions defined in this section.

An HDV Client that supports multiple-line configuration MUST configure the Network Logical Interface as described in Section 6.4.2.

An HDV Client that supports multiple-line configuration MUST configure the Mdi object as described in Section 6.4.3.

An HDV Client that supports multiple-line configuration MUST allow the creation, deletion and update of instances of the NSL object.

An HDV Client that supports multiple-line configuration MUST allow the configuration of the device as single-line as defined in Section 6.4.4, in a backward compatible manner (e.g., in the absence of operator configuration of the NSL object).

An HDV Client that supports multiple-line configuration MUST populate by default the Nsl.Name with a user defined value of the 'Line settings list' field 'Line name', or the default value "Line n" (without the quotes) where n is the Nsl.Index value.

The HDV client MUST support the modification of a PP name by means of the "Internal names list" to affected PPS as defined in the List change notification section of [TS 102 527-2] whenever the FP receive updates to the NSL and MDI objects via list commands from the PP or by operator updates to the device configuration. The relationships between Nsl and Mdi objects attributes and DECT list access are shown in Table 2.

<table>
<thead>
<tr>
<th>List Service Access Name</th>
<th>List Service Access Field Name</th>
<th>Configuration element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line settings list</td>
<td>line id</td>
<td>Nsl.Index</td>
</tr>
<tr>
<td>Line settings list</td>
<td>line name</td>
<td>NSL.Name</td>
</tr>
<tr>
<td>Line settings list</td>
<td>attached handsets</td>
<td>NSL.PortListIn, NSL.PortListOut</td>
</tr>
<tr>
<td>Internal names list</td>
<td>name</td>
<td>[Per Section 6.4.2]</td>
</tr>
</tbody>
</table>

The HDV client MUST support the modification of a PP name by means of the "Internal names list" from any PP and notify the PP being renamed.
The HDV client MAY support the deletion of a PP by another PP attached to the same line by means of the "Internal names list". An HDV client that supports the deletion of PPs via "Internal names list" MUST remove the PP from the network (e.g., remove pairing of the deleted PP).

The multi-line PacketCable 1.5 HDV client MUST use the Nsl.Index attribute to identify the NCS signaling endpoint name so that the endpoint signaling name of "aaln/N" corresponds to the NSLN (Nsl.Index = N) and vice-versa. For example, the NCS endpoint name "aaln/1" identifies NSL1.

The multi-line PacketCable 1.5 HDV client MUST preserve the endpoint interface index relationship to aaln/N independent of the MDI ports identification and their association with the NSL. For example, aaln/1 corresponds to endpoint signaling ifIndex = 9; aaln/2 corresponds to endpoint signaling ifIndex = 10. The prior case is valid to configure MDI ports ifIndex 9,10 with aaln/1 (signaling endpoint ifIndex = 9) or aaln/2 (signaling endpoint ifIndex = 10), aaln/3 (signaling endpoint ifIndex = 11), etc.

The multi-line PacketCable 2.0 HDV client MUST support the "NSL#N" tag for the UsrIMPU.AdditionalInfo object attribute where N corresponds to the Nsl.Index value, so that if UsrIMPU.AdditionalInfo attribute contains the value NSLN, it corresponds to the Service Line NSL=N assigned to the particular IMPU.

The multi-line PacketCable 2.0 HDV client MUST use the NSL#N tag if the UsrIMPU.AdditionalInfo object attribute contains the NSL#N tag along with either IEP#N, OEP#N tags or both, and ignore the IEP#N, OEP#N tags.

The multi-line PacketCable 2.0 HDV client MUST ignore a NSL#N tag in an UsrIMPU.AdditionalInfo object attribute pointing to a non-existing instance of the NSL object, and log the warning condition as defined in Section 6.4.8.

The multi-line PacketCable 2.0 HDV client MUST reject the configuration of two or more IMPUs (i.e., IMPU AdditionalInfo attribute) to the same NSL#N, and log the failure condition as defined in Section 6.4.8.

The multi-line PacketCable 2.0 HDV client MUST provide a single-line HDV client and PacketCable 2.0 client configuration (see Section 6.4.4) when configuring a single instance of UsrIMPU.AdditionalInfo with IEP#9 and/or OEP#9 notation.

6.4.6 Configuration Requirements for the Inbound and Outgoing Service Requests

The HDV client MUST NOT enable telephony features on a particular MDI Port if the MDI port is not associated - by default or explicit configuration - with an instance of the NSL Object, or if the MDI port interface administrative status is set to 'down'.

If more than one service line is configured in the outgoing direction for a particular Media Port, the HDV client MUST use the service line with the lowest value of Nsl.Index for outgoing calls unless the Media Port is capable of indicating the preferred NSL.

6.4.7 List Access Service Support

The "List access service" provides storage and configuration capabilities for users of information related to the DECT system. The HDV client uses the list access services to retrieve service information, such as call logs and of feature configuration like the assignment of handsets to phone lines. See [TS 102 527-3] for information about the "List access service" feature.

The HDV client capable of a single line configuration MAY support the List Access Service Object Model as defined in Annex B.

The HDV client capable of multi-line configuration MUST support the following Annex B objects associated with List access services:
The following requirements provide rules to prevent user and operator conflict assignment of handsets to phone lines.

The PacketCable provisioning framework does not support persistence of the provisioning information in general. In the multi-line configuration of DECT handsets, the model is extended to allow users to modify the assignment of PPs to NSLs. To offer a reliable user experience, persistence of the PPs assignment is required. From the operator perspective, it is not practical to track the user configuration of PPs via the configuration data at boot time. However ad-hoc operations may be used to modify the terminals assignment via operator management interface (e.g., Web portal).

Note: The operator can disable the user ability to modify the line settings by locking the Line settings list via the FP.LockListCfg object attribute to have full control over the provisioning interface.

The HDV client supporting Multi-line must apply the following rules when the user is allowed to modify the line settings.

The HDV client supporting Multi-line MUST apply the following rule when the user is allowed to modify the line settings; if the HDV client operator configuration contains NSL information and does not contain PPs assigned to the NSL, the device updates the NSL.PortListIn, PortsListOut attributes with the "Line settings list" field "attached handsets" field available in the device (i.e., LineSettingsList object).

The HDV client supporting Multi-line MUST apply the following rule when the user is allowed to modify the line settings; if the HDV client operator configuration contains NSL information and does contain PPs assigned to the NSL, the configured PPs to NSLs from the operator configuration prevails over the user configuration. Other PPs not included in the operator NSL configuration but in the Line settings list are updated in the device NSL object. Then the new line settings is communicated back to the affected PPs via DECT List change notification [TS 102 527-3].

The HDV client supporting Multi-line MUST notify the affected PPs via DECT List change notification procedures [TS 102 527-3] the changes to the NSL and MDI objects when the user is allowed to modify the line settings.

6.4.8 Provisioning and Configuration Error Status Reporting

During provisioning, error conditions can occur. In some cases the HDV client is rejecting the provisioning process due the nature of the failure, and in some cases those failures conditions are ignored and logged by the device. Depending on the HDV provisioning model, "rejecting" or "ignoring" a configuration item through this document is interpreted as defined below.

HDV clients supporting SNMP-based provisioning as defined in [PROV1.5] and [EUE-PROV] specifications include the download of a config file that is processed by the HDV client. Depending on the information being configured, the HDV client will either "reject" the configuration and reinitialize the provisioning process, or will "ignore" the provisioned item and complete the provisioning process. See details on the provisioning state and log of exception in [PROV1.5], [MIBS1.5], [EUE-PROV], and [EUE-DATA] specifications.

The HDV client that supports the SNMP and DHCP provisioning framework in a "reject" condition MUST set the client provisioning state to "failureOtherReason" and report the problem in the pktcMtaDevErrorOidsTable.
The HDV client that supports the SNMP and DHCP provisioning framework in an "ignore" condition MUST set the client provisioning state to "passWithWarnings" and will report the warning in the pktcMtaDevErrorOidsTable.

The HDV client that supports OMA DM-based provisioning as defined in [UE-PROV] specification performs OMA DM sessions. In terms of device provisioning, the OMA DM session may include e.g., OMA DM 'Add' and 'Replace', 'Delete' commands. During the OMA DM session, the client accepts or rejects a configuration item. It is up to the DM server to stop or continue the provisioning process within the DM session. Therefore, 'rejecting' or 'ignoring' a configuration item implies an HDV client OMA DM message response (status message) different than 'OK'.

### 6.5 HD Voice Clients Requirements for DHCP- and SNMP-based Provisioning

This section specifies requirements to support the HD Voice provisioning requirements for the PacketCable HDV clients that support DHCP- and SNMP-based provisioning. The HDV clients that supports the SNMP management interface MUST comply with the Object Models and SNMP MIB Modules as specified in Table 3.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Object Model*</th>
<th>MIB Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex B</td>
<td>DECT</td>
<td>PKTC-DECT-MIB</td>
<td>DECT Features</td>
</tr>
<tr>
<td>Annex B</td>
<td>DECT-SIP</td>
<td>PCKT-DECT-SIP-MIB</td>
<td>DECT SIP Signaling interoperability for E-UEs (e.g., E-DVA)</td>
</tr>
<tr>
<td>Annex C</td>
<td>MDI</td>
<td>PKTC-MDI-MIB</td>
<td>Telephony Delivery Interface</td>
</tr>
</tbody>
</table>

**Note:** There are no requirements for modeling [DECT-NCS].

#### 6.5.1 HD Voice E-MTA SNMP Requirements

An E-MTA that is PacketCable HD Voice capable MUST support the following:

- the HD Voice Capabilities, as specified in Annex A;
- the HD Voice Object Model, as specified in Annex B;
- the PKTC-DECT-MIB Module, as specified in Annex B;
- HD Voice PacketCable Service Delivery Model defined in Annex C;
- the PKTC-MDI-MIB Module, as specified in Annex C;
- the management requirements defined in [PROV1.5].

#### 6.5.2 HD Voice E-DVA SNMP Requirements

An E-DVA that supports PacketCable HD Voice MUST support the following:

- the HD Voice Capabilities, as specified in Annex A;
- the HD Voice Object Model, as specified in Annex B;
- the PKTC-DECT-MIB Module, as specified in Annex B;
- the PKTC-DECT-SIP-MIB Module defined in Annex B;
- HD Voice PacketCable Service Delivery Model defined in Annex C;
- the PKTC-MDI-MIB Module, as specified in Annex C;
- the management requirements defined in [RST-EUE-PROV] and [EUE-DATA].
6.6 HD Voice Clients Requirements for OMA DM-based Provisioning

This section specifies requirements to support the HD Voice provisioning requirements for PacketCable DVAs that support the OMA DM based management interface. PacketCable DVAs that support the OMA DM management interface MUST comply with the Object Models and OMA DM DDFs defined in Table 4.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Object* Model</th>
<th>MO DDF URN</th>
<th>DDF Path</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex B</td>
<td>DECT</td>
<td>urn:cablelabs:packetcable:ddf:dect</td>
<td>/Pktc</td>
<td>DECT Features</td>
</tr>
<tr>
<td>Annex B</td>
<td>DECT-SIP</td>
<td>urn:cablelabs:packetcable:ddf:dect-sip</td>
<td>/Pktc</td>
<td>DECT SIP Signaling interoperability for UEs (e.g., S-DVA)</td>
</tr>
<tr>
<td>Annex C</td>
<td>MDI</td>
<td>urn:cablelabs:packetcable:ddf:mdi</td>
<td>/Pktc</td>
<td>Telephony Delivery Interface</td>
</tr>
</tbody>
</table>

Note: [DECT-NCS] is not applicable to devices that support OMA DM Provisioning requirements (e.g., S-DVAs).

6.6.1 HD Voice OMA DM Requirements

An S-DVA that supports PacketCable HD Voice MUST support the following requirements:

- the HD Voice Capabilities, as specified in Annex A;
- the HD Voice Object Model, as specified in Annex B;
- the DECT DDF, as specified in Annex B;
- the DECT-SIP DDF, as specified in Annex B;
- HD Voice PacketCable Service Delivery Model defined in Annex C;
- the MDI-DDF Module, as specified in Annex C;
- the management requirements defined in [RST-UE-PROV] and [UE-DATA].
Annex A  HDV Client Capabilities

This annex contains HD Voice related capabilities for the PacketCable client.

DHCP- and SNMP-based Provisioning PacketCable clients represent the HD Voice capabilities as defined in [PROV1.5] and [EUE-PROV].

OMA DM-based Provisioning PacketCable clients represent the HD Voice capabilities as defined in [UE-PROV].

This TLV indicates the HDV client capabilities.

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Values</th>
<th>Comment</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.37</td>
<td>n</td>
<td>composite</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

A.1 HDV Client Number of Lines

This TLV indicates the maximum number of phone lines supported by the PacketCable HDV client. For PacketCable 1.5 HDV clients, it corresponds to the maximum number of voice endpoints and, therefore, NSL instances that can be configured active simultaneously. For PacketCable 2.0 HDV clients, it corresponds to the maximum number of IMPUs that can be configured in the device. The direct implication for the PacketCable 2.0 HDV client is that the number of NSL active instances is less than or equal to the maximum number of active IMPUs that can be configured in a HDV client.

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Values</th>
<th>Comment</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.37.1</td>
<td>1</td>
<td>0..128</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

A.2 DECT Port Interface Index

This TLV indicates the value of the IfIndex of the first PP in a PacketCable client device FP.

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Values</th>
<th>Comment</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.37.2</td>
<td>2</td>
<td>1..65535</td>
<td>First PP in HDV client</td>
<td>N/A</td>
</tr>
</tbody>
</table>

A.3 Number of PPs

This TLV indicates the number of PPs supported by the HDV client.

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Values</th>
<th>Comment</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.37.3</td>
<td>2</td>
<td>1..65535</td>
<td>Number of PPs in HDV client</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Annex B  HD Voice Management Requirements

B.1  DECT Object Model Overview

This section specifies the management model for the HD Voice Application. Unless specified, the PacketCable clients will not persist operator configured data after reinitialization for the data models herein described. This data model is defined after the PacketCable clients E-MTA, E-DVA, and S-DVA and may be applicable to other types of PacketCable devices.

B.2  DECT Object Model Definitions

B.2.1  DECT Object Model Data Types

This section defines the data types used in the DECT object model.

Table 5 - Data Type Definitions

<table>
<thead>
<tr>
<th>Data Type Name</th>
<th>Base Type</th>
<th>Permitted Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PktcSpecVersion</td>
<td>unsignedByte</td>
<td>0..255</td>
</tr>
<tr>
<td>PktcDectPPState</td>
<td>Enum</td>
<td>unknown(1) idleUnlocked(2) activeUnlocked(3) idleLocked(4) activeLocked(5) noFPInRange(6) waitingEasyPairing(7) easyPairingFailed(8) easyPINFailed(9)</td>
</tr>
</tbody>
</table>

PktcSpecVersion

This data type represents the publication spec number of the corresponding requirement being referenced.

PacketCable specifications have the notation PKT-SP-<SPECNAME>-I<##>-YYMMDD.

This PacketCable Specification Version value corresponds to the integer representation of <##>.

Reference: [DECT-HDV]

PktcDectPPState

This data type describes the DECT PP MAC later state or status indication.

The combination of states and status provides remote debugging capabilities by knowing the actions that determine e.g., the fallback to a specific state.
Some values may have a temporary duration and not observable due their transient nature. Event logging might be defined for such cases.

Below are the states definitions as defined by the DECT standard:

- 'activeLocked'
  where the PP is synchronized to at least one RFP transmission and has one or more connections in progress.

- 'idleLocked'
  where the PP is synchronized to at least one RFP transmission. It is able to make or receive connections, but has no connections in progress.

- 'activeUnlocked'
  where the PP is not synchronized to any RFP transmissions, and is unable to make or receive connections. The PP makes occasional attempts to detect a suitable RFP and enter the 'IdleLocked' state.

- 'idleUnlocked'
  The PP is not synchronized to any RFP and does not attempt to detect RFPs.

Other values.

The state 'activeUnlocked' does not define any possible reason why the PP has not progressed into a locked state. Below are possible values to report:

- 'noFPInRange'
  The PP could not find any FP in range.

- 'waitingEasyPairing'
  The PP is waiting for easy pairing to be activated by the FP.

- 'easyPairingFailed'
  The FP rejects the easyPairing access rights request.

- 'easyPINFailed'
  The FP rejects the easyPIN access rights.

Reference: [DECT-HDV]
B.2.2 DECT Object Model Class Diagram

Figure 6 - DECT Object Model Class Diagram
B.2.3 DECT Object Model Description

B.2.3.1 FP Object

This object represents configuration parameters associated with the FP.

