

PacketCable™ 2.0

**Presence Provisioning, Activation,
Configuration and Management Specification**

PKT-SP-PRS-PACM-I01-070628

ISSUED

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Document Status Sheet

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- Work in Progress** An incomplete document, designed to guide discussion and generate feedback, that may include several alternative requirements for consideration.
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1 SCOPE

1.1 Introduction and Purpose

PacketCable Presence specifies an implementation of Presence features in a PacketCable network with PacketCable User Equipment (UE). To support the Presence feature being defined, the UEs need to support Provisioning, Activation, Configuration and Management (PACM) in a PacketCable network.

This document specifies the PacketCable Presence Provisioning, Activation, Configuration and Management (PACM) requirements and the Presence data model, as applicable to UEs supporting the PacketCable Presence specification. It inherits requirements from the PacketCable PACM specification and defines the Presence data model based on the requirements in the PacketCable Presence specification. The current version of this specification only addresses the configuration aspects of a UE or network element that supports PacketCable Presence.

1.2 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.

- [RFC 4825] IETF RFC 4825, The Extensible Markup Language (XML) Configuration Access Protocol (XCAP), May 2007.
- [PACM] PacketCable Provisioning, Activation, Configuration, and Management Specification, PKT-SP-PACM-I02-061013, October 13, 2006, Cable Television Laboratories, Inc.
- [PKT 24.229] PacketCable SIP and SDP Stage 3 Specification 3GPP TS 24.229, PKT-SP-24.229-I02-061013, October 13, 2006, Cable Television Laboratories, Inc.

2.2 Informative References

This specification uses the following informative references.

- [ARCH TR] PacketCable Architecture Framework Technical Report, PKT-TR-ARCH-FRM-V02-061013, October 13, 2006, Cable Television Laboratories, Inc.
- [PRS] PacketCable 2.0 Presence Specification, PKT-SP-PRS-I01-070628, June 28, 2007, Cable Television Laboratories, Inc.
- [OMA PS] OMA-TS-Presence_SIMPLE-V1_0_1-20061128-A, Presence SIMPLE Specification, November 2006, Open Mobile Alliance.
- [OMA PS.MO] OMA-TS-Presence_SIMPLE_MO-V1_0_1-20061128-A, OMA Management Object for SIMPLE Presence, November 2006, Open Mobile Alliance.
- [OMA XDM.Core] OMA-TS-XDM_Core-V1_0_1-20061128-A, XML Document Management (XDM) Specification, November 2006, Open Mobile Alliance.

2.3 Reference Acquisition

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone +1-303-661-9100; Fax +1-303-661-9199; Internet: <http://www.cablelabs.com/>
- Internet Engineering Task Force (IETF) Secretariat, 46000 Center Oak Plaza, Sterling, VA 20166, Phone +1-571-434-3500, Fax +1-571-434-3535, <http://www.ietf.org>
- 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/>.

3 TERMS AND DEFINITIONS

This specification uses the following terms:

3rd Generation Partnership Project	The 3rd Generation Partnership Project (3GPP) is a collaboration agreement that was established in December 1998. The collaboration agreement brings together a number of telecommunications standards bodies that are known as "Organizational Partners," including ARIB, CCSA, ETSI, ATIS, TTA, and TTC.
Activation	Activation is the process of controlling the state of entities, features, or services.
Application Unique Identifier	A unique identifier within the namespace of application unique IDs (AUID) created by the XCAP specification [RFC 4825]. The AUID differentiates XCAP resources accessed by one application from XCAP resources accessed by another.
Configuration	Configuration is the process of defining and propagating data to network elements for providing services.
Data Model	An abstract model that describes representation of data in a system.
Management	Management refers to the protocols, methodologies and interfaces that enable oversight services in a Service Provider Network.
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 User Equipment that offers services.

