
**Information technology — UPnP
Device Architecture —**

**Part 3-10:
Audio Video Device Control Protocol —
Audio Video Transport Service**

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*Technologies de l'information — Architecture de dispositif UPnP —
Partie 3-10: Protocole de contrôle de dispositif audio-vidéo — Service
de transport audio-vidéo*

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CONTENTS

Foreword	vi
Introduction.....	vii
1. Scope.....	1
2. Service Modeling Definitions	2
2.1. ServiceType	2
2.2. State Variables.....	2
2.2.1. <u>TransportState</u>	6
2.2.2. <u>TransportStatus</u>	7
2.2.3. <u>PlaybackStorageMedium</u>	7
2.2.4. <u>RecordStorageMedium</u>	7
2.2.5. <u>PossiblePlaybackStorageMedia</u>	7
2.2.6. <u>PossibleRecordStorageMedia</u>	7
2.2.7. <u>CurrentPlayMode</u>	7
2.2.8. <u>TransportPlaySpeed</u>	8
2.2.9. <u>RecordMediumWriteStatus</u>	8
2.2.10. <u>CurrentRecordQualityMode</u>	8
2.2.11. <u>PossibleRecordQualityModes</u>	8
2.2.12. <u>NumberOfTracks</u>	8
2.2.13. <u>CurrentTrack</u>	8
2.2.14. <u>CurrentTrackDuration</u>	9
2.2.15. <u>CurrentMediaDuration</u>	9
2.2.16. <u>CurrentTrackMetaData</u>	9
2.2.17. <u>CurrentTrackURI</u>	9
2.2.18. <u>AVTransportURI</u>	9
2.2.19. <u>AVTransportURIMetaData</u>	9
2.2.20. <u>NextAVTransportURI</u>	10
2.2.21. <u>NextAVTransportURIMetaData</u>	10
2.2.22. <u>RelativeTimePosition</u>	10
2.2.23. <u>AbsoluteTimePosition</u>	10
2.2.24. <u>RelativeCounterPosition</u>	10
2.2.25. <u>AbsoluteCounterPosition</u>	10
2.2.26. <u>CurrentTransportActions</u>	11
2.2.27. <u>LastChange</u>	11
2.2.28. <u>A_ARG_TYPE_SeekMode</u>	11
2.2.29. <u>A_ARG_TYPE_SeekTarget</u>	11
2.2.30. <u>A_ARG_TYPE_InstanceID</u>	11
2.3. Eventing and Moderation	12
2.3.1. Event Model	12
2.4. Actions	14
2.4.1. <u>SetAVTransportURI</u>	14
2.4.2. <u>SetNextAVTransportURI</u>	16
2.4.3. <u>GetMediaInfo</u>	17
2.4.4. <u>GetTransportInfo</u>	18
2.4.5. <u>GetPositionInfo</u>	19
2.4.6. <u>GetDeviceCapabilities</u>	20
2.4.7. <u>GetTransportSettings</u>	20
2.4.8. <u>Stop</u>	21
2.4.9. <u>Play</u>	22
2.4.10. <u>Pause</u>	23
2.4.11. <u>Record</u>	24
2.4.12. <u>Seek</u>	25

2.4.13.	Next	26
2.4.14.	Previous	27
2.4.15.	SetPlayMode	28
2.4.16.	SetRecordQualityMode	29
2.4.17.	GetCurrentTransportActions	30
2.4.18.	Common Error Codes	30
2.5.	Theory of Operation	31
2.5.1.	TransportState Control	31
2.5.2.	Transport Settings	32
2.5.3.	Navigation	32
2.5.4.	AVTransportURI Concept	32
2.5.5.	AVTransport Abstraction	33
2.5.6.	Supporting multiple virtual Transports	36
2.5.7.	Playlist Playback	37
3.	XML Service Description	38
4.	Test	48
5.	“LastChange” State Variable Schema	49
Annex A (normative)	SetAVTransportURI protocol specifics	56
A.1	Application to HTTP streaming	56
A.1.1	AVTransportURI definition	56
A.1.2	Implementation of SetAVTransportURI	56
A.1.3	Cleanup	56
A.2	Application to RTSP/RTP/UDP streaming	56
A.2.1	AVTransportURI definition	56
A.2.2	Implementation of SetAVTransportURI	57
A.2.3	Cleanup	57
A.2.4	Implementation of Transport controls	57
A.3	Application to internal streaming	58
A.3.1	AVTransportURI definition	58
A.3.2	Implementation of SetAVTransportURI	58
A.3.3	Cleanup	58
A.4	Application to IEC61883 streaming	58
A.4.1	AVTransportURI definition	58
A.4.2	Implementation of SetAVTransportURI	58
A.4.3	Cleanup	59
A.5	Application to vendor-specific streaming	60
A.5.1	AVTransportURI definition	60
A.5.2	Implementation of SetAVTransportURI	60
A.5.3	Cleanup	60

