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Outdoor Micro Gateway User Guide OPDK



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1 GUI Access

1.1 Open Admin GUI

Access ODU-LBT WebUI via WAN IP address assigned by DHCP.

The default username is "admin" and the password is "admin" (or you can check the back label to see the access password).

Figure 1.1 Login

A screenshot of a web browser's login page. The page has a white background with a light gray border. At the top center, the text "Authorization Required" is displayed in a large, bold, black font. Below this, a thin horizontal line separates the title from a smaller, gray instruction: "Please enter your username and password." Further down, there are two input fields. The first is labeled "Username" and has a horizontal line for text entry. The second is labeled "Password" and has a horizontal line with a vertical cursor on the left side. In the bottom right corner of the form area, there is a blue rectangular button with the word "LOGIN" in white, uppercase letters.

The ODU-LBT OPDK firmware version will be displayed on the upper-left corner after login.

1 Packet Forward

The purpose of this category is to view current Packet Forward settings. ODU LBT supports 2 LoRa modules in which the configuration methods are the same. Here we only take module 1 as an example.

1.1 Module 1 Settings

1.1.1 Gateway Info

This page is to set up LoRa configuration, which includes: Gateway ID, Server Address, Server Uplink Port, Server Downlink Port, Keep-Alive Interval, Statistics display Interval, and Push Timeout.

Figure 1.1.1 Gateway Info

Gateway Info

Gateway ID:	1c497be9e607
Server Address:	<input type="text" value="127.0.0.1"/>
Server Uplink Port:	<input type="text" value="1680"/> (1~65535)
Server Downlink Port:	<input type="text" value="1680"/> (1~65535)
Keep Alive Interval:	<input type="text" value="10"/> (seconds)
Statistics display Interval:	<input type="text" value="30"/> (seconds)
Push Timeout:	<input type="text" value="100"/> (milliseconds)

[APPLY](#)

1.1.2 Gain

This page is to set up the antenna gain value.

Figure 1.1.2 Gain

Antenna Gain: (0 ~ 15)

[APPLY](#)

1.1.3 Radio and Channel Settings

This page is to set up the Radio 0/1 configuration of LoRa, which includes: Central Frequency, RSSI Offset, TX Status, Channel Status, and Channel offset.

Figure 1.1.3 Radio and Channel settings

Radio Settings

Here you can modify Central frequency of Radio 0 or Radio 1 to change channel frequencies.

<p>Radio 0</p> <p>Central Frequency: <input type="text" value="923100000"/> (Hz)</p> <p>RSSI Offset: <input type="text" value="-167"/> (dBm)</p> <p>TX Status: <input type="text" value="Enable"/></p>	<p>Radio 1</p> <p>Central Frequency: <input type="text" value="923900000"/> (Hz)</p> <p>RSSI Offset: <input type="text" value="-167"/> (dBm)</p> <p>TX Status: <input type="text" value="Disable"/></p>
---	--

Channel Assignment

CH 0 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="0"/>	CenterFreqOffset: <input type="text" value="-300000"/> (-400000~+400000)
CH 1 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="0"/>	CenterFreqOffset: <input type="text" value="-100000"/> (-400000~+400000)
CH 2 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="0"/>	CenterFreqOffset: <input type="text" value="100000"/> (-400000~+400000)
CH 3 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="0"/>	CenterFreqOffset: <input type="text" value="300000"/> (-400000~+400000)
CH 4 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="1"/>	CenterFreqOffset: <input type="text" value="-300000"/> (-400000~+400000)
CH 5 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="1"/>	CenterFreqOffset: <input type="text" value="-100000"/> (-400000~+400000)
CH 6 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="1"/>	CenterFreqOffset: <input type="text" value="100000"/> (-400000~+400000)
CH 7 Status: <input type="text" value="Enable"/>	Radio Interface: <input type="text" value="1"/>	CenterFreqOffset: <input type="text" value="300000"/> (-400000~+400000)
CH 8 Status: <input type="text" value="Disable"/>	Radio Interface: <input type="text" value="0"/>	CenterFreqOffset: <input type="text" value="0"/> (-300000~+300000) Channel E

[APPLY](#)

1.1.4 LBT Settings

This page is to set up the LBT configuration of LoRa, which includes: LBT Status, RSSI Target, Channel settings.

