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Information technology – UPnP Device Architecture – Part 8-15: Internet Gateway Device Control Protocol – Wide Area Network Common Interface Configuration Service



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INFORMATION TECHNOLOGY – UPNP DEVICE ARCHITECTURE –

Part 8-15: Internet Gateway Device Control Protocol – Wide Area Network Common Interface Configuration Service

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The list of all currently available parts of the ISO/IEC 29341 series, under the general title *Universal plug and play (UPnP) 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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UPnP Document Title	**ISO/IEC 29341 Part**
UPnP Device Architecture 1.0	ISO/IEC 29341-1
UPnP Basic:1 Device	ISO/IEC 29341-2
UPnP AV Architecture:1	ISO/IEC 29341-3-1
UPnP MediaRenderer:1 Device	ISO/IEC 29341-3-2
UPnP MediaServer:1 Device	ISO/IEC 29341-3-3
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: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
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11
UPnP ContentDirectory:2 Service	ISO/IEC 29341-4-12
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13
UPnP ScheduledRecording:1	ISO/IEC 29341-4-14
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 HVAC_ZoneThermostat:1 Device	ISO/IEC 29341-6-2
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 BinaryLight:1 Device	ISO/IEC 29341-7-1
UPnP DimmableLight:1 Device	ISO/IEC 29341-7-2
UPnP Dimming:1 Service	ISO/IEC 29341-7-10
UPnP SwitchPower:1 Service	ISO/IEC 29341-7-11
UPnP InternetGatewayDevice:1 Device	ISO/IEC 29341-8-1
UPnP LANDevice:1 Device	ISO/IEC 29341-8-2
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 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 WANPPPConnection:1 Service	ISO/IEC 29341-8-20
UPnP WLANConfiguration:1 Service	ISO/IEC 29341-8-21
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP Scanner:1.0 Device	ISO/IEC 29341-9-2
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 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 QOS v2 Schema Files	ISO/IEC 29341-11-2

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UPnP Document Title	ISO/IEC 29341 Part
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 RemoteUIClientDevice:1 Device	ISO/IEC 29341-12-1
UPnP RemoteUIServerDevice:1 Device	ISO/IEC 29341-12-2
UPnP RemoteUIClient:1 Service	ISO/IEC 29341-12-10
UPnP RemoteUIServer:1 Service	ISO/IEC 29341-12-11
UPnP DeviceSecurity:1 Service	ISO/IEC 29341-13-10
UPnP SecurityConsole:1 Service	ISO/IEC 29341-13-11

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1. Overview and Scope

This service definition is compliant with the UPnP Device Architecture version 1.0

This service-type models physical layer properties of a WAN interface on an Internet Gateway used for Internet access.

The service is REQUIRED and is specified in
urn:schemas-upnp-org:device:*WANDevice*
one or more instances of which are specified under the root device
urn:schemas-upnp-org:device:*InternetGatewayDevice*

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2. Service Modeling Definitions

2.1. ServiceType

The following service type identifies a service that is compliant with this template:

urn:schemas-upnp-org:service:*WANCommonInterfaceConfig:1*.

2.2. State Variables

Table 1: State Variables

Variable Name	Req. or Opt.[1]	Data Type	Allowed Value	Default Value[2]	Eng. Units
WANAccessType	R	string	See table 1.1 below	Empty string	N/A
Layer1UpstreamMaxBitRate	R	ui4	Range of values is WAN device, technology and/or deployment scenario specific	Undefined	bitspersecond
Layer1DownstreamMaxBitRate	R	ui4	Range of values is WAN device, technology and/or deployment scenario specific	Undefined	bitspersecond
PhysicalLinkStatus	R	string	See table 1.2 below	Not specified	N/A
WANAccessProvider	O	string	No specific range of values defined	Empty string	N/A
MaximumActiveConnections	O	ui2	A fixed number, product dependent.	A fixed number, product dependent	N/A
NumberOfActiveConnections	O	ui2	Undefined	Not specified	N/A
ActiveConnectionDeviceContainer	O	string	Undefined	Empty string	N/A
ActiveConnectionServiceID	O	string	Undefined	Empty string	N/A
TotalBytesSent	O	ui4	Undefined	Not specified	N/A
TotalBytesReceived	O	ui4	Undefined	Not specified	N/A
TotalPacketsSent	O	ui4	Undefined	Not specified	N/A
TotalPacketsReceived	O	ui4	Undefined	Not specified	N/A