LIST OF TABLES

Table 1: State Variables	2
Table 1.1: allowedValueList for <u>TransportState</u>	3
Table 1.2: allowedValueList for <u>PlaybackStorageMedium</u>	4
Table 1.3: allowedValueList for <u>CurrentPlayMode</u>	5
Table 1.4: allowedValueList for <u>RecordMediumWriteStatus</u>	5
Table 1.5: allowedValueList for <u>CurrentRecordQualityMode</u>	5
Table 1.6: allowedValueRange for <u>NumberOfTracks</u>	6
Table 1.7: allowedValueRange for <u>CurrentTrack</u>	6
Table 1.8: allowedValueList for <u>A_ARG_TYPE_SeekMode</u>	6
Table 2: Event Moderation	12
Table 3: Actions	14
Table 4: Arguments for <u>SetAVTransportURI</u>	14
Table 5: Arguments for <u>SetNextAVTransportURI</u>	16
Table 6: Arguments for <u>GetMediaInfo</u>	17
Table 7: Arguments for <u>GetTransportInfo</u>	18
Table 8: Arguments for <u>GetPositionInfo</u>	19
Table 9: Arguments for <u>GetDeviceCapabilities</u>	20
Table 10: Arguments for <u>GetTransportSettings</u>	20
Table 11: Arguments for <u>Stop</u>	21
Table 12: Arguments for <u>Play</u>	22
Table 13: Arguments for <u>Pause</u>	23
Table 14: Arguments for <u>Record</u>	24
Table 15: Arguments for <u>Seek</u>	25
Table 16: Arguments for <u>Next</u>	26
Table 17: Arguments for <u>Previous</u>	27
Table 18: Arguments for <u>SetPlayMode</u>	28
Table 19: Arguments for <u>SetRecordQualityMode</u>	29
Table 20: Arguments for <u>GetCurrentTransportActions</u>	30
Table 21: Common Error Codes	30
Table 22: Allowed AVTransportURIs	33

Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see <http://www.iso.org/directives>).

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For an explanation on the meaning of the ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword – Supplementary information](#)

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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. 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
UPnP Basic:1 Device	ISO/IEC 29341-2
UPnP AV Architecture:1	ISO/IEC 29341-3-1
UPnP MediaRenderer:1 Device	ISO/IEC 29341-3-2
UPnP MediaServer:1 Device	ISO/IEC 29341-3-3
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: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
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11
UPnP ContentDirectory:2 Service	ISO/IEC 29341-4-12
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13
UPnP ScheduledRecording:1	ISO/IEC 29341-4-14
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 HVAC_ZoneThermostat:1 Device	ISO/IEC 29341-6-2
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 BinaryLight:1 Device	ISO/IEC 29341-7-1
UPnP DimmableLight:1 Device	ISO/IEC 29341-7-2
UPnP Dimming:1 Service	ISO/IEC 29341-7-10
UPnP SwitchPower:1 Service	ISO/IEC 29341-7-11
UPnP InternetGatewayDevice:1 Device	ISO/IEC 29341-8-1
UPnP LANDevice:1 Device	ISO/IEC 29341-8-2
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 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 WANPPPOConnection:1 Service	ISO/IEC 29341-8-20
UPnP WLANConfiguration:1 Service	ISO/IEC 29341-8-21
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP Scanner:1.0 Device	ISO/IEC 29341-9-2
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 Document Title	ISO/IEC 29341 Part
UPnP Scan:1 Service	ISO/IEC 29341-9-13
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 QOS v2 Schema Files	ISO/IEC 29341-11-2
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 RemoteUIClientDevice:1 Device	ISO/IEC 29341-12-1
UPnP RemoteUIServerDevice:1 Device	ISO/IEC 29341-12-2
UPnP RemoteUIClient:1 Service	ISO/IEC 29341-12-10
UPnP RemoteUIServer:1 Service	ISO/IEC 29341-12-11
UPnP DeviceSecurity:1 Service	ISO/IEC 29341-13-10
UPnP SecurityConsole:1 Service	ISO/IEC 29341-13-11

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INFORMATION TECHNOLOGY – UPNP DEVICE ARCHITECTURE –

Part 3-10: Audio Video Device Control Protocol – Audio Video Transport Service

1. Scope

This service definition is compliant with the UPnP Device Architecture version 1.0.

