
**Information technology — UPnP
Device Architecture —**

**Part 20-12:
Audio video device control protocol —
Level 4 — Content directory service**

*Technologies de l'information — Architecture de dispositif UPnP —
Partie 20-12: Protocole de contrôle de dispositif audio-vidéo —
Niveau 4 — Service d'Annuaire de contenu*





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CONTENTS

1	Scope	1
2	Normative references	1
3	Terms, definitions, symbols and abbreviations.....	5
3.1	Provisioning terms	5
3.2	Symbols	5
4	Notations and Conventions	5
4.1	Notation	5
4.1.1	Data Types	6
4.1.2	Strings Embedded in Other Strings.....	6
4.1.3	Extended Backus-Naur Form.....	6
4.2	Derived Data Types	7
4.2.1	Summary	7
4.2.2	CSV Lists.....	7
4.3	Management of XML Namespaces in Standardized DCPs.....	8
4.3.1	Namespace Prefix Requirements.....	12
4.3.2	Namespace Names, Namespace Versioning and Schema Versioning.....	13
4.3.3	Namespace Usage Examples	15
4.4	Vendor-defined Extensions	15
4.4.1	Vendor-defined Action Names	15
4.4.2	Vendor-defined State Variable Names	15
4.4.3	Vendor-defined XML Elements and attributes	16
4.4.4	Vendor-defined Property Names.....	16
5	Service Modeling Definitions.....	16
5.1	Service Type	16
5.2	Key Concepts	16
5.2.1	<i>On-line</i> and <i>Off-line</i> Network States.....	16
5.2.2	object	16
5.2.3	Object Identity	17
5.2.4	Object Lifetime.....	18
5.2.5	Object Modification	18
5.2.6	class.....	19
5.2.7	<i>item</i>	19
5.2.8	<i>container</i>	19
5.2.9	Container Modification	19
5.2.10	ContentDirectory Tracking Changes Option	20
5.2.11	<i>ContainerUpdateIDValue</i> Indicator.....	20
5.2.12	ContentDirectory Service Object Organization	21
5.2.13	Hierarchical location	21
5.2.14	Subtree.....	22
5.2.15	Subtree Updates.....	22
5.2.16	XML Document	23
5.2.17	XML Fragment	23
5.2.18	DIDL-Lite XML Document.....	24
5.2.19	<i>CDS View</i>	25
5.2.20	<i>CDS Properties</i>	26

5.2.21	<i>reference, reference item, referenced item</i>	27
5.2.22	<i>CDS feature</i>	28
5.2.23	<i>Metadata vs. Foreign Metadata</i>	28
5.2.24	<i>Embedded XML Documents</i>	28
5.2.25	<i>Device Protection Option</i>	28
5.2.26	<i>Device Mode Option</i>	30
5.2.27	<i>Shortcut</i>	30
5.3	<i>State Variables</i>	30
5.3.1	<i>State Variable Overview</i>	31
5.3.2	<u><i>SearchCapabilities</i></u>	32
5.3.3	<u><i>SortCapabilities</i></u>	32
5.3.4	<u><i>SortExtensionCapabilities</i></u>	33
5.3.5	<u><i>SystemUpdateID</i></u>	33
5.3.6	<u><i>ContainerUpdateIDs</i></u>	35
5.3.7	<u><i>ServiceResetToken</i></u>	36
5.3.8	<u><i>LastChange</i></u>	37
5.3.9	<u><i>TransferIDs</i></u>	41
5.3.10	<u><i>FeatureList</i></u>	41
5.3.11	<u><i>DeviceMode</i></u>	41
5.3.12	<u><i>DeviceModeStatus</i></u>	42
5.3.13	<u><i>PermissionsInfo</i></u>	43
5.3.14	<u><i>A ARG TYPE ObjectID</i></u>	45
5.3.15	<u><i>A ARG TYPE Result</i></u>	45
5.3.16	<u><i>A ARG TYPE SearchCriteria</i></u>	45
5.3.17	<u><i>A ARG TYPE BrowseFlag</i></u>	47
5.3.18	<u><i>A ARG TYPE Filter</i></u>	47
5.3.19	<u><i>A ARG TYPE SortCriteria</i></u>	49
5.3.20	<u><i>A ARG TYPE Index</i></u>	50
5.3.21	<u><i>A ARG TYPE Count</i></u>	50
5.3.22	<u><i>A ARG TYPE UpdateID</i></u>	50
5.3.23	<u><i>A ARG TYPE TransferID</i></u>	50
5.3.24	<u><i>A ARG TYPE TransferStatus</i></u>	51
5.3.25	<u><i>A ARG TYPE TransferLength</i></u>	51
5.3.26	<u><i>A ARG TYPE TransferTotal</i></u>	51
5.3.27	<u><i>A ARG TYPE TagValueList</i></u>	51
5.3.28	<u><i>A ARG TYPE URI</i></u>	51
5.3.29	<u><i>A ARG TYPE CDSView</i></u>	51
5.3.30	<u><i>A ARG TYPE QueryRequest</i></u>	51
5.3.31	<u><i>A ARG TYPE QueryResult</i></u>	52
5.3.32	<u><i>A ARG TYPE FFQCapabilities</i></u>	53
5.3.33	<u><i>A ARG TYPE CPID</i></u>	54
5.3.34	<u><i>A ARG TYPE DeviceModelID</i></u>	55
5.3.35	<u><i>A ARG TYPE DeviceModeRequest</i></u>	55
5.4	<i>Eventing and Moderation</i>	58
5.5	<i>Actions</i>	59
5.5.1	<i>Action Overview</i>	59
5.5.2	<u><i>GetSearchCapabilities()</i></u>	61
5.5.3	<u><i>GetSortCapabilities()</i></u>	61

