AVM TR-064 – First Steps

Supported by AVM

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Date: 2013-08-26

Content

History

Date	Version	Changes
2010-06-17	1	Initial version
2010-06-18	2	Minor changes
2010-06-21	3	4.1 Authorization, actions GetSecurityPort and DialNumber
2010-07-09	4	Added chapter 6 Actions
2010-08-31	5	Added chapter 7 State Variables Added reference to UPnP specification
2011-02-25	6	Added chapter Transactions
2011-03-03	7	Added chapter Support for Multiple Clients and Parallel Access with transactions or multiple session IDs
2011-12-05	8	Changed chapter Authorization to Authentication Added sub chapter Content Level Authentication
2011-12-21	9	Changed examples for Content Level Authentication
2012-11-06	10	Added chapter 6.1 Actions and User Rights. Change list of action allowed without authentication in chapter 4.1 Authentication .
2012-11-07	11	LanConfigSecurity:GetInfoEx () without authentication ManagementServer:GetInfo () without authentication Layer3Forwarding:SetDefaultConnectionService () with configuration rights.
2012-12-03	12	Description of authentication for multi user configurations. X_AVM-DE_GetAnonymousLogin () X_AVM-DE_GetCurrentUser ()
2013-01-23	13	Changed chapter 4.1.1 Remarks to clarify service behaviour for unauthorized requests.
2013-03-25	14	Details for content level authentication.
2013-04-02	15	Spelling Added actions in chapter 6.1.24 Service X_AVM-DE_MyFritz .
2013-08-20	16	Added action and changed right for all actions in chapter 6.1.10 Service Hosts .
2013-08-23	17	Changed right for GetInfo in chapter 6.1.24 Service X_AVM-DE_MyFritz .
2013-08-26	18	Add action in chapter 6.1.16 Service WLANConfiguration : X_AVM-DE_GetWLANExtInfo Corrections 6.1.16 Service WLANConfiguration : X_AVM_DE_SetStickSurfEnable → X_AVM-

		DE_SetStickSurfEnable Corrections 6.1.17 Service X_VoIP : X_AVM_DE_*VoIPAccount → X_AVM-DE_*VoIPAccount X_AVM_DE_GetClient* → X_AVM-DE_GetClient* X_AVM_DE_SetClient* → X_AVM-DE_SetClient* X_AVM_DE_DeleteClient → X_AVM-DE_DeleteClient X_AVM_DE_GetClients → X_AVM-DE_GetClients X_AVM_DE_GetNumbers → X_AVM-DE_GetNumbers X_AVM_DE_GetNumberOfNumbers → X_AVM-DE_GetNumberOfNumbers

1 Introduction

This document gives at short overview about the TR-064 protocol implementation in AVM devices. Especially the discovery of IP addresses, ports, TR-064 devices and services. Next chapter explains the usage of the security options are explained.

In addition some examples messages between the management application and the CPE are listed to see some details.

For details please refer the TR-064 document at
http://www.broadband-forum.org/technical/download/TR-064.pdf.

2 Device Discovery

To be able to communicate with a TR-064 device from AVM, the following steps have to be done.

A complete description can be found in chapter *3.2.2 SSDP Search on Start-up of CPE Management Application* in the [TR064] specification.

1   SSDP Discovery using M-SEARCH
2   Retrieval of device description file(s) using HTTP GET
   2.1   The content of the SSDP discover response message has to be parsed to get the valid URL for downloading the service description.
3   Be aware of the lease time for every announcement. If an announcement is not re-sent prior to the expire of the lease, the service discovery has to be restarted by the application.

2.1.1 Remark

In the [TR064] specification chapter *3.2.1 SSDP Advertisement on Start-up of CPE Device*, the CPE MUST send broadcast SSDP advertisement (NOTIFY) messages. AVM devices do not do this, to avoid being shown in Microsoft Windows UPnP/ network devices list by default.

3 Service Discovery

For the individual services several separate description files can be retrieved.
The URLs are given in the central service description.
An URL can be combined by taking the IP address and the port from the SSDP discovery response message (LOCATION header) and the value in a XML tag SCPDURL.

3.1 Manual Discovery

If a TR-064 client tries to detect an AVM TR-064 service manually, the following steps can be used.