4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

3GPP	3rd Generation Partnership Project
ACL	Access Control List
AUID	Application Unique Identifier
PAC	Provisioning, Activation and Configuration
PACM	Provisioning, Activation, Configuration, and Management
P-CSCF	Proxy Call Session and Control Function
PDS	Profile Delivery Server
SIP	Session Initiation Protocol
UE	User Equipment
URI	Uniform Resource Indicator
XCAP	Extensible Markup Language (XML) Configuration Access Protocol
XDM	XML Document Management
XDS	XCAP Document Server
XSD	XML Schema Definition
XUI	XCAP User Identifier

5 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, refer to the PacketCable Architecture Framework Technical Report [ARCH TR].

As part of these efforts, PacketCable specifies features (Presence, for example) built upon the PacketCable architecture. Support of Presence in a PacketCable network also requires specification of applicable architectural requirements related to UEs, PACM, Accounting, etc. This document specifies such requirements related to PACM, as applicable to the UEs supporting Presence. Further, within the context of this document, any reference to a PacketCable UE should be interpreted as a UE that supports the PacketCable Presence specification [PRS].

5.1 Presence

The PacketCable Presence specification documents the PacketCable Presence architecture and the normative requirements to implement the Presence feature in a PacketCable network. For more information, please refer to [PRS].

5.2 Provisioning, Activation, Configuration and Management (PACM)

The PacketCable PACM specification documents reference points, protocols, and data models to support Provisioning, Activation, Configuration and Management requirements in a PacketCable network. Further, the specification requires PacketCable feature specifications, such as Presence, to utilize and mandate reference points; and extends the data models as required to support the defined features. For more information, refer to [PACM].

6 PACKETCABLE PRESENCE - PACM ARCHITECTURE AND REQUIREMENTS

6.1 PacketCable Presence-PACM Functional Architecture

The PacketCable PACM functional architecture, as specified in [PACM], is depicted in Figure 1.

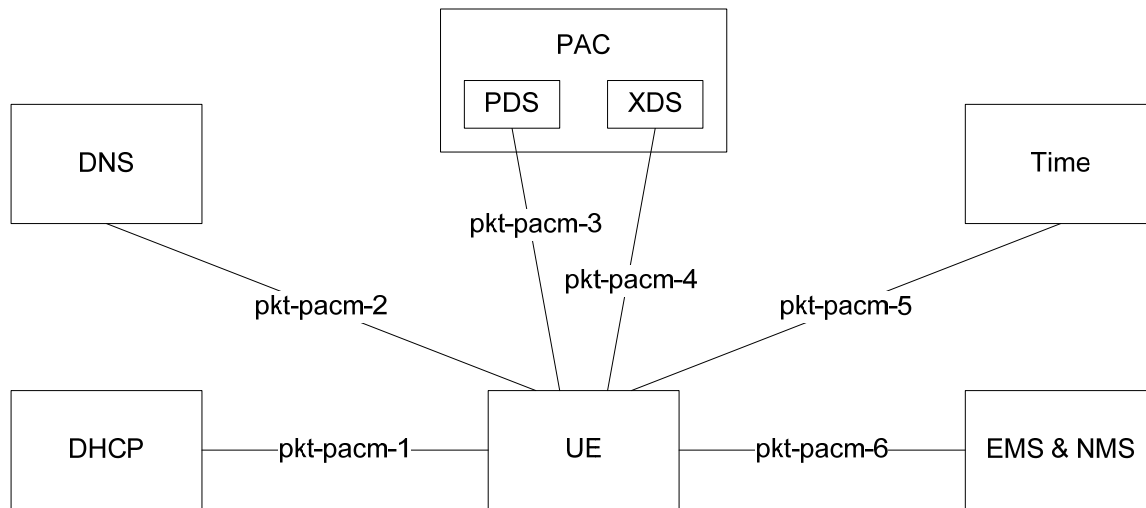


Figure 1 - PacketCable PACM Functional Architecture

The procedures and requirements pertaining to the use of interfaces pkt-pacm-1, pkt-pacm2, pkt-pacm-3, pkt-pacm-4, pkt-pacm-5 and pkt-pacm-6 are all as defined within [PACM]. This specification provides additional requirements for the use of interfaces pkt-pacm-3 and pkt-pacm-4.

