



FG132

Open SDK Dialing Guide

V1.0

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Applicable Model

No.	Applicable Model	Description
1	FM132 series & FG132 series	SDX35 platform

Change History

V1.0 (2024-10-12)

Initial version.

1 Overview

This document mainly introduces the FG132 OpenSDK dialing settings.

2 Modifying Default Configuration

OpenSDK defaults to FFW (Fibocom Embedded Application Framework) running mode, and some configuration options need to be modified before compilation.

2.1 Modifying Start Mode

OPENSdk defaults to FFW mode, and some OpenWRT services do not start. You need to switch the start mode to OpenWRT.

The modifications are as follows:

Modify the `./owrt_workspace/vendor/fibocom/prebuilt/system/rootfs/etc/startup_option` file in the SDK to change the contents of `startup_option` to 1, as follows:

```
@ubuntu:~/myProject/SDK/fg132-open-sdk$  
@ubuntu:~/myProject/SDK/fg132-open-sdk$ echo 1 > ./owrt_workspace/vendor/fibocom/prebuilt/system/rootfs/etc/startup_option  
@ubuntu:~/myProject/SDK/fg132-open-sdk$  
@ubuntu:~/myProject/SDK/fg132-open-sdk$ cat ./owrt_workspace/vendor/fibocom/prebuilt/system/rootfs/etc/startup_option  
1  
@ubuntu:~/myProject/SDK/fg132-open-sdk$
```

Figure 1. Modifying start mode



During the debugging phase, you can modify the start mode by:

1. Run the **adb shell** to enter the module.
2. Manually modify the value of `/etc/startup_option` to 1.
3. Restart the module and the system will enter the OpenWRT mode.

2.2 Modifying USB Mode

The default USB mode of OpenSDK is RMNET (the corresponding GTUSBMODE value is 36). In the RMNET mode, network sharing is not supported, and the host cannot manage the network through WebUI. It is necessary to switch USB mode to RNDIS or ECM mode.

Method 1: Modify the USB default value.

1. Find the default configuration file for the project: `./projects/PRJ_FG132-XX-XX-XX/config_data/f_cust_devcfg.xml`.
2. Refer to Table 1, modify the val of the USBMODE node in xml to the corresponding value.

```
<setting name="USBMODE" id="00BB0000">  
  <type>int</type>  
  <min>20</min>  
  <max>43</max>  
  <val>41</val>  
</setting>
```

Figure 2. Modifying default USB mode

The values of USB mode are modified by referring to the following table.

Table 1. USB mode functions

USBMODE	Function Interface	Applicable Scenario
36	RMNET	Applicable to standard version
37	RMNET+ADB	Applicable to standard version
38	ECM	Applicable to Linux host environment
39	ECM+ADB	Applicable to Linux host environment
40	RNDIS	Applicable to Windows host environment
41	RNDIS+ADB	Applicable to Windows host environment



The default value is stored in the configurable partition and will take effect when the firmware is upgraded. If you only change the configurable partition, you can select `rawprogram_nand_p2K_b128K_for_upgradedevconfigonly_windows.xml` in the software package to upgrade.

Method 2: Dynamically adjust the USB mode.

Run the `AT+GTUSBMODE=<val>` command to adjust it.

Refer to Table 1 for the val value in the AT command.

3 Compilation Upgrade

Refer to Fibocom_FG132_OpenSDK Compilation Environment Setup Guide.

4 OpenWRT Dialing

4.1 QCMAP Software Framework

QCMobileAP (QCMAP) is an important software framework for Qualcomm SDX35 platform to process dialing management. Its main functions are implemented in AP. It realizes the management of PDP activation and the reception of network events through QMI messages such as WDS and NAS of Qualcomm, and controls IPA acceleration and data transmission. The function control involves wwan, wlan, br-lan and other fields, and is mainly implemented by software QCMAP_ConnectionManager.

