

IWR 工業 LTE GPS 路由器

使用手冊

版本: 3.0

日期: Oct 1, 2018

修訂記錄

版本	日期	改變
1.0	08/22/2018	首次發布 IWR 使用手冊
2.0	09/12/2018	依韌體 Ver1359 Wed Sep 12 09:12:57 UTC 2018 編修 IWR 使用手冊
3.0	10/01/2018	JMHUANG - 加入各功能及細部功能介紹

目錄

修訂記錄	2
1. 產品概述	5
1.1 介紹.....	5
1.2 硬體規格	6
1.3 軟體規格	7
1.4 無線規格	7
1.5 I/O 規格.....	8
1.6 外觀尺寸(CASING DIMENSION)	8
1.7 重啟為出廠預設值	9
1.8 LED 顯示定義.....	9
1.9 包裝內容	10
2. 快速安裝及使用	12
3. 狀態功能設定	14
3-1 STATUS 狀態資訊	16
3-2 FIREWALL 防火牆.....	19
3-3 ROUTES 路由	21
3-4 SYSTEM LOG 系統日誌.....	22
3-5 KERNEL LOG 核心日誌.....	22
3-6 REALTIME GRAPHS 即時圖表.....	23
4. 系統功能設定	24
4-1 SYSTEM 系統.....	24
4-2 ADMINISTRATOR 管理員	26
4-3 BACKUP / FLASH FIRMWARE 備份還原設定值/更新韌體.....	27
4-4 REBOOT 重啟	29
5. 服務功能設定	29
5-1 GPS GW 全球定位功能	29
5-2 BEACON GW 設定(選配).....	31
5-3 uHTTPD 服務器	32
5-4 SERIAL GW 序列閘道.....	33
6. 網路功能設定	34
6-1 INTERFACE OVERVIEW 介面狀態	34

6-2 WIRELESS 無線設置.....	37
6-3 SWITCH 開關設置.....	42
6-4 DHCP & DNS	43
6-5 HOSTNAMES 主機名稱.....	46
6-6 STATIC ROUTES 靜態路由	47
6-7 FIREWALL 防火牆.....	48
6-8 DIAGNOSTICS 診斷.....	52
6-9 QoS 服務質量	53
6-A LOAD BALANCING 負載平衡.....	54
7. 快速無線 4G 上網/APN 設定	60

1. 產品概述

1.1 介紹

IWR 是一個帶有 LTE、WiFi 與 GPS 的工業物聯網路由器，它可從各種物聯網設備感應器收集數據資料，如行動軌跡、溫度、濕度、氣壓、電力、G sensor、陀螺儀、燈光、Modbus PLC 等等。IWR 工業物聯網路由器可轉換不同介面與設備的協議到物聯網伺服器，如 Http 伺服器，MOTT 伺服器。

IWR 系列工業無線路由器是一種物聯網無線通信路由器，利用公用營運商網路為用戶提供無線長距離數據傳輸。IWR 採用高性能的工業級 32 位通信處理器和工業級無線模塊，以嵌入式操作系統為軟體支撐平台，同時提供 2 個乙太網 LAN(其中一個可配置為 WAN)，同時連接串口設備，乙太網設備，實現數據透明傳傳輸和路由功能。

IWR 已廣泛應用於物聯網產業鏈中的 M2M 行業，如智能電網，智能交通，智能家居，移動 POS 終端，供應鏈自動化，工業自動化，智能建築，消防，公共安全，環境保護，氣象，數字化醫療，遙感勘測，軍事，空間探索，農業，林業，水資源，煤礦，石化等領域。

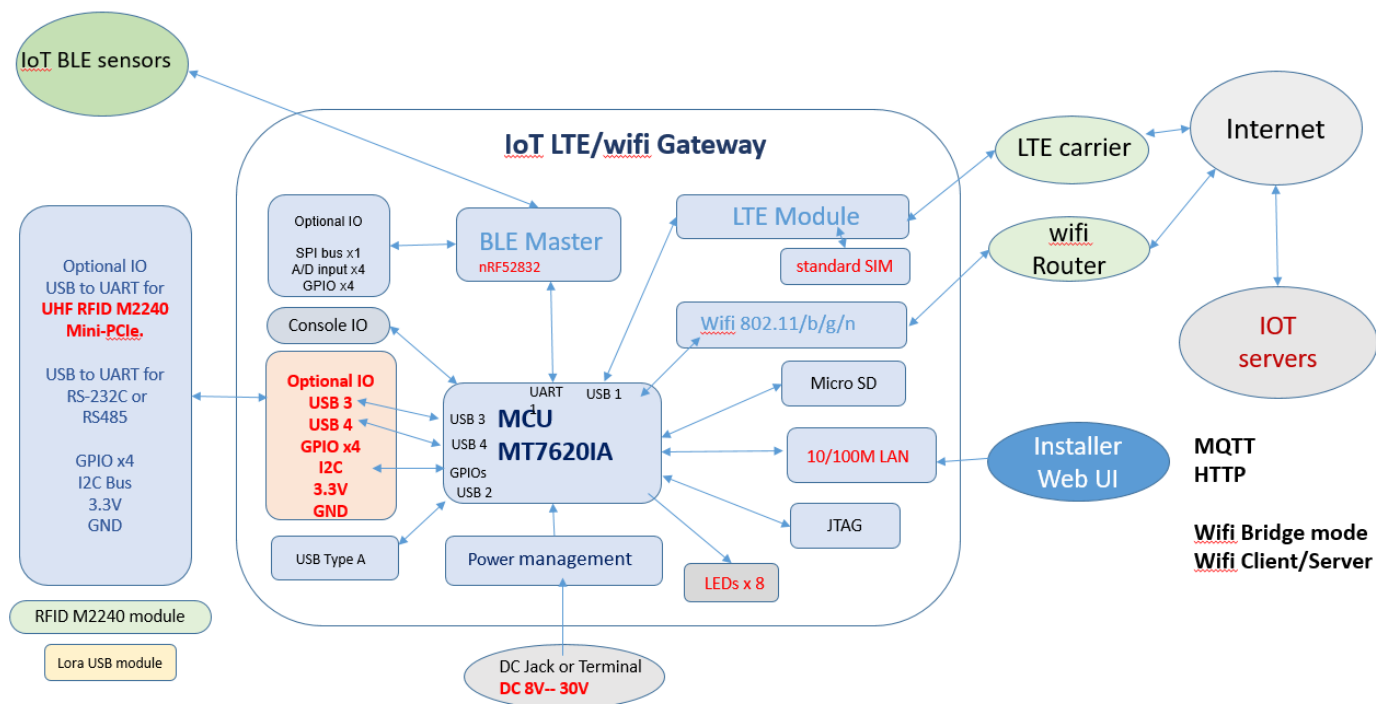
1.2 硬體規格

- 中央處理器：MT7620IA
- 同步動態隨機存取記憶體：64MB ~256MB
- 快閃記憶體：8MB ~ 16MB
- MT7620IA工作溫度範圍：-40° C ~ +85° C
- 功率範圍：DC8V~DC30V /1A
- 濕度範圍：10% ~ 90% non-condensing

天線：

- 可拆卸SMA WiFi天線 x 2
- 可拆卸SMA LTE天線 x 2
- 可拆卸SMA GPS天線 x 1
- 導軌套件
- 壁掛套件

Industrial IoT LTE/wifi gateway Block Diagram



1.3 軟體規格

- Internet access over Ethernet WAN (support DHCP, Static IP, PPPoE) or Internal LTE Failover from Ethernet WAN to LTE
- 防火牆
 - IP and MAC Filter
 - Virtual Server and DMZ
 - NAT (Network Address Translation)
- VPN
 - PPTP, L2TP pass through
- 通訊協議 (Communication Protocols)
 - IP, NAT, DHCP, PAP, CHAP, PPP, TCP, UDP, HTTP, NTP

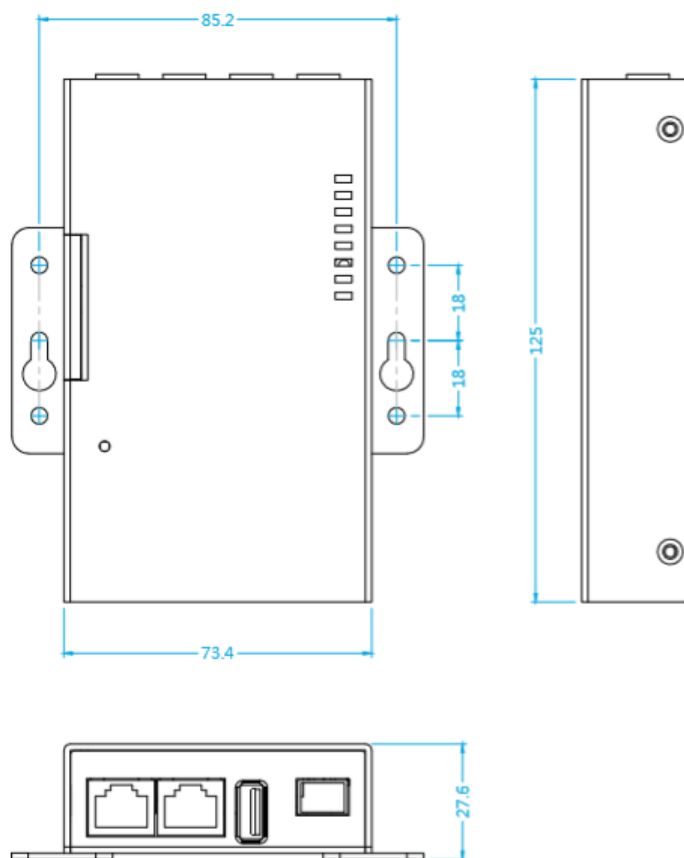
1.4 無線規格

- WiFi Specification (2T2R 802.11n)
 - Output Power (WiFi)
 - 802.11n:11 dBm
 - 802.11g:13 dBm
 - 802.11b:15 dBm
- Sensitivity (WiFi):
 - 802.11n : -68 dBm
 - 802.11g : -68 dBm
 - 802.11b : -85 dBm
- WiFi Frequencies
 - 2,4 - 2,462 GHz, CCK / OFDM (Modulation Range Coverage)
- WiFi Distances
 - Indoor: approximately 30 to 50 meters
 - Outdoor: 80 to 100 meters

1.5 I/O 規格

- 10/100M LAN x1
- 10/100M WAN or LAN
- USB Type A x 1
- LED x 8
- Reset button x 1
- Micro SD Card x 1
- Standard SIM Card x 1
- WiFi SMA Antenna x 2
- LTE SMA Antenna x 2
- GPS SMA Antenna x 1
- DC Jack x1 (DC 8V - 30V input)
- DC 5mm terminal Jack x1.

1.6 外觀尺寸(Casing dimension)

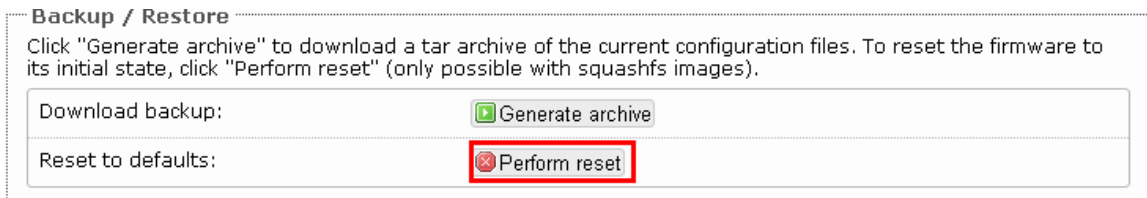


1.7 重啟為出廠預設值

重啟為出廠預設值方式(特殊需求時，如…忘記當初修改的設定值或更新最新韌體)

方式 1:設備啟動後，請等待約 45 秒，按壓 Reset 按鈕，直到 LED 3(LTE), 4(CSQ), 7(RUN)閃爍

方式 2:登錄網頁後，請按下重置按鈕> 5--10 秒，LED 3(LTE), 4(CSQ), 7(RUN)閃爍



步驟 3: 等待系統重啟（設備將恢復為出廠預設值）

注意：重啟為出廠預設值過程中，請勿關閉電源。

1.8 LED 顯示定義

LED1: LAN 2 狀態顯示

LED2: WAN / LAN 1 狀態顯示

LED3. LTE 工作狀態顯

LED4. LTE CSQ 顯示，閃爍速度（高，中，低）

LED5. WiFi 802.11 b / g / n 工作狀態顯示

LED6. BLE 工作狀態顯示

LED7. SYS(重啟按鈕顯示和 SD 工作狀態顯示)

LED8 : 開機顯示

正常工作狀態

LED 1閃爍（連接到PC LAN端口之後）

LED 2熄滅（預設為WAN端口設定）

LED 3閃爍（設備連接到4G運營商和數據上傳或下載）

LED 4快速閃爍意味著CSQ> 20（低速閃爍意味著CSQ <10 ..）

LED 5閃爍（WiFi RF開啟，數據上傳或下載）

LED 6關閉（保留給BLE應用）

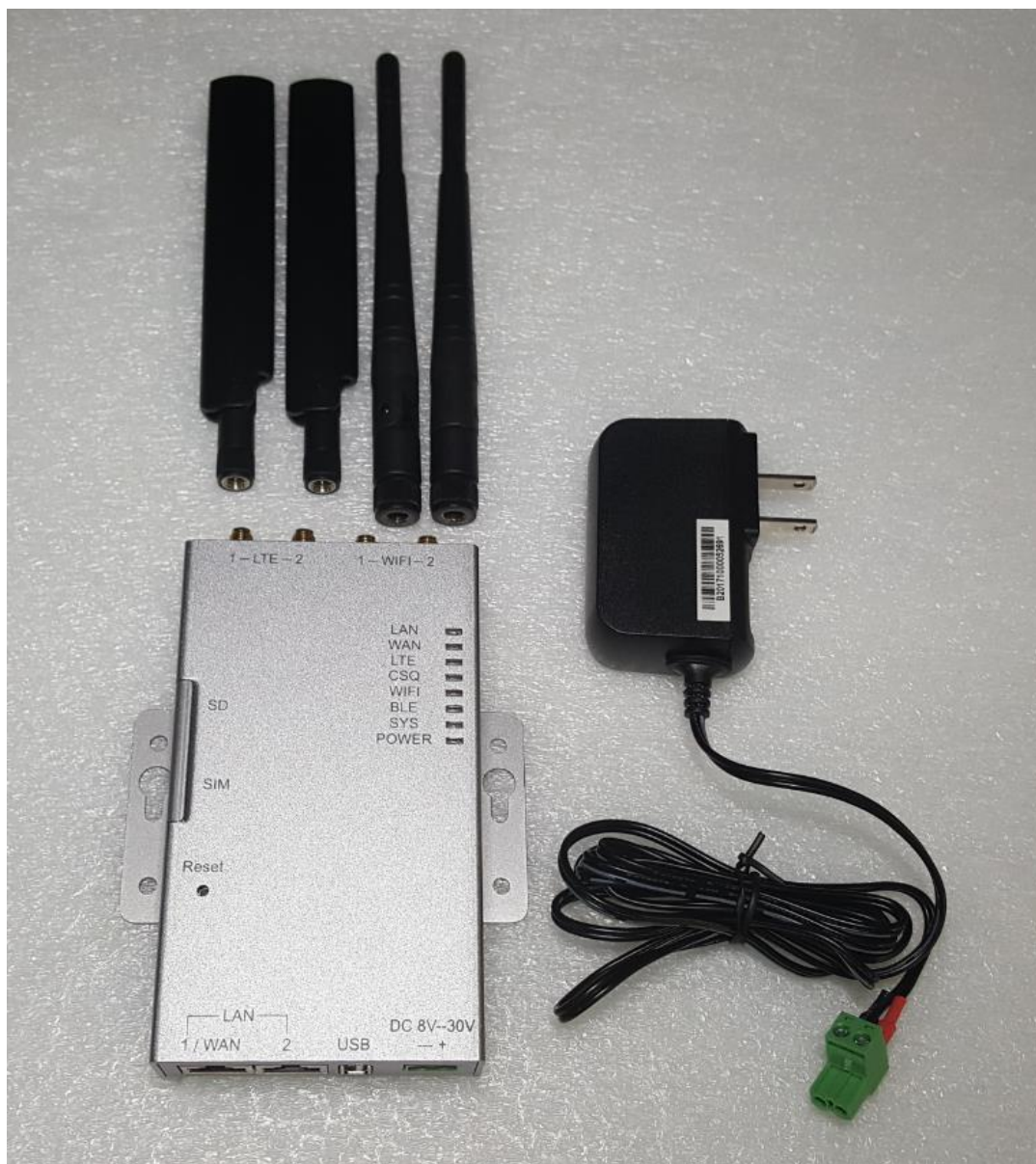
LED 7關閉（重啟按鈕狀態顯示）

LED 8亮起

1.9 包裝內容

標準配件

- IWR x 1
- 電源(DC_12V /1A) x 1
- LTE Antenna x 2
- WiFi Antenna x 2
- GPS Antenna x 1
- IP CAM1 x 1(選配)