- DNS resolution of fritz.box
- HTTP GET request to http://192.168.179.1:49000/tr64desc.xml
- HTTPS GET request to https://192.168.179.1:49443/tr64desc.xml

4 Security

TR-064 offers authorization and encryption to make safe communication.

4.1 Authentication

In the [TR064] specification, chapter *4.2 Authentication*, the default usernames and factory

default passwords are described.

AVM CPEs have the following implementation.

- If an individual username and a password is configured via WebGUI or TR-064, a configured username and password have to be used for password-protected actions.

   It is recommended to always use a configured username and password.

   The following actions do not need authorization:

   ○ DeviceInfo:GetSecurityPort
   ○ WLANConfiguration:X_SetHighFrequencyBand
   ○ LanConfigSecurity:GetInfo
   ○ LanConfigSecurity:X_AVM-DE_GetAnonymousLogin

- If only a password is configured via WebGUI or TR-064, a matching username is used internally.

   ○ It is not recommended to use only a password without a configured username.
   ○ If no configured username is used the following action shows which internal user is used instead:

      LanConfigSecurity:X_AVM-DE_GetCurrentUser

- If no individual password is configured, TR-064 does not require a password or username.

   The following action is protected and not available without an individual password:

   ○ DialNumber

The default authentication mechanism is HTTP authentication using digest (MD5 hashes). Alternatively an authentication on content level is supported.

4.1.1 Remarks

The username dslf-reset is not supported.

The TR-064 service may use HTTP status code 503 (service unavailable) instead of 401 (unauthorized) if too many unauthenticated requests from one client are made.

4.1.2 Content Level Authentication

The Content Level Authentication is based on the idea of SOAP extension for basic and digest authentication described in [SOAPAUTH01].

The client may either use the HTTP authentication mechanisms or use the content level authentication for SOAP actions that require authorization.

To access URLs with HTTP GET or HTTP POST a TR-064 URL session ID has to be retrieved first.

The TR-064 URL session ID is part of the URLs for phone book and call list.

For further requests like:

- phone book images,
- fax messages or
- answering machine messages

the SOAP action DeviceConfig::X_AVM-DE_CreateUrlSID () has to be invoked.

See the example for the authentication in the chapter 10.7 Content Level Authentication .

The client has to insert a SOAP header in the content to initiate the content level authentication.

The server responses an initial request with content level authentication contains a nonce value, the realm and a SOAP fault with a number and a text.

The client needs the nonce value, username, realm and password to calculate the digest hash.
A client side nonce is supported as optional parameter, too.

The following calculation and example values are taken from the examples in chapter 10.7 Content Level Authentication .

Variable	Value	Remark
uid	admin	
pwd	gurkensalat	
realm	F!Box SOAP-Auth	Not writeable.
sn	F758BE72FB999CEA	
response	b4f67585f22b0af7c4615db5a18faa14	

The calculation is similar to chapter 4.3 Digest Computation in [SOAPAUTH01].

```
response = MD5( concat(secret, ":", sn) )
```

when only client authentication is required.

Where:

- **secret** (string) represents the hex encoding of the digest
  ```
  secret = MD5( concat(uid, ":", realm, ":", pwd) )
  ```
- **uid** (string) represents the User ID.
- **realm** (string) represents the Realm name.
- **pwd** (string) represents the password.
- **sn** (string) represents the nonce serving as the challenge from the server to the client.

4.2 Encryption

The TR-064 specification chapter *4.4 Encryption* describes the possibilities for encryption. To make it more easy for applications the port can be retrieved using a special SOAP action.

The service type urn:dslforum-org:service:DeviceInfo:1 offers the action GetSecurityPort where the used port value can be retrieved.

Examples messages for a request and a response with the security port can be found in the examples chapter.

4.2.1 Remark

In the [TR064] specification, SSL encryption is recommended only for some SOAP actions. The support for access over an encrypted HTTPS link is not specified in details. Therefore AVM decided to use the explained action GetSecurityPort.