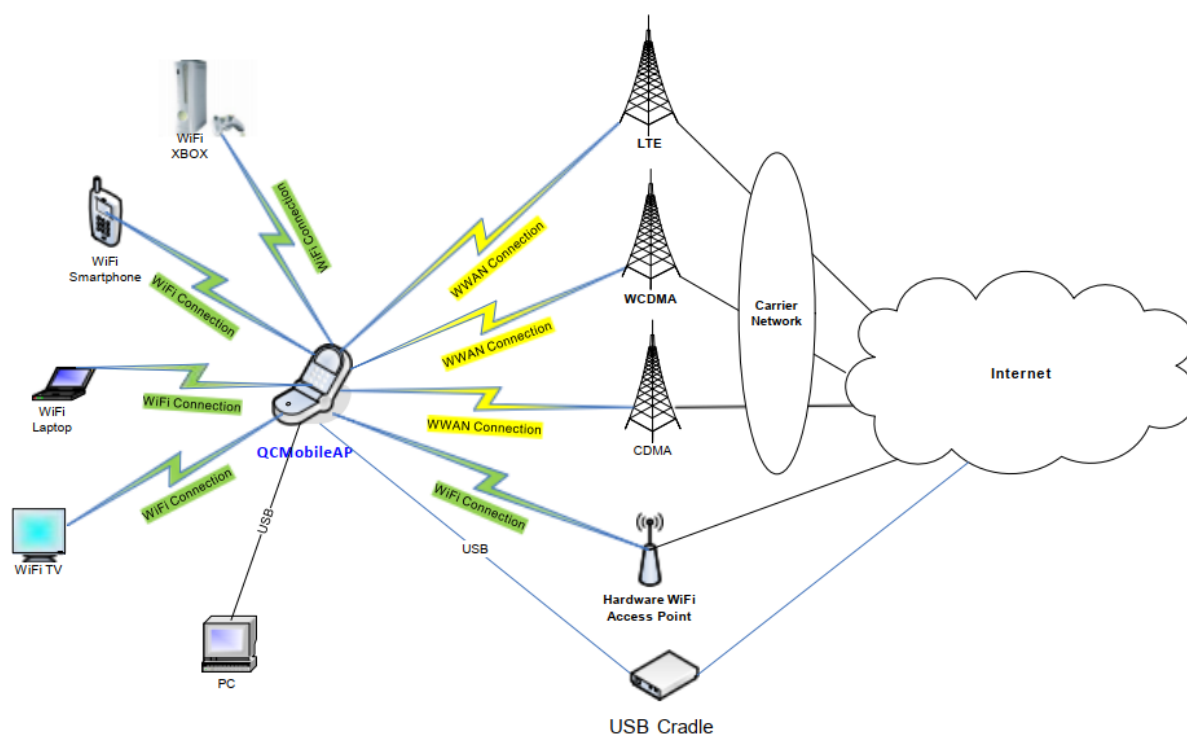


Figure 3. Framework diagram of MobileAP application scenario

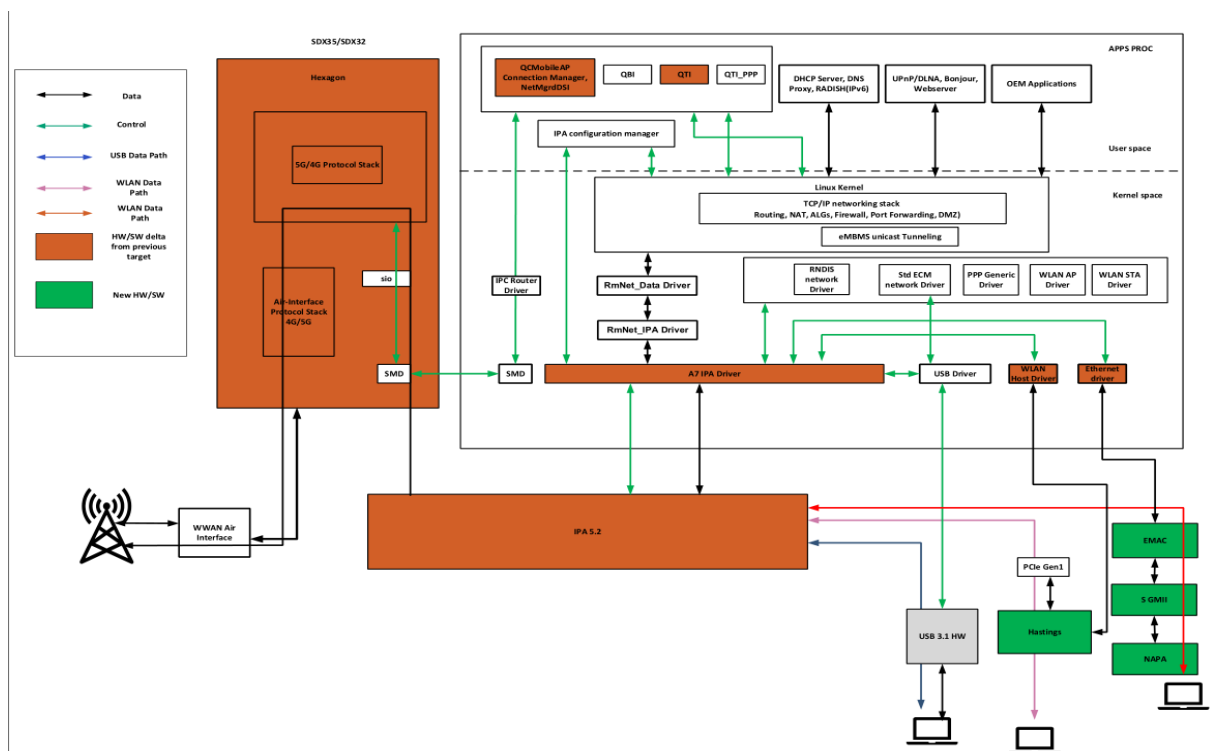


Figure 4. Control and data flow diagram

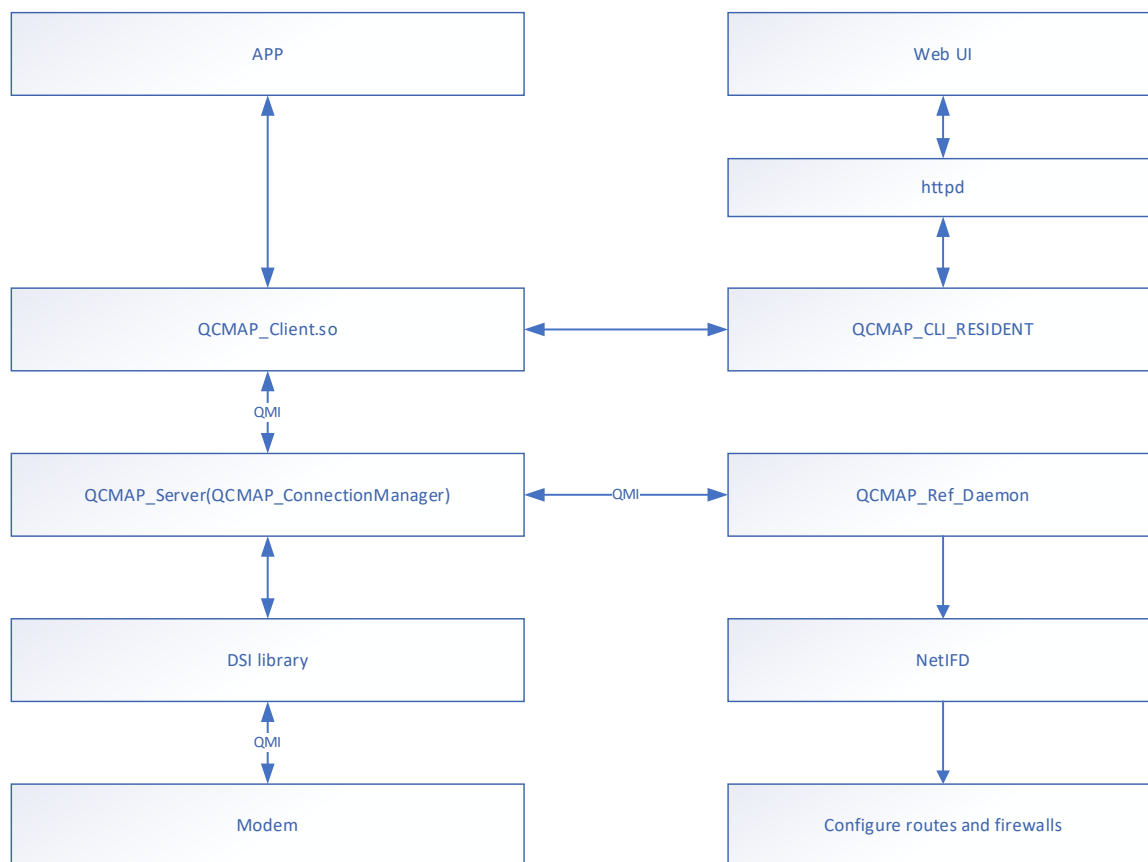


Figure 5. QCMAP dialing process

As can be seen from the dialing flow chart of QCMAP, QCMAP supports three dialing initiation methods:

1. Dial manager automatically initiates dialing.
2. The APP initiates dialing at the application layer.
3. WEB UI initiates dialing.

Table 2. Description of QCMAP dialing process

QCMAP_ConnectionManager	Qualcomm data dialing management process, responsible for actual dialing initiation, disconnection, etc., and maintaining dialing status. When automatic dialing is configured, QCMAP_ConnectionManager initiates dialing itself.
QCMAP_Client.so	Qualcomm dialing client API library provides encapsulated interfaces for APP applications to call. Establish a connection with QCMAP_ConnectionManager directly through QMI.
App	For the OPEN application, Fibocom provides a Demo. For details, see 4.3 "Internal Application Dialing".
QCMAP_CLI_RESIDENT	Fibocom provides a program based on QCMAP_Client.so, for the openWRT WEB UI corresponding dial-up script call.

