

This is a preview - click here to buy the full publication



ISO/IEC 29341-18-13

Edition 1.0 2011-08

INTERNATIONAL STANDARD



**Information technology – UPnP device architecture –
Part 18-13: Remote Access Device Control Protocol – Remote Access Transport
Agent Configuration Service**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

S

ICS 35.200

ISBN 978-2-88912-641-5

CONTENTS

1	Overview and Scope.....	4
1.1	Introduction	4
1.2	Notation	4
1.3	Vendor-defined Extensions.....	5
1.4	References.....	5
1.4.1	Normative References	5
1.4.2	Informative References	6
2	Service Modeling Definitions.....	6
2.1	Service Type	6
2.2	Terms and Abbreviations	7
2.2.1	Abbreviations.....	7
2.2.2	Terms.....	7
2.3	<i>RATAConfig</i> Service Architecture	8
2.4	State Variables.....	8
2.4.1	State Variable Overview.....	8
2.4.2	<i>SystemInfo</i>	8
2.4.3	<i>TransportAgentCapabilities</i>	9
2.4.4	<i>CredentialDelivery</i>	9
2.4.5	<i>CredentialsList</i>	9
2.4.6	<i>ProfileList</i>	9
2.4.7	<i>A_ARG_TYPE_ProfileConfigInfo</i>	10
2.4.8	<i>A_ARG_TYPE_ProfileID</i>	10
2.5	Eventing and Moderation	10
2.5.1	Relationships Between State Variables	10
2.6	Actions.....	10
2.6.1	<i>GetTransportAgentCapabilities()</i>	11
2.6.2	<i>GetSupportedCredentialDelivery()</i>	11
2.6.3	<i>GetCredentialsList()</i>	12
2.6.4	<i>GetProfileList()</i>	13
2.6.5	<i>AddProfile()</i>	13
2.6.6	<i>EditProfile()</i>	14
2.6.7	<i>DeleteProfile()</i>	15
2.6.8	<i>GetProfileConfigInfo()</i>	16
2.6.9	Error Code Summary	16
2.7	Theory of Operation.....	17
2.7.1	The Interaction Model	17
2.7.2	Detecting the RATA Role	17
2.7.3	Configuring Remote Access Transport Profile (Server)	17
2.7.4	Configuring Remote Access Transport Profile (Client)	18
2.7.5	Editing a Profile	18
2.7.6	Deleting a Profile	19
3	XML Service Description	19
4	Test	22
	Annex A (normative) RATransportAgent Data Structures	23

A.1	ProfileList Template.....	23
A.2	ProfileConfig Template	23
A.3	TransportAgentCapabilities Template	24
A.4	CredentialDelivery Template.....	25
A.5	CredentialsList Template	26
A.6	TransportAgent Datastructure Schema	27
Annex B	(informative) Addressing Considerations	28
B.1	IPv4 Considerations	28
B.1.1	IPv4 Address Allocation	28
B.1.2	Address Space Collisions.....	28
Annex C	(normative) Using IPsec as Remote Access Transport	30
C.1	IPsec Templates.....	30
C.1.1	IPsec Options Template	30
C.1.2	IPsec Configuration Template	31
C.2	Sample IPsec Files.....	34
C.2.1	Sample IPsec based on certificates	34
C.2.2	Sample IPsec based on shared key null policy.....	37
C.2.3	Sample IPsec based on shared key advanced policy.....	39
Annex D	(normative) Using OpenVPN as Remote Access Transport	42
D.1	OpenVPN Templates	42
D.1.1	OpenVPN Configuration Template.....	42
D.2	Sample OpenVPN configuration.....	46
D.2.1	Sample configuration for Server	46
D.2.2	Sample configuration for Client	46
Figure 2-1	— The Interaction Model	17
Figure 2-2	— Configuring Remote Access Transport Profiles.....	18
Figure 2-3	— Editing Remote Access Transport Profiles.....	18
Figure 2-4	— Deleting Remote Access Transport Profiles.....	19
Figure B.1	— Address Space Collision Problem.	28
Table 2-1	— Abbreviations.....	7
Table 2-2	— State Variables	8
Table 2-3	— Eventing and Moderation	10
Table 2-4	— Actions	10
Table 2-5	— Arguments for <u>GetTransportAgentCapabilities()</u>	11
Table 2-6	— Error Codes for <u>GetTransportAgentCapabilities()</u>	11
Table 2-7	— Arguments for <u>GetSupportedCredentialDelivery()</u>	11
Table 2-8	— Error Codes for <u>GetSupportedCredentialDelivery()</u>	12
Table 2-9	— Arguments for <u>GetCredentialsList()</u>	12
Table 2-10	— Error Codes for <u>GetCredentialsList()</u>	13
Table 2-11	— Arguments for <u>GetProfileList()</u>	13
Table 2-12	— Error Codes for <u>GetProfileList()</u>	13
Table 2-13	— Arguments for <u>AddProfile()</u>	13
Table 2-14	— Error Codes for <u>AddProfile()</u>	14
Table 2-15	— Arguments for <u>EditProfile()</u>	14

