

VDSL Autoconfiguration Plugtests Event 2008

Technical Information Document
Auto-Configuration
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1 Introduction

This document gives an overview over the Auto Configuration Part of the VDSL-Autoconfig Plugtest 2008, hosted by ETSI Plugtests Services. It will give some information about the used infrastructure and the settings of the event. The purpose of this document is to allow the participants to prepare their equipment in advance.

It is still possible, that something changed in this document until the event.

**This document will be available in a final version as soon as the registration application has been closed and the number of participating companies is known.
Current version is 0.2**

2 General Information

2.1 *Location and time*

The Auto-Configuration Plugtest will be a part of the VDSL-Autoconfig Plugtest 2008. It will take place in Lannion France from May 12 through May 16.

2.2 Contact

2.2.1 Technical Issues

CETECOM ICT Services
Martin Kirchner
Untertuerkheimer Str 6-10
66117 Saarbrücken
Tel: +49 681 598 8530
Mob: +49 173 878 0317
Mail: martin.kirchner@ict.cetecom.de
Web: <http://dsl.cetecom-ict.de>

2.2.2 Event Organising Issues

Generally:

ETSI Plugtests
Maya Ayache
CTI - Centre for Testing &
Interoperability
Plugtests TM Service
Tel: +33 (0)4 92 94 42 95
maya.ayache@etsi.org

3 Equipment Provisioning

3.1 What participants need to bring

- Power Cords (euro or shockproof plug)
- Power supplies and the devices must support 230V/50Hz
- PCs and own debug software
- Ethernet Cables to connect their equipment to the test network
- HUBs for tracing etc..

3.2 CPE Requirements

- The CPE has to be configurable during the event with respect to the IP settings, the kind of authentication, the ACS URL and the VPI/VCI settings.
- The CPE usernames must meet the requirements from TR-069 Chapter 3.4.4
- CPE vendors have to provide one firmware file which can be placed onto the file server
- It has to be possible to change the default ACS URL of the CPE
- The CPE should be prepared with the certificate distributed by CETECOM before the meeting
- The CPE has to be equipped with a power supply suitable for the German power mains network (230V/50Hz).

3.3 ACS Requirements

- The ACS has to be configurable during the event with respect to with respect to the IP settings, the authentication, the CPE address and the CPE Configuration parameter
- The ACS has to be prepared to use usernames and passwords as defined in TR-069 Chapter 3.4.4 for Digest authentication
- The ACS should be prepared with the certificate distributed and signed by CETECOM
- The CPE has to be equipped with a power supply suitable for the German power mains network (250V/50Hz).

3.4 Equipment provided by the organizer

- One central -48 VDC power supply
- One public PC with internet access
- Free WiFi access
- Tool Corner with soldering machine, screw drivers, etc.
- Some 10BT hubs for sniffing and debugging
- Workspace for every participating Company with 250V/50 Hz Power Connections, RJ-45 Sockets for DSL and Ethernet connection to the test network
- Some analogue phones
- SIP Server
- RADIUS Server
- HTTPS/HTTP and FTP Server
- DSLAM and test network (see chapter 7)

4 Scope of test

The scope of the tests should be the auto configuration of every type of CPE equipment like DSL-Modems/Router, SetUp Boxes, IP-Phones, etc. in interaction with ACS servers according the TR-069.

The focus should be the interoperability between the CPE and the ACS in a defined environment.

- All test cases in chapter (5) are just proposals.
- The test schedule (chapter 6) is mandatory.

4.1 Reporting of Results

Only the pure results, collected in this document are feed back to the working groups of ETSI and maybe the DSL-FORUM. The page with firmware versions versions and other personal information are for your own use only. Please report only the results.

4.2 Typical Test Setup

3 different test setups will be possible. One for testing DSL Modems/Router (Figure 4.2-1), one for testing NONDSL CPEs with direct Ethernet connection (Figure 4.2-2) and one for testing NONDSL CPEs where the SUT is connected via a DSL-Router (Figure 4.2-3).



Figure 4.2-1 Test Setup for DSL Devices like IGDs

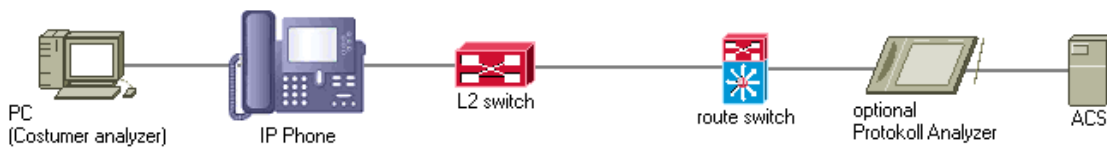


Figure 4.2-2 Test Setup for NONDSL Devices like SIP phones



Figure 4.2-3 Test Setup for NONDSL Devices, connected over a DSL-Router

5 Test Plan

5.1 Underlying test cases

5.1.1 Test Case 1 HTTP Session Initiation

Test Case No:	1a
Test Case Name:	HTTP Session Initiation CPE initiated – Basic Client Authentication
Purpose	To validate that the CPE can establish an authenticated HTTP Session with the ACS using basic authentication
Procedure	<ul style="list-style-type: none"> • Configure the ACS to use basic authentication • The CPE has to initiate a HTTP session
Comment	No comments

Test Case No:	1b
Test Case Name:	HTTP Session Initiation CPE initiated –Digest Client Authentication
Purpose	To validate that the CPE can establish an authenticated HTTP Session with the ACS using digest authentication
Procedure	<ul style="list-style-type: none"> • Configure the ACS to use digest authentication • The CPE has to initiate a HTTP session
Comment	No comments

Test Case No:	1c
Test Case Name:	HTTP Session Initiation ACS initiated – Digest Client Authentication
Purpose	To validate that the ACS can establish an authenticated HTTP Session with the CPE
Procedure	<ul style="list-style-type: none">• The ACS has to initiate a HTTP session
Comment	No comments

5.1.2 Test Case 2 SSL Encryption Tests

Test Case No:	2a
Test Case Name:	SSL encryption Test – Basic Client Authentication
Purpose	To validate that the CPE can interact with the ACS over SSL, using server certificate authentication for the ACS and basic authentication for the CPE.
Procedure	<ul style="list-style-type: none"> • Enable SSL at both sides • Configure the ACS to use basic authentication • The CPE has to initiate a HTTP session
Comment	No comments

Test Case No:	2b
Test Case Name:	SSL encryption Test – Digest Client Authentication
Purpose	To validate that the CPE can interact with the ACS over SSL, using server certificate authentication for the ACS and digest authentication for the CPE.
Procedure	<ul style="list-style-type: none"> • Enable SSL at both sides • Configure the ACS to use digest authentication • The CPE has to initiate a HTTP session
Comment	No comments

Test Case No:	2c
Test Case Name:	SSL encryption Test – Certificate Client Authentication
Purpose	To validate that the CPE can interact with the ACS over SSL, using server certificate authentication for the ACS and client certificate authentication for the CPE.
Procedure	<ul style="list-style-type: none"> • Enable SSL at both sides • Configure the ACS to use digest authentication • The CPE has to initiate a HTTP session
Comment	No comments

5.2 DHCP Test Cases

This test cases will not be performed during the event.

5.3 STUN

Not possible to carry out during the event

5.4 TR-069 Test Cases

5.4.1 Test Case 5 CWMP Session Initiation

Test Case No:	5a
Test Case Name:	CWMP Session Initiation
Purpose	To enable vendors to verify session establishment and basic interoperability of the CPE and ACS Inform handshake, which is the basis of all other interactions.
Procedure	<ul style="list-style-type: none"> • Force the CPE to send an Inform to the ACS • The ACS has to send an InformResponse message to the CPE.
Comment	An ACS may need to perform some special work on first contact with a given CPE, in which case the Inform may need to include the "0 BOOTSTRAP" event code.