Object Operations: None

Reference: [DECT-HDV]

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxNumPP</td>
<td>unsignedInt</td>
<td>R</td>
<td></td>
<td>PPs</td>
<td></td>
</tr>
<tr>
<td>MaxActivePP</td>
<td>unsignedInt</td>
<td>RU</td>
<td></td>
<td>PPs</td>
<td></td>
</tr>
<tr>
<td>LockPPCfg</td>
<td>EnumBits</td>
<td>RU</td>
<td>listOfSupportedLists(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>missedCallsList(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>outgoingCallsList(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>incomingAcceptedCallsList(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>allCallsList(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>contactList(5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>internalNamesList(6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dectSystemSettingsList(7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>lineSettingsList(8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZeroEmissionEnabled</td>
<td>boolean</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;true&quot;</td>
</tr>
<tr>
<td>PairingType</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;0000&quot;</td>
</tr>
<tr>
<td>EasyPairingActivate</td>
<td>boolean</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;true&quot;</td>
</tr>
<tr>
<td>Name</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;true&quot;</td>
</tr>
<tr>
<td>GeneralCapabilities</td>
<td>EnumBits</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ExtendedCapabilities</td>
<td>EnumBits</td>
<td>R</td>
<td>listAccess(14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>parallelCall(19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>zeroEmission(23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>multipleLines(26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>multipleCalls(27)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MaxNumPP

This attribute represents the maximum number of PPs supported by the FP.

Reference: [DECT-HDV]

MaxActivePP

This attribute represents the maximum number of PPs that can reach the state Idle_Unlocked simultaneously. The FP ages out PPs as soon as the PP leaves the Idle_Unlocked state to either Active_unlocked or unknown, allowing another PP to attempt synchronization with the FP. By default, this attribute reports the MaxNumPP attribute value.

Reference: [DECT-HDV]
LockPPcfg

This attribute indicates the lock state of user invocation of List Access Service 'Edit entry', 'Save entry', 'Delete entry' and 'Delete list' commands. If a bit is set to '1', it indicates the corresponding list is locked for the commands listed above. If a bit is set to '0', the bit associated list is not locked for the modification commands listed above. A bit set to a non supported list is ignored and returned as '0' on a subsequent read operation of this attribute. Other list commands are always allowed.

The default value is the bit set to '1' for all lists that the device supports as editable lists.

ZeroEmissionEnabled

This attribute indicates the status of the Zero Emission mode. The value 'true' indicates Zero Emission is enabled and the FP will invoke the initiation of the no-emission mode if all registered PPs are no-emission capable.

EasyPairingType

This attribute represents the control of the PP registration using PIN or easy registration procedures. Setting this attribute to values containing ascii octets not in the range [0-9] returns an error. The value '0000' indicates the easy paring procedure is used for registering new PPs. Otherwise, the PIN procedure is used.

Reference: Easy PIN code and easy pairing registration section [TS 102 527-3].

EasyPairingActivate

This attribute represents the control of easy pairing invocation by the FP.

The value 'false' indicates easy pairing is not active.

The value 'true' indicates the FP imitates the easy pairing process. After the first PP attempts pairing or a timer expires, which ever occurs first, the easy pairing is disabled and this attribute falls back to 'false'.

Reference: Easy PIN code and easy pairing registration, Digital Enhanced Cordless Telecommunications (DECT) [TS 102 527-3].

Name

This attribute corresponds to the FP name.

Reference: Base station name selection section [TS 102 527-3]

GeneralCapabilities

This attribute represents the General FP capabilities. A bit set to '1' indicates support of the specific profile feature, a bit set to '0' indicates no support of the profile feature. Bits are numbered left to right (MSB = 0). The possible values are encoded starting from bit a12 to a47.

Bit a12 represents bit 0 of this enumeration, a47 is bit 35 in this attribute encoding.

ExtendedCapabilities

This attribute represents the FP capabilities. A bit set to '1' indicates support of the specific profile feature, a bit set to '0' indicates no support of the profile feature. Bits are numbered left to right (MSB = 0). The possible values are encoded starting from bit a12 to a47.
Bit a12 represents bit 0 of this enumeration, a47 is bit 35 in this attribute encoding (only the most relevant are shown):

- 'parallelCall': Common parallel call procedure support
- 'listAccess': list Access feature support
- 'zeroEmission': support for Zero Emission
- 'multipleLines': multiple lines support
- 'multipleCalls': multiple calls support

**B.2.3.2 PP**

This object represents the list of PPs and related identifiers.

For debugging purposes this object lists more PPs than the maximum number of PPs.

**Table 7 - PP Object**

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Id</td>
<td>unsignedShort</td>
<td>key</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPEI</td>
<td>hexBinary</td>
<td>R</td>
<td>Size (0..5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TerminalID</td>
<td>unsignedShort</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>PktcDectPPStatus</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RegCtrl</td>
<td>Enum</td>
<td>R</td>
<td>register(1)</td>
<td>deregister(2)</td>
<td>remove(3)</td>
</tr>
</tbody>
</table>

**Id**

This key represents the unique identifier of the PP.

The Id of PPs already registered corresponds to the interface Index associated with the PP MDI. For PPs not registered, the FP selects an Id outside the range of well known Interface Index values defined for the device.

The FP lists only PPs that have previously paired or attempted to pair within the FP during an FP initiated pairing process. This prevents PPs from neighboring areas from appearing on another FP.

**TerminalID**

This attribute represents the Terminal Identifier the FP assigns to the PP. For simple operation the FP may maintain the same PP Terminal Identifier from the initial Locate during pairing during device initialization.

**IPEI**

This attribute represents the International Portable Equipment Identifier of the device. Other than residential/default handset, identifiers are not required.

**Status**

This attribute represents the state of a PP as seen by the FP based on last PP/FP interaction.

The FP may report only the values 'idleLocked' and 'activeLocked' for registered PPs.
Unregistered PPs are reported as 'unknown' or the latest failure occurred such as 'easyPINFailed', 'easyPairingFailed'.

**Note:** In no-emission mode, the FP may not accurately report the PP state.

**RegCtrl**

This attribute provides control of the PP registration status.

The value 'deregister' directs the PP to initiate the procedure to terminate PP access rights without deleting the identity of the PP in this object (e.g., for troubleshooting purposes).

The value 'register' initiates the registration process either easy pairing or PIN registration depending on the FP configuration (FP.PairingType). Subsequently, the FP will register the PP for which the register action was invoked. See the FP InitiateRegistration to invoke the pairing of any PP.

The value 'remove' invokes the action to de-register the PP (if so) and deletes the PP information of the FP.

### B.2.3.3 PPCapability

#### Table 8 - PPCapability Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Enum</td>
<td>R</td>
<td>na(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>noDisplay(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>numeric(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>numericPlus(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>alphanumericic(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fullDisplay(5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone</td>
<td>Enum</td>
<td>R</td>
<td>na(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>notone(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dialTone(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>e182(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dect(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Echo</td>
<td>Enum</td>
<td>R</td>
<td>na(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>minTCL(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fullTCL(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>voip(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AmbientNoiseRejection</td>
<td>Enum</td>
<td>R</td>
<td>na(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>noSupport(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>support(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AdaptiveVolumeCtrl</td>
<td>Enum</td>
<td>R</td>
<td>na(0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>noSupported(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>used(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>disabled(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SlotType</td>
<td>EnumBits</td>
<td>R</td>
<td>doubleSlot(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fullSlot(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>halfSlot(7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>StoredDisplayChars</td>
<td>unsignedShort</td>
<td>R</td>
<td>0..16363</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayLines</td>
<td>unsignedByte</td>
<td>R</td>
<td>1..128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute Name</td>
<td>Type</td>
<td>Access</td>
<td>Type Constraints</td>
<td>Units</td>
<td>Default</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------</td>
<td>--------</td>
<td>-----------------------------------------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>ChrsPerDisplayLine</td>
<td>unsignedByte</td>
<td>R</td>
<td>1..128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ScrollBehavior</td>
<td>Enum</td>
<td>R</td>
<td>na(0), type1(1), type(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profile</td>
<td>EnumBits</td>
<td>R</td>
<td>gapSupport(5), zeroEmissionSupport(41), multipleLlines(50), parallelCall(51), callIdentification(52), wideband(53), part3(54)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Display**

This attribute represents the PP display capability. The possible values are:

- 'na': not applicable
- 'noDisplay': no display
- 'numeric': numeric characters (space, 0-9, *, #)
- 'numericPlus': extended numeric characters (space, 0-9, *, #, a, b, c, d)
- 'alphanumeric': alphanumeric characters (space, 0-9, *, #, a-z and A-Z)
- 'fullDisplay': displayable characters up to 0x7F

**Tone**

This attribute represents the PP tone capability. The possible values are:

- 'na': not applicable
- 'notone': no tone capability supported
- 'dialTone': dialtone supported
- 'e182': ITU-T E.182 tones supported
- 'dect': complete DECT tone set

**Echo**

This attribute represents the PP echo capability. The possible values are:

- 'na': not applicable
- 'minTCL': > 34 dB
- 'fullTCL': > 46 dB
- 'voip': > 55 dB
**AmbientNoiseRejection**

This attribute represents the PP echo capability. The possible values are:

- 'na': not applicable
- 'noSupport': no noise rejection
- 'support': noise rejection provided

**AdaptiveVolumeCtrl**

This attribute represents the PP adaptive volume control capability. The possible values are:

- 'na': not applicable
- 'noSupported': no adaptive volume control
- 'used': supported and in use
- 'disabled': supported not in use

**SlotType**

This attribute represents the PP slot type capabilities. A bit set to '1' indicates support of the slot type, a bit set to '0' indicates no support of the slot type. Bits are numbered left to right (MSB = 0). The possible values are:

- 'doubleSlot': double slot
- 'fullSlot': full slot
- 'halfSlot': half slot, j = 0

**StoredDisplayChars**

This attribute represents the PP number of stored display characters.

**DisplayLines**

This attribute represents the number of lines in the PP display.

**ChrPerDisplayLine**

This attribute represents the PP number of characters per line in the display.

**ScrollBehavior**

This attribute represents the PP scroll behavior capability. The possible values are:

- 'na': not applicable, specified
- 'type1': type 1
- 'type2': type 2
**Profile**

This attribute represents the PP profile feature capabilities. A bit set to '1' indicates support of the specific profile feature, a bit set to '0' indicates not support of the profile feature. Bits are numbered left to right (MSB = 0). The possible values are (only the most relevant are shown):

- 'gapSupport': GAP profile support
- 'zeroEmissionSupport': Zero Emission support
- 'multipleLines': multiple lines
- 'parallelCall': Common parallel call procedures
- 'callIdentification': Call Identification support
- 'wideband': Wideband support
- 'part3': Extended wideband speech services support

**B.2.3.4 HDVoiceProfile Object**

This object indicates the DH Voice profile capabilities of the FP.

Object Operations: None

Reference: [DECT-HDV]

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>BasicService</td>
<td>PktcSpecVersion</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCS</td>
<td>PktcSpecVersion</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIP</td>
<td>PktcSpecVersion</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BasicService**

This attribute represents the supported HD Voice profile for basic service.

Reference: [DECT-HDV]

**NCS**

This attribute represents the supported HD voice profile for NCS.

Reference: [DECT-NCS]

**SIP**

This attribute represents the supported HD Voice profile for SIP.

Reference: [DECT-SIP]
B.2.3.5 Codec Object

This object represents the configuration of Codec related parameters for FPs.

Object Operations: None

Reference: [DECT-HDV]

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>PrefList</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;G722,PCMU,PCMA&quot;</td>
</tr>
</tbody>
</table>

PrefList

This attribute represents the codec selection in preferred order from left to right. The codec list is comma separated with no additional characters between code names. When a user associated with an endpoint linked to this FP has configured its own preferred codec list, this attribute is ignored.

Reference: [DECT-HDV]

B.2.3.6 DTMF Object

This object represents the configuration of DTMF related parameters for FPs.

Object Operations: None

Reference: [DECT-HDV]

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>ToneDuration</td>
<td>unsignedInt</td>
<td>RU</td>
<td></td>
<td>milliseconds</td>
<td>100</td>
</tr>
</tbody>
</table>

ToneDuration

This attribute specifies the tone duration for DTMF defined length events sent by a PP to the FP.

Reference: [DECT-HDV]

B.2.3.7 BargeIn Object

This object represents the configuration parameters of the Barge-In feature of DECT capable PacketCable clients. For the HDV clients with multi-line support this object defines the 'Barge-In' feature only for the set of Media Ports (POTS or DECT) associated with the same NSL. This object is not applicable to the Media Ports associated with different NSLs.

Object Operations: None

Reference: [DECT-HDV]
Table 12 - BargeIn Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td>boolean</td>
<td>RU</td>
<td></td>
<td></td>
<td>true</td>
</tr>
</tbody>
</table>

Enabled

This attribute indicates the barge-in state of this instance. The value 'true' indicates barge-in is enabled. The value 'false' indicates barge-in is disabled.

Reference: [DECT-HDV]

B.2.3.8 ServiceStatus Object

This object represents configuration parameters to display service status to PP associated with the FP.

Object Operations: None

Reference: [DECT-HDV]

Table 13 - Service Status Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeactivationDisplay</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;Service Deactivated&quot;</td>
</tr>
<tr>
<td>ConnectivityDisplay</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td>&quot;Network Unavailable&quot;</td>
</tr>
</tbody>
</table>

DeactivationDisplay

This attribute indicates the configured text to display in the PP when the PacketCable Client service is disconnected.

Reference: [DECT-HDV]

ConnectivityDisplay

This attribute indicates the configured text to display in the PP when the PacketCable Client has no Network (Service) Connectivity.

Reference: [DECT-HDV]

B.2.3.9 AnalogAlarmCfg Object

This object represents the configuration of an end point to support the Analog Alarm Configuration.

Reference: [DECT-HDV]

Object Operations

When an endpoint instance is configured to enable the analog Alarm Configuration, the largest POTS MDI identifier (PktcMdiType = 'pots") in the endpoint takes the role of analog alarm port. Therefore, an endpoint is allowed to have only one POTS configured as an analog Alarm port.

End points not instantiated in this object have no analog Alarm configured (i.e., equivalent to analogAlarmCfg.State = 'none').
### Table 14 - AnalogAlarmCfg Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>ifIndex</td>
<td>InterfaceIndex</td>
<td>key</td>
<td>ifType = voiceOverCable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>Enum</td>
<td>CRUD</td>
<td>preemptive(2)</td>
<td></td>
<td>'none'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>simultaneousCalls(3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IfIndex**

This key represents the interface Index associated with the endpoint the analog alarm is configured to.

**State**

This attribute represents alarm configuration type assigned for this analog port. The possible values are:

- 'none' indicates the end point has no analog alarm configuration
- 'preemptive' indicates the analog alarm is configured in a preemptive mode of operation.

'SimultaneousCalls' indicates the PacketCable client can have a regular phone call and an alarm call simultaneously. This type of analog alarm configuration is not applicable to PacketCable clients that support NCS signaling (i.e., E-MTAs) and a set to this attribute with this value is rejected.

![ListAccess](image)

**Figure 7 - List Access Service Object Model Class Diagram**

### B.2.3.10 ListAccess Object

This object represents the list of lists stored in the FP.

Object Operations: None
### Table 15 - List Access Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>unsignedShort</td>
<td>key</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>listID</td>
<td>unsignedShort</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>AdminString</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Index**

This key represents the unique identifier of the list element.

**listID**

This attribute defines the ID of the supported list.

**Descr**

This attribute represents the name of the list. For standard list this corresponds to the exact name as the list is referred to in the specification. Vendor specific list may include name and references to documentation (e.g., URNs).

### B.2.3.11 InternalNamesList Object

This object represents the list of registered PPs

Object Operations: None

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>unsignedShort</td>
<td>key</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>unsignedShort</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>AdminString</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Index**

This Key represents the unique identifier of the list element.

**Number**

This attribute indicates the terminal identity number.

**Name**

This attribute indicates the name of the internal party.

### B.2.3.12 LineSettingsList Object

This object represents Information pertaining to the DECT Line settings list. Operator settings to this line are performed via the NSL object.