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Variable Name	Req. or Opt.[1]	Data Type	Allowed Value	Default Value[2]	Eng. Units
EnabledForInternet	O	boolean	0,1	Not specified	N/A
Non-standard state variables implemented by an UPnP vendor go here.	*X*	*TBD*	*TBD*	*TBD*	*TBD*

[1] R = Required, O = Optional, X = Non-standard.

[2]Values listed in this column are required. To specify standard optional values or to delegate assignment of values to the vendor, you must reference a specific instance of an appropriate table below.

NOTE: Default values are not specified in the DCP. A vendor may however choose to provide default values for SST variables where appropriate.

Table 1.1: AllowedValueList for `WANAccessType`

Value	Req. or Opt.[3]	Description
DSL	*R*	*Only applicable for Digital Subscriber Link (DSL) modems*
POTS	*R*	*Only applicable for Plain Old Telephone Service (POTS) modems*
Cable	*R*	*Only applicable for cable modems*
Ethernet	*R*	*Only applicable for external Ethernet-attached modems*

[3]WANAccessType must be set to only one of the values listed in the table, as appropriate for the hardware device.

Table 1.2: AllowedValueList for `PhysicalLinkStatus`

Value	Req. or Opt.
Up	*R*
Down	*R*
Initializing	*O*
Unavailable	*O*

2.2.1. WANAccessType

This variable specifies the type of WAN access (modem) between the residential network and the Internet Service Provider (ISP). *Ethernet* refers to an Ethernet-attached external modem. Other values are self-explanatory.

2.2.2. Layer1UpstreamMaxBitRate

This variable specifies the maximum upstream (from the ***WANDevice*** to ISP) theoretical bit rate (in bits per second) for the WAN device. For example, 33600 for a POTS V.90 modem.

2.2.3. Layer1DownstreamMaxBitRate

This variable specifies the maximum downstream (from the ISP to ***WANDevice***) theoretical bit rate (in bits per second) for the WAN device. For example, 56000 for a POTS V.90 modem.

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2.2.4. PhysicalLinkStatus

This variable indicates the state of the physical connection (link) from ***WANDevice*** to a connected entity (could be ISP CO for an integrated modem and Ethernet link status for an external Ethernet-connected modem).

2.2.5. WANAccessProvider

This is a descriptive string name of the Service Provider providing link connectivity on the WAN interface. This provider MAY or MAY NOT also be the Internet Service Provider. For example, a customer MAY have DSL service from a phone company and Internet Access Service from another. In this case, the **former** is identified by **this** variable. The format of the text is implementation dependent. An implementation may provide information such as customer support phone numbers so a user can get help when needed.

2.2.6. MaximumActiveConnections

This variable indicates the maximum number of active connections the gateway can simultaneously support. This may be different from the number of instances of ***WAN*Connection*** service that is initialized by the gateway. For example, the description document may provide 10 static instances of ***WANPPPConnection***. But if the value of this variable is 5, no more than 5 connections can be simultaneously active on this ***WANDevice***.
Note that the value of this variable may be dependent on the software and hardware capabilities of a specific WAN interface (modeled by a ***WANDevice***) as well as a function of the type of connections supported. For example, a certain modem may support up to 5 simultaneous bridged connections but only 3 simultaneous PPTP connections. This value cannot be 0.