5.4.2 Test Case 6 Connection Request

Test Case No:	6a
Test Case Name:	TCP Connection Request
Purpose	Building upon the successful ability to exchange a basic CPE-initiated Inform message.
Procedure	<ul style="list-style-type: none"> • The ACS issues an HTTP GET to the ConnectionRequest URL specified by the CPE in the Inform message in Chapter 5.4.2 • The CPE then initiates a CWMP session with the ACS by sending an Inform message. • The ACS sends an InformResponse message to the CPE.
Comment	

Test Case No:	6b
Test Case Name:	UDP Connection Request
Purpose	Building upon the successful ability to exchange a basic CPE-initiated Inform message, this test examines the ability of the ACS to initiate interaction with the device by making a Connection Request.
Procedure	<ul style="list-style-type: none"> • The ACS issues a UDP HTTP GET (as specified in TR-111 Section 2.2.2.3) to the UDPConnectionRequestAddress (address and port) that the ACS will already have discovered (TR-111 Section 2.2.2.2). • The CPE then initiates a CWMP session with the ACS by sending an Inform message. • The ACS sends an InformResponse message to the CPE. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS.
Comment	

5.4.3 Test Case 7 Get RPC Methodes

Test Case No:	7a
Test Case Name:	Get RPC Methodes ACS → CPE
Purpose	To validates that the ACS is able to discover the RPC methods supported by the CPE.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues the <code>GetRPCMethods</code> RPC. • The CPE sends a <code>GetRPCMethodsResponse</code> message to the ACS.
Comment	

Test Case No:	7b
Test Case Name:	Get RPC Methodes CPE → ACS
Purpose	To validates that the CPE is able to discover the RPC methods supported by the ACS.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The CPE issues the <code>GetRPCMethods</code> RPC. • The ACS sends a <code>GetRPCMethodsResponse</code> message to the CPE.
Comment	

5.4.4 Test Case 8 Firmware Download

Test Case No:	8a
Test Case Name:	Firmware Download (<i>No ACS specified Delay</i>)
Purpose	To validate that a firmware download can be successfully executed when the ACS permits the download to take place in the current CWMP session.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues the Download RPC, specifying values for the URL of the download server and no delay. • The CPE performs the download. It may: <ul style="list-style-type: none"> ○ Perform and apply the download immediately during the current session and respond with a Status=0. ○ Respond with a Status=1, which indicates that the download will be completed later. • If the CPE responds with a status of 1, it may either finish the download during that same session or require a new CWMP session (either because it initiates a new connection to perform the upgrade or because it requires a reboot to fully apply the firmware upgrade). • If the CPE is able to finish the download during the same CWMP session <ul style="list-style-type: none"> ○ The CPE sends the TransferComplete RPC in the same session once the download has finished. ○ The ACS sends a TransferCompleteResponse message to the CPE. • If the CPE requires a new CWMP session in order to complete or report completion of the firmware download <ul style="list-style-type: none"> ○ It terminates cleanly the existing session with the ACS. ○ It downloads the firmware and reboots if required. ○ It then establishes an HTTP session with the ACS. ○ It sends an Inform message to the ACS with the “7 TRANSFER COMPLETE” event code. ○ The ACS responds with an InformResponse message. ○ The CPE sends a TransferComplete RPC. ○ The ACS sends a TransferCompleteResponse message. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS. • Subsequent interrogation indicates that the CPE’s firmware does indeed match the new, downloaded version.
Comment	

Test Case No:	8b
Test Case Name:	Firmware Download (<i>ACS specified Delay</i>)
Purpose	To test the ability of the CPE to download firmware when not permitted to perform the download in the current CWMP session.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues the Download RPC, specifying values for the URL and a non-zero delay. • The CPE responds with a status value of 1, indicating that the download has not yet been completed. • The CPE waits for the indicated period of time. • The CPE then initiates a new session for the purpose of performing the download. • The CPE downloads and applies the firmware. It may need to reboot in order to apply the firmware. • After successful download and application of the file, the CPE initiates a new transaction session with the ACS in which the Inform contains the "7 TRANSFER COMPLETE" event code. • The CPE issues the TransferComplete method during that new session. • The ACS responds with a TransferCompleteResponse message. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS. • Subsequent interrogation indicates that the CPE's firmware does indeed match the new, downloaded version.
Comment	

Test Case	8c
Test Case	Firmware Download (<i>No ACS specified Delay – SSL</i>)
Purpose	To validate that a firmware download can be successfully executed when the ACS permits the download to take place in the current CWMP session using SSL.
Procedure	<ul style="list-style-type: none"> • Configure the CPE to enable SSL; if the ACS is acting as the fileserver, enable SSL on the ACS. • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues the Download RPC, specifying HTTPS values for the URL of the download server and no delay. • The CPE performs the download. It may: <ul style="list-style-type: none"> ○ Perform and apply the download immediately during the current session and respond with a Status=0. ○ Respond with a Status=1, which indicates that the download will be completed later. • If the CPE responds with a status of 1, it may either finish the download during that same session or require a new CWMP session (either because it initiates a new connection to perform the upgrade or because it requires a reboot to fully apply the firmware upgrade). • If the CPE is able to finish the download during the same CWMP session <ul style="list-style-type: none"> ○ The CPE sends the TransferComplete RPC in the same session once the download has finished. ○ The ACS sends a TransferCompleteResponse message to the CPE. • If the CPE requires a new CWMP session in order to complete or report completion of the firmware download <ul style="list-style-type: none"> ○ It terminates cleanly the existing session with the ACS. ○ It downloads the firmware and reboots if required. ○ It then establishes an HTTP session with the ACS. ○ It sends an Inform message to the ACS with the “7 TRANSFER COMPLETE” event code. ○ The ACS responds with an InformResponse message. ○ The CPE sends a TransferComplete RPC. ○ The ACS sends a TransferCompleteResponse message. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS. • Subsequent interrogation indicates that the CPE’s firmware does indeed match the new, downloaded version..
Comment	

5.4.5 Test Case 9 Get Parameter Manes

Test Case	9a
Test Case	Get Parameter Manes; Complete Path
Purpose	To validate the ability of the CPE to respond for a simple complete path request of a variable's name.
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterNames RPC specifying the following complete path. <ul style="list-style-type: none"> IGD InternetGatewayDevice.DeviceInfo.Manufacturer VoIP InternetGatewayDevice.DeviceInfo.Manufacturer STB InternetGatewayDevice.DeviceInfo.Manufacturer The CPE issues a GetParameterNamesResponse message containing the name requested by the ACS.

Test Case No:	9b
Test Case Name:	Get Parameter Manes; Partial Path Next Level True
Purpose	To validates the ability of the ACS to retrieve information about the next level of the CPE's data hierarchy using the GetParameterNames RPC..
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange through a successful Inform exchange. The ACS issues a GetParameterNames RPC specifying the following partial path and with the NextLevel Boolean argument set to True. <ul style="list-style-type: none"> IGD InternetGatewayDevice.WANDevice.1. VoIP InternetGatewayDevice.Services.VoiceService.1. STB InternetGatewayDevice.Services.STBService.1 . The ACS receives a GetParameterNamesResponse message from the CPE that contains the next level objects and parameters
Comment	

Test Case No:	9c						
Test Case Name:	Get Parameter Manes; Partial Path Next Level False						
Purpose	To validates the ability of the ACS to retrieve information about the CPE's data hierarchy at all levels using the GetParameterNames RPC.						
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterNames RPC specifying the following partial path and with the NextLevel Boolean argument set to False. <table border="0" style="margin-left: 40px;"> <tr> <td style="padding-right: 20px;">IGD</td> <td>InternetGatewayDevice.Layer3Forwarding.</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.SIP.</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.Services.STBService.1.Capabilities.AVDecoder.</td> </tr> </table> The CPE issues a GetParameterNamesResponse message containing the full path name of all parameters whose name begins with the string specified in the request 	IGD	InternetGatewayDevice.Layer3Forwarding.	VoIP	InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.SIP.	STB	InternetGatewayDevice.Services.STBService.1.Capabilities.AVDecoder.
IGD	InternetGatewayDevice.Layer3Forwarding.						
VoIP	InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.SIP.						
STB	InternetGatewayDevice.Services.STBService.1.Capabilities.AVDecoder.						

