Implementing the SourceType XML Element in PBDA Devices

Guidelines for Independent Hardware Vendors

July 9, 2009

Abstract

This white paper provides information about the **SourceType** XML element of the Protected Broadcast Driver Architecture (PBDA). It provides guidelines for independent hardware vendors (IHVs) of digital tuners and recorders.

PBDA is the worldwide Microsoft platform that integrates broadcast TV services into Windows Media® Center on a computer that is running the Windows® family of operating systems. By supporting the **SourceType** XML element, IHVs provide an integrated solution to configure their digital tuner by using Windows Media Center.

This information applies to the Windows 7 operating system.

References, resources, and specifications discussed here are listed at the end of this paper.

The current version of this paper is maintained on the Web at:
 <http://www.microsoft.com/whdc/device/broadcast/pbda/SourceType.mspx>

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# Introduction

This white paper provides guidelines for independent hardware vendors (IHV) on how to implement the **SourceType** XML element in the Windows® Protected Broadcast Driver Architecture (PBDA). In Windows 7, PBDA is supported by Windows Media® Center.

The **SourceType** XML element provides IHVs with an integrated solution for configuring their digital tuner in Windows Media Center. Windows Media Center queries the **SourceType** XML data from PBDA-compatible devices, such as digital tuners and recorders. With this data, Windows Media Center can configure the device for media reception and playback.

This paper describes the methods that are used to implement the **SourceType** XML element in PBDA-compatible devices. Additional clarifications and details can be found in the PBDA specification, which is listed in “Resources” at the end of this paper.

# Overview of the **SourceType** XML Element

The **SourceType** XML element is a structure that contains a group of universally unique identifiers (UUIDs) and names. Windows Media Center requires this information to configure a media transform device (MTD), such as a digital tuner or recorder.

Windows Media Center uses the PBDA General Purpose Name Value Service (GPNVS) to query the name/value pairs that an MTD supports. The GPNVS lets the device expose its capabilities, while also letting Windows Media Center set preferences.

For a PBDA-compatible MTD to be successfully configured by Windows Media Center, it must support the “Source Types” name/value pair, which has the following value:

“PBDA:/Microsoft.com/NV/Variable/MCE/Source Types”

During the Live TV setup, Windows Media Center queries the “Source Types” name/value pair by using the **GetValue()** method of GPNVS. This query returns the **SourceType** XML data, which Windows Media Center parses to retrieve the attribute values that are described in the following section of this document. These values determine how Windows Media Center can configure an MTD.

**Note:** In the PBDA 1.3.1 specification, Live TV setup is referred to as *First Run* (FRUN).

For more information about GPNVS, refer to the “Part 1: PBDA Part 1: Core Services” document in the PBDA specification, which is listed in “Resources” at the end of this paper.

For more information about “Sources Type” and other name/value pairs that GPNVS uses, refer to the “Part 1: Microsoft Profile” document in the PBDA specification, which is listed in “Resources” at the end of this paper.

# Format of the **SourceType** XML Element

**SourceType** is an XML element that has the following format:

<SourceTypes>

 <SourceType TuningSpaceUniqueName="TuningSpaceName">

 <HeadendType id="HeadEndTypeID" name="HeadEndTypeName"/>

 <NetworkType id="NetworkTypeID" name="NetworkTypeName"/>

 <VideoSource id="VideoSourceID" name="VideoSourceName"/>

 </SourceType>

</SourceTypes>

**Note:** In Windows 7, a PBDA-compatible MTD must specify only a single **SourceType** XML element in each **SourceTypes** XML element. If an MTD returns multiple **SourceType** XML elements in the **SourceTypes** element, Windows Media Center uses only the first **SourceType** XML element.

## **TuningSpaceUniqueName** Attribute

**TuningSpaceUniqueName** is an optional attribute of the **SourceType** XML element. This attribute specifies the name of the tuning space that an MTD uses.

If this attribute is specified, the specified string is used as the **Name** attribute of the **tune::TuningSpace** XML tag that Windows Media Center sends to an MTD during tuning.