5.5.4	<u>GetSortExtensionCapabilities()</u>	61
5.5.5	<u>GetFeatureList()</u>	62
5.5.6	<u>GetSystemUpdateID()</u>	62
5.5.7	<u>GetServiceResetToken()</u>	63
5.5.8	<u>Browse()</u>	63
5.5.9	<u>Search()</u>	65
5.5.10	<u>CreateObject()</u>	66
5.5.11	<u>DestroyObject()</u>	72
5.5.12	<u>UpdateObject()</u>	73
5.5.13	<u>MoveObject()</u>	79
5.5.14	<u>ImportResource()</u>	80
5.5.15	<u>ExportResource()</u>	81
5.5.16	<u>DeleteResource()</u>	82
5.5.17	<u>StopTransferResource()</u>	83
5.5.18	<u>GetTransferProgress()</u>	84
5.5.19	<u>CreateReference()</u>	84
5.5.20	<u>FreeFormQuery()</u>	85
5.5.21	<u>GetFreeFormQueryCapabilities()</u>	87
5.5.22	<u>RequestDeviceMode()</u>	88
5.5.23	<u>ExtendDeviceMode()</u>	89
5.5.24	<u>CancelDeviceMode()</u>	90
5.5.25	<u>GetDeviceMode()</u>	91
5.5.26	<u>GetDeviceModeStatus()</u>	91
5.5.27	<u>GetPermissionsInfo()</u>	92
5.5.28	Non-Standard Actions Implemented by a UPnP Vendor	92
5.5.29	Common Error Codes	92
6	XML Service Description	94
7	Test	106
	Annex A (normative) Schemas	107
	A.1 DIDL-Lite	107
	A.2 UPnP Elements	107
	A.3 Dublin Core Subset Elements	107
	A.4 Event Schema	107
	A.5 <u>FeatureList</u> State Variable Schema	107
	Annex B (normative) AV Working Committee Properties	108
	B.1 Base Properties	117
	B.1.1 <u>@id</u>	117
	B.1.2 <u>@parentID</u>	118
	B.1.3 <u>@refID</u>	118
	B.1.4 <u>@restricted</u>	118
	B.1.5 <u>@searchable</u>	118
	B.1.6 <u>@childCount</u>	118
	B.1.7 <u>@childContainerCount</u>	118
	B.1.8 <u>dc:title</u>	119
	B.1.9 <u>dc:creator</u>	119
	B.1.10 <u>res</u>	119
	B.1.11 <u>res@id</u>	119
	B.1.12 <u>upnp:class</u>	119

B.1.13	<u>upnp:searchClass</u>	121
B.1.14	<u>upnp:createClass</u>	121
B.1.15	<u>upnp:writeStatus</u>	122
B.2	Resource Encoding Characteristics Properties	123
B.2.1	<u>res</u>	123
B.3	Resource Encoding Extension Properties	128
B.3.1	<u>upnp:resExt</u>	128
B.3.2	<u>upnp:resExt::uniqueContentIdentification</u>	129
B.4	Contributor-related Properties	130
B.4.1	<u>upnp:artist</u>	130
B.4.2	<u>upnp:actor</u>	130
B.4.3	<u>upnp:author</u>	130
B.4.4	<u>upnp:producer</u>	131
B.4.5	<u>upnp:director</u>	131
B.4.6	<u>dc:publisher</u>	131
B.4.7	<u>dc:contributor</u>	131
B.5	Affiliation-related Properties	131
B.5.1	<u>upnp:genre</u>	131
B.5.2	<u>upnp:album</u>	132
B.5.3	<u>upnp:playlist</u>	132
B.6	Associated Resources Properties	132
B.6.1	<u>upnp:albumArtURI</u>	132
B.6.2	<u>upnp:artistDiscographyURI</u>	133
B.6.3	<u>upnp:lyricsURI</u>	133
B.6.4	<u>dc:relation</u>	133
B.7	Storage-Related Properties	133
B.7.1	<u>upnp:storageTotal</u>	133
B.7.2	<u>upnp:storageUsed</u>	133
B.7.3	<u>upnp:storageFree</u>	133
B.7.4	<u>upnp:storageMaxPartition</u>	134
B.7.5	<u>upnp:storageMedium</u>	134
B.8	General Description (mainly for UI purposes) Properties	135
B.8.1	<u>dc:description</u>	135
B.8.2	<u>upnp:longDescription</u>	135
B.8.3	<u>upnp:icon</u>	135
B.8.4	<u>upnp:region</u>	136
B.8.5	<u>upnp:rights</u>	136
B.8.6	<u>dc:date</u>	136
B.8.7	<u>dc:language</u>	136
B.8.8	<u>upnp:playbackCount</u>	136
B.8.9	<u>upnp:lastPlaybackTime</u>	137
B.8.10	<u>upnp:lastPlaybackPosition</u>	137
B.8.11	<u>upnp:recordedStartDateTime</u>	137
B.8.12	<u>upnp:recordedEndDateTime</u>	138
B.8.13	<u>upnp:recordedDuration</u>	138
B.8.14	<u>upnp:recordedDayOfWeek</u>	138
B.8.15	<u>upnp:srsRecordScheduleID</u>	139
B.8.16	<u>upnp:srsRecordTaskID</u>	139