Figure 1.1.4 LBT Settings

LBT Settings

LBT Status:

RSSI Target: (dBm)

Channel settings:

Frequency:	<input type="text" value="922800000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="923000000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="923200000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="923400000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="923600000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="923800000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="924000000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>
Frequency:	<input type="text" value="924200000"/>	(Hz)	Scan Time:	<input type="text" value="5000us"/>

1.2 Log

This page shows the LoRa module log.

Figure 1.2 Log

LoRa Module 1 Log

```
WARNING: [gps]WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
WARNING: [gps] could not get GPS time from GPS
JSON up: {"stat":{"time":"2019-11-06 06:19:55 GMT","rxnb":0,"rxok":0,"rxfw":0,"ackr":0.0,"dwnb":0,"txnb":0}}
##### END #####
```

REFRESH

2 System

2.1 Administration

ODU-LBT GUI login password can be configured on this page.

Figure 2.1 Administration

Administration

Router Password

Changes the administrator password for accessing the device

Password

Confirmation

[SAVE](#) [CANCEL](#)

2.2 Restore

This page will allow you to reset the ODU-LBT to default status. Files and configurations you uploaded/modified will be erased or cleared to their default state.

Figure 2.2 Administration

Restore

To reset the firmware to its initial state, click "Perform reset".

Reset to defaults: [PERFORM RESET](#)

2.3 System Firmware

This page will allow the user to upgrade ODU-LBT firmware.

Figure 2.3-A System Firmware

System Firmware

Firmware Information

Current firmware version: opdk-1.01.07

Please select a file to upgrade:

Figure 2.3-B Running upgrade process

System – System Upgrade Now ...

The system is upgrading now, please wait !!!


 Waiting for changes to be applied...

Figure 2.3-C Upgrade finished

System Firmware

Firmware Information

Current firmware version: opdk-1.01.07

Please select a file to upgrade:

Upgrade successful!!

3 Network

Here you can config WAN connection type and VPN (OpenVPN) settings.

3.1 WAN

By default, the WAN connection is "Ethernet WAN" DHCP mode, 3G/4G LTE mode is disabled.

3.1.1 WAN Status

Here will show the current WAN status, but in default, due to the WAN type is "Ethernet WAN" mode only, so, 3G/4G status will not be updated. In this FW, the dual-WAN mode is supported, and the user can check the "(main outgoing interface)" information to know which WAN interface is using as the main route.

Figure 3.1.1-A WAN status - default

WAN Status

Ethernet WAN	Status (main outgoing interface)
<div style="border: 1px solid #ccc; padding: 2px; width: fit-content; margin: 0 auto;">eth0</div>	MAC-Address: 1C:49:7B:EA:58:24 IPv4 Address: 192.168.11.37 Subnet Mask: 255.255.255.0 Gateway: 192.168.11.1 DNS Server: 192.168.11.1
3G/4G LTE	Status
<div style="border: 1px solid #ccc; padding: 2px; width: fit-content; margin: 0 auto;">sim card</div>	SIM card status: Not detected IMEI: 861107031704837 IMSI: N/A Module Info: Quectel, Product:EC25, Revision:EC25AUFAR02A02M4G Network Info: N/A APN: N/A IP: N/A Network Status: Disconnected


Note: Current WAN mode is "Ethernet WAN", 3/4G LTE status will not be updated in this mode, you can change it in "WAN Settings"


REFRESH



Figure 3.1.1-B WAN status – dual-WAN mode

WAN Status

Ethernet WAN	Status (main outgoing interface)
	MAC-Address: 1C:49:7B:EA:58:24 IPv4 Address: 192.168.11.37
WAN	Subnet Mask: 255.255.255.0
	Gateway: 192.168.11.1
	DNS Server: 192.168.11.1; 114.114.114.114

