ISO/IEC 29341-18-3

Edition 1.0 2011-08

INTERNATIONAL STANDARD

colour inside

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

ISO/IEC 29341-18-3:2011(E)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub
The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: www.iec.ch/online_news/justpub
Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.

- Electropedia: www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.

- Customer Service Centre: www.iec.ch/webstore/custserv
If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: csc@iec.ch
Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00

ISO/IEC 29341-18-3

Edition 1.0 2011-08

INTERNATIONAL STANDARD

colour inside

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE C

ICS 35.200

ISBN 978-2-88912-651-4

CONTENTS

INFORMATION TECHNOLOGY – UPNP DEVICE ARCHITECTURE –

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

FOREWORD

1) ISO (International Organization for Standardization) and IEC (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. Their preparation is entrusted to technical committees; any ISO and IEC member body interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with ISO and IEC also participate in this preparation.

2) In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

3) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC and ISO member bodies.

4) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

5) In order to promote international uniformity, IEC and ISO member bodies undertake to apply IEC, ISO and ISO/IEC publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO/IEC publication and the corresponding national or regional publication should be clearly indicated in the latter.

6) ISO and IEC provide no marking procedure to indicate their approval and cannot be rendered responsible for any equipment declared to be in conformity with an ISO/IEC publication.

7) All users should ensure that they have the latest edition of this publication.

8) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.

9) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

10) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 29341-18-3 was prepared by UPnP Forum Steering committee[1], was adopted, under the fast track procedure, by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

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.

---

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.

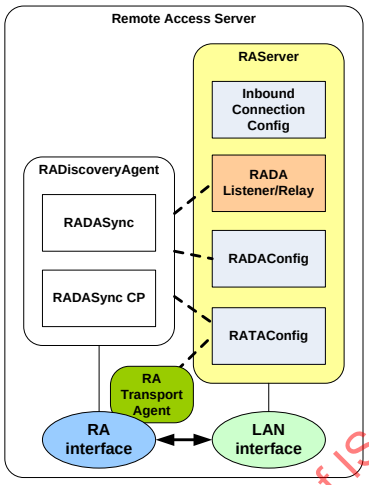

Figure 2-1 — RAServer Device Architecture.

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>
```