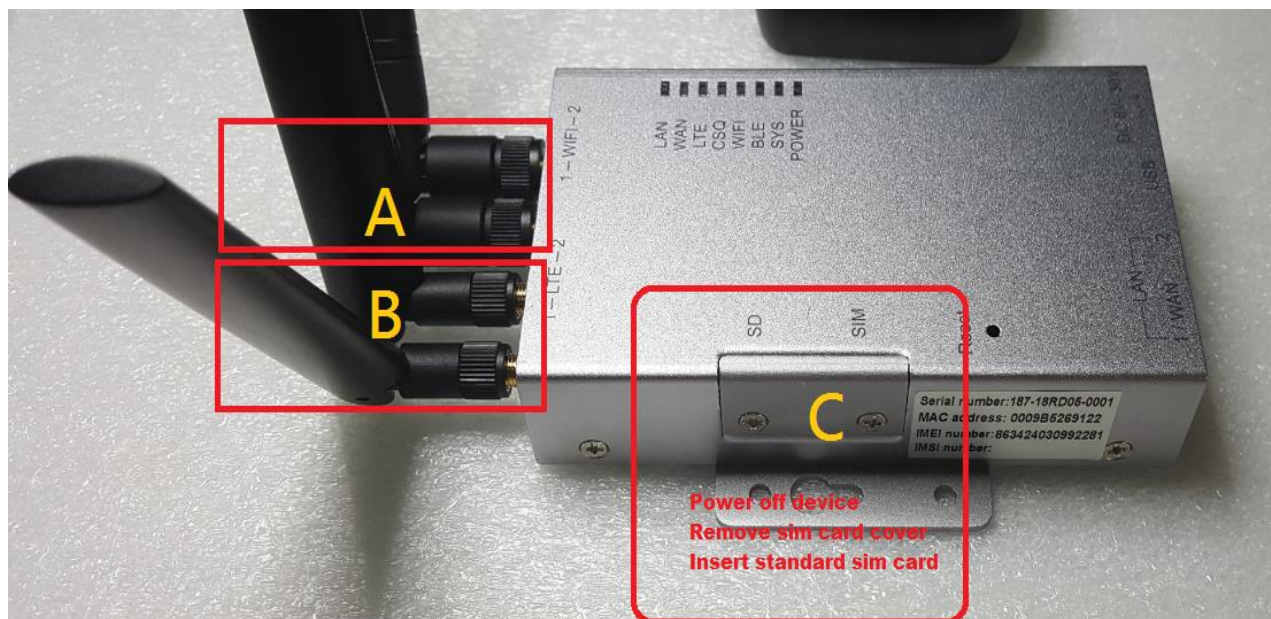


可選擇其他相關配件

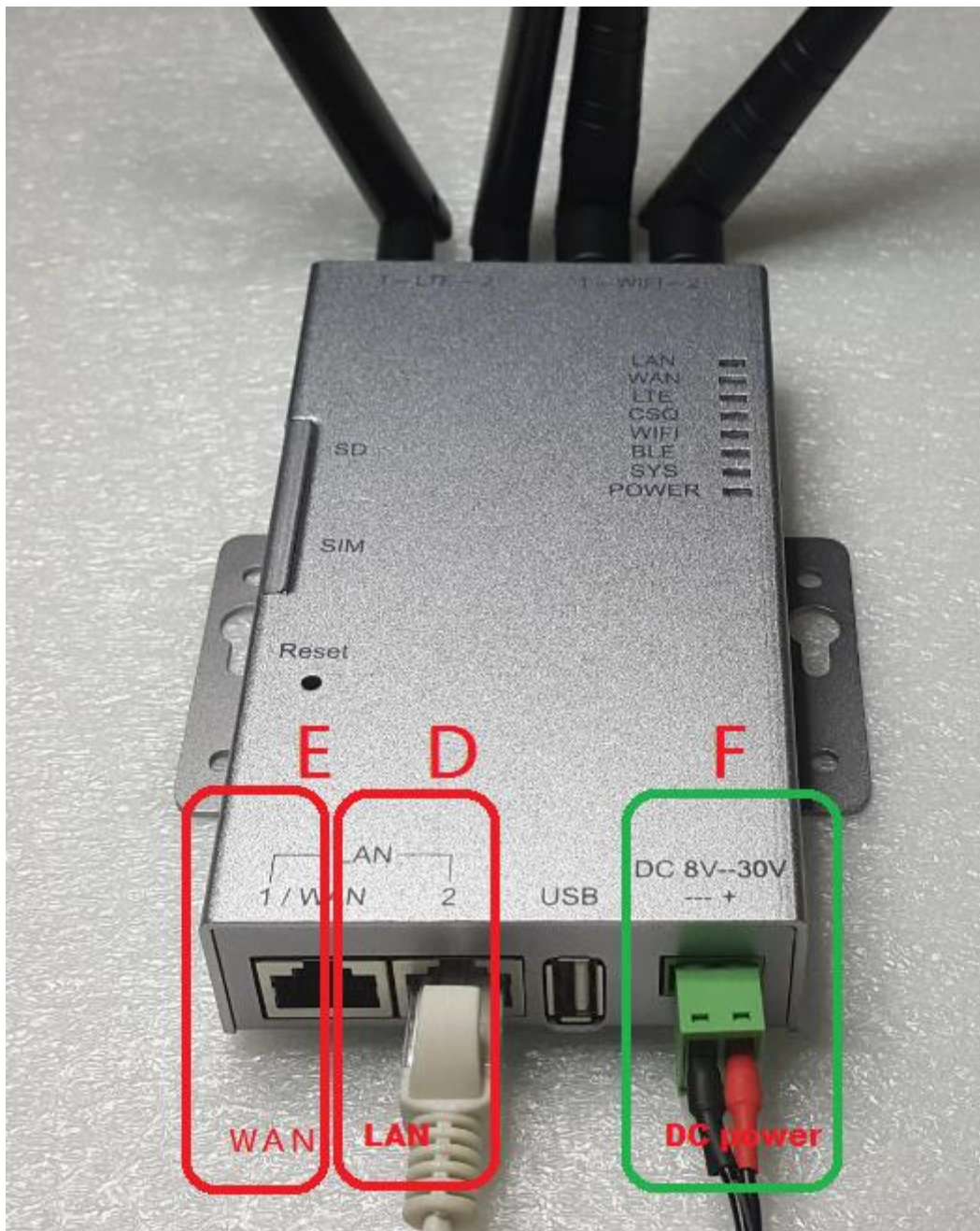


2. 快速安裝及使用

1. 首先接上 wifi 天線*2 (下圖 A) 及 4G 天線*2 (下圖 B)
2. 接著將 SIM/SD 卡座外蓋 (下圖 C) 二個螺絲卸下後取下外蓋，並置入 4G SIM CARD
3. 再蓋回卡座外蓋 (下圖 C) 後再鎖回二個螺絲



- 於 LAN2 接口接上與電腦連接之網路線 (下圖 D)，若有需要接 WAN(有線外網下圖 E))時，請於電源啟動 30 秒後再行插入 WAN 網路線
- 最後再接上電源接頭 (下圖 F)，以啟動開機程序

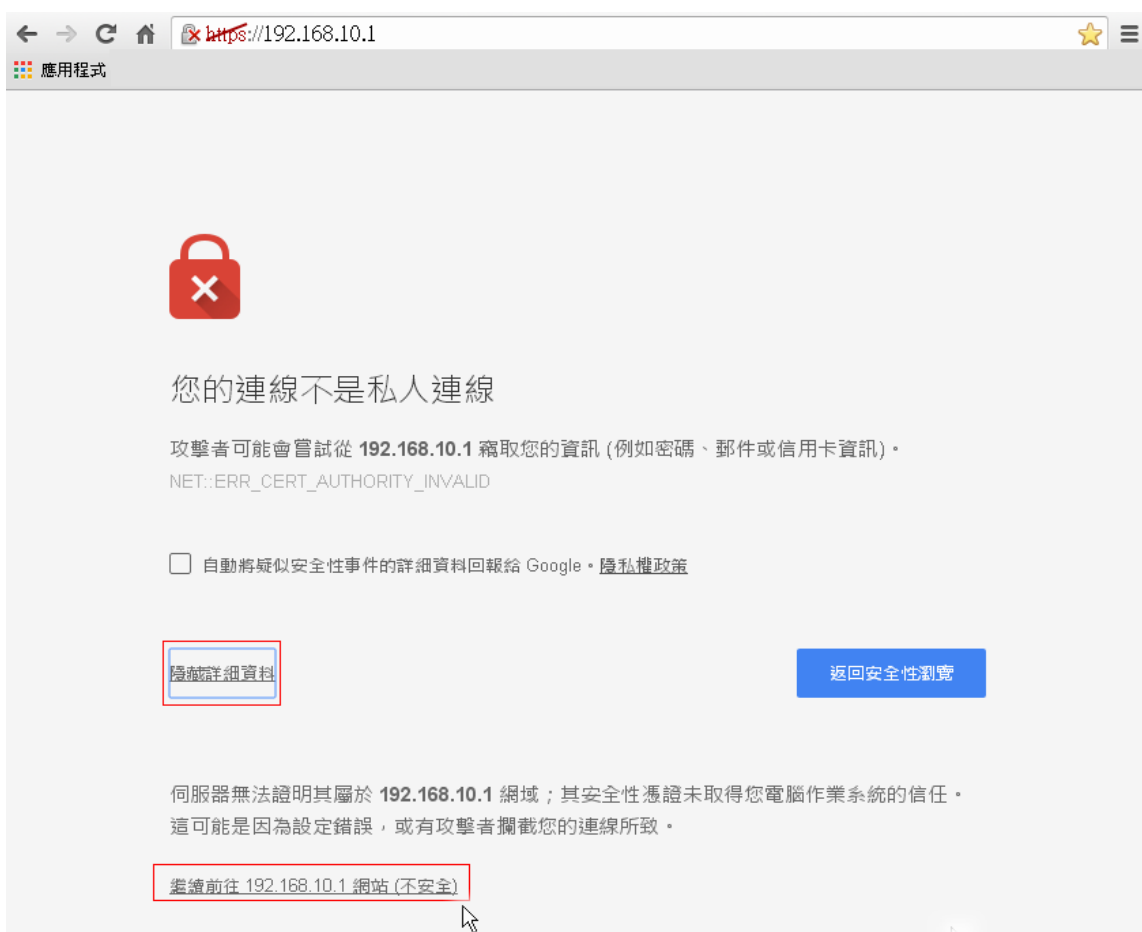


- 開啟電腦瀏覽器軟體，於網址列鍵入 Router 功能設定首頁的 IP 地址為 <https://192.168.10.1>

3. 狀態功能設定

- 登入：Router 功能設定首頁的 IP 地址為 <https://192.168.10.1>

注意：如果出現警告頁面，請先點選進入"進階"→繼續前往 192.168.10.1 網站（不安全），這只會出現在您有做還原預設值的動作(按壓 Reset 按鍵)第一次進入設定頁面時或您的韌體為舊版時會出現。斷電重啟後，接下來您都可以用 <https://192.168.10.1> 或 <http://192.168.10.1> 網址進入 IWR 路由器的設定頁面，不會再出現繼續前往 192.168.10.1 網站（不安全）的警告畫面，以下是以 <https://192.168.10.1> 為範例。

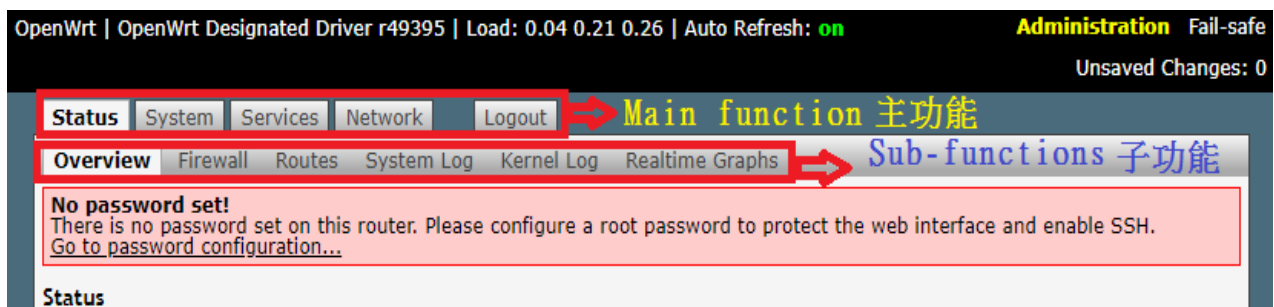
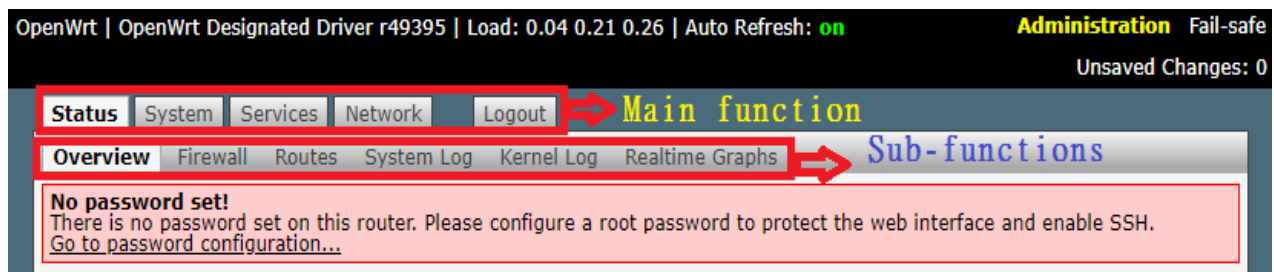