29341-18-13 © ISO/IEC:2011(E)

Table 2-16 — Error Codes for <u>EditProfile()</u>	15
Table 2-17 — Arguments for <u>DeleteProfile()</u>	15
Table 2-18 — Error Codes for <u>DeleteProfile()</u>	16
Table 2-19 — Arguments for <u>GetProfileConfigInfo()</u>	16
Table 2-20 — Error Codes for <u>GetProfileConfigInfo()</u>	16
Table 2-21 — Error Code Summary	17

INFORMATION TECHNOLOGY – UPnP DEVICE ARCHITECTURE –

Part 18-13: Remote Access Device Control – Remote Access Transport Agent Configuration 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.
- 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 29341-18-13 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".

[This is a preview - click here to buy the full publication](#)

29341-18-13 © ISO/IEC:2011(E)

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 *RATAConfig* service.

1.1 Introduction

The *RATAConfig* service is a UPnP service that allows control points to provision and configure the parameters that are required for enabling a Remote Access Server to accept and a Remote Access Client to initiate remote access connections. This service provides control points with the following functionality:

- Determine the Remote Access Transport Agents that can be configured by the service.
- Determine the delivery mechanisms for credentials supported by the service.
- Configure Remote Access Transport Agent profiles
- Management of Remote Access Transport Agent profiles

This service does not address:

- The trust model that will enable secure remote access connections.
- The delivery of credentials.

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>.

[DEVICE-IPv6] – UPnP Device Architecture, version 1.0., Annex A – IP Version 6 Support. Available at: http://www.upnp.org/resources/documents/AnnexA-IPv6_000.pdf

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

[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>.

[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>.

[TADS-XSD] – XML Schema for UPnP RA Transport Agent XML Data Structures Available at: <http://www.upnp.org/schemas/ra/tads-v1-20090930.xsd>. Latest version available at: <http://www.upnp.org/schemas/ra/tads-v1.xsd>.

[IPSEC-XSD] – XML Schema for IPsec Transport Agent Options and Configuration XML Data Structures Available at: <http://www.upnp.org/schemas/ra/tacfg-ipsec-v1-20090930.xsd>. Latest version available at: <http://www.upnp.org/schemas/ra/tacfg-ipsec-v1.xsd>.

[OPENVPN-XSD] – XML Schema for OpenVPN Transport Agent Options and Configuration XML Data Structures Available at: <http://www.upnp.org/schemas/ra/tacfg-openvpn-v1-20090930.xsd>. Latest version available at: <http://www.upnp.org/schemas/ra/tacfg-openvpn-v1.xsd>.

[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:

[IGD] – InternetGatewayDevice:1, UPnP Forum, November, 2001
Available at: http://www.upnp.org/standardizeddcps/documents/UPnP_IGD_1.0.zip

[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>.

[RFC 2406] – IETF RFC 2406, IP Encapsulating Security Payload (ESP), S. Kent, R. Atkinson,
November 1998
Available at: <http://www.ietf.org/rfc/rfc2406.txt>

[RFC 3706] – IETF RFC 3706, A Traffic-Based Method of Detecting Dead Internet Key
Exchange (IKE) Peers, G. Huang, et. Al., February 2004
Available at: <http://www.ietf.org/rfc/rfc3706.txt>

[RFC 3947] – IETF RFC 3947, Negotiation of NAT-Traversal in the IKE, T. Kivinen, B.
Swander, A. Huttunen, V. Volpe, January 2005.
Available at: <http://www.ietf.org/rfc/rfc3947.txt>.

[RFC 4306] – IETF RFC 4306, Internet Key Exchange (IKEv2) Protocol, C. Kaufman, Ed.,
December 2005
Available at: <http://www.ietf.org/rfc/rfc4306.txt>