WANEthernetLinkConfig:1 Service Template Version 1.01
For UPnP™ Version 1.0
Status: Standardized DCP
Date: November 12, 2001

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<table>
<thead>
<tr>
<th>Authors</th>
<th>Company</th>
</tr>
</thead>
<tbody>
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<td>Prakash Iyer</td>
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</tr>
</tbody>
</table>
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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 and link layer properties of a WAN Ethernet interface used for Internet access on an InternetGatewayDevice. A gateway device that offers Internet connectivity via an external, Ethernet-attached cable or DSL modem would offer this service.

The service is OPTIONAL (for an InternetGatewayDevice that has an Ethernet WAN interface) and is specified in urn:schemas-upnp-org:device:WANConnectionDevice one or more instances of which are specified under the device urn:schemas-upnp-org:device:WANDevice

An instance of WANDevice is specified under the root device urn:schemas-upnp-org:device:InternetGatewayDevice

NOTE: A WANDevice also provides a WANCommonInterfaceConfig service that encapsulates Internet access properties common across all WAN interfaces.

1.1. Change Log

Changes from WANEthernetLinkConfig:0.1
- Removed white spaces from XML section
- Renamed LinkStatus to EthernetLinkStatus

Changes from WANEthernetLinkConfig:0.11
- Modified names of formal parameters of actions to be different from ‘Related State Variable’.

Changes from WANEthernetLinkConfig:0.12
- Updated to service template v1.01
- Verified against TDC checklist v1.01
- Changed service from Required to Optional

Changes from WANEthernetLinkConfig:0.8
- Removed default values and updated XML section accordingly
- Required versus Optional changes to allowedValueList tables

Changes from WANEthernetLinkConfig:0.81
- Added XML comment tags to comments text in XML template

Changes from WANEthernetLinkConfig:0.82
- Updated tests section

Changes from WANEthernetLinkConfig:0.9
- Version changes for 1.0

Changes from WANEthernetLinkConfig:0.99
- Version updated to reflect 45-day review completion. No other changes to this draft.

Changes from WANEthernetLinkConfig:0.99
- Copyright messages and document status updated.
2. Service Modeling Definitions

2.1. ServiceType

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


2.2. State Variables

Table 1: State Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Req. or Opt.</th>
<th>Data Type</th>
<th>Allowed Value ²</th>
<th>Default Value ²</th>
<th>Eng. Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>EthernetLinkStatus</td>
<td>R</td>
<td>string</td>
<td>See table 1.1</td>
<td>Not specified</td>
<td>N/A</td>
</tr>
<tr>
<td>Non-standard state variables implemented by an UPnP vendor go here.</td>
<td>X</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

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 EthernetLinkStatus

<table>
<thead>
<tr>
<th>Value</th>
<th>Req. or Opt. ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up</td>
<td>R</td>
</tr>
<tr>
<td>Down</td>
<td>R</td>
</tr>
<tr>
<td>Unavailable</td>
<td>O</td>
</tr>
</tbody>
</table>

³ –

2.2.1. EthernetLinkStatus
This variable indicates the status of the WAN Ethernet link. This only indicates the status of the physical link between the InternetGatewayDevice and an externally attached modem, and NOT the status of the external link of the modem itself. It is a Read-only variable.

2.2.2. Relationships Between State Variables
None.

2.3. Eventing and Moderation

Table 2: Event Moderation

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Evented</th>
<th>Moderated Event</th>
<th>Max Event Rate¹</th>
<th>Logical Combination</th>
<th>Min Delta per Event²</th>
</tr>
</thead>
<tbody>
<tr>
<td>EthernetLinkStatus</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Non-standard state variables implemented by an UPnP vendor go here.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Evented</th>
<th>Moderated Event</th>
<th>Max Event Rate¹</th>
<th>Logical Combination</th>
<th>Min Delta per Event²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-standard state variables implemented by an UPnP vendor go here.</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

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

2.3.1. Event Model
If EthernetLinkStatus changes, subscribed control points are notified. A status change indicates presence or absence of connectivity to an externally attached modem.

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Req. or Opt. ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>GetEthernetLinkStatus</td>
<td>R</td>
</tr>
</tbody>
</table>

Non-standard actions implemented by an UPnP vendor go here.