6.2 PacketCable Presence-PACM Configuration

The Presence-PACM configuration derives from the configuration requirements as defined in [PACM]. This includes the configuration data model and the reference points: pkt-pacm-3 and pkt-pacm-4.

The PacketCable Presence architecture defines a single data model for the Presence configuration. This data model is based on the configuration data model defined in [PACM]. Annex A of this specification contains the Presence configuration data model, represented as an XML Schema.

6.2.1 XCAP Usage for the PacketCable "Presence" Application Profile

The PacketCable Presence Feature profile, described by the XML Schema in Annex A of this specification, corresponds to an "application" profile. Refer to [PACM] for more details. Its XCAP usage is specified in the following sections.

6.2.1.1 AUID

A PACM XDS supporting PacketCable Presence features MUST set the Application Unique ID (AUID) for the PacketCable Presence Feature profile to be "com.cablelabs.pkt.presence".

6.2.1.2 Default Namespace Binding

The default namespace binding for the PacketCable Presence Feature profile is:

<http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-PRS>

6.2.2 XML Data Validation

The mime-type for the PacketCable Presence Feature profile is "application/xml".

Uniqueness of index attributes in the profile document **MUST** be enforced, as specified using the <unique> element in the schema definition, by the XDS. If the <unique> element is not used in the schema definition, then attributes whose <annotation> indicates they are index attributes are required to be unique within the scope of similar elements under the same containing element and **MUST** be adhered to by the UE and enforced by the XDS.

The profile document may reference an external document when the <PktcPACMXData> element is used (see [PACM]). This reference may be a relative URL, which is relative to the XCAP Root, an absolute URL, or a reference to an additional profile subscription defined by an AUID and optional document URL. When the UE is granted write access to this type of reference, it is the responsibility of the UE to ensure referential integrity. Trusted network elements that are allowed to change this type of reference and alter the referenced document are similarly responsible for referential integrity between the referenced document and the profile document. The XCAP server (XDS entity) does not provide any integrity enforcement for these references.

The profile document may reference an external access control document (see [PACM]). This is a relative URL reference, which is relative to the XCAP Root. The UE **MUST NOT** write, nor be authorized to write, this Access Control List (ACL) reference within the profile document. Further, the XDS **MUST NOT** authorize the UE to create, modify or delete the ACL document. Trusted network elements that are allowed to change this reference and alter the referenced ACL document **MUST** maintain referential integrity between the ACL document and the profile document, both of which may reference each other. See the ACL document definition in [PACM] for more details. Because the XDS is required to enforce access control based on the referenced ACL document, the XDS **SHOULD** ensure referential integrity.

The profile document can also embed aggregated access control information, as specified by [PACM]. Whether embedded or external, the ACL document contains XPath information relating to the Presence Feature profile document structure. There is no requirement for the XPath information to correspond to existing profile document elements. This allows for ACL control of non-existent elements. However, XPath information in the ACL document **SHOULD** correspond to valid profile document structures.

6.2.3 Data Semantics

The data semantics for the PacketCable Presence Feature profile is specified in the <annotation> elements of the corresponding XML schema.

6.2.4 Naming Conventions

By default, the PacketCable Presence Feature Profile document **SHOULD** be referred to as "Presence-Profile." It **SHOULD** be ensured that this appears under the user-specific portion of the XCAP URL path for the PacketCable Presence features AUID, as specified in Section 6.2.1.1.

6.2.5 Resource Interdependencies

The PacketCable Presence Feature profile document may be dependent on an external ACL document, as described in [PACM]. The profile document can also be dependent on other external documents and resources, referenced in <PktcPACMXData> elements in the document. See the XML Data Validation Section 6.2.2 for more details.

6.2.6 Authorization Policies

Each UE, acting on behalf of a Public Identity for which it has credentials and which is authorized for this AUID, is able to access (read, modify, and delete) the profile document(s) below the user directory for that Public Identity on the XDS implementing this AUID. The XCAP User Identifier (XUI) portion of the document path corresponds to the particular Public Identity. Further, all UEs authorized to access this AUID are able to read documents within the "global" directory of this AUID.