This service type enables control over the transport of audio and video streams. The service type defines a ‘common’ model for A/V transport control suitable for a generic user interface. It can be used to control a wide variety of disc, tape and solid-state based media devices such as CD players, VCRs and MP3 players. A minimal implementation of this service can be used to control tuners.

The service type is related to the ConnectionManager service type, which describes A/V connection setup procedures, and the ContentDirectory service, which offers meta-information about the resource stored on the media. AVTransport also offers an action to retrieve any meta data embedded in the resource itself.

This service type does not offer *scheduled* recording.

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2. Service Modeling Definitions

2.1. ServiceType

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

urn:schemas-upnp-org:service:AVTransport:1

2.2. State Variables

Table 1: State Variables

Variable Name	Req. or Opt. ¹	Data Type	Allowed Value	Default Value	Eng. Units
<u>TransportState</u>	<u>R</u>	<u>string</u>	<u>"STOPPED"</u> <u>"PLAYING"</u> see Table 1.1		
<u>TransportStatus</u>	<u>R</u>	<u>string</u>	<u>"OK"</u> , <u>"ERROR_OCCURRED"</u> vendor-extensible		
<u>PlaybackStorageMedium</u>	<u>R</u>	<u>string</u>	see Table 1.2		
<u>RecordStorageMedium</u>	<u>R</u>	<u>string</u>	see Table 1.2		
<u>PossiblePlaybackStorageMedia</u>	<u>R</u>	<u>string</u>	CSV ² (string)		
<u>PossibleRecordStorageMedia</u>	<u>R</u>	<u>string</u>	CSV (string)		
<u>CurrentPlayMode</u>	<u>R</u>	<u>string</u>	<u>"NORMAL"</u> see Table 1.3	<u>"NORMAL"</u>	
<u>TransportPlaySpeed</u>	<u>R</u>	<u>string</u>	<u>"1"</u>	<u>"1"</u>	
<u>RecordMediumWriteStatus</u>	<u>R</u>	<u>string</u>	see Table 1.4		
<u>CurrentRecordQualityMode</u>	<u>R</u>	<u>string</u>	see Table 1.5		
<u>PossibleRecordQualityModes</u>	<u>R</u>	<u>string</u>	CSV (string)		
<u>NumberOfTracks</u>	<u>R</u>	<u>ui4</u>	<u>Min = 0</u> see Table 1.6		
<u>CurrentTrack</u>	<u>R</u>	<u>ui4</u>	<u>Min = 0</u> <u>Step = 1</u> see Table 1.7		
<u>CurrentTrackDuration</u>	<u>R</u>	<u>string</u>			
<u>CurrentMediaDuration</u>	<u>R</u>	<u>string</u>			
<u>CurrentTrackMetaData</u>	<u>R</u>	<u>string</u>			
<u>CurrentTrackURI</u>	<u>R</u>	<u>string</u>			
<u>AVTransportURI</u>	<u>R</u>	<u>string</u>			
<u>AVTransportURIMetaData</u>	<u>R</u>	<u>string</u>			
<u>NextAVTransportURI</u>	<u>R</u>	<u>string</u>			
<u>NextAVTransportURIMetaData</u>	<u>R</u>	<u>string</u>			
<u>RelativeTimePosition</u>	<u>R</u>	<u>string</u>			

Variable Name	Req. or Opt. ¹	Data Type	Allowed Value	Default Value	Eng. Units
<u><i>AbsoluteTimePosition</i></u>	<u><i>R</i></u>	<u><i>string</i></u>			
<u><i>RelativeCounterPosition</i></u>	<u><i>R</i></u>	<u><i>i4</i></u>			
<u><i>AbsoluteCounterPosition</i></u>	<u><i>R</i></u>	<u><i>i4</i></u>			
<u><i>CurrentTransportActions</i></u>	<u><i>O</i></u>	<u><i>string</i></u>	CSV (string)		
<u><i>LastChange</i></u>	<u><i>R</i></u>	<u><i>string</i></u>			
<u><i>A_ARG_TYPE_SeekMode</i></u>	<u><i>R</i></u>	<u><i>string</i></u>	<u><i>"TRACK_NR"</i></u> see Table 1.8	<u><i>n/a</i></u>	
<u><i>A_ARG_TYPE_SeekTarget</i></u>	<u><i>R</i></u>	<u><i>string</i></u>		<u><i>n/a</i></u>	
<u><i>A_ARG_TYPE_InstanceID</i></u>	<u><i>R</i></u>	<u><i>ui4</i></u>		<u><i>n/a</i></u>	

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

² CSV stands for Comma-Separated Value list. The type between brackets denotes the UPnP data type used for the elements inside the list. CSV is defined more formally in the ContentDirectory service template.

