

# INTERNATIONAL STANDARD

**Information technology – UPnP Device Architecture –  
Part 9-10: Imaging Device Control Protocol – External Activity Service**

**ISO/IEC 29341-9-10:2008**  
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## Part 9-10: Imaging Device Control Protocol – External Activity Service

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This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

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UPnP Document Title	ISO/IEC 29341 Part
UPnP Device Architecture 1.0	ISO/IEC 29341-1
UPnP Basic:1 Device	ISO/IEC 29341-2
UPnP AV Architecture:1	ISO/IEC 29341-3-1
UPnP MediaRenderer:1 Device	ISO/IEC 29341-3-2
UPnP MediaServer:1 Device	ISO/IEC 29341-3-3
UPnP AVTransport:1 Service	ISO/IEC 29341-3-10
UPnP ConnectionManager:1 Service	ISO/IEC 29341-3-11
UPnP ContentDirectory:1 Service	ISO/IEC 29341-3-12
UPnP RenderingControl:1 Service	ISO/IEC 29341-3-13
UPnP MediaRenderer:2 Device	ISO/IEC 29341-4-2
UPnP MediaServer:2 Device	ISO/IEC 29341-4-3
UPnP AV Datastructure Template:1	ISO/IEC 29341-4-4
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11
UPnP ContentDirectory:2 Service	ISO/IEC 29341-4-12
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13
UPnP ScheduledRecording:1	ISO/IEC 29341-4-14
UPnP DigitalSecurityCamera:1 Device	ISO/IEC 29341-5-1
UPnP DigitalSecurityCameraMotionImage:1 Service	ISO/IEC 29341-5-10
UPnP DigitalSecurityCameraSettings:1 Service	ISO/IEC 29341-5-11
UPnP DigitalSecurityCameraStillImage:1 Service	ISO/IEC 29341-5-12
UPnP HVAC_System:1 Device	ISO/IEC 29341-6-1
UPnP HVAC_ZoneThermostat:1 Device	ISO/IEC 29341-6-2
UPnP ControlValve:1 Service	ISO/IEC 29341-6-10
UPnP HVAC_FanOperatingMode:1 Service	ISO/IEC 29341-6-11
UPnP FanSpeed:1 Service	ISO/IEC 29341-6-12
UPnP HouseStatus:1 Service	ISO/IEC 29341-6-13
UPnP HVAC_SetpointSchedule:1 Service	ISO/IEC 29341-6-14
UPnP TemperatureSensor:1 Service	ISO/IEC 29341-6-15
UPnP TemperatureSetpoint:1 Service	ISO/IEC 29341-6-16
UPnP HVAC_UserOperatingMode:1 Service	ISO/IEC 29341-6-17
UPnP BinaryLight:1 Device	ISO/IEC 29341-7-1
UPnP DimmableLight:1 Device	ISO/IEC 29341-7-2
UPnP Dimming:1 Service	ISO/IEC 29341-7-10
UPnP SwitchPower:1 Service	ISO/IEC 29341-7-11
UPnP InternetGatewayDevice:1 Device	ISO/IEC 29341-8-1
UPnP LANDevice:1 Device	ISO/IEC 29341-8-2
UPnP WANDevice:1 Device	ISO/IEC 29341-8-3
UPnP WANConnectionDevice:1 Device	ISO/IEC 29341-8-4
UPnP WLANAccessPointDevice:1 Device	ISO/IEC 29341-8-5
UPnP LANHostConfigManagement:1 Service	ISO/IEC 29341-8-10
UPnP Layer3Forwarding:1 Service	ISO/IEC 29341-8-11
UPnP LinkAuthentication:1 Service	ISO/IEC 29341-8-12
UPnP RadiusClient:1 Service	ISO/IEC 29341-8-13
UPnP WANCableLinkConfig:1 Service	ISO/IEC 29341-8-14
UPnP WANCommonInterfaceConfig:1 Service	ISO/IEC 29341-8-15
UPnP WANDSLLinkConfig:1 Service	ISO/IEC 29341-8-16
UPnP WANEthernetLinkConfig:1 Service	ISO/IEC 29341-8-17
UPnP WANIPConnection:1 Service	ISO/IEC 29341-8-18
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UPnP WLANConfiguration:1 Service	ISO/IEC 29341-8-21
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP Scanner:1.0 Device	ISO/IEC 29341-9-2
UPnP ExternalActivity:1 Service	ISO/IEC 29341-9-10
UPnP Feeder:1.0 Service	ISO/IEC 29341-9-11
UPnP PrintBasic:1 Service	ISO/IEC 29341-9-12
UPnP Scan:1 Service	ISO/IEC 29341-9-13
UPnP QoS Architecture:1.0	ISO/IEC 29341-10-1
UPnP QoSDevice:1 Service	ISO/IEC 29341-10-10
UPnP QoSManager:1 Service	ISO/IEC 29341-10-11
UPnP QoSPolicyHolder:1 Service	ISO/IEC 29341-10-12
UPnP QoS Architecture:2	ISO/IEC 29341-11-1
UPnP QOS v2 Schema Files	ISO/IEC 29341-11-2