步驟 1：選擇 Administration。



步驟 2: 輸入使用者名稱 (預設為 root) 及密碼 (預設無需 password) 後再按 login。

- 主功能：包含狀態資訊設定、系統功能設定、服務功能設定及網路相關功能設定 (如下圖)。



步驟 3: 檢查數據機信號品質 CSQ 值、SIM CARD 狀態、網路註冊資訊與其他網路狀態訊息。

<https://192.168.10.1/cgi-bin/luci/admin/status>

當 CSQ<10 時表示信號品質不佳(檢視 4G 天線是否銜接妥當) CSQ>20 時表示信號品質很好。

3-1 Status 狀態資訊

Overview → IWR Router 狀態資訊

包含：System / Memory / Network / DHCP Leases / DHCPv6 Leases / Wireless / Associated Stations / MWAN Interface Live Status 等資訊。

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.04 0.21 0.26 | Auto Refresh: **on** | Unsaved Changes: 0 | **Administration** | Fail-safe

Status | System | Services | Network | Logout

Overview | Firewall | Routes | System Log | Kernel Log | Realtime Graphs

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Status

System

Hostname: OpenWrt
Model: MT7620a-IoT
Firmware Version: OpenWrt Designated Driver r49395 / LuCI Master (git-17.165.70928-dd6cb31)
Kernel Version: 4.4.6
Release: 1359 Wed Sep 12 09:12:57 UTC 2018
Local Time: Mon Oct 1 09:01:58 2018
Uptime: 0h 36m 34s
Load Average: 2.31, 2.39, 1.36
Modem Signal: Signal Quality: 24,99
Modem SIM card: SIM ready
Modem Network Registered: Registered on Home network: "Chunghwa Telecom",7
Modem Network type: E-UTRAN
Modem IMEI: 861107032979172

Memory

Total Available: 92348 kB / 125932 kB
Free: 88056 kB / 125932 kB (73%)
Buffered: 4292 kB / 125932 kB (69%) (3%)

Network

IPv4 WAN Status: Type: dhcp
Address: 192.168.100.141
Netmask: 255.255.255.0
Gateway: 192.168.100.1
DNS 1: 168.95.1.1
DNS 2: 8.8.8.8
Expires: 1h 59m 47s
Connected: 0h 0m 13s

IPv6 WAN Status: ? Not connected

Active Connections: 45 / 16384 (0%)

DHCP Leases

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
There are no active leases.			

DHCPv6 Leases

Host	IPv6-Address	DUID	Leasetime remaining
There are no active leases.			

Wireless

Generic 802.11bgn Wireless Controller (radio0): SSID: HotSpot-00:09:b5:00:00:64
Mode: Master
Channel: 6 (2.437 GHz)
Bitrate: ? Mbit/s
BSSID: 00:09:B5:00:00:64
Encryption: None

0%

Associated Stations

Network	MAC-Address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

MWAN Interface Live Status

wan (eth0.2) Online (tracking active) wan2 (wwan0) Online (tracking active)

Powered by LuCI Master (git-17.165.70928-dd6cb31)

- System 系統資訊

Hostname : 顯示 IWR Router 主機名稱
 Model: 顯示 IWR Router 型號
 Firmware Version : 韌體版本資訊
 Kernel Version : 核心版本資訊
 Release : 系統釋出的韌體版本資訊
 Local Time : 本地時間顯示 (星期 月日 時 分 秒 年)
 Uptime : IWR Router 開機後已工作時間
 Load Average : 負載平均值
 Modem Signal : 模組 CSQ 訊號值
 Modem SIM card : SIM card 狀態
 Modem Network Registered : SIM card 業者基地台註冊狀態
 Modem Network type : 顯示 4G LTE 網路連接模式
 Modem IMEI : 顯示 4G 模組的 IMEI 號碼

Status	
System	
Hostname	OpenWrt
Model	MT7620a-IoT
Firmware Version	OpenWrt Designated Driver r49395 / LuCI Master (git-17.165.70928-dd6cb31)
Kernel Version	4.4.6
Release	1359 Wed Sep 12 09:12:57 UTC 2018
Local Time	Mon Oct 1 09:01:58 2018
Uptime	0h 36m 34s
Load Average	2.31, 2.39, 1.36
Modem Signal	Signal Quality: 24,99
Modem SIM card	SIM ready
Modem Network Registered	Registered on Home network: "Chunghwa Telecom",7
Modem Network type	E-UTRAN
Modem IMEI	861107032979172

- Memory 記憶體使用資訊

Total Available
 Free
 Buffered

Memory	
Total Available	94224 kB / 125932 kB (74%)
Free	90116 kB / 125932 kB (71%)
Buffered	4108 kB / 125932 kB (3%)

- Network 網路資訊


IPv4 WAN Status 顯示目前 IPv4 外網連線資訊，包含 IP 及 IP 取得方式等

IPv6 WAN Status 顯示目前 IPv6 外網連線資訊，目前尚未開放

Active Connections 顯示目前活動連接數資訊。


Network

IPv4 WAN Status

 [eth0.2](#)

Type: dhcp
Address: 192.168.100.151
Netmask: 255.255.255.0
Gateway: 192.168.100.1
DNS 1: 168.95.1.1
DNS 2: 8.8.8.8
Expires: 1h 51m 54s
Connected: 2h 8m 6s

IPv6 WAN Status

 ? Not connected

Active Connections 63 / 16384 (0%)

- DHCP Leases 租約資訊

顯示目前 DHCPv4 使用的資訊(DHCPv6 未開放)，包含主機名稱、IP 位置、MAC Address、已使用租約時間等。

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
android-d82l	192.168.10.100	10:7b:44:31: [redacted]	11h 27m 48s
Aspire [redacted]	192.168.10.181	2c:60:0c:a8: [redacted]	11h 8m 33s

- Wireless 無線網路資訊

顯示目前無線網路的資訊，包含 SSID、連接模式、頻道、Bitrate、MAC、加密方式等。

Wireless

Generic 802.11bgn Wireless Controller
(radio0)

SSID: [HotSpot-00:09:b5:00:00:64](#)
Mode: Master
Channel: 6 (2.437 GHz)
Bitrate: ? Mbit/s
BSSID: 00:09:B5:00:00:64
Encryption: None

- MWAN Interface Live Status 外網接口即時狀態

顯示目前 WAN 網路即時狀態的資訊。

MWAN Interface Live Status

wan (eth0.2)
Online (tracking active)

wan2 (wwan0)
Online (tracking active)

3-2 Firewall 防火牆

Firewall Status → IWR Router 防火牆狀態資訊

為路由器的最小防火牆配置通常由一個的默認部分，至少兩個區（lan 和 wan）和一個轉發，以允許從 lan 到 wan。（當不超過兩個區域時，不嚴格要求轉發部分，因為該規則可以設置為該區域的“全局默認”。）

defaults 默認

該 defaults 部分聲明了不屬於特定區域的全局防火牆設置

zone 區

zone 節組的一個或多個接口，並且用作源或目的地為 forwardings，規則和重定向。

Forwardings 轉發

這些 forwarding 部分控制區域之間的交通流量，並且可以針對特定方向啟用 MSS 箱位。forwarding 規則只涵蓋一個方向。

區域的 INPUT 規則描述了試圖通過該區域中的接口到達路由器本身的流量會發生什麼。

區域的 OUTPUT 規則描述了源自路由器本身通過該區域中的接口的流量會發生什麼。

區域的 FORWARD 規則描述了在該區域中不同接口之間傳遞的流量會發生什麼。

Redirects 重定向

端口轉發（DNAT）由 redirect 部分定義。指定源區域上與給定規則匹配的所有傳入流量將定向到指定的內部主機。

重定向通常也稱為“端口轉發”和“虛擬服務器”。

Rules 規則

該類型的部分 rule 可用於定義基本的接受或拒絕規則，以允許或限制對特定端口或主機的訪問。

```
Chain INPUT (Policy: ACCEPT, Packets: 0, Traffic: 0.00 B)
Pkts. Traffic Target Prot. In Out Source Destination Options
0 0.00 B ACCEPT all lo * * 0.0.0.0/0 0.0.0.0/0 ID:66773300
10975 937.56 KB input_rule all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 /* user chain for input */
9353 755.15 KB ACCEPT all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 ctstate RELATED,ESTABLISHED
23 920.00 B DROP all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 ctstate INVALID
20 1.02 KB svn_flood tcp * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 tcp flags:0x17/0x02
2599 181.52 KB zone_lan_input all br-lan * * 0.0.0.0/0 0.0.0.0/0 ID:66773300
0 0.00 B zone_wan_input all wwan0 * * 0.0.0.0/0 0.0.0.0/0 ID:66773300
0 0.00 B zone_wan_input all eth0.2 * * 0.0.0.0/0 0.0.0.0/0 ID:66773300

Chain FORWARD (Policy: DROP, Packets: 0, Traffic: 0.00 B)
Pkts. Traffic Target Prot. In Out Source Destination Options
199024 45.73 MB forwarding_rule all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 /* user chain for forwarding */
195439 45.43 MB ACCEPT all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 ctstate RELATED,ESTABLISHED
75 3.20 KB DROP all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 ctstate INVALID
3510 309.37 KB zone_lan_forward all br-lan * * 0.0.0.0/0 0.0.0.0/0 ID:66773300
0 0.00 B zone_wan_forward all wwan0 * * 0.0.0.0/0 0.0.0.0/0 ID:66773300
0 0.00 B zone_wan_forward all eth0.2 * * 0.0.0.0/0 0.0.0.0/0 ID:66773300
0 0.00 B reject all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300

Chain OUTPUT (Policy: ACCEPT, Packets: 0, Traffic: 0.00 B)
Pkts. Traffic Target Prot. In Out Source Destination Options
0 0.00 B ACCEPT all * * lo 0.0.0.0/0 0.0.0.0/0 ID:66773300
10271 1.19 MB output_rule all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 /* user chain for output */
3971 723.54 KB ACCEPT all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 ctstate RELATED,ESTABLISHED
0 0.00 B DROP all * * 0.0.0.0/0 0.0.0.0/0 ID:66773300 ctstate INVALID
0 0.00 B zone_lan_output all br-lan 0.0.0.0/0 0.0.0.0/0 ID:66773300
6300 496.34 KB zone_wan_output all wwan0 0.0.0.0/0 0.0.0.0/0 ID:66773300
0 0.00 B zone_wan_output all eth0.2 0.0.0.0/0 0.0.0.0/0 ID:66773300
```

Chain reject (References: 5)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	REJECT	tcp	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 reject-with tcp-reset
0	0.00 B	REJECT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 reject-with icmp-port-unreachable

Chain syn_flood (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
20	1.02 KB	RETURN	tcp	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 tcp flags:0x17/0x02 limit: avg 25/sec burst 50
0	0.00 B	DROP	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_lan_dest_ACCEPT (References: 5)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	ACCEPT	all	*	*	br-lan	0.0.0.0/0	ID:66773300

Chain zone_lan_forward (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
3510	309.37 KB	forwarding_lan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for forwarding */
3510	309.37 KB	zone_vpn_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* forwarding lan -> vpn */
3510	309.37 KB	zone_wan_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* forwarding lan -> wan */
0	0.00 B	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate DNAT /* Accept port forwards */
0	0.00 B	zone_lan_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_lan_input (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
2599	181.52 KB	input_lan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for input */
0	0.00 B	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate DNAT /* Accept port redirections */
2599	181.52 KB	zone_lan_src_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_lan_output (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	output_lan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for output */
0	0.00 B	zone_lan_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_lan_src_ACCEPT (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
2599	181.52 KB	ACCEPT	all	br-lan	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_vpn_forward (References: 0)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	forwarding_vpn_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for forwarding */
0	0.00 B	zone_lan_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* forwarding vpn -> lan */
0	0.00 B	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate DNAT /* Accept port forwards */
0	0.00 B	zone_vpn_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_vpn_input (References: 0)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	input_vpn_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for input */
0	0.00 B	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate DNAT /* Accept port redirections */
0	0.00 B	zone_vpn_src_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_vpn_output (References: 0)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	output_vpn_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for output */
0	0.00 B	zone_vpn_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_wan_dest_ACCEPT (References: 2)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
9810	805.71 KB	ACCEPT	all	*	wwan0	0.0.0.0/0	0.0.0.0/0	ID:66773300
0	0.00 B	ACCEPT	all	*	eth0.2	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_wan_dest_REJECT (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	reject	all	*	wwan0	0.0.0.0/0	0.0.0.0/0	ID:66773300
0	0.00 B	reject	all	*	eth0.2	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_wan_forward (References: 2)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	MINIUPNP	all	*	*	0.0.0.0/0	0.0.0.0/0	-
0	0.00 B	forwarding_wan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for forwarding */
0	0.00 B	zone_lan_dest_ACCEPT	esp	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* @rule[7] */
0	0.00 B	zone_lan_dest_ACCEPT	udp	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 udp dpt:500 /* @rule[8] */
0	0.00 B	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate DNAT /* Accept port forwards */
0	0.00 B	zone_wan_dest_REJECT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Table: NAT

Chain PREROUTING (Policy: ACCEPT, Packets: 669, Traffic: 43.88 KB)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
4408	312.89 KB	prerouting_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for prerouting */
4408	312.89 KB	zone_lan_prerouting	all	br-lan	*	0.0.0.0/0	0.0.0.0/0	ID:66773300
0	0.00 B	zone_wan_prerouting	all	wwan0	*	0.0.0.0/0	0.0.0.0/0	ID:66773300
0	0.00 B	zone_wan_prerouting	all	eth0.2	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain POSTROUTING (Policy: ACCEPT, Packets: 0, Traffic: 0.00 B)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
7932	634.35 KB	postrouting_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for postrouting */
0	0.00 B	zone_lan_postrouting	all	*	br-lan	0.0.0.0/0	0.0.0.0/0	ID:66773300
7932	634.35 KB	zone_wan_postrouting	all	*	wwan0	0.0.0.0/0	0.0.0.0/0	ID:66773300
0	0.00 B	zone_wan_postrouting	all	*	eth0.2	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_lan_postrouting (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	postrouting_lan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for postrouting */

Chain zone_lan_prerouting (References: 1)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
4408	312.89 KB	prerouting_lan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for prerouting */

Chain zone_vpn_postrouting (References: 0)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	postrouting_vpn_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for postrouting */
0	0.00 B	MASQUERADE	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_vpn_prerouting (References: 0)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	prerouting_vpn_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for prerouting */

Chain zone_wan_postrouting (References: 2)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
7932	634.35 KB	MINIUPNP-POSTROUTING	all	*	*	0.0.0.0/0	0.0.0.0/0	-
7932	634.35 KB	postrouting_wan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for postrouting */
7932	634.35 KB	MASQUERADE	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain zone_wan_prerouting (References: 2)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	MINIUPNP	all	*	*	0.0.0.0/0	0.0.0.0/0	-
0	0.00 B	prerouting_wan_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for prerouting */

3-3 Routes 路由

Routes 路由: Status→Routes

顯示依所例規則及 Interface 在這個系統上當前的活動狀態，包括 Lan 端使用者 IP 及 MAC/WAN 及 WAN2 等資訊，是選擇網絡中用於發送網絡流量的路徑的過程。有幾種路由協議可以或多或少地自動發生。為此，我們將使用靜態路由。路由由內核的組件處理，

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.06 0.35 Unsaved Changes: 0 **Administration** Fail-safe

Status System Services Network Logout

Overview Firewall **Routes** System Log Kernel Log Realtime Graphs

No password set!
 There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Routes

The following rules are currently active on this system.