Test Case No:	9d						
Test Case Name:	Get Parameter Manes; Invalid Path						
Purpose	To validates the ability for the CPE to identify an invalid path and for the ACS to handle the resulting error..						
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterNames RPC specifying the following invalid complete path. <table border="0" style="margin-left: 40px;"> <tr> <td style="padding-right: 20px;">IGD</td> <td>InvalidParameterPath</td> </tr> <tr> <td>VoIP</td> <td>InvalidParameterPath</td> </tr> <tr> <td>STB</td> <td>InvalidParameterPath</td> </tr> </table> The CPE issues a GetParameterNamesResponse message containing a 9005 (Invalid Parameter Name) fault code. The ACS may either issue another GetParameterValues RPC to the CPE with a correct parameter path specified, or may allow the CPE to terminate the session.. 	IGD	InvalidParameterPath	VoIP	InvalidParameterPath	STB	InvalidParameterPath
IGD	InvalidParameterPath						
VoIP	InvalidParameterPath						
STB	InvalidParameterPath						
Comment							

Test Case No:	9e
Test Case Name:	Get Parameter Names; Entire Object Model
Purpose	To validate the ability of the ACS to retrieve information about the CPE's entire data hierarchy using the GetParameterNames RPC. Note that the 9004 (Resources Exceeded) fault is never returned by GetParameterNames.
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterNames RPC specifying the root of the naming hierarchy and with the NextLevel Boolean argument set to False. <ul style="list-style-type: none"> IGD InternetGatewayDevice. VoIP InternetGatewayDevice. STB InternetGatewayDevice. The CPE issues a GetParameterNamesResponse message containing the full path name of all parameters in the CPE's data model.
Comment	

5.4.6 Test Case 10 Get Parameter Values

Test Case No:	10a						
Test Case Name:	Get Parameter Values; Simple Complete Path						
Purpose	To verify that the CPE provides configuration information in response to a simple, complete path request.						
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterValues RPC to the CPE specifying the following complete path. <table border="1" data-bbox="549 703 1294 860"> <tr> <td>IGD</td> <td>InternetGatewayDevice.ManagementServer.ConnectionRequest-Username</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.ManagementServer.ConnectionRequest-Username</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.ManagementServer.ConnectionRequest-Username</td> </tr> </table> The CPE responds with a GetParameterValues response message containing the name and value for the requested parameter. 	IGD	InternetGatewayDevice.ManagementServer.ConnectionRequest-Username	VoIP	InternetGatewayDevice.ManagementServer.ConnectionRequest-Username	STB	InternetGatewayDevice.ManagementServer.ConnectionRequest-Username
IGD	InternetGatewayDevice.ManagementServer.ConnectionRequest-Username						
VoIP	InternetGatewayDevice.ManagementServer.ConnectionRequest-Username						
STB	InternetGatewayDevice.ManagementServer.ConnectionRequest-Username						
Comment							

Test Case No:	10b						
Test Case Name:	Get Parameter Values; Multiple Complete Paths						
Purpose	To validate that a CPE can successfully receive and respond to a request for the values of multiple variables from different places within the device hierarchy.						
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterValues RPC specifying the following complete paths to multiple variables from various branches of the device hierarchy to the CPE <table border="1" data-bbox="507 701 1382 1184"> <tr> <td>IGD</td> <td>Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Layer3Forwarding.ForwardNumberOfEntries Internet Gateway Device.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.ExternalIPAddress</td> </tr> <tr> <td>VoIP</td> <td>Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Services.VoiceService.1.VoiceProfileNumberOfEntries Internet Gateway Device.Services.VoiceService.1.VoiceProfile.1.Line.1.Enable</td> </tr> <tr> <td>STB</td> <td>Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Services.STBService.1.Components.TunerNumberOfEntries Internet Gateway Device.Services.STBService.1.Components.Tuner.1.Enable</td> </tr> </table> <ul style="list-style-type: none"> The CPE responds with a GetParameterValuesResponse message containing the ParameterList of names and their values. 	IGD	Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Layer3Forwarding.ForwardNumberOfEntries Internet Gateway Device.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.ExternalIPAddress	VoIP	Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Services.VoiceService.1.VoiceProfileNumberOfEntries Internet Gateway Device.Services.VoiceService.1.VoiceProfile.1.Line.1.Enable	STB	Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Services.STBService.1.Components.TunerNumberOfEntries Internet Gateway Device.Services.STBService.1.Components.Tuner.1.Enable
IGD	Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Layer3Forwarding.ForwardNumberOfEntries Internet Gateway Device.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.ExternalIPAddress						
VoIP	Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Services.VoiceService.1.VoiceProfileNumberOfEntries Internet Gateway Device.Services.VoiceService.1.VoiceProfile.1.Line.1.Enable						
STB	Internet Gateway Device.DeviceInfo.SoftwareVersion Internet Gateway Device.Services.STBService.1.Components.TunerNumberOfEntries Internet Gateway Device.Services.STBService.1.Components.Tuner.1.Enable						
Comment							

Test Case No:	10c
Test Case Name:	Get Parameter Values; Partial Paths
Purpose	To validate that the CPE can respond to a request for configuration that is made using a partial path name
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterValues RPC to the CPE specifying the following partial path. <p style="margin-left: 40px;">IGD InternetGatewayDevice.ManagementServer. VoIP InternetGatewayDevice.ManagementServer. STB InternetGatewayDevice.ManagementServer.</p> The CPE sends a GetParameterValuesResponse message containing a list of all the parameters in the branch of the hierarchy with the same prefix as the argument along with their values, within the given device's resource limits.
Comment	

Test Case No:	10d
Test Case Name:	Get Parameter Values; Complete and Partial Paths
Purpose	To validate that the CPE can respond to a request for configuration that is made using a mixture of complete and partial path names
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterValues RPC to the CPE specifying the following complete and partial paths <ul style="list-style-type: none"> IGD InternetGatewayDevice.LANDevice.1.WLAN-Configuration.1.SSID InternetGatewayDevice.LANDevice.1.LANHostConfig-Management. VoIP InternetGatewayDevice.ManagementServer.URL InternetGatewayDevice.Services.VoiceService.1.Voice-Profile.1.Line. STB InternetGatewayDevice.ManagementServer.URL InternetGatewayDevice.Services.STBService.1.Components.-Tuner. The CPE sends a GetParameterValuesResponse message containing a list of all the requested parameters along with their values, within the given device's resource limits.
Comment	

Test Case No:	10e						
Test Case Name:	Get Parameter Values; Entire Object Model						
Purpose	To validate that both parties can handle a request that is likely to strain the resource capabilities of the device. In this test the ACS issues a request for the entire object model, which is likely to result in a 9004 (Resources Exceeded) fault, or if the CPE can handle responding to the request, an extremely large message for the ACS to parse.						
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a GetParameterValues RPC to the CPE specifying the following partial path. <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">IGD</td> <td>InternetGatewayDevice.</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.</td> </tr> </table> • If the CPE is capable of responding with a ParameterList of its entire object model, it responds with a GetParameterValuesResponse message containing a list of all the requested parameters along with their values, within the given device's resource limits. • If the CPE cannot respond with its entire object model, • It issues a 9004 (Resources Exceeded) fault. • The ACS may either issue another GetParameterValues RPC to the CPE with a smaller portion of the object model specified, or may allow the CPE to terminate the session. 	IGD	InternetGatewayDevice.	VoIP	InternetGatewayDevice.	STB	InternetGatewayDevice.
IGD	InternetGatewayDevice.						
VoIP	InternetGatewayDevice.						
STB	InternetGatewayDevice.						
Comment							

5.4.7 Test Case 11 Set Parameter Values

Test Case No:	11a						
Test Case Name:	Set Parameter Values; Simple						
Purpose	To validate that the ACS can modify a single variable.						
Procedure	<ol style="list-style-type: none"> 1. Initiate a transaction session between the ACS and CPE through a successful Inform exchange. 2. The ACS issues a SetParameterValues RPC to the CPE setting the following parameter to any valid value that is different from its current value. <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">IGD</td> <td>InternetGatewayDevice.ManagementServer.PeriodicInformEnable</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.ManagementServer.PeriodicInformEnable</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.ManagementServer.PeriodicInformEnable</td> </tr> </table> 3. The CPE validates that it can change the value of the parameter as requested. 4. If the CPE is able to apply the value change immediately, it responds with a SetParameterValuesResponse message in which Status=0 to the ACS. 5. If the CPE requires a reboot or other action to apply the change <ol style="list-style-type: none"> a. It responds with a SetParameterValuesResponse message in which Status=1 to the ACS. b. It terminates the session with the ACS. c. It applies the changes and reboots if necessary. d. It then initiates an HTTP session and a CWMP session with the ACS by sending an Inform. e. The ACS sends an Inform response. <p>When the CPE is later interrogated, the value of the variable reflects the new value specified in the SetParameterValues RPC</p>	IGD	InternetGatewayDevice.ManagementServer.PeriodicInformEnable	VoIP	InternetGatewayDevice.ManagementServer.PeriodicInformEnable	STB	InternetGatewayDevice.ManagementServer.PeriodicInformEnable
IGD	InternetGatewayDevice.ManagementServer.PeriodicInformEnable						
VoIP	InternetGatewayDevice.ManagementServer.PeriodicInformEnable						
STB	InternetGatewayDevice.ManagementServer.PeriodicInformEnable						
Comment							

