# ISO/IEC 29341-18-3

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# INTERNATIONAL STANDARD

colour inside

## Information technology – UPnP device architecture – Part 18-3: Remote Access Device Control Protocol – Remote Access Server Device

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# INFORMATION TECHNOLOGY – UPNP DEVICE ARCHITECTURE –

## Part 18-3: Remote Access Device Control Protocol – Remote Access Server Device

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The list of all currently available parts of the ISO/IEC 29341 series, under the general title *Information technology – UPnP device architecture*, can be found on the IEC web site.

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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1 UPnP Forum Steering committee, UPnP Forum, 3855 SW 153rd Drive, Beaverton, Oregon 97006 USA. See also “Introduction”.

**IMPORTANT – The "colour inside" logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

# 1 Overview and Scope

This device definition is compliant with the UPnP Device Architecture version 1.0. It defines a device type referred to herein as *RAServer* Device.

## 1.1 Introduction

The *RAServer* Device is a UPnP Device UPnP device that allows control points to configure Remote Access Servers. This Device provides control points with the following functionality:

- Determine if the Remote Access Server is reachable from the public Internet
- Enable a Remote Access Server to be reachable from the public Internet
- Enumerate the Remote Access Transport mechanisms supported by the Remote Access Server
- Enumerate the Credentials Delivery mechanisms supported by the Remote Access Server
- Configure active Remote Access Transport profiles
- Configure filters for allowing which local Devices are visible in remote networks
- Configure filters for allowing which remote Devices are visible in the local network
- Maintains list of registered remote users, and authenticates when they log in depending on their pre-configured info appropriately

This Device does not address:

- Control level and content level Access Control for local Devices which are exposed to remote networks

## 1.2 Notation

- In this document, features are described as Required, Recommended, or Optional as follows:

  The key words “MUST,” “MUST NOT,” “REQUIRED,” “SHALL,” “SHALL NOT,” “SHOULD,” “SHOULD NOT,” “RECOMMENDED,” “MAY,” and “OPTIONAL” in this specification are to be interpreted as described in [RFC 2119].

  In addition, the following keywords are used in this specification:

  PROHIBITED – The definition or behavior is an absolute prohibition of this specification. Opposite of REQUIRED.

  CONDITIONALLY REQUIRED – The definition or behavior depends on a condition. If the specified condition is met, then the definition or behavior is REQUIRED, otherwise it is PROHIBITED.

  CONDITIONALLY OPTIONAL – The definition or behavior depends on a condition. If the specified condition is met, then the definition or behavior is OPTIONAL, otherwise it is PROHIBITED.

  These keywords are thus capitalized when used to unambiguously specify requirements over protocol and application features and behavior that affect the interoperability and security of implementations. When these words are not capitalized, they are meant in their natural-language sense.
- Strings that are to be taken literally are enclosed in “double quotes”.
- Placeholder values that need to be replaced are enclosed in the curly brackets “{” and “}”.
- 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 by the UPnP Device Architecture are printed using the **arch** character style.
- A double colon delimiter, "::", 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.

### 1.3 Vendor-defined Extensions

Whenever vendors create additional vendor-defined state variables, actions or properties, their assigned names and XML representation MUST follow the naming conventions and XML rules as specified in [DEVICE], Clause 2.5, "Description: Non-standard vendor extensions".

### 1.4 References

#### 1.4.1 Normative References

This clause lists the normative references used in this specification and includes the tag inside square brackets that is used for each such reference:

[DEVICE] – UPnP Device Architecture, version 1.0. Available at: http://www.upnp.org/specs/arch/UPnP-arch-DeviceArchitecture-v1.0-20080424.pdf. Latest version available at: http://www.upnp.org/specs/arch/UPnP-arch-DeviceArchitecture-v1.0.pdf.

[ICC] – InboundConnectionConfig:1, UPnP Forum, Available at: http://www.upnp.org/specs/ra/UPnP-ra-InboundConnectionConfig-v1-Service-20090930.pdf. Latest version available at: http://www.upnp.org/specs/ra/UPnP-ra-InboundConnectionConfig-v1-Service.pdf.

[RADAConfig] – RADAConfig:1, UPnP Forum, Available at: http://www.upnp.org/specs/ra/UPnP-ra-RADAConfig-v1-Service-20090930.pdf. Latest version available at: http://www.upnp.org/specs/ra/UPnP-ra-RADAConfig-v1-Service.pdf.

