Realtek TR069 Guide

Date: 2013/10/04

Version: 2.1

CHANGE HISTORY

VERSION	DATE	REMARKS
1.0	2013/03/01	INITIAL RELEASE
2.1	2013/10/04	ADD TR-181 PART

1. TR069 specification and source code location

1.1 Introduction

This document describes the mechanism that used by Realtek TR-069, in code develop, configuration for testing and the list of supported and non-supported.

1.2 Specification

Comply with:

1. TR-069 CPE WAN Management Protocol v1.1

   Version: Issue 1 Amendment 2
   Version Date: December 2007

2. TR-098 Internet Gateway Device Data Model for TR-069
   Issue: 1 Amendment 2
   Issue Date: September 2008

3. TR-181 Device Data Model for TR-069

   Issue: 2 Amendment 2

   Issue Date: February 2011

1.3 User program

I. /users/cwmp-tr069/cwmpClient: parameter data model

II. /users/cwmp-tr069/gsoaplib: gsoap library

III. /users/flatfsd: flatfs utility

2. List of TR069 function supported

2.1 RPC Method

GetRPCMethods
SetParameterValues
GetParameterValues
GetParameterNames
SetParameterAttributes
GetParameterAttributes
AddObject
DeleteObject
Reboot
Download
Upload
FactoryReset
ScheduleInform
Inform

2.2 Parameter Data Model

- TR-098 Amendment 2

  Internet Gateway Device Data Model v1.1:

  - Baseline:1 Profile
  - EthernetWAN:1 Profile
  - EthernetLAN:1 Profile
  - WiFiLAN:1 Profile
  - Time:1 Profile
  - IPPing:1 Profile

- TR-181 Issue 2 Amendment 2

  Device Data Model v2.2:

  - Baseline:1 Profile
  - DeviceAssociation:1 Profile
  - GatewayInfo:1 Profile
  - EthernetInterface:1 Profile
  - EthernetLink:1 Profile
  - WiFiRadio:1 Profile
  - WiFiSSID:1 Profile
  - WiFiAccessPoint:1 Profile
  - Bridge:1 Profile
  - IPInterface:1 Profile
  - IPInterface:2 Profile
  - IPv6Interface:1 Profile
  - DHCPv4Client:1 Profile
  - DHCPv6Client:1 Profile
  - VendorLogFiles: 1 Profile
  - IPPing:1 Profile