A PacketCable device allows the user to modify any line parameter via PP List Access Service commands with the exception of the 'Dialing Prefix' field.
Object Operations: None

**Table 17 - LineSettingsList Object**

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>unsignedShort</td>
<td>key</td>
<td>1..127</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineId</td>
<td>unsignedShort</td>
<td>R</td>
<td>1..127</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineName</td>
<td>AdminString</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AttachedHandsets</td>
<td>AdminString</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DialingPrefix</td>
<td>AdminString</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMelody</td>
<td>unsignedShort</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPVolume</td>
<td>unsignedShort</td>
<td>R</td>
<td>0..10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BlockedNB</td>
<td>boolean</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MultipleCalls</td>
<td>boolean</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IntrusionCall</td>
<td>boolean</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Index**

This Key represents the unique identifier of the list element.

**recordLineId**

This attribute represents the line identifier.

**LineName**

This attribute represents the name of the line.

**AttachedHandsets**

This attribute represents the list of registered handsets which are attached to the line.

This attribute is formatted as a string where each octet represents the 'Terminal Identifier' of the handset.

**Note:** The over the air 'Line settings list' defines the 'Attached handsets' as a sequence of bits, each representing a 'Terminal Id' handset.

**DialingPrefix**

This attribute represents a prefix to add to called party numbers for calls placed on the line.

**FPMelody**

This attribute represents the melody of the FP linked to this line.

**FPVolume**

This attribute represents the melody volume of the FP linked to this line.

**BlockedNB**

This attribute represents forbidden called party numbers on the line.
MultipleCalls

This attribute represents the current mode of the line:

- The value 'true' indicates support for multiple call mode.
- The value 'false' indicates support for single call mode.
- For PacketCable client devices supporting only single call mode this value always use the value 'false'.

IntrusionCall

This attribute represents the call intrusion mode for the line.

- The value 'true' indicates the line has 'call intrusion' enabled. Otherwise the value 'false' is reported.
- The PacketCable client device should always use the configured BargeIn.Enabled attribute value as the highest possible value. It means if BargeIn.Enabled is set to 'false', the user can't modify the call intrusion to 'true' via list access commands. In the contrary, if BargeIn.Enabled is set to 'true' the user could set this attribute to false via 'line settings list' commands.

![Figure 8 - DECT Air Interface Object Model Class Diagram](image)

B.2.3.13 Performance Object

This object represents the performance statistics of each PP. When Zero Emission is enabled, this object stores statistics on a per call basis. When Zero Emission is off, this object may contain a single instance per PP (Terminal ID) referent to all the messages activity in the upstream direction (PP to FP) or maintain per call statistics.

Object Operations: None
**Table 18 - Performance Object**

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordNum</td>
<td>unsignedShort</td>
<td>key</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handovers</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTDelay</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SyncFailures</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ControlFieldErrs</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PayloadErrs</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SlidingCollisions</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkErrsQbit</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RecordNum**

This key represents the identifier of the logged statistics of a previous call. When Zero Emission is enabled, the FP maintains an incrementing log information and deletes the oldest log instance when reaching the maximum number of entries.

When Zero Emission is disabled, this object creates a single instance with RecordNum = 0 and continuously collects the data associated with the object attributes.

**Handovers**

This attribute indicates how many channel handovers the PP has realized since the first activity related to this logged call.

**RTDelay**

This attribute indicates the round trip delay calculated by the FP.

The FP measures the RoundTrip Delay at the beginning of the call.

**SyncFailures**

This attribute indicates the number of synchronization failures that have occurred during the current call.

**ControlFieldErrs**

This attribute indicates the number of Control field errors encountered during this time period.

**PayloadErrs**

This attribute indicates the number of CRC errors accumulated during this period of time.

**SlidingCollisions**

This attribute indicates the number of sliding collisions detected during this period of time.

**LinkErrsQbit**

This attribute indicates the number of link errors being signaled with the Q-bit during this period of time.
### B.2.3.14 Status Object

This object represents the PP status and related connectivity information.

Object Operations: None

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>LastLocate</td>
<td>dateTime</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NumLocateMsgs</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NumConnectionFailures</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NumActivitySuccess</td>
<td>Counter32</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LastActivityFailure</td>
<td>dateTime</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSSI</td>
<td>unsignedShort</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LastLocate**

This attribute represents the time when the last Locate message was sent by the PP to the FP.

**NumLocateMsgs**

This attribute represents the number of times the PP has subscribed since last FP reboot.

**NumConnectionFailures**

This attribute represents the number of times the PP has failed connections with the FP since last FP reinitialization.

**NumActivitySuccess**

This attribute indicates the number of times the PP has initiated any activity successfully since last FP reinitialization.

**LastActivityFailure**

This attribute indicates the time then the last PP initiated activity and was rejected by the FP.

**RSSI**

This attribute represents the instantaneous Received Signal Strength from the PP.
B.2.4 DECT-SIP Object Model Class Diagram

![Diagram](image)

Figure 9 - DECT-SIP Object Model Diagram

B.2.5 DECT-SIP Object Model Description

B.2.5.1 CFVDis Object

This object represents FP configuration parameters for User Identities with the CFV feature activated.

Object Operations: None

Reference: [DECT-HDV]

Table 20 - CFVDis Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>NewFwdCalls</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ActStat</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NewFwdCalls

This attribute represents the text to be displayed by the PacketCable client PPs when new calls are forwarded based on the CFV feature.

Reference: [DECT-SIP]

ActStat

This attribute represents the text to be displayed by the PacketCable client PPs going off-hook when the CFV feature is active.

Reference: [DECT-HDV]

B.2.5.2 SCFDis Object

This object represents FP configuration parameters for User Identities with the SCF feature activated.

Object Operations: None

Reference: [DECT-HDV]
Table 21 - SCFDIs Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>NewFwdCalls</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NewFwdCalls

This attribute represents the text to be displayed by the PacketCable client PPs when new calls are forwarded based on the CFV feature.

Reference: [DECT-HDV]

B.2.5.3 DNDDis Object

This object represents FP configuration parameters for User Identities with the DND feature activated.

Object Operations: None

Reference: [DECT-HDV]

Table 22 - DNDis Object

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>ActStat</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ActStat

This attribute represents the text to be displayed by the PacketCable client PPs going off-hook when the DND feature is active.

Reference: [DECT-HDV]

B.3 DECT SNMP MIB MODULES

B.3.1 DECT SNMP MIB MODULE

PKTC-DECT-MIB DEFINITIONS ::= BEGIN
IMPORTS
  MODULE-IDENTITY, OBJECT-TYPE, Unsigned32,
  Counter32 FROM SNMPv2-SMI

  OBJECT-GROUP, MODULE-COMPLIANCE FROM SNMPv2-CONF

  SnmpAdminString FROM SNMP-FRAMEWORK-MIB

  TEXTUAL-CONVENTION, TruthValue, DateAndTime
  FROM SNMPv2-TC

  ifIndex FROM IF-MIB

  pktcApplicationMibs FROM CLAB-DEF-MIB;
pktcDectMib MODULE-IDENTITY
LAST-UPDATED "200909170000Z" -- September 17, 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
Eugene Nechamkin, Broadcom
Josh Littlefield, Cisco
Jerry Mahler, Motorola
Eduardo Cardona, CableLabs"

DESCRIPTION
"This MIB module contains the PacketCable client HD Voice management requirements."
REVISION "200909170000Z" -- September 17, 2009
DESCRIPTION
"Revised version includes ECN
DECT-PROV-N-09.0576-8
and published as part of PKT-SP-DECT-PROV-I02"
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DESCRIPTION
"Initial version, published as part of the CableLabs
DECT Provisioning Specification PKT-SP-DECT-PROV-I01-090226
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 ::= { pktcApplicationMibs 4 }

-- Textual Conventions

PktcSpecVersion ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION "This data type represents the publication spec number of the corresponding requirement being referenced.
PacketCable specifications have the notation PKT-SP-<SPECNAME>I<##>-YYMMDD.
This value corresponds to the integer representation of <##>.
"
REFERENCE "PacketCable DECT-HDV Specification."
SYNTAX Unsigned32

PktcDectPPState ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION "This data type describes the DECT PP MAC later state or status indication.
The combination of states and status provide remote debugging capabilities by knowing the actions that determines e.g., the fallback to a specific state.
Some values may have a temporary duration and not observable due their transient nature. Event logging might be defined for such cases.

Below are the states definitions as defined by the DECT standard
'activeLocked'
where the PP is synchronized to at least one RFP transmission and has one or more connections in progress.
'idleLocked'
where the PP is synchronized to at least one RFP transmission.
It is able to make or receive connections, but has no connections in progress.
'activeUnlocked' where the PP is not synchronized to any RFP transmissions, and is unable to make or receive connections.
The PP makes occasional attempts to detect a suitable RFP and enter the 'IdleLocked' state.
'idleUnlocked' The PP is not synchronized to any RFP and does not attempt to detect RFPs.

Other values.
The state 'activeUnlocked' does not define any possible reason why the PP has not progressed into a locked state. Below are possible values to report:
'noFPInRange' The PP could not find any FP in range.
'waitingEasyPairing' The PP is waiting for easy pairing to be activated by the FP.
'easyPairingFailed' The PP rejects the easyPairing access rights request.
'easyPINFailed' The FP rejects the easyPIN access rights.

REFERENCE
"PacketCable DECT-HDV Specification."

SYNTAX INTEGER {
  unknown(1),
  idleUnlocked(2),
  activeUnlocked(3),
  idleLocked(4),
  activeLocked(5),
  noFPInRange(6),
  waitingEasyPairing(7),
  easyPairingFailed(8),
  easyPINFailed(9)
}

-- Object Definitions
pktcDectNotifications OBJECT IDENTIFIER ::= { pktcDectMib 0 }
pktcDectObjects OBJECT IDENTIFIER ::= { pktcDectMib 1 }
pktcDectFP OBJECT IDENTIFIER ::= { pktcDectObjects 1 }

pktcDectFPMaxNumPP OBJECT-TYPE
SYNTAX Unsigned32
UNITS "PPs"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the maximum number of PPs supported by the FP."
REFERENCE "PacketCable DECT-HDV Specification."
::= { pktcDectFP 1 }

pktcDectFPMaxActivePP OBJECT-TYPE
SYNTAX Unsigned32
UNITS "PPs"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This attribute represents the maximum number of PPs that can reach the state Idle_Unlocked simultaneously. The FP ages out PPs as soon as the PP leaves the Idle_Unlocked state to either Active_unlocked or unknown, allowing another PP to attempt synchronization with the FP. By Default this attribute reports the MaxNumPP attribute value."
REFERENCE

"ETSI EN 300 175-3, Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer"

::= { pktcDectFP 2 }

pktcDectFPLockListCfg OBJECT-TYPE
SYNTAX      BITS {
    listOfSupportedLists(0),
    missedCallsList(1),
    outgoingCallsList(2),
    incomingAcceptedCallsList(3),
    allCallsList(4),
    contactList(5),
    internalNamesList(6),
    dectSystemSettingsList(7),
    lineSettingsList(8)
}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This attribute indicates the lock state of user invocation of access list 'Edit entry', 'Save entry', 'Delete entry and 'Delete list' commands.

If a bit it set to '1' it indicates the corresponding list is locked for the commands listed above.

If a bit is set to '0' the bit associated list is not locked for the modification commands listed above.

A bit set to a non supported list is ignored and returned as '0' on a subsequent read operation of this attribute.

Other list commands are always allowed.
The default value is the bit set to '1' for all lists that the device supports as editable lists."

::= { pktcDectFP 3 }

pktcDectFPZeroEmissionEnabled OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This attribute indicates the status of the Zero Emission mode. the value 'true' indicates Zero Emission is enabled and the FP will invoke the initiation of the no-emission mode if all registered PPs are no-emission capable."

DEFVAL      { true }
::= { pktcDectFP 4 }

pktcDectFPPairingType OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This attribute represents the control of the PP registration using PIN or easy registration procedures. Setting this attribute to values containing ascii octets not in the range [0-9] returns an error. The value '0000' indicates the easy paring procedure is used for registering new PPs. Otherwise, the PIN procedure is used."

DEFVAL      { "0000" }
::= { pktcDectFP 5 }
pktcDectFPEasyPairingActivate OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This attribute represents the control of easy pairing invocation by the FP.

The value 'false' indicates easy pairing is not active.
The value 'true' indicates the FP initiates the easy pairing process.
After the first PP attempts pairing or a timer expires, which ever occurs first, the easy pairing is disabled and this attribute falls back to 'false'."
DEFVAL { true }
::= {pktcDectFP 6 }

pktcDectFPName OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This attribute corresponds to the FP name."
::= {pktcDectFP 7 }

pktcDectFPGeneralCapabilities OBJECT-TYPE
SYNTAX BITS { none(0) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This attribute represents the General FP capabilities.
A bit set to '1' indicates support of the specific profile feature, a bit set to '0' indicates not support of the profile feature. Bits are numbered left to right (MSB = 0). The possible values are encoded starting from bit a12 to a47. Bit a12 represents bit 0 of this enumeration, a47 is bit 35 in this attribute encoding."
::= {pktcDectFP 8 }

pktcDectFPExtendedCapabilities OBJECT-TYPE
SYNTAX BITS {
  listAccess(14),
  parallelCall(19),
  zeroEmission(23),
  multipleLines(26),
  multipleCalls(27)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This attribute represents the FP capabilities.
A bit set to '1' indicates support of the specific profile feature, a bit set to '0' indicates not support of the profile feature. Bits are numbered left to right (MSB = 0). The possible values are encoded starting from bit a12 to a47. Bit a12 represents bit 0 of this enumeration, a47 is bit 35 in this attribute encoding (only the most relevant are shown):

'parallelCall': Common parallel call procedure support
'listAccess': list Access Service support
'zeroEmission': support for Zero Emission
'multipleLines': multiple lines support
'multipleCalls': multiple calls support."
::= {pktcDectFP 9 }

pktcDectHDVoiceProfile OBJECT IDENTIFIER ::= { pktcDectObjects 2 }

pktcDectHDVoiceProfileBasicService OBJECT-TYPE
SYNTAX      PktcSpecVersion
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "This attribute represents the supported HD Voice profile for basic service."
REFERENCE   "PacketCable DECT-HDV Specification."
::= { pktcDectHDVoiceProfile 1 }

pktcDectHDVoiceProfileNCS OBJECT-TYPE
SYNTAX      PktcSpecVersion
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "This attribute represents the supported HD voice profile for NCS."
REFERENCE   "PacketCable DECT-HDV Specification"
::= { pktcDectHDVoiceProfile 2 }

pktcDectHDVoiceProfileSIP OBJECT-TYPE
SYNTAX      PktcSpecVersion
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "This attribute represents the supported HD Voice profile for SIP."
REFERENCE   "PacketCable DECT-HDV Specification"
::= { pktcDectHDVoiceProfile 3 }

pktcDectCodec OBJECT IDENTIFIER ::= { pktcDectObjects 3 }

pktcDectCodecPrefList OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "This attribute represents the codec selection in prefer order from left to right. The codec list is comma separated with no additional characters between code names. When a user associated with an endpoint linked to this FP has configured its own preferred codec list this attribute is ignored."
REFERENCE   "PacketCable DECT-HDV Specification"
DEFVAL      {"G722,PCMU,PCMA"}
::= { pktcDectCodec 1 }

pktcDectDTMF OBJECT IDENTIFIER ::= { pktcDectObjects 4 }

pktcDectDTMFToneDuration OBJECT-TYPE
SYNTAX      Unsigned32
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "This attribute specifies the tone duration for DTMF defined length events sent by a PP to the FP."
REFERENCE   "PacketCable DECT-HDV Specification"
DEFVAL      { 100 }  ::= { pktcDectDTMF 1 }

pktcDectBargeIn OBJECT IDENTIFIER ::= { pktcDectObjects 5 }

pktcDectBargeInEnabled OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This attribute indicates the barge-in state of this instance. The value 'true' indicates barge-in is enabled. The value 'false' indicates barge-in is disabled."
REFERENCE "PacketCable DECT-HDV Specification"
DEFVAL { true } ::= { pktcDectBargeIn 1 }

pktcDectServiceStatus OBJECT IDENTIFIER ::= { pktcDectObjects 6 }

pktcDectServiceStatusDeactivationDisplay OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This attribute indicates the configured text to display in the PP when the PacketCable Client service is disconnected."
REFERENCE "PacketCable DECT-HDV Specification"
DEFVAL { "Service Deactivated" } ::= { pktcDectServiceStatus 1 }

pktcDectServiceStatusConnectivityDisplay OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This attribute indicates the configured text to display in the PP when the PacketCable Client has no Network (Service) Connectivity."
REFERENCE "PacketCable DECT-HDV Specification"
DEFVAL { "Network Unavailable" } ::= { pktcDectServiceStatus 2 }

pktcDectAnalogAlarmCfgTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDectAnalogAlarmCfgEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the configuration of an end point to support the Analog Alarm Configuration."
REFERENCE "PacketCable DECT-HDV Specification."
 ::= {pktcDectObjects 7 }

pktcDectAnalogAlarmCfgEntry OBJECT-TYPE
SYNTAX PktcDectAnalogAlarmCfgEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcDectAnalogAlarmCfgTable. When an endpoint instance is configured to enable the analog Alarm Configuration, the largest POTS MDI identifier (PktcMdiType = 'pots') in the endpoint takes the role of
analog alarm port. Therefore, an endpoint is allowed to have only one POTS configured as an analog Alarm port.