[RADASync] – RADASync:1, UPnP Forum, Available at: http://www.upnp.org/specs/ra/UPnP-ra-RADASync-v1-Service-20090930.pdf. Latest version available at: http://www.upnp.org/specs/ra/UPnP-ra-RADASync-v1-Service.pdf.

[RATAConfig] – RATAConfig:1, UPnP Forum, Available at: http://www.upnp.org/specs/ra/UPnP-ra-RATAConfig-v1-Service-20090930.pdf. Latest version available at: http://www.upnp.org/specs/ra/UPnP-ra-RATAConfig-v1-Service.pdf.

[RFC 2119] – IETF RFC 2119, Key words for use in RFCs to Indicate Requirement Levels, S. Bradner, March 1997. Available at: http://www.ietf.org/rfcs/rfc2119.txt.

[XML] – "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/.

#### 1.4.2 Informative References

This clause lists the informative references that are provided as information in helping understand this specification:

[RAARCH] – RAArchitecture:1, UPnP Forum, Available at: http://www.upnp.org/specs/ra/UPnP-ra-RAArchitecture-v1-20090930.pdf. Latest version available at: http://www.upnp.org/specs/ra/UPnP-ra-RAArchitecture-v1.pdf.

# 2 Device Definitions

## 2.1 Device Type

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

**urn:schemas-upnp-org:device**:*RAServer:1*

*RAServer* Device is used herein to refer to this device type.

## 2.2 Terms and Abbreviations

### 2.2.1 Abbreviations

**Table 2-1 — Abbreviations**

| Definition | Description |
|---|---|
| ICC | Inbound Connection Config |
| RADA | RA Discovery Agent |
| RAC | RA Client |
| RAS | RA Server |
| RATA | RA Transport Agent |

### 2.2.2 Terms

#### 2.2.2.1 Management Console

The collection of Control Points used to configure and monitor Remote Access related services.

#### 2.2.2.2 Remote Access Client

The Remote Access Client (RAC) is the peer physical device that is not part of the physical home network. The RAC is exposing only the UPnP devices and services that are embedded in the physical device.

#### 2.2.2.3 Remote Access Network Interface

The RA network interface is the network interface that is created by the Remote Access Transport Agent. The settings for this interface are contained in a RATA profile.

#### 2.2.2.4 Remote Access Server

The Remote Access Server (RAS) is the peer physical device located in the home network. RAS is exposing to the RAC the UPnP devices and services available in the physical home network as well as any embedded in the physical RAS device.

#### 2.2.2.5 Remote Access Transport profile

A RATA profile is a configured RATA connection ready to be used by either accepting connections on the RAS side or to initiate connections on the RAC side.

#### 2.2.2.6 Remote device

A remote device is a UPnP device that is not attached to the physical network where the RADA is located.

## 2.3 *RAServer* Device Architecture

This device is hosted by the Remote Access Server and is active on the LAN network interface. The device embeds the the RATAConfig service that is used to configure the RA Transport Agent associated with the RA network interface, the RADAConfig service that is used to configure how local devices are exposed in the remote networks and how remote devices are exposed in the local network, and the InboundConnectionConfig service that provides the features that enable the reachability of the RAS from the Internet.

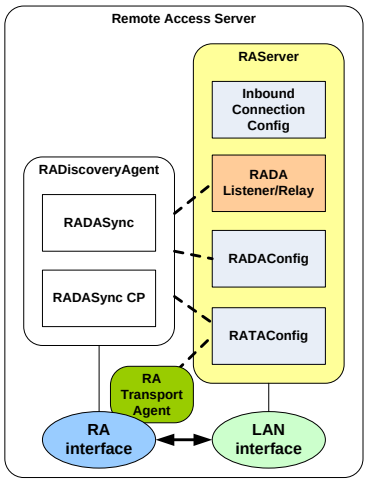


**Figure 2-1 — RAServer Device Architecture.**

Additionally, the *RAServer* Device is hosting the RADA Listener and Relay functionality that is a support function of the Remote Access Discovery Agent (RADA). RADA Listener and Relay are described in detail in the RADASync Service document.

## 2.4 Device Model

*RAServer* products MUST implement minimum version numbers of all REQUIRED embedded Devices and Services specified in the table below. A *RAServer* Device can be either a *Root* device or can be *Embedded* in another UPnP Device (*RAServer* or other). A *RAServer* Device (*Root* or *Embedded*) can in turn contain other standard or non-standard *Embedded* UPnP Devices.