<b>UPnP Document Title</b>	<b>ISO/IEC 29341 Part</b>
UPnP QosDevice:2 Service	ISO/IEC 29341-11-10
UPnP QosManager:2 Service	ISO/IEC 29341-11-11
UPnP QosPolicyHolder:2 Service	ISO/IEC 29341-11-12
UPnP RemoteUIClientDevice:1 Device	ISO/IEC 29341-12-1
UPnP RemoteUIServerDevice:1 Device	ISO/IEC 29341-12-2
UPnP RemoteUIClient:1 Service	ISO/IEC 29341-12-10
UPnP RemoteUIServer:1 Service	ISO/IEC 29341-12-11
UPnP DeviceSecurity:1 Service	ISO/IEC 29341-13-10
UPnP SecurityConsole:1 Service	ISO/IEC 29341-13-11

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## 1. Overview and Scope

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

- This service represents a front-panel by registering a control point for a specific user interaction. It allows the service to control its resources by enabling limited registrations. It also interacts with an associated Scan service to address contention issues after a user interaction has occurred.

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## 2. Service Modeling Definitions

### 2.1. ServiceType

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

`urn:schemas-upnp-org:service:ExternalActivity:1`

### 2.2. Service State Table

Table 1: Service State Table

Variable Name	Req. or Opt. <sup>1</sup>	Data Type	Allowed Value <sup>2</sup>	Default Value <sup>2</sup>	Eng. Units
Activity	R	string			n/a
AvailableRegistrations (Read-Only Value)	R	Boolean		<implementation specific> Recommended Value: 1	N/A
DisplayString	R	string			
DisplayStringSize (Read-Only Value)	R	ui4	[0 vendor-defined]		
ButtonName	R	string	[All]	All	n/a
Duration	R	i4	-1 – max i4		
RegistrationID	R	ui4	1 – max ui4		

<sup>1</sup> R = Required, O = Optional, X = Non-standard.

<sup>2</sup> Values listed in this column are required. To specify standard optional values or to delegate assignment of values to the vendor, you must reference a specific instance of an appropriate table below.

#### 2.2.1. Activity

A string that reflects the most recent activity (possibly a button press, an activity such as a motion sensor, etc.). This string contains a concatenation of the ButtonName value, the DisplayString value, and a sequence number as shown in the example below. Vendor specific information may be included after the sequence number if needed.

`<ButtonName>;<DisplayString>;<SequenceNumber>;optional vendor specific information>`

ScanButton;John Jones;11234;Scanner at NW entrance

The separate parts of the string are each separated by a semicolon (;). The concatenation of the two values solves a race that occurs when two evented variables change simultaneously. UPnP does not specify if the events will arrive together, or if separately, which order they will arrive in. The sequence value is meaningless and it should be ignored. It simply ensures that an event will occur even if the same button is pressed two times sequentially.

#### 2.2.2. AvailableRegistrations

The *AvailableRegistrations* value indicates whether the ExternalActivity service is currently able to accept registrations or not. This value is TRUE (1) when the service is able to successfully execute the Register action.

### 2.2.3. DisplayString

The DisplayString given in the most recent *Register* action. This value is intended to uniquely identify a user choice in a display (if the device has one). This can be any string value that is unique for an ExternalActivity Service. If the device has a display and uses presents menus to a user, then this string is the message that should be presented for each choice.

### 2.2.4. DisplayStringSize

The *DisplayStringSize* variable is a constant. It is intended to provide a maximum string length, in characters, for a display. Control points should refer to the SCPD to determine the maximum length of the DisplayString value. The string is specified to be in UTF8 characters. This means that not all characters will be one byte long. They may be up to 4 bytes in length. Vendors should allocate sufficient memory to hold the oversized strings, or at least be able to detect that the string may exceed the available resources and act accordingly. The maximum value is vendor unique.

**Table 1.1: DisplayStringSize allowedValueRange**

Value	Req. or Opt.
Minimum	0
Maximum	Vendor Unique
Step	1

### 2.2.5. ButtonName

The name of a button or other activity used in the Register action.

A vendor may extend or subset the allowed values to support any external activity needed. The allowedValueList below contains an optional value of "Scan", however other values could include concepts like *Red*, *Green*, *TemperatureSensor*, *PhoneRinging*, *ScanTo*, etc. Basically, the ButtonName value can be used to represent a specific type of interaction.

How the ExternalActivity Service Description <defaultValue> and <allowedValueList> elements are configured with these values is implementation specific.

If the value of *All* is given, then the *Register* action should be applied to all supported buttons and activities.

**Table 1.2: ButtonPress allowed values**

Value	Req. or Opt.
All	R
Scan	O

### 2.2.6. Duration

Represents the duration of a registration in the Register and Renew actions.

**Table 1.3: Duration allowed values**

Value	Req. or Opt.
Minimum	-1
Maximum	Vendor Unique
Step	1