4.2 Automatic Dialing

In OPENWRT mode, automatic dialing is enabled by default. The methods for enabling or disabling the automatic dialing are as follows:

Modify the source code in the kuno-le-1-0/owrt_workspace/owrt/src/data/mobileap/server/src/mobileap_cfg.xml file, and refer to the following figure to modify the configuration.

```

73      <MobileAPWanCfg>
74          <EriConfig>/data/mobileap_eri_config.bin</EriConfig>
75          <FirstPreferredBackhaul>bt-pan</FirstPreferredBackhaul>
76          <SecondPreferredBackhaul>eth</SecondPreferredBackhaul>
77          <ThirdPreferredBackhaul>usb_cradle</ThirdPreferredBackhaul>
78          <FourthPreferredBackhaul>wlan</FourthPreferredBackhaul>
79          <FifthPreferredBackhaul>wwan</FifthPreferredBackhaul>
80          <Profile>1</Profile>
81          <SubscriptionId>0</SubscriptionId>
82          <AutoConnect>1</AutoConnect>
83          <Roaming>0</Roaming>
84          <TECH>ANY</TECH>
85          <APN_Name></APN_Name>
86          <APN_Type>0</APN_Type>

```

1: Automatic dialing
0: Non-automatic dialing

Figure 6. Automatic dialing settings

You can also directly modify the internal file /etc/data/mobileap_cfg.xml of the module during debugging and restart the module after modification to take effect.

4.3 Internal Application Dialing

4.3.1 Interface Calling Method

The APP calls the interface in QCMAP_Client.h of the Qualcomm platform to dial.

The path of the interface file is:

kuno-le-1-0/owrt_workspace/owrt/src/data/mobileap/client/inc/QCMAP_Client.h

The following interfaces are required for dialing:

- Initialization/Deinitialization

```
Boolean EnableMobileAP_Ext
(
    qmi_error_type_v01 *qmi_err_num,
    uint64_t ind_reg_mask
);
Boolean DisableMobileAP
(
    qmi_error_type_v01 *qmi_err_num
);
```

- Initiating dialing

```
Boolean ConnectBackHaul
(
    qcmap_msgr_wwan_call_type_v01 call_type, //Dial type IPV4/IPV6/IPV4V6
    qmi_error_type_v01 *qmi_err_num
);
```

Dialing disconnection

```
Boolean DisconnectBackHaul //Disconnecting the dial-up interface
(
    qcmap_msgr_wwan_call_type_v01 call_type,
    qmi_error_type_v01 *qmi_err_num
);
```

- Receive returned dialing results (asynchronous)

```
typedef void (*client_status_ind_t)
(
    qmi_client_type user_handle, /* QMI user handle. */
    unsigned int msg_id,         /* Indicator message ID. */
    void *ind_buf,               /* Raw indication data. */
    unsigned int ind_buf_len,    /* Raw data length. */
    void *ind_cb_data            /* User callback handle. */
```

```
);
```

4.3.2 Demo

1. Source code path:

```
kuno-le-1-0/fibo_oem/fibo_apps/fibo-opensrc/sample-datacall/qcmap
```

2. Compilation method:

```
cd kuno-le-1-0/owrt_workspace/owrt
```

```
make package/fibocom/sample_qcmap_cli/{clean,compile} V=sc
```

3. Compilation result:

After successful compilation, the following executable file is generated:

```
kuno-le-1-0/owrt_workspace/owrt/build_dir/target-arm_cortex-a7+neon-vfpv4_musl_eabi/sample_qcmap_cli-1/bin/sample_qcmap_cli
```

4. Run the following command:

Push sample_qcmap_cli inside the module and execute sample_qcmap_cli <cid>, for example:

First dialing, execute sample_qcmap_cli 1.

Second dialing, execute sample_qcmap_cli 2.