5 Discovery and Communication

Base on the message flow in the [TR064] specification, the following interaction sequence is expected by the CPE.
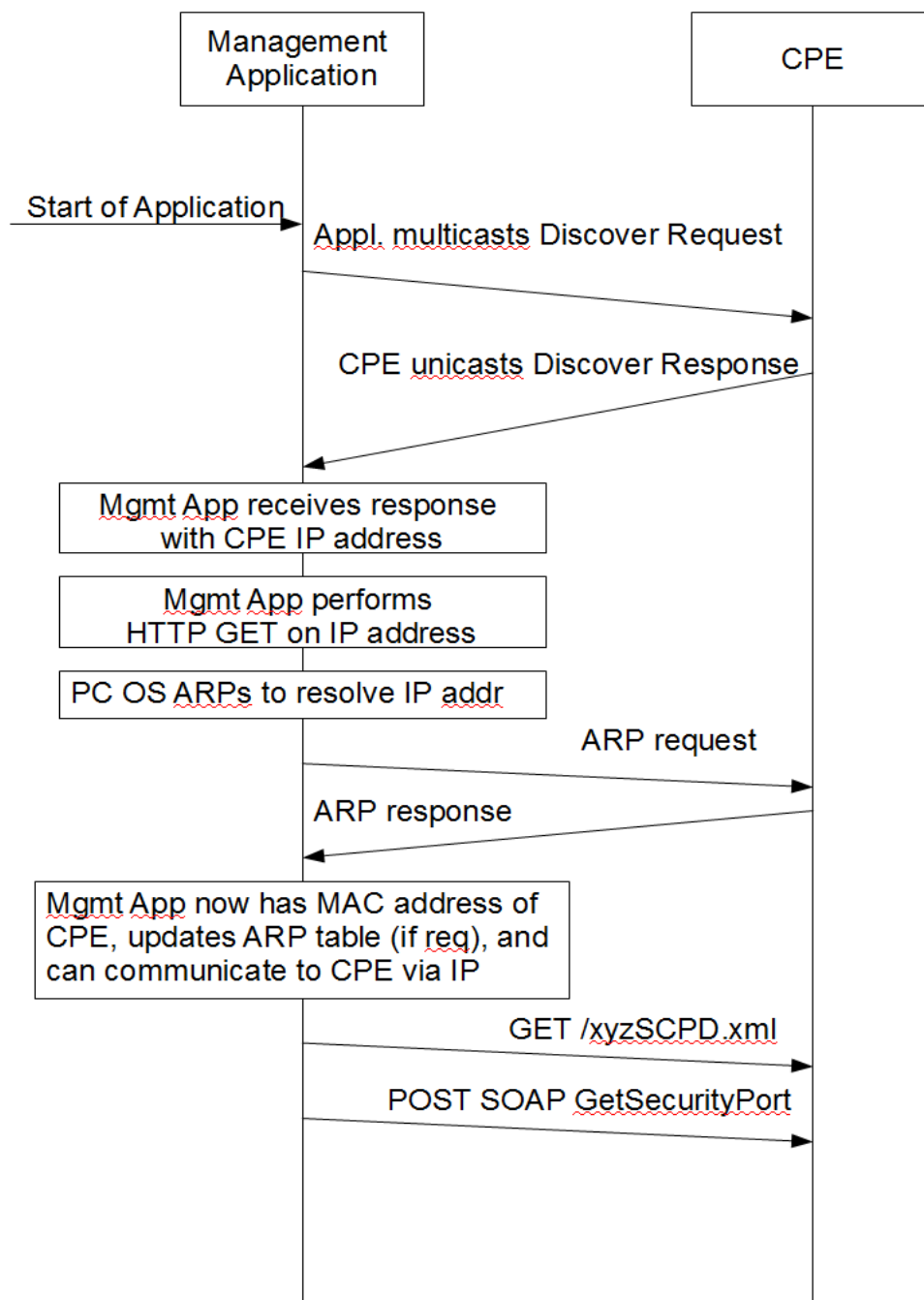
Figure 1: CPE Discovery and Communications base on the [TR064] specification

6 Actions

Actions may change in their lifetime. The names of actions are kept unchanged as long as possible, but the arguments may change if needed.
The number of arguments may differ and the meaning of a state variable may change.
To detect such a change, it is recommended to parse all SCPDXML files after attaching to a device.
In general actions return 402 if the number of arguments for an action is not as expected

or an unexpected argument is used.
If an unknown action is used the returned code is 401. This return code is used for obsoleted actions, too.

