

INTERNATIONAL
STANDARD

ISO/IEC
29341-26-10

First edition
2017-09

Information technology — UPnP Device Architecture —

Part 26-10: Telephony device control protocol — Level 2 — Call management service

*Technologies de l'information — Architecture de dispositif UPnP —
Partie 26-10: Protocole de contrôle de dispositif de téléphonie —
Niveau 2 — Service de gestion des appels*



Reference number
ISO/IEC 29341-26-10:2017(E)

© ISO/IEC 2017



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

CONTENTS

1	Scope.....	1
2	Normative References	1
3	Terms, definitions, symbols and abbreviated terms.....	2
4	Notations and conventions	5
4.1	Text conventions	5
4.2	Data Types.....	5
4.3	Vendor-defined Extensions	6
5	Service Modeling Definitions	6
5.1	Service Type	6
5.2	<i>CallManagement</i> Service Architecture	6
5.2.1	Managing Call With Multiple Telephony Clients.....	6
5.2.2	User Concept and Multi-User Control.....	10
5.2.3	Call Monopolization.....	11
5.2.4	Selective Information Delivery	16
5.2.5	Handling of Media Streams.....	16
5.2.6	Content Sharing	17
5.3	State Variables	18
5.3.1	State Variable Overview	18
5.3.2	<i>CallInfo</i>	19
5.3.3	<i>TelCPNameList</i>	23
5.3.4	<i>CallBackAvailability</i>	23
5.3.5	<i>PushInfo</i>	23
5.3.6	<i>VoiceMailInfo</i>	24
5.3.7	<i>ParallelCallInfo</i>	25
5.3.8	<i>A ARG TYPE TelephonyServerIdentity</i>	26
5.3.9	<i>A ARG TYPE TelCPName</i>	26
5.3.10	<i>A ARG TYPE TelCPNameList</i>	26
5.3.11	<i>A ARG TYPE Expires</i>	26
5.3.12	<i>A ARG TYPE MediaCapabilityInfo</i>	26
5.3.13	<i>A ARG TYPE CalleeID</i>	28
5.3.14	<i>A ARG TYPE CallPriority</i>	28
5.3.15	<i>A ARG TYPE CallMode</i>	29
5.3.16	<i>A ARG TYPE CallID</i>	29
5.3.17	<i>A ARG TYPE SecretKey</i>	29
5.3.18	<i>A ARG TYPE RejectReason</i>	29
5.3.19	<i>A ARG TYPE TCLIST</i>	29
5.3.20	<i>A ARG TYPE CallInfoList</i>	30
5.3.21	<i>A ARG TYPE CallLogs</i>	31
5.3.22	<i>A ARG TYPE CallBackID</i>	32
5.3.23	<i>A ARG TYPE CallBackInfoList</i>	32
5.3.24	<i>A ARG TYPE PushInfoList</i>	33
5.3.25	<i>A ARG TYPE VoiceMailInfoList</i>	34
5.3.26	<i>A ARG TYPE VoiceMailID</i>	34

ISO/IEC 29341-26-10:2017(E)