The first dialing will be shared to the host through the ECM or RNDIS network card, and the Internet can also be accessed inside the module. If it is necessary to access the Internet outside the module, perform the first dialing; If the dialing is only used internally in the module, you can perform the 2nd to 16th dialing. Note that non-first dialing requires a valid APN. A maximum of three dialing is supported.

```

/usr/bin #
/usr/bin # sample_qcmap_cli 1
diag: Diag_LSM_Init: invoked for pid: 1753 with init_count: 0
diag:successfully connected to socket 4
diag: Diag_LSM_Init: done for pid: 1753 with init_count: 1
diag: Diag_LSM_Init: invoked for pid: 1753 with init_count: 1
diag: Diag_LSM_Init: done for pid: 1753 with init_count: 2

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 65535 ind_buf_len 8.

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 241 ind_buf_len 7.

src/qcmap_cli_test.cpp 891:
MobileAP Enable succeeds.
src/qcmap_cli_test.cpp 748:fiibo_qcmap_prz2file_handle_set success
src/qcmap_cli_test.cpp 920:
V4 ConnectBackHaul succeeds.
src/qcmap_cli_test.cpp 940:
V6 ConnectBackHaul succeeds.
src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 34 ind_buf_len 111.

src/qcmap_cli_test.cpp 202:fiibo_qmi_qcmap_ind: PDN=1 IPV4 WWAN Connected
Interface Name      : rmnet_data0
Public IPv4 Address : 10.61.36.150
Primary DNS IPv4 Address : 211.136.112.50
Secondary DNS IPv4 Address : 211.136.150.66
Public IPv6 Address : ::
Primary DNS IPv6 Address : ::
Secondary DNS IPv6 Address : ::

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 36 ind_buf_len 166.

src/qcmap_cli_test.cpp 377:fiibo_qmi_qcmap_ind: PDN=1 (Subs_Id=0) IPV4 WWAN Connected...
src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 34 ind_buf_len 111.

src/qcmap_cli_test.cpp 222:fiibo_qmi_qcmap_ind: PDN=1 (Subs_Id=2147483647) IPV6 WWAN Connected
Interface Name      : rmnet_data0
Public IPv4 Address : 0.0.0.0
Primary DNS IPv4 Address : 0.0.0.0
Secondary DNS IPv4 Address : 0.0.0.0
Public IPv6 Address : 2409:891e:6a40:3386:94e0:86c4:b3b7:f3b9
Primary DNS IPv6 Address : 2409:801e:2000::1
Secondary DNS IPv6 Address : 2409:801e:2000::2

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 36 ind_buf_len 163.

src/qcmap_cli_test.cpp 410:fiibo_qmi_qcmap_ind: PDN=1 (Subs_Id=0) IPV6 WWAN Connected...
src/qcmap_cli_test.cpp 761:get wwan info:

src/qcmap_cli_test.cpp 769:v4 status=3, v6_status=9
src/qcmap_cli_test.cpp 781:V4: CONNECTED
src/qcmap_cli_test.cpp 806:V6: CONNECTED
src/qcmap_cli_test.cpp 833:V4 addr: 10.61.36.150
src/qcmap_cli_test.cpp 836:V4 dns1: 211.136.112.50
src/qcmap_cli_test.cpp 839:V4 dns2: 211.136.150.66
src/qcmap_cli_test.cpp 851:V6 addr: 2409:891e:6a40:3386:94e0:86c4:b3b7:f3b9
src/qcmap_cli_test.cpp 853:V6 dns1: 2409:801e:2000::1
src/qcmap_cli_test.cpp 855:V6 dns2: 2409:801e:2000::2
src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 241 ind_buf_len 7.

```

Figure 7. CID 1 dialing

```

/usr/bin #
/usr/bin # sample_qcmap_cli 2
diag: Diag_LSM_Init: invoked for pid: 2441 with init_count: 0
diag:successfully connected to socket 4
diag: Diag_LSM_Init: done for pid: 2441 with init_count: 1
diag: Diag_LSM_Init: invoked for pid: 2441 with init_count: 1
diag: Diag_LSM_Init: done for pid: 2441 with init_count: 2

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 241 ind_buf_len 7.

src/qcmap_cli_test.cpp 891:
MobileAP Enable succeeds.
src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 65535 ind_buf_len 8.

src/qcmap_cli_test.cpp 748:fiibo_qcmap_prz2file_handle_set success
src/qcmap_cli_test.cpp 920:
V4 ConnectBackHaul succeeds.
src/qcmap_cli_test.cpp 940:
V6 ConnectBackHaul succeeds.
src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 34 ind_buf_len 111.

src/qcmap_cli_test.cpp 202:fiibo_qmi_qcmap_ind: PDN=2 IPV4 WWAN Connected
Interface Name      : rmnet_datal
Public IPv4 Address  : 10.60.135.56
Primary DNS IPv4 Address : 211.136.112.50
Secondary DNS IPv4 Address : 211.136.150.66
Public IPv6 Address  : ::
Primary DNS IPv6 Address : ::
Secondary DNS IPv6 Address : ::

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 36 ind_buf_len 166.

src/qcmap_cli_test.cpp 377:fiibo_qmi_qcmap_ind: PDN=2 (Subs_Id=0) IPV4 WWAN Connected...
src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 34 ind_buf_len 111.

src/qcmap_cli_test.cpp 222:fiibo_qmi_qcmap_ind: PDN=2 (Subs_Id=2147483647) IPV6 WWAN Connected
Interface Name      : rmnet_datal
Public IPv4 Address  : 0.0.0.0
Primary DNS IPv4 Address : 0.0.0.0
Secondary DNS IPv4 Address : 0.0.0.0
Public IPv6 Address  : 2409:891e:6a40:c98:503:af03:da86:6446
Primary DNS IPv6 Address : 2409:801e:2000::1
Secondary DNS IPv6 Address : 2409:801e:2000::2

src/qcmap_cli_test.cpp 118:fiibo_qmi_qcmap_ind: user_handle 0x3 msg_id 36 ind_buf_len 163.

src/qcmap_cli_test.cpp 410:fiibo_qmi_qcmap_ind: PDN=2 (Subs_Id=0) IPV6 WWAN Connected...
src/qcmap_cli_test.cpp 761:get wwan info:

src/qcmap_cli_test.cpp 769:v4 status=3, v6_status=9
src/qcmap_cli_test.cpp 781:V4: CONNECTED
src/qcmap_cli_test.cpp 806:V6: CONNECTED
src/qcmap_cli_test.cpp 833:V4 addr: 10.60.135.56
src/qcmap_cli_test.cpp 836:V4 dns1: 211.136.112.50
src/qcmap_cli_test.cpp 839:V4 dns2: 211.136.150.66
src/qcmap_cli_test.cpp 851:V6 addr: 2409:891e:6a40:c98:503:af03:da86:6446
src/qcmap_cli_test.cpp 853:V6 dns1: 2409:801e:2000::1
src/qcmap_cli_test.cpp 855:V6 dns2: 2409:801e:2000::2

