

# ISO/IEC 29341-24-11:2017-09 (E)

## Information technology - UPnP Device Architecture - Part 24-11: Internet gateway device control protocol - Level 2 - Wide area network internet protocol v6 - Firewall control service

---

Contents	Page
1 Scope.....	1
2 Normative References .....	1
3 Terms, definitions, symbols and abbreviations.....	2
4 Notations and conventions .....	4
4.1 Notation .....	4
4.2 Data types .....	4
4.3 Vendor-defined extensions.....	4
5 Service Model.....	4
5.1 Service Type .....	4
5.2 Service Architecture.....	5
5.3 State Variables .....	5
5.3.1 Summary .....	5
5.3.2 <i>FirewallEnabled</i> .....	5
5.3.3 <i>InboundPinholeAllowed</i> .....	6
5.3.4 <i>A_ARG_TYPE_OutboundPinholeTimeout</i> .....	6
5.3.5 <i>A_ARG_TYPE_IPv6Address</i> .....	6
5.3.6 <i>A_ARG_TYPE_Port</i> .....	6
5.3.7 <i>A_ARG_TYPE_Protocol</i> .....	6
5.3.8 <i>A_ARG_TYPE_LeaseTime</i> .....	6
5.3.9 <i>A_ARG_TYPE_UniqueID</i> .....	7
5.3.10 <i>A_ARG_TYPE_PinholePackets</i> .....	7
5.3.11 <i>A_ARG_TYPE_Boolean</i> .....	7
5.3.12 Relationships among State Variables.....	7
5.4 Eventing and Moderation .....	7
5.4.1 Summary .....	7
5.4.2 Eventing of <i>FirewallEnabled</i> .....	7
5.4.3 Eventing of <i>InboundPinholeAllowed</i> .....	7
5.5 Actions .....	7
5.5.1 Summary .....	7
5.5.2 <i>GetFirewallStatus()</i> .....	8
5.5.3 <i>GetOutboundPinholeTimeout()</i> .....	8
5.5.4 <i>AddPinhole()</i> .....	10
5.5.5 <i>UpdatePinhole()</i> .....	12
5.5.6 <i>DeletePinhole()</i> .....	13
5.5.7 <i>GetPinholePackets()</i> .....	14
5.5.8 <i>CheckPinholeWorking()</i> .....	15
5.5.9 Relationships Between Actions.....	17
5.5.10 Error Code Summary.....	17
5.6 Service Behavioral Model .....	17
6 XML Service Description.....	18
Annex A (informative) Theory of Operation .....	23

A.1	IPv4 NAT and IPv6 firewall control relationship.....	23
A.2	Start-up .....	23
A.3	Outbound pinhole management.....	24
A.3.1	Outbound pinhole creation.....	24
A.3.2	Outbound pinhole refresh .....	24
A.3.3	Outbound pinhole lifecycle .....	25
A.4	Inbound Pinhole management.....	25
A.4.1	Inbound pinhole creation .....	25
A.4.2	Checking that an inbound pinhole is working.....	26
A.4.3	Inbound pinhole refresh.....	27
A.4.4	Inbound pinhole state transition diagram.....	28
Annex B (normative)	Security Considerations .....	29
B.1	Overview .....	29
B.2	Firewall Assets, Risks and Threats.....	29
B.3	Firewall Control Policy and Recommendations .....	29
Annex C (informative)	Bibliography .....	31
Figure A.1	— Outbound pinhole creation .....	24
Figure A.2	— Outbound pinhole refresh.....	25
Figure A.3	— Outbound pinhole state transition diagram.....	25
Figure A.4	— Inbound pinhole creation.....	26
Figure A.5	— Checking that an inbound pinhole is working .....	27
Figure A.6	— Inbound pinhole refresh and deletion.....	28
Figure A.7	— Inbound pinhole state transition diagram .....	28
Table 1	— State Variables .....	5
Table 2	— allowedValueRange for <i>A_ARG_TYPE_OutboundPinholeTimeout</i> .....	6
Table 3	— allowedValueRange for <i>A_ARG_TYPE_LeaseTime</i> .....	6
Table 4	— Eventing and Moderation.....	7
Table 5	— Actions .....	7
Table 6	— Arguments for <i>GetFirewallStatus()</i> .....	8
Table 7	— Error Codes for <i>GetFirewallStatus()</i> .....	8
Table 8	— Arguments for <i>GetOutboundPinholeTimeout()</i> .....	9
Table 9	— Error Codes for <i>GetOutboundPinholeTimeout()</i> .....	10
Table 10	— Arguments for <i>AddPinhole()</i> .....	10
Table 11	— Error Codes for <i>AddPinhole()</i> .....	11
Table 12	— Arguments for <i>UpdatePinhole()</i> .....	12
Table 13	— Error Codes for <i>UpdatePinhole()</i> .....	13
Table 14	— Arguments for <i>DeletePinhole()</i> .....	13
Table 15	— Error Codes for <i>DeletePinhole()</i> .....	14
Table 16	— Arguments for <i>GetPinholePackets()</i> .....	14
Table 17	— Error Codes for <i>GetPinholePackets()</i> .....	15
Table 18	— Arguments for <i>CheckPinholeWorking()</i> .....	16
Table 19	— Error Codes for <i>CheckPinholeWorking()</i> .....	16
Table 20	— Error Code Summary .....	17