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**Information technology – UPnP device architecture –
Part 18-10: Remote Access Device Control Protocol – Remote Access Inbound
Connection Configuration Service**

CONTENTS

**INFORMATION TECHNOLOGY –
UPNP DEVICE ARCHITECTURE –**

**Part 18-10: Remote Access Device Control Protocol –
Remote Access Inbound Connection Configuration Service**

FOREWORD

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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 29341-18-10 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 *InboundConnectionConfig* service.

1.1 Introduction

The *InboundConnectionConfig* service is a UPnP service that allows control points to configure the parameters that will enable the service to test if the host device is reachable from the internet. InboundConnectionConfig uses Dynamic DNS to manage at least one public address for home-network services; it uses STUN to ensure that any intermediate NAT device is navigatable, i.e. it is a full-cone NAT. Thus, this service provides control points with the following functionality:

- Configure the dynamic DNS client co-located with the service,

- Configure the STUN client co-located with the service,

- Check if the device hosting the service is reachable from the internet.

This service does not address:

- Configuration of relay services in the public network, e.g. TURN.

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, UPnP Forum, June 13, 2000. 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.

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

[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.

[RFC 1034] – IETF RFC 1034, DOMAIN NAMES - CONCEPTS AND FACILITIES, P. Mockapetris, November 1987 Available at: http://www.ietf.org/rfc/rfc1034.txt

[RFC 1035] – IETF RFC 1035, DOMAIN NAMES - IMPLEMENTATION AND SPECIFICATION, P. Mockapetris, November 1987 Available at: http://www.ietf.org/rfc/rfc1035.txt

[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 2136] – IETF RFC 2136, Dynamic Updates in the Domain Name System (DNS UPDATE), P. Vixie (Editor), April 1997 Available at: http://www.ietf.org/rfc/rfc2136.txt

[RFC 3489] – IETF RFC 3489, STUN - Simple Traversal of User Datagram Protocol (UDP) Through Network Address Translators (NATs), J. Rosenberg, et. Al., March 2003 Available at: http://www.ietf.org/rfc/rfc3489.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 specificatio:

[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-v1-20090930pdf. Latest version available at: http://www.upnp.org/specs/ra/UPnP-ra-RAArchitecture-v1.pdf.

[TURN] – IETF Internet Draft, Traversal Using Relays around NAT (TURN): Relay Extensions to Session Traversal Utilities for NAT (STUN), J. Rosenberg, July 8, 2007 Available at: http://www.ietf.org/internet-drafts/draft-ietf-behave-turn-04.txt