Test Case No:	11b
Test Case Name:	Set Parameter Values; Complex
Purpose	To validate that the ACS can make configuration modifications to multiple parameters.
Procedure	<p>As with the previous test, the CPE may either be able to apply the requested changes immediately or it may need to reboot in order to apply the change.</p> <ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a SetParameterValues RPC to the CPE setting the following parameters to any valid values different from their current ones. <ul style="list-style-type: none"> IGD InternetGatewayDevice.ManagementServer.UpgradeManaged InternetGatewayDevice.LANDevice.1.LANHostConfig- Management.DomainName InternetGatewayDevice.WANDevice.1.WANConnection- Device.1.WANIPConnection.1.Name VoIP InternetGatewayDevice.ManagementServer.UpgradeManaged InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.Enable InternetGatewayDevice.Services.VoiceService.1.Voice- Profile.1.Line.1.SIP.URI STB InternetGatewayDevice.ManagementServer.UpgradeManaged InternetGatewayDevice.Services.STBService.1.Components.- Tuner.1.Enable InternetGatewayDevice.Services.STBService.1.Components.- UserInterface.InformationMsg • The CPE validates that it can change the values of the parameters as requested • If the CPE is able to apply the value changes immediately, it responds with a SetParameterValuesResponse message in which Status=0 to the ACS. • If the CPE requires a reboot or other action to apply the changes <ul style="list-style-type: none"> ○ It responds with a SetParameterValuesResponse message in which Status=1 to the ACS. ○ It terminates the session with the ACS. ○ It applies the changes and reboots if required. ○ It then initiates an HTTP session and a CWMP session with the ACS by sending an Inform. ○ The ACS sends an Inform response. • When the CPE is later interrogated, the value of the variables reflects the new values specified in the SetParameterValues RPC.
Comment	

Test Case No:	11c
Test Case Name:	Set Parameter Values; Invalide
Purpose	To validate that the CPE can detect an invalid parameter modification request and that the ACS can handle the resulting fault response.
Procedure	<p>As with the previous test, the CPE may either be able to apply the requested changes immediately or it may need to reboot in order to apply the change.</p> <ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a SetParameterValues RPC to the CPE attempting to set the following non-writeable, non-primitive or non-existent parameters. <ul style="list-style-type: none"> IGD InternetGatewayDevice.DeviceInfo.Manufacturer InternetGatewayDevice.LANDevice.1.LANEthernetInterfaceConfig.1 InternetGatewayDevice.WANDevice.1.NonExistent VoIP InternetGatewayDevice.DeviceInfo.Manufacturer InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1 InternetGatewayDevice.Services.VoiceService.1.Capabilities.NonExistent STB InternetGatewayDevice.DeviceInfo.Manufacturer InternetGatewayDevice.Services.STBService.1.Capabilities InternetGatewayDevice.Services.STBService.1.Applications.NonExistent The CPE detects the invalid parameters and generates a fault response with a primary fault code of 9003 (Invalid Arguments) and an appropriate SetParameterValuesFault structure for each parameter that is in error. The ACS may either issue another SetParameterValues RPC to the CPE with correct parameters specified, or may allow the CPE to terminate the session
Comment	

5.4.8 Test Case 12 Add a Object

Test Case No:	12a						
Test Case Name:	Add a Object						
Purpose	To validate that the ACS can add new instances of multi-instance objects.						
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues an AddObject command with the following path name. <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">IGD</td> <td>InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.-WANIPConnection.1.PortMapping.</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.Line.</td> </tr> <tr> <td>STB</td> <td>n/a</td> </tr> </table> • The CPE validates that it can add the object as requested. • If the CPE is able to create the object immediately, it does so and responds with an AddObjectResponse message with the instance number in which Status=0 to the ACS. • If the CPE requires a reboot or other action to apply the changes • It responds with an AddObjectRresponse message with the instance number of the new object in which Status=1 to the ACS. • It terminates the session with the ACS. • It creates the object and reboots if required. • The CPE then initiates an HTTP session and a CWMP session with the ACS by sending an Inform. • The ACS sends an Inform response. • Later interrogation of the CPE indicates that the new object exists in the object model with the specified instance number and expected default values. 	IGD	InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.-WANIPConnection.1.PortMapping.	VoIP	InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.Line.	STB	n/a
IGD	InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.-WANIPConnection.1.PortMapping.						
VoIP	InternetGatewayDevice.Services.VoiceService.1.VoiceProfile.1.Line.						
STB	n/a						
Comment							

5.4.9 Test Case 13 Delete a Object

Test Case No:	13a
Test Case Name:	Delete a Object
Purpose	To validate that the ACS can delete instances of multi-instance objects.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a DeleteObject command to the CPE with the path of the object to be deleted. • Note that this object can be the one created in the previous test, or it can be another object whose instance number is known by the ACS. • The CPE validates that it can delete the object as requested. • If the CPE is able to delete the object immediately, it does so and responds with a DeleteObjectResponse in which Status=0 to the ACS. • If the CPE requires a reboot or other action to apply the changes • It responds with a DeleteObjectResponse in which Status=1 to the ACS. • It terminates the session with the ACS. • It deletes the object and reboots if required • It then initiates an HTTP session and a CWMP session with the ACS by sending an Inform. • The ACS sends an Inform response. • Later interrogation of the CPE indicates that the object no longer exists in the data hierarchy.
Comment	

5.4.10 Test Case 14 Reboot

Test Case No:	14a
Test Case Name:	Reboot the CPE
Purpose	To verify that the ACS can reboot the CPE.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a Reboot RPC. • The CPE responds with a RebootResponse message. • The CPE reboots and then sends an Inform to the ACS with the "M Reboot" event code and command key.
Comment	

5.4.11 Test Case 15 Get Attribute Values

Test Case No:	15a
Test Case Name:	Get Attribute Values; Test
Purpose	To validate that the ACS can retrieve the current value of a parameter's attributes.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a GetParameterAttributes RPC to the CPE. <ul style="list-style-type: none"> IGD InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries VoIP InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable STB InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable • The CPE responds with a GetParameterAttributesResponse containing the parameter and the value of the Notification and AccessList attributes.
Comment	

Test Case No:	15b
Test Case Name:	Get Attribute Values; Multiple Complete Paths
Purpose	To validate that the ACS can retrieve the current values of multiple parameters' attributes.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a GetParameterAttributes RPC to the CPE, specifying the following complete paths to multiple variables. <ul style="list-style-type: none"> IGD InternetGatewayDevice.LANDevice.1.WLANConfiguration.1.-TotalAssociations InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries VoIP InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.Enable STB InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable InternetGatewayDevice.STBService.1.Components.AVDecoder.1.Enable • The CPE responds with a GetParameterAttributesResponse containing the parameters and the values of their Notification and AccessList attributes.
Comment	

Test Case No:	15c						
Test Case Name:	Get Attribute Values; Partial Path						
Purpose	To validate that the ACS can retrieve the current values of the attributes of all parameters within the object identified by a partial path.						
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterAttributes RPC to the CPE, specifying the following partial path. <table border="1" data-bbox="604 651 1437 757"> <tr> <td>IGD</td> <td>InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.STBService.1.Components.AVDecoder.1.</td> </tr> </table> <ul style="list-style-type: none"> The CPE responds with a GetParameterAttributesResponse containing the parameters and the values of their Notification and AccessList attributes. 	IGD	InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.	VoIP	InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.	STB	InternetGatewayDevice.STBService.1.Components.AVDecoder.1.
IGD	InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.						
VoIP	InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.						
STB	InternetGatewayDevice.STBService.1.Components.AVDecoder.1.						
Comment							

Test Case No:	15d						
Test Case Name:	Get Attribute Values; Complete and Partial Path						
Purpose	To validate that the ACS can retrieve the current values of the attributes of a mixture of parameters specified via complete paths and of parameters within an object identified by a partial path.						
Procedure	<ul style="list-style-type: none"> Initiate a transaction session between the ACS and CPE through a successful Inform exchange. The ACS issues a GetParameterAttributes RPC to the CPE, specifying the following complete and partial paths. <table border="1" data-bbox="604 1585 1437 1787"> <tr> <td>IGD</td> <td>InternetGatewayDevice.LANDevice.1.WLANConfiguration.1.-TotalAssociations InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable InternetGatewayDevice.STBService.1.Components.AVDecoder.1.</td> </tr> </table> <ul style="list-style-type: none"> The CPE responds with a GetParameterAttributesResponse containing the parameters and the values of their Notification and AccessList attributes. 	IGD	InternetGatewayDevice.LANDevice.1.WLANConfiguration.1.-TotalAssociations InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.	VoIP	InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.	STB	InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable InternetGatewayDevice.STBService.1.Components.AVDecoder.1.
IGD	InternetGatewayDevice.LANDevice.1.WLANConfiguration.1.-TotalAssociations InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.						
VoIP	InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.						
STB	InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable InternetGatewayDevice.STBService.1.Components.AVDecoder.1.						

