RemoteUIServerDevice:1 Device Template Version 1.01

For UPnP Version 1.0
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1. **Overview and Scope**

This device template is compliant with the UPnP Architecture, Version 1.0.

This document defines the device


This device can be a UPnP root device, or embedded within a different device.

2. Device Definitions

2.1. Device Type

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

urn:schemas-upnp-org:device:RemoteUIServerDevice:1

2.2. Device Model

It is recommended that RemoteUIServerDevice be implemented with support for securing UPnP™ actions. It is also recommended that securing of UPnP™ action is done using the DeviceSecurity service as defined by the UPnP™ security working committee. If implemented, the DeviceSecurity service must be contained either inside RemoteUIServerDevice implementation or in a device that encompasses the RemoteUIServerDevice. These two models are described below.

2.2.1. Description of Device Requirements

The following table briefly describes the service used in RemoteUIServerDevice.

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RemoteUIServer</td>
<td>Allows for basic discovery of available and remutable user interfaces.</td>
</tr>
<tr>
<td>DeviceSecurity</td>
<td>Actions for taking ownership, configuring access control, establishing secure sessions, and invoking secure actions.</td>
</tr>
</tbody>
</table>

2.2.1.1. DeviceSecurity within RemoteUIServerDevice

This model is typically applicable to physical devices that need DeviceSecurity functionality (including device ownership and access control) to be used only by the RemoteUIServerDevice. In this case, products that expose devices of the type urn:schemas-upnp-org:device:RemoteUIServerDevice:1 must implement minimum version numbers of the required service specified in the table below.

<table>
<thead>
<tr>
<th>DeviceType</th>
<th>Root</th>
<th>Req. or Opt.</th>
<th>ServiceType</th>
<th>Req. or Opt.</th>
<th>Service ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>RemoteUIServerDevice:1</td>
<td>Yes</td>
<td>R</td>
<td>RemoteUIServer:1</td>
<td>R</td>
<td>RemoteUIServer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DeviceSecurity:1</td>
<td>O</td>
<td>DeviceSecurity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-standard services embedded by an UPnP vendor go here.</td>
<td>X</td>
<td>To be defined by vendor</td>
</tr>
</tbody>
</table>

1 R = Required, O = Optional, X = Non-standard.
2 Prefixed by urn:upnp-org:serviceId.
**Relationship between Services**

Figure 1 shows the logical structure of the device and services defined by the working group for UPnP™ technology enabled Remote UI servers.

![Diagram of RemoteUIDevice with RemoteUIServerService and DeviceSecurity](image)

**Figure 1: DeviceSecurity within RemoteUIServerDevice**

### 2.2.1.2. DeviceSecurity outside RemoteUIServerDevice

This model is typically applicable to physical devices that implement Remote UI server functionality, but the `RemoteUIServerDevice` may use `DeviceSecurity` that is already part of another device. An example of this would be where `urn:schemas-upnp-org:device:RemoteUIServerDevice:1` is implemented inside a device of the type `urn:schemas-upnp-org:device:BasicDevice:1`. The `BasicDevice` in this case contains the `DeviceSecurity` service that may be used by another UPnP™ device e.g., `MediaRenderer`. The implementation of `RemoteUIServerDevice` must contain the minimum version number of the service specified in the table below.

**Table 3: Device Requirements for embedded RemoteUIServerDevice**

<table>
<thead>
<tr>
<th>DeviceType</th>
<th>Root</th>
<th>Req. or Opt.¹</th>
<th>ServiceType</th>
<th>Req. or Opt.¹</th>
<th>Service ID²</th>
</tr>
</thead>
<tbody>
<tr>
<td>RemoteUIServerDevice:1</td>
<td>Yes</td>
<td>R</td>
<td>RemoteUIServer:1</td>
<td>R</td>
<td>RemoteUI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-standard services embedded by an UPnP vendor go here.</td>
<td>X</td>
<td>To be defined by vendor</td>
</tr>
</tbody>
</table>

¹ R = Required, O = Optional, X = Non-standard.
² Prefixed by urn:upnp-org:serviceId:.