6.1 Actions and User Rights

The following user rights are supported:
- no rights
- configuration
- phone contents and phone configuration
- NAS contents and NAS configuration

User rights for configuration include user rights for phone contents and phone configuration.

The user rights may be limited to LAN or granted to LAN and WAN access.
There are some more settings for user rights:
- access from LAN only with authentication
- access from LAN without authentication
- no configured user and no configured password

Every action has needed user rights. The following user rights mappings to SOAP actions shall give an overview.
C – Configuration
P – Phone contents and phone configuration
N – NAS contents and NAS configuration
- – No rights

If a user is not authenticated, 401 ("Unauthorized") will be returned.
If a user is authenticated but has not the needed rights, 606 ("Action not authorized") will be returned.

6.1.1 Service DeviceInfo

Action	User Rights
GetInfo	C
SetProvisioningCode	C
GetDeviceLog	C
GetSecurityPort	-

6.1.2 Service DeviceConfig

Action	User Rights
GetPersistentData	-
SetPersistentData	C
ConfigurationStarted	C
ConfigurationFinished	C
FactoryReset	C

Reboot	C
X_GenerateUUID	C
GetConfigFile	C
SetConfigFile	C
CreateUrlSID	P

6.1.3 Service Layer3Forwarding

Action	User Rights
SetDefaultConnectionService	C
GetDefaultConnectionService	C
GetForwardNumberOfEntries	C
AddForwardingEntries	C
DeleteForwardingEntries	C
GetSpecificForwardingEntry	C
GetGenericForwardingEntry	C
SetForwardingEntryEnabled	C

6.1.4 Service LANConfigSecurity

Action	User Rights
GetInfo	-
X_AVM-DE_GetAnonymousLogin	-
X_AVM-DE_GetCurrentUser	C or P or N
SetConfigPassword	C or P or N

6.1.5 Service ManagementServer

Action	User Rights
GetInfo	C
SetManagementServerURL	C
SetManagementServerUsername	C
SetManagementServerPassword	C
SetPeriodicInform	C
SetConnectionRequestAuthentication	C
SetUpgradeManagement	C
X_SetTR069Enable	C
X_AVM-DE_GetTR069FirmwareDownloadEnabled	C

X_AVM-DE_SetTR069FirmwareDownloadEnabled	C

6.1.6 Service Time

Action	User Rights
GetInfo	C
SetNTPServers	C

6.1.7 Service UserInterface

Action	User Rights
GetInfo	C
X_AVM-DE_CheckUpdate	C
X_AVM-DE_DoUpdate	C
X_AVM-DE_DoManualUpdate	C
X_AVM-DE_PrepareCGI	C
X_AVM-DE_GetInternationalConfig	C
X_AVM-DE_SetInternationalConfig	C

6.1.8 Service LANHostConfigManagement

Action	User Rights
GetInfo	C
SetDHCPServerEnable	C
SetIPInterface	C
GetAddressRange	C
SetAddressRange	C
GetSubnetMask	C
SetSubnetMask	C
GetIPRoutersList	C
SetIPRouter	C
GetDNSServers	C
GetIPInterfaceNumberOfEntries	C

6.1.9 Service LANEthernetInterfaceConfig

Action	User Rights
GetInfo	C
SetEnable	C
GetStatistics	C

6.1.10 Service Hosts

Action	User Rights
GetHostNumberOfEntries	-
GetSpecificHostEntry	-
GetGenericHostEntry	-
X_AVM-DE_GetChangeCounter	-

6.1.11 Service WANCommonInterfaceConfig

Action	User Rights
GetCommonLinkProperties	C
GetTotalBytesSent	C
GetTotalBytesReceived	C
GetTotalPacketsSent	C
GetTotalPacketsReceived	C
X_AVM-DE_SetWANAccessType	C

6.1.12 Service WANDSLInterfaceConfig

Action	User Rights
GetInfo	C
GetStatisticsTotal	C

6.1.13 Service WANDSLLinkConfig

Action	User Rights
GetInfo	C
SetEnable	C
GetAutoConfig	C
SetDSLLinkType	C
GetDSLLinkType	C
SetDestinationAddress	C
GetDestinationAddress	C
SetATMEncapsulation	C
GetATMEncapsulation	C
GetStatistics	C

