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ISO/IEC 29341-24-11was prepared by UPnP Forum and adopted, under the PAS procedure, by joint technical committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

The list of all currently available parts of ISO/IEC 29341 series, under the general title *Information technology — UPnP Device Architecture*, can be found on the ISO web site.

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Original UPnP Document

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UPnP Document Title	ISO/IEC 29341 Part
UPnP Device Architecture 1.0	ISO/IEC 29341-1:2008
UPnP Device Architecture Version 1.0	ISO/IEC 29341-1:2011
UPnP Device Architecture 1.1	ISO/IEC 29341-1-1:2011
UPnP Device Architecture 2.0	ISO/IEC 29341-1-2
UPnP Basic:1 Device	ISO/IEC 29341-2
UPnP AV Architecture:1	ISO/IEC 29341-3-1:2008
UPnP AV Architecture:1	ISO/IEC 29341-3-1:2011
UPnP AVTransport:1 Service	ISO/IEC 29341-3-10
UPnP ConnectionManager:1 Service	ISO/IEC 29341-3-11
UPnP ContentDirectory:1 Service	ISO/IEC 29341-3-12
UPnP RenderingControl:1 Service	ISO/IEC 29341-3-13
UPnP MediaRenderer:1 Device	ISO/IEC 29341-3-2
UPnP MediaRenderer:2 Device	ISO/IEC 29341-3-2:2011
UPnP MediaServer:1 Device	ISO/IEC 29341-3-3
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10:2008
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10:2011
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11:2008
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11:2011
UPnP ContentDirectory:2 Service	ISO/IEC 29341-4-12
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13:2008
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13:2011
UPnP ScheduledRecording:1	ISO/IEC 29341-4-14
UPnP ScheduledRecording:2	ISO/IEC 29341-4-14:2011

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UPnP MediaRenderer:2 Device	ISO/IEC 29341-4-2
UPnP MediaServer:2 Device	ISO/IEC 29341-4-3
UPnP AV Datastructure Template:1	ISO/IEC 29341-4-4:2008
UPnP AV Datastructure Template:1	ISO/IEC 29341-4-4:2011
UPnP DigitalSecurityCamera:1 Device	ISO/IEC 29341-5-1
UPnP DigitalSecurityCameraMotionImage:1 Service	ISO/IEC 29341-5-10
UPnP DigitalSecurityCameraSettings:1 Service	ISO/IEC 29341-5-11
UPnP DigitalSecurityCameraStillImage:1 Service	ISO/IEC 29341-5-12
UPnP HVAC_System:1 Device	ISO/IEC 29341-6-1
UPnP ControlValve:1 Service	ISO/IEC 29341-6-10
UPnP HVAC_FanOperatingMode:1 Service	ISO/IEC 29341-6-11
UPnP FanSpeed:1 Service	ISO/IEC 29341-6-12
UPnP HouseStatus:1 Service	ISO/IEC 29341-6-13
UPnP HVAC_SetpointSchedule:1 Service	ISO/IEC 29341-6-14
UPnP TemperatureSensor:1 Service	ISO/IEC 29341-6-15
UPnP TemperatureSetpoint:1 Service	ISO/IEC 29341-6-16
UPnP HVAC_UserOperatingMode:1 Service	ISO/IEC 29341-6-17
UPnP HVAC_ZoneThermostat:1 Device	ISO/IEC 29341-6-2
UPnP BinaryLight:1 Device	ISO/IEC 29341-7-1
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UPnP SwitchPower:1 Service	ISO/IEC 29341-7-11
UPnP DimmableLight:1 Device	ISO/IEC 29341-7-2
UPnP InternetGatewayDevice:1 Device	ISO/IEC 29341-8-1
UPnP LANHostConfigManagement:1 Service	ISO/IEC 29341-8-10
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UPnP LinkAuthentication:1 Service	ISO/IEC 29341-8-12
UPnP RadiusClient:1 Service	ISO/IEC 29341-8-13