5.3.27 <i>A ARG TYPE CallType</i>	34
5.3.28 <i>A ARG TYPE CallerID</i>	35
5.3.29 <i>A ARG TYPE MaxWaitingTime</i>	36
5.4 Eventing and Moderation	36
5.4.1 Eventing of <i>CallInfo</i>	36
5.4.2 Eventing of <i>TelCPNameList</i>	37
5.4.3 Eventing of <i>CallBackAvailability</i>	37
5.4.4 Eventing of <i>PushInfo</i>	37
5.4.5 Eventing of <i>VoiceMailInfo</i>	37
5.4.6 Eventing of <i>ParallelCallInfo</i>	37
5.5 Actions	37
5.5.1 <i>GetTelephonyIdentity()</i>	38
5.5.2 <i>RegisterTelCPName()</i>	39
5.5.3 <i>UnregisterTelCPName()</i>	41
5.5.4 <i>ChangeTelCPName()</i>	41
5.5.5 <i>GetTelCPNameList()</i>	42
5.5.6 <i>GetMediaCapabilities()</i>	43
5.5.7 <i>StartCall()</i>	44
5.5.8 <i>StopCall()</i>	46
5.5.9 <i>AcceptCall()</i>	48
5.5.10 <i>RejectCall()</i>	50
5.5.11 <i>ModifyCall()</i>	52
5.5.12 <i>AcceptModifyCall()</i>	54
5.5.13 <i>StartMediaTransfer()</i>	56
5.5.14 <i>ChangeMonopolizer()</i>	57
5.5.15 <i>InitiateCall()</i>	59
5.5.16 <i>GetCallInfo()</i>	59
5.5.17 <i>GetCallLogs()</i>	61
5.5.18 <i>ClearCallLogs()</i>	61
5.5.19 <i>RegisterCallBack()</i>	62
5.5.20 <i>ClearCallBack()</i>	63
5.5.21 <i>GetCallBackInfo()</i>	63
5.5.22 <i>ChangeCallMode()</i>	64
5.5.23 <i>GetPushInfo()</i>	65
5.5.24 <i>IgnoreCall()</i>	66
5.5.25 <i>GetVoiceMail()</i>	67
5.5.26 <i>DeleteVoiceMail()</i>	68
5.5.27 <i>EnhancedInitiateCall()</i>	69
5.5.28 <i>WaitingForCall()</i>	70
5.5.29 <i>InitiateParallelCall()</i>	71
5.5.30 <i>AcceptParallelCall()</i>	72
5.5.31 Relationships Between Actions	73
5.5.32 Error Code Summary	73
5.6 Service Behavioral Model	73
5.6.1 State Diagram	73
6 XML Service Description	77
Annex A (normative) XML complex type <i>peerType</i>	93

Annex B (normative) XML Schema	97
Annex C (informative) Theory of Operation	102
Annex D (informative) Sequence Examples	125
Annex E (informative) How to send DTMF	295
Annex F (informative) Bibliography	296
 Figure 1 — Relationship among Media Stream, Media Session and Media Session ID	3
Figure 2 — Architecture of the <i>CallManagement</i> Service	6
Figure 3 — Managing a Telephony Call with Multiple Telephony Clients	7
Figure 4 — Starting a Call with Multiple Telephony Clients Using Media Mixing Capability	8
Figure 5 — Modifying a Call with Multiple Telephony Clients Using Media Mixing Capability	8
Figure 6 — Starting a Call With Multiple Telephony Clients Using Media Sharing Capability	9
Figure 7 — Modifying a Call With Multiple Telephony Clients Using Media Sharing Capability	10
Figure 8 — Example for Multi-User Control Concept	11
Figure 9 — PHONE-based Call Monopolization	13
Figure 10 — Incoming Call Handling	15
Figure 11 — Call State Diagram for a Caller	74
Figure 12 — Call State Diagram for a Callee	75
Figure 13 — Call State Diagram to request the modification of a Call	76
Figure 14 — Call State Diagram to accept the modification of a Call	77
Figure C.1 — Flow basics for creating an outgoing Call (TC-Based Media Handling)	103
Figure C.2 — Flow basics for accepting an incoming Call (TC-Based Media Handling)	105
Figure C.3 — Flow basics for modifying an ongoing Call (TC-Based Media Handling)	107
Figure C.4 — Flow basics for creating an outgoing Call (TS-Based Media Handling)	109
Figure C.5 — Flow basics for accepting an incoming Call (TS-Based Media Handling)	111
Figure C.6 — Flow basics for modifying an ongoing Call (TS-Based Media Handling)	113
Figure C.7 — Flow basics for changing CallMode from Non-Monopolize to Monopolize	114
Figure C.8 — Flow basics for changing CallMode from Monopolize to Non-Monopolize	115
Figure C.9 — Flow basics for Early Media	116
Figure C.10 — Example flow of TS-Based Content Sharing by initiating a Call	118
Figure C.11 — Example flow of TS-Based Content Sharing in an existing Call	119
Figure C.12 — Example flow of TC-Based Content Sharing by Updating a Call	120
Figure C.13 — Example flow of TC-Based Content Sharing without Updating a Call	121
Figure C.14 — Example flow of TC-Based Content Sharing by initiating a Call	122
Figure C.15 — Architecture for Parallel Call	123
Figure C.16 — Flow basics for Establishing a Parallel Call	124
Figure D.1 — Register TelCPName	125
Figure D.2 — Register TelCPName (But the specified TelCPName is already in use.)	126
Figure D.3 — Keep using the same TelCPName	127