The default authorization policy defined in [RFC 4825] MUST be supported by all PacketCable elements.

Authorization for modification of specific portions of the PacketCable Presence document content MUST be enforced by the XDS, according to the ACL rules associated with that element, as specified in [PACM]. The <PKTC-ACL: aggregated-acls> element of the document, if present, SHOULD contain explicit inline access control preventing UE write access. The PACM XDS MAY deny write access by the UE to the <PKTC-ACL: aggregated-acls> element despite the absence of explicit inline access control. Trusted network elements, explicitly defined in the PACM XDS, can freely modify all documents, including global documents, and correspond to "Network" entities with respect to specific ACL rules.

6.3 PacketCable Presence-PACM component requirements

6.3.1 UE requirements

UEs MUST support the following:

- Interfaces pkt-pacm-3 and pkt-pacm-4 as defined in [PACM], plus additional requirements pertaining to those interfaces provided in this document.
- Configuration data model specified in Annex A.

It is to be noted that this version of the specification supports UEs that can operate in both controlled and uncontrolled environments. UE specifications may qualify or choose an environment, if required.

6.3.1.1 Configuration retrieval

For each active User not prohibited by the UE configuration data, the UE MUST attempt User registration as specified in [PKT 24.229].

For each registered User connecting via the UE, the UE MUST obtain the User Configuration as specified in [PACM].

An active User, in the context of this specification, is defined as a User who is considered to obtain services perpetually, unless configured otherwise (e.g., an embedded device pre-configured with Users) or a User who explicitly requests service (e.g., User at a kiosk).

6.3.1.2 Presence configuration retrieval

For each User obtaining the Presence Feature, the PAC Element MUST include the Presence Feature information in the User profile.

Further, the PAC Element MUST ensure the following:

- If the Presence Feature information is embedded in the User Profile, it conforms to the XML Schema specified in Annex A.
- If the Presence Feature information is referenced as an external profile, it uses the AUID defined in Section 6.2.1.1 and the profile MUST conform to the XML Schema specified in Annex A.

Upon retrieving the User Profile containing Presence Feature information, if the configuration is not embedded, the UE MUST retrieve the Presence Feature Profile using the mechanisms specified in [PACM].

6.3.2 PDS requirements

A PDS supporting the PacketCable Presence Feature MUST support the following:

- PDS requirements specified in [PACM].
- UE and User AUIDs defined in [PACM].
- Presence AUID defined in Section 6.2.1.1 of this specification.

6.3.3 XDS requirements

A PACM XDS supporting the PacketCable Presence Feature MUST support the XDS requirements specified in [PACM].

6.3.4 AS requirements

For an AS supporting the PacketCable Presence Feature and containing, or acting as, a PACM PDS, refer to Section 6.3.2.

For an AS supporting the PacketCable Presence Feature and containing, or acting as, a PACM XDS, refer to Section 6.3.3.

7 PRESENCE-PACM CONFIGURATION ELEMENT REQUIREMENTS

A UE that supports the PacketCable Presence feature MUST support the configuration data elements defined in Table 1. Refer to [PRS] for more information.

Table 1 - PacketCable Presence Configuration Elements

Data	Type	Persistence	Scope	Stored by	Written by	Read by	PACM Requirement
pkcPRSApplcationDisplayName	String	Volatile	Per Network	XDS	XDS	UE	Optional
pkcPRSProviderID	String	Volatile	Per Network	XDS	XDS	UE	Optional
pkcPRSCliantObjDataLimit	Integer	Volatile	Public Identity	XDS	XDS	UE	Mandatory
pkcPRSContentServerURI	String	Volatile	Public Identity	XDS	XDS	UE	Optional
pkcPRSSourceThrottlePublish	Integer	Volatile	Public Identity	XDS	XDS	UE	Optional
pkcPRSMaxNumberOfPresenceSubscriptions	Integer	Volatile	Public Identity	XDS	XDS	UE	Optional
pkcPRSMaxNumberOfSubscriptionsInPresenceList	Integer	Volatile	Public Identity	XDS	XDS	UE	Optional
pkcPRSServiceURITemplate	String	Volatile	Public Identity	XDS	XDS	UE	Optional