For more information about the **tune** and **TuningSpace** XML schemas, refer to “Part 1: Tuning Schemas – Core Schemas” in the PBDA specification, which is listed in “Resources” at the end of this paper.

## **HeadendType** XML Element

The **HeadendType** XML child element specifies the type of headend or signal providers from which Windows Media Center downloads guide data for an MTD. This element and its attributes are required.

The **HeadendType** XML child element has the following format:

<HeadendType id="HeadEndTypeID" name="HeadEndTypeName"/>

### **HeadendType id** Attribute

The **id** attribute of the **HeadendType** XML child element is a string that Windows Media Center uses during Live TV setup. Windows Media Center uses this value to retrieve only the guide lineups that apply to an MTD. During Live TV setup, users can select the guide lineups for which Windows Media Center downloads the guide listings.

The string value of the **id** attribute specifies one of the following:

* The identifier that specifies the type of the headend or signal provider that is available through the guide services that Microsoft provides. For a complete list of the IDs for these service providers, see “[Specifying **HeadendType** XML Data](#_Specifying_HeadendType_XML)” later in this paper.

**Note:** To develop MTDs that use Microsoft-provided guide services, contact Microsoft directly. For development purposes, you can use a value of “TERd”, “SATd”, or “CABd”.

* A UUID. By using a UUID, an MTD specifies that it does not use any headend or signal providers that are available through guide services that Microsoft provides.

In this situation, we recommend that you set the **id** attribute to the value of use a newly generated UUID. You can generate UUIDs by using the Guidgen tool (Guidgen.exe) in the Windows Software Development Kit (SDK).

### **HeadendType name** Attribute

The **name** attribute of the **HeadendType** XML child element is a string that specifies the friendly-name of the headend type.

Because this **name** attribute string can appear in the Windows Media Center UI during Live TV setup, the name of the service provider should be meaningful and localized.

**Note:** An MTD must return a string that is localized based on the value of the *Language* argument of the **GetValue()** method. This method is called to query the value of the “Source Types” name/value pair.

### Specifying **HeadendType** XML Data

You must follow these guidelines when you develop an MTD that specifies the **id** and **name** attribute values for the **HeadendType** XML child element:

* If you are developing an MTD for a broadcast standard that is supported by the Microsoft-provided guide services, you must use the ID and name values from the following table.

**Note:**If you want to add a new broadcast standard to the Microsoft-provided guide services, you must first contact Microsoft to add new headend types. After you have added the headend type to the guide services, you must use the ID and name value for this new headend type.

* If you are developing an MTD for a broadcast standard that is not supported by the Microsoft-provided guide services, you must use a UUID. You must also use a name for the headend type that is meaningful and localized.

The following table lists some of the IDs and names for the **HeadendType** XML data that the Microsoft-provided guide services currently support. IHVs should use the IDs and names in this table if they develop an MTD that supports these headend types.

HeadendType id and name values

| **HeadendType id value** | **HeadendType name value** |
| --- | --- |
| ATSC | Digital Antenna (ATSC) |
| ATSCc | Digital Cable (ATSC) |
| CAB | Analog Cable |
| CABd | Digital Cable (CableCard™) |
| DVBs | Digital Satellite (DVB-S) |
| DVBt | Digital Antenna (DVB-T) |
| ISDBt | Digital Antenna (ISDB-T) |
| ISDBs | Digital Satellite (ISDB-S) |
| QAM | Digital Cable (ClearQAM) |
| SATd | Satellite |
| TER | Analog Antenna |
| TERd | Digital Antenna |

## **NetworkType** XML Element

The **NetworkType** XML child element specifies the UUID and name of the broadcast standard or proprietary network of an MTD. This element and its attributes are required.

The **NetworkType** XML child element has the following format:

<NetworkType id="NetworkTypeID" name="NetworkTypeName"/>

### **NetworkType id** Attribute

The **id** attribute of the **NetworkType** XML child element is a string that uniquely identifies the network type that an MTD supports. A UUID value is expected for this attribute.