ISO/IEC 29341-26-10:2017(E)

Figure D.4 — Keep using the same TelCPName (But the specified Secret Key is invalid.)	128
Figure D.5 — Change TelCPName	129
Figure D.6 — Change TelCPName (But the specified Secret Key is invalid.)	130
Figure D.7 — Change TelCPName (But the specified TelCPName is already in use.)	131
Figure D.8 — Unregister TelCPName	132
Figure D.9 — Unregister TelCPName (But the specified TelCPName does not exist.)	133
Figure D.10 — Get existing TelCPNames	134
Figure D.11 — Get existing TelCPNames (But no TelCP exists)	135
Figure D.12 — Create a Call	137
Figure D.13 — Terminate a Call	153
Figure D.14 — Reject an incoming Call	158
Figure D.15 — Cancel an outgoing Call	161
Figure D.16 — Cancel an outgoing Call (But the specified CallID does not exist.)	164
Figure D.17 — Cancel an outgoing Call (But the StopCall() action is invoked at invalid timing.)	165
Figure D.18 — Get MediaSessionInfo and CallInfo during the Call	166
Figure D.19 — Create an outgoing Call using multiple TCs (Case 1)	169
Figure D.20 — Create an outgoing Call using multiple TCs (Case 2)	183
Figure D.21 — Accept an incoming Call using multiple TCs (Case 1)	188
Figure D.22 — Accept an incoming Call using multiple TCs (Case 2)	201
Figure D.23 — Add TC during a Call (Create a modification request)	205
Figure D.24 — Add TC during a Call (Accept a modification request)	215
Figure D.25 — Remove TC during a Call (Create a modification request)	224
Figure D.26 — Remove TC during a Call (Accept a modification request)	230
Figure D.27 — Change TC during a Call	237
Figure D.28 — Modify Media Session during a Call	246
Figure D.29 — Initiate a Call	254
Figure D.30 — Create an outgoing Call (Monopolization Mode Call(PHONE-TelCP))	257
Figure D.31 — Terminate a Call (But the specified TelCP is not authorized.)	272
Figure D.32 — Cancel an outgoing Call (But the specified TelCP is not authorized.)	273
Figure D.33 — Change TelCP which Monopolize the Call	274
Figure D.34 — Create a Call with TC-Based and TS-Based Media Handlings	277
 Table 1 — State Variables	18
Table 2 — Allowed values for type	20
Table 3 — Alllowed values for callStatus	20
Table 4 — Allowed values for reason and the corresponding values of the Call Status	21
Table 5 — Allowed values for priority	22
Table 6 — Allowed values for format	22
Table 7 — Alllowed values for priority	24
Table 8 — Alllowed values for informationType	26

