



BSI Standards Publication

Information technology — UPnP Device Architecture

Part 26-11: Telephony device control protocol —
Level 2 — Media management service

National foreword

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**Information technology — UPnP
Device Architecture —**

**Part 26-11:
Telephony device control protocol —
Level 2 — Media management service**

Technologies de l'information — Architecture de dispositif UPnP —

*Partie 26-11: Protocole de contrôle de dispositif de téléphonie —
Niveau 2 — Service de gestion des médias*





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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.

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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 29341-26-11 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

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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
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

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

The MediaManagement service enables the feature to set-up a media session on a Telephony Client (TC), under the control of a Telephony Control Point (TelCP). This service provides the following functions:

- Set up a media session to send and/or receive media streams between a TC and a TS. To set up a media session, The MediaManagement service provides an interface for a TelCP to negotiate the media capabilities (e.g., codec types, IP address, port number etc.) between a TC and a TS. This ensures a TelCP to select a common set of the media capabilities to be used to send and/or receive media streams between a TS and a TC. After the media session is established, the TC starts sending and/or receiving media streams based on the media capabilities negotiated between the TC and the TS.
- The mechanism to modify the media capabilities of an existing media session. For instance, if a media session is created for sending and receiving an audio media stream, it is possible to modify the media session for sending and receiving a video media stream.
- The mechanism to terminate a media session.

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/8601.html).

[3] – IETF RFC 2119, Key words for use in RFCs to Indicate Requirement Levels, S. Bradner, 1997. Available at: <http://www.faqs.org/rfcs/rfc2119.html>.

[4] – 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>.

[5] – 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>.

[6] – 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>.

[7] – 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>.

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

[9] – *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>.

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms and definitions given in [1] and the following apply.

3.1 Provisioning terms

3.1.1

conditionally allowed

CA

The definition or behavior depends on a condition. If the specified condition is met, then the definition or behavior is allowed, otherwise it is not allowed.

3.1.2

conditionally required

CR

The definition or behavior depends on a condition. If the specified condition is met, then the definition or behavior is required, otherwise it is not allowed.

3.1.3

not allowed

The definition or behavior is prohibited by this specification. Opposite of required.

3.2 Symbols

3.2.1

::

signifies a hierarchical parent-child (parent::child) relationship between the two objects separated by the double colon. This delimiter is used in multiple contexts, for example: Service::Action(), Action()::Argument, parentProperty::childProperty.

3.3 Terms

3.3.1

Media Stream

a flow of media (e.g., audio, video, and data etc.) which is sent and/or received between two parties.

3.3.2

Media Session

a series of interactions for flow of media among the parties.

3.3.3**Media Session ID**

unique identifier for a Media Session.

Figure 1 shows the relationship among Media Streams, Media Session and Media Session ID. A Media Session can include multiple Media Streams.

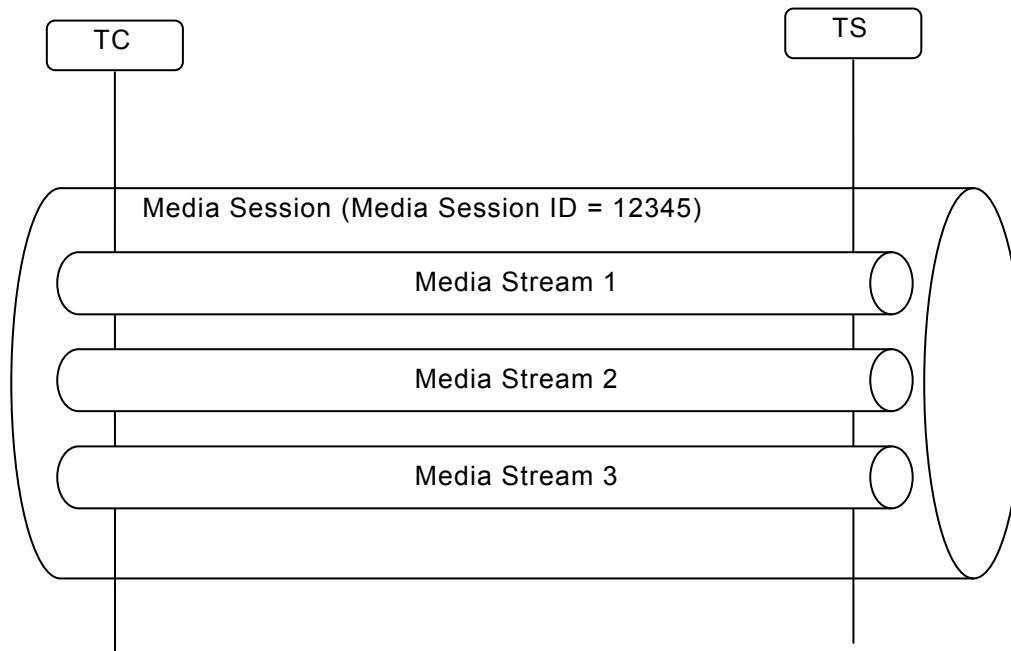


Figure 1 — Relationship among Media Stream, Media Session and Media Session ID

3.3.4**Media Capability**

Media Stream's attributes which are negotiated before sending/receiving a Media Stream in a Media Session. Media Stream's attributes include a codec type, a codec parameter, IP address, and a port number etc. [5] defines one of the methods to describe Media Capability. And the Media Capabilities represent attributes for a set of Media Streams.

3.4 Abbreviated terms**3.4.1****ID**

Identifier

3.4.2**SDP**

Session Description Protocol

3.4.3**TC**

Telephony Client

3.4.4**TelCP**

Telephony Control Point

3.4.5

TS

Telephony Server

4 Notations and conventions

4.1 Text conventions

- Strings that are to be taken literally are enclosed in “double quotes”.
- Words that are emphasized are printed in *italic*.
- Keywords that are defined by the UPnP Working Committee are printed using the forum character style.
- Keywords that are defined in [1] are printed using the arch character style.

4.2 Data Types

This document uses data type definitions from two different sources. Data types from [1] are used to define state variable and action argument data types. The XML Schema data types [7] are used to define property data types.

For Boolean data types defined in [1], it is strongly recommended to use the value “0” for false, and the value “1” for true. The values “true”, “yes”, “false”, or “no” may also be used but are not recommended. The values “yes” and “no” are deprecated and shall not be sent out by devices but shall be accepted on input.

For XML Schema defined Boolean data types, it is strongly recommended to use the value “0” for false, and the value “1” for true. The values “true”, “yes”, “false”, or “no” may also be used but are not recommended. The values “yes” and “no” are deprecated and shall not be sent out by devices but shall be accepted on input.

4.3 Vendor-defined Extensions

Whenever vendors create additional vendor-defined state variables, actions or properties, their assigned names and XML representation shall follow the naming conventions and XML rules as specified in [1], 2.5.

5 Service Modeling Definitions

5.1 Service Type

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

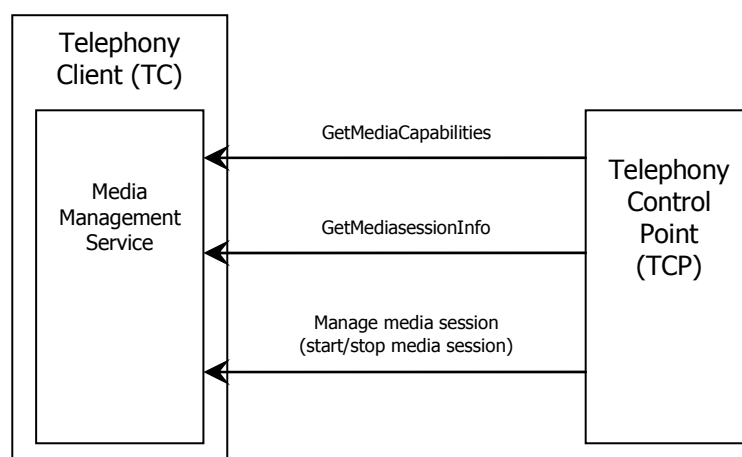
urn:schemas-upnp-org:service:MediaManagement:2

MediaManagement service is used in this document to refer to this service type.

5.2 MediaManagement Service Architecture

The MediaManagement service provides the feature to set-up Media Session on a Telephony Client (TC), under the control of a Telephony Control Point (TelCP).

The architecture for the MediaManagement service is shown in Figure 2.

Figure 2 — Architecture of the **MediaManagement** Service

5.3 State Variables

Note: For first-time reader, it may be more insightful to read the theory of operations first and then the action definitions before reading the state variable definitions.

5.3.1 State Variable Overview

Table 1 — State Variables

Variable Name	R/A ^a	Data Type	Reference
<u>MediaSessionInfo</u>	<u>R</u>	<u>string</u> (XML fragment)	See 5.3.2
<u>A_ARG_TYPE_MediaSessionID</u>	<u>R</u>	<u>string</u>	See 5.3.3
<u>A_ARG_TYPE_MediaCapabilityInfo</u>	<u>R</u>	<u>string</u> (XML fragment)	See 5.3.4
<u>A_ARG_TYPE_MediaSessionInfoList</u>	<u>R</u>	<u>string</u> (XML fragment)	See 5.3.5
^a <u>R</u> = required, <u>A</u> = allowed, <u>CR</u> = conditionally required, <u>CA</u> = conditionally allowed, <u>X</u> = Non-standard, add <u>-D</u> when deprecated (e.g., <u>R-D</u> , <u>A-D</u>).			

5.3.2 MediaSessionInfo

This evented state variable notifies information about an existing Media Session. It contains Media Session ID, Media Session status, Media Capability format, and Media Capabilities etc. This state variable is evented when status of the Media Session changes.

5.3.2.1 XML Schema Definition

This is a string containing an XML fragment. The XML fragment in this argument shall validate against the XML schema for MediaSessionInfo in the XML namespace "urn:schemas-upnp-org:phone:mms" which is located at "http://www.upnp.org/schemas/phone/mms-v2.xsd".

5.3.2.2 Description of fields in the MediaSessionInfo structure

```

<?xml version="1.0" encoding="utf-8"?>
<mms:mediaSessionInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:mms
  http://www.upnp.org/schemas/phone/mms-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mms="urn:schemas-upnp-org:phone:mms">
  
```

```
<mediaSessionID>unique Media Session ID</mediaSessionID>
<mediaSessionStatus reason="reason why status is changed">
  status of Media Session
</mediaSessionStatus>
<mediaCapability format="format of Media Capability">
  Media capability
</mediaCapability>
</mms:mediaSessionInfo>
```

<xml>

Required. Case sensitive.

