

INTERNATIONAL STANDARD



**Information technology – UPnP device architecture –
Part 18-4: Remote Access Device Control Protocol – Remote Access Discovery
Agent Device**

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 29341-18-4:2011



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2011 ISO/IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about ISO/IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
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 It also gives information on projects, withdrawn and replaced publications.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

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 29047-18-4:2017



ISO/IEC 29341-18-4

Edition 1.0 2011-08

INTERNATIONAL STANDARD



**Information technology – UPnP device architecture –
Part 18-4: Remote Access Device Control Protocol – Remote Access Discovery
Agent Device**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

C

ICS 35.200

ISBN 978-2-88912-652-1

CONTENTS

- 1 Overview and Scope.....2
 - 1.1 Introduction2
 - 1.2 Notation2
 - 1.3 Vendor-defined Extensions3
 - 1.4 References.....3
 - 1.4.1 Normative References3
 - 1.4.2 Informative References3
- 2 Device Definitions3
 - 2.1 Device Type3
 - 2.2 Terms and Abbreviations4
 - 2.2.1 Abbreviations.....4
 - 2.2.2 Terms.....4
 - 2.3 RADiscoveryAgent Device Architecture.....4
 - 2.4 Device Model5
 - 2.4.1 Description of Device Requirements.....5
 - 2.5 Theory of Operation.....5
- 3 XML Device Description5
- 4 Test6

- Figure 2-1 — RADiscoveryAgent Device Architecture.....4

- Table 2-1 — Abbreviations.....4
- Table 2-2 — Device Requirements.....5

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 29341-18-4:2011

INFORMATION TECHNOLOGY – UPNP DEVICE ARCHITECTURE –

Part 18-4: Remote Access Device Control Protocol – Remote Access Discovery Agent 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 29341-18-4 was prepared by UPnP Forum Steering committee¹, 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.

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 29341-18-4:2011

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 RADiscoveryAgent device.

1.1 Introduction

The RADiscoveryAgent device is a UPnP device that provides the functionality capability for synchronizing the UPnP discovery information between two remote networks.

The Remote Access Discovery Agent functionality is a combination of a RADASync service and a control point functionality that interacts with a remote RADASync service running on the remote network. Each control point is pushing discovery information about devices available in its local area network to its corresponding RADASync peer. This device provides control points with the following functionality:

- Ability to push discovery information from a remote network that will be used to recreate and propagate the original information into the local network.
- Ability to propagate multicast events from a remote network into the local network.

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>.

[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>.

[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/rfc/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>.

[RAServer] – RAServer:1, UPnP Forum,

Available at: <http://www.upnp.org/specs/ra/UPnP-ra-RAServer-v1-Device-20090930.pdf>.

Latest version available at: <http://www.upnp.org/specs/ra/UPnP-ra-RAServer-v1-Device.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:RADiscoveryAgent:1

[RADiscoveryAgent](#) 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
RADA	Remote Access Discovery Agent

2.2.2 Terms

2.2.2.1 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.

2.2.2.2 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.

2.2.2.3 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.

2.3 RADiscoveryAgent Device Architecture

This device is hosted by the Remote Access Client or Remote Access Server and is active on the RA network interface. The device embeds the RADASync Service and a RADASync Control Point.

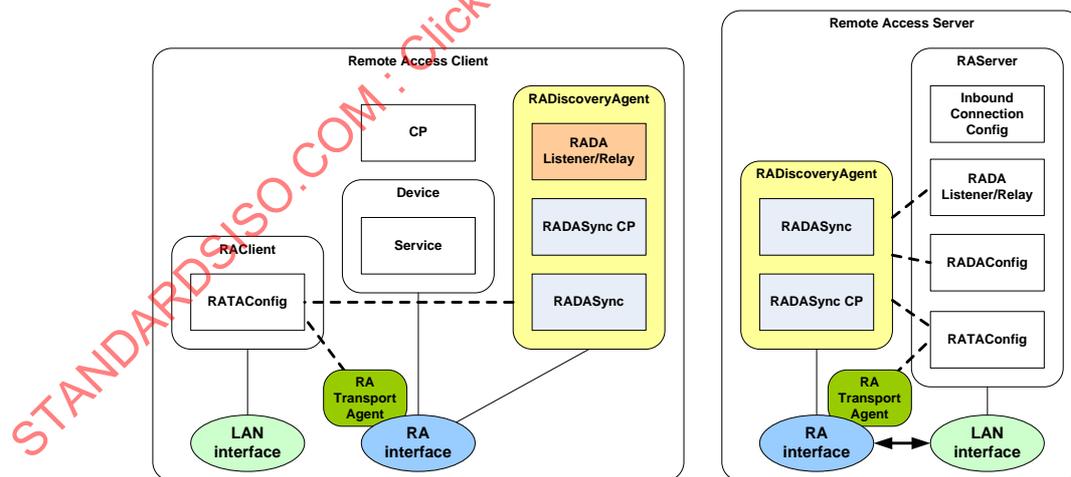


Figure 2-1 — RADiscoveryAgent Device Architecture.

Additionally, the RADiscoveryAgent Device in the Remote Access Client 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

RADiscoveryAgent products MUST implement minimum version numbers of all REQUIRED embedded devices and services specified in the table below. A *RADiscoveryAgent* device can be either a *Root* device or can be *Embedded* in another UPnP device (*RADiscoveryAgent* or other). A *RADiscoveryAgent* 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
<i>RADiscoveryAgent:1</i>	<i>Root</i> or <i>Embedded</i>	<i>R</i>	<i>RADASync:1</i>	<i>R</i>	RADASync
			<i>Standard non-RA services defined by UPnP (QoS, Security, etc.) go here.</i>	<i>X</i>	<i>TBD</i>
			<i>Non-standard services embedded by a UPnP vendor go here.</i>	<i>X</i>	<i>TBD</i>
<i>Standard devices embedded by a UPnP vendor go here.</i>	<i>Embedded</i>	<i>O</i>	<i>Services as defined by the corresponding standard UPnP Device Definition go here.</i>		
<i>Non-standard devices embedded by a UPnP vendor go here.</i>	<i>Embedded</i>	<i>X</i>	<i>TBD</i>	<i>TBD</i>	<i>TBD</i>

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

^b Prefixed by urn:schemas-upnp-org:serviceId:

2.4.1 Description of Device Requirements

Any instance of a *RADiscoveryAgent* MUST have a *RADASync* service.

RADiscoveryAgent MUST be visible only on the Remote Access network interface of the physical device that host the device. *RADiscoveryAgent* MUST not be visible on the LAN interface of the host physical device.

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:RADiscoveryAgent: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>
  </device>
</root>
```

```

<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:RADASync:1
    </serviceType>
    <serviceId>
      urn:upnp-org:serviceId:RADASync
    </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.