```

Figure 8. CID 2 dialing

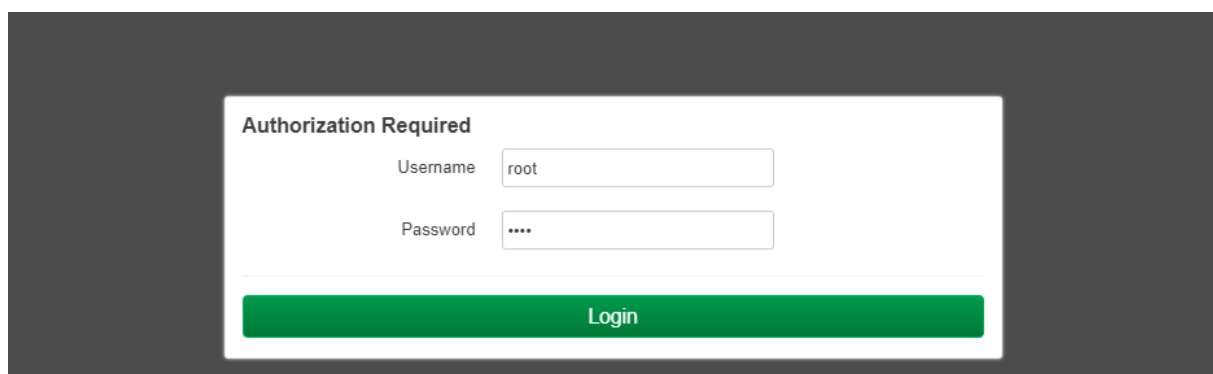

```
rmnet_data0 Link encap:UNSPEC HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
  inet addr:10.61.36.150 Mask:255.255.255.252
  inet6 addr: fe80::fc29:d6ff:fe6c:42e7/64 Scope:Link
  inet6 addr: 2409:891e:6a40:3386:94e0:86c4:b3b7:f3b9/64 Scope:Global
  UP RUNNING MTU:1500 Metric:1
  RX packets:4 errors:0 dropped:0 overruns:0 frame:0
  TX packets:17 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:1000
  RX bytes:552 (552.0 B) TX bytes:1760 (1.7 KiB)

rmnet_data1 Link encap:UNSPEC HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
  inet addr:10.60.135.56 Mask:255.255.255.240
  inet6 addr: fe80::7456:80ff:fe3d:6385/64 Scope:Link
  inet6 addr: 2409:891e:6a40:c98:503:af03:da86:6446/64 Scope:Global
  UP RUNNING MTU:1500 Metric:1
  RX packets:3 errors:0 dropped:0 overruns:0 frame:0
  TX packets:4 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:1000
  RX bytes:432 (432.0 B) TX bytes:444 (444.0 B)
```

Figure 9. NIC information

4.4 Login Web Page

1. Connect the module to the PC (if it is a Windows system, you need to confirm that the module USBMODE is 40/41; if it is a Linux system, you need to confirm that the USBMODE is 38/39).
2. Open 192.168. 224.1 through the web page, and the system will pop up a login interface. The username and password are both root.



The image shows a web login interface titled "Authorization Required". It contains two input fields: "Username" with the value "root" and "Password" with four asterisks "****". Below these fields is a green button labeled "Login".

Figure 10. Web login interface

3. Choose **Status** → **OverView** to view the dialing status.

The screenshot shows the OpenWRT web interface. At the top, there is a navigation bar with links: OpenWrt, Status, System, Services, Network, and Logout. A 'REFRESHING' button is on the right. Below the navigation bar, a yellow banner displays a warning: 'No password set. There is no password set. Please configure a root password to protect the web interface.' A dropdown menu is open under the 'Status' link, showing options: Overview (highlighted with a red box), Routing, Firewall, System Log, Processes, Channel Analysis, Realtime Graphs, and MultiWAN Manager. Below the menu, the 'Status' section is visible, showing system information in a table format.

