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Partie 24-1: Protocole de contrôle de dispositif de passerelle Internet — Niveau 2 — Dispositif de passerelle Internet

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see http://www.iso.org/directives).

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ISO/IEC 29341-24-1 was 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

Reference may be made in this document to original UPnP documents. These references are retained in order to maintain consistency between the specifications as published by ISO/IEC and by UPnP Implementers Corporation and later by UPnP Forum. The following table indicates the original UPnP document titles and the corresponding part of ISO/IEC 29341:

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
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

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UPnP BinaryLight:1 Device	ISO/IEC 29341-7-1
UPnP Dimming:1 Service	ISO/IEC 29341-7-10
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
UPnP Layer3Forwarding:1 Service	ISO/IEC 29341-8-11
UPnP LinkAuthentication:1 Service	ISO/IEC 29341-8-12
UPnP RadiusClient:1 Service	ISO/IEC 29341-8-13
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
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

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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
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
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

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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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Introduction

Version 2 of the Internet Gateway Device Device Control Protocol (IGD DCP:2) was created to address limitations in version 1, with the following specific enhancements:

- Update *WANIPConnection* service based on developer feedback and maintenance need
  - NAT terminology update
  - New actions better suited for application development
  - Limited port mapping lease time
  - Enhanced security for the actions and parameters
- Security and access control support
  - Allow basic IGD:1 compliant functionality without requiring new protocols to be supported
  - Protect and require authentication on functionality potentially creating security threats. These features will not be available for legacy control points and backward compatibility is limited in these cases where other role than *Public* is recommended.
- Add support for IPv6 Firewall control (*WANIPv6FirewallControl*). This service allows creating and maintaining pinholes for inbound traffic from the Internet

Due to lack of developer interest, *WANPPPConnection* service was NOT updated to reflect the changes made to *WANIPConnection*.

1 Scope

This document specifies the characteristics of a device that manages connectivity to the Internet as an “edge” device between a residential Local Area Network and a Wide Area Network. The gateway can be physically implemented as a standalone device, or logically as a set of UPnP devices and services on a PC. This specified device is intended to be controlled from inside the home network. Control from outside the home network typically requires access control mechanisms that are outside the scope of this document. This specified device is also not intended for use with small business networks.

This document defines version 2 of the device named *InternetGatewayDevice*. It is a UPnP root device, and is identified by the UPnP device type *InternetGatewayDevice:2*. It is compliant with the UPnP Device Architecture, Versions 1.0 and 1.1 ([15] and [16], respectively). *InternetGatewayDevice:2* encapsulates several sub-devices and services that collectively comprise the Internet Gateway Device Control Protocol (DCP).

Figure 1 is a conceptual illustration of a generic Internet Gateway device consisting of one or more physical WAN and LAN interfaces.

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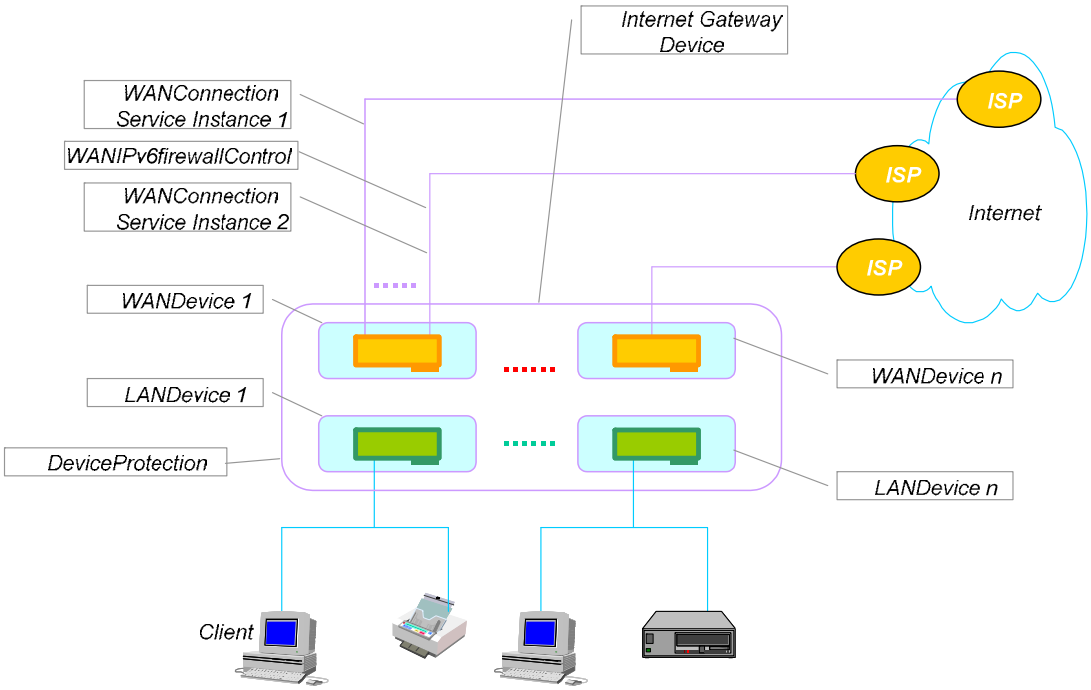


