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INTERNATIONAL STANDARD

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inside

**Information technology – UPnP device architecture –
Part 18-12: Remote Access Device Control Protocol – Remote Access Discovery
Agent Synchronization Service**

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INFORMATION TECHNOLOGY –
UPNP DEVICE ARCHITECTURE –

Part 18-12: Remote Access Device Control Protocol –
Remote Access Discovery Agent Synchronization Service

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.

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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 29341-18-12 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.

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

This service type enables an in-band synchronization mechanism between Remote Access Clients and Remote Access Server.

1.1 Introduction

A Remote Access Discovery Agent (RADA) aggregates information about UPnP devices and services from two primary sources, depending if the devices are located in the local network or they are located in a remote device. For aggregating the devices and services available in the local network, the Remote Access Discovery Agent is constantly monitoring the SSDP traffic, which enables the RADA to have an up-to-date view of the UPnP network. The RADA finds information about remote UPnP devices and services by synchronizing with remote RADAs.
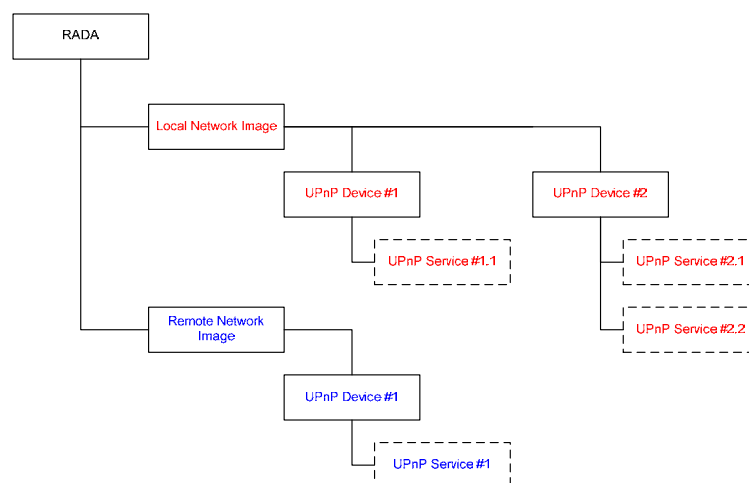

Figure 1-1 — SSDP Aggregation.

The main purpose in maintaining this aggregate view of available devices, is to alleviate the timing dependencies inherent in the UPnP Discovery mechanism. When a UPnP Control Point issues a search request, the request packet contains a parameter that specifies the maximum number of seconds a device can wait before sending the response. In remote scenarios, it is possible that this value will be exceeded with normal network traffic delay.

This aggregate view also serves to minimize the amount of SSDP traffic that needs to flow across the remote transport, as some remote scenarios may be cost-sensitive in regards to the amount of data that is transferred, since SSDP is often described as a "chatty" protocol.

The aggregate view could be used to restrict the visibility of local UPnP devices and services from remote devices and of UPnP devices and services hosted by remote devices to your local network.

This service does not address the actual transport protocol used to facilitate Remote Access.

The *RADASync* service is a UPnP service that provides control points with the following functionality:

- Publish and remove information about the existence of remote devices.
- Notification of the availability of the peer RADA.

- Register RADASync service that is co-located with the control point

This service does not address:

- Aggregation of the the local view of the UPnP network.

- Relaying discovery messages in the local network on behalf of remote devices

- Configuration of which devices are visible to and from a remote network.

- Transport protocol used to facilitate Remote Access or its configurtion.

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.

 [DADS-XSD] – XML Schema for UPnP RA Discovery Agent XML Data Structures
Available at: http://www.upnp.org/schemas/ra/dads-v1-20090930.xsd.
Latest version available at: http://www.upnp.org/schemas/ra/dads-v1.xsd.

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

[RFC 3986] – IETF RFC 3986, Uniform Resource Identifier (URI): Generic Syntax, Tim
Berners-Lee, et. Al, January 2005.
Available at: http://www.ietf.org/rfc/rfc3986.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.

[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.

[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.