8 SAMPLE PRESENCE-PACM FLOWS AND EXAMPLES

This section provides an informative snapshot of a potential provisioning flow, based on the requirements specified in Section 6, as they relate to PacketCable Presence configuration retrieval.

The sections that follow assume completion of any other steps required after UE initialization, such as IP network participation, P-CSCF Discovery, registration, and user profile retrieval.

8.1 Profiles and AUIDs

The configuration profile, corresponding data, and the XCAP AUID used to support the Presence Feature is the Presence “application” profile that corresponds to the Presence feature data; its AUID is com.cablelabs.pkt.presence.

8.2 Presence Feature Profile retrieval

Figure 2 provides a snapshot of the provisioning flow depicting retrieval of the Presence Feature profile.

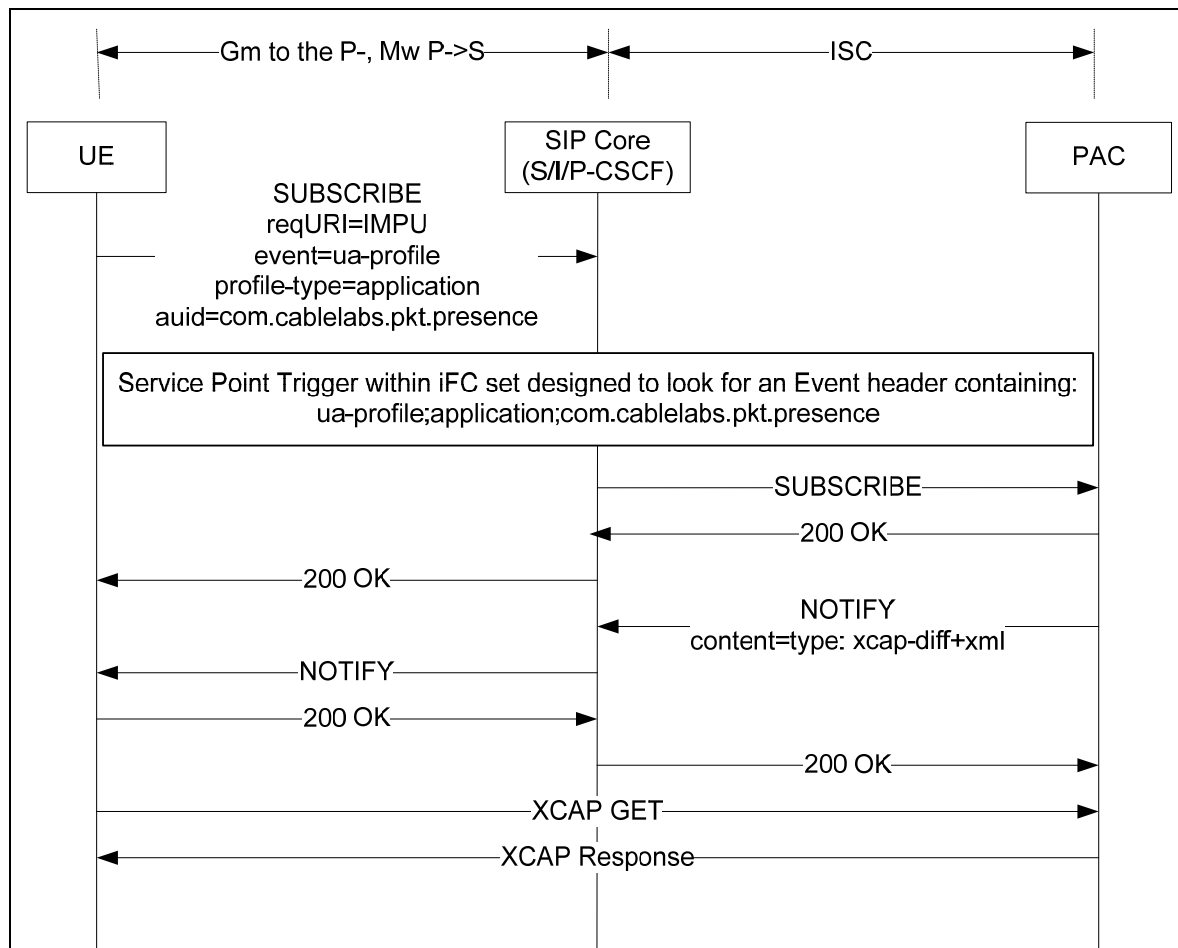


Figure 2 - Obtaining the Presence Profile

If the User Profile indicates an external Presence Feature Profile reference, the UE SUBSCRIBES to the "application" profile using its IMPU as the Request URI and the service provider domain as the host portion (e.g., sip:+15551234567@serviceprovider.com). The Event header indicates that this is an "application" profile type. Refer to [PACM] for more details. It also has an AUID emphasizing that this specifically is the PacketCable Presence feature data. The Event header would be:

Event: ua-profile;profile-type=application;auid=com.cablelabs.pkt.presence

Assuming a successful subscription, a NOTIFY will be returned by the PAC Element. This will be used by the UE to construct an XCAP request to retrieve the profile.

Annex A Presence-PACM Data Model

The following is the XML Schema representing the Presence Feature Profile.

```
<?xml version="1.0" encoding="utf-8"?>
<xsd:schema
  xmlns="http://http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-PRS"
  xmlns:CL-PKTC-BASE-
  SVC="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-BASE-SVC"
  xmlns:PKTC-ACLS="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-
  ACL"
  xmlns:CL-PKTC-TC="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-
  TC"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"