6.1.14 Service WANEthernetLinkConfig

Action	User Rights
Action	User Rights

GetEthernetLinkStatus	C

6.1.15 Service WANPPPConnection

Action	User Rights
GetInfo	P
GetConnectionTypeInfo	C
GetConnectionType	C
GetStatusInfo	C
GetUserName	C
SetUserName	C
SetPassword	C
GetNATRSIPStatus	C
SetConnectionTrigger	C
ForceTermination	C
RequestConnection	C
GetGenericPortMappingEntry	C
GetSpecificPortMappingEntry	C
AddPortMapping	C
DeletePortMapping	C
GetExternalIPAddress	C
X_GetDNSServers	C
X_SetDNSServers	C
GetLinkLayerMaxBitRates	C
GetPortMappingNumberOfEntries	C
SetRouteProtocolRx	C
SetIdleDisconnectTime	C
X_AVM-DE_GetAutoDisconnectTimeSpan	C
X_AVM-DE_SetAutoDisconnectTimeSpan	C

6.1.16 Service WLANConfiguration

Action	User Rights
SetEnable	C
GetInfo	C
SetConfig	C
SetSecurityKeys	C

GetSecurityKeys	C
SetDefaultWEPKeyIndex	C
GetDefaultWEPKeyIndex	C
GetBasBeaconSecurityProperties	C
SetBasBeaconSecurityProperties	C
GetSSID	C
SetSSID	C
GetBSSID	C
GetBeaconType	C
SetBeaconType	C
GetBeaconAdvertisement	C
SetBeaconAdvertisement	C
GetChannelInfo	C
SetChannel	C
GetTotalAssociations	P
GetGenericAssociatedDeviceInfo	P
GetSpecificAssociatedDeviceInfo	P
X_SetHighFrequencyBand	-
X_AVM-DE_SetStickSurfEnable	C
X_AVM-DE_GetIPTVOptimzed	C
X_AVM-DE_SetIPTVOptimzed	C
GetStatistics	C
GetPacketStatistics	C
X_AVM-DE_GetWlanNightControl	-
X_AVM-DE_GetWLANExtInfo	C

6.1.17 Service X_VoIP

Action	User Rights
X_AVM-DE_AddVoIPAccount	P
X_AVM-DE_DelVoIPAccount	P
X_AVM-DE_GetVoIPAccount	P
GetVoIPCommonCountryCode	P
SetVoIPCommonCountryCode	P
GetVoIPEnableCountryCode	P
SetVoIPEnableCountryCode	P

GetInfo	P
GetInfoEx	P
SetConfig	P
X_AVM-DE_GetNumberOfClients	P
X_AVM-DE_GetClient	P
X_AVM-DE_GetClient2	P
X_AVM-DE_GetClient3	P
X_AVM-DE_SetClient	P
X_AVM-DE_SetClient2	P
X_AVM-DE_SetClient3	P
X_AVM-DE_DeleteClient	P
X_AVM-DE_GetClients	P
X_AVM-DE_GetNumbers	P
X_AVM-DE_GetNumberOfNumbers	P
GetMaxVoIPNumbers	P
GetExistingVoIPNumbers	P
GetPhonePort	P
DialGetConfig	P
DialSetConfig	P
DialNumber	P
DialHangup	P
GetVoIPCommonAreaCode	P
SetVoIPCommonAreaCode	P
GetVoIPEnableAreaCode	P
SetVoIPEnableAreaCode	P

6.1.18 Service X_AVM-DE_StorageService

Action	User Rights
GetInfo	C Remark: incomplete implementation.
SetFTPServer	C Remark: incomplete implementation.
SetSMBServer	C Remark: incomplete implementation.
GetUserInfo	C Remark: incomplete implementation.
SetUserInfo	C Remark: incomplete implementation.