<table>
<thead>
<tr>
<th>Name</th>
<th>Req. or Opt. ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-standard actions implemented by an UPnP vendor go here.</td>
<td>X</td>
</tr>
</tbody>
</table>

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

2.4.1. GetEthernetLinkStatus
This action retrieves the link status of the Ethernet connection to an externally attached modem.

2.4.1.1. Arguments

Table 4: Arguments for GetEthernetLinkStatus
<table>
<thead>
<tr>
<th>Argument</th>
<th>Direction</th>
<th>relatedStateVariable</th>
</tr>
</thead>
<tbody>
<tr>
<td>NewEthernetLinkStatus</td>
<td>OUT</td>
<td>EthernetLinkStatus</td>
</tr>
</tbody>
</table>

2.4.1.2. Dependency on State (if any)

2.4.1.3. Effect on State (if any)
None.

2.4.1.4. Errors

<table>
<thead>
<tr>
<th>errorCode</th>
<th>errorDescription</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>402</td>
<td>Invalid Args</td>
<td>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.</td>
</tr>
<tr>
<td>501</td>
<td>Action Failed</td>
<td>May be returned in current state if service prevents invoking of that action.</td>
</tr>
</tbody>
</table>

2.4.2. 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).

2.4.3. Relationships Between Actions
None.

2.4.4. 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>
<thead>
<tr>
<th>errorCode</th>
<th>errorDescription</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td>Invalid Action</td>
<td>See UPnP Device Architecture section on Control.</td>
</tr>
<tr>
<td>402</td>
<td>Invalid Args</td>
<td>See UPnP Device Architecture section on Control.</td>
</tr>
<tr>
<td>404</td>
<td>Invalid Var</td>
<td>See UPnP Device Architecture section on Control.</td>
</tr>
<tr>
<td>501</td>
<td>Action Failed</td>
<td>See UPnP Device Architecture section on Control.</td>
</tr>
<tr>
<td>701-799</td>
<td>TBD</td>
<td>Common action errors defined by the UPnP Forum working committees.</td>
</tr>
<tr>
<td>800-899</td>
<td>TBD</td>
<td>(Specified by UPnP vendor.)</td>
</tr>
</tbody>
</table>

2.5. Theory of Operation

As mentioned earlier, this service is implemented if an InternetGatewayDevice supports an external, Ethernet-attached modem. If the modem type identification and control operations are possible through other proprietary mechanisms, a vendor may choose to implement a more specific link configuration service; for example WANDSLLinkConfig or WANCableLinkConfig.
3. XML Service Description

```xml
<?xml version="1.0"?>
<scpd xmlns="urn:schemas-upnp-org:service-1-0">
  <specVersion>
    <major>1</major>
    <minor>0</minor>
  </specVersion>
  <actionList>
    <action>
      <name>GetEthernetLinkStatus</name>
      <argumentList>
        <argument>
          <name>NewEthernetLinkStatus</name>
          <direction>out</direction>
          <relatedStateVariable>EthernetLinkStatus</relatedStateVariable>
        </argument>
      </argumentList>
    </action>
    <!-- Declarations for other actions added by UPnP vendor (if any) go here -->
  </actionList>
  <serviceStateTable>
    <stateVariable sendEvents="yes">
      <name>EthernetLinkStatus</name>
      <dataType>string</dataType>
      <allowedValueList>
        <allowedValue>Up</allowedValue>
        <allowedValue>Down</allowedValue>
        <allowedValue>Unavailable</allowedValue>
      </allowedValueList>
    </stateVariable>
    <!-- Declarations for other state variables added by UPnP vendor (if any) go here -->
  </serviceStateTable>
</scpd>
```
4. Test

No semantic tests have been defined for this service.
Change History

Change Log for Version 1.0 (10-4-00)

- Revised the Title Page to call out V1.0 of the Service Template
- Changed to be consistent with Sample Designs released to the Technical Committee
- Service State Table: Variable Descriptions removed from the table and are listed in specific sections following the table.
- Actions: Reformatted the information contained in the Action Table:
  - Added overview entry point.
  - Added an Action Summary Table to specify Required or Optional
  - Added enumerated sections to specify each actions: Arguments, Effect on State, and Errors.