2.2.7. NumberOfActiveConnections

Number of ***WAN*Connection*** service instances currently active on a WAN interface.

2.2.8. ActiveConnectionDeviceContainer & ActiveConnectionServiceID

Active Connections are represented as an array of entries – each entry consists of the 2 values represented by the following state variables -

`ActiveConnectionDeviceContainer` – Identifies the ***WANConnectionDevice*** container for the active connection service instance. Has the form:
uuid:*device-UUID*:*WANConnectionDevice*:*v*
`ActiveConnectionServiceID` - Service ID of the active connection service. Has the form:
urn:**upnp-org**:**serviceId**:*serviceID*.

The variable `NumberOfActiveConnections` indicates the total number of 'simultaneously active connections' (elements in the array) on this ***WANDevice***. To retrieve all array entries a client should iterate `GetActiveConnection` calls incrementing the array index from 0 to [`NumberOfActiveConnections`-1].

2.2.9. TotalBytesSent

This variable represents the cumulative counter for total number of bytes sent upstream across all connection service instances on ***WANDevice***. The count rolls over to 0 after it reaching the maximum value (2^32) –1.

2.2.10. TotalBytesReceived

This variable represents the cumulative counter for total number of bytes received downstream across all connection service instances on ***WANDevice***. The count rolls over to 0 after it reaching the maximum value (2^32) –1.

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2.2.11.TotalPacketsSent

This variable represents the cumulative counter for total number of IP or PPP packets sent upstream across all connection service instances on ***WANDevice***. The count rolls over to 0 after it reaching the maximum value (2^32) –1.

2.2.12.TotalPacketsReceived

This variable represents the cumulative counter for total number of IP or PPP packets received downstream across all connection service instances on ***WANDevice***. The count rolls over to 0 after it reaching the maximum value (2^32) –1.

2.2.13.EnabledForInternet

This variable can be used to enable or disable access to and from the Internet, across all connection instances. It can be set to **0** to turn off access to the Internet. In the case of Always-On, Always-Connected (AOAC) technologies such as DSL or cable modems, IP or PPP sessions will be disabled at the ***WANDevice***.

2.2.14.Relationships Between State Variables

If `EnabledForInternet` is set to 0, `NumberOfActiveConnections` should be ignored. `NumberOfActiveConnections` cannot exceed `MaximumActiveConnections`.

`NumberOfActiveConnections`, `ActiveConnectionDeviceContainer` and `ActiveConnectionServiceID` are related and a vendor that chooses to implement this feature MUST implement all 3 of these variables.

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2.3. Eventing and Moderation

Table 2: Event Moderation

Variable Name	Evented	Moderated Event	Max Event Rate[1]	Logical Combination	Min Delta per Event[2]
WANAccessType	No	No	N/A	N/A	N/A
Layer1UpstreamMaxBitRate	No	No	N/A	N/A	N/A
Layer1DownstreamMaxBitRate	No	No	N/A	N/A	N/A
PhysicalLinkStatus	Yes	No	N/A	N/A	N/A
WANAccessProvider	No	No	N/A	N/A	N/A
MaximumActiveConnections	No	No	N/A	N/A	N/A
NumberOfActiveConnections	Yes	No	N/A	N/A	N/A
ActiveConnectionDeviceContainer	No	No	N/A	N/A	N/A
⋮					
ActiveConnectionServiceID	No	No	N/A	N/A	N/A
TotalBytesSent	No	No	N/A	N/A	N/A
TotalBytesReceived	No	No	N/A	N/A	N/A
TotalPacketsSent	No	No	N/A	N/A	N/A
TotalPacketsReceived	No	No	N/A	N/A	N/A
EnabledForInternet	Yes	No	N/A	N/A	N/A
Non-standard state variables implemented by an UPnP vendor go here.	*TBD*	*TBD*	*TBD*	*TBD*	*TBD*

[1] Determined by N, where Rate = (Event)/(N secs).
[2] (N) * (allowedValueRange Step).