  targetNamespace="http://http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-
  PKTC-PRS"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">
  <xsd:import namespace="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-
  PKTC-TC" schemaLocation="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-
  PKTC-TC.xsd"/>
  <xsd:import namespace="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-
  PKTC-ACL"
  schemaLocation="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-
  ACL.xsd"/>
  <xsd:import namespace="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-
  PKTC-BASE-SVC"
  schemaLocation="http://www.cablelabs.com/namespaces/PacketCable/R2/XSD/v1/CL-PKTC-
  BASE-SVC.xsd"/>
  <xsd:annotation>
    <xsd:documentation>
      The data elements in this schema represent the information required by
      PacketCable UEs in order to support the Presence feature.

      Reference: [OMA TS-PRS] Presence SIMPLE Specification (OMA TS), Version 1.0.1,
      Open Mobile Alliance.
      Reference: [OMA PRES-MO] OMA Management Object for SIMPLE Presence (OMA TS),
      Version 1.0.1, Open Mobile Alliance.
      Reference: [OMA XDM-CORE] XML Document Management (XDM) Specification, Version
      1.0.1, Open Mobile Alliance.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:element name="CL-PKTC-PRS">
    <xsd:annotation>
      <xsd:appinfo>
        <PKTC-ACLS:access-control>NetworkWritable</PKTC-ACLS:access-control>
      </xsd:appinfo>
    </xsd:annotation>
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element ref="PKTC-ACLS:aggregated-acls" minOccurs="0"/>
        <xsd:element name="pktcPRSObjects" type="pktcPRSObjectsType" minOccurs="0"/>
        <xsd:element name="pktcPRSProfile" type="pktcPRSProfileType" minOccurs="1" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
  <xsd:complexType name="pktcPRSProfileType" mixed="false">
    <xsd:complexContent mixed="false">
      <xsd:extension base="CL-PKTC-BASE-SVC:pkcPACMSvcFeature">
        <xsd:sequence>
          <xsd:element name="pktcPRSApplicationDisplayName" type="xsd:string"
            minOccurs="0">
            <xsd:annotation>
              <xsd:documentation>
```

The pktcPRSElementName element provides a user displayable name for the Presence Service.