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UPnP WANCableLinkConfig:1 Service	ISO/IEC 29341-8-14
UPnP WANCommonInterfaceConfig:1 Service	ISO/IEC 29341-8-15
UPnP WANDSLLinkConfig:1 Service	ISO/IEC 29341-8-16
UPnP WANEthernetLinkConfig:1 Service	ISO/IEC 29341-8-17
UPnP WANIPConnection:1 Service	ISO/IEC 29341-8-18
UPnP WANPOTSLinkConfig:1 Service	ISO/IEC 29341-8-19
UPnP LANDevice:1 Device	ISO/IEC 29341-8-2
UPnP WANPPPConnection:1 Service	ISO/IEC 29341-8-20
UPnP WLANConfiguration:1 Service	ISO/IEC 29341-8-21
UPnP WANDevice:1 Device	ISO/IEC 29341-8-3
UPnP WANConnectionDevice:1 Device	ISO/IEC 29341-8-4
UPnP WLANAccessPointDevice:1 Device	ISO/IEC 29341-8-5
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP ExternalActivity:1 Service	ISO/IEC 29341-9-10
UPnP Feeder:1.0 Service	ISO/IEC 29341-9-11
UPnP PrintBasic:1 Service	ISO/IEC 29341-9-12
UPnP Scan:1 Service	ISO/IEC 29341-9-13
UPnP Scanner:1.0 Device	ISO/IEC 29341-9-2
UPnP QoS Architecture:1.0	ISO/IEC 29341-10-1
UPnP QosDevice:1 Service	ISO/IEC 29341-10-10
UPnP QosManager:1 Service	ISO/IEC 29341-10-11
UPnP QosPolicyHolder:1 Service	ISO/IEC 29341-10-12
UPnP QoS Architecture:2	ISO/IEC 29341-11-1
UPnP QosDevice:2 Service	ISO/IEC 29341-11-10
UPnP QosManager:2 Service	ISO/IEC 29341-11-11
UPnP QosPolicyHolder:2 Service	ISO/IEC 29341-11-12
UPnP QOS v2 Schema Files	ISO/IEC 29341-11-2

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UPnP RemoteUIClientDevice:1 Device	ISO/IEC 29341-12-1
UPnP RemoteUIClient:1 Service	ISO/IEC 29341-12-10
UPnP RemoteUIServer:1 Service	ISO/IEC 29341-12-11
UPnP RemoteUIServerDevice:1 Device	ISO/IEC 29341-12-2
UPnP DeviceSecurity:1 Service	ISO/IEC 29341-13-10
UPnP SecurityConsole:1 Service	ISO/IEC 29341-13-11
UPnP ContentDirectory:3 Service	ISO/IEC 29341-14-12:2011
UPnP MediaServer:3 Device	ISO/IEC 29341-14-3:2011
UPnP ContentSync:1	ISO/IEC 29341-15-10:2011
UPnP Low Power Architecture:1	ISO/IEC 29341-16-1:2011
UPnP LowPowerProxy:1 Service	ISO/IEC 29341-16-10:2011
UPnP LowPowerDevice:1 Service	ISO/IEC 29341-16-11:2011
UPnP QoS Architecture:3	ISO/IEC 29341-17-1:2011
UPnP QosDevice:3 Service	ISO/IEC 29341-17-10:2011
UPnP QosManager:3 Service	ISO/IEC 29341-17-11:2011
UPnP QosPolicyHolder:3 Service	ISO/IEC 29341-17-12:2011
UPnP QosDevice:3 Addendum	ISO/IEC 29341-17-13:2011
UPnP RemoteAccessArchitecture:1	ISO/IEC 29341-18-1:2011
UPnP InboundConnectionConfig:1 Service	ISO/IEC 29341-18-10:2011
UPnP RADAConfig:1 Service	ISO/IEC 29341-18-11:2011
UPnP RADASync:1 Service	ISO/IEC 29341-18-12:2011
UPnP RATAConfig:1 Service	ISO/IEC 29341-18-13:2011
UPnP RAClient:1 Device	ISO/IEC 29341-18-2:2011
UPnP RAServer:1 Device	ISO/IEC 29341-18-3:2011
UPnP RADiscoveryAgent:1 Device	ISO/IEC 29341-18-4:2011
UPnP SolarProtectionBlind:1 Device	ISO/IEC 29341-19-1:2011
UPnP TwoWayMotionMotor:1 Service	ISO/IEC 29341-19-10:2011