5.4.12 Test Case 16 Set Attribute Values

Test Case No:	16a
Test Case Name:	Set Attribute Values; Active Notifications
Purpose	To validate that the ACS can modify Active Notification related attributes on parameters.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a SetParameterAttributes RPC to enable active notifications. <ul style="list-style-type: none"> IGD InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries VoIP InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable STB InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable • The CPE responds with a SetParameterAttributes response. • The CPE's state is modified through some local means such that the value of the specified variables changes. • The CPE then initiates a CWMP session by sending an Inform to the ACS. This Inform message has a "4 VALUE CHANGE" event code and the variable and its new value are in the Inform Parameter List. • The ACS sends an Inform response.
Comment	

Test Case No:	16b
Test Case Name:	Set Attribute Values; Passive Notifications – Complete Path
Purpose	To validate that the ACS can modify Passive Notification related attributes on parameters.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a SetParameterAttributes RPC to enable passive notifications for a particular parameter. <ul style="list-style-type: none"> IGD InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries VoIP InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable STB InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable • The CPE responds with a SetParameterAttributes response. • Through some local mechanism the value of the parameter is changed on the CPE. • Through some mechanism, the CPE is stimulated to initiate a session and send an Inform to the ACS with the parameter and its current value in the Inform Parameter List. • The ACS sends an Inform response.
Comment	

Test Case No:	16c
Test Case Name:	Set Attribute Values; Passive Notifications – Partial Path
Purpose	To validate that the ACS can modify Passive Notification related attributes on all parameters within the object identified by a partial path.
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a SetParameterAttributes RPC to enable passive notifications for the following partial path. <ul style="list-style-type: none"> IGD InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMapping. VoIP InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1. STB InternetGatewayDevice.STBService.1.Components.Tuner.1. • The CPE responds with a SetParameterAttributes response. • Through some local mechanism the values of one or more parameters within the object identified by the partial path are changed on the CPE. • Through some mechanism, the CPE is stimulated to initiate a session and send an Inform to the ACS with the modified parameters and their current values in the Inform Parameter List. • The ACS sends an Inform response.
Comment	

Test Case No:	16d						
Test Case Name:	Set Attribute Values; Passive Notifications – Complete Path and Partial Path						
Purpose	To validate that the ACS can modify Passive Notification related attributes on parameters specified via complete paths and on parameters within the object identified by a partial path.						
Procedure	<ul style="list-style-type: none"> • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a SetParameterAttributes RPC to enable passive notifications for the following complete and partial paths. <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">IGD</td> <td>InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMapping.</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.STBService.1.Components.Tuner.1.</td> </tr> </table> • The CPE responds with a SetParameterAttributes response. • Through some local mechanism the values of one or more parameters within the variable and object identified by the complete and partial paths are changed on the CPE. • Through some mechanism, the CPE is stimulated to initiate a session and send an Inform to the ACS with the modified parameters and their current values in the Inform Parameter List. • The ACS sends an Inform response. 	IGD	InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMapping.	VoIP	InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.	STB	InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.STBService.1.Components.Tuner.1.
IGD	InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMapping.						
VoIP	InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Line.1.						
STB	InternetGatewayDevice.DeviceInfo.UpTime InternetGatewayDevice.STBService.1.Components.Tuner.1.						
Comment							

Test Case No:	16e						
Test Case Name:	Set Attribute Values; Disable Notifications						
Purpose	To validate that the ACS can disable Notifications on parameters.						
Procedure	<ul style="list-style-type: none"> • Through some mechanism, preferably by just having executed the Passive Notifications test, the CPE ensures that passive notifications are enabled for the parameter in the table below. • Initiate a transaction session between the ACS and CPE through a successful Inform exchange. • The ACS issues a SetParameterAttributes RPC to disable notifications for a particular parameter. <table border="1" data-bbox="604 728 1437 831"> <tr> <td>IGD</td> <td>InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries</td> </tr> <tr> <td>VoIP</td> <td>InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable</td> </tr> <tr> <td>STB</td> <td>InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable</td> </tr> </table> <ul style="list-style-type: none"> • The CPE responds with a SetParameterAttributes response. • Through some local mechanism the value of the parameter is changed on the CPE. • Through some mechanism, the CPE is stimulated to initiate a session and send an Inform to the ACS. This Inform should not include this parameter and its current value in the Inform Parameter List. • The ACS sends an Inform response. 	IGD	InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries	VoIP	InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable	STB	InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable
IGD	InternetGatewayDevice.WANDevice.1.WANConnection-Device.1.WANIPConnection.1.PortMappingNumberOfEntries						
VoIP	InternetGatewayDevice.VoiceService.1.VoiceProfile.1.Enable						
STB	InternetGatewayDevice.STBService.1.Components.Tuner.1.Enable						
Comment							

5.5 Real World tests

5.5.1 Test Case 17 Port Mapping

Test Case No:	17a
Test Case Name:	Port Mapping
Purpose	To validate that the ACS can find and modify the state of a particular port mapping entry. Note that this test is IGD specific; voice devices should not attempt this test.
Procedure	<ul style="list-style-type: none"> • The ACS and CPE initiate a transaction session. • The ACS locates the port mapping of interest. • The ACS takes the necessary steps to modify the port mapping of interest. • The ACS and CPE successfully terminate the transaction session.
Comment	<p>This test assumes that there is at least one port mapping in the CPE's data model (and preferably a more fully populated port mapping table to better simulate a real world situation).</p> <p>The pre-existing port mapping should map TCP traffic on external port 80 to internal port 80 (the same port) on a LAN PC, e.g. 192.168.1.9</p> <p>The port mapping should be changed to refer to a different LAN IP address. This simulates the action that an ACS port mapping management application would have to take if a LAN host acquired a new IP address.</p>

5.5.2 Test Case 18 WiFi Configuration

Test Case No:	18a
Test Case Name:	WiFi Configuration
Purpose	To validate that the ACS can configure the CPE's wireless connection. Note that this test is IGD specific; voice devices should not attempt this test.
Procedure	<ul style="list-style-type: none"> • The CPE and ACS initiate a transaction session. • The ACS modifies the CPE data model as required to put the CPE in the state specified above. • The CPE and ACS successfully close the transaction session.
Comment	<p>When this test is complete the device should be in the following state:</p> <ol style="list-style-type: none"> 1. Wireless interface is enabled. 2. SSID = ETSI-Plugfest. 3. Device is operating in Infrastructure mode. 4. Device is using Channel 10. 5. WEP128 Encryption is enabled <p>The WEP128 key has been configured to "0A0A0A0A0A0A0A0A0A0A0A0A0A0A0A0A"</p>

5.5.3 Test Case 19 WAN Connection

Test Case No:	19a
Test Case Name:	WAN Settings
Purpose	To verify that a complete WAN connection stack can be built up by the ACS. This test creates a WANConnectionDevice, WANIPConnection object and PortMapping entry via ACS. Note that this test is IGD specific; voice devices should not attempt this test.
Procedure	<ul style="list-style-type: none"> • The CPE and ACS initiate a transaction session. • The ACS adds objects to the CPE's data hierarchy and modifies device state such that the device is in the state described above. • The CPE and ACS close the transaction session successfully.
Comment	<p>When this test is complete the device should have the following state:</p> <ol style="list-style-type: none"> 1. The device has an additional, enabled PVC with an PPPoE link type and VPI/VCI of 1/33. 2. Username and password should be etsi; etsi 3. The new PVC has one enabled, PPPoE WAN connection across it. 4. This new connection has NAT enabled. 5. The new NAT table contains a port mapping entry.