2.3 ACS Server Tested

- Comtrend
- OpenACS
- CDRouter

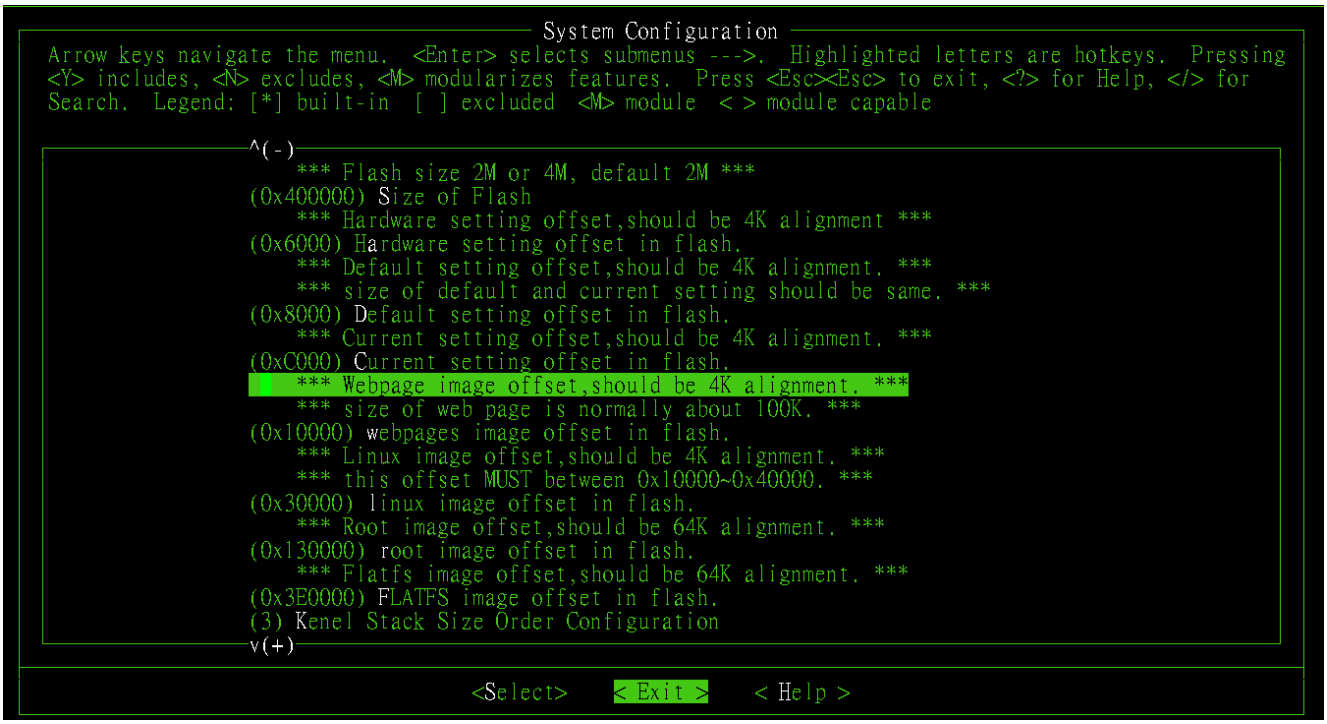
3. Configuration of TR069

3.1 Compile user program

- Kernel menuconfig

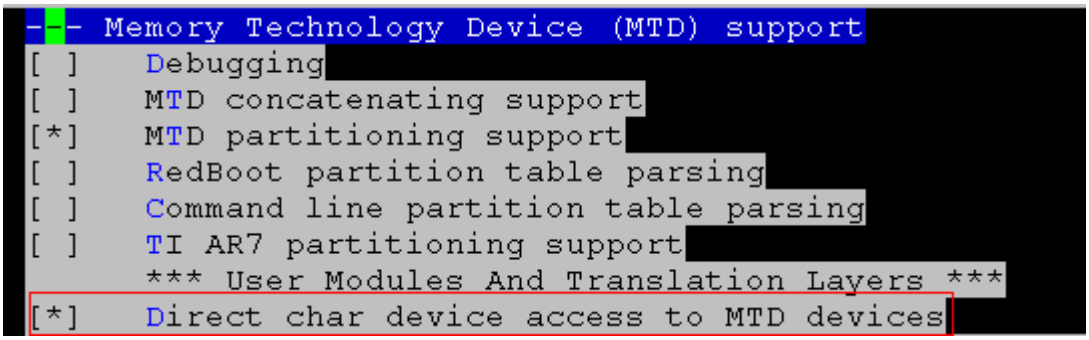
  Set flatfs is supported in default, in “System Configuration”