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UPnP AV Architecture:2	ISO/IEC 29341-20-1
UPnP AVTransport:3 Service	ISO/IEC 29341-20-10
UPnP ConnectionManager:3 Service	ISO/IEC 29341-20-11
UPnP ContentDirectory:4 Device	ISO/IEC 29341-20-12
UPnP RenderingControl:3 Service	ISO/IEC 29341-20-13
UPnP ScheduledRecording:2 Service	ISO/IEC 29341-20-14
UPnP MediaRenderer:3 Service	ISO/IEC 29341-20-2
UPnP MediaServer:4 Device	ISO/IEC 29341-20-3
UPnP AV Datastructure Template:1	ISO/IEC 29341-20-4
UPnP InternetGatewayDevice:2 Device	ISO/IEC 29341-24-1
UPnP WANIPConnection:2 Service	ISO/IEC 29341-24-10
UPnP WANIPv6FirewallControl:1 Service	ISO/IEC 29341-24-11
UPnP WANConnectionDevice:2 Service	ISO/IEC 29341-24-2
UPnP WANDevice:2 Device	ISO/IEC 29341-24-3
UPnP Telephony Architecture:2	ISO/IEC 29341-26-1
UPnP CallManagement:2 Service	ISO/IEC 29341-26-10
UPnP MediaManagement:2 Service	ISO/IEC 29341-26-11
UPnP Messaging:2 Service	ISO/IEC 29341-26-12
UPnP PhoneManagement:2 Service	ISO/IEC 29341-26-13
UPnP AddressBook:1 Service	ISO/IEC 29341-26-14
UPnP Calendar:1 Service	ISO/IEC 29341-26-15
UPnP Presense:1 Service	ISO/IEC 29341-26-16
UPnP TelephonyClient:2 Device	ISO/IEC 29341-26-2
UPnP TelephonyServer:2 Device	ISO/IEC 29341-26-3
UPnP Friendly Info Update:1 Service	ISO/IEC 29341-27-1
UPnP MultiScreen MultiScreen Architecture:1	ISO/IEC 29341-28-1
UPnP MultiScreen Application Management:1 Service	ISO/IEC 29341-28-10

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UPnP MultiScreen Screen:1 Device	ISO/IEC 29341-28-2
UPnP MultiScreen Application Management:2 Service	ISO/IEC 29341-29-10
UPnP MultiScreen Screen:2 Device	ISO/IEC 29341-29-2
UPnP IoT Management and Control Architecture Overview:1	ISO/IEC 29341-30-1
UPnP DataStore:1 Service	ISO/IEC 29341-30-10
UPnP IoT Management and Control Data Model:1 Service	ISO/IEC 29341-30-11
UPnP IoT Management and Control Transport Generic:1 Service	ISO/IEC 29341-30-12
UPnP IoT Management and Control:1 Device	ISO/IEC 29341-30-2
UPnP Energy Management:1 Service	ISO/IEC 29341-31-1

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1 Scope

This document specifies the characteristics of the UPnP networked service named *WANIPv6FirewallControl*, version *1*. This service definition is compliant with *UPnP Service Architecture 1.0* [1].

This service supports the management IPv6 firewall pinholes in Internet gateway devices independent of the WAN access type (PPP, DHCP, ...). It also supports access control to restrict operations to authorized control points and users. It enables UPnP control points to:

- create and delete pinholes of limited duration that allow external communication from the WAN side of the gateway to reach devices on the LAN side
- determine operational status of a pinhole

This service does not support:

- retrieving detailed information about pinholes (such as associated external port or remaining lease duration)
- outbound packet filtering
- modification of security policies of a gateway device

2 Normative References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[1] *UPnP Device Architecture, Version 1.0*, UPnP Forum.
Available at: http://upnp.org/specs/arch/UPnP-arch-DeviceArchitecture-v1.0.pdf.

[2] *InternetGatewayDevice:2*, version 1.00, UPnP Forum, December 10, 2010.
Available at http://upnp.org/specs/gw/UPnP-gw-InternetGatewayDevice-v2-Device.pdf.

[3] *WANDevice:2*, version 1.0, UPnP Forum, September 10, 2010.
Available at http://upnp.org/specs/gw/UPnP-gw-WANDevice-v2-Device.pdf.

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Available at: http://upnp.org/specs/gw/UPnP-gw-WANConnectionDevice-v2-Device.pdf.

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Available at: http://upnp.org/specs/gw/UPnP-gw-WANIPConnection-v2-Service.pdf.

[6] IETF RFC 6092, *Recommended Simple Security Capabilities in Customer Premises Equipment (CPE) for Providing Residential IPv6 Internet Service*, J. Woodyatt, January 2011
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Available at: ISO 8601:2000.

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Available at: http://tools.ietf.org/html/rfc4291.

[9] IETF RFC 4890, *Recommendations for Filtering ICMPv6 Messages in Firewalls*, E. Davies, J. Mohacsi, May 2007.
Available at: http://tools.ietf.org/html/rfc4890.