6.1.19 Service X_AVM-DE_WebDAVClientService

Action	User Rights
GetInfo	C
SetConfig	C

6.1.20 Service X_AVM-DE_UPnP

Action	User Rights
GetInfo	C
SetConfig	C

6.1.21 Service X_AVM-DE_OnTel

Action	User Rights
GetInfo	P
SetEnable	P
SetConfig	P
SetInfoByIndex	P
SetConfigByIndex	P
DeleteByIndex	P
GetNumberOfEntries	P
GetCallList	P
GetPhonebookList	P
GetPhonebook	P
AddPhonebook	P
DeletePhonebook	P
GetPhonebookEntry	P
SetPhonebookEntry	P
DeletePhonebookEntry	P
GetDECTHandsetList	P
GetDECTHandsetInfo	P
SetDECTHandsetPhonebook	P

6.1.22 Service X_AVM-DE_TAM

Action	User Rights
GetInfo	P
SetEnable	P

6.1.23 Service X_AVM-DE_RemoteAccess

Action	User Rights
GetInfo	P
SetConfig	C
GetDDNSInfo	C
GetDDNSProviders	C
SetDDNSConfig	C

6.1.24 Service X_AVM-DE_MyFritz

Action	User Rights
GetInfo	-
GetNumberOfServices	P
GetServiceByIndex	P
SetServiceByIndex	P
DeleteServiceByIndex	P

7 State Variables

The vendor specific state variables with the format X_<VENDOR>_StateVariable use the following string for compatibility reasons.
AVM-DE
e.g. X_AVM-DE_Password
This string is not conform to the UPnP specification [UPNP11], that does not allow a – in the name of a state variable.

7.1 Compatibility with clients

At least one client has compatibility problems with these names of state variables.
Herqq UPnP http://www.herqq.org

8 Support for Multiple Clients and Parallel Access

There are two features that support parallel access of multiple TR-064 clients to one TR-064 service.
The first feature is the usage of transactions which is described in chapter9Transactions and the second feature are multiple internal session IDs.
These internal session IDs are used as parameters for URL access. The action GetCallList () returns such an URL for example.

9 Transactions

To support TR-064 access for several clients in parallel the [TR064] specification recommends the usage of transactions.
The description of the transactions is described in the chapter 6.3 Transactional Approach and in the chapter 6.5.2 DeviceConfig.

Some message examples can be found on the page 87 and following pages.

9.1 Usage of Transactions

Transactions cover the execution of SOAP actions without interruption by other TR-064 clients.

To begin a transaction the SOAP action DeviceConfig::ConfigurationStarted has to be used.

To end a transaction the SOAP action DeviceConfig::ConfigurationFinished has to be used.

The following sequence of SOAP actions is recommended for the communication with the AVM TR-064 service.

1. DeviceConfig::X_GenerateUUID
2. DeviceConfig::ConfigurationStarted
3. One or more SOAP actions to be protected against parallel access.
4. DeviceConfig::ConfigurationFinished

A transaction permits to successfully execute SOAP actions for its duration.

A transaction times out 45 seconds after DeviceConfig::ConfigurationStarted was called, if the client does not call DeviceConfig::ConfigurationFinished to handle connection loss between TR-064 client and server and similar failures.

10 Examples

The following examples show unencrypted communication between a TR-064 enabled CPE and a TR-064 application.

10.1 SSDP request from application

Multicast HTTP message from application.

```
M-SEARCH * HTTP/1.1
HOST: 239.255.255.250:1900
MAN: "ssdp:discover"
MX: 5
ST: urn:dslforum-org:device:InternetGatewayDevice:1
```

10.2 SSDP response from CPE

Unicast HTTP response message from CPE to application.

```
HTTP/1.1 200 OK
LOCATION: http://192.168.179.1:49000/tr64desc.xml
SERVER: FRITZBOX UPnP/1.0 AVM FRITZ!Box Fon WLAN 7270 v3 74.04.85
CACHE-CONTROL: max-age=1800
EXT:
ST: urn:dslforum-org:device:InternetGatewayDevice:1
USN: uuid:739f2409-bccb-40e7-8e6c-0024FE6E00C3::urn:dslforum-
org:device:InternetGatewayDevice:1
```

10.3 Service description request from application

Unicast HTTP GET request message from application to CPE using values of SSDP discovery response message LOCATION header.

```
GET /tr64desc.xml HTTP/1.1
HOST: 192.168.179.1:49000
```

```
CONNECTION: Close
USER-AGENT: AVM UPnP/1.0 Client 1.0
```