**Table 2-2 — Device Requirements**

| DeviceType | Root | R/O [a] | ServiceType | R/O [a] | Service ID [b] |
|---|---|---|---|---|---|
| *RAServer:1* | *Root* or *Embedded* | *R* | *RATAConfig:1* | *R* | RATAConfig |
| | | | *RADAConfig:1* | *R* | RADAConfig |
| | | | *InboundConnectionConfig:1* | *R* | InboundConnection Config |
| | | | *Standard non-RA Services defined by UPnP (QoS, Security, etc.) go here.* | *X* | *TBD* |
| | | | *Non-standard Services embedded by a UPnP vendor go here.* | *X* | *TBD* |
| *Standard Devices embedded by a UPnP vendor go here.* | *Embedded* | *O* | *Services as defined by the corresponding standard UPnP Device Definition go here.* | | |
| *Non-standard Devices embedded by a UPnP vendor go here.* | *Embedded* | *X* | *TBD* | *TBD* | *TBD* |

a *R* = REQUIRED, *O* = OPTIONAL, *X* = Non-standard

b Prefixed by urn:**upnp-org**:**serviceId**:

### 2.4.1 Description of Device Requirements

The interfaces exposed by the *RAServer* device SHOULD be available only to authorized RA Management Consoles.

## 2.5 Theory of Operation

Refer to the Clause 4.3 and Clause 4.4 of the Remote Access Architecture document.

# 3 XML Device Description

```
<?xml version="1.0"?>
<root xmlns="urn:schemas-upnp-org:device-1-0">
   <specVersion>
      <major>1</major>
      <minor>0</minor>
   </specVersion>
   <URLBase>base URL for all relative URLs</URLBase>

   <device>
      <deviceType>
         urn:schemas-upnp-org:device:RAServer:1
      </deviceType>
      <friendlyName>short user-friendly title</friendlyName>
      <manufacturer>manufacturer name</manufacturer>
      <manufacturerURL>URL to manufacturer site</manufacturerURL>
      <modelDescription>long user-friendly title</modelDescription>
      <modelName>model name</modelName>
      <modelNumber>model number</modelNumber>
      <modelURL>URL to model site</modelURL>
      <serialNumber>manufacturer's serial number</serialNumber>
      <UDN>uuid:UUID</UDN>
      <UPC>Universal Product Code</UPC>
      <iconList>
         <icon>
            <mimetype>image/format</mimetype>
            <width>horizontal pixels</width>
            <height>vertical pixels</height>
            <depth>color depth</depth>
```

```
            <url>URL to icon</url>
         </icon>
         <!-- XML to declare other icons, if any, go here -->
      </iconList>
      <serviceList>
         <service>
            <serviceType>
               urn:schemas-upnp-org:service:RATAConfig:1
            </serviceType>
            <serviceId>
               urn:upnp-org:serviceId:RATAConfig
            </serviceId>
            <SCPDURL>URL to service description</SCPDURL>
            <controlURL>URL for control</controlURL>
            <eventSubURL>URL for eventing</eventSubURL>
         </service>
         <service>
            <serviceType>
               urn:schemas-upnp-org:service:RADAConfig:1
            </serviceType>
            <serviceId>
               urn:upnp-org:serviceId:RADAConfig
            </serviceId>
            <SCPDURL>URL to service description</SCPDURL>
            <controlURL>URL for control</controlURL>
            <eventSubURL>URL for eventing</eventSubURL>
         </service>
         <service>
            <serviceType>
               urn:schemas-upnp-org:service:InboundConnectionConfig:1
            </serviceType>
            <serviceId>
               urn:upnp-org:serviceId:InboundConnectionConfig
            </serviceId>
            <SCPDURL>URL to service description</SCPDURL>
            <controlURL>URL for control</controlURL>
            <eventSubURL>URL for eventing</eventSubURL>
         </service>

      <!-- Declarations for standard non-RA services defined by UPnP
         (if any)go here. -->

      <!-- Declarations for other services defined by UPnP vendor
         (if any)go here.-->

      </serviceList>
      <deviceList>

      <!-- Declarations for standard non-RA devices defined by UPnP
         (if any)go here. -->

      <!-- Declarations for other devices defined by UPnP vendor
         (if any)go here. -->

      </deviceList>
      <presentationURL>URL for presentation</presentationURL>
   </device>
</root>
```

## 4 Test

No semantic tests have been specified for this device.

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