**Relationships between Services**

Figure 2 shows the logical structure of the device and services defined by the working group for UPnP™ technology enabled Remote UI servers that may use the `DeviceSecurity` service for other UPnP™ devices contained in the same physical device. `RemoteUIServer` service may be dependent on the `DeviceSecurity` service for providing access control to the actions defined in the services.
2.2.2. Relationships Between Services
The dependencies between the services are listed in the above section under the possible models of implementing services in RemoteUIServerDevice.

2.3. Theory of Operation
It is highly recommended for the Remote UI server to use DeviceSecurity service to secure specific UPnP™ Remote UI server actions. This section assumes that the reader has an overall understanding of UPnP™ Security. Please refer to the DeviceSecurity:1 Service Control Specification for detailed description of a secure UPnP™ device.

2.3.1. Secure Remote UI Servers (if DeviceSecurity implemented in Remote UI server device)
RemoteUIServer service provides a set of actions to give a list of user interfaces and to destroy an unconnected, instantiated UI. The actions in this service that change the device state should be authenticated via UPnP™ security. Some actions in RemoteUIServer service can carry critical information such as password as arguments. By using DecryptAndExecute action defined in DeviceSecurity service, security sensitive information can be protected. A control point that accesses the secure actions on the service has to be initially authenticated via a Security Console application as described in UPnP™ Security DCP. Access control definitions such as Permissions, Profiles and Access Control List(ACL) for Remote UI server device are described in Appendix A.
3. XML Device Description

```xml
<?xml version="1.0" encoding="UTF-8"?>
<root xmlns="urn:schemas-upnp-org:device-1-0">
  <specVersion>
    <major>1</major>
    <minor>0</minor>
  </specVersion>
  <URLBase>base URL for all relative URLs</URLBase>
  <device>
    <deviceType>urn:schemas-upnp-org:device:RemoteUIserverDevice:1</deviceType>
    <friendlyName>short user-friendly title</friendlyName>
    <manufacturer>manufacturer name</manufacturer>
    <manufacturerURL>URL to manufacturer site</manufacturerURL>
    <modelDescription>long user-friendly title</modelDescription>
    <modelName>model name</modelName>
    <modelNumber>model number</modelNumber>
    <modelURL>URL to model site</modelURL>
    <serialNumber>manufacturer's serial number</serialNumber>
    <UDN>uuid:UUID</UDN>
    <UPC>Universal Product Code</UPC>
    <iconList>
      <icon>
        <mimetype>image/format</mimetype>
        <width>horizontal pixels</width>
        <height>vertical pixels</height>
        <depth>color depth</depth>
        <url>URL to icon</url>
      </icon>
    </iconList>
    <serviceList>
      <service>
        <serviceType>urn:schemas-upnp-org:service:RemoteUIserver:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:RemoteUIserver:1</serviceId>
        <SCPDURL>URL to service description</SCPDURL>
        <controlURL>URL for control</controlURL>
        <eventSubURL>URL for eventing</eventSubURL>
      </service>
    </serviceList>
    <presentationURL>URL for presentation</presentationURL>
  </device>
</root>
```
4. Test

*No semantic tests are defined for this device.*
Appendix A: Access Control Definitions (if DeviceSecurity service is implemented)

This section specifies the Permissions, Profiles and Access Control List (ACL) entry to be implemented in the DeviceSecurity service that can optionally be used by the RemoteUIServerDevice. This is used by the Security Console to assign access control of secure actions on the Remote UI server device to control point applications. Please refer to the DeviceSecurity1.0 service specification for more details about Security Console, Permissions, Profiles and ACLs.

