TelephonyServer:2 Device

For UPnP Version 1.0

Status: Standardized DCP (SDCP)

Date: December 10, 2012

Document Version: 1.0

Service Template Version: 2.00

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1 Scope

This document defines a device type named *TelephonyServer* that complies with [1].

The *TelephonyServer* device is a UPnP device that allows control points to exploit a set of telephony features such as managing telephony calls, messaging, presence etc via UPnP though other UPnP enabled home network devices. This device provides control points with the following functionality:

- Managing telephony calls including initiation of a call, rejection of a call, acceptance and mofications of a call.
- Messaging features including sending and retrieving messages and notifications of incoming messages.
- Enabling user friendly input capability.
- Configuring of the Telephony Server via phone data model.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies.

For undated references, the latest edition of the referenced document (including any amendments) applies.

[1] – UPnP Device Architecture, version 1.0, UPnP Forum, October 15, 2008. Available at: http://www.upnp.org/specs/arch/UPnP-arch-DeviceArchitecture-v1.0-20081015.pdf. Latest version available at: http://www.upnp.org/specs/arch/UPnP-arch-DeviceArchitecture-v1.0.pdf.

[2] – Extensible Markup Language (XML) 1.0 (Third Edition), François Yergeau, Tim Bray, Jean Paoli, C. M. Sperberg-McQueen, Eve Maler, eds., W3C Recommendation, February 4, 2004. Available at: http://www.w3.org/TR/2004/REC-xml-20040204/.

3 Terms, definitions and abbreviated terms

3.1
Telephony Server
TS
The term Telephony Server (TS) refers to a logical device that provides common telephony features (e.g. call/video call, messaging, address book) via UPnP to other devices in the home network. A TS is usually connected to a telephony service on its WAN interface, either wire line or mobile. For example, a TS may be a mobile phone or a home gateway with VoIP features.

3.2
Telephony Client
TC
The term Telephony Client (TC) to a networked logical device that allows the user to enjoy the telephony features provided by the Telephony Server via UPnP. A TC may usually provide input/output features for voice and video. An example of a TC is a networked TV Set.

3.3
Telephony Control Point
TelCP
The term Telephony Control Point (TelCP) refers to a software feature able to control the functionalities of both TS and TC. It may be embedded in a TS, a TC or also being a physical device on its own.

3.4
InputConfig Service
IS
The Term InputConfig Service (InputConfig) refers to a software feature that is able to provide user-friendly input capability via UPnP means and expose interfaces to describe capabilities of sender/receiver of devices to be used for input services and setup the input session between the devices using the matching profile (capability) from the ICP .

3.5
InputConfig Control point
ICP
The Term InputConfig Control Point (ICP) refers to a software feature that is able to control the functionalities of UPnP devices to be used to provide user-friendly input features. The control here refers to getting capabilities of UPnP dveices to be used for input, matching capabilities and selecting the appropriate dveice role such as receving side or sending side etc.

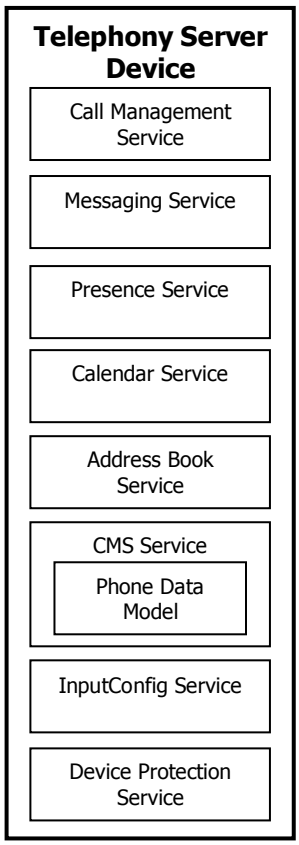

Figure 1 — TelephonyServer Device Architecture

5.3 Device Model

TelephonyServer products shall implement minimum version numbers of all required embedded devices and services specified in the table below. A *TelephonyServer* device can be either a *Root* device or can be *Embedded* in another UPnP device (*TelephonyServer* or other). A *TelephonyServer* device (*Root* or *Embedded*) can in turn contain other standard or non-standard *Embedded* UPnP devices.

Table 1 — Device Requirements

DeviceType	Root	R/A [a]	ServiceType	R/A [a]	Service ID [b]
TelephonyServer:2	*Root* or *Embedded*	*R*	*CallManagement:2*	*A* [c]	*CaMS*
			Messaging:2	*A* [c]	*Messaging*
			InputConfig:1	*A*	*InputConfig*
			DeviceProtection:1	*A*	*DeviceProtection1*
			ConfigurationManagement:1	*A*	*ConfigurationManagment*
			Presence:1	*A*	*Presence*
			AddressBook:1	*A*	*AddressBook*
			Calendar:1	*A*	*Calendar*

DeviceType	Root	R/A [a]	ServiceType	R/A [a]	Service ID [b]
			Non-standard services embedded by a UPnP vendor go here.	*X*	*TBD*
Standard devices embedded by a UPnP vendor go here.	*Embedded*	*A*	*Services as defined by the corresponding standard UPnP Device Definition go here.*		
Non-standard devices embedded by a UPnP vendor go here.	*Embedded*	*X*	*TBD*	*TBD*	*TBD*

a *R* = required, *A* = allowed, *X* = Non-standard.

b Prefixed by urn:**upnp-org**:**serviceId**:

c It shall be noted that even though all the services for *TelephonyServer:2* device have been listed as "*A*" in the table above, in order to be recognized as a Telephony Server, an implementation shall have at least either of the *Messaging:1* service or *CallManagement:1* implemented.