2.3.1. Event Model

The eventing model is simple and is not moderated. Clients registered for events on this service can use updates on PhysicalLinkStatus, NumberOfActiveConnections and EnabledForInternet to provide user feedback and manage connections from local applications.

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2.4. Actions

Immediately following this table is detailed information about these actions, including short descriptions of the actions, the effects of the actions on state variables, and error codes defined by the actions.

Table 3: Actions

Name	Req. or Opt. [1]
SetEnabledForInternet	O
GetEnabledForInternet	O
GetCommonLinkProperties	R
GetWANAccessProvider	O
GetMaximumActiveConnections	O
GetTotalBytesSent	O
GetTotalBytesReceived	O
GetTotalPacketsSent	O
GetTotalPacketsReceived	O
GetActiveConnection	O
Non-standard actions implemented by an UPnP vendor go here.	X

[1] R = Required, O = Optional, X = Non-standard.

2.4.1. SetEnabledForInternet

This action enables or disables access to the Internet on the ***WANDevice***.

2.4.1.1. Arguments

Table 4: Arguments for `SetEnabledForInternet`

Argument	Direction	relatedStateVariable
NewEnabledForInternet	IN	EnabledForInternet

2.4.1.2. Dependency on State (if any)

None.

2.4.1.3. Effect on State (if any)

Setting this variable to 0 turns off access to the Internet on this ***WANDevice***. Actions in other services may become “Don’t Care” operations in this state.

2.4.1.4. Errors

errorCode	errorDescription	Description
401	Invalid Action	No action by that name at this service.
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.
501	Action Failed	May be returned in current state if service prevents invoking of that action.

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2.4.2. GetEnabledForInternet

This action retrieves the value of `EnabledForInternet`.

2.4.2.1. Arguments

Table 5: Arguments for `GetEnabledForInternet`

Argument	Direction	relatedStateVariable
`NewEnabledForInternet`	*OUT*	`EnabledForInternet`

2.4.2.2. Dependency on State (if any)

2.4.2.3. Effect on State

None.

2.4.2.4. Errors

errorCode	errorDescription	Description
401	Invalid Action	No action by that name at this service.
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.
501	Action Failed	May be returned in current state if service prevents invoking of that action.

2.4.3. GetCommonLinkProperties

This action retrieves physical link properties of the WAN interface (***WANDevice***).

2.4.3.1. Arguments

Table 6: Arguments for `GetCommonLinkProperties`

Argument	Direction	relatedStateVariable
`NewWANAccessType`	*OUT*	`WANAccessType`
`NewLayer1UpstreamMaxBitRate`	*OUT*	`Layer1UpstreamMaxBitRate`
`NewLayer1DownstreamMaxBitRate`	*OUT*	`Layer1DownstreamMaxBitRate`
`NewPhysicalLinkStatus`	*OUT*	`PhysicalLinkStatus`

2.4.3.2. Dependency on State (if any)

2.4.3.3. Effect on State

None.

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2.4.3.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.4. GetWANAccessProvider

This action retrieves a string description of the link service provider, common to all connection instances on a ***WANDevice***.

2.4.4.1. Arguments

Table 7: Arguments for `GetWANAccessProvider`

Argument	Direction	relatedStateVariable
`NewWANAccessProvider`	*OUT*	`WANAccessProvider`

2.4.4.2. Dependency on State (if any)

2.4.4.3. Effect on State

None.

2.4.4.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.5. GetMaximumActiveConnections

This action retrieves the maximum number of active connections possible across all connection instances on a ***WANDevice***.

2.4.5.1. Arguments

Table 8: Arguments for `GetMaximumActiveConnections`

Argument	Direction	relatedStateVariable
`NewMaximumActiveConnections`	*OUT*	`MaximumActiveConnections`

2.4.5.2. Dependency on State (if any)

2.4.5.3. Effect on State

None.