<mediaSessionInfo>

Required. Shall include a namespace declaration for the [MediaManagement](#) service Schema ("urn:schemas-upnp-org:phone:mms"). It may have the following elements:

<mediaSessionID>

Required. xsd:string, Indicates the ID of the Media Session which is unique in the [MediaManagement](#) service.

<mediaSessionStatus>

Required. xsd:string, Indicates the status of the Media Session and can have the following values as described in the Table 2. And this element has an attribute which name is "reason".

Table 2 — Allowed values for mediaSessionStatus

Value	Description
" Started "	Indicates the status of the Media Session when Media Streams are being sent and/or received in the Media Session.
" Stopped "	Indicates the status of the Media Session when the Media Streams stop flowing in the Media Session.

reason

Allowed. xsd:string, Indicates the reason why status of a Media Session is changed. Table 3 shows the allowed values of this attribute and the corresponding status of Media Session:

Table 3 — Allowed values for reason and the corresponding status of Media Session

Value	Media Session Status	Description
" Modified "	" Started "	Indicates the status of the Media Session after the invocation of the ModifyMediaSession() action succeeds and Media Streams are being sent and/or received in the Media Session according to the new Media Capabilities.
" ModifyFailed "	" Started "	Indicates the status of the Media Session after the invocation of the ModifyMediaSession() action succeeds and the MediaManagement service fails to negotiate the Media Capabilities with the WAN side. In this case, Media Streams are being sent and/or received without changing their Media Capabilities.
" Error "	" Stopped "	Indicates the status of the Media Session when the MediaManagement service can not send and/or receive a Media Stream.
TBD	TBD	(Specified by UPnP vendors.)

<mediaCapability>

Required. Defines the selected Media Capabilities as specified by the "format" attribute.

format

Required. xsd:string, Indicates the format of Media Capabilities. Allowed values of this attribute are as follows:

Table 4 — Allowed values for format

Value	Description
SDP	Media Capability is described by SDP in [5].
TBD	(Specified by UPnP vendors.)

5.3.3 **A ARG TYPE MediaSessionID**

This state variable uniquely identifies a Media Session. The [MediaManagement](#) service assigns a unique ID for the Media Session when a TelCP invokes the [StartMediaSession\(\)](#) action.

5.3.4 **A ARG TYPE MediaCapabilityInfo**

This state variable defines an XML document that contains the Media Capabilities of a Media Session. This state variable is used as an input argument of the [StartMediaSession\(\)](#) and [ModifyMediaSession\(\)](#) actions.

5.3.4.1 XML Schema Definition

This is a string containing an XML fragment. The XML fragment in this argument shall validate against the XML schema for [MediaCapabilityInfo](#) in the XML namespace "urn:schemas-upnp-org:phone:mms" which is located at "http://www.upnp.org/schemas/phone/mms-v2.xsd".

5.3.4.2 Description of fields in the [MediaCapabilityInfo](#) structure

```
<?xml version="1.0" encoding="utf-8"?>
<mms:mediaCapabilityInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:mms
  http://www.upnp.org/schemas/phone/mms-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:cams="urn:schemas-upnp-org:phone:mms">
  <mediaCapability format="format of Media Capability">
    Media capability
  </mediaCapability>
  <contentSharingCapability>
    <protocolInfo>metadata information of the content</protocolInfo>
    <URI>URI of the content</URI>
    <sharingType>transfer or streaming</sharingType>
  </contentSharingCapability>
</mms:mediaCapabilityInfo>
```

<xml>

Required. Case sensitive.

<mediaCapabilityInfo>

Required. Shall include a namespace declaration for the [MediaManagement](#) service Schema ("urn:schemas-upnp-org:phone:mms"). This namespace defines the following elements and attributes:

<mediaCapability>

Required. Indicates the Media Capability of a Media Session using the format which is specified by the "format" attribute.

format

Required. xsd:string, indicates the format of Media Capability. Values of this attribute are shown in Table 4.

<contentSharingCapability>

Allowed. Used by a TC to indicate whether it supports the TC-Based Content Sharing mechanism defined in [8] by the [SupportedMediaCapabilityInfo](#) output argument of the [GetMediaCapabilities\(\)](#) action. And used by a TelCP to prepare for a Content Sharing session using the [GetMediaCapabilities\(\)](#) action, and trigger the Content Sharing process using the [StartMediaSession\(\)](#) action or the [ModifyMediaSession\(\)](#) action.

<protocolInfo>

Allowed. xsd:string, one or more instances of this element are used by the TC to indicate its Media Capabilities (e.g., transport protocols, codecs etc.) for the TC-Based Content Sharing mechanism. A TelCP uses this element to provide the metadata information of the content to be shared. The format of this string element follows the UPnP AV protocolInfo concept as defined in subclause 2.5.2 of [9].

<URI>

Allowed. xsd:anyURI, used by a TelCP to provide the URI of the content to be shared, used by the TC to locate and retrieve the content.

<sharingType>

Allowed. xsd:string, used by a TelCP to indicate to the TC if the content is sent as a file or streamed to the Remote Party via a TS when invoking the [GetMediaCapabilities\(\)](#), [StartMediaSession\(\)](#) or [ModifyMediaSession\(\)](#) action. Values for this element are "transfer" and "streaming". This element is only a hint to the TC, the TC implementation may anyway choose its supported mechanism.

5.3.5 **A ARG TYPE MediaSessionInfoList**

This state variable contains a list of ongoing Media Sessions and their information as defined in the MediaSessionInfo structure.

5.3.5.1 XML Schema Definition

This is a string containing an XML fragment. The XML fragment in this argument shall validate against the XML schema for [MediaSessionInfoList](#) in the XML namespace "urn:schemas-upnp-org:phone:mms" which is located at "http://www.upnp.org/schemas/phone/mms-v2.xsd".

5.3.5.2 Description of fields in the [MediaSessionInfoList](#) structure

```
<?xml version="1.0" encoding="utf-8"?>
<mms:mediaSessionInfoList
  xsi:schemaLocation="urn:schemas-upnp-org:phone:mms
  http://www.upnp.org/schemas/phone/mms-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mms="urn:schemas-upnp-org:phone:mms">
  <mediaSessionInfo>
    <mediaSessionID>unique Media Session ID</mediaSessionID>
    <mediaSessionStatus reason="reason why status is changed">
      status of Media Session
    </mediaSessionStatus>
    <mediaCapability format="format of Media Capability">
      Media capability
    </mediaCapability>
  </mediaSessionInfo>
  <!-- Any other mediaSessionInfo (if any) go here.-->
</mms:mediaSessionInfo>
```

<xml>

Required. Case sensitive.

<mediaSessionInfoList>

Required. Shall include a namespace declaration for the [MediaManagement](#) service Schema ("urn:schemas-upnp-org:phone:mms"). Includes information about Media Sessions. This element includes one or more <MediaSessionInfo> elements as described in the [MediaSessionInfo](#) structure.

5.4 Eventing and Moderation

Table 5 — Event Moderation

Variable Name	Evented	Moderated Event	Max Event Rate ^a (seconds)	Logical Combination	Min Delta per Event ^b
<u>MediaSessionInfo</u>	<u>YES</u>	<u>No</u>			
<u>A_ARG_TYPE_MediaSessionID</u>	<u>No</u>	<u>No</u>			
<u>A_ARG_TYPE_MediaCapabilityInfo</u>	<u>No</u>	<u>No</u>			
<u>A_ARG_TYPE_MediaSessionInfoList</u>	<u>No</u>	<u>No</u>			
^a Determined by N, where Rate = (Event)/(N secs). ^b (N) * (allowedValueRange Step).					

5.4.1 Eventing of MediaSessionInfo

This state variable is evented when the status of the Media Session changes.

5.5 Actions

Table 6 — Actions

Name	Device R/A ^a	Control Point R/A ^b
<u>GetMediaCapabilities()</u>	<u>R</u>	<u>R</u>
<u>StartMediaSession()</u>	<u>R</u>	<u>R</u>
<u>StopMediaSession()</u>	<u>R</u>	<u>R</u>
<u>ModifyMediaSession()</u>	<u>A</u>	<u>A</u>
<u>GetMediaSessionInfo()</u>	<u>R</u>	<u>R</u>
^a For a device this column indicates whether the action shall be implemented or not, where <u>R</u> = required, <u>A</u> = allowed, <u>CR</u> = conditionally required, <u>CA</u> = conditionally allowed, <u>X</u> = Non-standard, add <u>-D</u> when deprecated (e.g., <u>R-D</u> , <u>A-D</u>). ^b For a control point this column indicates whether a control point shall be capable of invoking this action, where <u>R</u> = required, <u>A</u> = allowed, <u>CR</u> = conditionally required, <u>CA</u> = conditionally allowed, <u>X</u> = Non-standard, add <u>-D</u> when deprecated (e.g., <u>R-D</u> , <u>A-D</u>).		

5.5.1 GetMediaCapabilities()

This action returns a set of Media Capabilities supported by the MediaManagement service. If the input argument TSMediaCapabilityInfo contains the empty string(""), this action returns all the Media Capabilities which the MediaManagement service supports. If the input argument TSMediaCapabilityInfo contains a valid value, this action returns the Media Capabilities supported by the MediaManagement service, which will be a subset of TSMediaCapabilityInfo.

5.5.1.1 Arguments

Table 7 — Arguments for GetMediaCapabilities()

Argument	Direction	relatedStateVariable
<u>TSMediaCapabilityInfo</u>	<u>IN</u>	<u>A_ARG_TYPE_MediaCapabilityInfo</u>
<u>SupportedMediaCapabilityInfo</u>	<u>OUT</u>	<u>A_ARG_TYPE_MediaCapabilityInfo</u>

5.5.1.2 Argument Descriptions

The input argument [TSMediaCapabilityInfo](#) contains either the empty string("") or the Media Capabilities that a TelCP wants to use for a Media Session. For instance, the input argument [TSMediaCapabilityInfo](#) can contain the output argument of the [CaMS::GetMediaCapabilities\(\)](#) action.

The output argument [SupportedMediaCapabilityInfo](#) contains the Media Capabilities of the [MediaManagement](#) service. If the input argument [TSMediaCapabilityInfo](#) contains the empty string(""), this action returns all the Media Capabilities which the [MediaManagement](#) service supports. If the input argument [TSMediaCapabilityInfo](#) contains a valid value, this action returns the Media Capabilities supported by the [MediaManagement](#) service, which will be a subset of [TSMediaCapabilityInfo](#).