B.8.17	<u>upnp:recordable</u>	139
B.9	Recorded Object-related Properties	140
B.9.1	<u>upnp:programTitle</u>	140
B.9.2	<u>upnp:seriesTitle</u>	140
B.9.3	<u>upnp:programID</u>	141
B.9.4	<u>upnp:seriesID</u>	141
B.9.5	<u>upnp:channelID</u>	141
B.9.6	<u>upnp:episodeType</u>	143
B.9.7	<u>upnp:episodeCount</u>	143
B.9.8	<u>upnp:episodeNumber</u>	143
B.9.9	<u>upnp:episodeSeason</u>	143
B.9.10	<u>upnp:programCode</u>	143
B.9.11	<u>upnp:rating</u>	144
B.9.12	<u>upnp:recommendationID</u>	145
B.10	User Channel and EPG Related Properties	145
B.10.1	<u>upnp:channelGroupName</u>	145
B.10.2	<u>upnp:callSign</u>	146
B.10.3	<u>upnp:networkAffiliation</u>	146
B.10.4	<u>upnp:serviceProvider</u>	146
B.10.5	<u>upnp:price</u>	147
B.10.6	<u>upnp:payPerView</u>	147
B.10.7	<u>upnp:epgProviderName</u>	147
B.10.8	<u>upnp:dateTimeRange</u>	147
B.11	Preserved Program Properties	148
B.11.1	<u>upnp:programPreserved</u>	148
B.11.2	<u>upnp:preservedTimeRange</u>	149
B.11.3	<u>upnp:programList</u>	151
B.12	Radio Broadcast Properties	151
B.12.1	<u>upnp:radioCallSign</u>	151
B.12.2	<u>upnp:radioStationID</u>	151
B.12.3	<u>upnp:radioBand</u>	152
B.13	Video Broadcast Properties	152
B.13.1	<u>upnp:channelNr</u>	152
B.13.2	<u>upnp:channelName</u>	153
B.13.3	<u>upnp:scheduledStartTime</u>	153
B.13.4	<u>upnp:scheduledEndTime</u>	153
B.13.5	<u>upnp:scheduledDuration</u>	154
B.14	Physical Tuner Status-related Properties	154
B.14.1	<u>upnp:signalStrength</u>	154
B.14.2	<u>upnp:signalLocked</u>	154
B.14.3	<u>upnp:tuned</u>	155
B.15	MultiStream-related Properties	156
B.15.1	<u>upnp:resExt::isSyncAnchor</u>	157
B.15.2	<u>upnp:resExt::componentInfo</u>	157
B.16	Segmentation-related Properties	163
B.16.1	<u>upnp:segmentID</u>	164
B.16.2	<u>upnp:resExt::segmentInfo</u>	164
B.17	Bookmark-related Properties	166

B.17.1	<u>@neverPlayable</u>	166
B.17.2	<u>upnp:bookmarkID</u>	167
B.17.3	<u>upnp:bookmarkedObjectID</u>	167
B.17.4	<u>upnp:deviceUDN</u>	167
B.17.5	<u>upnp:stateVariableCollection</u>	167
B.18	Miscellaneous Properties.....	168
B.18.1	<u>upnp:DVDRegionCode</u>	169
B.18.2	<u>upnp:originalTrackNumber</u>	169
B.18.3	<u>upnp:toc</u>	169
B.18.4	<u>upnp:userAnnotation</u>	169
B.18.5	<u>desc</u>	169
B.19	Object Tracking Properties.....	170
B.19.1	<u>upnp:containerUpdateID</u>	170
B.19.2	<u>upnp:objectUpdateID</u>	170
B.19.3	<u>upnp:totalDeletedChildCount</u>	171
B.19.4	<u>res@updateCount</u>	171
B.20	Permission Properties.....	172
B.20.1	<u>upnp:inclusionControl</u>	172
B.21	Ownership Properties.....	172
B.21.1	<u>upnp:objectOwner</u>	173
B.22	Object Linking Properties.....	174
B.22.1	<u>upnp:objectLink</u>	174
B.22.2	<u>upnp:objectLinkRef</u>	178
B.23	Foreign Metadata-related Properties.....	180
B.23.1	<u>upnp:foreignMetadata</u>	180
B.24	Synchronized Playback-related Properties.....	187
B.24.1	<u>upnp:resExt::clockSync</u>	187
B.25	DRMInfo-related Overview Properties.....	188
B.25.1	<u>upnp:resExt::DRMInfo</u>	188
Annex C (normative)	AV Working Committee Class Definitions.....	189
C.1	Class Hierarchy.....	189
C.1.1	Class name syntax.....	190
C.1.2	Class Properties Overview.....	191
C.2	<u>object</u> (Base Class).....	203
C.2.1	<u>item:object</u>	203
C.2.2	<u>container:object</u>	211
Annex D (Informative)	Theory of Operation.....	219
D.1	Introduction.....	219
D.2	Generating Object ID Values.....	219
D.3	Content Setup for Browsing and Searching.....	220
D.4	Browsing.....	220
D.4.1	Retrieving Sort Capabilities.....	221
D.4.2	Browsing the Root Level Metadata.....	221
D.4.3	Browsing the Children of the Root Level.....	222
D.4.4	Browsing the Children of the My Music Folder.....	223
D.4.5	Browsing the Children of the Singles Soundtrack Music Album.....	223
D.4.6	Browsing the Children of the Album Art Folder.....	224
D.5	Searching.....	225

D.5.1	Retrieving Search Capabilities.....	225
D.5.2	Search for All Content Created by the performer Sting.....	225
D.5.3	Search for all Photos Taken During the Month of October.....	227
D.5.4	Search for All Objects in the My Photos Folder Containing the Word "Christmas".....	227
D.5.5	Search for all <i>album</i> objects in the ContentDirectory service.....	228
D.6	Browsing, Searching, and References.....	229
D.6.1	Creating a reference to a photo in the Mexico Trip album inside the Christmas album.....	229
D.6.2	Search for All Photos Taken During the Month of October.....	229
D.6.3	Deletion of the Reference to the Photo in the Mexico Trip Album.....	230
D.7	Object Creation.....	230
D.7.1	Creating a New Object.....	230
D.7.2	Creating a New MusicTrack.....	230
D.8	Object Resource Binding (Importing a Resource).....	231
D.8.1	Transfer Using the <i>ImportResource()</i> Action.....	231
D.8.2	Transfer Using Direct HTTP POST.....	232
D.9	Exporting ContentDirectory Resources.....	232
D.9.1	Transfer Using the <i>ExportResource()</i> Action.....	233
D.9.2	Transfer using HTTP GET.....	234
D.10	Playlist Manipulation.....	234
D.10.1	Playlist File Representation in the ContentDirectory Service.....	234
D.10.2	Playlist File Generation.....	234
D.11	Internet Content Representation.....	236
D.12	Multi-component media representation.....	236
D.12.1	Creating a multi-component video object.....	238
D.12.2	Adding a component to a multi-component video object.....	240
D.13	Segments Manipulation.....	243
D.13.1	Segment Item Example.....	243
D.13.2	Creating, Destroying and Updating Segments.....	244
D.13.3	Browse and Search Segment Items.....	246
D.14	Bookmark Manipulation.....	246
D.14.1	<i>bookmarkItem</i> Example.....	246
D.14.2	Creating and Destroying Bookmarks.....	248
D.14.3	Browsing Bookmarks.....	252
D.15	Processing FreeForm Queries.....	257
D.15.1	Retrieving the title of all music albums.....	258
D.15.2	Retrieving the audio items of Album 1.....	258
D.15.3	Retrieving a limited number of photo items.....	259
D.16	Foreign Metadata.....	260
D.16.1	Determining the Supported Foreign Metadata Types.....	260
D.16.2	Determining Whether an Object Contains Foreign Metadata.....	261
D.17	Monitoring Changes.....	262
D.17.1	Monitoring Changes while <i>on-line</i>	263
D.17.2	Monitoring Changes while <i>off-line</i>	268
D.18	Browsing preserved transitory content.....	270
D.18.1	Browsing broadcast items with preserved history.....	270
D.18.2	Browsing program items indicating preserved history (EPG data available but not exposed to control point).....	271