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2.4.5.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.6. GetTotalBytesSent

This action retrieves the cumulative count of bytes sent upstream across all connection instances on a *WANDevice*.

2.4.6.1. Arguments

Table 9: Arguments for `GetTotalBytesSent`

Argument	Direction	relatedStateVariable
`NewTotalBytesSent`	*OUT*	`TotalBytesSent`

2.4.6.2. Dependency on State (if any)

2.4.6.3. Effect on State

None.

2.4.6.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.7. GetTotalBytesReceived

This action retrieves the cumulative count of bytes received downstream across all connection instances on a *WANDevice*.

2.4.7.1. Arguments

Table 10: Arguments for `GetTotalBytesReceived`

Argument	Direction	relatedStateVariable
`NewTotalBytesReceived`	*OUT*	`TotalBytesReceived`

2.4.7.2. Dependency on State (if any)

2.4.7.3. Effect on State

None.

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2.4.7.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.8. GetTotalPacketsSent

This action retrieves the cumulative count of IP or PPP packets sent upstream across all connection instances on a ***WANDevice***.

2.4.8.1. Arguments

Table 11: Arguments for `GetTotalPacketsSent`

Argument	Direction	relatedStateVariable
`NewTotalPacketsSent`	*OUT*	`TotalPacketsSent`

2.4.8.2. Dependency on State (if any)

2.4.8.3. Effect on State

None.

2.4.8.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.9. GetTotalPacketsReceived

This action retrieves the cumulative count of IP or PPP packets received downstream across all connection instances on a ***WANDevice***.

2.4.9.1. Arguments

Table 12: Arguments for `GetTotalPacketsReceived`

Argument	Direction	relatedStateVariable
`NewTotalPacketsReceived`	*OUT*	`TotalPacketsReceived`

2.4.9.2. Dependency on State (if any)

2.4.9.3. Effect on State

None.

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2.4.9.4. Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.

2.4.10.GetActiveConnection

Retrieves the service ID of a specific active connection. Active connections are represented as an array. If a client wishes to get all the elements of the array, it repeats this action looping on the array index from 0 to (`NumberOfActiveConnections` –1) OR till an error is returned. Note that the client should reevaluate its loop if `NumberOfActiveConnections` is evented during the process of getting all entries.

2.4.10.1.Arguments

Table 13: Arguments for `GetActiveConnection`

Argument	Direction	relatedStateVariable
`NewActiveConnectionIndex`	*IN*	`NumberOfActiveConnections`
`NewActiveConnDeviceContainer`	*OUT*	`ActiveConnectionDeviceContainer`
`NewActiveConnectionServiceID`	*OUT*	`ActiveConnectionServiceID`

2.4.10.2.Dependency on State (if any)

2.4.10.3.Effect on State

None.

2.4.10.4.Errors

errorCode	errorDescription	Description
402	Invalid Args	One of following: not enough IN arguments, too many IN arguments, no IN argument by that name, one or more IN arguments are of the wrong data type. See also the UPnP Device Architecture.
501	Action Failed	May be returned in current state if service prevents invoking of that action.
712	NullValueAtSpecifiedArrayIndex	The specified array index holds a NULL value

2.4.11.Non-Standard Actions Implemented by a UPnP Vendor

To facilitate certification, non-standard actions implemented by UPnP vendors should be included in this service template. The UPnP Device Architecture lists naming requirements for non-standard actions (see the section on Description).

2.4.12.Relationships Between Actions

If `SetEnabledForInternet` sets `EnabledForInternet` to 0, set actions attempting to initiate connections in other services may return errors.

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2.4.13.Common Error Codes

The following table lists error codes common to actions for this service type. If an action results in multiple errors, the most specific error should be returned.

