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**Information technology — UPnP  
Device Architecture —**

**Part 29-2:  
Multiscreen device control protocol —  
Level 2 — Screen device**

*Technologies de l'information — Architecture de dispositif UPnP —*

*Partie 29-2: Protocole de contrôle de dispositif multi-écran — Niveau  
2 — Dispositif écran*



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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.

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](http://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 29341-29-2 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.

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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

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Turin - Italy 10148

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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       |

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| 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 WANPPPPConnection:1 Service        | ISO/IEC 29341-8-20       |
| UPnP WLANConfiguration:1 Service        | ISO/IEC 29341-8-21       |
| UPnP WANDevice:1 Device                 | ISO/IEC 29341-8-3        |
| UPnP WANConnectionDevice:1 Device       | ISO/IEC 29341-8-4        |
| UPnP WLANAccessPointDevice:1 Device     | ISO/IEC 29341-8-5        |
| UPnP Printer:1 Device                   | ISO/IEC 29341-9-1        |
| UPnP ExternalActivity:1 Service         | ISO/IEC 29341-9-10       |
| UPnP Feeder:1.0 Service                 | ISO/IEC 29341-9-11       |
| UPnP PrintBasic:1 Service               | ISO/IEC 29341-9-12       |
| UPnP Scan:1 Service                     | ISO/IEC 29341-9-13       |
| UPnP Scanner:1.0 Device                 | ISO/IEC 29341-9-2        |
| UPnP QoS Architecture:1.0               | ISO/IEC 29341-10-1       |
| UPnP QosDevice:1 Service                | ISO/IEC 29341-10-10      |
| UPnP QosManager:1 Service               | ISO/IEC 29341-10-11      |
| UPnP QosPolicyHolder:1 Service          | ISO/IEC 29341-10-12      |
| UPnP QoS Architecture:2                 | ISO/IEC 29341-11-1       |
| UPnP QosDevice:2 Service                | ISO/IEC 29341-11-10      |
| UPnP QosManager:2 Service               | ISO/IEC 29341-11-11      |
| UPnP QosPolicyHolder:2 Service          | ISO/IEC 29341-11-12      |
| UPnP QOS v2 Schema Files                | ISO/IEC 29341-11-2       |
| UPnP RemoteUIClientDevice:1 Device      | ISO/IEC 29341-12-1       |
| UPnP RemoteUIClient:1 Service           | ISO/IEC 29341-12-10      |
| UPnP RemoteUIServer:1 Service           | ISO/IEC 29341-12-11      |
| UPnP RemoteUIServerDevice:1 Device      | ISO/IEC 29341-12-2       |
| UPnP DeviceSecurity:1 Service           | ISO/IEC 29341-13-10      |
| UPnP SecurityConsole:1 Service          | ISO/IEC 29341-13-11      |
| UPnP ContentDirectory:3 Service         | ISO/IEC 29341-14-12:2011 |
| UPnP MediaServer:3 Device               | ISO/IEC 29341-14-3:2011  |
| UPnP ContentSync:1                      | ISO/IEC 29341-15-10:2011 |
| UPnP Low Power Architecture:1           | ISO/IEC 29341-16-1:2011  |
| UPnP LowPowerProxy:1 Service            | ISO/IEC 29341-16-10:2011 |



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

## ISO/IEC 29341-29-2:2017(E)

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

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## 1 Scope

This document defines a device type referred to as ScreenDevice version 2. This device specification is compliant with UPnP Device Architecture 1.0 [1].

ScreenDevice provides various interactive services with other display device(s) which is (are) implemented with Screen Control Point(s). It is designed to be controlled by and interact with Screen Control Point(s). See the Multi-Screen Architecture:1 [2] for details.

## 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] – *Multi-Screen Architecture:1*, UPnP Forum, September 30, 2014.

Available at: <http://www.upnp.org/specs/ms/UPnP-ms-MultiScreenArchitecture-v1-20140930.pdf>.

Latest version available at: <http://www.upnp.org/specs/ms/UPnP-ms-MultiScreenArchitecture-v1.pdf>.

[3] – *ApplicationManagement:2*, UPnP Forum, September 30, 2014.

Available at: <http://www.upnp.org/specs/ms/UPnP-ms-ApplicationManagement-v2-Service-20140930.pdf>.

Latest version available at: <http://www.upnp.org/specs/ms/UPnP-ms-ApplicationManagement-v2-Service.pdf>.

[4] – *DeviceProtection:1*, UPnP Forum, December 31, 2010.

Available at: <http://www.upnp.org/specs/gw/UPnP-gw-DeviceProtection-v1-Service-20110224.pdf>.

Latest version available at: <http://www.upnp.org/specs/gw/UPnP-gw-DeviceProtection-v1-Service.pdf>.

## 3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the terms and definitions given in the UPnP Device Architecture:1 [1], the Multi-Screen Architecture:1 [2], and the ApplicationManagement:2 [3].

## 4 Notations and Conventions

See the Multi-Screen Architecture:1 [2].

## 5 Device Definitions

### 5.1 Device Type

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

urn:[schemas-upnp-org:device:ScreenDevice:2](#)

### 5.2 Device Model

ScreenDevice products shall implement minimum version numbers of all required embedded devices and services specified in the table below. A ScreenDevice may be either a Root device or may be Embedded in another UPnP device. A ScreenDevice (Root or Embedded) may in turn contain other standard or non-standard Embedded UPnP devices.