5.5.1.3 Service Requirements

This service shall return the Media Capabilities of the [MediaManagement](#) service regardless of its status.

When receiving this action with the value of the [TSMediaCapabilityInfo](#) input argument as the empty string(""), and if this service supports the TC-Based Content Sharing mechanism, the output argument [SupportedMediaCapabilityInfo](#) shall contain the <contentSharingCapability> element to indicate the Media Capabilities of this service for the TC-Based Content Sharing mechanism.

When receiving this action with the <contentSharingCapability> element in the [TSMediaCapabilityInfo](#) input argument, this service shall check the content metadata information and return the SDP formatted parameters in the <mediaCapability> element of the output argument [SupportedMediaCapabilityInfo](#). The output argument indicates the SDP parameters will be used for sending the content media to the TS.

5.5.1.4 Control Point Requirements When Calling The Action

When setting up a TC-Based Content Sharing session using this action, A TelCP shall include the <contentSharingCapability> element to provide the metadata information of the content, and the <mediaCapability> element to provide the TS Media Capabilities in the [TSMediaCapabilityInfo](#) input argument.

5.5.1.5 Dependency on Device State

None.

5.5.1.6 Effect on Device State

None.

5.5.1.7 Errors

Table 8 — Error Codes for [GetMediaCapabilities\(\)](#)

ErrorCode	errorDescription	Description
400-499	TBD	See Control clause in [1].
500-599	TBD	See Control clause in [1].
600-699	TBD	See Control clause in [1].

5.5.2 StartMediaSession()

This action allows a TelCP to create and start a Media Session. The Media Session is created using the Media Capabilities specified in the input argument TSMediaCapabilityInfo. If succeeds, the MediaManagement service assigns a unique ID for the newly created Media Session. The MediaManagement service returns the ID of the Media Session and the capabilities of the Media Session to be used in the output arguments MediaSessionID and TCMediaCapabilityInfo respectively. Once the Media Session is created, the MediaManagement service starts sending and/or receiving Media Streams.

5.5.2.1 Arguments

Table 9 — Arguments for StartMediaSession()

Argument	Direction	relatedStateVariable
<u>TSMediaCapabilityInfo</u>	<u>IN</u>	<u>A_ARG_TYPE_MediaCapabilityInfo</u>
<u>MediaSessionID</u>	<u>OUT</u>	<u>A_ARG_TYPE_MediaSessionID</u>
<u>TCMediaCapabilityInfo</u>	<u>OUT</u>	<u>A_ARG_TYPE_MediaCapabilityInfo</u>

5.5.2.2 Argument Descriptions

The input argument TSMediaCapabilityInfo contains the Media Capabilities (e.g., codecs, port and IP address etc.) of the TS. The Media Capabilities in this argument shall be a subset of the return value of the GetMediaCapabilities() action on the TS.

The output argument MediaSessionID is the return value of this action and uniquely identifies the Media Session. The MediaManagement service assigns a unique Media Session ID for every Media Session.

The output argument TCMediaCapabilityInfo contains the Media Capabilities (e.g., codecs, port and IP address etc.) to be used in the MediaManagement service for this specific Media Session.

5.5.2.3 Service Requirements

This service shall analyze the input argument TSMediaCapabilityInfo whether this service can support the Media Capabilities. If this service supports the Media Capabilities, this action succeeds, otherwise fails. If succeeds, this service generates a unique Media Session ID for the Media Session and starts sending and/or receiving Media Streams based on both of TSMediaCapabilityInfo and TCMediaCapabilityInfo. Then this service events the MediaSessionInfo state variable which <mediaSessionStatus> element includes “Started”.

When receiving this action with the <contentSharingCapability> element in the TSMediaCapabilityInfo input argument, this service shall start retrieving the content based on the provided metadata information, process and send the content media to the TS using the Media Session.

5.5.2.4 Control Point Requirements When Calling The Action

Before calling this action, A TelCP shall decide the Media Capabilities for a Media Session. In case that this service is used with the CallManagement service, a TelCP gets the Media Capabilities of this service and the CallManagement service and decide the Media Capabilities which are supported by both of this service and the CallManagement service. Then the CallManagement service exchanges the Media Capabilities between a caller and a callee and decide the Media Capabilities of a call. The decided Media Capabilities are contained in the <mediaCapability> element in the CallInfo state variable which <callStatus> element includes “Connected” or “Modified”. Then a TelCP decides the Media Capabilities for setting to the MediaManagement service and invokes this action.

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A TelCP should invoke the [GetMediaCapabilities\(\)](#) action before invoking this action to prepare the TC-Based Content Sharing session. When invoking this action, the TelCP should provide the same content information in the MediaCapabilityInfo input argument as when invoking the [GetMediaCapabilities\(\)](#) action.

5.5.2.5 Dependency on Device State

None.

5.5.2.6 Effect on Device State

None.

5.5.2.7 Errors

Table 10 — Error Codes for [StartMediaSession\(\)](#)

ErrorCode	errorDescription	Description
400-499	TBD	See Control clause in [1].
500-599	TBD	See Control clause in [1].
606	Action not Authorized	The CP does not have privileges to invoke this action.
701	Invalid Media Capabilities	The specified Media Capabilities are invalid (e.g., the MediaManagement service does not support the Media Capabilities).
702	Busy	The MediaManagement service is already in use and no resource left.

5.5.3 [StopMediaSession\(\)](#)

This action allows a TelCP to request to stop a Media Session specified by the input argument [TargetMediaSessionID](#). When a TC receives this action, a TC stops sending and/or receiving Media Streams related to the input argument [TargetMediaSessionID](#) and a TC releases all the resources regarding to the input argument [TargetMediaSessionID](#).

5.5.3.1 Arguments

Table 11 — Arguments for [StopMediaSession\(\)](#)

Argument	Direction	relatedStateVariable
TargetMediaSessionID	IN	A_ARG_TYPE_MediaSessionID

5.5.3.2 Argument Descriptions

The argument [TargetMediaSessionID](#) uniquely identifies the Media Session to be stopped.

5.5.3.3 Service Requirements

When this action is invoked, this service terminates the Media Session which Media Session ID is the same as the value of the argument [TargetMediaSessionID](#). And this service changes the status of the Media Session to "[Stopped](#)" and notifies the [MediaSessionInfo](#) state variable.

5.5.3.4 Control Point Requirements When Calling The Action

None.

5.5.3.5 Dependency on Device State

None.

5.5.3.6 Effect on Device State

None.

5.5.3.7 Errors**Table 12 — Error Codes for StopMediaSession()**

ErrorCode	errorDescription	Description
400-499	TBD	See Control clause in [1].
500-599	TBD	See Control clause in [1].
606	Action not Authorized	The CP does not have privileges to invoke this action.
703	Invalid Media Session ID	The specified Media Session ID is invalid.

5.5.4 ModifyMediaSession()

This action allows a TelCP to modify the Media Capabilities of an existing Media Session. If this action succeeds, the Media Capabilities of the Media Session which Media Session ID is the same value of the input argument TargetMediaSessionID is change to the new Media Capabilities. To decide the new Media Capabilities, a TelCP offers this service the new Media Capabilities using the input argument NewMediaCapabilityInfo and this service decides the new Media Capabilities by comparing input argument NewMediaCapabilityInfo with the Media Capabilities supported by this service. The decided new Media Capabilities are returned by the output argument TCMediaCapabilityInfo.

5.5.4.1 Arguments**Table 13 — Arguments for ModifyMediaSession()**

Argument	Direction	relatedStateVariable
<u>TargetMediaSessionID</u>	<u>IN</u>	<u>A_ARG_TYPE_MediaSessionID</u>
<u>NewMediaCapabilityInfo</u>	<u>IN</u>	<u>A_ARG_TYPE_MediaCapabilityInfo</u>
<u>TCMediaCapabilityInfo</u>	<u>OUT</u>	<u>A_ARG_TYPE_MediaCapabilityInfo</u>

5.5.4.2 Argument Descriptions

The input argument TargetMediaSessionID uniquely identifies the Media Session to be modified the Media Capabilities.

The input argument NewMediaCapabilityInfo contains the new Media Capability information for the Media Session which Media Session ID is the same as the input argument TargetMediaSessionID.

The output argument TCMediaCapabilityInfo contains this service's Media Capability information based on the input argument NewMediaCapabilityInfo. If SDP as defined in [5] is used to describe the Media Capability information, basic information such as codec types is the same but IP addresses and port numbers are different between NewMediaCapabilityInfo and TCMediaCapabilityInfo. That is, NewMediaCapabilityInfo includes IP addresses and port numbers of destinations for sending Media Streams from a TC. TCMediaCapabilityInfo

includes IP addresses and port numbers of a TC to receive Media Streams from the remote party.

5.5.4.3 Service Requirements

When this action succeeds, this service modifies existing Media Session's Media Capabilities. And this service starts sending and/or receiving the Media Streams using the new Media Capabilities. Then this service events the [MediaSessionInfo](#) state variable which <mediaSessionStatus> element includes "[Started](#)" and its reason attribute includes "[Modified](#)".

If this action fails, this service does not modify existing Media Session's Media Capabilities and keep sending and/or receiving Media Streams without changing Media Capabilities. Then this service events the [MediaSessionInfo](#) state variable which <mediaSessionStatus> element includes "[Started](#)" and its reason attribute includes "[ModifyFailed](#)".

When receiving this action with the <contentSharingCapability> element in the [TSMediaCapabilityInfo](#) input argument, this service shall start retrieving the content based on the provided metadata information, process and send the content media to the TS using the Media Session. If the Media Session is not modified, e.g., the content media is mixed into existing stream, this service shall also event the [MediaSessionInfo](#) state variable with the value of the <mediaSessionStatus> element set as "[Started](#)" and its reason attribute set as "[Modified](#)".

5.5.4.4 Control Point Requirements When Calling The Action

Before calling the action, a TelCP shall get the remote party's Media Capabilities.

A TelCP should invoke the [GetMediaCapabilities\(\)](#) action before invoking this action to prepare the TC-Based Content Sharing session. When invoking this action, the TelCP should provide the same content information in the input argument [MediaCapabilityInfo](#) as when invoking the [GetMediaCapabilities\(\)](#) action.

5.5.4.5 Dependency on Device State

None.

5.5.4.6 Effect on Device State

None.