3G/4G LTE	Status
	SIM card status: Detected IMEI: 861107031704837 IMSI: 466011202835059
WAN	Module Info: Quectel, Product:EC25, Revision:EC25AUFAR02A02M4G
	Network Info: LTE BAND 3
	APN: internet
	IP: 100.64.207.157
	Network Status: Connected

General Information	State: Connected Network Operator: Far EasTone Technology: LTE Uptime: 01m 07s
Uplink Status	Tx Date Rate: 20 (MHz) Tx bytes: 4 (bytes) Tx Packets: 58
Downlink Status	Rx Date Rate: 20 (MHz) Rx bytes: 4 (bytes) Rx Packets: 52

[REFRESH](#)

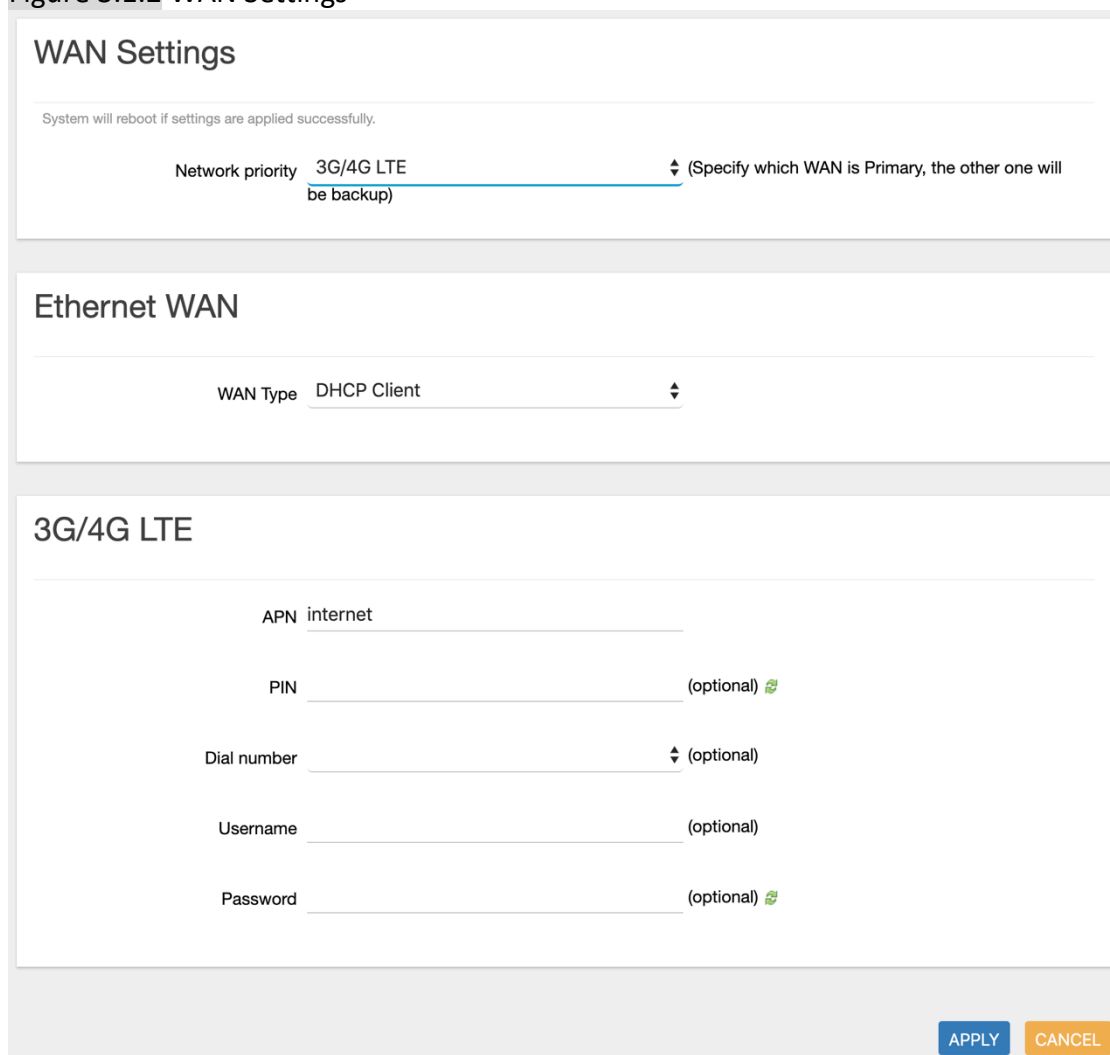
3.1.2 WAN Settings

In the “WAN Setting” section, you can specify which interface is the main outgoing interface, and the other will turn to be the backup, the default is “Ethernet WAN”.

In the “Ethernet WAN” section, you can specify the Ethernet WAN connection type, DHCP and static mode is supported, default is “DHCP”.

In the “3G/4G LTE” section, you can configure your mobile data connections. After all, configurations are done, click the “Apply” button, the system will reboot to take effect.

Figure 3.1.2 WAN Settings



The screenshot shows a web interface for configuring WAN settings. It is divided into three main sections: WAN Settings, Ethernet WAN, and 3G/4G LTE. At the bottom right, there are 'APPLY' and 'CANCEL' buttons.

WAN Settings

System will reboot if settings are applied successfully.


Network priority 3G/4G LTE (Specify which WAN is Primary, the other one will be backup)

Ethernet WAN

WAN Type DHCP Client


3G/4G LTE

APN internet

PIN _____ (optional) 

Dial number _____ (optional)

Username _____ (optional)

Password _____ (optional) 

APPLY **CANCEL**