10.4 Service description response from CPE

Unicast HTTP response message (trimmed) from CPE to application.

```
HTTP/1.0 200 OK
Content-Length: 10327
Content-Type: text/xml
Date: Thu, 17 Jun 2010 11:35:47 GMT
Last-Modified: Thu, 17 Jun 2010 10:33:08 GMT
Mime-Version: 1.0

<?xml version="1.0"?>
<root xmlns="urn:dslforum-org:device-1-0">
 <specVersion>
  <major>1</major>
  <minor>0</minor>
 </specVersion>
 <device>
  <deviceType>urn:dslforum-
org:device:InternetGatewayDevice:1</deviceType>
  <friendlyName>FRITZBOX UPnP/1.0 AVM FRITZ!Box Fon WLAN 7270 v3
74.04.85</friendlyName>
  <manufacturer>AVM</manufacturer>
  <manufacturerURL>www.avm.de</manufacturerURL>
  <modelDescription>FRITZ!Box Fon WLAN 7270 v3</modelDescription>
  <modelName>FRITZ!Box Fon WLAN 7270 v3</modelName>
  <modelNumber> - avm</modelNumber>
  <modelURL>www.avm.de</modelURL>
  <UDN>uuid:739f2409-bccb-40e7-8e6c-0024FE6E00C3</UDN>
  <iconList>
   <icon>
    <mimetype>image/gif</mimetype>
    <width>118</width>
    <height>119</height>
    <depth>8</depth>
    <url>/ligd.gif</url>
   </icon>
  </iconList>
  <serviceList>
   <service>
    <serviceType>urn:dslforum-org:service:DeviceInfo:1</serviceType>
    <serviceId>urn:DeviceInfo-com:serviceId:DeviceInfo1</serviceId>
    <controlURL>/upnp/control/deviceinfo</controlURL>
    <eventSubURL>/upnp/control/deviceinfo</eventSubURL>
    <SCPDURL>/deviceinfoSCPD.xml</SCPDURL>
   </service>
...
  </serviceList>
  <deviceList>
   <device>
    <deviceType>urn:dslforum-org:device:LANDevice:1</deviceType>
    <friendlyName>LANDevice - FRITZ!Box Fon WLAN 7270 v3</friendlyName>
```

```
    <manufacturer>AVM</manufacturer>
    <manufacturerURL>www.avm.de</manufacturerURL>
    <modelDescription>LANDevice - FRITZ!Box Fon WLAN 7270
v3</modelDescription>
    <modelName>LANDevice - FRITZ!Box Fon WLAN 7270 v3</modelName>
    <modelNumber> - avm</modelNumber>
    <modelURL>www.avm.de</modelURL>
    <UDN>uuid:75802409-bccb-40e7-8e6b-0024FE6E00C3</UDN>
    <UPC>AVM TR-064</UPC>
    <serviceList>
     <service>
      <serviceType>urn:dslforum-
org:service:WLANConfiguration:1</serviceType>
      <serviceId>urn:WLANConfiguration-
com:serviceId:WLANConfiguration1</serviceId>
      <controlURL>/upnp/control/wlanconfig1</controlURL>
      <eventSubURL>/upnp/control/wlanconfig1</eventSubURL>
      <SCPDURL>/wlanconfigSCPD.xml</SCPDURL>
     </service>
...
    </serviceList>
   </device>
...
  </deviceList>
  <presentationURL>http://fritz.box</presentationURL>
 </device>
</root>
```

10.5 SOAP Request with Action GetSecurityPort

Unicast SOAP message from application to CPE using values from SCPD description file
and SSDP discovery response message.

```
POST /upnp/control/deviceinfo HTTP/1.1
HOST: 192.168.179.1:49000
CONTENT-LENGTH: 267
CONTENT-TYPE: text/xml; charset="utf-8"
SOAPACTION: "urn:dslforum-org:service:DeviceInfo:1#GetSecurityPort"
USER-AGENT: AVM UPnP/1.0 Client 1.0

<?xml version="1.0"?>
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
<s:Body><u:GetSecurityPort xmlns:u="urn:dslforum-
org:service:DeviceInfo:1"></u:GetSecurityPort>
</s:Body>
</s:Envelope>
```