Table 14: Common Error Codes

errorCode	errorDescription	Description
401	Invalid Action	See UPnP Device Architecture section on Control.
402	Invalid Args	See UPnP Device Architecture section on Control.
404	Invalid Var	See UPnP Device Architecture section on Control.
501	Action Failed	See UPnP Device Architecture section on Control.
600-699	TBD	Common action errors. Defined by UPnP Forum Technical Committee.
701-799		Common action errors defined by the UPnP Forum working committees.
800-899	*TBD*	*(Specified by UPnP vendor.)*

2.5. Theory of Operation

The ***WANCommonInterfaceConfig*** service MUST be implemented for each ***WANDevice***. The service models WAN interface properties common across all connection service instances.

`MaximumActiveConnections` is specific to the type of WAN interface. The relationship between the static number of instances of ***WAN*Connection*** service in a description document and the values of `MaximumActiveConnections` and `NumberOfActiveConnections` is best illustrated with an example.

Suppose a gateway supports a POTS modem on its WAN interface. To support the possibility of multiple connection instances (one for each user account with an ISP for example), a gateway vendor may specific a static number of ***WANPPPConnection*** instances. However, as only one connection instance can be active on the POTS modem at any time, `MaximumActiveConnections` will be set to 1. `ActiveConnectionServiceID` corresponding to the first entry (in the array of active connections) will designate the service ID of the ***WANPPPConnection*** that is currently active (in use).

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3. XML Service Description

```
<?xml version="1.0"?>
<scpd xmlns="urn:schemas-upnp-org:service-1-0">
  <specVersion>
    <major>1</major>
    <minor>0</minor>
  </specVersion>
  <actionList>
    <action>
    <name>SetEnabledForInternet</name>
      <argumentList>
        <argument>
          <name>NewEnabledForInternet</name>
          <direction>in</direction>
         <relatedStateVariable>EnabledForInternet</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetEnabledForInternet</name>
      <argumentList>
        <argument>
          <name>NewEnabledForInternet</name>
          <direction>out</direction>
         <relatedStateVariable>EnabledForInternet</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetCommonLinkProperties</name>
      <argumentList>
        <argument>
          <name>NewWANAccessType</name>
          <direction>out</direction>
          <relatedStateVariable>WANAccessType</relatedStateVariable>
        </argument>
        <argument>
          <name>NewLayer1UpstreamMaxBitRate</name>
          <direction>out</direction>
   <relatedStateVariable>Layer1UpstreamMaxBitRate</relatedStateVariable>
        </argument>
        <argument>
          <name>NewLayer1DownstreamMaxBitRate</name>
          <direction>out</direction>
<relatedStateVariable>Layer1DownstreamMaxBitRate</relatedStateVariable>
        </argument>
        <argument>
          <name>NewPhysicalLinkStatus</name>
          <direction>out</direction>
         <relatedStateVariable>PhysicalLinkStatus</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetWANAccessProvider</name>
      <argumentList>
        <argument>
          <name>NewWANAccessProvider</name>
          <direction>out</direction>
          <relatedStateVariable>WANAccessProvider</relatedStateVariable>
        </argument>
      </argumentList>
```