The UUID value of the **id** attribute specifies one of the following:

* The UUID of a broadcast standard that is natively supported by Windows Media Center. For a complete list of these UUIDs for broadcast standards, see “[Specifying **NetworkType** XML Data](#_Specifying_NetworkType_XML_1)” later in this paper.
* The UUID that represents either a proprietary network type or network type that is not natively supported by Windows Media Center.

In this situation, we recommend that you set the **id** attribute to the value of a newly generated UUID. You can generate UUIDs by using the Guidgen tool in the Windows SDK.

### **NetworkType name** Attribute

The **name** attribute of the **NetworkType** XML child element is a string that describes the network type that an MTD supports.

Because this **name** attribute string can appear in the Windows Media Center UI during Live TV setup, the name of the service provider should be meaningful and localized.

**Note:** An MTD must return a string that is localized based on the value of the *Language* argument of the **GetValue()** method. This method is called to query the value of the “Source Types” name/value pair.

### Specifying **NetworkType** XML Data

You must follow these guidelines when you develop an MTD that specifies the **id** and **name** attribute values for the **NetworkType** XML child element:

* If you are developing an MTD for a network type that is natively supported by Windows Media Center, you must use the ID and name values from the following table.
* If you are developing an MTD for a network type that is not natively supported by Windows Media Center, you must use a newly-generated UUID (as described earlier). You must also use a name for the network type that is meaningful and localized.

The following table lists the IDs and names of the network types that are natively supported by Windows Media Center. IHVs should use the UUIDs and names in this table if they develop an MTD that supports these network types.

NetworkType id and name values

| Network type | NetworkType id value | NetworkType name value |
| --- | --- | --- |
| NTSC, PAL, and SECAM | B820D87E-E0E3-478f-8A38-4E13F7B3DF42 | Analog |
| Analog AUXIN | 742EF867-09E1-40A3-82D3-9669BA35325F | Auxiliary Input (Set-Top Box) |
| FM Radio | 7728087B-2BB9-4E30-8078-449476E59DBB | FM Radio |
| ATSC | 0DAD2FDD-5FD7-11D3-8F50-00C04F7971E2 | Digital Antenna (ATSC) |
| DVB-C | DC0C0FE7-0485-4266-B93F-68FBF80ED834 | Digital Cable (DVB-C) |
| DVB-T | 216C62DF-6D7F-4E9A-8571-05F14EDB766A | Digital Antenna (DVB-T) |
| DVB-S | FA4B375A-45B4-4D45-8440-263957B11623 | Digital Satellite (DVB-S) |
| ISDB-C | C974DDB5-41FE-4B25-9741-92F049F1D5D1 | Digital Cable (ISDB-C) |
| ISDB-T | 95037F6F-3AC7-4452-B6C4-45A9CE9292A2 | Digital Antenna (ISDB-T) |
| ISDB-S | B0A4E6A0-6A1A-4B83-BB5B-903E1D90E6B6 | Digital Satellite (ISDB-S) |

**Note:** For a complete list of the current UUIDs and names of network types, refer to *Bdamedia.h* in the Windows Driver Kit (WDK) or the “Part 1: PBDA Part 1: Core Services” document within the PBDA specification, which are listed in “Resources” at the end of this paper.

## **VideoSource** XML Element

The **VideoSource** ID XML child element describes the broadcast source from which an MTD receives its content. This element and its attributes are required.

In PBDA, a video source is defined as the medium that carries the broadcast signal. Examples of videos sources include cable and satellite.

The **VideoSource** XML child element has the following format:

<VideoSource id="VideoSourceID" name="VideoSourceName"/>

### **VideoSource** **id** Attribute

The **id** attribute of the **VideoSource** XML child element is a string that identifies the video source for the type of network that the service provider uses. A UUID value is expected for this attribute.

The UUID value of the **id** attribute specifies one of the following:

* The UUID of a video source medium that Windows Media Center supports. For a complete list of these UUIDs for video source media, see “[Specifying **VideoSource** XML Data](#_Specifying_VideoSource_XML)” earlier in this paper.
* The UUID that represents either a proprietary video source medium or a video source medium that Windows Media Center does not support.