D.18.3 Browsing program items for recording (EPG exposed to control point).....	272
D.19 Object Linking	274
D.19.1 Displaying Object Link titles	274
D.19.2 Locating the head Object Link property of an Object Linked list.....	275
D.19.3 Starting an Object Linked presentation	275
D.19.4 Object Linking Example.....	275
D.20 <i>DEVICE_MODE</i> feature	282
D.20.1 Initiating and Managing <i>ActionBurst</i> mode	283
D.20.2 Initiating and Managing <i>ExclusiveOwnership</i> mode	287
D.21 Synchronized Playback.....	290
D.21.1 Precision Time Synchronized Playback for RTSP-RTP Transport	290
D.21.2 Precision Time Synchronized Playback for HTTP Transport	293
D.22 Usage of the <i>CONTAINER_SHORTCUTS</i> feature	294
Annex E (normative) EBNF Syntax Definitions	296
E.1 Summary	296
E.2 Date&time Syntax.....	296
Annex F (normative) <i>CDS</i> features	297
F.1 Requirements for the <i>EPG</i> feature, Version 1	298
F.2 Requirements for the <i>TUNER</i> feature, Version 1.....	299
F.3 Requirements for the <i>BOOKMARK</i> feature, Version 1	300
F.4 Requirements for the <i>FOREIGN_METADATA</i> feature, Version 1	300
F.5 Requirements for the <i>FFQ</i> feature, Version 1	301
F.6 Requirements for the <i>MULTI_STREAM</i> feature, Version 1	302
F.7 Requirements for the <i>SEGMENTATION</i> feature, Version 1	303
F.8 Requirements for the <i>DEVICE_MODE</i> feature, Version 1.....	304
F.9 Requirements for the <i>CLOCKSYNC</i> feature, Version 1	306
F.10 Requirements for the <i>CONTENT_PROTECTION</i> feature, Version 1	306
F.11 Requirements for the <i>CONTAINER_SHORTCUTS</i> feature, Version 1	307
Annex G (normative) <i>CONTENT_PROTECTION</i> feature	312
G.1 AV Roles for <i>CONTENT_PROTECTION</i>	312
G.1.1 Access at action level	313
G.1.2 Restrictable and Non-Restrictable Actions	313
G.1.3 <i>Action Level Access</i> using pre-defined AV Roles	314
G.1.4 Access at object level	315
G.1.5 <i>Role</i> assignments for unrecognized control points.....	316
G.1.6 Implicit role assignments.....	316
G.2 Behavior of actions with <i>CONTENT_PROTECTION</i> feature	317
G.2.1 <i>CreateObject()</i> action with <i>CONTENT_PROTECTION</i> feature	317
G.2.2 <i>UpdateObject()</i> action with <i>CONTENT_PROTECTION</i> feature.....	318
G.2.3 <i>Browse()</i> action with <i>CONTENT_PROTECTION</i> feature	319
G.2.4 <i>Search()</i> action with <i>CONTENT_PROTECTION</i> feature.....	319
G.2.5 <i>FreeFormQuery()</i> action with <i>CONTENT_PROTECTION</i> feature	320
G.2.6 <i>DestroyObject()</i> action with <i>CONTENT_PROTECTION</i> feature.....	320
G.2.7 <i>MoveObject()</i> action with <i>CONTENT_PROTECTION</i> feature	320
G.2.8 <i>DeleteResource()</i> action with <i>CONTENT_PROTECTION</i> feature	320
Annex H (informative) Content Authoring using Object Linking	321
H.1 Introduction	321
H.2 Object Linking Metadata Properties.....	321

H.3	Table of Contents (Index) Lists	322
H.4	Playback and Step Lists.....	323
H.5	References between lists of items	324
H.6	Sharing items in multiple lists.....	324
H.7	Return Model.....	325
H.8	Control Point processing of Object Linked items	325
Annex I (informative)	Example ContentDirectory Hierarchy	327
Annex J (informative)	Bibliography	334

List of Tables

Table 1 — EBNF Operators.....7

Table 2 — CSV Examples.....8

Table 3 — Namespace Definitions.....9

Table 4 — Schema-related Information11

Table 5 — Default Namespaces for the AV Specifications.....13

Table 6 — Properties in XML26

Table 7 — State variables.....31

Table 8 — SearchCapabilities requirements for supporting *Tracking Changes Option*.....32