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Available at: http://tools.ietf.org/html/rfc3339.

[12] *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.

[13] *XML Schema Part 2: Data Types, Second Edition*, Paul V. Biron, Ashok Malhotra, W3C Recommendation, 28 October 2004.
Available at: http://www.w3.org/TR/2004/REC-xmlschema-2-20041028.

3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the terms and definitions given in [1] and the following apply:

3.1
firewall
a hardware or software system that inspects network traffic passing through it, and either denies or permits the passage based on a set of rules. It has an "internal" interface (to a LAN) and an "external" interface (normally to a WAN, but sometimes to a different LAN).

3.2
pinhole
a rule that defines an opening in a firewall packet filter to allow unsolicited packets originating from the external interface of the firewall to the corresponding internal address. Unlike IPv4 network address translation, the external address is not re-written to a mapped internal address but are in one-to-one correspondence. In IPv6, this address is typically a globally-routable IPv6 Global Unicast Address.

3.3
inbound traffic
traffic going from the external to the internal interface of the firewall. For example, a remote host in the WAN sending traffic to one of the internal client in the IGD's local network.

3.4
outbound traffic
traffic going from the internal to the external interface of the firewall. For example, one of the internal client in the IGD's local network sending traffic to a remote host in the WAN.

3.5
inbound pinhole
a rule created in the firewall to allow inbound initiated traffic to pass through the firewall.

outbound pinhole
a rule created in the firewall to allow outbound initiated traffic to pass through the firewall.

automatic pinhole
outbound pinhole that is created automatically when outbound traffic is initiated

3.6
traffic session
an exchange of outbound and inbound traffic between an internal-client interface that is identified by a transport address and a remote host for a given duration.

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3.7 Symbols

3.7.1
::
signifies a hierarchical relationship (parent::child) between the two objects separated by the double colon. This delimiter is used in multiple contexts, such as: Service::Action(), Action()::Argument, parentProperty::childProperty.

3.8 Abbreviations

3.8.1
DHCP
Dynamic Host Configuration Protocol

3.8.2
DNS
Domain Name Service

3.8.3
GUA
Global Unicast Address

3.8.4
HTTP
HyperText Transfer Protocol

3.8.5
IANA
Internet Assigned Numbers Authority

3.8.6
ICMPv6
Internet Control Message Protocol version 6

3.8.7
IGD
Internet Gateway Device

3.8.8
IPv6
Internet Protocol version 6

3.8.9
LAN
Local Area Network

3.8.10
MTU
Maximum Transmission Unit

3.8.11
NAT
Network Address Translation

3.8.12
P2P
Peer to Peer

3.8.13
PMP
Port Mapping Protocol

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3.8.14
PPP
Point to Point Protocol

3.8.15
TCP
Transmission Control Protocol

3.8.16
UDP
User Datagram Protocol

3.8.17
WAN
Wide Area Network

4 Notations and conventions

4.1 Notation

- UPnP interface names defined in [1] are styled in **green bold underlined** text.
- UPnP interface names defined outside of [1] are styled in *red italic underlined* text.
- Some additional non-interface names and terms are styled in *italic* text.
- Words that are emphasized are also styled in *italic* text. The difference between italic terms and italics for emphasis will be apparent by context.
- Strings that are to be taken literally are enclosed in “double quotes”.

4.2 Data types

Data type definitions come from two sources:

- All state variable and action argument data types are defined in [1].
- Basic data types for XML element and attribute values are defined in [13]. The XML data types are essential, since all communications between UPnP services and control points are encoded in XML.

For the UPnP-defined data type **boolean** (see [1]), it is strongly recommended to use the value “**0**” for false, and the value “**1**” for true. The values “**true**”, “**false**”, “**yes**” and “**no**” are deprecated—they shall not appear in output, but shall be accepted on input.

For the data type `boolean` defined in [13], it is strongly recommended to use the value “`0`” for false, and the value “`1`” for true. The values “`true`” and “`false`” are allowed, but not recommended.

4.3 Vendor-defined extensions

When vendors add vendor-defined state variables, actions or properties, their assigned names and XML representation shall follow the naming conventions and XML rules for non-standard vendor extensions in [1].

5 Service Model

5.1 Service Type

A service that complies with this specification shall identify itself with the URN:

urn:schemas-upnp-org:service:*WANIPv6FirewallControl:1:1*

WANIPv6FirewallControl service is used herein to refer to this service type.

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