System	
Hostname	OpenWrt
Model	Qualcomm Technologies, Inc. SDXBAAGHA QMP 256M ROME
Architecture	ARMv7 Processor rev 5 (v7l)
Target Platform	sdx35/generic
Firmware Version	OpenWrt 22.03.5 r20134-5f15225c1e / LuCI luci/luci/openwrt-22.03 branch git-23.093.57104-ce20b4a
Kernel Version	5.15.123-perf
Local Time	1980-01-06 00:04:25
Uptime	0h 4m 47s

Figure 11. Viewing status menu

4. At the bottom of the status interface, you can see the address information of IPV4 and IPV6.

The screenshot shows the OpenWRT web interface with the 'Status' menu open. The 'Network' section is visible, showing disk space, temp space, and active connections. Below this, there are two tables: 'Active DHCP Leases' and 'Active DHCPv6 Leases'. Each table has columns for Hostname, IP address, MAC/DUID, Lease time remaining, and a 'Set Static' button.

Active DHCP Leases				
Hostname	IPv4 address	MAC address	Lease time remaining	Static Lease
DESKTOP-FPP1I8R (localhost)	192.168.226.230	8A:C4:4D:5E:67:9E	11h 54m 31s	<button>Set Static</button>
DESKTOP-FPP1I8R (localhost)	192.168.225.2	BE:A4:8F:16:BE:6A	11h 53m 43s	<button>Set Static</button>

Active DHCPv6 Leases				
Host	IPv6 address	DUID	Lease time remaining	Static Lease
DESKTOP-FPP1I8R	2408:840d:6830:3c14::d91/128	000100012c8de7adf875a426f354	11h 53m 59s	<button>Set Static</button>

Figure 12. Host IP address

5. Choose **Status** → **Routing** to view the internal IP information of the module.

OpenWrt Status ▾ System ▾ Services ▾ Network ▾ Logout

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

Routing

The following rules are currently active on this system.

Pv4 Routing IPv6 Routing

IPv4 Neighbours

IP address	MAC address	Interface
192.168.226.230	8A:C4:4D:5E:67:9E	(br-lan)

Active IPv4 Routes

Network	Target	Gateway	Metric	Table	Protocol
(rmnet_data1)	0.0.0.0/0	10.42.23.50	0	9	static
(rmnet_data1)	10.42.23.48/30	-	0	9	kernel
wan	112.65.184.255	-	0	9	static
rndis	169.254.20.0/24	-	0	9	kernel
lan	192.168.224.0/22	-	0	9	kernel
wan	210.22.84.3	-	0	9	static
(rmnet_data1)	0.0.0.0/0	10.42.23.50	0	main	static
(rmnet_data1)	10.42.23.48/30	-	0	main	kernel

Figure 13. Module IPV4 information

OpenWrt
Status
System
Services
Network
Logout

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

Routing

The following rules are currently active on this system.

IPv4 Routing
IPv6 Routing

IPv6 Neighbours

IP address	MAC address	Interface
fc01:abab:cdcd:efe0::100	8A:C4:4D:5E:67:9E	(br-lan)

Active IPv6 Routes

Network	Target	Source	Metric	Table	Protocol
lan_bind6	2408:840d:6830:3c14::d91	-	1024	10	static
lan_bind6	2408:840d:6830:3c14:420:b18c:c234:c484	-	1024	10	static
lan_bind6	2408:840d:6830:3c14:eb83:2601:261:c4d9	-	1024	10	static
lan_bind6	2408:840d:6830:3c14::/64	-	256	10	kernel
wan_v6	2408:8888:0:8888::8	-	1024	10	static
wan_v6	2408:8899:0:8899::8	-	1024	10	static
(br-lan)	fc01:abab:cdcd:efe0::100	-	1024	10	static
(br-lan)	fe80::8098:eaba:ea27:63b3	-	1024	10	static
(rmnet_data1)	::/0	-	1024	10	static
lan_bind6	2408:840d:6830:3c14::d91	-	1024	main	static

Figure 14. Module IPV6 information

4.5 WebUI Initiates Dialing

Refer to section 4.4 to log in to the module UI interface. After logging in, perform data dial as follows:

The screenshot shows the OpenWRT web interface. At the top, there is a navigation bar with the following items: OpenWrt, Status, System, Services, Network, and Logout. A 'REFRESHING' button is located on the right. Below the navigation bar, a yellow banner displays the message: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface.' The main content area is divided into several sections: 'Status', 'System', 'Memory', and 'Interfaces'. The 'System' section is currently selected, showing various system information. The 'Interfaces' menu item in the top navigation bar is highlighted with a red box.

System	
Hostname	OpenWrt
Model	Qualcomm Technologies, Inc. SDXBAAGHA QMP 256M ROME
Architecture	ARMv7 Processor rev 5 (v7l)
Target Platform	sdxc35/generic
Firmware Version	OpenWrt 22.03.5 r20134-5f15225c1e / LuCI luci/luci/openwrt-22.03 branch glt-23.093.57104-ce20b4a
Kernel Version	5.15.123-perf
Local Time	2024-07-27 07:48:07
Uptime	0h 1m 18s
Load Average	3.51, 1.05, 0.37

Memory	
Total Available	64.39 MiB / 150.41 MiB (42%)
Used	139.25 MiB / 150.41 MiB (92%)

Figure 15. Entering interface

The screenshot shows the OpenWRT web interface with the 'Interfaces' section selected. A yellow banner at the top displays the message: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface.' Below the banner, there are tabs for 'Interfaces', 'Devices', and 'Global network options'. The 'Interfaces' section lists several network interfaces, each with its status, protocol, and statistics. The 'wan' interface is highlighted with a red box.