Table 9 — Sort Modifiers33

Table 10 — ContainerUpdateIDs Example.....35

Table 11 — ContainerUpdateIDs Example.....36

Table 12 — Event moderation58

Table 13 — Actions.....60

Table 14 — Arguments for GetSearchCapabilities()61

Table 15 — Error Codes for GetSearchCapabilities()61

Table 16 — Arguments for GetSortCapabilities()61

Table 17 — Error Codes for GetSortCapabilities()61

Table 18 — Arguments for GetSortExtensionCapabilities().....62

Table 19 — Error Codes for GetSortExtensionCapabilities().....62

Table 20 — Arguments for GetFeatureList()62

Table 21 — Error Codes for GetFeatureList()62

Table 22 — Arguments for GetSystemUpdateID()62

Table 23 — Error Codes for GetSystemUpdateID()63

Table 24 — Arguments for GetServiceResetToken()63

Table 25 — Error Codes for GetServiceResetToken()63

Table 26 — Arguments for Browse().....64

Table 27 — Error Codes for Browse().....65

Table 28 — Arguments for Search()66

Table 29 — Error Codes for Search()66

Table 30 — Arguments for CreateObject()71

Table 31 — Error codes for CreateObject().....71

Table 32 — Arguments for DestroyObject()73

Table 33 — Error Codes for DestroyObject()73

Table 34 — Update examples76

Table 35 — Arguments for UpdateObject()78

Table 36 — Error Codes for UpdateObject()78

Table 37 — Arguments for MoveObject()80

Table 38 — Error Codes for MoveObject()80

Table 39 — Arguments for ImportResource().....81

Table 40 — Error Codes for ImportResource().....81

Table 41 — Arguments for ExportResource().....82

Table 42 — Error Codes for <u>ExportResource()</u>	82
Table 43 — Arguments for <u>DeleteResource()</u>	83
Table 44 — Error Codes for <u>DeleteResource()</u>	83
Table 45 — Arguments for <u>StopTransferResource()</u>	83
Table 46 — Error Codes for <u>StopTransferResource()</u>	84
Table 47 — Arguments for <u>GetTransferProgress()</u>	84
Table 48 — Error Codes for <u>GetTransferProgress()</u>	84
Table 49 — Arguments for <u>CreateReference()</u>	85
Table 50 — Error Codes for <u>CreateReference()</u>	85
Table 51 — Arguments for <u>FreeFormQuery()</u>	86
Table 52 — Error Codes for <u>FreeFormQuery()</u>	87
Table 53 — Arguments for <u>GetFreeFormQueryCapabilities()</u>	87
Table 54 — Error Codes for <u>GetFreeFormQueryCapabilities()</u>	88
Table 55 — Arguments for <u>RequestDeviceMode()</u>	88
Table 56 — Error Codes for <u>RequestDeviceMode()</u>	89
Table 57 — Arguments for <u>ExtendDeviceMode()</u>	89
Table 58 — Error Codes for <u>ExtendDeviceMode()</u>	90
Table 59 — Arguments for <u>CancelDeviceMode()</u>	90
Table 60 — Error Codes for <u>CancelDeviceMode()</u>	91
Table 61 — Arguments for <u>GetDeviceMode()</u>	91
Table 62 — Error Codes for <u>GetDeviceMode()</u>	91
Table 63 — Arguments for <u>GetDeviceModeStatus()</u>	91
Table 64 — Error Codes for <u>GetDeviceModeStatus()</u>	92
Table 65 — Arguments for <u>GetPermissionsInfo()</u>	92
Table 66 — Error Codes for <u>GetPermissionsInfo()</u>	92
Table 67 — Common Error Codes.....	93
Table B.1 — ContentDirectory Service Properties Overview.....	108
Table B.2 — Base Properties Overview.....	117
Table B.3 — Allowed values for <u>upnp:class</u>	120
Table B.4 — Allowed values for <u>upnp:writeStatus</u>	122
Table B.5 — Resource Encoding Characteristics Properties Overview.....	123
Table B.6 — Allowed values for <u>res@daylightSaving</u>	128
Table B.7 — Resource Encoding Extension Properties Overview.....	128
Table B.9 — Contributor-related Properties Overview.....	130
Table B.10 — Affiliation-related Properties Overview.....	131
Table B.11 — Associated Resources Properties Overview.....	132
Table B.12 — Storage-Related Properties Overview.....	133
Table B.13 — General Description (mainly for UI purposes) Properties Overview.....	135
Table B.14 — Allowed values for <u>upnp:recordedDayOfWeek</u>	139
Table B.15 — Recorded Object-related Properties Overview.....	140
Table B.16 — User Channel and EPG Related Properties Overview.....	145
Table B.17 — Preserved Program Properties Overview.....	148
Table B.18 — Allowed values for <u>upnp:programPreserved</u>	148

Table B.19 — Radio Broadcast Properties Overview	151
Table B.20 — Allowed values for <u>upnp:radioBand</u>	152
Table B.21 — Video Broadcast Properties Overview	152
Table B.22 — Allowed values for <u>upnp:scheduledStartTime@usage</u>	153
Table B.23 — Physical Tuner Status-related Properties Overview	154
Table B.24 — MultiStream Properties Overview	156
Table B.25 — Allowed values for <u>upnp:resExt::componentInfo::componentGroup ::component::componentClass</u>	159
Table B.26 — Segmentation-related Properties Overview	163
Table B.27 — Bookmark-related Properties Overview	166
Table B.28 — Allowed values for <u>upnp:stateVariableCollection@rcsInstanceType</u>	168
Table B.29 — Miscellaneous Properties Overview	168
Table B.30 — Object Tracking Properties Overview	170
Table B.31 — Permission Properties Overview	172
Table B.32 — Ownership Properties Overview	172
Table B.33 — Object Linking Properties Overview	174
Table B.34 — Allowed values for <u>upnp:objectLink::mode</u>	176
Table B.35 — Allowed values for <u>upnp:objectLink::relatedInfo@role</u>	177
Table B.36 — Allowed values for <u>upnp:objectLink::endAction@action</u>	178
Table B.37 — Allowed values for <u>upnp:objectLinkRef::relatedInfo@role</u>	180
Table B.38 — Foreign Metadata-related Properties Overview	180
Table B.39 — Synchronized Playback Properties Overview	187
Table B.40 — DRMInfo-Related Properties Overview	188
Table C.1 — Class Properties Overview	191
Table C.2 — <u>object</u> Properties	203
Table C.3 — <u>item</u> Properties	203
Table C.4 — <u>imageItem:item</u> Properties	204
Table C.5 — <u>photo:imageItem</u> Properties	204
Table C.6 — <u>audioItem:item</u> Properties	204
Table C.7 — <u>musicTrack:audioItem</u> Properties	205
Table C.8 — <u>audioBroadcast:audioItem</u> Properties	205
Table C.9 — <u>audioBook:audioItem</u> Properties	205
Table C.10 — <u>videoItem:item</u> Properties	206
Table C.11 — <u>movie:videoItem</u> Properties	206
Table C.12 — <u>videoBroadcast:videoItem</u> Properties	207
Table C.13 — <u>musicVideoClip:videoItem</u> Properties	207
Table C.14 — <u>playlistItem:item</u> Properties	208
Table C.15 — <u>textItem:item</u> Properties	208
Table C.16 — <u>bookmarkItem:item</u> Properties	209
Table C.17 — <u>epgItem:item</u> Properties	210
Table C.18 — <u>audioProgram:epgItem</u> Properties	211
Table C.19 — <u>videoProgram:epgItem</u> Properties	211
Table C.20 — <u>container</u> Properties	212