ARP

IPv4-Address	MAC-Address	Interface
192.168.10.181	2c:60:0c:...	br-lan
192.168.10.202	00:12:17:...	br-lan
192.168.10.200	00:12:16:...	br-lan
192.168.100.1	f8:d1:11:...	eth0.2

Active IPv4-Routes

Network	Target	IPv4-Gateway	Metric	Table
wan	0.0.0.0/0	192.168.100.1	0	1
wan2	0.0.0.0/0	10.162.247.137	0	2
wan	0.0.0.0/0	192.168.100.1	10	main
wan2	0.0.0.0/0	10.162.247.137	30	main
wan2	10.162.247.128/28		30	main
wan2	10.162.247.137		30	main
lan	192.168.10.0/24		0	main
wan	192.168.100.0/24		10	main
wan	192.168.100.1		10	main

Active IPv6-Routes

Network	Target	Source	Metric	Table
lan	fd09:81d:c6c::/64		1024	main
(eth0)	ff00::/8		256	local
lan	ff00::/8		256	local
wan	ff00::/8		256	local
wan2	ff00::/8		256	local
lan	ff00::/8		256	local

IPv6 Neighbours

IPv6-Address	MAC-Address	Interface
--------------	-------------	-----------

Powered by LuCI Master (git-17.165.70928-dd6cb31)

3-4 System Log 系統日誌

System Log 系統日誌 : Status → System Log

系統運行日誌記錄

```

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.01 0.05
Administration Fail-safe
Unsaved Changes: 0
System Log
Overview Firewall Routes System Log Kernel Log Realtime Graphs
Tue Sep 11 09:58:44 2018 daemon.err insmod: module is already loaded - xt_comment
Tue Sep 11 09:58:44 2018 daemon.notice csqled[1145]: ip6tables v1.4.21: host/network '192.168.10.1' not found
Tue Sep 11 09:58:44 2018 daemon.notice csqled[1145]: Try 'ip6tables -h' or 'ip6tables --help' for more information.
Tue Sep 11 09:58:45 2018 user.notice root: modem_setup: init_network
Tue Sep 11 09:58:46 2018 kern.info kernel: [ 23.393446] 8021q: adding VLAN 0 to HW filter on device eth0
Tue Sep 11 09:58:46 2018 kern.info kernel: [ 23.472868] device eth0.1 entered promiscuous mode
Tue Sep 11 09:58:46 2018 kern.info kernel: [ 23.482500] device eth0 entered promiscuous mode
Tue Sep 11 09:58:46 2018 kern.info kernel: [ 23.571144] br-lan: port 1(eth0.1) entered forwarding state
Tue Sep 11 09:58:46 2018 kern.info kernel: [ 23.582349] br-lan: port 1(eth0.1) entered forwarding state
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'lan' is enabled
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'lan' is setting up now
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'lan' is now up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'loopback' is enabled
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'loopback' is setting up now
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'loopback' is now up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan' is enabled
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan6' is enabled
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan2' is enabled
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Bridge 'br-lan' link is up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'lan' has link connectivity
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Network device 'eth0' link is up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: VLAN 'eth0.1' link is up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Network device 'lo' link is up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'loopback' has link connectivity
Tue Sep 11 09:58:46 2018 daemon.notice netifd: VLAN 'eth0.2' link is up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan' has link connectivity
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan' is setting up now
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan6' has link connectivity
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan6' is setting up now
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Network device 'wwan0' link is up
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan2' has link connectivity
Tue Sep 11 09:58:46 2018 daemon.notice netifd: Interface 'wan2' is setting up now
Tue Sep 11 09:58:47 2018 user.notice root: [GREMON] lan ( <-> br-lan ) is ifup
Tue Sep 11 09:58:47 2018 daemon.notice netifd: wan (1583): udhcpc (v1.24.1) started
Tue Sep 11 09:58:47 2018 daemon.notice netifd: wan2 (1582): udhcpc (v1.24.1) started
Tue Sep 11 09:58:47 2018 user.notice root: udhcpc script: 1st param=deconfig
Tue Sep 11 09:58:47 2018 user.notice root: udhcpc script: deconfig_interface
Tue Sep 11 09:58:47 2018 daemon.notice netifd: wan2 (1582): Sending discover...
Tue Sep 11 09:58:48 2018 daemon.err insmod: module is already loaded - xt_multiport
Tue Sep 11 09:58:48 2018 user.notice root: udhcpc script: 1st param=deconfig
Tue Sep 11 09:58:48 2018 daemon.err insmod: module is already loaded - xt_comment

```

3-5 Kernel Log 核心日誌

Kernel log 核心日誌 : Status → Kernel Log

核心運行日誌記錄

```

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.17 0.33
Administration Fail-safe
Unsaved Changes: 0
Kernel Log
Overview Firewall Routes System Log Kernel Log Realtime Graphs
No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
Go to password configuration...
Kernel Log
[ 0.000000] Linux version 4.4.6 (root@MT7623Ubuntu14) (gcc version 5.3.0 (OpenWrt GCC
[ 0.000000] Board has DDR2
[ 0.000000] Analog PMU set to hw control
[ 0.000000] Digital PMU set to hw control
[ 0.000000] SoC Type: MediaTek MT7620A ver:2 eco:6
[ 0.000000] bootconsole [early0] enabled
[ 0.000000] CPU0 revision is: 00019650 (MIPS 24KEc)
[ 0.000000] MIPS: machine is MT7620a-3JIoT
[ 0.000000] Determined physical RAM map:
[ 0.000000] memory: 08000000 @ 00000000 (usable)
[ 0.000000] Initrd not found or empty - disabling initrd
[ 0.000000] Zone ranges:
[ 0.000000] Normal [mem 0x0000000000000000-0x0000000007ffffff]
[ 0.000000] Movable zone start for each node
[ 0.000000] Early memory node ranges
[ 0.000000] node 0: [mem 0x0000000000000000-0x0000000007ffffff]
[ 0.000000] Initmem setup node 0 [mem 0x0000000000000000-0x0000000007ffffff]
[ 0.000000] On node 0 totalpages: 32768
[ 0.000000] free_area_init_node: node 0, pgdat 803863b0, node_mem_map 81000000
[ 0.000000] Normal zone: 256 pages used for memmap
[ 0.000000] Normal zone: 0 pages reserved
[ 0.000000] Normal zone: 32768 pages, LIFO batch:7

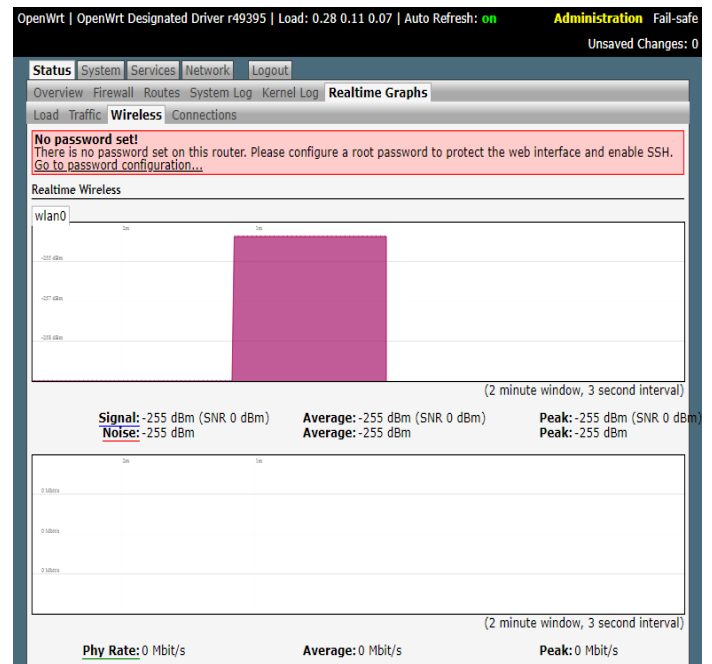
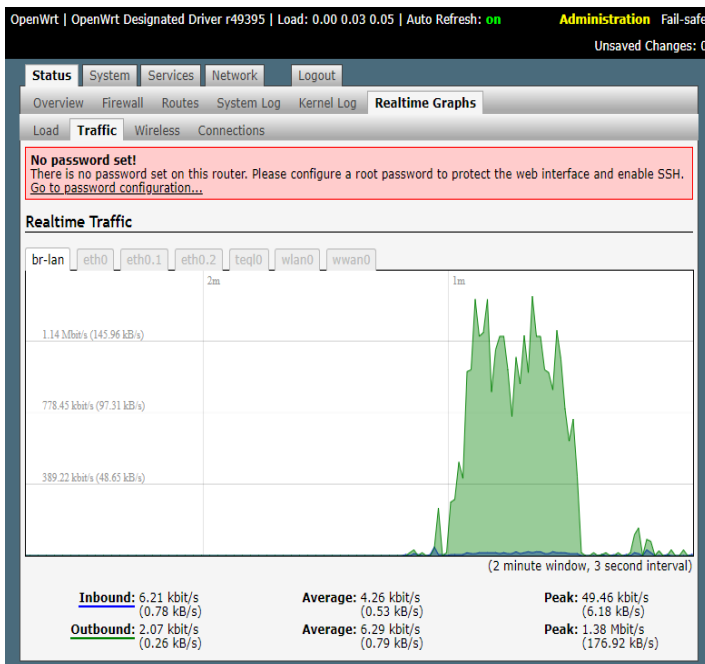
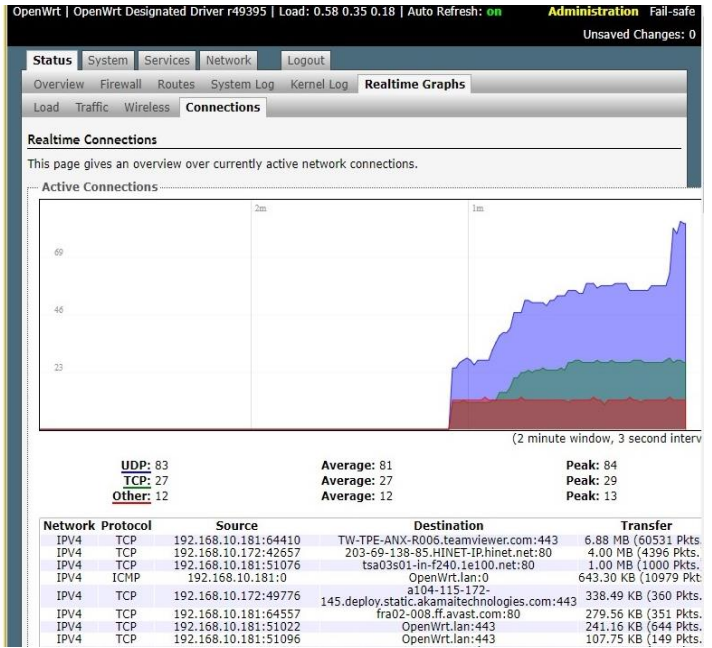
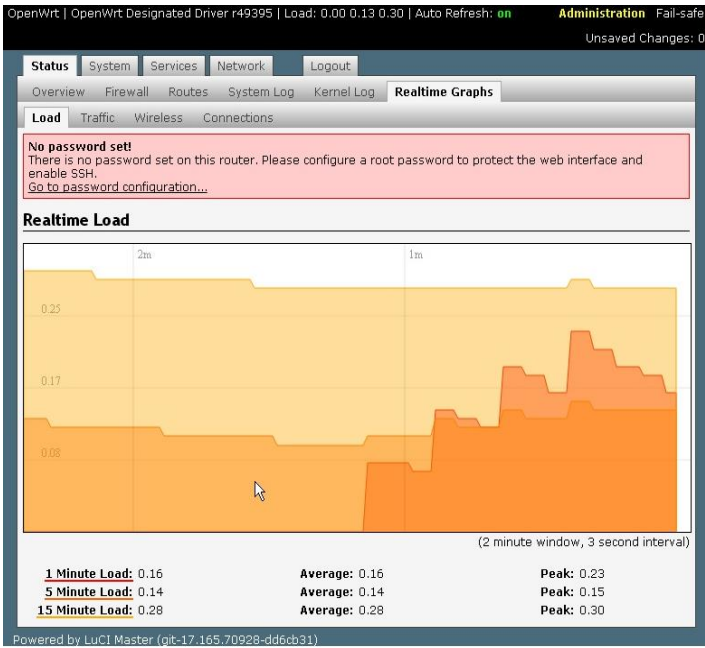
```