5.5.4.7 Errors

Table 14 — Error Codes for [ModifyMediaSession\(\)](#)

ErrorCode	errorDescription	Description
400-499	TBD	See Control clause in [1].
500-599	TBD	See Control clause in [1].
606	Action not Authorized	The CP does not have privileges to invoke this action.
701	Invalid Media Capability	The specified Media Capabilities are invalid (e.g., the MediaManagement service does not support the Media Capabilities).
703	Invalid Media Session ID	The specified Media Session ID is invalid.

5.5.5 GetMediaSessionInfo()

This action allows a TelCP to get information about existing Media Sessions.

This action provides two functions:

- To get the information about all the existing Media Sessions.
- To get the information about the Media Session specified by the input argument TargetMediaSessionID.

5.5.5.1 Arguments

Table 15 — Arguments for GetMediaSessionInfo()

Argument	Direction	relatedStateVariable
<u>TargetMediaSessionID</u>	<u>IN</u>	<u>A_ARG_TYPE_MediaSessionID</u>
<u>MediaSessionInfoList</u>	<u>OUT</u>	<u>A_ARG_TYPE_MediaSessionInfoList</u>

5.5.5.2 Argument Descriptions

The input argument TargetMediaSessionID uniquely identifies the Media Session which a TelCP gets Media Session information. When a TelCP gets the information about all the existing Media Sessions, the value of this argument is set to the empty string("").

The output argument MediaSessionInfo contains information about Media Sessions. When TargetMediaSessionID contains the empty string(""), this argument contains information about all the existing Media Sessions. When TargetMediaSessionID has valid value, this argument contains information about the Media Session specified by TargetMediaSessionID.

5.5.5.3 Service Requirements

None.

5.5.5.4 Control Point Requirements When Calling The Action

None.

5.5.5.5 Dependency on Device State

None.

5.5.5.6 Effect on Device State

None.

5.5.5.7 Errors

Table 16 — Error Codes for GetMediaSessionInfo()

ErrorCode	errorDescription	Description
400-499	TBD	See Control clause in [1].
500-599	TBD	See Control clause in [1].
600-699	TBD	See Control clause in [1].
703	Invalid Media Session ID	The specified Media Session ID is invalid.

5.5.6 Error Code Summary

Table 17 lists error codes common to actions for this service type. If an action results in multiple errors, the most specific error should be returned.

Table 17 — Error Code Summary

ErrorCode	errorDescription	Description
400-499	TBD	See Control clause in [1].
500-599	TBD	See Control clause in [1].
606	Action not Authorized	The CP does not have privileges to invoke this action.
700		Reserved for future extensions.
701	Invalid Media Capabilities	The specified Media Capabilities are invalid (e.g., the MediaManagement service does not support the Media Capabilities).
702	Busy	The MediaManagement service is already in use and no resource left.
703	Invalid Media Session ID	The specified Media Session ID is invalid.

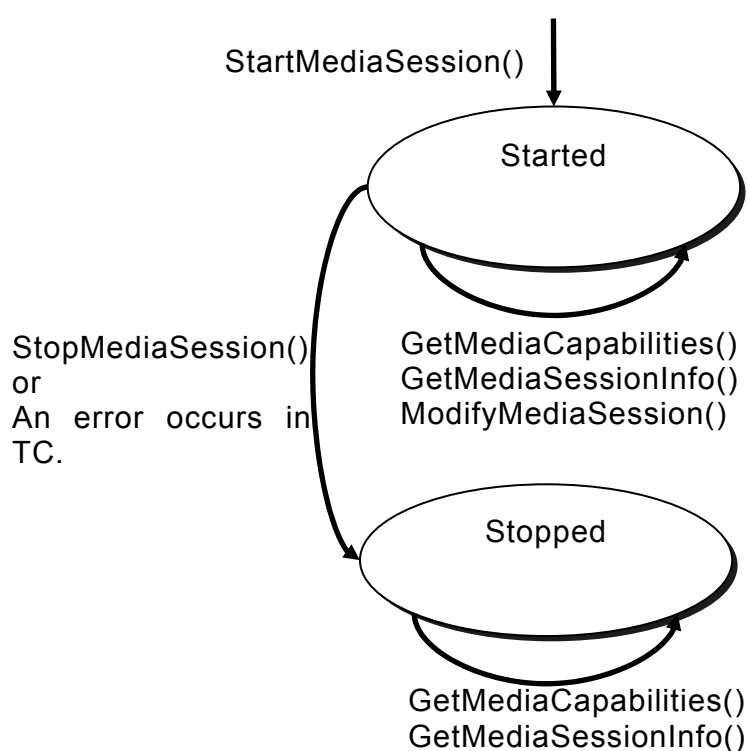
Note: 800-899 Error Codes are not permitted for standard actions. See Control clause in [1] for more details.

5.6 Service Behavioral Model

5.6.1 State Diagrams

The state diagram of a Media Session is shown in Figure 3.

- When a TelCP invokes the [StartMediaSession\(\)](#) action, a new Media Session is created and the status of the Media Session is set to as "[Started](#)". Then, the [MediaManagement](#) service starts sending and/or receiving Media Streams,
- When a TelCP invokes the [StopMediaSession\(\)](#) action, the status of the Media Session is set to as "[Stopped](#)" and the Media Session is deleted.
- The [GetMediaCapabilities\(\)](#) action and the [GetMediaSessionInfo\(\)](#) action can be invoked without depending on the status of the Media Session.
- The [ModifyMediaSession\(\)](#) action can be invoked when the status of the Media Session is "[Started](#)". This action have no effect on the status of the Media Session.

Figure 3 — State diagrams of the **MediaManagement** service

6 XML Service Description

```

<?xml version="1.0"?>
<scpd xmlns="urn:schemas-upnp-org:service-1-0">

  <specVersion>
    <major>1</major>
    <minor>0</minor>
  </specVersion>

  <actionList>
    <action>
      <name>GetMediaCapabilities</name>
      <argumentList>
        <argument>
          <name>TSMediaCapabilityInfo</name>
          <direction>in</direction>
          <relatedStateVariable>
            A ARG TYPE MediaCapabilityInfo
          </relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
      <name>SupportedMediaCapabilityInfo</name>
      <direction>out</direction>
      <relatedStateVariable>
        A ARG TYPE MediaCapabilityInfo
      </relatedStateVariable>
    </action>
  </actionList>
</scpd>

```

```

<name>GetMediaSessionInfo</name>
<argumentList>
  <argument>
    <name>TargetMediaSessionID</name>
    <direction>in</direction>
    <relatedStateVariable>
      A ARG TYPE MediaSessionID
    </relatedStateVariable>
  </argument>
  <argument>
    <name>MediaSessionInfoList</name>
    <direction>out</direction>
    <relatedStateVariable>
      A ARG TYPE MediaSessionInfoList
    </relatedStateVariable>
  </argument>
</argumentList>
</action>

<action>
  <name>ModifyMediaSession</name>
  <argumentList>
    <argument>
      <name>TargetMediaSessionID</name>
      <direction>in</direction>
      <relatedStateVariable>
        A ARG TYPE MediaSessionID
      </relatedStateVariable>
    </argument>
    <argument>
      <name>NewMediaCapabilityInfo</name>
      <direction>in</direction>
      <relatedStateVariable>
        A ARG TYPE MediaCapabilityInfo
      </relatedStateVariable>
    </argument>
    <argument>
      <name>TCMediaCapabilityInfo</name>
      <direction>out</direction>
      <relatedStateVariable>
        A ARG TYPE MediaCapabilityInfo
      </relatedStateVariable>
    </argument>
  </argumentList>
</action>

<action>
  <name>StartMediaSession</name>
  <argumentList>
    <argument>
      <name>TSMediaCapabilityInfo</name>
      <direction>in</direction>
      <relatedStateVariable>
        A ARG TYPE MediaCapabilityInfo
      </relatedStateVariable>
    </argument>
    <argument>
      <name>MediaSessionID</name>
      <direction>out</direction>
      <relatedStateVariable>
        A ARG TYPE MediaSessionID
      </relatedStateVariable>
    </argument>
    <argument>
      <name>TCMediaCapabilityInfo</name>
      <direction>out</direction>
      <relatedStateVariable>
        A ARG TYPE MediaCapabilityInfo
      </relatedStateVariable>
    </argument>
  </argumentList>
</action>

```

```

        </relatedStateVariable>
      </argument>
    </argumentList>
  </action>

  <action>
    <name>StopMediaSession</name>
    <argumentList>
      <argument>
        <name>TargetMediaSessionID</name>
        <direction>in</direction>
        <relatedStateVariable>
          A ARG TYPE MediaSessionID
        </relatedStateVariable>
      </argument>
    </argumentList>
  </action>
</actionList>

<serviceStateTable>
  <stateVariable sendEvents="yes">
    <name>MediaSessionInfo</name>
    <dataType>string</dataType>
  </stateVariable>

  <stateVariable sendEvents="no">
    <name>A ARG TYPE MediaCapabilityInfo</name>
    <dataType>string</dataType>
  </stateVariable>

  <stateVariable sendEvents="no">
    <name>A ARG TYPE MediaSessionID</name>
    <dataType>string</dataType>
  </stateVariable>

  <stateVariable sendEvents="no">
    <name>A ARG TYPE MediaSessionInfoList</name>
    <dataType>string</dataType>
  </stateVariable>
</serviceStateTable>
</scpd>

```

Annex A (normative)