Interface	Status	Protocol	Statistics	Actions
ecm	Not present	Static address	RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present	Restart Stop Edit Delete
eth	Not present	Static address	RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present	Restart Stop Edit Delete
eth_nic2	Not present	Static address	RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present	Restart Stop Edit Delete
lan	Up	Static address	Uptime: 0h 2m 8s MAC: 0E:EE:70:8A:82:5A RX: 137.11 KB (1201 Pkts.) TX: 265.26 KB (716 Pkts.) IPv4: 192.168.224.1/22	Restart Stop Edit Delete
phantap	Up	Static address	RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present	Restart Stop Edit Delete
rndis	Up	Static address	Uptime: 0h 2m 9s MAC: 0E:EE:70:8A:82:5A RX: 154.44 KB (1207 Pkts.) TX: 298.01 KB (724 Pkts.) IPv4: 169.254.20.1/24	Restart Stop Edit Delete
wan	Not present	Rmnet address		Restart Stop Edit Delete
wan_v6	Not present			

Figure 16. Viewing wan port

OpenWrt

Status

System

Services

Network

Logout

REFRESHING











<div><div></div><div>eth0</div></div>	<div>RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>eth</div></div>	<div>Protocol: Static address RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>eth_nic2</div></div>	<div>Protocol: Static address RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>lan</div></div>	<div>Protocol: Static address Uptime: 0h 2m 45s MAC: 0E:EE:70:8A:82:5A RX: 156.40 KB (1457 Pkts.) TX: 330.69 KB (898 Pkts.) IPv4: 192.168.224.1/22</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>phantap</div></div>	<div>Protocol: Static address RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) Error: Network device is not present</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>rndis</div></div>	<div>Protocol: Static address Uptime: 0h 2m 46s MAC: 0E:EE:70:8A:82:5A RX: 177.31 KB (1463 Pkts.) TX: 371.45 KB (906 Pkts.) IPv4: 169.254.20.1/24</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>wan</div></div>	<div>Interface is reconnecting...</div>	<div><input type="radio"/> Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>wan_v6</div></div>	<div>Protocol: Rmnet address</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>wanbt</div></div>	<div>Protocol: DHCP client Error: Network device is not present</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div></div><div>wanbt_v6</div></div>	<div>Protocol: DHCPv6 client Error: Network device is not present</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>

Figure 17. Starting wan

OpenWrt

Status ▾

System ▾

Services ▾

Network ▾

Logout

REFRESHING

eth1

TX: 0 B (0 Pkts.)
RX: 0 B (0 Pkts.)
Error: Network device is not present

lan

MAC: 0E:EE:70:8A:82:5A
RX: 186.36 KB (1703 Pkts.)
TX: 455.20 KB (1150 Pkts.)
IPv4: 192.168.224.1/22

Restart

Stop

Edit

Delete

lan_bind6

MAC: 0E:EE:70:8A:82:5A
RX: 186.36 KB (1703 Pkts.)
TX: 455.20 KB (1150 Pkts.)
IPv6: 240e:457:a10:2fd0::1/64

Restart

Stop

Edit

Delete

phantap

RX: 0 B (0 Pkts.)
TX: 0 B (0 Pkts.)
Error: Network device is not present

Restart

Stop

Edit

Delete

rndis

MAC: 0E:EE:70:8A:82:5A
RX: 210.71 KB (1709 Pkts.)
TX: 507.04 KB (1158 Pkts.)
IPv4: 169.254.20.1/24

Restart

Stop

Edit

Delete

wan

Protocol: Rmnet address
Uptime: 0h 1m 53s
RX: 8.37 KB (45 Pkts.)
TX: 13.85 KB (99 Pkts.)
IPv4: 10.180.14.22/30

Restart

Stop

Edit

Delete

wan_v6

Protocol: Rmnet address
Uptime: 0h 1m 47s
RX: 8.37 KB (45 Pkts.)
TX: 13.85 KB (99 Pkts.)
IPv6: 240e:457:a10:2fd0:91ca:5d92:3f42:e686/64

Restart

Stop

Edit

Delete

wanbt

Not present

Protocol: DHCP client
Error: Network device is not present

Restart

Stop

Edit

Delete

wanbt_v6

Not present

Protocol: DHCPv6 client
Error: Network device is not present

Restart

Stop

Edit

Delete

Figure 18. Traffic statistics of wan port