5.3.1 Telephony Server Identity Requirements

The identity of a Telephony Server (TS) device is expressed using the standard URI (Unified Resource Identifier) scheme as specified in [RFC 2396]. In case of SIP, the identity of the Telephony Server identity contains the SIP URI. In case of a generic resource identified by a telephone number, the Telephony Server identity contains the TEL URI [RFC 3966]. The identity of a Telephony Server can be retrieved by inoking the *GetTelephonyIdentity()* action either on the *CallManagement:2* service or on the *Messaging:2* service.

6 XML Device Description

```
<?xml version="1.0"?>
<root xmlns="urn:schemas-upnp-org:device-1-0">
   <specVersion>
      <major>1</major>
      <minor>0</minor>
   </specVersion>
   <URLBase>base URL for all relative URLs</URLBase>
   <device>
      <deviceType>
         urn:schemas-upnp-org:device:TelephonyServer:2
      </deviceType>
      <friendlyName>A user friendly name for the TS</friendlyName>
      <manufacturer>manufacturer name</manufacturer>
      <manufacturerURL>URL to manufacturer site</manufacturerURL>
      <modelDescription>long user-friendly title</modelDescription>
      <modelName>model name</modelName>
      <modelNumber>model number</modelNumber>
      <modelURL>URL to model site</modelURL>
      <serialNumber>manufacturer's serial number</serialNumber>
      <UDN>uuid:UUID</UDN>
      <UPC>Universal Product Code</UPC>
      <iconList>
         <icon>
            <mimetype>image/format</mimetype>
            <width>horizontal pixels</width>
            <height>vertical pixels</height>
            <depth>color depth</depth>
            <url>URL to icon</url>
         </icon>
         <!-- XML to declare other icons, if any, go here -->
      </iconList>
      <serviceList>
```

```
<service>
   <serviceType>
      urn:schemas-upnp-org:service:CallManagement:2
   </serviceType>
   <serviceId>
      urn:upnp-org:serviceId:CallManagement
   </serviceId>
   <SCPDURL>URL to service description</SCPDURL>
   <controlURL>URL for control</controlURL>
   <eventSubURL>URL for eventing</eventSubURL>
</service>
<service>
   <serviceType>
      urn:schemas-upnp-org:service:Messaging:2
   </serviceType>
   <serviceId>
      urn:upnp-org:serviceId:Messaging
   </serviceId>
   <SCPDURL>URL to service description</SCPDURL>
   <controlURL>URL for control</controlURL>
   <eventSubURL>URL for eventing</eventSubURL>
</service>

<service>
   <serviceType>
      urn:schemas-upnp-org:service:InputConfig:1
   </serviceType>
   <serviceId>
      urn:upnp-org:serviceId:InputConfig
   </serviceId>
   <SCPDURL>URL to service description</SCPDURL>
   <controlURL>URL for control</controlURL>
   <eventSubURL>URL for eventing</eventSubURL>
</service>
<service>
   <serviceType>
      urn:schemas-upnp-org:service:ConfigurationManagement:1
   </serviceType>
   <serviceId>
      urn:upnp-org:serviceId:ConfigurationManagement
   </serviceId>
   <SCPDURL>URL to service description</SCPDURL>
   <controlURL>URL for control</controlURL>
   <eventSubURL>URL for eventing</eventSubURL>
</service>
<service>
   <serviceType>
      urn:schemas-upnp-org:service:Presence:1
   </serviceType>
   <serviceId>
      urn:upnp-org:serviceId:Presence
   </serviceId>
   <SCPDURL>URL to service description</SCPDURL>
   <controlURL>URL for control</controlURL>
   <eventSubURL>URL for eventing</eventSubURL>
</service>
<service>
   <serviceType>
      urn:schemas-upnp-org:service:Calendar:1
   </serviceType>
   <serviceId>
      urn:upnp-org:serviceId:Calendar
   </serviceId>
   <SCPDURL>URL to service description</SCPDURL>
   <controlURL>URL for control</controlURL>
   <eventSubURL>URL for eventing</eventSubURL>
```

```
            </service>
            <service>
               <serviceType>
                  urn:schemas-upnp-org:service:AddressBook:1
               </serviceType>
               <serviceId>
                  urn:upnp-org:serviceId:AddressBook
               </serviceId>
               <SCPDURL>URL to service description</SCPDURL>
               <controlURL>URL for control</controlURL>
               <eventSubURL>URL for eventing</eventSubURL>
            </service>
            <service>
               <serviceType>
                  urn:schemas-upnp-org:service:DeviceProtection:1
               </serviceType>
               <serviceId>
                  urn:upnp-org:serviceId:DeviceProtection
               </serviceId>
               <SCPDURL>URL to service description</SCPDURL>
               <controlURL>URL for control</controlURL>
               <eventSubURL>URL for eventing</eventSubURL>
            </service>

            <!-- Declarations for standard non-Telephony services defined by
               UPnP (if any)go here. -->

            <!-- Declarations for other services defined by UPnP vendor
               (if any)go here. -->


         </serviceList>
         <deviceList>

         <!-- Declarations for standard non-Telephony devices defined by UPnP
            (if any)go here. -->

         <!-- Declarations for other devices defined by UPnP vendor
            (if any)go here. -->


         </deviceList>
         <presentationURL>URL for presentation</presentationURL>
      </device>
</root>
```