XML Schema

Annex A provides the global XML Schema for syntactical validation of all the XML fragments used in the MediaManagement service.

```
<?xml version="1.0" encoding="utf-8"?>
<schema targetNamespace="urn:schemas-upnp-org:phone:mms" xmlns:mms="urn:schemas-
upnp-org:phone:mms" xmlns="http://www.w3.org/2001/XMLSchema"
attributeFormDefault="qualified" elementFormDefault="qualified">

  <simpleType name="mediaCapabilityFormatType">
    <restriction base="string">
      <enumeration value="SDP" />
    </restriction>
  </simpleType>

  <simpleType name="mediaSessionStatusValueType">
    <restriction base="string">
      <enumeration value="Started" />
      <enumeration value="Stopped" />
    </restriction>
  </simpleType>

  <simpleType name="mediaSessionStatusReasonType">
    <restriction base="string">
      <enumeration value="Modified" />
      <enumeration value="Error" />
    </restriction>
  </simpleType>

  <complexType name="mediaSessionInfoType">
    <sequence>

      <element name="mediaSessionID" form="unqualified" type="string" />

      <element name="mediaSessionStatus" form="unqualified" nillable="true">
        <complexType>
          <simpleContent>
            <extension base="mms:mediaSessionStatusValueType">
              <attribute name="reason" form="unqualified"
type="mms:mediaSessionStatusReasonType" use="optional" />
            </extension>
          </simpleContent>
        </complexType>
      </element>

      <element name="mediaCapability" form="unqualified" nillable="true">
        <complexType>
          <simpleContent>
            <extension base="string">
              <attribute name="format" form="unqualified"
type="mms:mediaCapabilityFormatType" use="required" />
            </extension>
          </simpleContent>
        </complexType>
      </element>

    </sequence>
  </complexType>

  <complexType name="contentSharingCapabilityType">
    <sequence>
```

```

<element name="protocolInfo" type="string" minOccurs="0" />
<element name="URI" type="anyURI" minOccurs="0" />
<element name="sharingType" minOccurs="0" >
  <simpleType>
    <restriction base="string">
      <enumeration value="transfer" />
      <enumeration value="streaming" />
    </restriction>
  </simpleType>
</element>
</sequence>
</complexType>
<element name="mediaCapabilityInfo">
  <complexType>
    <choice maxOccurs="unbounded">
      <element name="mediaCapability" form="unqualified" nillable="true">
        <complexType>
          <simpleContent>
            <extension base="string">
              <attribute name="format" form="unqualified"
type="mms:mediaCapabilityFormatType" use="required" />
            </extension>
          </simpleContent>
        </complexType>
      </element>
    </choice>
  </complexType>
</element>
<element name="mediaSessionInfo" type="mediaSessionInfoType" />
<element name="mediaSessionInfoList">
  <complexType>
    <choice maxOccurs="unbounded">
      <element name="mediaSessionInfo" form="unqualified"
type="mediaSessionInfoType" />
    </choice>
  </complexType>
</element>
</schema>

```

Annex B
(informative)

Theory of Operation

B.1 Create an outgoing Call

The following sequence describes how to create an outgoing Call in the Non-Monopolization Mode.

- a) The TelCP determines the Media Capabilities of the TS by invoking the GetMediaCapabilities() action.
- b) The TelCP determines the Media Capabilities of the TC by invoking the GetMediaCapabilities() action.
- c) The TelCP selects the set of appropriate Media Capabilities for the Call by matching the Media Capabilities of the TS and the TC.
- d) The TelCP invokes the StartCall() action on the TS and the TS initiates the Call on the WAN side.
- e) The TS sends the CallInfo state variable to the TelCP about the state of the Call (“Dialing”, “Calling” and “Connected”). The Call between the TS and the WAN side is established at this point.
- f) The TelCP invokes the StartMediaSession() action on the TC after the TelCP receives the CallInfo state variable with the Call Status as “Connected”. The TC starts sending and/or receiving the Media Streams.
- g) The TC sends the MediaSessionInfo state variable to the TelCP with the status of the Media Session as “Started”.
- h) The TelCP invokes the StartMediaTransfer() action on the TS. The TS starts sending and/or receiving the Media Streams.
- i) The TS sends the CallInfo state variable to the TelCP with the CallStatus as “Talking”.
- j) If the TelCP wants to disconnect the Call, the TelCP invokes the StopCall() action on the TS.
- k) The TelCP then invokes the StopMediaSession() action on the TC.
- l) The TS sends the CallInfo state variable to the TelCP with the CallStatus as “Disconncted” and the TC sends the MediaSessionInfo state variable to the TelCP with the status of the Media Session as “Stopped”.

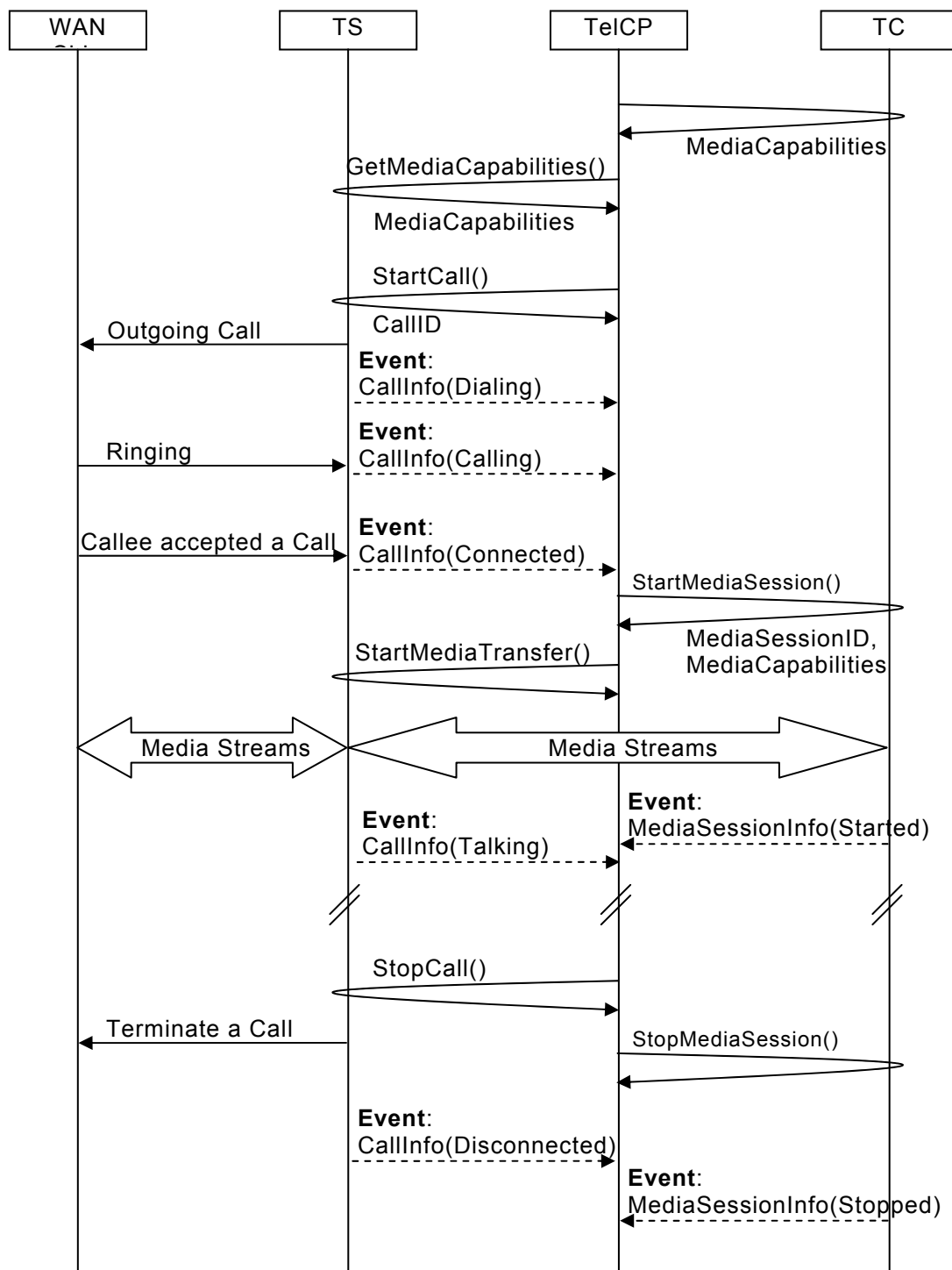


Figure B.1 — Flow basics for creating an outgoing Call

B.2 Accept an incoming Call

The following sequence describes how to accept an incoming Call in the Non-Monopolization Mode.

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- a) When the TS receives an incoming Call on the WAN side, the TS sends the CallInfo state variable to the TelCP with the Call Status as “Ringing”. The CallInfo state variable also includes the Media Capabilities of the Caller.
- b) The TelCP determines the Media Capabilities of the TC by invoking the GetMediaCapabilities() action.
- c) The TelCP selects the set of appropriate Media Capabilities for the Call by matching the Media Capabilities of the TS and the TC.
- d) The TelCP invokes the AcceptCall() action on the TS and the TS accepts the Call on the WAN side.
- e) After the Call between the TS and the WAN side is established, the TS sends the CallInfo state variable to the TelCP with the Call Status as “Connected”.
- f) The TelCP invokes the StartMediaSession() action on the TC after the TelCP receives the CallInfo state variable with the Call Status as “Connected”. The TC starts sending and/or receiving the Media Streams.
- g) The TC sends the MediaSessionInfo state variable to the TelCP with the status of the Media Session as “Started”.
- h) The TelCP invokes the StartMediaTransfer() action on the TS. The TS starts sending and/or receiving the Media Streams.
- i) The TS sends the CallInfo state variable to the TelCP with the Call Status as “Talking”.
- j) If the TelCP wants to disconnect the Call, the TelCP invokes the StopCall() action on the TS.
- k) The TelCP then invokes the StopMediaSession() action on the TC.
- l) The TS sends the CallInfo state variable to the TelCP with the Call Status as “Disconneted” and the TC sends the MediaSessionInfo state variable to the TelCP with the status of the Media Session as “Stopped”.