End points not instantiated in this object have no analog Alarm configured (i.e., equivalent to analogAlarmCfg.State = 'none')."

INDEX {
  ifIndex
}

::= {pktcDectAnalogAlarmCfgTable 1 }

PktcDectAnalogAlarmCfgEntry ::= SEQUENCE {
  pktcDectAnalogAlarmCfgState
    INTEGER
}

pktcDectAnalogAlarmCfgState OBJECT-TYPE
SYNTAX INTEGER {
  none(1),
  preemptive(2),
  simultaneousCalls(3)
}
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This attribute represents alarm configuration type assigned for this analog port. The possible values are:

'none' indicates the end point has no analog alarm Configuration

'preemptive' indicates the analog alarm is configured in a preemptive mode of operation.

'SimultaneousCalls' indicates the PacketCable client can have a regular phone call and an alarm call simultaneously.

This type of analog alarm configuration is not applicable to PacketCable clients that support NCS signaling (i.e., E-MTAs) and a set to this attribute with this value is rejected."

 ::= {pktcDectAnalogAlarmCfgEntry 1 }

pktcDectPPTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDectPPEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the list of PPs and related identifiers. For debugging purposes this object lists more PPs than the maximum number of PPs."

 ::= {pktcDectObjects 8 }

pktcDectPPEntry OBJECT-TYPE
SYNTAX PktcDectPPEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcDectPPTable."
INDEX {
  pktcDectPPId
}
::= {pktcDectPPTable 1 }
PktcDectPPEntry ::= SEQUENCE {
  pktcDectPPId   Unsigned32,
  pktcDectPPiPEI OCTET STRING,
  pktcDectPPTerminalID Unsigned32,
  pktcDectPPStatus  PktcDectPPState,
  pktcDectPPRegCtrl  INTEGER
}

pktcDectPPId OBJECT-TYPE
SYNTAX Unsigned32 (1..128)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This key represents the unique identifier of the PP. The Id of PPs already registered corresponds to the interface Index associated with the PP MDI. For PPs not registered the FP selects an Id outside the range of well known Interface Index values defined for the device.

The FP lists only PPs that have previously paired or attempted to pair within the FP during an FP initiated pairing process. This avoid first time PPs from neighbor areas to appear on a different subscriber FP."
 ::= {pktcDectPPEntry 1 }

pktcDectPPiPEI OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(0..5))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the International Portable Equipment Identifier of the device. Other than residential/default handset identifiers are not required."
 ::= {pktcDectPPEntry 2 }

pktcDectPPTerminalID OBJECT-TYPE
SYNTAX Unsigned32 (1..128)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the Terminal Identifier the FP assigns to the PP. For simple operation the PP may maintain the same PP Terminal Identifier from the initial Locate during pairing across device initialization."
 ::= {pktcDectPPEntry 3 }

pktcDectPPStatus OBJECT-TYPE
SYNTAX PktcDectPPState
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the state of a PP as seen by the FP based on last PP/FP interaction.

The FP may report only the values 'idleLocked' and activeLocked' for registered PPs. Unregistered PPs are reported as 'unknown' or the latest failure occurred such as 'easyPINFailed', 'easyPairingFailed'.

"
Note that in no-emission mode the FP may not accurately
report the PP state."
::= {pktcDectPPEntry 4 }

pktcDectPPRegCtrl OBJECT-TYPE
SYNTAX        INTEGER {
    register(1),
    deregister(2),
    remove(3)
}
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION   "This attribute provides control of the PP registration
status.

The value 'deregister' directs the PP to initiate the
procedure to terminate PP access rights without deleting
the identity of the PP in this object (e.g., for
troubleshooting purposes).

The value 'register' initiates the registration process
either easy pairing or PIN registration depending on the
FP configuration (FP.PairingType). Subsequently,
the FP will register the FP for which the register
action was invoked. See the FP InitiateRegistration
to invoke the pairing of any FP.

The value 'remove' invokes the action to de-register the PP
(if so) and deletes the PP information of the FP."
::= {pktcDectPPEntry 5 }

pktcDectPPCapabilitiesTable OBJECT-TYPE
SYNTAX      SEQUENCE OF PktcDectPPCapabilitiesEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION "This object represents the PP reported capabilities."
::= {pktcDectObjects 9 }

PktcDectPPCapabilitiesEntry OBJECT-TYPE
SYNTAX      PktcDectPPCapabilitiesEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION "The Conceptual row of pktcDectPPCapabilitiesTable."
INDEX      {
    pktcDectPPIp
}
::= {pktcDectPPCapabilitiesTable 1 }

PktcDectPPCapabilitiesEntry ::= SEQUENCE {
    pktcDectPPCapabilitiesDisplay
        INTEGER,
    pktcDectPPCapabilitiesTone
        INTEGER,
    pktcDectPPCapabilitiesEcho
        INTEGER,
    pktcDectPPCapabilitiesAmbientNoiseRejection
        INTEGER,
    pktcDectPPCapabilitiesAdaptiveVolumeCtrl
        INTEGER,
    pktcDectPPCapabilitiesSlotType
        BITS,
    pktcDectPPCapabilitiesStoredDisplayChars
        Unsigned32,
pktcDectPPCapabilitiesDisplay    OBJECT-TYPE
SYNTAX      INTEGER {
            na(0),
            noDisplay(1),
            numeric(2),
            numericPlus(3),
            alphanumeric(4),
            fullDisplay(5)
        }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "This attribute represents the PP display capability. The possible values are: 'na': not applicable 'noDisplay': no display 'numeric': numeric characters (space, 0-9, *, #) 'numericPlus': extended numeric characters (space, 0-9, *, #, a, b, c, d) 'alphanumeric': alphanumeric characters (space, 0-9, *, #, a-z and A-Z) 'fullDisplay': displayable characters up to 0x7F."
 ::= {pktcDectPPCapabilitiesEntry 1 }

pktcDectPPCapabilitiesTone    OBJECT-TYPE
SYNTAX      INTEGER {
            na(0),
            notone(1),
            dialTone(2),
            e182(3),
            dect(4)
        }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "This attribute represents the PP tone capability. The possible values are: 'na': not applicable 'notone': no tone capability supported 'dialTone': dialtone supported 'e182': ITU-T E.182 tones supported 'dect': complete DECT tone set."
 ::= {pktcDectPPCapabilitiesEntry 2 }

pktcDectPPCapabilitiesEcho    OBJECT-TYPE
SYNTAX      INTEGER {
            na(0),
            minTCL(1),
            fullTCL(2),
            voip(3)
        }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "This attribute represents the PP echo capability. The possible values are: 'na': not applicable
'minTCL': &gt; 34 dB
'fullTCL': &gt; 46 dB
'voip': &gt; 55 dB.

::= {pktcDectPPCapabilitiesEntry 3 }

pktcDectPPCapabilitiesAmbientNoiseRejection OBJECT-TYPE
SYNTAX    INTEGER { na(0),
                   noSupport(1),
                   support(2) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"This attribute represents the PP ambient noise rejection
capability. The possible values are:
'na': not applicable
'noSupport': no noise rejection
'support': noise rejection provided."
::= {pktcDectPPCapabilitiesEntry 4 }

pktcDectPPCapabilitiesAdaptiveVolumeCtrl OBJECT-TYPE
SYNTAX    INTEGER { na(0),
                    noSupported(1),
                    used(2),
                    disabled(3) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"This attribute represents the PP adaptive volume
control capability. The possible values are:
'na': not applicable
'noSupported': no adaptive volume control
'used': supported and in use
'disabled': supported not in use."
::= {pktcDectPPCapabilitiesEntry 5 }

pktcDectPPCapabilitiesSlotType OBJECT-TYPE
SYNTAX    BITS { doubleSlot(3),
                fullSlot(4),
                halfSlot(7) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"This attribute represents the PP slot type
capabilities. A bit set to '1' indicates support of the
slot type, A bit set to '0' indicates not support of
the slot type. Bits are numbered left to
right (MSB = 0). The possible values are:
'halfSlot': half slot, j = 0
'fullSlot': full slot
'doubleSlot': double slot"
::= {pktcDectPPCapabilitiesEntry 6 }

pktcDectPPCapabilitiesStoredDisplayChars OBJECT-TYPE
SYNTAX    Unsigned32 (0..16363)
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"This attribute represents the PP number of stored
display characters."
::= {pktcDectPPCapabilitiesEntry 7 }

pktcDectPPCapabilitiesDisplayLines  OBJECT-TYPE
SYNTAX  Unsigned32 (0..128)
MAX-ACCESS  read-only
STATUS  current
DESCRIPTION  "This attribute represents the number of lines in the PP display."
::= {pktcDectPPCapabilitiesEntry 8 }

pktcDectPPCapabilitiesCharsPerDisplayLine  OBJECT-TYPE
SYNTAX  Unsigned32 (0..128)
MAX-ACCESS  read-only
STATUS  current
DESCRIPTION  "This attribute represents the PP number of characters per line in the display."
::= {pktcDectPPCapabilitiesEntry 9 }

pktcDectPPCapabilitiesScrollBehavior  OBJECT-TYPE
SYNTAX  INTEGER {
   na(0),
   type1(1),
   type2(2)
}
MAX-ACCESS  read-only
STATUS  current
DESCRIPTION  "This attribute represents the PP scroll behavior capability. The possible values are:
'na': not applicable, specified
'type1': type 1
'type2': type 2."
::= {pktcDectPPCapabilitiesEntry 10 }

pktcDectPPCapabilitiesProfile  OBJECT-TYPE
SYNTAX  BITS {
   gapSupport(5),
   zeroEmissionSupport(41),
   multipleLlines(50),
   parallelCall(51),
   callIdentification(52),
   wideband(53),
   part3(54)
}
MAX-ACCESS  read-only
STATUS  current
DESCRIPTION  "This attribute represents the PP profile feature capabilities. A bit set to '1' indicates support of the specific profile feature, a bit set to '0' indicates not support of the profile feature. Bits are numbered left to right (MSB = 0). The possible values are (only the most relevant are shown):
'gapSupport': GAP profile support
'zeroEmission': Zero Emission support
'multipleLlines': multiple lines
'parallelCall': Common parallel call procedures
'callIdentification': Call Identification support
'wideband': Wideband support
'part3' : Extended wideband speech services support"
::= {pktcDectPPCapabilitiesEntry 11 }

pktcDectListAccessTable OBJECT-TYPE
SYNTAX  SEQUENCE OF PktcDectListAccessEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the list of lists stored in the FP."
 ::= {pktcDectObjects 10 }

pktcDectListAccessEntry OBJECT-TYPE
SYNTAX PktcDectListAccessEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcDectListAccessTable."
INDEX {
  pktcDectListAccessIndex
}
 ::= {pktcDectListAccessTable 1 }

PktcDectListAccessEntry ::= SEQUENCE {
  pktcDectListAccessIndex
    Unsigned32,
  pktcDectListAccesslistID
    Unsigned32,
  pktcDectListAccessDescr
    SnmpAdminString
}

pktcDectListAccessIndex OBJECT-TYPE
SYNTAX Unsigned32 (1..128)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This Key represents the unique identifier of the list element."
 ::= {pktcDectListAccessEntry 1 }

pktcDectListAccesslistID OBJECT-TYPE
SYNTAX Unsigned32 (1..128)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute defines the ID of the supported list."
 ::= {pktcDectListAccessEntry 2 }

pktcDectListAccessDescr OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the name of the list.
For standard list this corresponds to the exact name as the
list is referred in the specification.
Vendor specific list may include name and references to
documentation (e.g., URNs)."
 ::= {pktcDectListAccessEntry 3 }

pktcDectInternalNamesListTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDectInternalNamesListEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the list of registered PPs"
 ::= {pktcDectObjects 11 }

pktcDectInternalNamesListEntry OBJECT-TYPE
SYNTAX PktcDectInternalNamesListEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The Conceptual row of pktcDectInternalNamesListTable."

INDEX {
  pktcDectInternalNamesListIndex
}
::= {pktcDectInternalNamesListTable 1}

PktcDectInternalNamesListEntry ::= SEQUENCE {
  pktcDectInternalNamesListIndex Unsigned32,
  pktcDectInternalNamesListNumber Unsigned32,
  pktcDectInternalNamesListName SnmpAdminString
}

pktcDectInternalNamesListIndex OBJECT-TYPE
SYNTAX Unsigned32 (1..32767)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This Key represents the unique identifier of the list element."
::= {pktcDectInternalNamesListEntry 1}

pktcDectInternalNamesListNumber OBJECT-TYPE
SYNTAX Unsigned32 (1..32767)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the terminal identity number."
::= {pktcDectInternalNamesListEntry 2}

pktcDectInternalNamesListName OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the name of the internal party."
::= {pktcDectInternalNamesListEntry 3}

PktcDectLineSettingsListTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDectLineSettingsListEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents Information pertaining to the list. Operator settings to this line are performed via the NSL object. Primarily association of PPs to the phone line. A PacketCable device allows the user to modify any line parameter via PP access list commands with the exception of the 'Dialing Prefix' field."
::= {pktcDectObjects 12}

PktcDectLineSettingsListEntry OBJECT-TYPE
SYNTAX PktcDectLineSettingsListEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcDectLineSettingsListTable."
INDEX {
  pktcDectLineSettingsListIndex
}
::= {pktcDectLineSettingsListTable 1}

PktcDectLineSettingsListEntry ::= SEQUENCE {
  pktcDectLineSettingsListIndex Unsigned32,
pktcDectLineSettingsListLineId
Unsigned32,
pktcDectLineSettingsListLineName
SnmpAdminString,
pktcDectLineSettingsListAttachedHandsets
SnmpAdminString,
pktcDectLineSettingsListDialingPrefix
SnmpAdminString,
pktcDectLineSettingsListFPMelody
Unsigned32,
pktcDectLineSettingsListFPVolume
Unsigned32,
pktcDectLineSettingsListBlockedNB
TruthValue,
pktcDectLineSettingsListMultipleCalls
TruthValue,
pktcDectLineSettingsListIntrusionCall
TruthValue
}

pktcDectLineSettingsListIndex OBJECT-TYPE
SYNTAX Unsigned32 (1..127)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This Key represents the unique identifier of the list
element."
 ::= {pktcDectLineSettingsListEntry 1 }

pktcDectLineSettingsListLineId OBJECT-TYPE
SYNTAX Unsigned32 (1..127)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the line identifier."
 ::= {pktcDectLineSettingsListEntry 2 }

pktcDectLineSettingsListLineName OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the name of the line."
 ::= {pktcDectLineSettingsListEntry 3 }

pktcDectLineSettingsListAttachedHandsets OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the list of registered handsets
which are attached to the line.
This attribute is formatted as a string where each octet
represents the 'Terminal Identifier' of the handset.
Note that the over the air 'Line settings list' defines
the 'Attached handsets' as a sequence of bits, each
representing a 'Terminal Id' handset."
 ::= {pktcDectLineSettingsListEntry 4 }

pktcDectLineSettingsListDialingPrefix OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents a prefix to add to called
party numbers for calls placed on the line."
 ::= {pktcDectLineSettingsListEntry 5 }
pktcDectLineSettingsListFPMelody OBJECT-TYPE
SYNTAX      Unsigned32 (0..128)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This attribute represents the melody of the FP linked to
  this line."
::= {pktcDectLineSettingsListEntry 6 }

pktcDectLineSettingsListFPVolume OBJECT-TYPE
SYNTAX      Unsigned32 (0..128)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This attribute represents the melody volume of the FP
  linked to this line."
::= {pktcDectLineSettingsListEntry 7 }

pktcDectLineSettingsListBlockedNB OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This attribute represents forbidden called party numbers
  on the line."
::= {pktcDectLineSettingsListEntry 8 }

pktcDectLineSettingsListMultipleCalls OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This attribute represents the current mode of the line:
  The value 'true' indicates support for multiple call mode
  The value 'false' indicates support for single call mode.
  For PacketCable Client devices supporting only single call
  mode this value always use the value 'false'."
::= {pktcDectLineSettingsListEntry 9 }

pktcDectLineSettingsListIntrusionCall OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This attribute represents the call intrusion mode for
  the line. The value 'true' indicates the line has 'call intrusion'
  is enabled. Otherwise the value 'false' is reported.