10.6 SOAP Response for Action GetSecurityPort

Unicast SOAP message from CPE to application.

```
HTTP/1.1 200 OK
DATE: Thu, 17 Jun 2010 11:53:59 GMT
SERVER: FRITZBOX UPnP/1.0 AVM FRITZ!Box Fon WLAN 7270 v3 74.04.85
CONNECTION: keep-alive
```

```
CONTENT-LENGTH: 324
CONTENT-TYPE: text/xml; charset="utf-8"
EXT:

<?xml version="1.0"?>
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"><s:Body>
<u:GetSecurityPortResponse xmlns:u="urn:dslforum-
org:service:DeviceInfo:1">
<NewSecurityPort>49443</NewSecurityPort>
</u:GetSecurityPortResponse>
</s:Body> </s:Envelope>
```

10.7 Content Level Authentication

The used values are listed below.

Variable	Value	Remark
Username	admin	
Password	gurkensalat	
Realm	F!Box SOAP-Auth	Not writeable.
Nonce	F758BE72FB999CEA	
Auth	b4f67585f22b0af7c4615db5a18faa14	
Nonce (next value)	0B9813494DD27C93	

10.7.1 Initial Client Request

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/" >
  <s:Header>
    <h:InitChallenge
      xmlns:h="http://soap-authentication.org/digest/2001/10/"
      s:mustUnderstand="1">
      <UserID>admin</UserID>
    </h:InitChallenge >
  </s:Header>
  <s:Body>
    <u:GetHostNumberOfEntries xmlns:u="urn:dslforum-org:service:Hosts:1">
    </u:GetHostNumberOfEntries>
  </s:Body>
</s:Envelope>
```

10.7.2 Server Response to Initial Client Request

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/" >
  <s:Header>
    <h:Challenge
      xmlns:h="http://soap-authentication.org/digest/2001/10/"
```

```
        s:mustUnderstand="1">
        <Status>Unauthenticated</Status>
        <Nonce>F758BE72FB999CEA</Nonce>
        <Realm>F!Box SOAP-Auth</Realm>
      </h:Challenge>
    </s:Header>
    <s:Body>
      <sFault>
        <errorCode>503</errorCode>
        <errorDescription>Auth. failed</errorDescription>
      </s:Fault>
    </s:Body>
</s:Envelope>
```

10.7.3 Client Request with Authentication

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/" >
  <s:Header>
    <h:ClientAuth
      xmlns:h="http://soap-authentication.org/digest/2001/10/"
      s:mustUnderstand="1">
      <Nonce>F758BE72FB999CEA</Nonce>
      <Auth>b4f67585f22b0af7c4615db5a18faa14</Auth>
      <UserID>admin</UserID>
      <Realm>F!Box SOAP-Auth</Realm>
    </h:ClientAuth>
  </s:Header>
  <s:Body>
    <u:GetHostNumberOfEntries xmlns:u="urn:dslforum-org:service:Hosts:1">
    </u:GetHostNumberOfEntries>
  </s:Body>
</s:Envelope>
```

10.7.4 Server Response for successful Authentication

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope s:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/" >
  <s:Header>
    <h:NextChallenge
      xmlns:h="http://soap-authentication.org/digest/2001/10/"
      s:mustUnderstand="1">
      <Status>Authenticated</Status>
      <Nonce>0B9813494DD27C93</Nonce>
      <Realm>F!Box SOAP-Auth</Realm>
    </h:NextChallenge>
  </s:Header>
  <s:Body>
    <u:GetHostNumberOfEntriesResponse
      xmlns:u="urn:dslforum-org:service:Hosts:1">
      <HostNumberOfEntries>42</HostNumberOfEntries>
    </u:GetHostNumberOfEntriesResponse>
```

```
    </s:Body>
</s:Envelope>
```

11 Appendix

11.1 References

TR064: DSL Forum, LAN-Side DSL CPE Configuration, 2004
SOAPAUTH01: Robert Cunnings, Rich Salz, SOAP Extensions: Basic and Digest
Authentication, 2001, http://www.whitemesa.com/soapauth.html
UPNP11: UPnP Forum, UPnP Device Architecture version 1.1, 2008