5.5.4 Test Case 20 Delete a WAN Connection

Test Case No:	20a
Test Case Name:	Delete a WAN Connection
Purpose	To verify that the ACS can delete an entire WAN connection stack, including the WANConnectionDevice, the WANIPConnection and WANDSLLinkConfig objects, and any state associated with the connection. This test assumes, that the CPE was correctly configured in test case 19a
Procedure	<ul style="list-style-type: none">• The ACS and CPE initiate a transaction session.• The ACS locates the WAN Connection of interest.• The ACS takes the necessary steps to delete the secondary WAN Connection.• The CPE and ACS terminate the transaction session successfully
Comment	

5.5.5 Test Case 21 SIP Configuration

Test Case No:	21a
Test Case Name:	VoIP/SIP Configuration
Purpose	To validate that the ACS can configure parameters for the CPE to provision a line and initiate a SIP Register message. Note that this test is Voice device specific; IGDs should not attempt this test
Procedure	<ul style="list-style-type: none">• The ACS and CPE initiate a transaction session.• The ACS locates the WAN Connection of interest.• The ACS takes the necessary steps to delete the secondary WAN Connection.• The CPE and ACS terminate the transaction session successfully
Comment	When this test is complete the device should be in the following state: A working SIP Connection, configured with the parameters as described in Chapter 7.5.4

5.5.6 Test Case 22 Ping Test

Test Case No:	22a
Test Case Name:	Ping Test
Purpose	To validate that the ACS can configure parameters for the CPE to initiate an IP Ping test, request that the test be performed, and collect the results
Procedure	<ul style="list-style-type: none"> • The ACS and CPE initiate a transaction session. • The ACS modifies the CPE state such that it matches the device state described above. • The CPE executes the IPPing diagnostic test. • The ACS reads the results of the diagnostic test. • The ACS and CPE successfully terminate the transaction session.
Comment	<p>When this test is complete the device should have the following values in InternetGatewayDevice.IPPingDiagnostics:</p> <ol style="list-style-type: none"> 1. DiagnosticState = "Complete". 2. Interface is in the proper format to represent the correct WANIPConnection pointer. 3. Host = 10.50.10.9 4. NumberOfRepetitions = "4" 5. Timeout = "17000" 6. DataBlockSize = "42" 7. DSCP = "0" <p>Other parameters are equal to the reported values of these parameters</p>

5.5.7 Test Case 23 Device Association

Test Case No:	23a
Test Case Name:	Gateway / Device Association
Purpose	To validate that the information exchanged by a CPE and IGD in <i>Test 3</i> is correctly made available in the CPE's GatewayInfo object and the IGD's ManageableDevice table, and that changes are correctly notified to the ACS. Note that this test is TR-111 specific
Procedure	<ul style="list-style-type: none"> • The CPE and IGD ensure (probably via some local interface) that neither is aware of the other's existence (this may result in notifications to the ACS). • The CPE and IGD engage in a DHCP exchange in which each learns the identity of the other and adds this identity to their data model, posting notifications to the ACS as appropriate. • The ACS learns from the CPE of its new IGD, and from the IGD of its new CPE. • The ACS reads the Gateway Identity from the CPE, and the Device Identity from the IGD, and validates that they match
Comment	

5.5.8 Test Case 24 Multiple Session Test

Test Case No:	24a
Test Case Name:	Multiple Session Test
Purpose	To validate that the CPE and ACS can perform a series of TR-069 operations over multiple sessions.
Procedure	<ul style="list-style-type: none">• Configure the CPE to use its minimum periodic inform interval.• Repeat <i>Test 5</i> using any supported client/server authentication mechanism.• Wait for next periodic inform, or have ACS initiate Connection Request.• Repeat <i>Test 9</i> without rebooting the CPE.• Wait for next periodic inform, or have ACS initiate Connection Request.• Repeat test 10 without rebooting the CPE.
Comment	

5.5.9 Test Case 25

Test Case No:	25a
Test Case Name:	Session Persistence Test
Purpose	To show that the ACS and CPE system can maintain a persistent session across multiple TCP connections
Procedure	<ul style="list-style-type: none">• Initiate a transaction session between the ACS and CPE through a successful Inform exchange• The CPE sends an empty post or a CWMP request to the ACS.• The ACS terminates the TCP connection through the use of the HTTP Connection:close header.• The ACS and CPE establish a new TCP connection.• The ACS and CPE successfully continue the CWMP session on the new TCP connection.• When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS.
Comment	

5.5.10 Test Case 26

Test Case No:	26a
Test Case Name:	Session Retry Test – HTTP Error
Purpose	To show that the ACS and CPE can recover from an HTTP error during a CWMP session.
Procedure	<ul style="list-style-type: none"> • The ACS and CPE successfully initiate a transaction session. • The CPE sends an empty post or a CWMP request to the ACS. • The ACS responds with an HTTP error, e.g. 400 (Bad Request). • The CPE terminates the session unsuccessfully. • The CPE retries the session in accordance with the session retry policy. • The ACS and CPE successfully initiate a transaction session. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS.
Comment	

Test Case No:	26b
Test Case Name:	Session Retry Test – CWMP Fault During Session Initiation
Purpose	To show that the ACS and CPE can handle a CWMP fault during CWMP session initiation (this is a special case).
Procedure	<ul style="list-style-type: none"> • The CPE initiates a CWMP session with the ACS by sending an Inform message. • The ACS responds with a CWMP fault other than 8005 (Retry Request), e.g. 8001 (Request Denied). • The CPE terminates the session unsuccessfully. • The CPE retries the session in accordance with the session retry policy. • The ACS and CPE successfully initiate a transaction session. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS.
Comment	

Test Case No:	26c
Test Case Name:	Session Retry Test – CWMP Fault During Established Session
Purpose	To show that the ACS and CPE can handle a CWMP fault during CWMP session initiation (this is a special case).
Procedure	<ul style="list-style-type: none"> • The ACS and CPE successfully initiate a transaction session. • The CPE sends a CWMP request to the ACS. • The ACS responds with a CWMP fault other than 8005 (Retry Request), e.g. 8001 (Request Denied). • The CPE handles the fault and continues with the session. • When the conditions outlined in Section 3.1 of TR-069 have been met, the CPE successfully terminates the session with the ACS.
Comment	

Test Case No:	26d
Test Case Name:	Session Retry Test – Event Delivery Retry
Purpose	To verify that the CPE and ACS can successfully retry a session in order to deliver an event.
Procedure	<ul style="list-style-type: none"> • Enable active notifications on a variable as described in the procedure for the <i>Active Notification</i> test. • Interrupt the connection between the ACS and CPE (in a manner that does not affect the CPE WAN connection), e.g. disconnect the ACS from the network. • Modify the CPE's state through some local means such that the value of the specified variable changes. • Allow the CPE to attempt to deliver a "4 VALUE CHANGE" event. • Re-establish the connection between the CPE and ACS. • Allow the CPE to retry the delivery of the event in accordance with the session retry policy. • Allow the ACS to process the event.
Comment	

Test Case No:	26e
Test Case Name:	Session Retry Test – Event Delivery Retained Across Reboot
Purpose	To verify that the CPE and ACS can recover an event that must never be discarded in the event of a connection failure t.
Procedure	<ul style="list-style-type: none"> • Perform a download request process as defined in <i>Test 8</i> • Interrupt the connection between the ACS and CPE (in a manner that does not affect the CPE WAN connection), e.g. disconnect the ACS from the network. • Allow the CPE to attempt to deliver a "7 TRANSFER COMPLETE" event. • Reboot the CPE via some local means. • While the CPE is re-booting, re-establish the connection between the CPE and ACS. • Allow the CPE to retry the delivery of the event in accordance with the session retry policy. • Allow the ACS to process the event.
Comment	

5.5.11 Test Case 27

Test Case No:	27a
Test Case Name:	Device Profile / Device Summary
Purpose	To validate that the CPE can announce, via the top-level DeviceSummary parameter, which device profiles and profile versions it supports, and that the ACS can successfully parse the value of the DeviceSummary parameter.
Procedure	<ul style="list-style-type: none">• The ACS and CPE initiate a transaction session.• The ACS extracts the value of the DeviceSummary parameter from the Inform message.• The ACS parses the value of the DeviceSummary parameter.
Comment	

5.6 Additional Test Cases for DSL-Modems -Router

The following test cases may only carry out, if the CPE and the ACS does support the:

5.6.1 Test Case A1 Line State Information

Test Case No:	A1
Test Case Name:	Line State Information
Purpose	To validate that the ACS is enabled to read the current line data parameter from the CPE
Procedure	<ul style="list-style-type: none"> Force the ACS to read the current CPE DSL Line parameters. Compare the received values by the ACS with the reported values by the CPE GUI.
Comment	Parameter Names to read: <code>InternetGatewayDevoce.WANDevice.{i}.WANDSLInterfaceConfig.</code> <code>InternetGatewayDevoce.WANDevice.{i}.WANDSLInterfaceConfig.Stats.Showtime.</code> <code>InternetGatewayDevoce.WANDevice.{i}.WANDSLInterfaceConfig.Stats.Total.</code>

5.6.2 Test Case A2 DSL Diagnostics

Test Case No:	A2
Test Case Name:	DSL Diagnostics
Purpose	To validate that the CPE provide the DSLDiagnostics for the ACS
Procedure	<ul style="list-style-type: none"> Force the ACS to read the current Diagnostics data
Comment	Parameter Name to read: <code>InternetGatewayDevoce.WANDevice.{i}.WANDSLDiagnostics</code>

5.6.3 Test Case A3 Last Connection Error

Test Case No:	A3
Test Case Name:	Last Connection Error
Purpose	To validate that the CPE provide the correct error messages to the ACS
Procedure	<ul style="list-style-type: none"> • Force the CPE to try to login with a wrong combination of username and password to the BRAS • Force the CPE to try to login with a correct combination of username and password to the BRAS • Initial the ACS to read the error messages
Comment	<p>Parameter Names to read:</p> <pre>InternetGatewayDevoce.WANDevice.{i}. WANConnectionDevice.{i}. WANPPPConnection.{i}.ConnectionStatus InternetGatewayDevoce.WANDevice.{i}. WANConnectionDevice.{i}. WANPPPConnection.{i}.LastConnectionError</pre>

6 Time Schedule

This chapter will be completed as soon as the registration application has been closed and the number of participating companies is known.

6.1 Room Plan

This chapter will be completed as soon as the registration application has been closed and the number of participating companies is known.

7 Test network

7.1 IP Address Range

- CPE participants: AnnexA 10.50.*n*.11/24 where *n* is the table number of the participant
- CPE participants: AnnexB 10.50.*n*.12/24 where *n* is the table number of the participant
- By using PPPoE login over VPI =1 and VCI=33 the connect3ed device will get a IP address in the format 10.10.10.*[table number]*
- ACS participants: 10.200.*n*.11/24 where *n* is the table number of the participant
- Server : 10.100.100.0/24
- Every participating company will have its own VLAN, where the VLAN number is = 1000 + *table number*. (for example Table 16; VLAN=1016)

7.2 ATM Settings

The default VPI/VCI settings are **1 and 33** for the fixed IP Range **10.50.*[table number]*.0/24**

and

VPI/VCI **1 and 32** are to login over PPPoE where the CPE got the IP address: **10.10.10.*[table number]***

7.3 Workspace Endowment

7.3.1 ACS Work Spaces

- 2 Ethernet connections to the test network
- At least 3 250 V Sockets

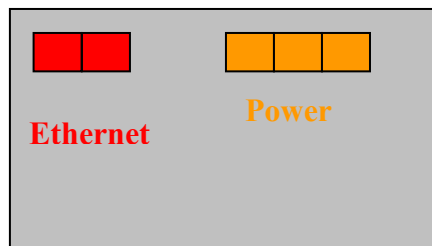


Figure 7.3-1 ACS Work Space

7.3.2 CPE Work Spaces

- 1 Ethernet connections to the test network
- 2 ADSL Annex A connections to the DSLAM (RJ45 sockets)
- 2 ADSL Annex B connections to the DSLAM (RJ45 sockets)
- At least 3 250 V Sockets

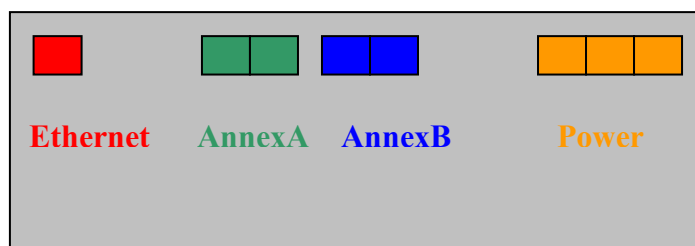


Figure 7.3-2 CPE Work Space

7.4 DSLAM Settings

During the event a HUAWEI DSLAM will be provided by CETECOM as central termination of DSL lines. The Both, ADSL/ADSL2/ADSL2+ Annex A and Annex B will be available at every workspace. The default VPI/VCI that will be configured on each port will be 1/32 for fixed IP and 1/33 for PPPoE. Each port will be configured with a multimode modulation (where ADSL2+ is the default setting) adaptive profile in FAST mode. The northbound interface will be Gigabit Ethernet.

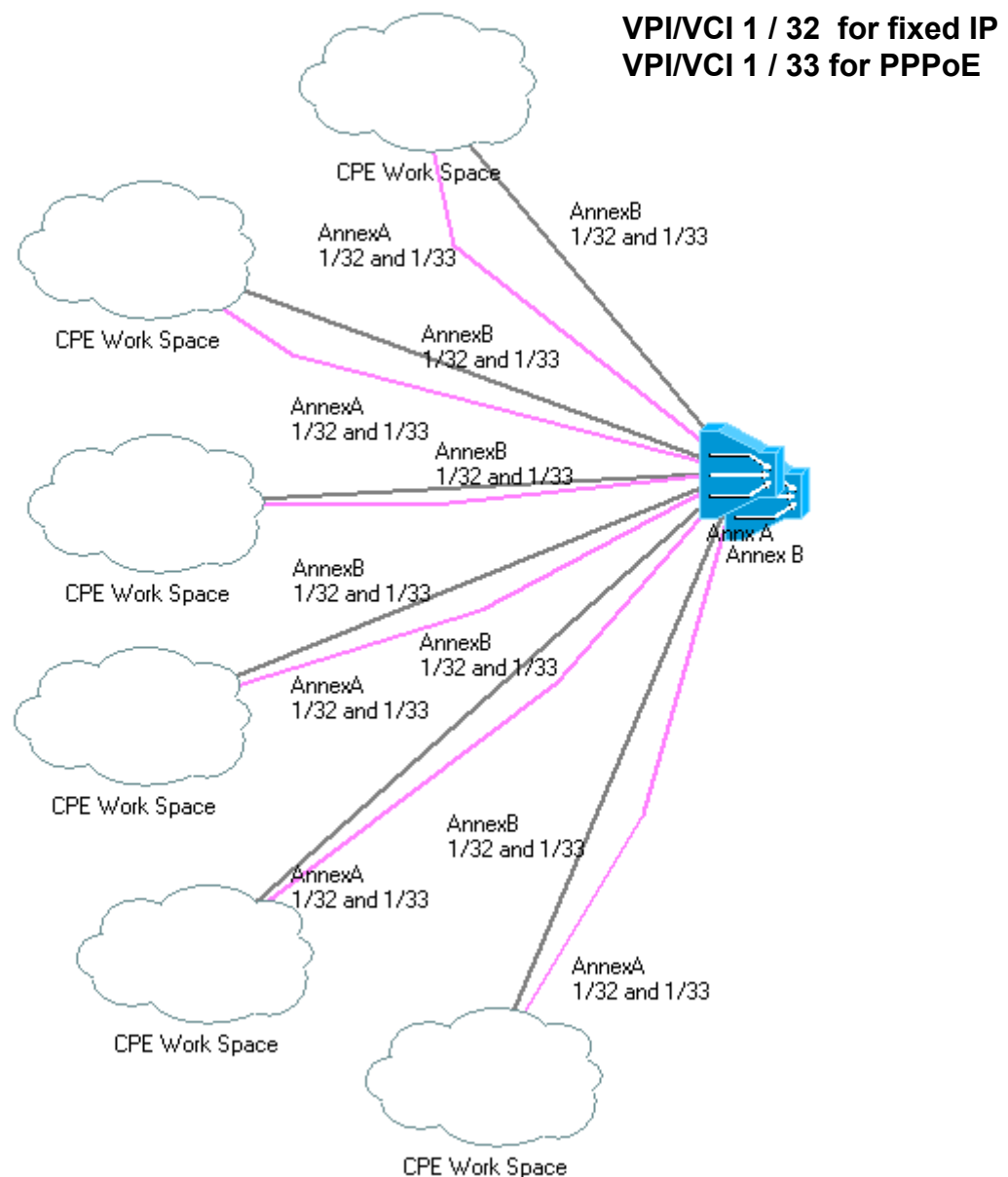


Figure 7.4-1 DSLAM Configuration

7.5.2 HTTP/HTTPS Server

This Server will be used for file downloads and file download tests. The Server based on a Apache2 with the Apache SSL integration.