  The PacketCable Client device should always use the
  configured BargedIn.Enabled attribute value as the highest
  possible value. It means if BargeIn.Enabled is set to 'false',
  the user can't modify the call intrusion to 'true' via list
  access commands. In the contrary, if BargeIn.Enabled is set to
  'true' the user could set this attribute to 'false' via 'line
  settings list' commands."
::= {pktcDectLineSettingsListEntry 10 }

pktcDectPerformanceTable OBJECT-TYPE
SYNTAX      SEQUENCE OF PktcDectPerformanceEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "This object represents the performance statistics of each PP.
  When Zero Emission is enabled this object store statistics on
  a per call basis."
When Zero Emission is disabled, this object may contain a single instance per PP (Terminal ID) referent to all the messages activity in the upstream direction (PP to FP) or maintain per call statistics.

```
::= {pktcDectObjects 13 }
```

```
pktcDectPerformanceEntry OBJECT-TYPE
SYNTAX PktcDectPerformanceEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcDectPerformanceTable."
INDEX {
  ifIndex
}
::= {pktcDectPerformanceTable 1 }
```

```
PktcDectPerformanceEntry ::= SEQUENCE {
pktcDectPerformanceRecordNum
  Unsigned32,
pktcDectPerformanceHandovers
  Counter32,
pktcDectPerformanceRTDelay
  Unsigned32,
pktcDectPerformanceSyncFailures
  Counter32,
pktcDectPerformanceControlFieldErrs
  Counter32,
pktcDectPerformancePayloadErrs
  Counter32,
pktcDectPerformanceSlidingCollisions
  Counter32,
pktcDectPerformanceLinkErrsQbit
  Counter32
}
```

```
pktcDectPerformanceRecordNum OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This key represents the identifier of the logged statistics of a previous call. When Zero Emission is enabled the FP maintains an incrementing log information and deletes the oldest log instance when reaching the maximum number of entries. When Zero Emission is disabled this object creates a single instance with RecordNum = 0 and collects continuously the data associated with the object attributes."
::= {pktcDectPerformanceEntry 1 }
```

```
pktcDectPerformanceHandovers OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates how many channel handovers the PP has realized since the first activity related to this logged call."
::= {pktcDectPerformanceEntry 2 }
```

```
pktcDectPerformanceRTDelay OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the round trip delay calculated
by the FP.
The FP measures the RoundTrip Delay at the beginning of
the call.
 ::= { pktcDectPerformanceEntry 3 }

pktcDectPerformanceSyncFailures OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the number of synchronization
failures that have occurred during the current call."
 ::= { pktcDectPerformanceEntry 4 }

pktcDectPerformanceControlFieldErrs OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the number of Control field errors
encountered during this time period"
 ::= { pktcDectPerformanceEntry 5 }

pktcDectPerformancePayloadErrs OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the number of CRC errors
accumulated during this period of time."
 ::= { pktcDectPerformanceEntry 6 }

pktcDectPerformanceSlidingCollisions OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the number of sliding collisions
detected during this period of time."
 ::= { pktcDectPerformanceEntry 7 }

pktcDectPerformanceLinkErrsQbit OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the number of link errors being
signaled with the Q-bit during this period of time."
 ::= { pktcDectPerformanceEntry 8 }

pktcDectStatusTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDectStatusEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the PP status and related
connectivity information"
 ::= { pktcDectObjects 14 }

pktcDectStatusEntry OBJECT-TYPE
SYNTAX PktcDectStatusEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcDectStatusTable."
INDEX { ifIndex
::= {pktcDectStatusTable 1 }

PktcDectStatusEntry ::= SEQUENCE {
  pktcDectStatusLastLocate           DateAndTime,
  pktcDectStatusNumLocateMsgs        Counter32,
  pktcDectStatusNumConnectionFailures Counter32,
  pktcDectStatusNumActivitySuccess   Counter32,
  pktcDectStatusLastActivityFailure  DateAndTime,
  pktcDectStatusRSSI                 Unsigned32
}

pktcDectStatusLastLocate OBJECT-TYPE
SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the time when the last Locate message was sent by the PP to the FP."
 ::= {pktcDectStatusEntry 1 }

pktcDectStatusNumLocateMsgs OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the number of times the PP has subscribed since last FP reboot."
 ::= {pktcDectStatusEntry 2 }

pktcDectStatusNumConnectionFailures OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the number of times the PP has failed connections with the FP since last FP reinitialization."
 ::= {pktcDectStatusEntry 3 }

pktcDectStatusNumActivitySuccess OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the number of times the PP has initiated any activity successfully since last time the FP reinitializes."
 ::= {pktcDectStatusEntry 4 }

pktcDectStatusLastActivityFailure OBJECT-TYPE
SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the time where the last PP initiated activity and being rejected by the FP."
 ::= {pktcDectStatusEntry 5 }

pktcDectStatusRSSI OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "This attribute represents the instantaneous
  Received Signal Strength from the PP."
::= {pktcDectStatusEntry 6 }

-- Conformance Definitions
pktcDectMibConformance OBJECT IDENTIFIER ::= { pktcDectMib 2 }
pktcDectMibCompliances OBJECT IDENTIFIER ::= { pktcDectMibConformance 1 }
pktcDectMibGroups OBJECT IDENTIFIER ::= { pktcDectMibConformance 2 }
pktcDectCompliance MODULE-COMPLIANCE
STATUS      current
DESCRIPTION
  "The compliance statement for the HD Voice PacketCable
  Client device."
MODULE -- this MODULE
MANDATORY-GROUPS {
pktcDectGroup
}
::= { pktcDectMibCompliances 1 }
pktcDectGroup OBJECT-GROUP
OBJECTS {
pktcDectFPMaxNumPP,
pktcDectFPMaxActivePP,
pktcDectFPLockListCfg,
pktcDectFPZeroEmissionEnabled,
pktcDectFPPairingType,
pktcDectFPEasyPairingActivate,
pktcDectFPName,
pktcDectFPPGeneralCapabilities,
pktcDectFPExtendedCapabilities,
pktcDectHDVoiceProfileBasicService,
pktcDectHDVoiceProfileNCS,
pktcDectHDVoiceProfileSIP,
pktcDectCodecPrefList,
pktcDectDTMFToneDuration,
pktcDectBargeInEnabled,
pktcDectServiceStatusDeactivationDisplay,
pktcDectServiceStatusConnectivityDisplay,
pktcDectAnalogAlarmCfgState,
pktcDectListAccesslistID,
pktcDectListAccessDescr,
pktcDectInternalNamesListNumber,
pktcDectInternalNamesListName,
pktcDectLineSettingsListLineId,
pktcDectLineSettingsListLineName,
pktcDectLineSettingsListAttachedHandsets,
pktcDectLineSettingsListDialingPrefix,
pktcDectLineSettingsListFPMelody,
pktcDectLineSettingsListFPVolume,
pktcDectLineSettingsListBlockedNB,
pktcDectLineSettingsListMultipleCalls,
pktcDectLineSettingsListIntrusionCall,
pktcDectPerformanceRecordNum,
pktcDectPerformanceHandovers,
pktcDectPerformanceRTDelay,
pktcDectPerformanceSyncFailures,
pktcDectPerformanceControlFieldErrs,
pktcDectPerformancePayloadErrs,
pktcDectPerformanceSlidingCollisions,
pktcDectPerformanceLinkErrsQbit,
pktcDectStatusLastLocate,
pktcDectStatusNumLocateMsgs,
pktcDectStatusNumConnectionFailures,
pktcDectStatusNumActivitySuccess,
pktcDectStatusLastActivityFailure,
pktcDectStatusRSSI,
pktcDectPPIPEI,
pktcDectPPTerminalID,
pktcDectPPStatus,
pktcDectPPRegCtrl,
pktcDectPPCapabilitiesDisplay,
pktcDectPPCapabilitiesTone,
pktcDectPPCapabilitiesEcho,
pktcDectPPCapabilitiesAmbientNoiseRejection,
pktcDectPPCapabilitiesAdaptiveVolumeCtrl,
pktcDectPPCapabilitiesSlotType,
pktcDectPPCapabilitiesStoredDisplayChars,
pktcDectPPCapabilitiesDisplayLines,
pktcDectPPCapabilitiesCharsPerDisplayLine,
pktcDectPPCapabilitiesScrollBehavior,
pktcDectPPCapabilitiesProfile

} STATUS current
DESCRIPTION "Group of objects implemented in the HD Voice PacketCable Client device."
 ::= { pktcDectMibGroups 1 }
END

B.3.2 DECT-NCS SNMP MIB MODULE

There are no SNMP MIB Modules specified for [DECT-NCS].

B.3.3 DECT-SIP SNMP MIB MODULE

PKTC-DECT-SIP-MIB DEFINITIONS ::= BEGIN
IMPORTS
  MODULE-IDENTITY, OBJECT-TYPE
    FROM SNMPv2-SMI
  OBJECT-GROUP,
  MODULE-COMPLIANCE
    FROM SNMPv2-CONF
  SnmpAdminString
    FROM SNMP-FRAMEWORK-MIB
  pktcApplicationMibs
    FROM CLAB-DEF-MIB;

pktcDectSipMib MODULE-IDENTITY
LAST-UPDATED "200902260000Z" -- February 26, 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
  Eugene Nechamkin, Broadcom
  Josh Littlefield, Cisco
  Jerry Mahler, Motorola
  Eduardo Cardona, CableLabs"
DESCRIPTION "This MIB module contains the PacketCable client
HD Voice SIP integration management requirements.

REVISION "200902260000Z" -- February 26, 2009

DESCRIPTION
"Initial version, published as part of the CableLabs DECT Provisioning Specification PKT-SP-DECT-PROV-I01-090226
Copyright 2009 Cable Television Laboratories, Inc.
All rights reserved."

::= { pktcApplicationMibs 5 }

-- Textual Conventions

-- Object Definitions

pktcDectSipNotifications OBJECT IDENTIFIER ::= { pktcDectSipMib 0 }
pktcDectSipObjects OBJECT IDENTIFIER ::= { pktcDectSipMib 1 }
pktcDectSipObjects OBJECT IDENTIFIER ::= { pktcDectSipObjects 1 }
pktcDectSipSCFDis OBJECT IDENTIFIER ::= { pktcDectSipObjects 2 }
pktcDectSipSCFDisNewFwdCalls OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This attribute represents the text to be displayed by the PacketCable client PPs when new calls are forwarded based on the CFV feature."
REFERENCE
"PacketCable DECT-SIP Specification"
DEFVAL { "" }
::= { pktcDectSipSCFDis 1 }
pktcDectSipSCFDisActStat OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This attribute represents the text to be displayed by the PacketCable client PPs going off-hook when the CFV feature is active."
REFERENCE
"PacketCable DECT-SIP Specification"
DEFVAL { "" }
::= { pktcDectSipSCFDis 2 }
pktcDectSipDNDDis OBJECT IDENTIFIER ::= { pktcDectSipObjects 3 }
pktcDectSipDNDDisNewFwdCalls OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This attribute represents the text to be displayed by the PacketCable client PPs when new calls are forwarded based on the CFV feature."
REFERENCE
"PacketCable DECT-SIP Specification"
DEFVAL { "" }
::= { pktcDectSipDNDDis 1 }
pktcDectSipDNDDisActStat OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This attribute represents the text to be displayed by the PacketCable client PPs going off-hook when the DND feature is active."
REFERENCE
"PacketCable DECT-SIP Specification"
::= { pktcDectSipDNDDis 1 }

-- Conformance Definitions
pktcDectSipMibConformance OBJECT IDENTIFIER ::= { pktcDectSipMib 2 }
pktcDectSipMibCompliances OBJECT IDENTIFIER ::= { pktcDectSipMibConformance 1 }
pktcDectSipMibGroups OBJECT IDENTIFIER ::= { pktcDectSipMibConformance 2 }

pktcDectSipCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The compliance statement for the SIP requirements of
               the HD Voice PacketCable client device."
  MODULE -- this MODULE
  MANDATORY-GROUPS {
    pktcDectSipGroup
  }
  ::= { pktcDectSipMibCompliances 1 }

pktcDectSipGroup OBJECT-GROUP
  OBJECTS {
    pktcDectSipCFVDisNewFwdCalls,
    pktcDectSipCFVDisActStat,
    pktcDectSipSCFDisNewFwdCalls,
    pktcDectSipDNDDisActStat
  }
  STATUS current
  DESCRIPTION "Group of objects for SIP DECT extensions."
  ::= { pktcDectSipMibGroups 1 }
END
### B.4 DECT OMA Management Objects (MO)

#### B.4.1 DECT High Level MO

![DECT High Level OMA Management Diagram]

*Figure 10 - DECT High Level OMA Management*
B.4.2 DECT Nodes

B.4.2.1 DECT FP Node MO tree

![Diagram of DECT FP Node MO tree]

Figure 11 - Node FP of DECT OMA Management

B.4.2.2 DECT FP MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/FP</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/FP&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/MaxNumPP/&lt;X&gt;/MaxNumPP</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/MaxActivePP/&lt;X&gt;/MaxActivePP</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/LockListCfg/&lt;X&gt;/LockListCfg</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/ZeroEmissionEnabled/&lt;X&gt;/ZeroEmissionEnabled</td>
<td>current</td>
<td>OneOrZero</td>
<td>bool</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/PairingType/&lt;X&gt;/PairingType</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/EasyPairingActivate/&lt;X&gt;/EasyPairingActivate</td>
<td>current</td>
<td>OneOrZero</td>
<td>bool</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/Name/&lt;X&gt;/Name</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/GeneralCapabilities/&lt;X&gt;/GeneralCapabilities</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/ExtendedCapabilities/&lt;X&gt;/ExtendedCapabilities</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>
B.4.2.3 DECT HdVoiceProfile Node MO tree

![Diagram](image1)

Figure 12 - Node HDVoiceProfile of DECT OMA Management

B.4.2.4 DECT HdVoiceProfile MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>/DECT/HdVoiceProfile</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/HdVoiceProfile&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/BasicService/&lt;X&gt;/BasicService</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/NCS/&lt;X&gt;/NCS</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/SIP/&lt;X&gt;/SIP</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
</tbody>
</table>

B.4.2.5 DECT Codec Node MO tree

![Diagram](image2)

Figure 13 - Node Codec of DECT OMA Management

B.4.2.6 DECT Codec MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>/DECT/Codec</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/Codec&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/PrefList/&lt;X&gt;/PrefList</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

B.4.2.7 DECT DTMF Node MO tree

![Diagram](image3)

Figure 14 - Node DTMF of DECT OMA Management

B.4.2.8 DECT DTMF MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>/DECT/DTMF</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/DTMF&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/ToneDuration/&lt;X&gt;/ToneDuration</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>
B.4.2.9  DECT Bargen Node MO tree

![Diagram](image)

**Figure 15 - Node Bargen of DECT OMA Management**

B.4.2.10  DECT Bargen MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/Bargen</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Bargen&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Enabled&lt;X&gt;/Enabled</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

B.4.2.11  DECT ServiceStatus Node MO tree

![Diagram](image)

**Figure 16 - Node ServiceStatus of DECT OMA Management**

B.4.2.12  DECT ServiceStatus MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/ServiceStatus</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/ServiceStatus&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/DeactivationDisplay&lt;X&gt;/DeactivationDisplay</td>
<td>current</td>
<td>OneOrZero</td>
<td>Chr</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/ConnectivityDisplay&lt;X&gt;/ConnectivityDisplay</td>
<td>current</td>
<td>OneOrZero</td>
<td>Chr</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

B.4.2.13  DECT AnalogAlarmCfg tree

![Diagram](image)

**Figure 17 - Node AnalogAlarmCfg of DECT OMA Management**

B.4.2.14  DECT AnalogAlarmCfg MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/AnalogAlarmCfg</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/AnalogAlarmCfg&lt;X&gt;/State</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Add, Get, Replace</td>
</tr>
</tbody>
</table>
B.4.2.15 DECT PP MO Node tree

![Diagram showing DECT PP MO Node tree]

Figure 18 - Node PP of DECT OMA Management

B.4.2.16 DECT PP MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/PP</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/PP&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td></td>
</tr>
<tr>
<td>./DECT/Id/&lt;X&gt;/Id</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/IPEI/&lt;X&gt;/IPEI</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/TerminalID/&lt;X&gt;/TerminalID</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Status/&lt;X&gt;/Status</td>
<td>current</td>
<td>OneOrZero</td>
<td></td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/RegCtrl/&lt;X&gt;/RegCtrl</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>
**B.4.2.17 DECT PPCapabilities MO Node tree**

![DECT PPCapabilities MO Node tree diagram](image)

*Figure 19 - Node PPCapabilities of DECT OMA Management*

**B.4.2.18 DECT PPCapabilities MO Node Description**

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/PPCapabilities</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/PPCapabilities&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Display/&lt;X&gt;/Display</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/Tone/&lt;X&gt;/Tone</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/Echo/&lt;X&gt;/Echo</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/AmbientNoiseRejection&lt;X&gt;/AmbientNoiseRejection</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/AdaptiveVolumeCtrl&lt;X&gt;/AdaptiveVolumeCtrl</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/SlotType/&lt;X&gt;/SlotType</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/StoredDisplayChars/&lt;X&gt;/StoredDisplayChars</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/DisplayLines/&lt;X&gt;/DisplayLines</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/CharsPerDisplayLine/&lt;X&gt;/CharsPerDisplayLine</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/ScrollBehavior/&lt;X&gt;/ScrollBehavior</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/Profile/&lt;X&gt;/Profile</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>
B.4.2.19 **DECT ListAccess MO Node tree**

![Diagram of DECT ListAccess MO Node tree]

**Figure 20 - Node ListAccess of DECT OMA Management**

B.4.2.20 **DECT ListAccess MO Node Description**

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/ListAccess</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/ListAccess&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Index/&lt;X&gt;/Index</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/listID/&lt;X&gt;/listID</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Descr/&lt;X&gt;/Descr</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
</tbody>
</table>

B.4.2.21 **DECT InternalNamesList MO Node tree**

![Diagram of DECT InternalNamesList MO Node tree]

**Figure 21 - Node InternalNamesList of DECT OMA Management**

B.4.2.22 **DECT InternalNamesList MO Node Description**

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/InternalNamesList</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/InternalNamesList&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Index/&lt;X&gt;/Index</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/Number/&lt;X&gt;/Number</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Name/&lt;X&gt;/Name</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
</tbody>
</table>
B.4.2.23  **DECT LineSettingsList MO Node tree**

![Node LineSettingsList of DECT OMA Management](image)

**Figure 22 - Node LineSettingsList of DECT OMA Management**

B.4.2.24  **DECT LineSettingsList MO Node Description**

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/LineSettingsList</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/LineSettingsList/X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/LineId/X&gt;/LineId</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/LineName/X&gt;/LineName</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/AttachedHandsets/X&gt;/AttachedHandsets</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/DialingPrefix/X&gt;/DialingPrefix</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/FPMelody/X&gt;/FPMelody</td>
<td>current</td>
<td>OneOrZero</td>
<td>bin</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/FPVolume/X&gt;/FPVolume</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/BlockedNB/X&gt;/BlockedNB</td>
<td>current</td>
<td>OneOrZero</td>
<td>bool</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/MultipleCalls/X&gt;/MultipleCalls</td>
<td>current</td>
<td>OneOrZero</td>
<td>bool</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/IntrusionCall/X&gt;/IntrusionCall</td>
<td>current</td>
<td>OneOrZero</td>
<td>bool</td>
<td>Get</td>
</tr>
</tbody>
</table>
B.4.2.25 DECT Status MO Node tree

![Node tree diagram](image)

Figure 23 - Node Status of DECT OMA Management

B.4.2.26 DECT Status MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>/DECT/Status</td>
<td>current</td>
<td>One Node</td>
<td></td>
<td>Get</td>
</tr>
<tr>
<td>/DECT/Status&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore Node</td>
<td>Get</td>
<td></td>
</tr>
<tr>
<td>/DECT/LastLocate/&lt;X&gt;/LastLocate</td>
<td>current</td>
<td>OneOrZero date</td>
<td>Get, Replace</td>
<td></td>
</tr>
<tr>
<td>/DECT/NumLocateMsgs/&lt;X&gt;/NumLocateMsgs</td>
<td>current</td>
<td>OneOrZero int</td>
<td>Get, Replace</td>
<td></td>
</tr>
<tr>
<td>/DECT/NumConnectionFailures/&lt;X&gt;/NumConnectionFailures</td>
<td>current</td>
<td>OneOrZero int</td>
<td>Get, Replace</td>
<td></td>
</tr>
<tr>
<td>/DECT/NumActivitySuccess/&lt;X&gt;/NumActivitySuccess</td>
<td>current</td>
<td>OneOrZero int</td>
<td>Get, Replace</td>
<td></td>
</tr>
<tr>
<td>/DECT/LastActivityFailure/&lt;X&gt;/LastActivityFailure</td>
<td>current</td>
<td>OneOrZero date</td>
<td>Get, Replace</td>
<td></td>
</tr>
<tr>
<td>/DECT/RSSI/&lt;X&gt;/RSSI</td>
<td>current</td>
<td>OneOrZero int</td>
<td>Get, Replace</td>
<td></td>
</tr>
</tbody>
</table>
B.4.2.27  DECT Performance MO Node tree

Figure 24 - Node Performance of DECT OMA Management

B.4.2.28  DECT Performance MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT/Performance</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/Performance&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT/RecordNum/&lt;X&gt;/RecordNum</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/Handovers/&lt;X&gt;/Handovers</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/RTDelay/&lt;X&gt;/RTDelay</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/SyncFailures/&lt;X&gt;/SyncFailures</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/ControlFieldErrs/&lt;X&gt;/ControlFieldErrs</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/PayloadErrs/&lt;X&gt;/PayloadErrs</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/SlidingCollisions/&lt;X&gt;/SlidingCollisions</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT/LinkErrsQbit/&lt;X&gt;/LinkErrsQbit</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

B.4.3  DECT OMA Device Description Framework (DDF)