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```
    </action>
    <action>
    <name>GetMaximumActiveConnections</name>
      <argumentList>
        <argument>
          <name>NewMaximumActiveConnections</name>
          <direction>out</direction>
  <relatedStateVariable>MaximumActiveConnections</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetTotalBytesSent</name>
      <argumentList>
        <argument>
          <name>NewTotalBytesSent</name>
          <direction>out</direction>
          <relatedStateVariable>TotalBytesSent</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetTotalBytesReceived</name>
      <argumentList>
        <argument>
          <name>NewTotalBytesReceived</name>
          <direction>out</direction>
          <relatedStateVariable>TotalBytesReceived</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetTotalPacketsSent</name>
      <argumentList>
        <argument>
          <name>NewTotalPacketsSent</name>
          <direction>out</direction>
          <relatedStateVariable>TotalPacketsSent</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetTotalPacketsReceived</name>
      <argumentList>
        <argument>
          <name>NewTotalPacketsReceived</name>
          <direction>out</direction>
         <relatedStateVariable>TotalPacketsReceived</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <action>
    <name>GetActiveConnection</name>
      <argumentList>
        <argument>
          <name>NewActiveConnectionIndex</name>
          <direction>in</direction>
<relatedStateVariable>NumberOfActiveConnections</relatedStateVariable>
        </argument>
        <argument>
          <name>NewActiveConnDeviceContainer</name>
          <direction>out</direction>
<relatedStateVariable>ActiveConnectionDeviceContainer</relatedStateVariable
>
```

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```
        </argument>
        <argument>
          <name>NewActiveConnectionServiceID</name>
          <direction>out</direction>
<relatedStateVariable>ActiveConnectionServiceID</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <!-- Declarations for other actions added by UPnP vendor (if any) go
here -->
  </actionList>
  <serviceStateTable>
    <stateVariable sendEvents="no">
      <name>WANAccessType</name>
      <dataType>string</dataType>
      <allowedValueList>
        <allowedValue>DSL</allowedValue>
        <allowedValue>POTS</allowedValue>
        <allowedValue>Cable</allowedValue>
        <allowedValue>Ethernet</allowedValue>
      </allowedValueList>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>Layer1UpstreamMaxBitRate</name>
      <dataType>ui4</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>Layer1DownstreamMaxBitRate</name>
      <dataType>ui4</dataType>
    </stateVariable>
    <stateVariable sendEvents="yes">
      <name>PhysicalLinkStatus</name>
      <dataType>string</dataType>
      <allowedValueList>
        <allowedValue>Up</allowedValue>
        <allowedValue>Down</allowedValue>
        <allowedValue>Initializing</allowedValue>
        <allowedValue>Unavailable</allowedValue>
      </allowedValueList>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>WANAccessProvider</name>
      <dataType>string</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>MaximumActiveConnections</name>
      <dataType>ui2</dataType>
      <allowedValueRange>
        <minimum>1</minimum>
        <step>1</step>
      </allowedValueRange>
    </stateVariable>
    <stateVariable sendEvents="yes">
      <name>NumberOfActiveConnections</name>
      <dataType>ui2</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>ActiveConnectionDeviceContainer</name>
      <dataType>string</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>ActiveConnectionServiceID</name>
      <dataType>string</dataType>
    </stateVariable>
```

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```
    <stateVariable sendEvents="no">
      <name>TotalBytesSent</name>
      <dataType>ui4</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>TotalBytesReceived</name>
      <dataType>ui4</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>TotalPacketsSent</name>
      <dataType>ui4</dataType>
    </stateVariable>
    <stateVariable sendEvents="no">
      <name>TotalPacketsReceived</name>
      <dataType>ui4</dataType>
    </stateVariable>
    <stateVariable sendEvents="yes">
      <name>EnabledForInternet</name>
      <dataType>boolean</dataType>
    </stateVariable>
    <!-- Declarations for other state variables added by UPnP vendor (if
any) go here -->
  </serviceStateTable>
</scpd>
```

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4. Test

SetEnabledForInternet / GetEnabledForInternet

Test Sequence 1: To test success path
Semantic class: 2
Pre-conditions:

- Follow sequence of actions outlined in the WANPPP or WANIPConnection service descriptions to ensure that `ConnectionStatus` is Disconnected.

NOTE: This test is only applicable if the vendor implements the feature.

SetEnabledForInternet Success = 200

In-Arg	Values	State Variables	Current State	Expected State
EnabledForInternet	1			
Out-Arg	**Expected Value**			
		Error Code (if any)	NA	NA

GetEnabledForInternet Success = 200

In-Arg	Values	State Variables	Current State	Expected State
Out-Arg	**Expected Value**			
EnabledForInternet	1	**Error Code (if any)**	NA	NA

This test should be repeated with the value set to 0.

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