3-6 Realtime Graphs 即時圖表

Realtime Graphs 即時圖表 : Status → Realtime Graphs

類似 MRTGK 的即時圖型資訊，包含

Load 即時負載/即時連接 Connections/即時流量 Traffic/即時無線流量 Wireless



4. 系統功能設定

4-1 System 系統

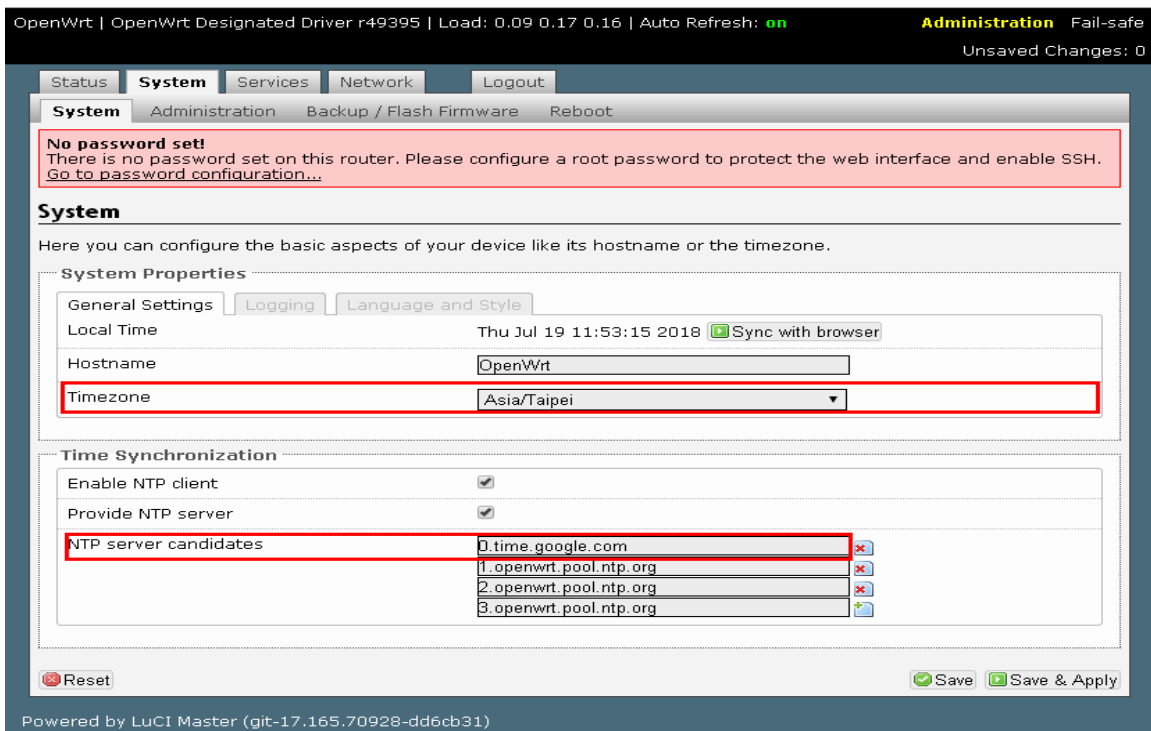
System 系統：System→System

可設定 IWR 路由器的時間/時區，記錄 log 的儲存及語系等設置。

General Settings 基本設置

選擇您所要的 Timezone 時區，如 Asia/Taipei or UTC 與可自定多

個 NTP 網路校時伺服器可設定 time.google.com，設定好後按下 Save & Apply 鍵。



Logging 記錄設置

System log buffer size: 設置記錄檔 buffer 容量大小

External system log server: 記錄檔儲存到遠端伺服器的 IP 位置

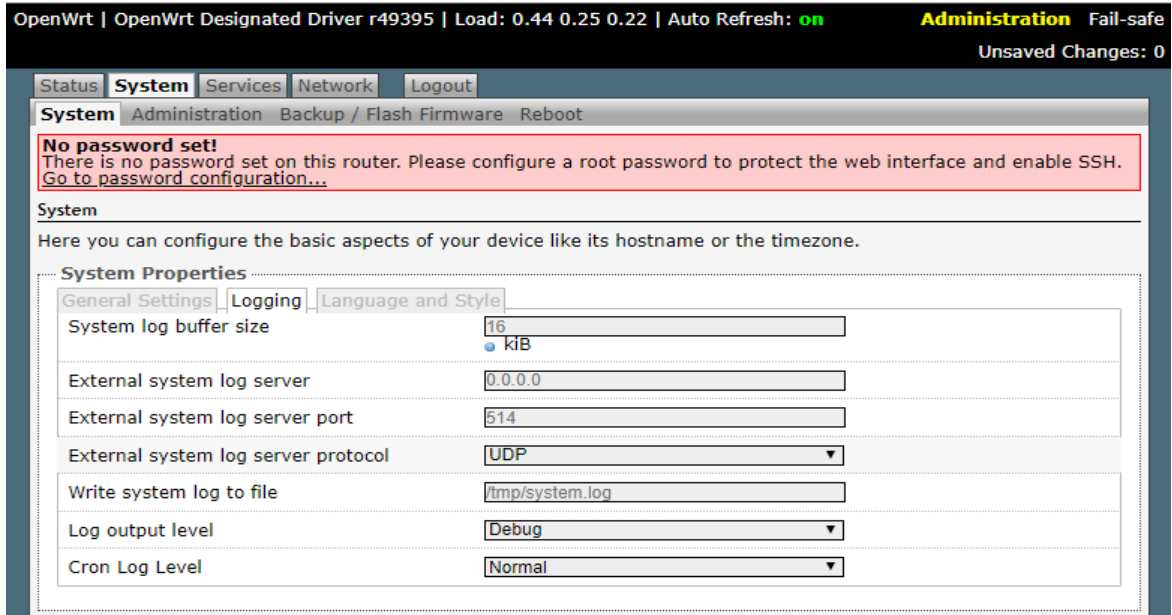
External system log server Port: 記錄檔儲存到遠端伺服器的 Port

External system log server protocol: 記錄檔儲存到遠端伺服器的通訊協定

Write system log to file: 記錄檔儲存成檔案

Log output level: 記錄檔輸出的級別或分類

Cron Log Level:



OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.44 0.25 0.22 | Auto Refresh: **on** **Administration** Fail-safe
Unsaved Changes: 0

Status **System** Services Network Logout

System Administration Backup / Flash Firmware Reboot

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

System

Here you can configure the basic aspects of your device like its hostname or the timezone.

System Properties

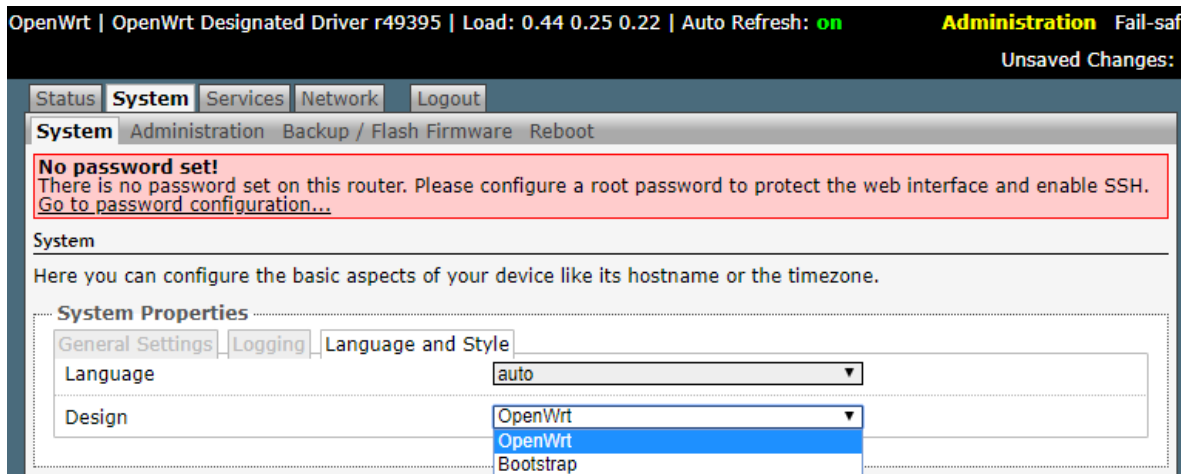
General Settings **Logging** Language and Style

System log buffer size	16 kB
External system log server	0.0.0.0
External system log server port	514
External system log server protocol	UDP
Write system log to file	/tmp/system.log
Log output level	Debug
Cron Log Level	Normal

Language and Style 語言和風格

Language 預設為 Auto

Style 預設為 OpenIWR



OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.44 0.25 0.22 | Auto Refresh: **on** **Administration** Fail-safe
Unsaved Changes: 0

Status **System** Services Network Logout

System Administration Backup / Flash Firmware Reboot

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

System

Here you can configure the basic aspects of your device like its hostname or the timezone.

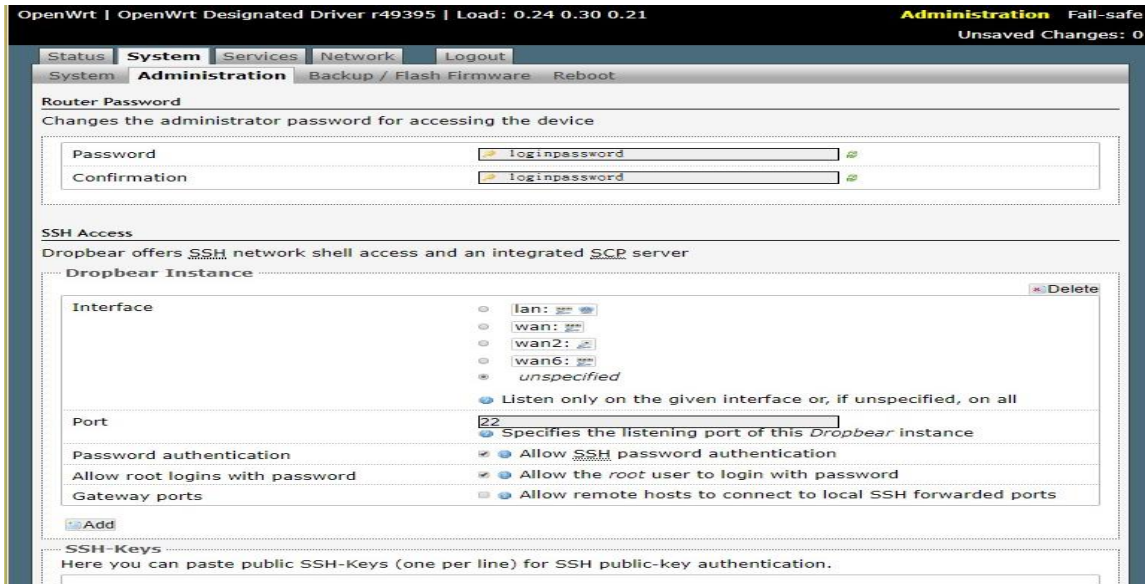
System Properties

General Settings **Logging** Language and Style

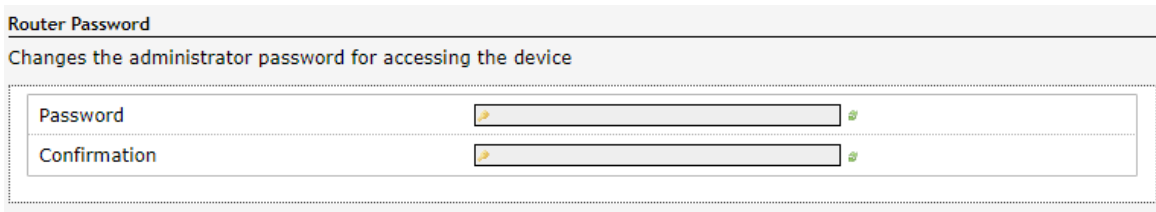
Language	auto
Design	OpenWrt

4-2 Administrator 管理員

Router Password & SSH Access 本地登入密碼 & 遠端登入：System → Administration
可自行變更最高權限 Login 密碼/設定 SSH 遠端登入 Router



更改用於訪問設備的管理員密碼：在 Password 與 Confirmation 欄位內鍵入欲變更的密碼後
再按下 Save & Apply



設定 SSH Access: SSH 遠端登入 Router 提供 Dropbear SSH 網絡 shell 訪問和集成的 SCP 服務器
供遠端登入，類似 Telnet

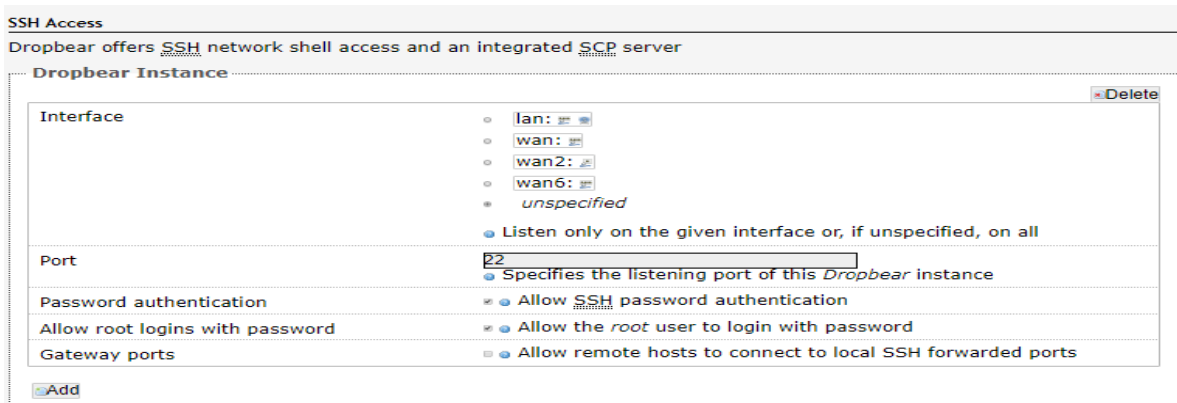
Interface: 告訴 dropbear 只在指定的界面上監聽

Port: 要收聽的端口號

Password authentication: 是否使用密碼進行身份驗證

Allow root logins with password: 是否使用 root 密碼驗證

Gateway ports: 是否允許遠程主機連接到本地 SSH 轉發端口



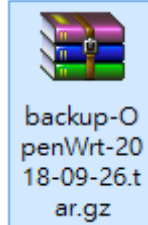
提供 SSH 網絡 shell 訪問和集成的 SCP 服務器供遠端登入，類似 Telnet

4-3 Backup / Flash firmware 備份還原設定值/更新韌體

Backup /Restore 備份及還原: System→Backup / Flash Firmware→Actions

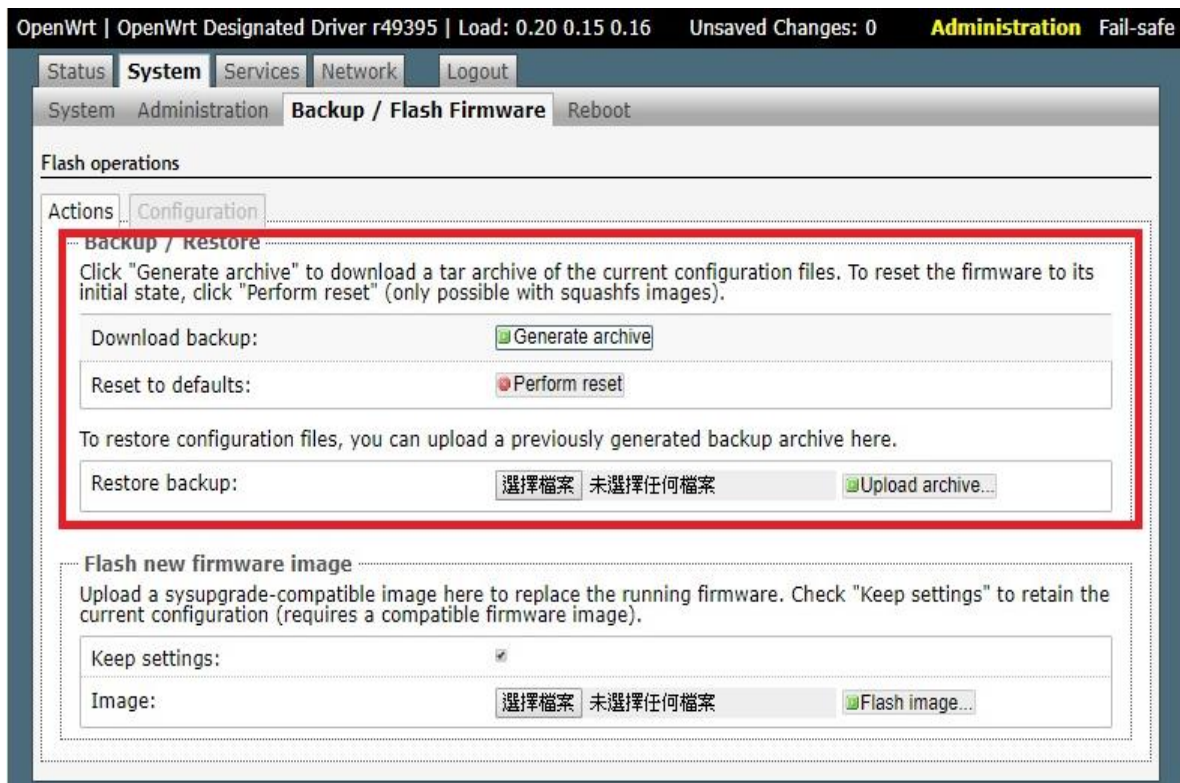
此功能為(1)備份 Router 系統設定值 (Download backup) :