```xml
<?xml version="1.0"?>
<MgmtTree>
  <VerDTD>1.2</VerDTD>
  <Man>PacketCable - Cable Laboratories Inc.</Man>
  <!--This DDF considers as model the UE MO (as defined in the PacketCable specifications) followed by a colon character (e.g., DECT:) -->
  <Mod>DECT:</Mod>
  <Node>
    <nodeName>DECT</nodeName>
    <path>/Pktc</path>
    <DFProperties>
```
<AccessType><Get/></AccessType><DefaultValue/><Description>The node that defines the DECT MO tree.</Description><DFFormat><node/></DFFormat><Occurrence><One/></Occurrence><Scope><Permanent/></Scope><DFTitle>The interior node holding all nodes of the PacketCable DECT MO three</DFTitle><DFType><DDFName>urn:cablelabs:packetcable:ddf:dect</DDFName></DFType><CaseSense><CIS/></CaseSense><DFProperties><Node><NodeName>FP</NodeName><DFProperties><AccessType><Get/></AccessType><DFFormat><node/></DFFormat><Occurrence><One/></Occurrence><DFTitle>DECT.FP</DFTitle><DFType><DDFName/></DFType></DFProperties></Node><Node><NodeName></NodeName><DFProperties><AccessType/></AccessType><DFFormat><node/></DFFormat><Occurrence><OneOrMore/></Occurrence><DFTitle/></DFTitle><DFType><DDFName/></DFType></DFProperties></Node><Node><NodeName>MaxNumPP</NodeName><DFProperties><AccessType><Get/></AccessType><DefaultValue/><Description/><DFFormat><int/></DFFormat></DFProperties></Node>
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</DDFName/>
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</DFProperties>
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  <DFProperties>
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    <DFFormat>
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    </DFFormat>
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    </DFType>
    <Value/>
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</Node>

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    </Occurrence>
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      <DDFName/>
    </DFType>
  </DFProperties>
</Node>

<Node>
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  <DFProperties>
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      <Get/>
    </AccessType>
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    </DefaultFormat>
    <Occurrence>
      <OneOrMore/>
    </Occurrence>
    <DFTitle/>
    <DFType>
      <DDFName/>
    </DFType>
  </DFProperties>
</Node>

<Node>
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  <DFProperties>
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    </AccessType>
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    </DefaultFormat>
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</Occurrence>
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</DDFName/>
</DFType>
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  <NodeName>DisplayLines</NodeName>
  <DFProperties>
    <AccessType/>
    <DefaultValue/>
    <Description/>
  </DFProperties>
  <Value/>
</Node>
<DFFormat><int/></DFFormat>
<Occurrence><One/></Occurrence>
<Scope><Permanent/></Scope>
</Scope>
<DFTitle/>
<DFType><MIME>text/plain</MIME></DFType>
<CaseSense/>
</DFProperties>
<Value/>
</Node>
<Node>
<nodeName>CharsPerDisplayLine</nodeName>
<DFProperties>
<AccessType/>
<DefaultValue/>
<Description/>
<DFFormat><int/></DFFormat>
<Occurrence><One/></Occurrence>
<Scope><Permanent/></Scope>
</Scope>
<DFTitle/>
<DFType><MIME>text/plain</MIME></DFType>
<CaseSense/>
</DFProperties>
<Value/>
</Node>
<Node>
<nodeName>ScrollBehavior</nodeName>
<DFProperties>
<AccessType/>
<DefaultValue/>
<Description/>
<DFFormat><int/></DFFormat>
<Occurrence><One/></Occurrence>
<Scope><Permanent/></Scope>
</Scope>
<DFTitle/>
<DFType><MIME>text/plain</MIME></DFType>
<CaseSense/>
</DFProperties>
<Value/>
</Node>
<Node>
<nodeName>Profile</nodeName>
<DFProperties>
<AccessType/>
</DFProperties>
B.5 DECT-SIP OMA Management Objects (MO)

B.5.1 DECT-SIP High Level MO

```
<DefaultValue></DefaultValue>
<Description/>
<DFFormat>
  <bin/>
</DFFormat>
<Occurrence>
  <One/>
</Occurrence>
<Scope>
  <Permanent/>
</Scope>
<DFFormat>
  <bin/>
</DFFormat>
<DFTitle/>
<DFFormat>
  <bin/>
</DFFormat>
<DFType>
  <MIME>text/plain</MIME>
</DFType>
<CaseSense/>
</DFProperties>
</Node>
</Node>
</MgmtTree>
```

Figure 25 - DECT-SIP High Level OMA Management

B.5.2 DECT-SIP Nodes

B.5.2.1 DECT-SIP CFVDis Node MO tree

Figure 26 - Node CFVDis of DECT OMA Management
### B.5.2.2 DECT-SIP CFVDis MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT-SIP/CFVDis</td>
<td>current</td>
<td>One</td>
<td></td>
<td></td>
</tr>
<tr>
<td>./DECT-SIP/CFVDis&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT-SIP/NewFwdCalls/&lt;X&gt;/NewFwdCalls</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT-SIP/ActStat/&lt;X&gt;/ActStat</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

### B.5.2.3 DECT-SIP SCFDIs Node MO tree

![Figure 27 - Node CSFDIs of DECT OMA Management](image)

### B.5.2.4 DECT-SIP SCFDIs MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT-SIP/SCFDIs</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT-SIP/SCFDIs&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT-SIP/NewFwdCalls/&lt;X&gt;/NewFwdCalls</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT-SIP/ActStat/&lt;X&gt;/ActStat</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

### B.5.2.5 DECT-SIP DNDDIs Node MO tree

![Figure 28 - Node DNDDIs of DECT OMA Management](image)

### B.5.2.6 DECT-SIP DNDDIs MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./DECT-SIP/DNDDis</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./DECT-SIP/DNDDis&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get, Replace</td>
</tr>
<tr>
<td>./DECT-SIP/ActStat/&lt;X&gt;/ActStat</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get, Replace</td>
</tr>
</tbody>
</table>

### B.5.3 DECT-SIP OMA Device Description Framework (DDF)