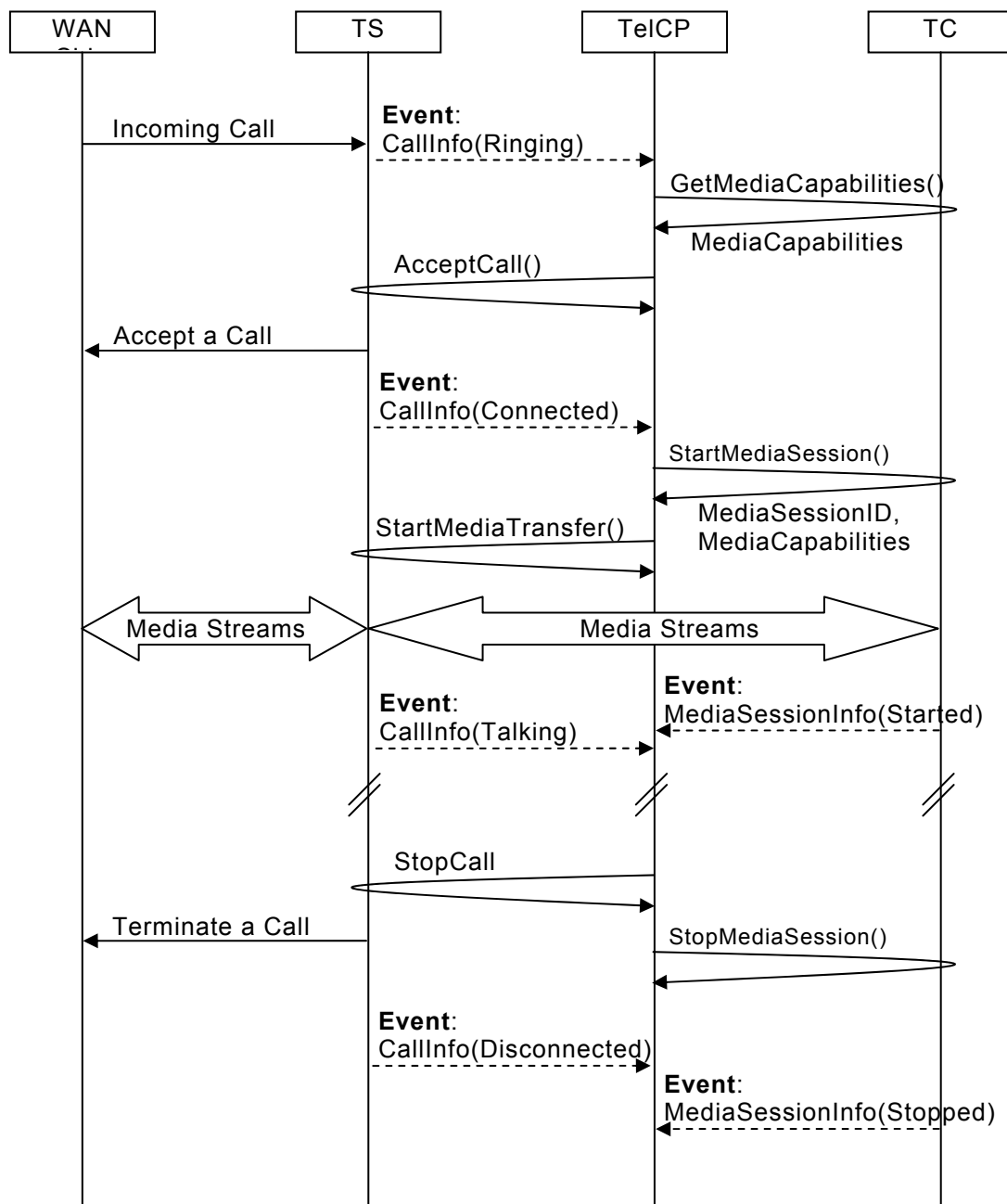


Figure B.2 — Flow basics for accpeting an incoming Call

B.3 Modify an ongoing Call

The following sequence describes how to modify an ongoing Call from an audio to a video Call. In this sequence, the TC1 supports the audio capabilities and the TC2 supports the video capabilities. At first, the TelCP creates an audio Call with TC1. Then the TelCP modifies the Call from audio to a video Call by adding TC2.

- The TelCP creates an audio Call with the TC1. The sequence is the same as the sequence shown in B.1.
- The TelCP determines the Media Capabilities of the TS by invoking the GetMediaCapabilities() action.

ISO/IEC 29341-26-11:2017(E)

- c) The TelCP determines the Media Capabilities of the TC2 by invoking the GetMediaCapabilities() action.
- d) The TelCP selects the set of appropriate Media Capabilities for the Call to change the Media Capabilities from an audio to a video Call by matching the Media Capabilities of the TS and the TC1 and TC2.
- e) The TelCP invokes the ModifyCall() action on the TS and the TS modifies the Call on the WAN side.
- f) The TS sends the CallInfo state variable to the TelCP about the state of the Call ("SendingModifyRequest" and "Modified"). The Call between the TS and the WAN side is modified at this point.
- g) The TelCP invokes the StartMediaSession() action on the TC2 after the TelCP receives the CallInfo state variable with the Call Status as "Modified". The TC2 starts sending and/or receiving the Media Streams.
- h) The TC2 sends the MediaSessionInfo state variable to the TelCP with the status of the Media Session as "Started".
- i) The TelCP invokes the StartMediaTransfer() action on the TS. The TS starts sending and/or receiving the Media Streams according to the modified Media Capabilities.
- j) The TS sends the CallInfo state variable to the TelCP with the Call Status as "Talking".
- k) If the TelCP wants to disconnect the Call, the TelCP invokes the StopCall() action on the TS.
- l) The TelCP then invokes the StopMediaSession() action on the TC1 and TC2.
- m) The TS sends the CallInfo state variable to the TelCP with the CallStatus as "Disconnected" and the TC1 and TC2 send the MediaSessionInfo state variable to the TelCP with the status of the Media Session as "Stopped".

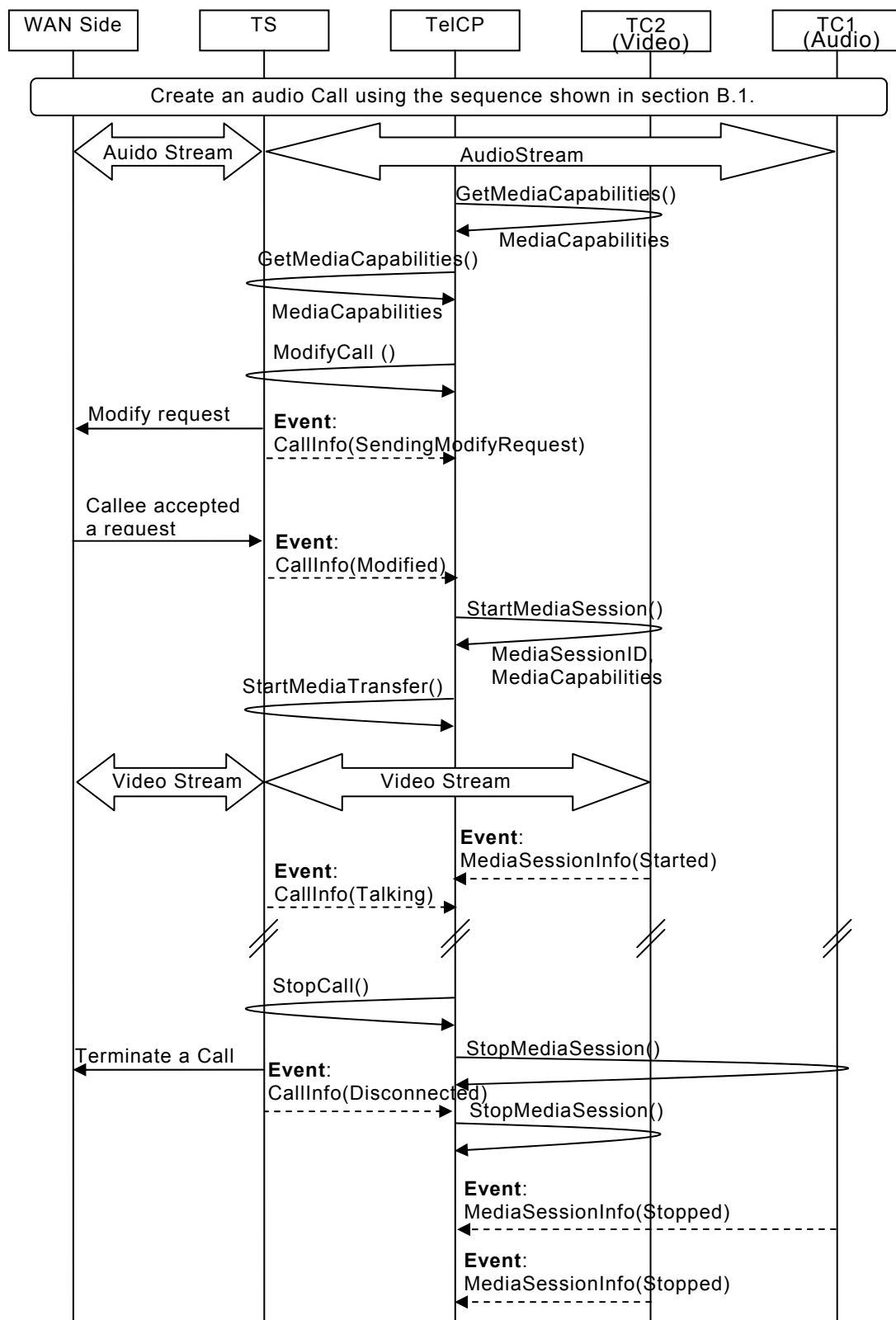


Figure B.3 — Flow basics for modifying an ongoing Call

Annex C
(informative)