In this situation, we recommend that you use a newly generated UUID for the video source medium. You can generate UUIDs by using the Guidgen tool in the Windows SDK.

### **VideoSource** **name** Attribute

The **name** attribute of the **VideoSource** XML child element is a string that describes the video source medium.

Because this **name** attribute string can appear in the Windows Media Center UI during Live TV setup, the name of the video source should be meaningful and localized.

**Note:** An MTD must return a string that is localized based on the value of the *Language* argument of the **GetValue()** method. This method is called to query the value of the “Source Types” name/value pair.

### Specifying **VideoSource** XML Data

The following table lists the IDs and names of the video sources that are natively supported by Windows Media Center. IHVs should use the UUIDs and names in this table if they develop an MTD that supports these video sources.

VideoSource id and name values

| VideoSource id value | VideoSource name value |
| --- | --- |
| 4CD4884F-3C04-4338-98DD-D400712EBB29 | Cable |
| 648DE801-3D5B-4095-8D2D-A3AEBACC85CC | Satellite |
| 31B740FC-499B-43C7-9562-6D04F85B7FD8 | Antenna |

# **SourceType** XML Element Examples

The following section provides examples of **SourceType** XML data.

## Standard Network

The following example shows the **SourceType** XML data for an MTD that supports the standard DVB-T network:

<SourceTypes>

 <SourceType>

 <HeadendType id="DVBt" name=" Digital Antenna (DVB-T)"/>

 <NetworkType id="216C62DF-6D7F-4E9A-8571-05F14EDB766A" name="Digital Antenna (DVB-T)"/>

 <VideoSource id="31B740FC-499B-43c7-9562-6D04F85B7FD8" name="Antenna"/>

 </SourceType>

</SourceTypes>

## Nonstandard Network

The following example shows the **SourceType** XML data for an MTD that supports the following:

* A headend type that is provided through the Microsoft guide services. You specify this headend type by setting the **id** attribute of the **HeadendType** XML element to the name of the headend type.

In this example, the headend type (CON-DMB-TH) specifies a third-party content provider that hosts its guide data on the Microsoft guide services.

* A nonstandard network type. In this example, a new network type (DMB-TH) is specified.
* A standard video source.

<SourceTypes>

 <SourceType TuningSpaceUniqueName="Contoso Digital Antenna (DMB-TH)">

 <HeadendType id="CON-DMB-TH" name="Contoso DMB-TH"/>

 <NetworkType id="588A28D6-B23C-408b-AC21-FAFAF3DD884D" name="DMB-TH"/>

 <VideoSource id="31B740FC-499B-43c7-9562-6D04F85B7FD8" name="Antenna"/>

 </SourceType>

</SourceTypes>

## Proprietary IPTV Network

The following example shows the **SourceType** XML data for an MTD that supports the following:

* A headend type that is not provided through the Microsoft guide services . You specify this headend type by setting the **id** attribute of the **HeadendType** XML element to a GUID.
* A nonstandard network type. In this example, a new network type (MyIPTVNetwork) is specified.
* A nonstandard video source.

<SourceTypes>

 <SourceType TuningSpaceUniqueName="MyIPTVNetwork">

 <HeadendType id="0746db53-38db-449c-988d-d6915be0d8f1" name="MyIPTVNetwork"/>

 <NetworkType id="35d7ec6e-e31a-4be2-9c2f-719e7caabe18" name="MyIPTVNetwork"/>

 <VideoSource id="3d4257eb-f521-49d1-948e-8248d46947a4" name="IPTV"/>

 </SourceType>

</SourceTypes>

# Resources

For the latest information about the Microsoft Windows family, see the [Windows Web site](http://www.microsoft.com/windows) at <http://www.microsoft.com/windows>.

#### Microsoft

#### WHDC Web site:

Home page

<http://www.microsoft.com/whdc/default.mspx>

Protected Broadcast Driver Architecture (PBDA) Specification (Version 1.3.1)

<http://www.microsoft.com/whdc/device/broadcast/PBDA/pbda_spec.mspx>