  Flatfs image offset is located in the latest 128K of flash memory



Device Drivers --->

Memory Technology Device (MTD) support --->



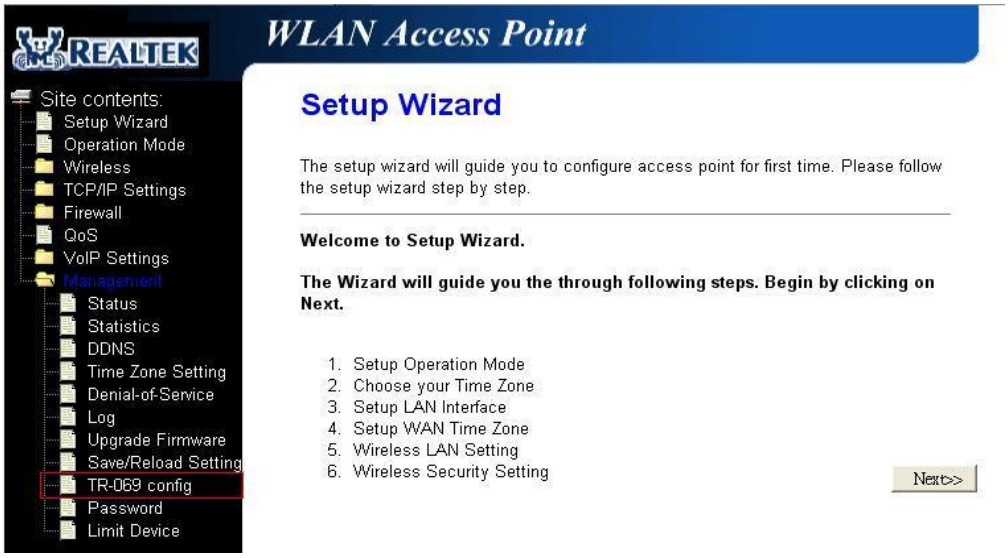
- Users menuconfig

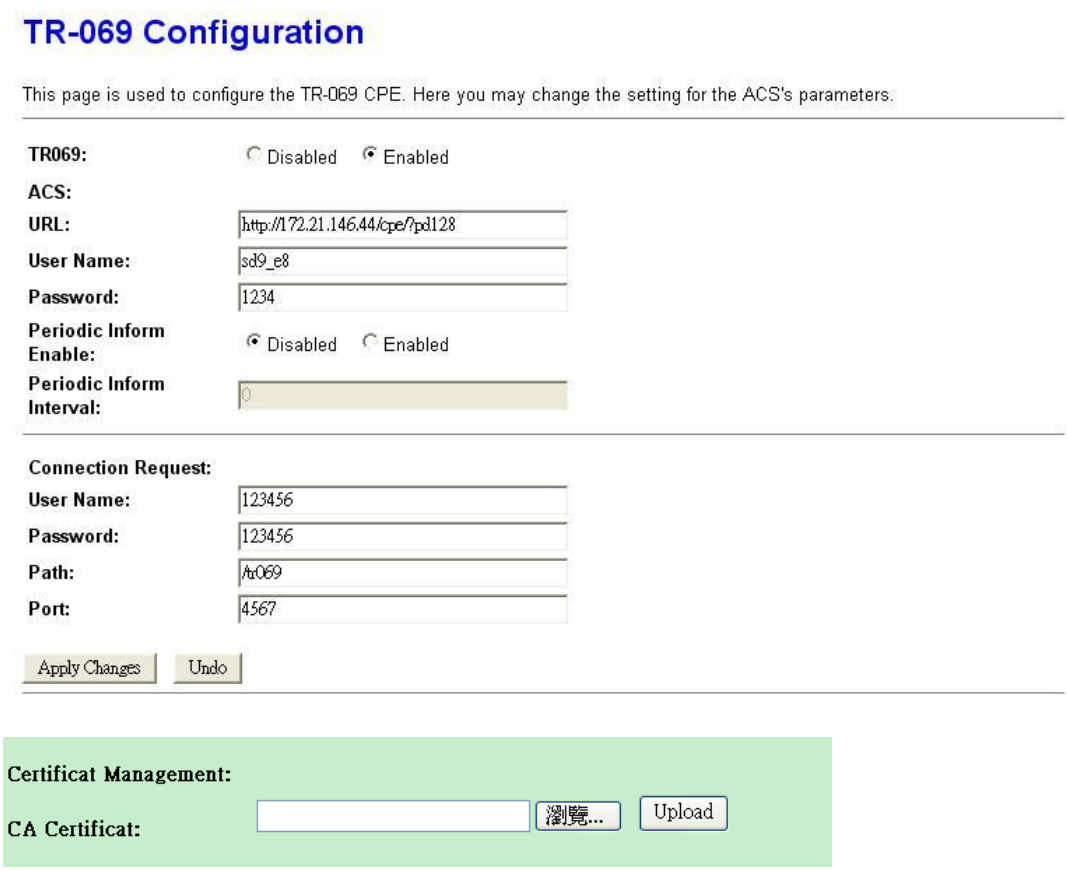
```
[*] tr069
[*]   support TR181 in TR069
[*]     support TR181 V6 part in TR069
[ ]   support TR143 in TR069
-*-   Flatfs support for TR069
      Subarchitecture Type (no support any SSL)  --->
```

In default, flatfs is enabled. TR143 is supported but it is not verified in this stage. Hence TR143 default is disabled. If only tr069 option is selected, the TR-098 data model is supported. If tr069 and support TR181 in TR069 options are selected, the TR-181 data model is supported. If tr069, support TR181 in TR069 and support TR181 V6 part in TR069 options are selected, the TR181 data model is supported and IPv6 related part is included. If support TR181 V6 part in TR069 option is selected, please enable IPv6 support according to Kernel_2_6_SDK_User_Guide.doc.

3.2 Enable/Disable Tr-069

Enable/Disable Tr-069 from WEB GUI:





Tr069 daemon is started when system booting (in /etc/init.d/rcS script). If you modify ACS url or account, Tr069 daemon will re-start after you apply changes.

You also have to open the port number to accept ACS connection request in firewall setting.