Table C.21 — <u>person:container</u> Properties	212
Table C.22 — <u>musicArtist:person</u> Properties	212
Table C.23 — <u>playlistContainer:container</u> Properties	213
Table C.24 — <u>album:container</u> Properties	213
Table C.25 — <u>musicAlbum:album</u> Properties	214
Table C.26 — <u>photoAlbum:album</u> Properties	214
Table C.27 — <u>genre:container</u> Properties	214
Table C.28 — <u>channelGroup:container</u> Properties	215
Table C.29 — <u>epgContainer:container</u> Properties	216
Table C.30 — <u>storageSystem:container</u> Properties	217
Table C.31 — <u>storageVolume:container</u> Properties	217
Table C.32 — <u>storageFolder:container</u> Properties	218
Table C.33 — <u>genre:container</u> Properties	218
Table F.1 — <i>CDS features</i>	298
Table F.2 — Required characteristics of the <i>EPG feature</i> element	299
Table F.3 — Required characteristics of the <i>TUNER feature</i> element	299
Table F.4 — Required characteristics of the <i>BOOKMARK feature</i> element	300
Table F.5 — Required characteristics of the <i>FOREIGN_METADATA feature</i> element	301
Table F.6 — Required characteristics of the <i>FFQ feature</i> element	302
Table F.7 — Required characteristics of the <i>MULTI_STREAM feature</i> element	303
Table F.8 — Required characteristics of the <i>SEGMENTATION feature</i> element	304
Table F.9 — Required characteristics of the <i>DEVICE_MODE feature</i> element	305
Table F.10 — Required characteristics of the <i>CLOCKSYNC feature</i> element	306
Table F.11 — Required characteristics of the <i>CONTENT_PROTECTION feature</i> element	307
Table F.12 — Required characteristics of the <i>CONTAINER_SHORTCUTS feature</i> element	307
Table F.13 — Allowed values for the Shortcut Name element	308
Table G.1 — Pre-defined <i>AV Roles</i> and <i>Public</i>	312
Table G.2 — Error Codes for <i>Action Level Access</i>	313
Table G.3 — Pre-defined settings for <i>Restrictable</i> and <i>Non-Restrictable</i> AV Actions	314
Table G.4 — Pre-defined AV Action to AV <i>Role</i> permissions mapping	315
Table G.5 — Error Codes for <i>Object Level Access</i>	317
Table G.6 — Error Codes for <u>CreateObject()</u> and <u>UpdateObject()</u> action with <u>upnp:objectOwner</u> and <u>upnp:objectOwner</u> property	319
Table G.7 — Error Codes for <u>MoveObject()</u> action with <i>CONTENT_PROTECTION</i> <i>feature</i>	320
Table G.8 — Error Codes for <u>DeleteResource()</u> action with <i>CONTENT_PROTECTION</i> <i>feature</i>	320

List of Figures

Figure 1 — ContentDirectory Service Object Organization	21
Figure 2 — Flattened DIDL-Lite hierarchical structure.....	25
Figure C.1 — Class hierarchy for the item base class	189
Figure C.2 — Class hierarchy for the container base class	190
Figure D.1 — Example Handshaking for <i>DEVICE_MODE feature</i>	283
Figure H.1 — Example of Object Link “Index” list.....	323
Figure H.2 — Example of Object Link list reference	324

Foreword

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ISO/IEC 29341-20-12 was prepared by UPnP Forum and adopted, under the PAS procedure, by joint technical committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

The list of all currently available parts of ISO/IEC 29341 series, under the general title *Information technology — UPnP Device Architecture*, can be found on the [ISO web site](#).

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Original UPnP Document

Reference may be made in this document to original UPnP documents. These references are retained in order to maintain consistency between the specifications as published by ISO/IEC and by UPnP Implementers Corporation and later by UPnP Forum. The following table indicates the original UPnP document titles and the corresponding part of ISO/IEC 29341:

UPnP Document Title	ISO/IEC 29341 Part
UPnP Device Architecture 1.0	ISO/IEC 29341-1:2008
UPnP Device Architecture Version 1.0	ISO/IEC 29341-1:2011
UPnP Device Architecture 1.1	ISO/IEC 29341-1-1:2011
UPnP Device Architecture 2.0	ISO/IEC 29341-1-2
UPnP Basic:1 Device	ISO/IEC 29341-2
UPnP AV Architecture:1	ISO/IEC 29341-3-1:2008
UPnP AV Architecture:1	ISO/IEC 29341-3-1:2011
UPnP AVTransport:1 Service	ISO/IEC 29341-3-10
UPnP ConnectionManager:1 Service	ISO/IEC 29341-3-11
UPnP ContentDirectory:1 Service	ISO/IEC 29341-3-12
UPnP RenderingControl:1 Service	ISO/IEC 29341-3-13
UPnP MediaRenderer:1 Device	ISO/IEC 29341-3-2
UPnP MediaRenderer:2 Device	ISO/IEC 29341-3-2:2011
UPnP MediaServer:1 Device	ISO/IEC 29341-3-3
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10:2008
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10:2011
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11:2008
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11:2011
UPnP ContentDirectory:2 Service	ISO/IEC 29341-4-12
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13:2008
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13:2011
UPnP ScheduledRecording:1	ISO/IEC 29341-4-14
UPnP ScheduledRecording:2	ISO/IEC 29341-4-14:2011
UPnP MediaRenderer:2 Device	ISO/IEC 29341-4-2
UPnP MediaServer:2 Device	ISO/IEC 29341-4-3
UPnP AV Datastructure Template:1	ISO/IEC 29341-4-4:2008
UPnP AV Datastructure Template:1	ISO/IEC 29341-4-4:2011
UPnP DigitalSecurityCamera:1 Device	ISO/IEC 29341-5-1
UPnP DigitalSecurityCameraMotionImage:1 Service	ISO/IEC 29341-5-10
UPnP DigitalSecurityCameraSettings:1 Service	ISO/IEC 29341-5-11
UPnP DigitalSecurityCameraStillImage:1 Service	ISO/IEC 29341-5-12
UPnP HVAC_System:1 Device	ISO/IEC 29341-6-1
UPnP ControlValve:1 Service	ISO/IEC 29341-6-10
UPnP HVAC_FanOperatingMode:1 Service	ISO/IEC 29341-6-11
UPnP FanSpeed:1 Service	ISO/IEC 29341-6-12
UPnP HouseStatus:1 Service	ISO/IEC 29341-6-13
UPnP HVAC_SetpointSchedule:1 Service	ISO/IEC 29341-6-14
UPnP TemperatureSensor:1 Service	ISO/IEC 29341-6-15
UPnP TemperatureSetpoint:1 Service	ISO/IEC 29341-6-16
UPnP HVAC_UserOperatingMode:1 Service	ISO/IEC 29341-6-17
UPnP HVAC_ZoneThermostat:1 Device	ISO/IEC 29341-6-2

UPnP BinaryLight:1 Device	ISO/IEC 29341-7-1
UPnP Dimming:1 Service	ISO/IEC 29341-7-10
UPnP SwitchPower:1 Service	ISO/IEC 29341-7-11
UPnP DimmableLight:1 Device	ISO/IEC 29341-7-2
UPnP InternetGatewayDevice:1 Device	ISO/IEC 29341-8-1
UPnP LANHostConfigManagement:1 Service	ISO/IEC 29341-8-10
UPnP Layer3Forwarding:1 Service	ISO/IEC 29341-8-11
UPnP LinkAuthentication:1 Service	ISO/IEC 29341-8-12
UPnP RadiusClient:1 Service	ISO/IEC 29341-8-13
UPnP WANCableLinkConfig:1 Service	ISO/IEC 29341-8-14
UPnP WANCommonInterfaceConfig:1 Service	ISO/IEC 29341-8-15
UPnP WANDSLLinkConfig:1 Service	ISO/IEC 29341-8-16
UPnP WANEthernetLinkConfig:1 Service	ISO/IEC 29341-8-17
UPnP WANIPConnection:1 Service	ISO/IEC 29341-8-18
UPnP WANPOTSLinkConfig:1 Service	ISO/IEC 29341-8-19
UPnP LANDevice:1 Device	ISO/IEC 29341-8-2
UPnP WANPPPConnection:1 Service	ISO/IEC 29341-8-20
UPnP WLANConfiguration:1 Service	ISO/IEC 29341-8-21
UPnP WANDevice:1 Device	ISO/IEC 29341-8-3
UPnP WANConnectionDevice:1 Device	ISO/IEC 29341-8-4
UPnP WLANAccessPointDevice:1 Device	ISO/IEC 29341-8-5
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP ExternalActivity:1 Service	ISO/IEC 29341-9-10
UPnP Feeder:1.0 Service	ISO/IEC 29341-9-11
UPnP PrintBasic:1 Service	ISO/IEC 29341-9-12
UPnP Scan:1 Service	ISO/IEC 29341-9-13
UPnP Scanner:1.0 Device	ISO/IEC 29341-9-2
UPnP QoS Architecture:1.0	ISO/IEC 29341-10-1
UPnP QosDevice:1 Service	ISO/IEC 29341-10-10
UPnP QosManager:1 Service	ISO/IEC 29341-10-11
UPnP QosPolicyHolder:1 Service	ISO/IEC 29341-10-12
UPnP QoS Architecture:2	ISO/IEC 29341-11-1
UPnP QosDevice:2 Service	ISO/IEC 29341-11-10
UPnP QosManager:2 Service	ISO/IEC 29341-11-11
UPnP QosPolicyHolder:2 Service	ISO/IEC 29341-11-12
UPnP QOS v2 Schema Files	ISO/IEC 29341-11-2
UPnP RemoteUIClientDevice:1 Device	ISO/IEC 29341-12-1
UPnP RemoteUIClient:1 Service	ISO/IEC 29341-12-10
UPnP RemoteUIServer:1 Service	ISO/IEC 29341-12-11
UPnP RemoteUIServerDevice:1 Device	ISO/IEC 29341-12-2
UPnP DeviceSecurity:1 Service	ISO/IEC 29341-13-10
UPnP SecurityConsole:1 Service	ISO/IEC 29341-13-11
UPnP ContentDirectory:3 Service	ISO/IEC 29341-14-12:2011
UPnP MediaServer:3 Device	ISO/IEC 29341-14-3:2011
UPnP ContentSync:1	ISO/IEC 29341-15-10:2011
UPnP Low Power Architecture:1	ISO/IEC 29341-16-1:2011
UPnP LowPowerProxy:1 Service	ISO/IEC 29341-16-10:2011

ISO/IEC 29341-20-12:2017(E)