3.1.3 3G/4G LTE Log

Here will show 3G/4G connection logs.

Figure 3.1.3 3G/4G LTE Log
3G/4G LTE Log

```
Script /etc/ppp/ip-up finished (pid 4397), status = 0x0
Script /etc/ppp/ip-up started (pid 4397)
secondary DNS address 139.175.1.2
primary DNS address 210.241.208.1
remote IP address 10.64.64.64
local IP address 100.64.207.157
not replacing existing default route via 192.168.11.1
Could not determine remote IP address: defaulting to 10.64.64.64
rcvd [IPCP ConfAck id=0x2 <addr 100.64.207.157> <ms-dns1 210.241.208.1> <ms-dns2 139.175.1.2>]
sent [IPCP ConfAck id=0x1]
rcvd [IPCP ConfReq id=0x1]
sent [IPCP ConfReq id=0x2 <addr 100.64.207.157> <ms-dns1 210.241.208.1> <ms-dns2 139.175.1.2>]
rcvd [IPCP ConfNak id=0x1 <addr 100.64.207.157> <ms-dns1 210.241.208.1> <ms-dns2 139.175.1.2>]
sent [IPCP ConfNak id=0x0 <addr 0.0.0.0>]
rcvd [IPCP ConfReq id=0x0]
sent [IPCP ConfReq id=0x1 <addr 0.0.0.0> <ms-dns1 0.0.0.0> <ms-dns2 0.0.0.0>]
```

[REFRESH](#)

3.2 VPN

OpenVPN client is supported and you can either import a config or manually config your VPN settings via GUI. Due to dual WAN mode is supported in this firmware, to avoid chaos, gateway information pushed from the VPN server will be ignored.

3.2.1 OpenVPN Client Settings

Figure 3.2.1-A VPN service - disabled

OpenVPN Client Settings

Here you can import a config file or manually config a VPN setting file.

Service State

Note: Due to dual WAN mode is running, gateway info pushed from VPN server will be ignored

[APPLY](#) [CANCEL](#)

Figure 3.2.1-B VPN service – enabled/import file

OpenVPN Client Settings

Here you can import a config file or manually config a VPN setting file.