7.5.3 RADIUS Server

This Server will be used for the PPPoE authentication at the provided BRAS. For PPPoE Login every participant can use the following format for username and password:

Username: *table[table number]*
Password: 1234

For example : "table2" and "1234"

7.5.4 SIP Server

The SIP Server is configured with 2 SIP accounts for every workspace.

Account 1:

Phone Number: *[table number]* 1
User: *[table number]* 1
Secret: *[table number]* 1
URL : SIP.PLUGTEST.XDSL

Account 2:

Phone Number: *[table number]* 2
User: *[table number]* 2
Secret: *[table number]* 2
URL : SIP.PLUGTEST.XDSL

7.5.5 Information Server

You will find current information regarding the event and the latest news on this server. (News ticker)

7.6 Test Net Layout

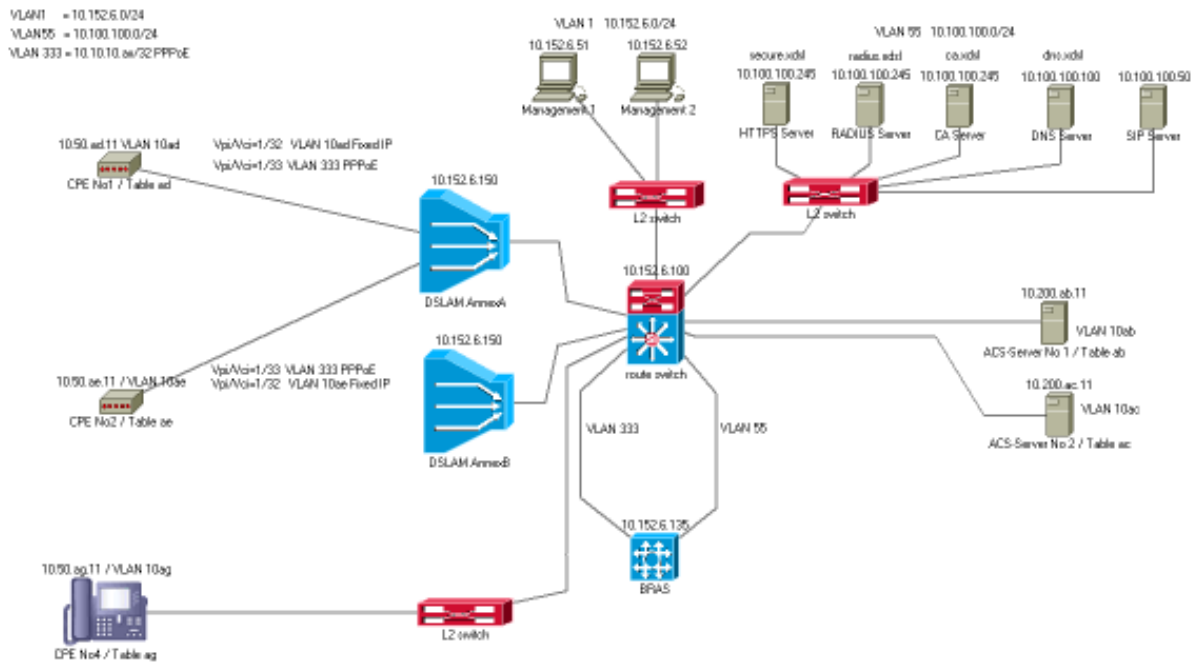


Figure 7.6-1 Schematic of the test net layout

7.7 Authentication Scheme

Our experience shows that the execution of the tests, using SSL is very time consuming. We propose to carry out the tests without SSL/HTTPS.

Nevertheless, it will be possible to use SSL to carry out the proposed tests.

7.7.1 Digest Authentication

The default username and password for digest authentication which should be configured in an ACS will be the OUI-Serial as described in TR-069 Chapter 3.4.4.

The used password is to be negotiated between CPE and ACS manufacturer for every test session.

For example:

```
USERNAME:      123123-ATU-98765432
Password:      <<<to be negotiated>>>
```

7.7.2 Authentication Certificates

- CPE Vendors may download a root certificate at <http://dsl.cetecom-ict.de/TR-069/certifikate.html> .
- ACS Vendors may generate a certificate request at <http://dsl.cetecom-ict.de/TR-069/certifikate.html> to get a signet server certificate.
- For CPE → ACS certificated authentication it is also possible for CPE vendors to send a Client certificate request at <http://dsl.cetecom-ict.de/TR-069/certifikate.html>. ACS vendors has to use the root certificate for this tests.

8 Test Result collection

8.1 Test Information for your own use

Date of Test	
Timeslot:	
DSLAM:	
Comment:	

Do not fill this field, if you like to report the results.

CPE	
Manufacturer:	
Typ / Name:	
Hardware Version:	
Firmware Version:	
Comment:	

Do not fill this field, if you like to report the results.

ACS	
Manufacturer:	
Typ / Name:	
Hardware Version:	
Firmware Version:	

8.2 Test Results for reporting

Tes Case	Test Title	PASS	Fail	N.A.
Section 6 - Underlying Protocol Tests				
1a	CPE-initiated - Basic Client Authentication			
1b	CPE-initiated - Digest Client Authentication			
1c	CPE-initiated - Session Cookie Validation			
1d	ACS-initiated			
2a	Basic Client Authentication			
2b	Digest Client Authentication			
2c	Certificate Client Authentication			
Section 7 - TR-069 Protocol Tests				
Test 5	CWMP Session Initiation			
5a	CWMP Session Initiation			
6a	TCP Connection Request			
6b	UDP Connection Request			
7a	ACS to CPE			
7b	CPE to ACS			
8a	No ACS Specified Delay			
8b	ACS Specified Delay			
8c	No ACS Specified Delay - SSL encrypted			
8d	ACS Specified Delay - SSL encrypted			
Test 9	Get Parameter Names			
9a	Complete Path			
9b	Partial Path - Next Level True			
9c	Partial Path - Next Level False			
9d	Invalid Path			
9e	Entire Object Model			
Test 10	Get Parameter Values			
10a	Simple Complete Path			
10b	Multiple Complete Paths			
10c	Partial Path			
10d	Complete and Partial Paths			
10e	Entire Object Model			
Test 11	Set Parameter Values			
11a	Simple			
11b	Complex			
11c	Invalid			
Test 12	Add Object			
12a	Add Object			
Test 13	Delete Object			
13a	Delete Object			
Test 14	Reboot			

14a	Reboot			
Test 15	Get Attribute Values			
15a	Get Attribute Values			
15b	Multiple Complete Paths			
15c	Partial Path			
15d	Complete and Partial Paths			
Test 16	Set Attribute Values			
16a	Active Notifications			
16b	Passive Notifications - Complete Path			
16c	Passive Notifications - Partial Path			
16d	Passive Notifications - Complete and Partial Path			
16e	Disabling Notifications			
Section 8 - Real World Tests				
Test 17	Modify Port Mapping Table Entry			
17a	Modify Port Mapping Table Entry			
Test 18	Wireless Configuration			
18a	Wireless Configuration			
Test 19	WAN Connection Creation			
19a	WAN Connection Creation			
Test 20	WAN Connection Deletion			
20a	WAN Connection Deletion			
Test 21	VoIP SIP Endpoint Configuration			
21a	VoIP SIP Endpoint Configuration			
Test 22	IP Ping Test			
22a	IP Ping Test			
Test 23	Gateway/Device Association			
23a	Gateway/Device Association			
Test 24	Multiple Session Test			
24a	Multiple Session Test			
Test 25	Session Persistence Test			
25a	Session Persistence Test			
Test 26	Session Retry Tests			
26a	HTTP Error			
26b	CWMP Fault During Session Initiation			
26c	CWMP Fault During Established Session			
26d	Event Delivery - Retry			
26e	Event Delivery - Retained Across Reboot			
Test 27	Device Profile Test			
27a	Device Profile Test			
Test A	Additional Tests			
A1	Line State Information			
A2	DSL Diagnostics			
A3	Last Connection Error			
26d	Event Delivery - Retry			
26e	Event Delivery - Retained Across Reboot			