按下” Generate archive” 即將現所有設定值成一壓縮檔，如下圖。



(2)載入 Router 系統 設定值(Restore backup)：選擇檔案位置後按” Upload archive”

(3)還原出廠預設值(Reset to defaults)：按下” Perform reset” 過程中勿中斷電源



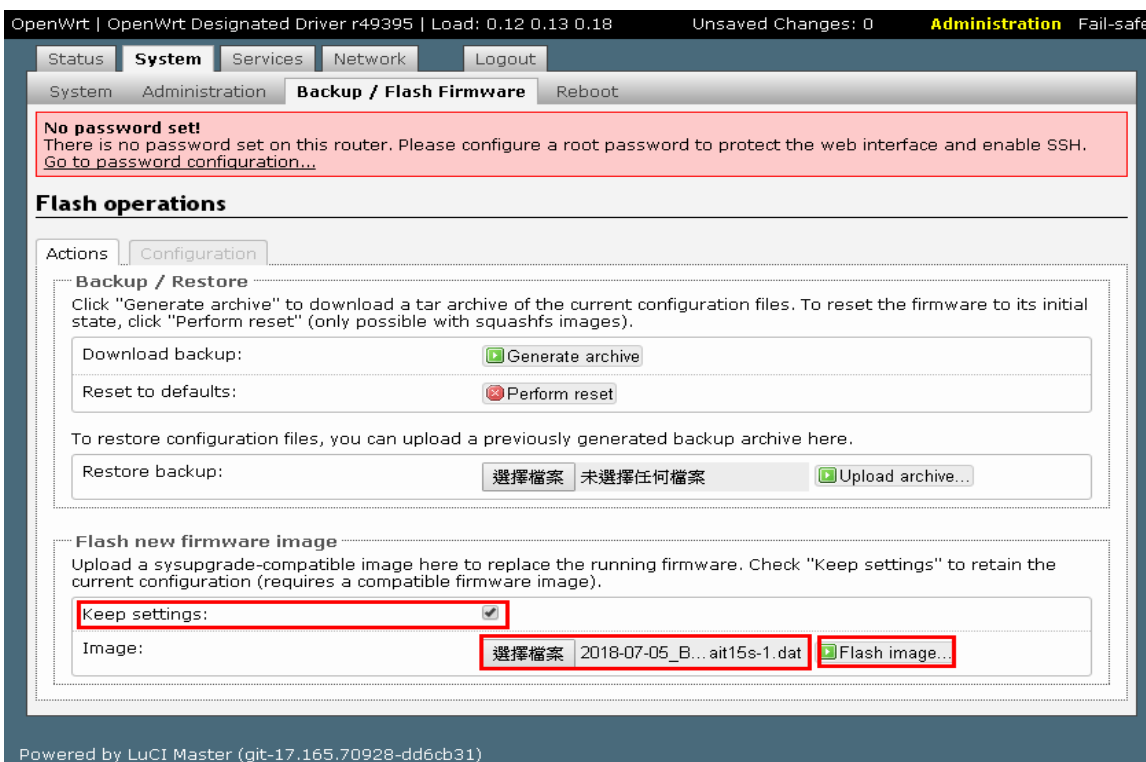
(4) Flash new firmware image 韌體更新

System→Backup / Flash Firmware→Flash new firmware image

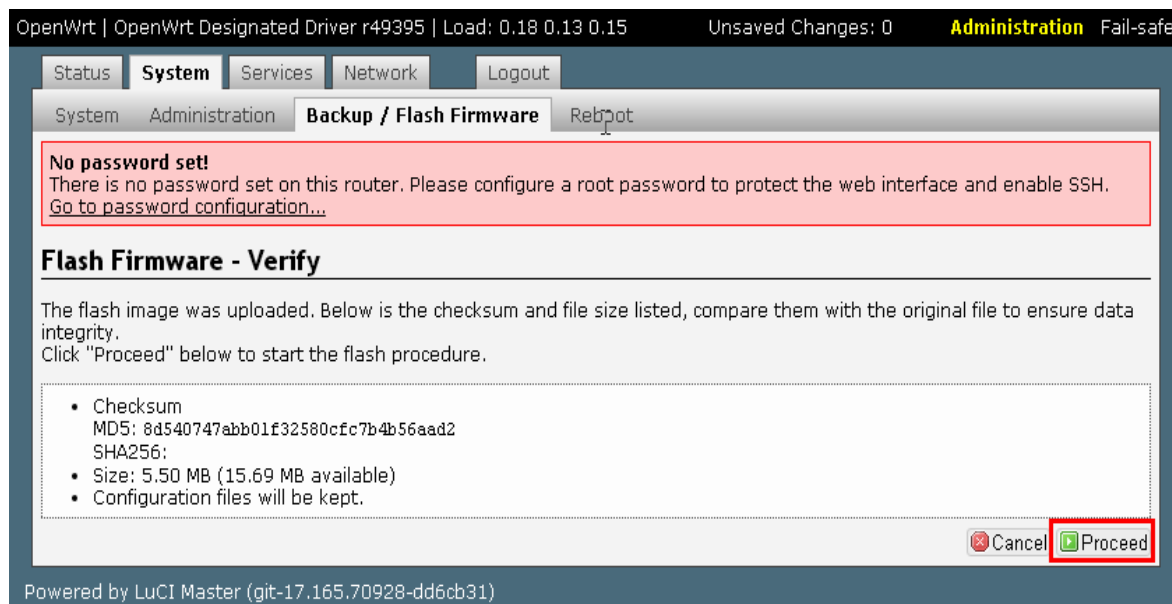
選擇更新韌體檔案(路徑)以進行更新流程，如果要保留當前主要設定值，請在 Keep settings 打勾。點擊 Flash image...，待出現提示畫面後，點擊 Proceed 開始更新流程並等待系統重啟。強烈建議更新韌體後請再次執行"1.7 重啟為出廠預設值"的動作並進行相關設定值的設定。

【注意：更新韌體到重新進入系統前，請勿關閉電源】

4.3.1 載入韌體檔案並上傳到系統



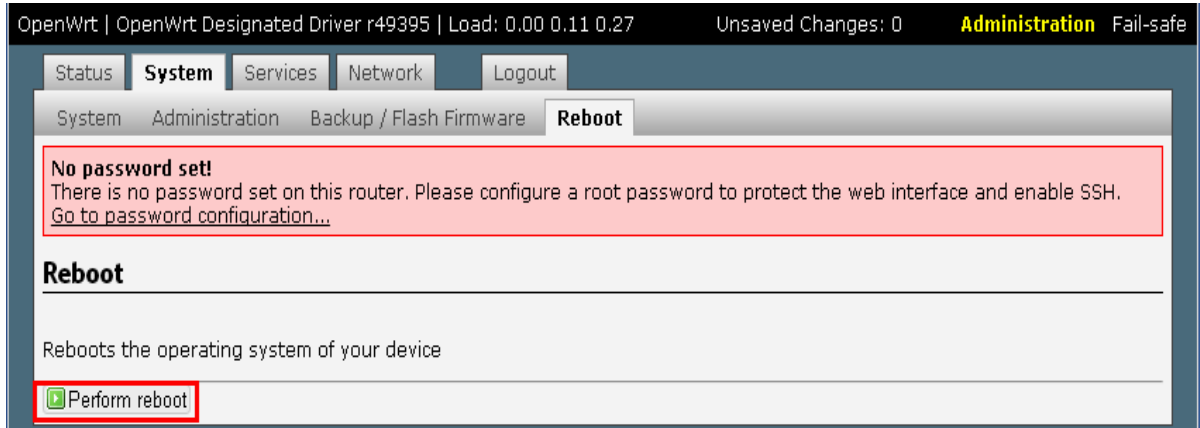
4.3.2 Flash 更新檔已上傳，下圖列出了校驗和和文件大小，請單擊下面的“繼續”以啟動更新。



4-4 Reboot 重啟

Reboot 重新啟動：System→Reboot

重新啟動設備的操作系統



5. 服務功能設定

Services 服務：Services

包含 GPS GW / Beacon GW / uHTTPd / Serial GW 等功能。

5-1 GPS GW 全球定位功能

Services→GPS GW

1. Start GPS GateWay service:

是否啟用，如果需要此功能，請將 Start GPS GateWay service 選項打勾。

GPS Report interval(3 ~ 65535 seconds)：GPS 間隔紀錄依個人需要設定。

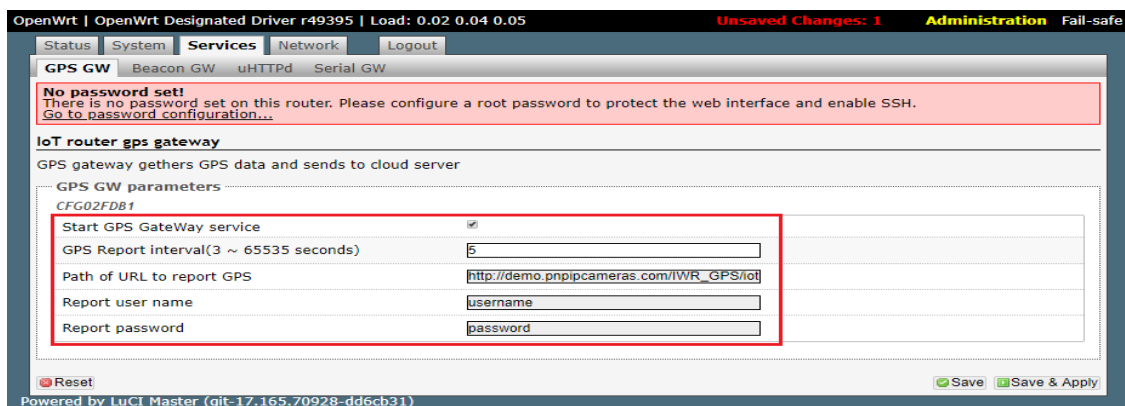
Path of URL to report GPS:

紀錄網址路徑 http://demo.pnpipcmeras.com/IWR_GPS/iotcurlgps.php

Report user name & password:

設定個人的 Report user name 與 Report user password(目前不需要設定)。

設定好 GPS 相關設定後套用，按下 Save & Apply 鍵



2 檢視 GPS 路徑報告

2.1 打開 GPS 路徑紀錄網址 http://demo.pnpipcameras.com.tw/IWR_GPS/

GPS

Searcher

Get Total Rows : 8

MAC	IMEI	Date Time (DDMMYY HHMMSS)	GPS address	Map link
00:09:b5:00:00:00	861107031320121	200718 040633	2504.134719,N, 12137.344393,E	Click Map
00:09:b5:00:00:00	861107035028035	220818 074546	2504.123576,N, 12137.328417,E	Click Map
00:09:b5:00:00:00	861107036162627	170918 034349	2503.583186,N, 12132.661951,E	Click Map
00:09:b5:00:00:00	861107037130920	240818 103439	2504.154933,N, 12137.354538,E	Click Map
00:09:b5:00:00:00	863424030864548	180718 015810	2503.586610,N, 12132.648894,E	Click Map
00:09:b5:00:00:00	863424030864803	160718 084200	2503.581382,N, 12132.677074,E	Click Map
00:09:b5:00:00:00	863424030866329	310718 033527	2504.132246,N, 12137.347423,E	Click Map
00:09:b5:00:00:00	866758040407070	170918 013307	2504.139912,N, 12137.356030,E	Click Map

2.2 根據您 IWR 路由器外殼上的貼紙資訊(4G 模組的 IMEI 號碼或 Mac Address) 來點擊 [Click Map](#) 檢視您所需要的 GPS 路徑圖。注意：時間可能因為是 <https://192.168.10.1/cgi-bin/luci/admin/system> 設定在 UTC 而有所不同。

The screenshot shows a Google Maps interface on a browser. The address bar contains the URL: https://www.google.com.tw/maps/place/25°04'08.1\". The map displays a residential area in Taipei, Taiwan, with various landmarks and streets labeled in Chinese. A blue location pin is placed on the map, corresponding to the coordinates 25°04'08.1\"/>

At the bottom of the browser window, there is a taskbar showing a file named 'backup-Open...tar.gz' and a '全部顯示' (Show All) button.

5-2 Beacon GW 設定(選配)

Services → Beacon GW

為雲端 MQTT 伺服器啟動接收 Beacon 數據之服務

如果需要此功能，請將 Start Beacon GateWay service 選項打勾後按下 Save & Apply 鍵。

Beacon MQTT Server URL：雲端 MQTT 伺服器位置為 61.56.193.66.