3.3 Enable/Disable Tr-069 Debug Message output

In console, use “flash” utility to enable/disable debug message

Enable Debug Message output:

Disable Debug Message output:

CWMP_FLAG bit 0:

1: enable debug message output

0: disable debug message output

When you modify “CWMP_FLAG” by “flash” utility, you have to restart “cwmpClient” daemon, or reboot system to take effect.

3.4 Usage of Flatfs

TR-069 daemon (cwmpClient) use flatfs to save notify list to flash memory.

The path is “/var/cwmp_config”. The file name “CWMPNotify.txt”

```
# cat ./CWMPNotify.txt
InternetGatewayDevice.DeviceSummary 5 1
InternetGatewayDevice.DeviceInfo.SpecVersion 5 1
InternetGatewayDevice.DeviceInfo.HardwareVersion 5 1
InternetGatewayDevice.DeviceInfo.SoftwareVersion 6 1
InternetGatewayDevice.DeviceInfo.ProvisioningCode 6 1
InternetGatewayDevice.ManagementServer.ConnectionRequestURL 6 1
InternetGatewayDevice.ManagementServer.ParameterKey 5 1
InternetGatewayDevice.WANDevice.1.WANConnectionDevice.1.WANIPConnection.1.ExternalIPAddress 6 1
InternetGatewayDevice.WANDevice.1.WANConnectionDevice.2.WANIPConnection.1.ExternalIPAddress 6 1
InternetGatewayDevice.WANDevice.1.WANConnectionDevice.3.WANIPConnection.1.ExternalIPAddress 6 1
InternetGatewayDevice.WANDevice.1.WANConnectionDevice.4.WANIPConnection.1.ExternalIPAddress 6 1
InternetGatewayDevice.LANDevice.1.WLANConfiguration.1.SSID 2 1
#
```

Configuration of Flatfs:

In Kernel Configuration should set the offset for flatfs.

In default the offset is the latest 128K of flash memory. And device node is necessary for flatfs in /dev directory.

In default /dev/mtd1, /dev/mtd2, /dev/mtd3, /dev/mtd4 are generated when the rootfs is created during compile firmware. /dev/mtd4 is used by “flatfsd” to create flatfs and sync content to flash memory.

“flatfsd –r”: read, or create flatfs from flash memory to main memory

“flatfsd –s”: sync the data in main memory to flash memory, such the data will not disappear after system reboot

4. WLAN Configuration

The layout of WLAN Setting is 2 dimension array, type is CONFIG_WLAN_SETTING_T

wlan[NUM_WLAN_INTERFACE][NUM_VWLAN_INTERFACE+1]

NUM_WLAN_INTERFACE is the number of root WLAN interface

NUM_VWLAN_INTERFACE is the number of virtual WLAN interface

There is ONE root WLAN interface for RTL8192C. And there are 2 root WLAN interface for RTL8192D. If MBSSID is enabled, the number of virtual WLAN interface is 4. Also another virtual WLAN interface is for REPETER. Hence the total virtual WLAN interface is 6.

The mapping table:

InternetGatewayDevice.LANDevice.{i}.WLANConfiguration.{i}.
i: InstanceNum

SingleBand Mapping						
WLAN MIB Index	[0,0]	[0,1]	[0,2]	[0,3]	[0,4]	[0,5]
WLAN interface Name	wlan0	wlan0-va0	wlan0-va1	wlan0-va2	wlan0-va3	wlan0-vxd

DualBand Mapping						
WLAN MIB Index	[0,0]	[1,0]	[0,1]	[0,2]	[0,3]	[0,4]
WLAN interface Name	wlan0	wlan1	wlan0-va0	wlan0-va1	wlan0-va2	wlan0-va3
WLAN MIB Index	[0,5]	[1,1]	[1,2]	[1,3]	[1,4]	[1,5]
WLAN interface Name	wlan0-vxd	wlan1-va0	wlan1-va1	wlan1-va2	wlan1-va3	wlan1-vxd

There is a limitation when dual band is enabled.

In 2.4G/5G Concurrent Mode, the WLAN MIB Index [0,0] should be 5G available. It can not be set to 2.4G available. In this condition, both wlan0 and wlan1 can not accept change "InternetGatewayDevice.LANDevice.{i}.WLANConfiguration.{i}.channel" to the other side channel.

5. Reference

1. “TR-069_How to Add the TR-69 Parameters.pdf” describes how to add parameters.