Sequence Examples

C.1 Create a Call

C.1.1 Figure

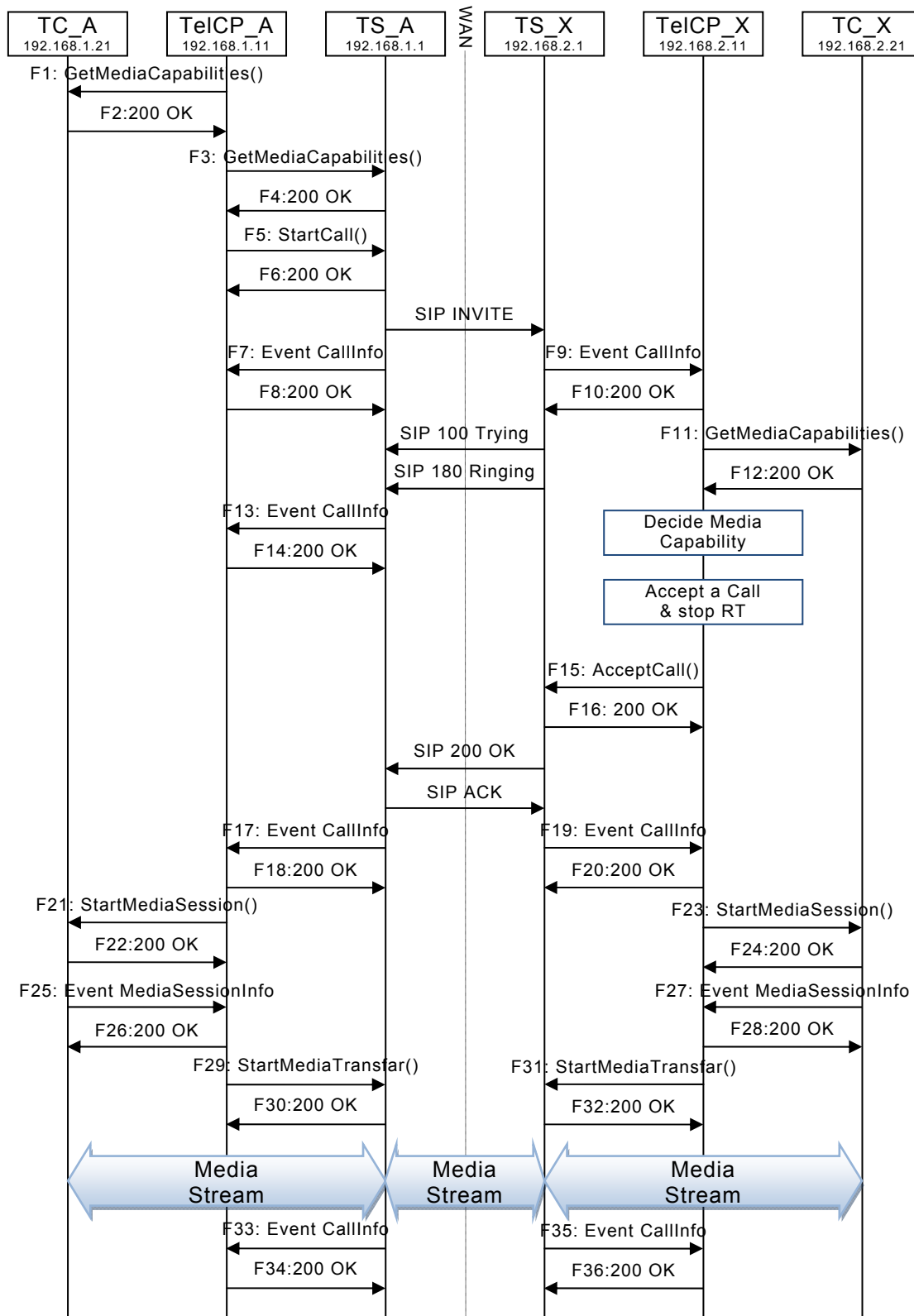


Figure C.4 — Create a Call

ISO/IEC 29341-26-11:2017(E)

C.1.2 F1

POST /_urn:upnp-org:serviceId:MediaManagement_control HTTP/1.1
SOAPACTION: "urn:schemas-upnp-org:service:MediaManagement:2#GetMediaCapabilities"
CONTENT-TYPE: text/xml ; charset="utf-8"
HOST: 192.168.1.21:10021
Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:GetMediaCapabilities xmlns:u="urn:schemas-upnp-org:service:MediaManagement:2" >
      <TSMediaCapabilityInfo></TSMediaCapabilityInfo>
    </u:GetMediaCapabilities>
  </s:Body>
</s:Envelope>
```

C.1.3 F2

HTTP/1.1 200 OK
EXT:
CONTENT-TYPE: text/xml ; charset="utf-8"
SERVER: Windows NT/5.0, UPnP/1.0, Intel CLR SDK/1.0
Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:GetMediaCapabilitiesResponse xmlns:u="urn:schemas-upnp-
org:service:MediaManagement:2">
      <SupportedMediaCapabilityInfo><?xml version="1.0" encoding="utf-8"?>
        <lt;mms:mediaCapabilityInfo
xsi:schemaLocation="urn:schemas-upnp-org:phone:mms
http://www.upnp.org/schemas/phone/mms-v2.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:cams="urn:schemas-upnp-org:phone:mms">
          <lt;mediaCapability format="SDP">
            o=- 0 0 IN IP4 192.168.1.21
            s=-
            c=IN IP4 192.168.1.21
            t=0 0
            m=audio 11021 RTP/AVP 0
            c=IN IP4 192.168.1.21
            a=rtpmap:0 PCMU/8000
            a=ptime:20
            m=video 12021 RTP/AVP 96
            c=IN IP4 192.168.1.21
            b=AS:2500
            a=rtpmap:96 MP4V-ES/90000
            a=fmtp:96 profile-level-
            id=4;config=000001b004000001b50900000100000001200086c40fa28a021e0a21
            a=framerate:30
          </mediaCapability>
        </mms:mediaCapabilityInfo>
      </SupportedMediaCapabilityInfo>
    </u:GetMediaCapabilitiesResponse>
  </s:Body>
</s:Envelope>
```

C.1.4 F3

POST /_urn:upnp-org:serviceId:CallManagement_control HTTP/1.1
SOAPACTION: "urn:schemas-upnp-org:service:CallManagement:2#GetMediaCapabilities"
CONTENT-TYPE: text/xml ; charset="utf-8"
HOST: 192.168.1.1:10001
Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:GetMediaCapabilities xmlns:u="urn:schemas-upnp-org:service: CallManagement:2">
      <TCMediaCapabilityInfo></TCMediaCapabilityInfo>
    </u:GetMediaCapabilities>
  </s:Body>
</s:Envelope>
```

C.1.5 F4

HTTP/1.1 200 OK

EXT:

CONTENT-TYPE: text/xml ; charset="utf-8"

SERVER: Windows NT/5.0, UPnP/1.0, Intel CLR SDK/1.0

Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:GetMediaCapabilitiesResponse xmlns:u="urn:schemas-upnp-
org:service:CallManagement:2">
      <SupportedMediaCapabilityInfo>&lt;?xml version="1.0" encoding="utf-8"?&gt;
&lt;cams:mediaCapabilityInfo
xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
http://www.upnp.org/schemas/phone/cams-v2.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:cams="urn:schemas-upnp-org:phone:cams"&gt;
&lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.1.1
s=-
c=IN IP4 192.168.1.1
t=0 0
m=audio 11001 RTP/AVP 0
c=IN IP4 192.168.1.1
a=rtpmap:0 PCMU/8000
a=ptime:20
m=video 12001 RTP/AVP 96
c=IN IP4 192.168.1.1
b=AS:2500
a=rtpmap:96 MP4V-ES/90000
a=fmtp:96 profile-level-
id=4;config=000001b004000001b50900000100000001200086c40fa28a021e0a21
a=framerate:30
&lt;/mediaCapability&gt;
&lt;/cams:mediaCapabilityInfo&gt;</SupportedMediaCapabilityInfo>
    </u:GetMediaCapabilitiesResponse>
  </s:Body>
</s:Envelope>
```

C.1.6 F5

POST /_urn:upnp-org:serviceId:CallManagement_control HTTP/1.1

SOAPACTION: "urn:schemas-upnp-org:service:CallManagement:2#StartCall"

CONTENT-TYPE: text/xml ; charset="utf-8"

HOST: 192.168.1.1:10001

Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:StartCall xmlns:u="urn:schemas-upnp-org:service:CallManagement:2">
      <TelCPName></TelCPName>
      <SecretKey></SecretKey>
      <CalleeID>tel:0774940201</CalleeID>
      <CallPriority>Normal</CallPriority>
      <MediaCapabilityInfo>&lt;?xml version="1.0" encoding="utf-8"?&gt;
```

ISO/IEC 29341-26-11:2017(E)

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:encoding="http://schemas.xmlsoap.org/soap/encoding/">
  <s:Body>
    <m:StartCallResponse xmlns:m="urn:schemas-upnp-org:service:CallManagement:2">
      <CallID>call1101</CallID>
    </m:StartCallResponse>
  </s:Body>
</s:Envelope>
```

C.1.7 F6

HTTP/1.1 200 OK
Content-Length: [bytes in body]
CONTENT-TYPE: text/xml; charset="utf-8"
SERVER: TS-HTTP/1.1 UPnP/1.0 UPnP-Device-Host/1.0
EXT:

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:encoding="http://schemas.xmlsoap.org/soap/encoding/">
  <s:Body>
    <m:StartCallResponse xmlns:m="urn:schemas-upnp-org:service:CallManagement:2">
      <CallID>call1101</CallID>
    </m:StartCallResponse>
  </s:Body>
</s:Envelope>
```

C.1.8 F7

NOTIFY /_urn:upnp-org:serviceId:CallManagement HTTP/1.1

HOST: 192.168.1.11:10011
CONTENT-TYPE: text/xml
Content-Length: [bytes in body]
NT: upnp:event
NTS: upnp:propchange
SID: uuid:c3580410-1dd1-11b2-8000-10001
SEQ: [sequence number]
Connection: Keep-Alive

```
<?xml version="1.0" encoding="utf-8"?>
<e:propertyset xmlns:e="urn:schemas-upnp-org:event-1-0">
  <e:property>
    <CallInfo><?xml version="1.0" encoding="utf-8"?>
      <?xml version="1.0" encoding="utf-8"?>
      <s:callInfo
        xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
          http://www.upnp.org/schemas/phone/cams-v2.xsd"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xmlns:cams="urn:schemas-upnp-org:phone:cams"
        xmlns:peer="urn:schemas-upnp-org:phone:peer">
          <callID>call1101</callID>
          <targetNames type="TelCPName">TV@Living</targetNames>
          <callStatus>Dialing</callStatus>
          <priority>Normal</priority>
          <remoteParty>
            <peer:id>0774940201</peer:id>
          </remoteParty>
          <mediaCapability format="SDP"></mediaCapability>
        </s:callInfo>
      </e:property>
    </e:propertyset>
```

```

o=- 0 0 IN IP4 192.168.1.1
s=-
c=IN IP4 192.168.1.1
t=0 0
m=audio 11001 RTP/AVP 0
c=IN IP4 192.168.1.1
a=rtpmap:0 PCMU/8000
a=ptime:20
<!--/mediaCapability-->
<!--/cams:callInfo--></CallInfo>
</e:property>
</e:propertyset>

```

C.1.9 F8

HTTP/1.1 200 OK
Content-Length: 0

C.1.10 F9

NOTIFY /_urn:upnp-org:serviceId:CallManagement HTTP/1.1
HOST: 192.168.2.11:20011
CONTENT-TYPE: text/xml
Content-Length: [bytes in body]
NT: upnp:event
NTS: upnp:propchange
SID: uuid:c3580410-1dd1-11b2-8000-20001
SEQ: [sequence number]
Connection: Keep-Alive