```xml
<?xml version="1.0"?>
<MgmtTree>
  <VerDTD>1.2</VerDTD>
  <Man>PacketCable - Cable Laboratories Inc.</Man>
  <!--This DDF considers as model the UE MO (as defined in the PacketCable specifications) followed by a colon character (e.g., DECT-SIP:) -->
  <Mod>DECT-SIP:</Mod>
  <Node>
    <NodeName>DECT-SIP</NodeName>
    <Path>/Pktc</Path>
    <DFProperties>
      <AccessType>
        <Get/>
      </AccessType>
      <DefaultValue/>
  </Node>
</MgmtTree>
```
<Description>The node that defines the DECT-SIP MO tree.</Description>

<DFFormat>
  <node/>
</DFFormat>

<Occurrence>
  <One/>
</Occurrence>

<Scope>
  <Permanent/>
</Scope>

<DFTitle>The interior node holding all nodes of the PacketCable DECT-SIP MO three</DFTitle>

<DFType>
  <DDFName>urn:cablelabs:packetcable:ddf:dect-sip</DDFName>
</DFType>

<CaseSense>
  <CIS/>
</CaseSense>

<Node>
  <NodeName>CFVDis</NodeName>
  <DFProperties>
    <AccessType>
      <Get/>
    </AccessType>
    <DFFormat>
      <node/>
    </DFFormat>
    <Occurrence>
      <One/>
    </Occurrence>
    <DFTitle>DECT-SIP.CFVDis</DFTitle>
    <DFType>
      <DDFName/>
    </DFType>
  </DFProperties>
</Node>

<Node>
  <NodeName></NodeName>
  <DFProperties>
    <AccessType>
      <Get/>
    </AccessType>
    <DFFormat>
      <node/>
    </DFFormat>
    <Occurrence>
      <OneOrMore/>
    </Occurrence>
    <DFTitle/>
    <DFType>
      <DDFName/>
    </DFType>
  </DFProperties>
</Node>

<Node>
  <NodeName>NewFwdCalls</NodeName>
  <DFProperties>
    <AccessType>
      <Get/>
    </AccessType>
    <DefaultValue>""</DefaultValue>
    <Description/>
    <DFFormat><chr/></DFFormat>
    <Occurrence>
      <One/>
    </Occurrence>
    <Scope>
      <Permanent/>
    </Scope>
    <DFTitle/>
    <DFType>
<MIME>text/plain</MIME>  
</DFType>  
<CaseSense/>
</DFProperties>
</Value/>
</Node>
</Node>
<Node>
<NodeName>ActStat</NodeName>
<DFProperties>
  <AccessType/>
  <DefaultValue>""</DefaultValue>
  <Description/>
  <DFFormat><chr/></DFFormat>
  <Occurrence>
    <One/>
  </Occurrence>
  <Scope>
    <Permanent/>
  </Scope>
  <DFTitle/>
  <DFType>
    <MIME>text/plain</MIME>
  </DFType>
</DFProperties>
</Value/>
</Node>
</Node>
<Node>
<NodeName>SCFDis</NodeName>
<DFProperties>
  <AccessType>
    <Get/>
  </AccessType>
  <DFFormat>
    <node/>
  </DFFormat>
  <Occurrence>
    <One/>
  </Occurrence>
  <DFTitle>DECT-SIP.SCFDis</DFTitle>
  <DFType>
    <DDFName/>
  </DFType>
</DFProperties>
</Node>
<Node>
<NodeName>NewFwdCalls</NodeName>
<DFProperties>
  <AccessType>
    <DefaultValue>""</DefaultValue>
  </AccessType>
  <DFFormat>
  </DFFormat>
  <Occurrence>
    <OneOrMore/>
  </Occurrence>
  <DFTitle/>
  <DFType>
    <DDFName/>
  </DFType>
</DFProperties>
</Node>
<DFFormat><chr/></DFFormat>
<Occurrence>
<One/>
</Occurrence>
<Scope>
<Permanent/>
</Scope>
<DFTitle/>
<DFType>
<MIME>text/plain</MIME>
</DFType>
<CaseSense/>
</DFProperties>
<Value/>
</Node>
</Node>
<Node>
<NodeName>DNDDis</NodeName>
<DFProperties>
<AccessType>
<Get/>
</AccessType>
<DFFormat>
<node/>
</DFFormat>
<Occurrence>
<One/>
</Occurrence>
<DFTitle>DECT-SIP.DNDDis</DFTitle>
<DFType>
<DDFName/>
</DFType>
</DFProperties>
</Node>
<Node>
<NodeName>ActStat</NodeName>
<DFProperties>
<AccessType></AccessType>
<DefaultValue>""</DefaultValue>
>Description/>
<DFFormat><chr/></DFFormat>
<Occurrence>
<One/>
</Occurrence>
<Scope>
<Permanent/>
</Scope>
<DFTitle/>
<DFType>
<MIME>text/plain</MIME>
</DFType>
<CaseSense/>
</DFProperties>
</Value/>
</Node>
</Node>
</Node>
</MgmtTree>
Annex C  PacketCable HDV Client Object Model

C.1  MDI Object Model Overview

This section defines the management model for the Media Delivery Interface (MDI) as described in Section 6.1. Unless specified, the PacketCable clients will not persist operator configured data after reinitialization for the data models herein described. Other documents that reference this object model might change the persistent requirement of the device. This data model is defined after the PacketCable clients E-MTA, E-DVA, and S-DVA and may be applicable to other types of PacketCable devices.

C.2  MDI Object Model Definitions

C.2.1  MDI Object Model Data Types

This section defines the data types used in the MDI object model.

<table>
<thead>
<tr>
<th>Data Type Name</th>
<th>Base Type</th>
<th>Permitted Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PktcMdiType</td>
<td>Enum</td>
<td>pots(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dectPP(2)</td>
</tr>
</tbody>
</table>

C.2.1.1  PktcMdiType

This data type represents the MDI types.

The term 'pots' refers to Plan Old Telephony Service analog phone lines.

The term 'dect' refers to DECT PP air interface.

C.2.2  MDI Object Model Class Diagram

![MDI Object Model Diagram](image)

Figure 29 - MDI Object Model Diagram
C.2.3  MDI Object Model Description

C.2.3.1  Mdi Object

This object represents the list of Media Delivery Interfaces (MDI) of the device.

Object Operations:

The device associates one instance of this object for each type of port.

For POTS Ports the Instance identifier corresponds to the Interface Index (i.e., ifIndex) associated to the POTS (e.g., ifIndex 9).

For DECT Ports there is an instance for each paired PP in the order of appearance in a manner that the assigned entry identifier (Interface Index) is persistent cross device initializations while the PP stays paired within the FP. Each PP association with the interface Index is maintained by the unique PP identifier (e.g., IPEI). The starting ifIndex number is defined in the device capabilities.

Reference: [DECT-HDV]

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>PktcMdiType</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>AdminString</td>
<td>RU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ActivityStatus</td>
<td>Enum</td>
<td>R</td>
<td>inactive(1)</td>
<td></td>
<td>active(2)</td>
</tr>
</tbody>
</table>

Type

This attribute represents the interface Type of the MDI port.

Name

This attribute represents the name assigned by the user or operator to the media port. This attribute provides an identification of the media port in a human readable format. For example: 'Office Line', 'Fax Line', telephone number, etc.

By default the FP populates the following values:

- For POTS as 'TERM n' where n = 1..m and n=1 corresponds to ifIndex = 9
- For DECT handsets as 'handset n' where n = 1..p and p is the maximum number of PP supported or allowed to register, which ever is small. Typically 'n' corresponds to the PP terminal identifier.

ActivityStatus

This attribute indicates the service media activities potentially going on for the particular MDI:

- 'notactive': No service media activities are currently happening through the port.
- 'active': There are service media activities on the port. Examples of services media activities (e.g., telephony) are: tones generated on the port in response to SIP requests, loopback tests, etc. The particular definition of all Telephony activities should be specified in the corresponding document for the particular PacketCable client.
C.2.3.2 Nsl Object

This object represents the Network Service Line definitions of the device. This object allows the aggregation of MDIs as part of a NSL.

Object Operations

A PacketCable HDV client that supports a single analog line MUST consider all the MDIs as part of a single line NSL#1.

A PacketCable HDV client capable of multi-line support that has not configured an instance in the Nsl object MUST consider all MDIs as part of a single line NSL#1.

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Type</th>
<th>Access</th>
<th>Type Constraints</th>
<th>Units</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>Index</td>
<td>key</td>
<td>1..256</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>AdminString</td>
<td>CRUD</td>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>PortListIn</td>
<td>AdminString</td>
<td>CRUD</td>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>PortListOut</td>
<td>AdminString</td>
<td>CRUD</td>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
</tbody>
</table>

Index

This key represents the unique identifier of a Network Service Line (NSL) assigned by the Operator to the Subscriber. In NCS this value represents the numeric value of an CNS telephony endpoint (aaln/#).

In RST this number represents the number in a NSL#N tag and is used in the mapping of RST users and PacketCable applications.

Name

This attribute represents the line name assigned by a User or by the operator. This attribute provides an identification of the Service Line in a human readable format. For example: 'Office Line', 'Fax Line' etc. Another example of human-readable identification is the Telephone Number associated with the particular NSL.

PortListIn

This attribute represents the comma separated list of MDI Indexes (MDI.Index attribute) associated with this NSL object instance for incoming calls.

PortListOut

This attribute represents the comma separated list of MDI Indexes (MDI.Index attribute) associated with this NSL object instance for outgoing requests. For the voice telephony service, this attribute does not preclude a HDV PP to make an outgoing call from a phone line not associated with the NSL.
C.3 MDI SNMP MIB MODULES

C.3.1 MDI SNMP MIB MODULE

PKTC-MDI-MIB DEFINITIONS ::= BEGIN
IMPORTS
  MODULE-IDENTITY,
  OBJECT-TYPE,
  Unsigned32
FROM SNMPv2-SMI

  OBJECT-GROUP,
  MODULE-COMPLIANCE
FROM SNMPv2-CONF

  SnmpAdminString
FROM SNMP-FRAMEWORK-MIB

  TEXTUAL-CONVENTION,
  RowStatus
FROM SNMPv2-TC

  ifIndex
FROM IF-MIB

  pktcApplicationMibs
FROM CLAB-DEF-MIB;

pktcMdiMib MODULE-IDENTITY
LAST-UPDATED "200909170000Z" -- September 17, 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
  Eugene Nechamkin, Broadcom
  Josh Littlefield, Cisco
  Jerry Mahler, Motorola
  Eduardo Cardona, CableLabs."

DESCRIPTION
"This MIB module contains the PacketCable client
Telephony Delivery Interface (MDI) and Network
Delivery Interface relationships."

REVISION "200909170000Z" -- September 17, 2009
DESCRIPTION
"Revised version includes ECN
DECT-PROV-N-09.0576-8
and published as part of PKT-SP-DECT-PROV-I02"

REVISION "200902260000Z" -- February 26, 2009
DESCRIPTION
"Initial version, published as part of the CableLabs
DECT Provisioning Specification
PKT-SP-DECT-PROV-I01-090226
Copyright 2009 Cable Television Laboratories, Inc.
All rights reserved."
::= { pktcApplicationMibs 6 }

-- Textual Conventions

PktcMditype ::= TEXTUAL-CONVENTION
  STATUS current
  DESCRIPTION
"This data type represents the MDI types.
'pots' refers to Plan Old Telephony Service analog phone lines."
'dectFP' refers to DECT FP air interface. 'dectPP' refers to DECT PP air interface."

REFERENCE
"PacketCable DECT-HDV Specification"

SYNTAX INTEGER
{
  pots(1),
  dectPP(2)
}

-- Object Definitions
pktcMdiNotifications OBJECT IDENTIFIER ::= { pktcMdiMib 0 }
pktcMdiObjects OBJECT IDENTIFIER ::= { pktcMdiMib 1 }

pktcMdiMdiTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcMdiMdiEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the list of Media Delivery Interface (MDI) of the device."
REFERENCE "PacketCable DECT Provisioning Specification"
::= {pktcMdiObjects 1 }

PktcMdiMdiEntry OBJECT-TYPE
SYNTAX PktcMdiMdiEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The Conceptual row of pktcMdiMdiTable. The device associates one instance of this object for each type of port. For POTS Ports the Instance identifier corresponds to the Interface Index (i.e., ifIndex) associated to the POTS (e.g., ifIndex 9...) For DECT Ports there is an instance for each paired PP in the order of appearance in a manner that the assigned entry identifier (Interface Index) is persistent cross device initializations while the PP stays paired within the FP. Each PP association with the interface Index is maintained by the unique PP identifier (e.g., IPEI). The starting ifIndex number is defined in the device capabilities."
INDEX { ifIndex }
::= {pktcMdiMdiTable 1 }

PktcMdiMdiEntry ::= SEQUENCE {
  pktcMdiMdiType  PktcMdiType,
  pktcMdiMdiName  SnmpAdminString,
  pktcMdiMdiActivityStatus  INTEGER
}

PktcMdiMdiType OBJECT-TYPE
SYNTAX PktcMdiType
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute represents the identifier of the Media Port in the context of the MDI type. It can be used as a reference point to objects related to the particular Media Port. For DECT Media Ports, this attribute
represents a unique identifier of the DECT handset (PP), typically the value of 'IPEI' contained in the PUN part of the IPUI is used by default, and for DECT handsets of type residential/default. IPEI is 36 bits, therefore, the representation of this attribute is a 5-octet string with the 4 MSB set to '0'. For POTS media Ports this attribute has no meaning and reports a sequential number for the set of POTS available.

::= {pktcMdiMdiEntry 1 }

pktcMdiMdiName OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This attribute represents the name assigned by the user or operator to the media port. This attribute provides an identification of the media port in a human readable format. For example: 'Office Line', 'Fax Line', telephone number, etc."

By default the FP populates the following values:
For POTS as 'TERM n' where n = 1..m and n=1 corresponds to ifIndex = 9
For DECT handsets as 'handset n' where n = 1..p and p is the maximum number of PP supported or allowed to register, which ever is small. Typically 'n' corresponds to the PP terminal identifier."

::= {pktcMdiMdiEntry 2 }

pktcMdiMdiActivityStatus OBJECT-TYPE
SYNTAX INTEGER
{ active(1), inactive(2) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This attribute indicates the service media activities potentially going on for the particular MDI:

'notActive':
No service media activities are currently happening through the port.

'active':
There are service media activities on the port. Examples of Services media activities (e.g., telephony) are: tones generated on the port in response to SIP requests, loopback tests, etc.

The particular definition of all Telephony activities should be specified in the corresponding document for the particular PacketCable client."

::= {pktcMdiMdiEntry 3 }

pktcMdiNslTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcMdiNslEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This object represents the Network Service Line definitions of the device. This object allows the aggregation of MDIs as part of a NSL."
REFERENCE "PacketCable DECT Provisioning Specification"

::= {pktcMdiObjects 2 }
pktcMdiNslEntry OBJECT-TYPE
SYNTAX  PktcMdiNslEntry
MAX-ACCESS not-accessible
STATUS  current
DESCRIPTION  "The Conceptual row of pktcMdiNslTable.
A PacketCable HDV client that supports a single analog line
must consider all the MDIs as part of a single line NSL#1
A PacketCable HDV client capable of multi-line support that has
not configured an instance in the Nsl object must consider all
MDIs as part of a single line NSL#1."
INDEX { pktcMdiNslIndex }::= {pktcMdiNslTable 1 }

PktcMdiNslEntry ::= SEQUENCE {
pktcMdiNslIndex Unsigned32, 
pktcMdiNslName SnmpAdminString, 
pktcMdiNslPortListIn SnmpAdminString, 
pktcMdiNslPortListOut SnmpAdminString, 
pktcMdiNslRowStatus RowStatus }

pktcMdiNslIndex OBJECT-TYPE
SYNTAX  Unsigned32
MAX-ACCESS not-accessible
STATUS  current
DESCRIPTION  "This key represents the unique identifier of a Network Service
Line (NSL) assigned by the Operator to the Subscriber. In NCS
this value represents the numeric value of an CNS telephony
endpoint (aaln/#).

In RST this number represents the number in a NSL# tag and used
in the mapping of RST users and PacketCable applications."
 ::= {pktcMdiNslEntry 1 }

pktcMdiNslName OBJECT-TYPE
SYNTAX  SnmpAdminString
MAX-ACCESS read-create
STATUS  current
DESCRIPTION  "This attribute represents the line name assigned by a User
or by the operator. This attribute provides an identification
of the Service Line in a human-readable format.
For example: 'Office Line', 'Fax Line' etc.
Another example of human-readable identification is the
Telephone Number associated with the particular NSL."
 ::= {pktcMdiNslEntry 2 }

pktcMdiNslPortListIn OBJECT-TYPE
SYNTAX  SnmpAdminString
MAX-ACCESS read-create
STATUS  current
DESCRIPTION  "This attribute represents the comma separated list of MDI
Indexes (MDI.Index attribute) associated with this NSL object
instance for incoming calls."
 ::= {pktcMdiNslEntry 3 }
pktcMdiNslPortListOut OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This attribute represents the comma separated list of MDI
Indexes (MDI.Index attribute) associated with this NSL
object instance for outgoing requests.
For the voice telephony service this attribute does not
preclude a HDV PP to make an outgoing call from a phone
line not associated with the NSL."
::= {pktcMdiNslEntry 4 }

pktcMdiNslRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"The conceptual row status of this object."
::= {pktcMdiNslEntry 5 }

-- Conformance Definitions
pktcMdiMibConformance OBJECT IDENTIFIER ::= { pktcMdiMib 2 }
pktcMdiMibCompliances OBJECT IDENTIFIER ::= { pktcMdiMibConformance 1 }
pktcMdiMibGroups OBJECT IDENTIFIER ::= { pktcMdiMibConformance 2 }

pktcMdiCompliance MODULE-COMPLIANCE
STATUS      current
DESCRIPTION
"The compliance statement for the MDI requirements of
the PacketCable client device."
MODULE -- this MODULE
MANDATORY-GROUPS {
pktcMdiGroup
}
::= { pktcMdiMibCompliances 1 }

pktcMdiGroup OBJECT-GROUP
OBJECTS {
pktcMdiMdiType,
pktcMdiMdiName,
pktcMdiMdiActivityStatus,
pktcMdiNsName,
pktcMdiNslPortListIn,
pktcMdiNslPortListOut,
pktcMdiNslRowStatus
}
STATUS      current
DESCRIPTION
"Group of objects for Telephony Delivery
Interfaces (MDI)."
::= { pktcMdiMibGroups 1 }

END

C.3.2 MDI High Level MO

Figure 30 - MDI High Level OMA Management
C.3.3 MDI Nodes

C.3.3.1 MDI Mdi Node MO tree

![Diagram of MDI Mdi Node MO tree](image1)

Figure 31 - Node Mdi of MDI OMA Management

C.3.3.2 MDI Mdi MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./MDI/Mdi</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./MDI/Mdi&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./MDI/Index/&lt;X&gt;/Index</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./MDI/Type/&lt;X&gt;/Type</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
<tr>
<td>./MDI/Name/&lt;X&gt;/Name</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Get</td>
</tr>
<tr>
<td>./MDI/ActivityStatus/&lt;X&gt;/ActivityStatus</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Get</td>
</tr>
</tbody>
</table>

C.3.3.3 MDI Nsl Node MO tree

![Diagram of MDI Nsl Node MO tree](image2)

Figure 32 - Node Nsl of MDI OMA Management

C.3.3.4 MDI Nsl MO Node Description

<table>
<thead>
<tr>
<th>MO Element</th>
<th>Status</th>
<th>Occurrence</th>
<th>Format</th>
<th>Access Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>./MDI/Nsl</td>
<td>current</td>
<td>One</td>
<td>Node</td>
<td>Get</td>
</tr>
<tr>
<td>./MDI/Nsl&lt;X&gt;</td>
<td>current</td>
<td>OneOrMore</td>
<td>Node</td>
<td>Add, Delete, Get, Replace</td>
</tr>
<tr>
<td>./MDI/Index/&lt;X&gt;/Index</td>
<td>current</td>
<td>OneOrZero</td>
<td>int</td>
<td>Add, Get, Replace</td>
</tr>
<tr>
<td>./MDI/Name/&lt;X&gt;/Name</td>
<td>current</td>
<td>OneOrZero</td>
<td>chr</td>
<td>Add, Get, Replace</td>
</tr>
</tbody>
</table>
C.4 MDI OMA Device Description Framework (DDF)