UPnP LowPowerDevice:1 Service	ISO/IEC 29341-16-11:2011
UPnP QoS Architecture:3	ISO/IEC 29341-17-1:2011
UPnP QoSDevice:3 Service	ISO/IEC 29341-17-10:2011
UPnP QoSManager:3 Service	ISO/IEC 29341-17-11:2011
UPnP QoSPolicyHolder:3 Service	ISO/IEC 29341-17-12:2011
UPnP QoSDevice:3 Addendum	ISO/IEC 29341-17-13:2011
UPnP RemoteAccessArchitecture:1	ISO/IEC 29341-18-1:2011
UPnP InboundConnectionConfig:1 Service	ISO/IEC 29341-18-10:2011
UPnP RADAConfig:1 Service	ISO/IEC 29341-18-11:2011
UPnP RADASync:1 Service	ISO/IEC 29341-18-12:2011
UPnP RATAConfig:1 Service	ISO/IEC 29341-18-13:2011
UPnP RAClient:1 Device	ISO/IEC 29341-18-2:2011
UPnP RAServer:1 Device	ISO/IEC 29341-18-3:2011
UPnP RADiscoveryAgent:1 Device	ISO/IEC 29341-18-4:2011
UPnP SolarProtectionBlind:1 Device	ISO/IEC 29341-19-1:2011
UPnP TwoWayMotionMotor:1 Service	ISO/IEC 29341-19-10:2011
UPnP AV Architecture:2	ISO/IEC 29341-20-1
UPnP AVTransport:3 Service	ISO/IEC 29341-20-10
UPnP ConnectionManager:3 Service	ISO/IEC 29341-20-11
UPnP ContentDirectory:4 Device	ISO/IEC 29341-20-12
UPnP RenderingControl:3 Service	ISO/IEC 29341-20-13
UPnP ScheduledRecording:2 Service	ISO/IEC 29341-20-14
UPnP MediaRenderer:3 Service	ISO/IEC 29341-20-2
UPnP MediaServer:4 Device	ISO/IEC 29341-20-3
UPnP AV Datastructure Template:1	ISO/IEC 29341-20-4
UPnP InternetGatewayDevice:2 Device	ISO/IEC 29341-24-1
UPnP WANIPConnection:2 Service	ISO/IEC 29341-24-10
UPnP WANIPv6FirewallControl:1 Service	ISO/IEC 29341-24-11
UPnP WANConnectionDevice:2 Service	ISO/IEC 29341-24-2
UPnP WANDevice:2 Device	ISO/IEC 29341-24-3
UPnP Telephony Architecture:2	ISO/IEC 29341-26-1
UPnP CallManagement:2 Service	ISO/IEC 29341-26-10
UPnP MediaManagement:2 Service	ISO/IEC 29341-26-11
UPnP Messaging:2 Service	ISO/IEC 29341-26-12
UPnP PhoneManagement:2 Service	ISO/IEC 29341-26-13
UPnP AddressBook:1 Service	ISO/IEC 29341-26-14
UPnP Calendar:1 Service	ISO/IEC 29341-26-15
UPnP Presense:1 Service	ISO/IEC 29341-26-16
UPnP TelephonyClient:2 Device	ISO/IEC 29341-26-2
UPnP TelephonyServer:2 Device	ISO/IEC 29341-26-3
UPnP Friendly Info Update:1 Service	ISO/IEC 29341-27-1
UPnP MultiScreen MultiScreen Architecture:1	ISO/IEC 29341-28-1
UPnP MultiScreen Application Management:1 Service	ISO/IEC 29341-28-10
UPnP MultiScreen Screen:1 Device	ISO/IEC 29341-28-2
UPnP MultiScreen Application Management:2 Service	ISO/IEC 29341-29-10
UPnP MultiScreen Screen:2 Device	ISO/IEC 29341-29-2
UPnP IoT Management and Control Architecture Overview:1	ISO/IEC 29341-30-1

UPnP DataStore:1 Service	ISO/IEC 29341-30-10
UPnP IoT Management and Control Data Model:1 Service	ISO/IEC 29341-30-11
UPnP IoT Management and Control Transport Generic:1 Service	ISO/IEC 29341-30-12
UPnP IoT Management and Control:1 Device	ISO/IEC 29341-30-2
UPnP Energy Management:1 Service	ISO/IEC 29341-31-1

1 Scope

This document specifies the characteristics of the UPnP networked service named *ContentDirectory*, version 4. This service definition is compliant with UPnP Device Architecture 1.0 [14].

Many devices within the home network contain various types of content that other devices would like to access (for example, music, videos, still images, etc). As an example, a MediaServer device might contain a significant portion of the homeowner's audio, video, and still-image library. In order for the homeowner to enjoy this content, the homeowner needs to be able to browse the objects stored on the MediaServer, select a specific one, and cause it to be played on an appropriate rendering device (for example, an audio player for music objects, a TV for video content, an Electronic Picture Frame for still-images, etc).

For maximum convenience, it is highly desirable to let the homeowner to initiate these operations from a variety of UI devices. In most cases, these UI devices will either be a UI built into the rendering device, or it will be a stand-alone UI device such as a wireless PDA or tablet. In any case, it is unlikely that the homeowner will interact directly with the device containing the content (that is: the homeowner won't have to walk over to the server device). In order to enable this capability, the server device needs to provide a uniform mechanism for UI devices to browse the content on the server and to obtain detailed information about individual content objects. This is the purpose of the ContentDirectory service.

The ContentDirectory service additionally provides a lookup/storage service that enables clients (for example, UI devices) to locate (and possibly store) individual objects (for example, songs, movies, pictures, etc) that the (server) device is capable of providing. For example, this service can be used to enumerate a list of songs stored on an MP3 player, a list of still-images comprising various slide-shows, a list of movies stored in a DVD-Jukebox, a list of TV shows currently being broadcast (a.k.a an EPG), a list of songs stored in a CD-Jukebox, a list of programs stored on a PVR (Personal Video Recorder) device, etc. Nearly any type of content can be enumerated via this ContentDirectory service. For devices that contain multiple types of content (for example, MP3, MPEG2, JPEG, etc.), a single instance of the ContentDirectory service can be used to enumerate all objects, regardless of their type.

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] – *XML Schema for RenderingControl AllowedTransformSettings*, UPnP Forum, March 31, 2013.

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