Table 9 — allowedValueList for the <i>A_ARG_TYPE_CallPriority</i> state variable	28
Table 10 — allowedValueList for the <i>A_ARG_TYPE_CallMode</i> state variable	29
Table 11 — Allowed values for <i>videoQuality</i>	35
Table 12 — Allowed values for <i>audioQuality</i>	35
Table 13 — Event Moderation	36
Table 14 — Actions	37
Table 15 — Arguments for <i>GetTelephonyIdentity()</i>	38
Table 16 — Error Codes for <i>GetTelephonyIdentity()</i>	39
Table 17 — Arguments for <i>RegisterTelCPName()</i>	39
Table 18 — Error Codes for <i>RegisterTelCPName()</i>	40
Table 19 — Arguments for <i>UnregisterTelCPName()</i>	41
Table 20 — Error Codes for <i>UnregisterTelCPName()</i>	41
Table 21 — Arguments for <i>ChangeTelCPName()</i>	41
Table 22 — Error Codes for <i>ChangeTelCPName()</i>	42
Table 23 — Arguments for <i>GetTelCPNameList()</i>	43
Table 24 — Error Codes for <i>GetTelCPNameList()</i>	43
Table 25 — Arguments for <i>GetMediaCapabilities()</i>	43
Table 26 — Error Codes for <i>GetMediaCapabilities()</i>	44
Table 27 — Arguments for <i>StartCall()</i>	44
Table 28 — Error Codes for <i>StartCall()</i>	46
Table 29 — Arguments for <i>StopCall()</i>	46
Table 30 — Error Codes for <i>StopCall()</i>	48
Table 31 — Arguments for <i>AcceptCall()</i>	48
Table 32 — Error Codes for <i>AcceptCall()</i>	50
Table 33 — Arguments for <i>RejectCall()</i>	50
Table 34 — Error Codes for <i>RejectCall()</i>	52
Table 35 — Arguments for <i>ModifyCall()</i>	52
Table 36 — Error Codes for <i>ModifyCall()</i>	53
Table 37 — Arguments for <i>AcceptModifyCall()</i>	54
Table 38 — Error Codes for <i>AcceptModifyCall()</i>	55
Table 39 — Arguments for <i>StartMediaTransfer()</i>	56
Table 40 — Error Codes for <i>StartMediaTransfer()</i>	57
Table 41 — Arguments for <i>ChangeMonopolizer()</i>	57
Table 42 — Error Codes for <i>ChangeMonopolizer()</i>	58
Table 43 — Arguments for <i>InitiateCall()</i>	59
Table 44 — Error Codes for <i>InitiateCall()</i>	59
Table 45 — Arguments for <i>GetCallInfo()</i>	59
Table 46 — Error Codes for <i>GetCallInfo()</i>	60
Table 47 — Arguments for <i>GetCallLogs()</i>	61
Table 48 — Error Codes for <i>GetCallLogs()</i>	61
Table 49 — Error Codes for <i>ClearCallLogs()</i>	62
Table 50 — Arguments for <i>RegisterCallBack()</i>	62

ISO/IEC 29341-26-10:2017(E)

Table 51 — Error Codes for <i>RegisterCallBack()</i>	63
Table 52 — Arguments for <i>ClearCallBack()</i>	63
Table 53 — Error Codes for <i>ClearCallBack()</i>	63
Table 54 — Arguments for <i>GetCallBackInfo()</i>	63
Table 55 — Error Codes for <i>GetCallBackInfo()</i>	64
Table 56 — Arguments for <i>ChangeCallMode()</i>	64
Table 57 — Error Codes for <i>ChangeCallMode()</i>	65
Table 58 — Arguments for <i>GetPushInfo()</i>	65
Table 59 — Error Codes for <i>GetPushInfo()</i>	66
Table 60 — Arguments for <i>IgnoreCall()</i>	66
Table 61 — Error Codes for <i>IgnoreCall()</i>	67
Table 62 — Arguments for <i>GetVoiceMail()</i>	67
Table 63 — Error Codes for <i>GetVoiceMail()</i>	68
Table 64 — Arguments for <i>DeleteVoiceMail()</i>	68
Table 65 — Error Codes for <i>DeleteVoiceMail()</i>	69
Table 66 — Arguments for <i>EnhancedInitiateCall()</i>	69
Table 67 — Error Codes for <i>EnhacedInitiateCall()</i>	70
Table 68 — Arguments for <i>WaitingForCall()</i>	70
Table 69 — Error Codes for <i>WaitingForCall()</i>	71
Table 70 — Arguments for <i>InitiateParallelCall()</i>	71
Table 71 — Error Codes for <i>IntiateParallelcall()</i>	72
Table 72 — Arguments for <i>AcceptParallelCall()</i>	72
Table 73 — Error Codes for <i>AcceptParallelCall()</i>	72
Table 74 — Error Code Summary.....	73

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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>).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of Standard, 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](#)

ISO/IEC 29341-26-10 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](#).

Introduction

ISO and IEC draw attention to the fact that it is claimed that compliance with this document may involve the use of patents as indicated below.