7 Test

No semantic tests have been specified for this device.

Annex A
(informative)

Theory of Operation

A Telephony Server (TS) can provide a number of features including Call Management Service (CaMS), Messaging and presence service, inputConfig service, configuration management service etc. The Call Management Service (CaMS) is a mandatory feature for the Telephony Server (TS) and it provides the basic telephony feature such as initiation of a call, management of a call etc.

The interactions of a Telephony Server (TS) with a Telephony Control Point (TelCP) to provide basic telephony features in shown in Figure A.1. The Telephony Control Point (TelCP) invokes action on the Telephony Server (TS) to initiate a call, accept or connect an incoming call or receive notifications for incoming calls and manage media session associated with the call including starting and stoping the media session. The interactions between a Telephony Control Point (TelCP) and the Messaging Service requires a number of UPnP actions to realize the features of sending and receiving messages and notifications for incoming messages.

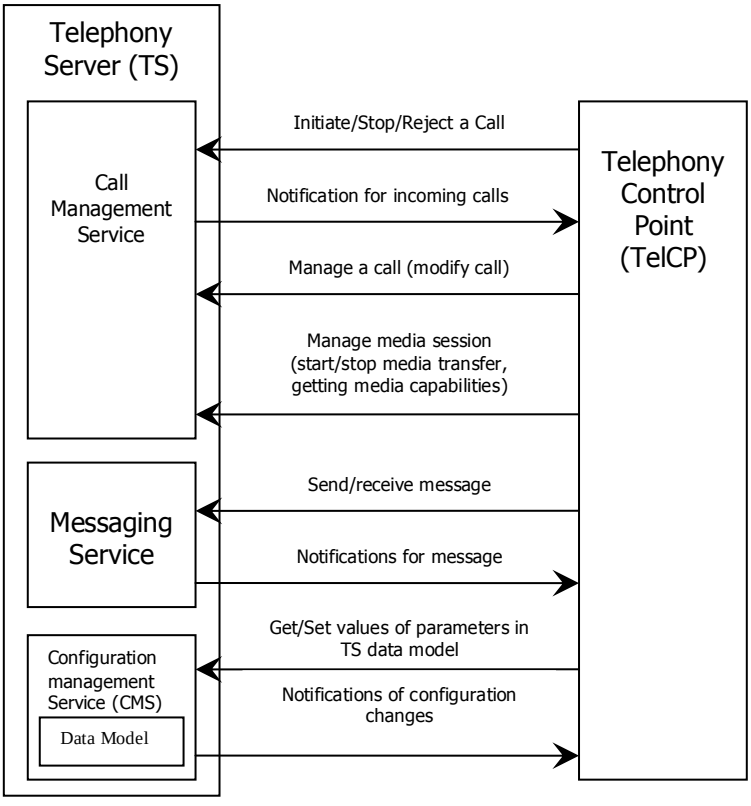

Figure A.1 — Telephony Server (TS) and Telephony Control Point (TelCP) Interactions

The basic architecture for Presence service requires basic UPnP eventing mechanism for notifications of presence information. The interactions between Telephony Control Point (TelCP) and the Presence service also requires a number of UPnP actions to manipulate local presence information and to retrieve other contacts presence. The CMS service in the TS allows the manipulation of configuration parameters, both for retrieving configuration and status information from a managed device (here the TS device) or for changing its configuration, notifications of configuration updates are also available.

Annex B
(informative)

Bibliography

The following documents, in whole or in part, may be useful for understanding this document but they are not essential for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[3] – *TelephonyArchitecture:2*, UPnP Forum, December 10, 2012. Available at: http://www.upnp.org/specs/phone/UPnP-phone-TelephonyArchitecture-v2-20121210.pdf. Latest version available at: http://www.upnp.org/specs/phone/UPnP-phone-TelephonyArchitecture.pdf.