A1 Permissions

The following table describes the permissions to perform access control on the secure actions of the services embedded in the Remote UI server device. The RUISDeviceAll is a required permission which can securely access all actions in the RemoteUIServer service. The other permissions are optional. Vendors may define additional set of permissions to perform access control on the Remote UI client device. For example, they may provide separate master and guest permissions for the finer granularity of access. However, for better interoperability, vendors should use the optional permissions presented in this document than implementing their own security permissions.

Table 4: Defined permissions for RemoteUIServer Service

<table>
<thead>
<tr>
<th>Permission</th>
<th>Allowed Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUISDeviceAll</td>
<td>All actions in RemoteUIServer Service.</td>
</tr>
<tr>
<td>RUISDeviceInfo</td>
<td>GetCompatibleUIs</td>
</tr>
<tr>
<td>RUISDeviceChangeStatus</td>
<td>SetUILifetime</td>
</tr>
</tbody>
</table>

1 RUISDeviceAll must be implemented.

When implementing only one the required RUISDeviceAll permission, the following XML format is used:

```xml
<Permission>
  <UIname>RUISDeviceControl</UIname>
  <ACLEntry>
    <RUIWG:RUISDeviceAll/>
  </ACLEntry>
  <FullDescriptionURL></FullDescriptionURL>
  <ShortDescription>
    This permission allows the control point to set and get all secure actions of all the services of the Remote UI server device.
  </ShortDescription>
</Permission>
```

XML element tags UIname, ACLEntry, FullDescription, ShortDescription and Permission are defined in DeviceSecurity1.0 service specification.

The above defined permission is returned by the Remote UI server device in the “DefinedPermissions” argument of DeviceSecurity’s GetDefinedPermission action.

If the DeviceSecurity service resides inside the RemoteUIServerDevice, it will contain only the defined permissions of the Remote UI server device (as mentioned above). The “DefinedPermissions” argument of GetDefinedPermission action returned by the DeviceSecurity in this case would be:

```xml
<DefinedPermissions>
</DefinedPermissions>
```
<Permission>
  <UIname>RUISDeviceControl</UIname>
  <ACLEntry>
    <RUIWG:RUISDeviceAll/>
  </ACLEntry>
  <FullDescriptionURL/>
  <ShortDescription>
    Allow this application to complete control of the Remote UI server device.
  </ShortDescription>
</Permission>

If the DeviceSecurity service resides outside of the RemoteUIserverDevice and the RemoteUIserverDevice is embedded in a container device with other devices such as MediaRenderer, the “DefinedPermissions” argument of GetDefinedPermission action returned by the DeviceSecurity service in this case would be:

<DefinedPermissions>
  <Permission>
    <UIname>RUISDeviceControl</UIname>
    <ACLEntry>
      <RUIWG:RUISDeviceAll/>
    </ACLEntry>
    <FullDescriptionURL/>
    <ShortDescription>
      Allow this application to complete control of the Remote UI server device.
    </ShortDescription>
  </Permission>
  ...  
</DefinedPermissions>

A2 Profiles

There is no profile specified to be used for the Remote UI server device. However, vendors may define profiles of their own. Please refer to DeviceSecurity1.0 service specification for more details.

A3 Access Control List (ACL) entry

If DeviceSecurity service is implemented in the UPnP™ Remote UI server device, RemoteUIserver would have the “<RUIWG:RUISDeviceAll>” defined permission for access control. Following XML shows an example ACL entry granting this defined permission to the control point specified in the subject element. The string value “dRDPBzZz…” under the <hash> tag denotes the public key hash of the control point for which this ACL is defined as an example.

<acl>
  <entry>
    <subject>
      <hash>
        <algorithm>SHA1</algorithm>
        <value>dRDPBzZzTFq7Jl2Q2N/YNghcfj8=</value>
      </hash>
    </subject>
    <access>
      <RUIWG:RUISDeviceAll/>
    </access>
  </entry>
</acl>
<RUIWG:RUISDeviceAll/>
</access>
</valid>
  <not-before>2002-10-23_05:17:32</not-before>
  <not-after>2004-12-31_23:59:59</not-after>
</valid>
</entry>
</acl>