ISO and IEC take no position concerning the evidence, validity and scope of these patent rights. The holders of these patent rights have assured ISO and IEC that they are willing to negotiate licenses under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with ISO and IEC.

Intel Corporation has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Intel Corporation
Standards Licensing Department
5200 NE Elam Young Parkway
MS: JFS-98
USA – Hillsboro, Oregon 97124

Microsoft Corporation has informed IEC and ISO that it has patent applications or granted patents as listed below:

6101499 / US; 6687755 / US; 6910068 / US; 7130895 / US; 6725281 / US; 7089307 / US;
7069312 / US; 10/783 524 /US

Information may be obtained from:

Microsoft Corporation
One Microsoft Way
USA – Redmond WA 98052

Philips International B.V. has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Philips International B.V. – IP&S
High Tech campus, building 44 3A21
NL – 5656 Eindhoven

NXP B.V. (NL) has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

NXP B.V. (NL)
High Tech campus 60
NL – 5656 AG Eindhoven

Matsushita Electric Industrial Co. Ltd. has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Matsushita Electric Industrial Co. Ltd.
1-3-7 Shiromi, Chuoh-ku
JP – Osaka 540-6139

Hewlett Packard Company has informed IEC and ISO that it has patent applications or granted patents as listed below:

5 956 487 / US; 6 170 007 / US; 6 139 177 / US; 6 529 936 / US; 6 470 339 / US; 6 571 388 / US; 6 205 466 / US

Information may be obtained from:

Hewlett Packard Company
1501 Page Mill Road
USA – Palo Alto, CA 94304

Samsung Electronics Co. Ltd. has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Digital Media Business, Samsung Electronics Co. Ltd.
416 Maetan-3 Dong, Yeongtang-Gu,
KR – Suwon City 443-742

Huawei Technologies Co., Ltd. has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Huawei Technologies Co., Ltd.
Administration Building, Bantian Longgang District
Shenzhen – China 518129

Qualcomm Incorporated has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Qualcomm Incorporated
5775 Morehouse Drive
San Diego, CA – USA 92121

Telecom Italia S.p.A. has informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Telecom Italia S.p.A.
Via Reiss Romoli, 274
Turin - Italy 10148

Cisco Systems informed IEC and ISO that it has patent applications or granted patents.

Information may be obtained from:

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA – USA 95134

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 29341-26-10:2017(E)

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 WAN CableLinkConfig:1 Service	ISO/IEC 29341-8-14
UPnP WAN CommonInterfaceConfig:1 Service	ISO/IEC 29341-8-15
UPnP WANDSLLinkConfig:1 Service	ISO/IEC 29341-8-16
UPnP WAN EthernetLinkConfig:1 Service	ISO/IEC 29341-8-17
UPnP WAN IP Connection:1 Service	ISO/IEC 29341-8-18
UPnP WAN POTS LinkConfig:1 Service	ISO/IEC 29341-8-19
UPnP LAN Device:1 Device	ISO/IEC 29341-8-2
UPnP WAN PPP Connection:1 Service	ISO/IEC 29341-8-20
UPnP WLAN Configuration:1 Service	ISO/IEC 29341-8-21
UPnP WAN Device:1 Device	ISO/IEC 29341-8-3
UPnP WAN Connection Device:1 Device	ISO/IEC 29341-8-4
UPnP WLAN Access Point Device:1 Device	ISO/IEC 29341-8-5
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP External Activity:1 Service	ISO/IEC 29341-9-10
UPnP Feeder:1.0 Service	ISO/IEC 29341-9-11
UPnP Print Basic: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 Qos Device:1 Service	ISO/IEC 29341-10-10
UPnP Qos Manager:1 Service	ISO/IEC 29341-10-11
UPnP Qos Policy Holder:1 Service	ISO/IEC 29341-10-12
UPnP QoS Architecture:2	ISO/IEC 29341-11-1
UPnP Qos Device:2 Service	ISO/IEC 29341-11-10
UPnP Qos Manager:2 Service	ISO/IEC 29341-11-11
UPnP Qos Policy Holder:2 Service	ISO/IEC 29341-11-12
UPnP QOS v2 Schema Files	ISO/IEC 29341-11-2
UPnP Remote UI Client Device:1 Device	ISO/IEC 29341-12-1
UPnP Remote UI Client:1 Service	ISO/IEC 29341-12-10
UPnP Remote UI Server:1 Service	ISO/IEC 29341-12-11
UPnP Remote UI Server Device:1 Device	ISO/IEC 29341-12-2
UPnP Device Security:1 Service	ISO/IEC 29341-13-10
UPnP Security Console:1 Service	ISO/IEC 29341-13-11
UPnP Content Directory:3 Service	ISO/IEC 29341-14-12:2011
UPnP Media Server:3 Device	ISO/IEC 29341-14-3:2011
UPnP Content Sync:1	ISO/IEC 29341-15-10:2011