Figure 1 — *InternetGatewayDevice* with LAN and WAN Interfaces

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.

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Available at: http://upnp.org/specs/gw/UPnP-gw-DeviceProtection-v1-Service.pdf.

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Available at: http://upnp.org/specs/gw/UPnP-gw-WANCommonInterfaceConfig-v1-Service.pdf.

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Available at: http://upnp.org/specs/gw/UPnP-gw-WANDSLLinkConfig-v1-Service.pdf

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Available at: http://upnp.org/specs/gw/UPnP-gw-WANEthernetLinkConfig-v1-Service.pdf.

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Available at: http://upnp.org/specs/arch/UPnPDA10_20000613.pdf.
Latest version available at: http://upnp.org/specs/arch/UPnP-arch-DeviceArchitecture-v1.0.pdf.

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3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms and definitions given in [15], [16], [1] and the following apply.

3.1 Security terms

3.1.1
access level
a set of rights that allows a control point to control or query another device or service—used interchangeably in this document with the term role, as defined in [1]

3.2 Abbreviated terms

3.2.1
DCP
Device Control Protocol

3.2.2
IGD
Internet Gateway Device

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3.2.3
WAN*LinkConfig
any or all of *WANPOTSLinkConfig*, *WANDSLLinkConfig*, *WANCableLinkConfig*, *WANEthernetLinkConfig*

3.2.4
WAN**Connection
any or both of *WANPPPConnection*, *WANIPConnection*

4 Device Model

4.1 Device Type

The following URN identifies a device that is compliant with this specification:

urn:**schemas-upnp-org:device**:*InternetGatewayDevice:2*

4.2 Requirements for an Internet Gateway Device

The following list of requirements has been identified on the capabilities of an Internet Gateway in coming up with the devices and services hierarchy for the gateway DCP.

- The *InternetGatewayDevice* shall support 1 WAN interface, but may support more than one physical WAN interface to connect to the Internet.
- The *InternetGatewayDevice* shall support 1 LAN interface, but may support more than one physical LAN interface to connect to the residential network.
- The *InternetGatewayDevice* should support *DeviceProtection* defined in [1].
- The *InternetGatewayDevice* shall support IGD Specific security as defined in 4.4, but may implement stricter security policy.

An implementation may host the WAN interface and LAN interface (mentioned above) on the same physical network interface card (NIC).

- Each WAN interface shall support one Internet connection, but may simultaneously support more than one Internet connection. Each of these connections will be modeled as instances of a service in the DCP.
- The *InternetGatewayDevice* shall be IP addressable from the residential LAN at all times to be UPnP compliant. More specifically, in the case of gateways with broadband modems on the WAN side, the *InternetGatewayDevice* shall be addressable.
  - When the device is not configured for WAN access or does not have any WAN connectivity.
  - Before, during and after modem and link configuration with a head-end device in the Internet service provider's central office.
- Connectivity on the WAN side shall enable nodes on the residential LAN to access resources on the Internet. A gateway may support modems and/or connections on a modem to a service provider, not resulting in Internet connectivity – for example, POTS dial-up access to a modem bank of a home security monitoring service provider. Such connections are outside the scope and requirements of the gateway DCP.

In this document, an Internet connection implies IP connectivity to an Internet Service Provider. Figure 2 illustrates the hierarchy of devices and services in an *InternetGatewayDevice*. A physical modem on the WAN side and a connection interface/port on the LAN side of the *InternetGatewayDevice* are modeled by a *WANDevice* and a *LANDevice* instance respectively. Depending on the hardware capabilities of an Internet Gateway, more than 1 instance of *WANDevice* and/or *LANDevice* are possible in an actual implementation of the gateway DCP description document. Virtual connection interfaces – such as Virtual Circuits (VC) on a DSL modem, are modeled by one or more instances of *WANConnectionDevice*. Sub-devices and services mentioned in this document are defined in companion documents that together specify the DCP for an Internet Gateway. It is

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