RADiscoveryAgent:2 Device

For UPnP™ Version 1.0
Status: Standardized DCP
Date: April 30, 2010
Document Version: 1.0
Device Template Version: 2.00

This Standardized DCP has been adopted as a Standardized DCP by the Steering Committee of the UPnP Forum, pursuant to Section 2.1(c)(ii) of the UPnP Forum Membership Agreement. UPnP Forum Members have rights and licenses defined by Section 3 of the UPnP Forum Membership Agreement to use and reproduce the Standardized DCP in UPnP Compliant Devices. All such use is subject to all of the provisions of the UPnP Forum Membership Agreement.

THE UPNP FORUM TAKES NO POSITION AS TO WHETHER ANY INTELLECTUAL PROPERTY RIGHTS EXIST IN THE PROPOSED SERVICES, IMPLEMENTATIONS OR IN ANY ASSOCIATED TEST SUITES. THE PROPOSED SERVICES, STANDARDIZED SERVICES, IMPLEMENTATIONS AND ANY ASSOCIATED TEST SUITES ARE PROVIDED "AS IS" AND "WITH ALL FAULTS". THE UPNP FORUM MAKES NO WARRANTIES, EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE PROPOSED SERVICES, STANDARDIZED SERVICES, IMPLEMENTATIONS AND ASSOCIATED TEST SUITES INCLUDING BUT NOT LIMITED TO ALL IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT AND FITNESS FOR A PARTICULAR PURPOSE, OF REASONABLE CARE OR WORKMANLIKE EFFORT, OR RESULTS OR OF LACK OF NEGLIGENCE.

Copyright UPnP Forum © 2011. All rights reserved.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bich Nguyen (Co-chair)</td>
<td>Cisco</td>
</tr>
<tr>
<td>Ayodele Damola</td>
<td>Ericsson</td>
</tr>
<tr>
<td>Yu Zhu</td>
<td>Huawei</td>
</tr>
<tr>
<td>Bryan Roe</td>
<td>Intel</td>
</tr>
<tr>
<td>Gunner Danneels</td>
<td>Intel</td>
</tr>
<tr>
<td>Alexander Kokhanyuk</td>
<td>Motorola</td>
</tr>
<tr>
<td>Vlad Stirbu</td>
<td>Nokia</td>
</tr>
<tr>
<td>Cathy Chan</td>
<td>Nokia</td>
</tr>
<tr>
<td>Remi Bars</td>
<td>Orange</td>
</tr>
<tr>
<td>Jeffrey Kang</td>
<td>Philips</td>
</tr>
<tr>
<td>Wouter van der Beek</td>
<td>Philips</td>
</tr>
<tr>
<td>Shrikant Kanaparti</td>
<td>Samsung</td>
</tr>
<tr>
<td>Se-Hee Han</td>
<td>Samsung</td>
</tr>
<tr>
<td>Mahfuzur Rahman (Co-chair)</td>
<td>Samsung</td>
</tr>
</tbody>
</table>
### Authors

<table>
<thead>
<tr>
<th>Authors</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanjeev Verma</td>
<td>Samsung</td>
</tr>
</tbody>
</table>