ISO/IEC 29341-26-10:2017(E)

UPnP Low Power Architecture:1	ISO/IEC 29341-16-1:2011
UPnP LowPowerProxy:1 Service	ISO/IEC 29341-16-10:2011
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

ISO/IEC 29341-26-10:2017(E)

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 service definition is compliant with [1]. It defines a service type referred to herein as the *CallManagement* service.

The *CallManagement* service is a UPnP service that allows control points to use the telephony features(e.g., voice call, video call, and data transfer etc.) provided by a Telephony Server (TS).

The *CallManagement* service enables the following features to a Telephony Control Point (TelCP):

- start an outgoing call
- accept an incoming call
- modify the capability of an existing call (e.g., changing from a voice call to a video call)
- terminate a call
- preview call logs
- register a call back and check the availability of the registered call back

To realize these features, the *CallManagement* service manages the connectivity of calls and media streams.

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] – Data elements and interchange formats – Information interchange -- Representation of dates and times, International Standards Organization, December 21, 2000. Available at: [ISO 8601:2000](http://www.iso.org/iso/iso8601).

[3] – IETF RFC 2396, Uniform Resource Identifiers (URI): Generic Syntax, T. Berners-Lee, MIT/LCS, R. Fielding, U.C. Irvine, L. Masinter, Xerox Corporation, 1998. Available at: <http://www.ietf.org/rfc/rfc2396.txt>.

[4] – IETF RFC 3261, SIP: Session Initiation Protocol, J. Rosenberg, dynamicsoft, H. Schulzrinne, Columbia U., G. Camarillo, Ericsson, A. Johnston, WorldCom, J. Peterson, Neustar, R. Sparks, dynamicsoft, M. Handley, ICIR, E. Schooler, AT&T, 2002. Available at: <http://www.ietf.org/rfc/rfc3261.txt>.

[5] – IETF RFC 3339, Date and Time on the Internet: Timestamps, G. Klyne, Clearswift Corporation, C. Newman, Sun Microsystems, July 2002. Available at: <http://www.ietf.org/rfc/rfc3339.txt>.

[6] – IETF RFC 3966, The tel URI for Telephone Numbers , H. Schulzrinne, Columbia University, 2004. Available at: <http://www.ietf.org/rfc/rfc3966.txt>.

[7] – IETF RFC 4566, SDP: Session Description Protocol, M. Handley, UCL, V. Jacobson, Packet Design, C. Perkins, University of Glasgow, July 2006. Available at: <http://www.ietf.org/rfc/rfc4566.txt>.

ISO/IEC 29341-26-10:2017(E)

[8] – 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>.

[9] – XML Schema Part 2: Data Types, Second Edition, Paul V. Biron, Ashok Malhotra, W3C Recommendation, 28 October 2004. Available at: <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028>.

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

[11] – IETF RFC 2046, Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types, N. Freed, Innosft, N. Borenstein, First Virtual, November 1996. Available at: <http://www.ietf.org/rfc/rfc2046.txt>.

[12] – *ConnectionManager:1*, UPnP Forum, June 25, 2002. Available at: <http://www.upnp.org/specs/av/UPnP-av-ConnectionManager-v1-Service-20020625.pdf>. Latest version available at: <http://www.upnp.org/specs/av/UPnP-av-ConnectionManager-Service.pdf>.