```xml
<?xml version="1.0"?>
<MgmtTree>
  <VerDTD>1.2</VerDTD>
  <Man>PacketCable - Cable Laboratories Inc.</Man>
  <!--This DDF considers as model the UE MO (as defined in the PacketCable specifications) followed by a colon character (e.g., MDI:)-->
  <Mod>MDI:</Mod>
  <Node>
    <NodeName>MDI</NodeName>
    <Path>./Pktc</Path>
    <DFProperties>
      <AccessType>
        <Get/>
      </AccessType>
      <DefaultValue/>
      <Description>The node that defines the MDI MO tree.</Description>
      <DFFormat>
        <node/>
      </DFFormat>
      <Occurrence>
        <One/>
      </Occurrence>
      <Scope>
        <Permanent/>
      </Scope>
      <DFTitle>The interior node holding all nodes of the PacketCable MDI MO three</DFTitle>
      <DFType>
        <DDFName>urn:cablelabs:packetcable:ddf:mdi</DDFName>
      </DFType>
      <CaseSense>
        <CIS/>
      </CaseSense>
    </DFProperties>
    <Node>
      <NodeName>Mdi</NodeName>
      <DFProperties>
        <AccessType>
          <Get/>
        </AccessType>
        <DFFormat>
          <node/>
        </DFFormat>
        <Occurrence>
          <One/>
        </Occurrence>
        <Scope>
          <Permanent/>
        </Scope>
        <DFTitle>MDI.Mdi</DFTitle>
        <DFType>
          <DDFName>
            urn:cablelabs:packetcable:ddf:mdi
          </DDFName>
        </DFType>
      </DFProperties>
    </Node>
  </Node>
</MgmtTree>
```
<DFType>
  <DFProperties>
    <AccessType></AccessType>
    <DefaultValue></DefaultValue>
    <Description/>
    <DFFormat>
      <int/>
    </DFFormat>
    <Occurrence>
      <One/>
    </Occurrence>
    <Scope>
      <Permanent/>
    </Scope>
  </DFProperties>
</DFType>
</Node>

<Node>
  <NodeName>Type</NodeName>
  <DFProperties>
    <AccessType>
      <Get/>
    </AccessType>
    <DefaultValue></DefaultValue>
    <Description/>
    <DFFormat>
      <int/>
    </DFFormat>
    <Occurrence>
      <One/>
    </Occurrence>
    <Scope>
      <Permanent/>
    </Scope>
  </DFProperties>
</Node>

<Node>
  <NodeName>Name</NodeName>
  <DFProperties>
    <AccessType></AccessType>
    <DefaultValue></DefaultValue>
    <Description/>
    <DFFormat>
      <chr/>
    </DFFormat>
    <Occurrence>
      <OneOrMore/>
    </Occurrence>
  </DFProperties>
</Node>
<MgmtTree>
  <Node>
    <NodeName>PortListOut</NodeName>
    <DFProperties>
      <AccessType/>
      <DefaultValue/>
      <Description/>
      <DFFormat>
        <chr/>
      </DFFormat>
      <Occurrence>
        <One/>
      </Occurrence>
      <Scope>
        <Permanent/>
      </Scope>
      <DFTitle/>
      <DType>
        <MIME>text/plain</MIME>
        <CaseSense/>
      </DType>
    </DFProperties>
    <Value/>
  </Node>
</MgmtTree>
Appendix I  Examples of Network Service Line Configuration

This section covers the configuration of single-line capable HDV clients and multi-line capable HDV clients for both PacketCable 1.5 and PacketCable 2.0.

In all scenarios it is assumed an HDV client with five terminals (MDI ports): two POTS and three DECT handsets. Table 26 shows the Media Ports representation in the Interface Table [RFC 2863] (e.g., E-MTA and E-DVA).

<table>
<thead>
<tr>
<th>ifIndex</th>
<th>ifType</th>
<th>ifDescription</th>
<th>ifAdminStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>198</td>
<td>“Voice Over Cable Interface”</td>
<td>‘up’</td>
</tr>
<tr>
<td>10</td>
<td>198</td>
<td>“Voice Over Cable Interface”</td>
<td>‘up’</td>
</tr>
<tr>
<td>11</td>
<td>198</td>
<td>“Voice Over Cable Interface”</td>
<td>‘up’</td>
</tr>
<tr>
<td>12</td>
<td>198</td>
<td>“Voice Over Cable Interface”</td>
<td>‘up’</td>
</tr>
<tr>
<td>13</td>
<td>198</td>
<td>“Voice Over Cable Interface”</td>
<td>‘up’</td>
</tr>
</tbody>
</table>

Table 26 - Endpoint Representation in the Interface Table

Notation: through these scenarios **Bold Italic** text corresponds to operator provisioned data elements, *Italic* text corresponds to default device configuration.

I.1  HDV client Single-line Provisioning

This example assumes an HDV client with a single line subscription and 5 termination devices: two POTS and three DECT. The single-line configuration is shown in Figure 33. The Interfaces index 9 and 10 correspond to the POTS MDIs and the interface Index 11, 12,13 correspond to the DECT handsets after completing pairing and properly registered with the FP.

For the single-line HDV client all MDI Ports are associated with the single-line allowed to the operator. The operator only needs to configure the signaling endpoints.

![Figure 33 - Single-line Service Configuration](image-url)
I.1.1 MDI and NSL Provisioning

From the service perspective the Media Ports appear to the operator and user as phone extensions. The operator may optionally configure the MDI Port names (both POTS and DECT PPs) and the single NSL; however, it may be outside the scope of the provisioning system when adding HDV capabilities to the traditional single-line service offer.

I.1.1.1 Mdi Object Configuration

The operator has access to the MDI Ports in the Mdi object for management purposes. Table 27 shows the default configuration of the Mdi object.

<table>
<thead>
<tr>
<th>ifIndex</th>
<th>Type</th>
<th>Name</th>
<th>ActivityStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>'pots'</td>
<td>&quot;POTS 9&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>10</td>
<td>'pots'</td>
<td>&quot;POTS 10&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>11</td>
<td>'pots'</td>
<td>&quot;DECT Handset 1&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>12</td>
<td>'pots'</td>
<td>&quot;DECT Handset 2&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>13</td>
<td>'pots'</td>
<td>&quot;DECT Handset 3&quot;</td>
<td>'notActive'</td>
</tr>
</tbody>
</table>

The operator may configure the POTS names via the management interface. The operator may configure the DECT PPs name via the management interface after the PPs are paired with the system. The user may configure the names of the DECT PPs locally. However, if the HDV client supports the DECT "List access service" feature, that configuration maybe transferred to the FP and accessible to the operator. Table 28 shows the optional configuration of MDI Port Names. POTS names are configured by the operator and the user configures PP names.

<table>
<thead>
<tr>
<th>ifIndex</th>
<th>Type</th>
<th>Name</th>
<th>ActivityStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>'pots'</td>
<td>&quot;Basement&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>11</td>
<td>'pots'</td>
<td>&quot;Fax&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>11</td>
<td>'dectPP'</td>
<td>&quot;Kitchen&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>12</td>
<td>'dectPP'</td>
<td>&quot;Master Bedroom&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>13</td>
<td>'dectPP'</td>
<td>&quot;Office&quot;</td>
<td>'notActive'</td>
</tr>
</tbody>
</table>

I.1.1.2 Nsl Object Configuration

Table 29 shows the default instance of the NSL object for the single-line capable HDV client.

<table>
<thead>
<tr>
<th>Index</th>
<th>Name</th>
<th>PortListIn</th>
<th>PortListOut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&quot;Line 1&quot;</td>
<td>9,10,11,12,13</td>
<td>9,10,11,12,13</td>
</tr>
</tbody>
</table>

Similarly, as in the case of the MDI object, the operator can configure the name of the NSL via the management interface.

If supported, the user may configure the NSL name via the DECT "Line settings list" List access service as shown in Table 30. At any time the user may change the name of the phone line if allowed (see FP.LockListCfg object attribute in Annex B).
### Table 30 - Nsi Object Configuration, DECT Handsets Assigned by User

<table>
<thead>
<tr>
<th>Index</th>
<th>Name</th>
<th>PortListIn</th>
<th>PortListOut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&quot;Home Line&quot;</td>
<td>9,10,11,12,13</td>
<td>9,10,11,12,13</td>
</tr>
</tbody>
</table>

### I.1.2 Signaling Provisioning

#### I.1.2.1 PacketCable 1.5 Signaling HDV Client Provisioning

The operator configures endpoint aaln/1 for the single-line service. The relevant information of the pktNcsEndPntConfigTable is shown in Table 31.

#### Table 31 - Multi-line Example NCS Endpoint configuration

<table>
<thead>
<tr>
<th>IfIndex</th>
<th>pktcNcsEndPntConfigCallAgentId</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td><a href="mailto:userALine1@mso1.com">userALine1@mso1.com</a></td>
</tr>
</tbody>
</table>

Note: The HDV Single-line client configuration uses a PacketCable 1.5 backward-compatible notation for the endpoint (endpoint ifIndex 9 represents the single line).

#### I.1.2.2 PacketCable 2.0 Signaling HDV Client Provisioning

The operator configures the user IMPU Object for the RST application. Relevant attributes for the case are shown in Table 32.

#### Table 32 - Multi-line Example User Configuration for RST

<table>
<thead>
<tr>
<th>IMPU.Index</th>
<th>IMPU.Id</th>
<th>IMPU.AdditionalInfo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><a href="mailto:userALine1@mso1.com">userALine1@mso1.com</a></td>
<td>IEP#9:OEP#9</td>
</tr>
</tbody>
</table>

Note: The HDV Single-line client configuration uses a PacketCable 2.0 backward-compatible notation.

### I.2 HDV client Multi-line Provisioning

This example assumes an HDV client with 2 line subscription: "Home Line" and "Home Office Line"; and 5 termination devices: two POTS and three DECT. The line configuration is shown in Figure 34. The Interfaces index 9 and 10 correspond to the POTS MDIs and the interface Index 11, 12,13 correspond to the DECT handsets after completing pairing and properly registered with the FP.
I.2.1 MDI and NSL Provisioning

The user contracts two phone lines with the operator. The user requested naming the lines as "Home Line", "Office Line" and "Fax Line". The user decides to have 2 analog phones used for the office and one DECT handset. Additionally, the user installs two DECT handsets. The user provides the handsets from retail.

The offered service allows the user to customize the telephone lines configuration assign POTS and DECT handsets to a specific phone lines. To change the association of POTS with phone lines, the user calls the operator, or logs into the operator service portal to make those changes. The configuration of DECT Handsets is possible from the handsets themselves.

The scenarios described for a service in this section are based on the assumption the user defines the layout of the home configuration by assigning the names of the household media ports as "Master Bedroom", "Kitchen", "Office", "Fax" and "Basement". The association of phone lines and terminals as specified in the contract is shown in Table 33. This scenario also assumes the operator configures all terminals for incoming or outgoing call devices.

### Table 33 - Media Ports and Phone Lines Configuration

<table>
<thead>
<tr>
<th>Line Name</th>
<th>Media Port Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Office Line&quot;</td>
<td>&quot;Office&quot; (DECT), &quot;Fax&quot; (POTS), &quot;Basement&quot; (POTS)</td>
</tr>
<tr>
<td>&quot;Home Line&quot;</td>
<td>&quot;Master Bedroom&quot; (DECT), &quot;Kitchen&quot; (DECT)</td>
</tr>
</tbody>
</table>

I.2.1.1 Mdi Object Provisioning by the Operator

The operator configures the Mdi object instances for the POTS ports as shown in Table 34.

### Table 34 - Mdi Object Provisioning of POTS

<table>
<thead>
<tr>
<th>ifIndex</th>
<th>Type</th>
<th>Name</th>
<th>Activity/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>'pots'</td>
<td>&quot;Basement&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>10</td>
<td>'pots'</td>
<td>&quot;Fax&quot;</td>
<td>'notActive'</td>
</tr>
</tbody>
</table>
For the DECT handsets there are several options to complete the provisioning: The Mdi Indices of the DECT Handsets are not known until the handsets registers with the FP. Therefore, defining what handset type (e.g., model) goes on which line is a user preference rather than an operator decision. Possible scenarios are described in Table 35 and Table 36.

After the user activates the HDV client, the operator assigns the handsets names if requested for the user. This is the case where the operator assists the configuration of the handsets. The operator configured information is then transfer to all handsets as specified in Section 6. This scenario is shown in Table 35.

<table>
<thead>
<tr>
<th>ifIndex</th>
<th>Type</th>
<th>Name</th>
<th>ActivityStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>'dectPP'</td>
<td>&quot;Kitchen&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>12</td>
<td>'dectPP'</td>
<td>&quot;Master Bedroom&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>13</td>
<td>'dectPP'</td>
<td>&quot;Office&quot;</td>
<td>'notActive'</td>
</tr>
</tbody>
</table>

Table 36 - Mdi Object Provisioning of DECT Handsets by the User

<table>
<thead>
<tr>
<th>ifIndex</th>
<th>Type</th>
<th>Name</th>
<th>ActivityStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>'dectPP'</td>
<td>&quot;Kitchen&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>12</td>
<td>'dectPP'</td>
<td>&quot;Master Bedroom&quot;</td>
<td>'notActive'</td>
</tr>
<tr>
<td>13</td>
<td>'dectPP'</td>
<td>&quot;Office&quot;</td>
<td>'notActive'</td>
</tr>
</tbody>
</table>

Note: The DECT handsets are not instantiated in the Mdi object until they register with the FP.

At any time the user can change the names of the PPs.

I.2.1.2 Nsl Object Provisioning by the Operator

Table 37 shows the operator provisioning of the Nsl object with the desired mapping of media ports to phone lines (Network Service Lines).

Similarly, as in the case of the MDI object, the operator can configure the POTS assignment to NSL objects first and assist the user with the configuration of the DECT handsets after those are paired.

<table>
<thead>
<tr>
<th>Index</th>
<th>Name</th>
<th>PortListIn</th>
<th>PortListOut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Home Office Line</td>
<td>9,10,13</td>
<td>9,10,13</td>
</tr>
<tr>
<td>2</td>
<td>Home Line</td>
<td>11,12</td>
<td>11,12</td>
</tr>
</tbody>
</table>

The Nsl object configuration is shown Table 38 for the case where the user configures the DECT handsets assignment to phone lines via the DECT "Line Settings List" List access service.
Table 38 - Nsl Object Configuration, DECT Handsets Assigned by User

<table>
<thead>
<tr>
<th>Index</th>
<th>Name</th>
<th>PortListIn</th>
<th>PortListOut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Home Office Line</td>
<td>9,10,13</td>
<td>9,10,13</td>
</tr>
<tr>
<td>2</td>
<td>Home Line</td>
<td>11,12</td>
<td>11,12</td>
</tr>
</tbody>
</table>

If allowed (e.g., see FP.LockListCfg object attribute in Annex B), the user may change the name of the phone line.

1.2.2 Signaling Provisioning

1.2.2.1 PacketCable 1.5 Signaling HDV Client Provisioning

The operator configures endpoint aaln/1 as the "Home Office Line" and aaln/2 for the "Home Line", the relevant information of the pktNcsEndPntConfigTable is shown in Table 39.

Table 39 - Multi-line Example NCS Endpoint configuration

<table>
<thead>
<tr>
<th>IfIndex</th>
<th>pktcNcsEndPntConfigCallAgentId</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td><a href="mailto:userALine1@mso1.com">userALine1@mso1.com</a></td>
</tr>
<tr>
<td>10</td>
<td><a href="mailto:userALine1@mso1.com">userALine1@mso1.com</a></td>
</tr>
</tbody>
</table>

1.2.2.2 PacketCable 2.0 Signaling HDV Client Provisioning

The operator configures the user IMPU Object for the RST application. Relevant attributes for the case are shown in Table 40.

Table 40 - Multi-line Example User Configuration for RST

<table>
<thead>
<tr>
<th>IMPU.Index</th>
<th>IMPU.Id</th>
<th>IMPU.AdditionalInfo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><a href="mailto:userALine1@mso1.com">userALine1@mso1.com</a></td>
<td>NSL#1</td>
</tr>
<tr>
<td>2</td>
<td><a href="mailto:userALine2@mso1.com">userALine2@mso1.com</a></td>
<td>NSL#2</td>
</tr>
</tbody>
</table>
Appendix II  Acknowledgements

CableLabs wishes to thank the PacketCable Provisioning 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 (alphabetical by company name).

    Thomas Clack, Broadcom
    Eugene Nechamkin, Broadcom
    Josh Littlefield, Cisco
    Effi Shiri, DSP Group
    Donald Joong, Ericsson
    Jerry Mahler, Motorola
    Oliver Maiwald, Sitel
    Mark Trayer, Samsung

Special thanks are extended to Eugene Nechamkin for being the primary author of this specification.

Eduardo Cardona and the PacketCable Architects, CableLabs, Inc.
Appendix III  Revision History

The following Engineering Change Notice was incorporated into PKT-SP-DECT-PROV-I02-091709.

<table>
<thead>
<tr>
<th>ECN</th>
<th>Date Accepted</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECT-PROV-N-09.0576-8</td>
<td>8/31/2009</td>
<td>HDVoice Phase II Requirements - multiline Support (Provisioning)</td>
</tr>
</tbody>
</table>