MQTT Server port：雲端 MQTT 伺服器連接埠為 1883

MQTT user name：使用者

MQTT password：密碼

MQTT topic for beacon：伺服器主題

MQTT topic for heart beat：MQTT 在線訊號

MQTT client：伺服器角色

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.01 0.09 | Unsaved Changes: 0 | Administration | Fail-safe

Status System **Services** Network Logout

GPS GW **Beacon GW** uHTTPd Serial GW

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

IoT router beacon gateway

Beacon gateway gets beacon data and sends to cloud server

Beacon GW parameters

CFG021449

Start Beacon GateWay service	<input checked="" type="checkbox"/>
Accepted beacon UUID 1	A1234567-890B-1234-5678-90C123456789
Accepted beacon UUID 2	22345678-90ab-cdef-1234-567890abcdef
Accepted beacon UUID 3	32345678-90ab-cdef-1234-567890abcdef
Accepted beacon UUID 4	42345678-90ab-cdef-1234-567890abcdef
Accepted beacon UUID 5	52345678-90ab-cdef-1234-567890abcdef
Accepted beacon UUID 6	62345678-90ab-cdef-1234-567890abcdef
Accepted beacon UUID 7	72345678-90ab-cdef-1234-567890abcdef
Accepted beacon UUID 8	82345678-90ab-cdef-1234-567890abcdef
Heart beat Report interval(10 ~ 65535 seconds)	60
Beacon Report interval(10 ~ 180 seconds)	30
Beacon MQTT Server URL	61.56.193.66
MQTT Server port	1883
MQTT user name	username
MQTT password	password
MQTT topic for beacon	Beacon
MQTT topic for heart beat	Heartbeat
MQTT client	clientid

Reset Save Save & Apply

Powered by LuCI Master (git-17.165.70928-dd6cb31)

5-3 uHTTPd 服務器

Services → uHTTPd

A lightweight single-threaded HTTP(S) server, uHTTPd 是 OpenIWR 的標準 HTTP 服務器，但本處目前僅開放做 HTTPS 轉址 HTTP 使用。

General Settings

HTTP listeners : 設定 HTTP 監聽位址及埠，指定要偵聽純 HTTP 訪問的端口和地址。如果僅給出端口號，則服務器將嘗試同時提供 IPv4 和 IPv6 請求。用於 0.0.0.0:80 僅在 IPv4 接口上綁定端口 80 或 [::]:80 僅用於 IPv6。要在多個接口上運行，指定每個接口，您可以列出每行一個接口（或接口：端口）

HTTPS listener : 指定要偵聽加密 HTTPS 訪問的監聽位址及埠，格式同 HTTP

Redirect all HTTP to HTTPS : 設定將所有 HTTP 重定向到 HTTPS

Ignore private IPs on public interface : 忽略在公用界面上的私有 IPs

HTTPS Certificate : 用於提供 HTTPS 連接的 ASN.1 / DER 證書的文件路徑

HTTPS Private Key : 用於提供 HTTPS 連接的 ASN.1 / DER 私鑰的文件路徑

Remove old certificate and key : 刪除舊的 DER 證書和 DER 私鑰

Remove configuration for certificate and key : 刪除 DER 證書和 DER 私鑰的配置

uHTTPd	
A lightweight single-threaded HTTP(S) server	
MAIN Delete	
General Settings Full Web Server Settings Advanced Settings	
HTTP listeners (address:port)	0.0.0.0:80 :::80 ● Bind to specific interface:port (by specifying interface address)
HTTPS listener (address:port)	0.0.0.0:443 :::443 ● Bind to specific interface:port (by specifying interface address)
Redirect all HTTP to HTTPS	<input checked="" type="checkbox"/>
Ignore private IPs on public interface	<input type="checkbox"/> Prevent access from private (RFC1918) IPs on an interface if it has a public IP address
HTTPS Certificate (DER Encoded)	Uploaded File (862.00 B) 選擇檔案 未選擇任何檔案 /etc/uhttpd.crt
HTTPS Private Key (DER Encoded)	Uploaded File (1.16 KB) 選擇檔案 未選擇任何檔案 /etc/uhttpd.key
Remove old certificate and key	<input type="checkbox"/> Remove old certificate and key ● uHTTPd will generate a new self-signed certificate using the configuration shown below.
Remove configuration for certificate and key	<input type="checkbox"/> Remove configuration for certificate and key ● This permanently deletes the cert, key, and configuration to use same.

uHTTPd Self-signed Certificate Parameters : uHTTPd 自簽名證書參數

uHTTPd Self-signed Certificate Parameters	
Valid for # of Days	730
Length of key in bits	2048
Server Hostname	OpenWrt ● a.k.a CommonName
Country	ZZ
State	Somewhere
Location	Unknown

5-4 Serial GW 序列閘道

Services → Serial GW 物聯網路由器 serial gateway

Serial GateWay 通過 TCP 連接 RS232 設備並將數據發送到雲服務器

Start Serial GateWay service : 勾選啟用此服務

TCP port number(1024 ~ 65535) which SerGW : 設定連接雲端伺服器的連接 Port 號

IP address which SerGW connects with by TCP : 設定連接雲端伺服器的 IP 位置

Duplex : 工作模式採 全雙工 or 半雙工

Baud : 設定 RS232 baud rate

data_bits : 設定 RS232 data bits

parity : RS232 Parity selection

stop_bits : RS232 number of stop bits

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.06 0.11 Unsaved Changes: 0 Administration Fail-safe

Status System **Services** Network Logout

GPS GW Beacon GW uHTTPd **Serial GW**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

IoT router serial gateway

Serial gateway connects RS232 device and sends data to cloud server by TCP

Serial GW parameters

CFG02E751

Start Serial GateWay service	<input type="checkbox"/>
TCP port number(1024 ~ 65535) which SerGW connects with	<input type="text" value="12345"/>
IP address which SerGW connects with by TCP	<input type="text" value="123.234.123.234"/>
duplex	<input type="text" value="half"/> <small>Send to remote only / Send and Receive</small>
baud	<input type="text" value="115200"/> <small>RS232 baud rate</small>
data_bits	<input type="text" value="8"/> <small>RS232 number of data bits</small>
parity	<input type="text" value="None"/> <small>RS232 Parity selection</small>
stop_bits	<input type="text" value="1"/> <small>RS232 number of stop bits</small>

6.網路功能設定

6-1 Interface Overview 介面狀態

Interface Overview 各網路介面狀態：Network → Interface

此處可查閱及設定各網路介面狀態

The screenshot shows the OpenWrt web interface for network management. The 'Network' tab is active, and the 'Interface Overview' section displays a table of network interfaces:

Network	Status	Actions
LAN br-lan	Uptime: 2h 23m 18s MAC-Address: 00:09:B5:..... RX: 12.59 MB (107507 Pkts.) TX: 57.21 MB (121638 Pkts.) IPv4: 192.168.10.1/24 IPv6: fdf9:17aa:a712::1/60	Connect Stop Edit Delete
WAN eth0.2	Uptime: 2h 18m 46s MAC-Address: 00:09:B5:..... RX: 220.63 MB (306318 Pkts.) TX: 807.65 KB (8653 Pkts.) IPv4: 192.168.100.121/24	Connect Stop Edit Delete
WAN2 wwan0	Uptime: 2h 23m 2s MAC-Address: F6:2B:79:..... RX: 44.00 MB (96024 Pkts.) TX: 10.35 MB (83162 Pkts.) IPv4: 10.228.103.216/28	Connect Stop Edit Delete
WAN6 eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09:B5:..... RX: 220.63 MB (306318 Pkts.) TX: 807.65 KB (8653 Pkts.)	Connect Stop Edit Delete

Below the table, the 'Global network options' section shows the IPv6 ULA-Prefix set to fdf9:17aa:a712::/48.

包含 WAN(IPV4)/WAN6(IPV6)/WAN2(4G)/LAN 的各細項設定，下列以 WAN 做說明。

WAN(IPV4) → General setup :

可設定 WAN IP 取得的方式：靜態 IP/DHCP/PPPoE

靜態 IP 設定：設定 IP Address / netmask / Gateway / DNS

The screenshot shows the 'General Setup' configuration page for the WAN interface (eth0.2). The interface is configured with a static IPv4 address. The configuration details are as follows:

Status	Uptime: 8h 24m 25s MAC-Address: 00:09:B5:00:00:65 eth0.2 RX: 1.54 GB (1618785 Pkts.) TX: 13.22 MB (183346 Pkts.) IPv4: 192.168.100.121/24
Protocol	Static address
IPv4 address	62.56.193.75
IPv4 netmask	255.255.255.192
IPv4 gateway	62.56.193.65
IPv4 broadcast	
Use custom DNS servers	168.95.1.1
IPv6 assignment length	disabled Assign a part of given length of every public IPv6-prefix to this interface
IPv6 address	
IPv6 gateway	
IPv6 routed prefix	Public prefix routed to this device for distribution to clients.
IPv6 suffix	1 Optional. Allowed values: 'eui64', 'random', fixed value like '::1' or '::1:2'. When IPv6 prefix (like 'a:b:c:d::') is received from a delegating server, use the suffix (like '::1') to form the IPv6 address ('a:b:c:d::1') for the interface.

DHCP 設定：自動取得 IP

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.01 0.03 0.05 | Auto Refresh: **on** **Administration** Fail-safe
Unsaved Changes: 0

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS
Load Balancing

WAN WAN6 WAN2 LAN

Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** Physical Settings Firewall Settings

Status

eth0.2 **Uptime:** 2h 23m 47s
MAC-Address: 00:09:B5:00:00:65
RX: 228.40 MB (317213 Pkts.)
TX: 833.69 KB (8922 Pkts.)
IPv4: 192.168.100.121/24

Protocol

Hostname to send when requesting DHCP

[Back to Overview](#) [Reset](#) [Save](#) [Save & Apply](#)

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PPPoE 設定：使用您 ISP 所提供之帳號及密碼撥接

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.03 0.05 | Auto Refresh: **on** **Unsaved Changes: 5** **Administration** Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing

WAN WAN6 WAN2 LAN

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** Physical Settings Firewall Settings

Status

pppoe-wan **RX:** 0 B (0 Pkts.)
TX: 0 B (0 Pkts.)

Protocol

PAP/CHAP username

PAP/CHAP password

Access Concentrator
[Leave empty to autodetect](#)

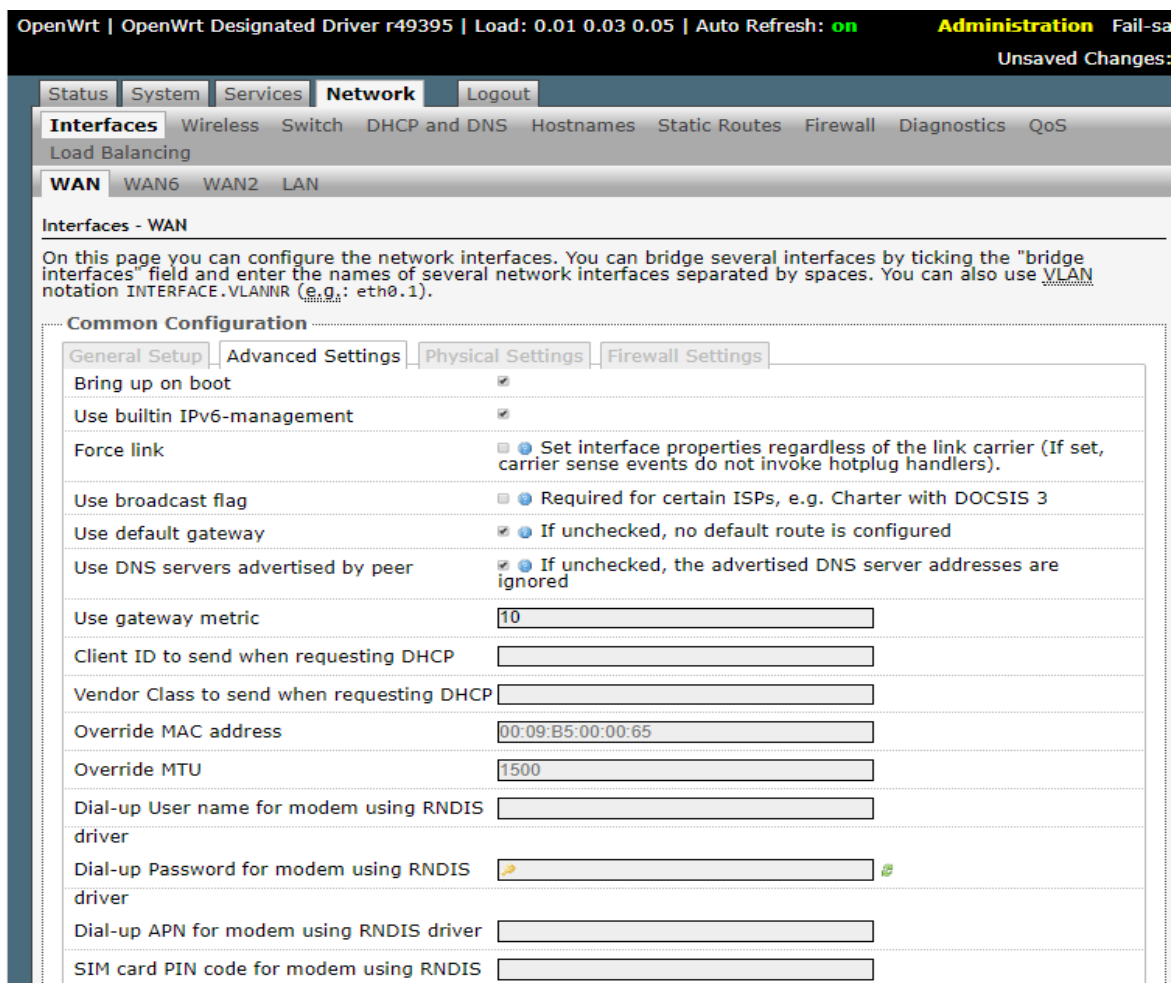
Service Name
[Leave empty to autodetect](#)

[Back to Overview](#) [Reset](#) [Save](#) [Save & Apply](#)

Powered by LuCI Master (git-17.165.70928-dd6cb31)

PPPoE Advanced Settings：此項內之設定請保留原廠預設值

WAN(IPV4)→Advanced Settings : WAN 的進階設定，包含 Bring up on boot/ Use builtin IPv6-management/ Use default gateway/MAC address...
此進階設定內之設定值請保留原廠初始值



OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.01 0.03 0.05 | Auto Refresh: **on** Administration Fail-safe
Unsaved Changes:

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing

WAN WAN6 WAN2 LAN

Interfaces - WAN

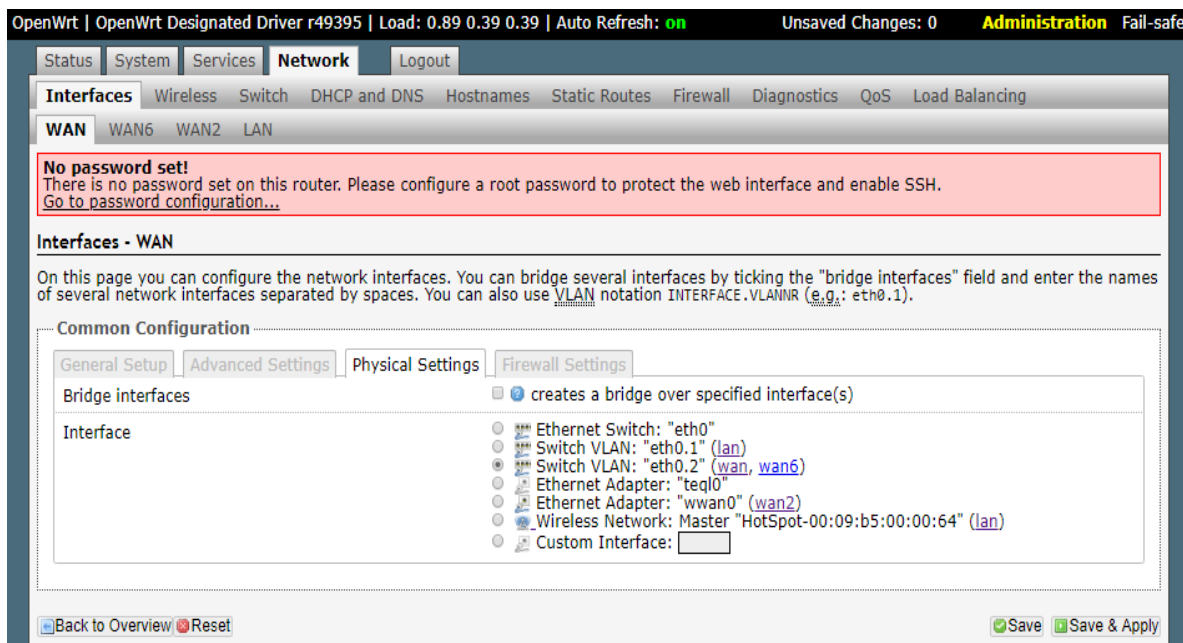
On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** Physical Settings Firewall Settings

