
CDPlayer:1 Sample Device Template

For UPnP™ Version 1.0

Status: Preliminary Design (TPD)

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1. Overview and Scope

This device template is compliant with the UPnP Device Architecture version 1.0. It defines a device type referred to herein as CDPlayer:1.

CDPlayer:1 is a Compact Disc (CD) player that can hold one or more CDs internally, play a CD, control volume, tone, and spatial balance, and output the signal through external, analog connectors.

CDPlayer:1 enables the following functions:

- Adding / removing discs.
- Manually playing, pausing, stopping play.
- Automatically playing a disc when inserted.
- Playing tracks and discs in order or randomly.

CDPlayer:1 does not enable:

- Retrieving files from a CD-ROM.
- Saving data on a CD-ROM.
- Recording audio CDs.
- Switching audio outputs.
- Playing video CDs.

This is only a sample. It does not replace the work of an UPnP Forum working committee. It is only intended to illustrate the use of device and service templates.

1.1. Change Log

[15 Aug 2000] Created v0.01.

[17 Aug 2000] v0.02. Added Relationships Between Services.

[23 Aug 2000] v0.03. Expanded Relationships Between Services.

[5 Feb 2001] v0.04. Fixed <service> elements in XML Device Description.

2. Device Definitions

2.1. Device Type

The following device type identifies a device that is compliant with this template:

urn:[schemas-upnp-org:device:CDPlayer:1](#)

The shorthand CDPlayer:1 is used herein to refer to this device type.

2.2. Device Model

CDPlayer:1 products must implement minimum version numbers of all required embedded devices and services specified in the table below.

Table 1: Device Requirements

Device Type	Root	Req. or Opt. ¹	Service Type	Req. or Opt. ¹	Service ID ²
CDPlayer:1	yes	R	SwitchPower:1	R	SwitchPower
			ChangeDisc:1	R	ChangeDisc
			PlayCD:1	R	PlayCD
			Audio:1	R	Audio
			<i>Non-standard services embedded by an UPnP vendor go here.</i>	X	<i>TBD</i>
<i>Non-standard devices embedded by an UPnP vendor go here.</i>	<i>TBD</i>	X	<i>TBD</i>	<i>TBD</i>	<i>TBD</i>

¹ R = Required, O = Optional, X = Non-standard.

² Prefixed by urn:[upnp-org:serviceId:](#) .

2.2.1. Description of Device Requirements

All four service types are required exactly once.

2.2.2. Relationships Between Services

If SwitchPower is off, for all other services, any outstanding event subscriptions are cancelled, and no action requests are acknowledged. The state of other services do not constrain the actions of SwitchPower; e.g., they do not define any error conditions for turning the power off.

ChangeDisc provides the disc tray and door required by PlayCD, even if there is no explicit carousel and the player can hold at most one CD. PlayCD defines behavior of its actions and state variables based on the status of the disc tray and door. The state of PlayCD and Audio do not constrain the actions of ChangeDisc; e.g., they do not define any error conditions for adding a CD.

2.3. Theory of Operation

To add a CD, a control point must switch on the device and set up the disc changer to accept a new disc.

```
// Switch on device
//   Invoke SetTarget with TRUE on SwitchPower service
// Set up disc changer to accept new disc
//   Invoke AddDisc on ChangeDisc service
//
```

To automatically play a CD when it is inserted, a control point subscribes to eventing from ChangeDisc and receives an event when a CD has been inserted in the disc tray. The control point closes the disc tray door (if open) and sends the play action to PlayCD.

```
// Subscribe to eventing from ChangeDisc
// Receive event when CD is inserted
// Is the disc tray door open?
//   Check value of evented DoorIsOpen variable
// Then close door
//   Invoke CloseDoor
// Start play
//   Invoke Play on PlayCD service
//
```

To set play volume, a control point subscribes to eventing and sets the volume on the audio service.

```
// Subscribe to eventing from Audio
// Receive event for volume
//   Invoke SetVolume with new value on Audio
//
```

To randomly play all the tracks on a particular CD, pick a random CD, and repeat, a control point subscribes to eventing and sets the play program to once in random order. Then it repeats the following steps: select a random disc, start play, and wait for an event that play has stopped before repeating.

```
// Subscribe to eventing from PlayCD
// Set play program to once in random order
//   Invoke SetPlayProgram with ONCE_RANDOM on PlayCD
// Repeat
//   Select a random disc
//   Invoke RandomDisc on ChangeDisc
//   Start play
//   Invoke Play on PlayCD
//   Receive event that play has stopped
//
```

3. 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:CDPlayer:1</deviceType>
    <friendlyName>short user-friendly title</friendlyName>
    <manufacturer>manufacturer name</manufacturer>
    <manufacturerURL>URL to manufacturer site</manufacturerURL>
    <modelDescription>long user-friendly title</modelDescription>
    <modelName>model name</modelName>
    <modelName>model number</modelName>
    <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:SwitchPower:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:SwitchPower</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:ChangeDisc:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:ChangeDisc</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:PlayCD:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:PlayCD</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:Audio:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:Audio</serviceId>

```

```
<SCPDURL>URL to service description</SCPDURL>
<controlURL>URL for control</controlURL>
<eventSubURL>URL for eventing</eventSubURL>
</service>
  Declarations for other services added by UPnP vendor (if any) go here
</serviceList>
<presentationURL>URL for presentation</presentationURL>
</device>
</root>
```

4. Test

TBD.