Table 1.1: allowedValueList for *TransportState*

Value	Req. or Opt.
<u><i>"STOPPED"</i></u>	<u><i>R</i></u>
<u><i>"PLAYING"</i></u>	<u><i>R</i></u>
<u><i>"TRANSITIONING"</i></u>	<u><i>O</i></u>
<u><i>"PAUSED_PLAYBACK"</i></u>	<u><i>O</i></u>
<u><i>"PAUSED_RECORDING"</i></u>	<u><i>O</i></u>
<u><i>"RECORDING"</i></u>	<u><i>O</i></u>
<u><i>"NO_MEDIA_PRESENT"</i></u>	<u><i>O</i></u>

Table 1.2: allowedValueList for **PlaybackStorageMedium**

Value	Req. or Opt.
<u>“UNKNOWN”</u>	<u>Q</u>
<u>“DV”</u>	<u>Q</u>
<u>“MINI-DV”</u>	<u>Q</u>
<u>“VHS”</u>	<u>Q</u>
<u>“W-VHS”</u>	<u>Q</u>
<u>“S-VHS”</u>	<u>Q</u>
<u>“D-VHS”</u>	<u>Q</u>
<u>“VHSC”</u>	<u>Q</u>
<u>“VIDEO8”</u>	<u>Q</u>
<u>“Hi8”</u>	<u>Q</u>
<u>“CD-ROM”</u>	<u>Q</u>
<u>“CD-DA”</u>	<u>Q</u>
<u>“CD-R”</u>	<u>Q</u>
<u>“CD-RW”</u>	<u>Q</u>
<u>“VIDEO-CD”</u>	<u>Q</u>
<u>“SACD”</u>	<u>Q</u>
<u>“MD-AUDIO”</u>	<u>Q</u>
<u>“MD-PICTURE”</u>	<u>Q</u>
<u>“DVD-ROM”</u>	<u>Q</u>
<u>“DVD-VIDEO”</u>	<u>Q</u>
<u>“DVD-R”</u>	<u>Q</u>
<u>“DVD+RW”</u>	<u>Q</u>
<u>“DVD-RW”</u>	<u>Q</u>
<u>“DVD-RAM”</u>	<u>Q</u>
<u>“DVD-AUDIO”</u>	<u>Q</u>
<u>“DAT”</u>	<u>Q</u>
<u>“LD”</u>	<u>Q</u>
<u>“HDD”</u>	<u>Q</u>
<u>“MICRO-MV”</u>	<u>Q</u>
<u>“NETWORK”</u>	<u>Q</u>

<u>"NONE"</u>	<u>Q</u>
<u>"NOT_IMPLEMENTED"</u>	<u>Q</u>
<i>Vendor-defined</i>	<u>Q</u>

Table 1.3: allowedValueList for **CurrentPlayMode**

Value	Req. or Opt.
<u>"NORMAL"</u>	<u>R</u>
<u>"SHUFFLE"</u>	<u>Q</u>
<u>"REPEAT_ONE"</u>	<u>Q</u>
<u>"REPEAT_ALL"</u>	<u>Q</u>
<u>"RANDOM"</u>	<u>Q</u>
<u>"DIRECT_1"</u>	<u>Q</u>
<u>"INTRO"</u>	<u>Q</u>
<i>Vendor-defined</i>	<u>Q</u>

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Table 1.4: allowedValueList for **RecordMediumWriteStatus**

Value	Req. or Opt.
<u>"WRITABLE"</u>	<u>Q</u>
<u>"PROTECTED"</u>	<u>Q</u>
<u>"NOT_WRITABLE"</u>	<u>Q</u>
<u>"UNKNOWN"</u>	<u>Q</u>
<u>"NOT_IMPLEMENTED"</u>	<u>Q</u>

Table 1.5: allowedValueList for **CurrentRecordQualityMode**

Value	Req. or Opt.
<u>"0:EP"</u>	<u>Q</u>
<u>"1:LP"</u>	<u>Q</u>
<u>"2:SP"</u>	<u>Q</u>
<u>"0:BASIC"</u>	<u>Q</u>
<u>"1:MEDIUM"</u>	<u>Q</u>
<u>"2:HIGH"</u>	<u>Q</u>