UPnP Forum in no way guarantees the accuracy or completeness of this author list and in no way implies any rights for or support from those members listed. This list is not the specifications’ contributor list that is kept on the UPnP Forum’s website.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>3</td>
</tr>
<tr>
<td>List of Tables</td>
<td>4</td>
</tr>
<tr>
<td>List of Figures</td>
<td>5</td>
</tr>
<tr>
<td><strong>1  Overview and Scope</strong></td>
<td>6</td>
</tr>
<tr>
<td>1.1  Introduction</td>
<td>6</td>
</tr>
<tr>
<td>1.2  Notation</td>
<td>6</td>
</tr>
<tr>
<td>1.3  Vendor-defined Extensions</td>
<td>7</td>
</tr>
<tr>
<td>1.4  References</td>
<td>7</td>
</tr>
<tr>
<td>1.4.1 Normative References</td>
<td>7</td>
</tr>
<tr>
<td>1.4.2 Informative References</td>
<td>7</td>
</tr>
<tr>
<td><strong>2  Device Definitions</strong></td>
<td>8</td>
</tr>
<tr>
<td>2.1  Device Type</td>
<td>8</td>
</tr>
<tr>
<td>2.2  Terms and Abbreviations</td>
<td>8</td>
</tr>
<tr>
<td>2.2.1 Abbreviations</td>
<td>8</td>
</tr>
<tr>
<td>2.2.2 Terms</td>
<td>8</td>
</tr>
<tr>
<td>2.3  <strong>RADiscoveryAgent</strong> Device Architecture</td>
<td>8</td>
</tr>
<tr>
<td>2.4  Device Model</td>
<td>9</td>
</tr>
<tr>
<td>2.4.1 Description of Device Requirements</td>
<td>10</td>
</tr>
<tr>
<td>2.5  Theory of Operation</td>
<td>10</td>
</tr>
<tr>
<td><strong>3  XML Device Description</strong></td>
<td>11</td>
</tr>
<tr>
<td><strong>4  Test</strong></td>
<td>13</td>
</tr>
</tbody>
</table>
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2-1:</td>
<td>Abbreviations</td>
<td>8</td>
</tr>
<tr>
<td>Table 2-2:</td>
<td>Device Requirements</td>
<td>9</td>
</tr>
</tbody>
</table>
List of Figures

Figure 2-1: RADiscoveryAgent Device Architecture. .................................................................9
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 \textit{RADiscoveryAgent} device.

1.1 Introduction
The \textit{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.
- Ability to retrieve address information of 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 “{}”.

- 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], Section 2.5, “Description: Non-standard vendor extensions”.

1.4 References

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


[RADASync] – RADASync:1, UPnP Forum,

Available at: http://www.ietf.org/rfc/rfc2119.txt.

Available at: http://www.w3.org/TR/2004/REC-xml-20040204/.

1.4.2 Informative References
This section lists the informative references that are provided as information in helping understand this specification:

[RAARCH] – RAArchitecture:1, UPnP Forum,

[RAServer] – RAServer:1, UPnP Forum,
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:2*

*RADiscoveryAgent* device is used herein to refer to this device type.

2.2 Terms and Abbreviations

2.2.1 Abbreviations

Table 2-1: Abbreviations

<table>
<thead>
<tr>
<th>Definition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADA</td>
<td>Remote Access Discovery Agent</td>
</tr>
</tbody>
</table>

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.
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

<table>
<thead>
<tr>
<th>DeviceType</th>
<th>Root</th>
<th>R/O¹</th>
<th>ServiceType</th>
<th>R/O²</th>
<th>Service ID³</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADiscoveryAgent:2</td>
<td>Root or Embedded</td>
<td>R</td>
<td>RADASync:2</td>
<td>R</td>
<td>RADASync</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard non-RA services defined by UPnP (QoS, Security, etc.) go here.</td>
<td>X</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-standard services embedded by a UPnP vendor go here.</td>
<td>X</td>
<td>TBD</td>
</tr>
<tr>
<td>Standard devices embedded by a UPnP vendor go here</td>
<td>Embedded</td>
<td>O</td>
<td>Services as defined by the corresponding standard UPnP Device Definition go here.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-standard devices embedded by a UPnP vendor go here</td>
<td>Embedded</td>
<td>X</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

¹ R = REQUIRED, O = OPTIONAL, X = Non-standard.
² R = REQUIRED, O = OPTIONAL, X = Non-standard.
³ Prefixed by urn: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 Section 4.3 and Section 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:2
    </deviceType>
    <friendlyName>short user-friendly title</friendlyName>
    <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:RADASync:2
        </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>
  </device>
</root>
<!-- 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.