This corresponds to the Name MO found in [OMA PRES-MO].

Reference: [OMA PRES-MO]

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="pktcPRSPProviderID" type="xsd:string" minOccurs="0">
  <xsd:documentation>
    The pktcPRSPProviderID element identifies the Presence Service
    Provider.
```

Reference: [OMA PRES-MO]

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="pktcPRSCliObjDataLimit" type="xsd:positiveInteger"
minOccurs="1">
  <xsd:documentation>
    <xsd:documentation>
      If the Presence Source decides to use direct content handling
      as described in [OMA TS-PRS] then pktcPRSCliObjDataLimit SHALL
      be used for determining the size limit for MIME data direct
      content in a PUBLISH.
```

Reference: [OMA TS-PRS]

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="pktcPRSCntServerURI" type="xsd:string" minOccurs="0">
  <xsd:documentation>
    If the Presence Source decides to use content indirection
    as described in [OMA TS-PRS] then pktcPRSCntServerURI
    SHALL be used as the URI for the Content Server.
```

Reference: [OMA TS-PRS]

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="pktcPRSSrcThrottlePublish" type="xsd:positiveInteger"
minOccurs="0">
  <xsd:documentation>
    <xsd:documentation>
      The pktcPRSSrcThrottlePublish element defines the rate
      that a Presence Source may generate PUBLISH requests.
```

Reference: [OMA TS-PRS]

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="pktcPRSMxNbOfPrsSubscriptions"
type="xsd:positiveInteger" minOccurs="0">
  <xsd:documentation>
    <xsd:documentation>
      The pktcPRSMxNbOfPrsSubscriptions element defines
      the maximum number of subscriptions to the presence event
      package that a watcher may have.
```

Reference: [OMA TS-PRS]

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
```

```

    <xsd:element name="pktcPRSMaxNumberOfSubscriptionsInPresenceList"
type="xsd:positiveInteger" minOccurs="0">
    <xsd:annotation>
    <xsd:documentation>
    The pktcPRSMaxNumberOfSubscriptionsInPresenceList element
    defines the total maximum number of back-end subscriptions
    allowed for presencelists for a watcher.

    Reference: [OMA TS-PRS]
    </xsd:documentation>
    </xsd:annotation>
    </xsd:element>
    <xsd:element name="pktcPRSServiceURITemplate" type="xsd:string"
minOccurs="0">
    <xsd:annotation>
    <xsd:documentation>
    The pktcPRSServiceURITemplate element defines the syntax
    of the service URI. The Service URI Template SHALL be a
    URI Template as specified in [OMA XDM-CORE].

    Reference: [OMA PRES-MO]
    Reference: [OMA XDM-CORE]
    </xsd:documentation>
    </xsd:annotation>
    </xsd:element>
    <xsd:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
    </xsd:extension>
    </xsd:complexContent>
    </xsd:complexType>
    <xsd:complexType name="pktcPRSOBJECTSType">
    <xsd:complexContent>
    <xsd:extension base="CL-PKTC-BASE-SVC:pktpacmSvcFeature">
    <xsd:sequence>
    <xsd:element name="pktcPACMPRSMINORVersion" type="xsd:int" default="0"
minOccurs="1">
    <xsd:annotation>
    <xsd:documentation>The default value of this Object contains the minor
version of the data model.</xsd:documentation>
    </xsd:annotation>
    </xsd:element>
    <xsd:element name="EXTOBJpktpcPRSOBJECTS" type="CL-PKTC-TC:PktpacmExtension"
minOccurs="0">
    <xsd:annotation>
    <xsd:documentation>
    Extension object for 'pktpcPRSOBJECTS'.
    </xsd:documentation>
    </xsd:annotation>
    </xsd:element>
    <xsd:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
    </xsd:extension>
    </xsd:complexContent>
    </xsd:complexType>
</xsd:schema>

```

Appendix I Acknowledgements

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