```

<?xml version="1.0" encoding="utf-8"?>
<e:propertyset xmlns:e="urn:schemas-upnp-org:event-1-0">
<e:property>
<CallInfo><!--?xml version="1.0" encoding="utf-8"?-->
<!--cams:callInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
  http://www.upnp.org/schemas/phone/cams-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:cams="urn:schemas-upnp-org:phone:cams"
  xmlns:peer="urn:schemas-upnp-org:phone:peer">
    <!--callID--><!--callID-->
    <!--targetNames type="TelCPName">*<!--/targetNames-->
    <!--callStatus--><!--Ringing--><!--/callStatus-->
    <!--priority-->Normal<!--/priority-->
    <!--remoteParty-->
      <!--peer:id--><!--0355550101--><!--/peer:id-->
    <!--/remoteParty-->
    <!--mediaCapability format="SDP">v=0
o=- 0 0 IN IP4 192.168.2.1
s=-
c=IN IP4 192.168.2.1
t=0 0
m=audio 21001 RTP/AVP 0
c=IN IP4 192.168.2.1
a=rtpmap:0 PCMU/8000
a=ptime:20
<!--/mediaCapability-->
<!--/cams:callInfo--></CallInfo>
</e:property>
</e:propertyset>

```

C.1.11 F10

HTTP/1.1 200 OK
Content-Length: 0

C.1.12 F11

POST /_urn:upnp-org:serviceId:MediaManagement_control HTTP/1.1

ISO/IEC 29341-26-11:2017(E)

SOAPACTION: "urn:schemas-upnp-org:service:MediaManagement:2#GetMediaCapabilities"

CONTENT-TYPE: text/xml ; charset="utf-8"

HOST: 192.168.2.21:20021

Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:GetMediaCapabilities xmlns:u="urn:schemas-upnp-org:service:MediaManagement:2" >
      <TSMediaCapabilityInfo></TSMediaCapabilityInfo>
    </u:GetMediaCapabilities>
  </s:Body>
</s:Envelope>
```

C.1.13 F12

HTTP/1.1 200 OK

EXT:

CONTENT-TYPE: text/xml ; charset="utf-8"

SERVER: Windows NT/5.0, UPnP/1.0, Intel CLR SDK/1.0

Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:GetMediaCapabilitiesResponse xmlns:u="urn:schemas-upnp-
org:service:MediaManagement:2">
      <SupportedMediaCapabilityInfo>&lt;?xml version="1.0" encoding="utf-8"?&gt;
&lt;mms:mediaCapabilityInfo
xsi:schemaLocation="urn:schemas-upnp-org:phone:mms
http://www.upnp.org/schemas/phone/mms-v2.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:cams="urn:schemas-upnp-org:phone:mms"&gt;
&lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.2.21
s=-
c=IN IP4 192.168.2.21
t=0 0
m=audio 21021 RTP/AVP 0
c=IN IP4 192.168.2.21
a=rtpmap:0 PCMU/8000
a=ptime:20
m=video 22021 RTP/AVP 96
c=IN IP4 192.168.2.21
b=AS:2500
a=rtpmap:96 MP4V-ES/90000
a=fmtp:96 profile-level-
id=4;config=000001b004000001b50900000100000001200086c40fa28a021e0a21
a=framerate:30
&lt;/mediaCapability&gt;
&lt;/mms:mediaCapabilityInfo&gt;</SupportedMediaCapabilityInfo>
    </u:GetMediaCapabilitiesResponse>
  </s:Body>
</s:Envelope>
```

C.1.14 F13

NOTIFY /_urn:upnp-org:serviceId:CallManagement HTTP/1.1

HOST: 192.168.1.11:10011

CONTENT-TYPE: text/xml

Content-Length: [bytes in body]

NT: upnp:event

NTS: upnp:propchange

SID: uuid:c3580410-1dd1-11b2-8000-10001

SEQ: [sequence number]

Connection: Keep-Alive

```
<?xml version="1.0" encoding="utf-8"?>
<e:propertyset xmlns:e="urn:schemas-upnp-org:event-1-0">
<e:property>
<CallInfo>&lt;?xml version="1.0" encoding="utf-8"?&gt;
&lt;cams:callInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
http://www.upnp.org/schemas/phone/cams-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:cams="urn:schemas-upnp-org:phone:cams"
  xmlns:peer="urn:schemas-upnp-org:phone:peer"&gt;
    &lt;callID&gt;call101&lt;/callID&gt;
    &lt;targetNames type="TelCPName"&gt;*&lt;/targetNames&gt;
    &lt;callStatus&gt;Calling&lt;/callStatus&gt;
    &lt;priority&gt;Normal&lt;/priority&gt;
    &lt;remoteParty&gt;
      &lt;peer:id&gt;0774940201&lt;/peer:id&gt;
    &lt;/remoteParty&gt;
    &lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.1.1
s=-
c=IN IP4 192.168.1.1
t=0 0
m=audio 11001 RTP/AVP 0
c=IN IP4 192.168.1.1
a=rtpmap:0 PCMU/8000
a=ptime:20
&lt;/mediaCapability&gt;
&lt;/cams:callInfo&gt;</CallInfo>
</e:property>
</e:propertyset>
```

C.1.15 F14

HTTP/1.1 200 OK
Content-Length: 0

C.1.16 F15

POST /_urn:upnp-org:serviceId:CallManagement_control HTTP/1.1
SOAPACTION: "urn:schemas-upnp-org:service:CallManagement:2#AcceptCall"
CONTENT-TYPE: text/xml ; charset="utf-8"
HOST: 192.168.2.1:20001
Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:AcceptCall xmlns:u="urn:schemas-upnp-org:service:CallManagement:2">
      <TelCPName></TelCPName>
      <SecretKey></SecretKey>
      <TargetCallID>call1201</TargetCallID>
      <MediaCapabilityInfo&lt;?xml version="1.0" encoding="utf-8"?&gt;
&lt;cams:mediaCapabilityInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
http://www.upnp.org/schemas/phone/cams-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:cams="urn:schemas-upnp-org:phone:cams"&gt;
    &lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.2.11
s=-
c=IN IP4 192.168.2.11
t=0 0
m=audio 21021 RTP/AVP 0
c=IN IP4 192.168.2.21
a=rtpmap:0 PCMU/8000
a=ptime:20
&lt;/mediaCapability&gt;
&lt;/cams:mediaCapabilityInfo&gt;</MediaCapabilityInfo>
      <CallMode>Non-Monopolize</CallMode>
    </u:AcceptCall>
```

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```
</s:Body>
</s:Envelope>
```

C.1.17 F16

HTTP/1.1 200 OK
Content-Length: [bytes in body]
CONTENT-TYPE: text/xml; charset="utf-8"
SERVER: TS-HTTP/1.1 UPnP/1.0 UPnP-Device-Host/1.0
EXT:

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
<s:Body>
<m:AcceptCallResponse xmlns:m="urn:schemas-upnp-org:service:CallManagement:2" />
</s:Body>
</s:Envelope>
```

C.1.18 F17

NOTIFY /_urn:upnp-org:serviceId:CallManagement HTTP/1.1
HOST: 192.168.1.11:10011
CONTENT-TYPE: text/xml
Content-Length: [bytes in body]
NT: upnp:event
NTS: upnp:propchange
SID: uuid:c3580410-1dd1-11b2-8000-10001
SEQ: [sequence number]
Connection: Keep-Alive

```
<?xml version="1.0" encoding="utf-8"?>
<e:propertyset xmlns:e="urn:schemas-upnp-org:event-1-0">
<e:property>
<CallInfo>&lt;?xml version="1.0" encoding="utf-8"?&gt;
&lt;cams:callInfo
xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
http://www.upnp.org/schemas/phone/cams-v2.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:cams="urn:schemas-upnp-org:phone:cams"
xmlns:peer="urn:schemas-upnp-org:phone:peer"&gt;
&lt;callID&gt;call1101&lt;/callID&gt;
&lt;targetNames type="TelCPName"&gt;*&lt;/targetNames&gt;
&lt;callStatus&gt;Connected&lt;/callStatus&gt;
&lt;priority&gt;Normal&lt;/priority&gt;
&lt;remoteParty&gt;
&lt;peer:id&gt;0774940201&lt;/peer:id&gt;
&lt;/remoteParty&gt;
&lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.1.1
s=-
c=IN IP4 192.168.1.1
t=0 0
m=audio 11001 RTP/AVP 0
c=IN IP4 192.168.1.1
a=rtpmap:0 PCMU/8000
a=ptime:20
&lt;/mediaCapability&gt;
&lt;/cams:callInfo&gt;</CallInfo>
</e:property>
</e:propertyset>
```

C.1.19 F18

HTTP/1.1 200 OK
Content-Length: 0

C.1.20 F19

NOTIFY /_urn:upnp-org:serviceId:CallManagement HTTP/1.1

HOST: 192.168.2.11:20011

CONTENT-TYPE: text/xml

Content-Length: [bytes in body]

NT: upnp:event

NTS: upnp:propchange

SID: uuid:c3580410-1dd1-11b2-8000-20001

SEQ: [sequence number]

Connection: Keep-Alive

```
<?xml version="1.0" encoding="utf-8"?>
<e:propertyset xmlns:e="urn:schemas-upnp-org:event-1-0">
<e:property>
<CallInfo><?xml version="1.0" encoding="utf-8"?>
&lt;cams:callInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:cams
http://www.upnp.org/schemas/phone/cams-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:cams="urn:schemas-upnp-org:phone:cams"
  xmlns:peer="urn:schemas-upnp-org:phone:peer">
    &lt;callID&gt;call1201&lt;/callID&gt;
    &lt;targetNames type="TelCPName"&gt;*&lt;/targetNames&gt;
    &lt;callStatus&gt;Connected&lt;/callStatus&gt;
    &lt;priority&gt;Normal&lt;/priority&gt;
    &lt;remoteParty&gt;
      &lt;peer:id&gt;0355550101&lt;/peer:id&gt;
    &lt;/remoteParty&gt;
    &lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.2.1
s=-
c=IN IP4 192.168.2.1
t=0 0
m=audio 21001 RTP/AVP 0
c=IN IP4 192.168.2.1
a=rtpmap:0 PCMU/8000
a=ptime:20
&lt;/mediaCapability&gt;
&lt;/cams:callInfo&gt;</CallInfo>
</e:property>
</e:propertyset>
```

C.1.21 F20

HTTP/1.1 200 OK

Content-Length: 0

C.1.22 F21

POST /_urn:upnp-org:serviceId:MediaManagement_control HTTP/1.1

SOAPACTION: "urn:schemas-upnp-org:service:MediaManagement:2#StartMediaSession"

CONTENT-TYPE: text/xml ; charset="utf-8"

HOST: 192.168.1.21:10021

Content-Length: [bytes in body]

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <u:StartMediaSession xmlns:u="urn:schemas-upnp-org:service:MediaManagement:2">
      <TSMediaCapabilityInfo><?xml version="1.0" encoding="utf-8"?>
&lt;mms:mediaCapabilityInfo
  xsi:schemaLocation="urn:schemas-upnp-org:phone:mms
http://www.upnp.org/schemas/phone/mms-v2.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:cams="urn:schemas-upnp-org:phone:mms">
    &lt;mediaCapability format="SDP"&gt;v=0
o=- 0 0 IN IP4 192.168.1.11
s=-
```