Service State

Config Type

Import config file:

Config Status

Note: Due to dual WAN mode is running, gateway info pushed from VPN server will be ignored

Figure 3.2.1-C VPN service – enabled/customize a file

OpenVPN Client Settings

Here you can import a config file or manually config a VPN setting file.

Service State

Config Type

Interface Type

Protocol

Server Hostname/IP

Server Port

Encryption Cipher

Certificate and Keys

Other settings
(Optional, max 1024 characters)

Note: Due to dual WAN mode is running, gateway info pushed from VPN server will be ignored

Figure 3.2.1-D VPN service – enabled/customize a file/CA keys

Certificate Authority	<p>Paste the content of the '-----BEGIN xxx-----' / '-----END xxx-----' block(including those two lines) here.</p>
Client Certificate	<p>Paste the content of the '-----BEGIN xxx-----' / '-----END xxx-----' block(including those two lines) here.</p>
Client Key	<p>Paste the content of the '-----BEGIN xxx-----' / '-----END xxx-----' block(including those two lines) here.</p>
TLS-Auth Key (optional)	<p>Paste the content of the '-----BEGIN xxx-----' / '-----END xxx-----' block(including those two lines) here.</p>

SAVE **CANCEL**

3.2.2 VPN Log

Here will show the detailed negotiation information between client and server.

Figure 3.2.2 VPN Log

```
Wed Nov 6 15:51:55 2019 Initialization Sequence Completed
Wed Nov 6 15:51:55 2019 /sbin/ip addr add dev tun0 local 10.211.1.13 peer 10.211.1.14
Wed Nov 6 15:51:55 2019 /sbin/ip link set dev tun0 up mtu 1500
Wed Nov 6 15:51:55 2019 do_ifconfig, tt->ipv6=0, tt->did_ifconfig_ipv6_setup=0
Wed Nov 6 15:51:55 2019 TUN/TAP TX queue length set to 100
Wed Nov 6 15:51:55 2019 TUN/TAP device tun0 opened
Wed Nov 6 15:51:55 2019 OPTIONS IMPORT: route-related options modified
Wed Nov 6 15:51:55 2019 OPTIONS IMPORT: --ifconfig/up options modified
Wed Nov 6 15:51:55 2019 OPTIONS IMPORT: timers and/or timeouts modified
Wed Nov 6 15:51:55 2019 Options error: option 'redirect-gateway' cannot be used in this context ([PUSH-OPTIONS])
Wed Nov 6 15:51:55 2019 Options error: option 'dhcp-option' cannot be used in this context ([PUSH-OPTIONS])
Wed Nov 6 15:51:55 2019 Options error: option 'dhcp-option' cannot be used in this context ([PUSH-OPTIONS])
Wed Nov 6 15:51:55 2019 PUSH: Received control message: 'PUSH_REPLY,ping 3,ping-restart 10,ifconfig 10.211.1.13 10.211.1.14,dhcp-option DNS 10.211.254.254,dhcp-option DNS
Wed Nov 6 15:51:54 2019 SENT CONTROL [*opengw.net]: 'PUSH_REQUEST' (status=1)
Wed Nov 6 15:51:52 2019 [*opengw.net] Peer Connection Initiated with [AF_INET]59.28.81.166:1195
Wed Nov 6 15:51:52 2019 Control Channel: TLSv1, cipher TLSv1/SSLv3 ECDHE-RSA-AES256-SHA, 2048 bit RSA
```

[REFRESH](#)

3.3 Diagnostics

This page provides the user to use the “ping” command from the ODU-LBT device to target the hostname/IP address to check the Internet connectivity.

Figure 3.3 Diagnostics

Diagnostics

Network Utilities

Note :

- If the ping test is fail, please check your network setting.
- 3G/4G : Please check the APN setting.
- Ethernet: Please make sure your backhaul network is available.

openwrt.org [PING](#)



4 Logout

This will logout from web GUI.