Bring up on boot	<input checked="" type="checkbox"/>
Use builtin IPv6-management	<input checked="" type="checkbox"/>
Force link	<input type="checkbox"/> Set interface properties regardless of the link carrier (If set, carrier sense events do not invoke hotplug handlers).
Use broadcast flag	<input type="checkbox"/> Required for certain ISPs, e.g. Charter with DOCSIS 3
Use default gateway	<input checked="" type="checkbox"/> If unchecked, no default route is configured
Use DNS servers advertised by peer	<input checked="" type="checkbox"/> If unchecked, the advertised DNS server addresses are ignored
Use gateway metric	<input type="text" value="10"/>
Client ID to send when requesting DHCP	<input type="text"/>
Vendor Class to send when requesting DHCP	<input type="text"/>
Override MAC address	<input type="text" value="00:09:B5:00:00:65"/>
Override MTU	<input type="text" value="1500"/>
Dial-up User name for modem using RNDIS driver	<input type="text"/>
Dial-up Password for modem using RNDIS driver	<input type="password"/>
Dial-up APN for modem using RNDIS driver	<input type="text"/>
SIM card PIN code for modem using RNDIS	<input type="text"/>

WAN(IPV4)→Physical Settings : creates a bridge over specified interface



OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.89 0.39 0.39 | Auto Refresh: **on** Unsaved Changes: 0 Administration Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing

WAN WAN6 WAN2 LAN

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** **Physical Settings** Firewall Settings

Bridge interfaces creates a bridge over specified interface(s)

Interface

- Ethernet Switch: "eth0"
- Switch VLAN: "eth0.1" ([lan](#))
- Switch VLAN: "eth0.2" ([wan](#), [wan6](#))
- Ethernet Adapter: "teql0"
- Ethernet Adapter: "wwan0" ([wan2](#))
- Wireless Network: Master "HotSpot-00:09:b5:00:00:64" ([lan](#))
- Custom Interface:

[Back to Overview](#) [Reset](#) Save Save & Apply

WAN(IPV4)→Firewall Settings : Create / Assign firewall-zone

The screenshot shows the OpenWrt Firewall Settings page for the WAN interface. The page is titled "Interfaces - WAN" and includes a "Common Configuration" section with tabs for "General Setup", "Advanced Settings", "Physical Settings", and "Firewall Settings". The "Firewall Settings" tab is active, showing options to "Create / Assign firewall-zone". The available zones are:

- lan: lan: (selected)
- vpn: (empty)
- wan: wan: wan6: wan2: (highlighted in red)
- unspecified -or- create: (input field)

 A help message below the zones states: "Choose the firewall zone you want to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the create field to define a new zone and attach the interface to it." At the bottom, there are buttons for "Back to Overview", "Reset", "Save", and "Save & Apply".

6-2 Wireless 無線設置

Wireless 無線設定 : Network→Wireless

The screenshot shows the OpenWrt Wireless Overview page. The page is titled "Wireless Overview" and displays information for the radio0 interface. A red box highlights the "Edit" button in the "Associated Stations" section. The "Associated Stations" section is currently empty, showing a table with columns for SSID, MAC-Address, Host, Signal / Noise, and RX Rate / TX Rate. The table contains the text "No information available".

SSID	MAC-Address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

預設 SSID 為 HotSpot-00:09:b5:00:00:64(MAC 則會依各主機號略有不同)

預設 WiFi 密碼是關閉的

Device Configuration

General setup : Network→Wireless→Edit

基本設定中 Status 為顯示目前各項設定值的狀態

Wireless network is enabled 開啟或關閉無線網路

Operating frequency 調整模式 Mode 及頻道 Channel、頻寬 Width 等

Transmit Power 調整發射功率

ESSID/MODE 變更 SSID / 連線模式

Advanced Settings : Network→Wireless→edit→ Advanced Settings

Country Code : 指定國家/地區代碼，影響可用的通道和傳輸功率，802.11 工作組劃分了 4 個獨立的頻段：2.4 GHz、3.6 GHz、4.9 GHz 和 5.8 GHz^[1]，每個頻段又劃分為若干頻道，每個國家自己制定了政策訂出如何使用這些頻段，例如最大的發射功率和配製方式等。

Distance Optimization : 距離优化指 ap 與最遠客戶間距離，以米為單位

Fragmentation Threshold : 分段閾值

RTS/CTS Threshold :

RTS /CTS 功用同跟一般有線網路的 CSMA/CA 載波偵測

假設有二個 wireless client 同時跟一個基地台做資料傳輸. 二個 wireless client 之間又有距離無法知道對方也在搶著講話, 這時會產生碰撞狀況. 所以基地台和 wireless client 可以設定多少大小 frame , 才使用 rts/cts 功能, rts/cts 如非必要 不要用會影響到效能 . 因為 wlan frame 最大 2304+8 wep byte=2312 所以訂 2312 -到 2346 等於是 "不啟用 " RTS/ CTS , 使用時機是能 (1) 當 wireless client 端很散亂分布 (2) rf 頻譜干擾嚴重時

The screenshot shows the 'Advanced Settings' tab in the 'Device Configuration' window. It contains four rows of settings:

- Country Code:** A dropdown menu showing '00 - World' and a sub-note 'Use ISO/IEC 3166 alpha2 country codes.'
- Distance Optimization:** An empty input field with a sub-note 'Distance to farthest network member in meters.'
- Fragmentation Threshold:** An empty input field.
- RTS/CTS Threshold:** An empty input field.

Interface Configuration

General setup : Network→Wireless→edit→ Interface Configuration

ESSID : 修改 WiFi 名稱

Mode : 設置無線模式，包含橋接器 Access Point、APClient 模式、Ad-Hoc、802.11S、WDS...等

Network : 選擇要附加到此無線接口的網絡，或填寫“新建”以定義新網絡

Hide ESSID：啟用隱藏 ESSID

啟用了隱藏 SSID 選項，所以無線用戶端無法掃描到其 SSID。

1. 請點選變更進階設定，進入無線網路內容

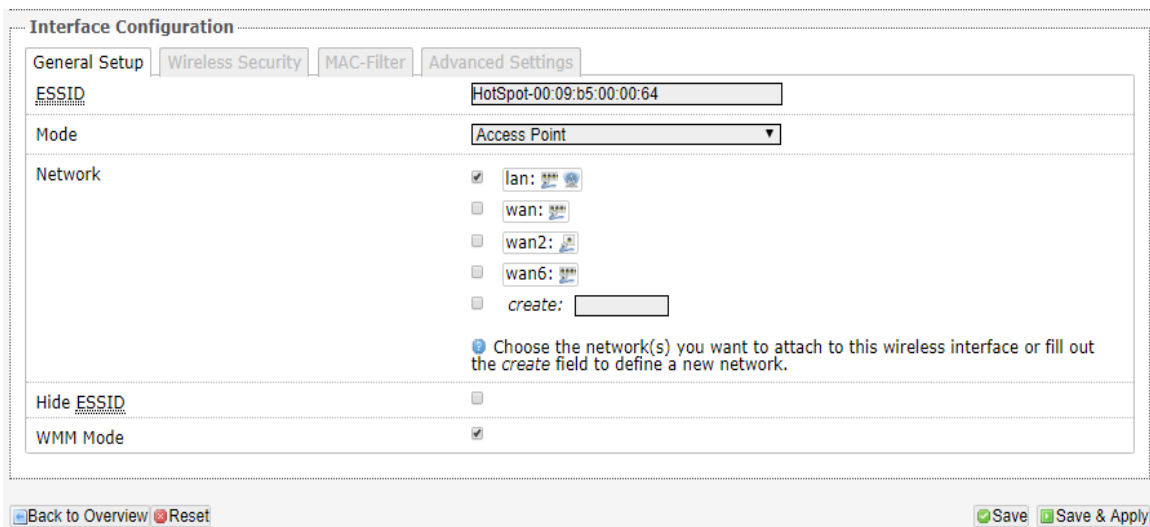


2. 點選新增，設定無線網路

3. 手動輸入網路名稱（SSID）並將資料加密停用

4. 由網路連線-> 無線網路-> 內容可發現無線網路連線已成功

WMM Mode：啟用 Wi-Fi 多媒體（WMM），是基於 IEEE 802.11e 標準的 Wi-Fi 聯盟互操作性認證，它為 IEEE 802.11 網絡提供基本的 QoS 功能，用於 RF 媒體之間的無線 QoS

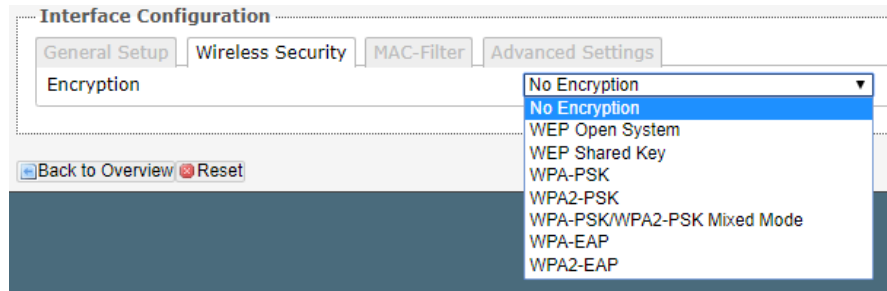


Wireless Security：Network→Wireless→edit→Interface Configuration

設定 WiFi 密碼，選擇 Wireless Security 進行相關加密設定，設定完後請按 Save & Apply。

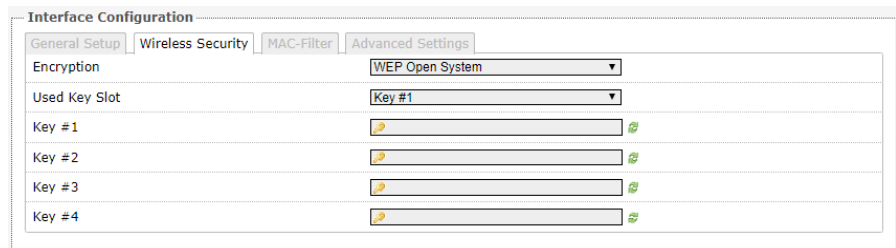
Encryption：設定無線加密方式

在無線安全方面，密碼只是成功的一半。選擇適當的加密級別同樣重要，正確的選擇將決定您的無線局域網是否是稻草屋或堡壘，大多數無線接入點都能夠選擇三種無線加密標準：有線等效保密（WEP），Wi-Fi 保護訪問（WPA）或 WPA2



No Encryption：不加密，為系統預設值

WEP：WEP 為有線等效加密 (Wired Equivalent Privacy)，又稱無線加密協議 (Wireless Encryption Protocol)，屬於為早期採用的加密技術，易破解不太建議使用，可設最少四組



WPA：WPA 具有適用於企業用戶和個人用途的離散模式，企業模式 WPA-EAP 使用更嚴格的 802.1x 身份驗證和可擴展身份驗證協議 (EAP)。個人模式 WPA-PSK 使用預共享密鑰，以便在消費者和小型辦公室之間實現更簡單的實施和管理。企業模式需要使用身份驗證服務器，WPA 包括：

WPA-PSK: WPA 預共享金鑰個人模式

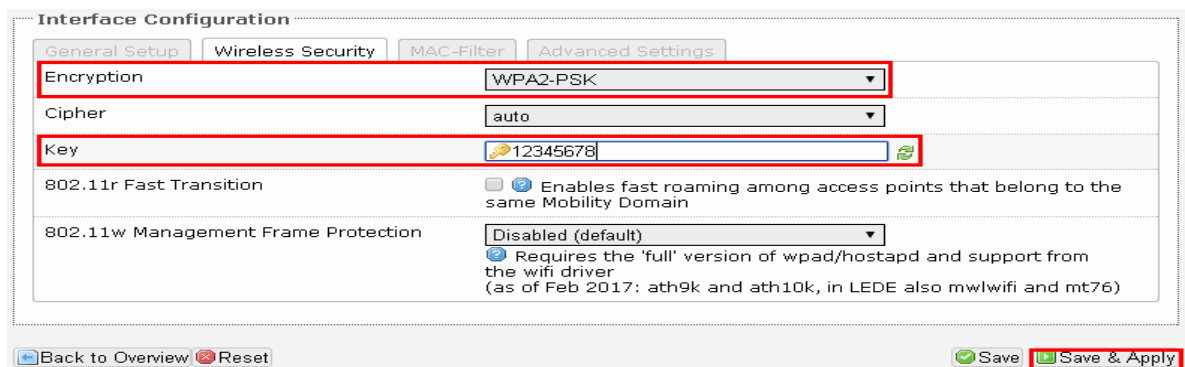
WPA2-PSK: WPA2 預共享金鑰個人模式

WPA-PSK / WPA2-PSK Mixed Mode: WPA2 / WPA 混合模式中可以与 WPA (TKIP) 和 WPA2 (AES) 客戶端連接

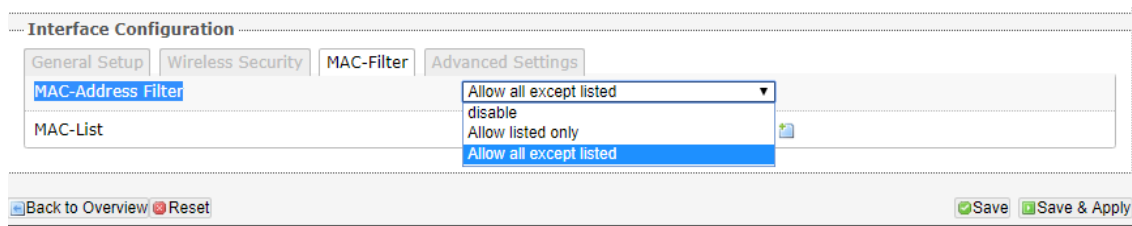
WPA-EAP: WPA 預共享金鑰企業模式

WPA2-EAP: WPA2 預共享金鑰企業模式

Cipher：設定無線加密技術，WPA 加密分為 2 種安全加密技術，分別為 TKIP 與 AES，這也是目前無線路由器所會看到的 2 種選擇方案。其中 AES 比 TKIP 採用更高級的加密技術，而如果採用 TKIP 的話，網路的傳輸速度就會被限制在 54 Mbps 以下



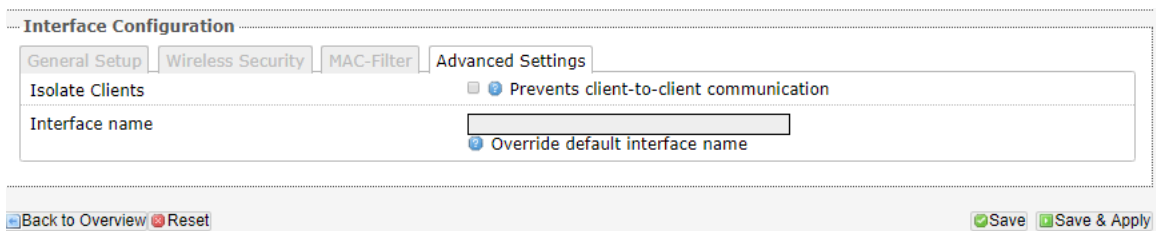
MAC-Address Filter：MAC-Address 過濾器，設定項有關閉/同意列出的 MAC 通過/除列出的 MAC 外全都同意



Advanced Settings：Network→Wireless→edit→Interface Configuration→Advanced Settings

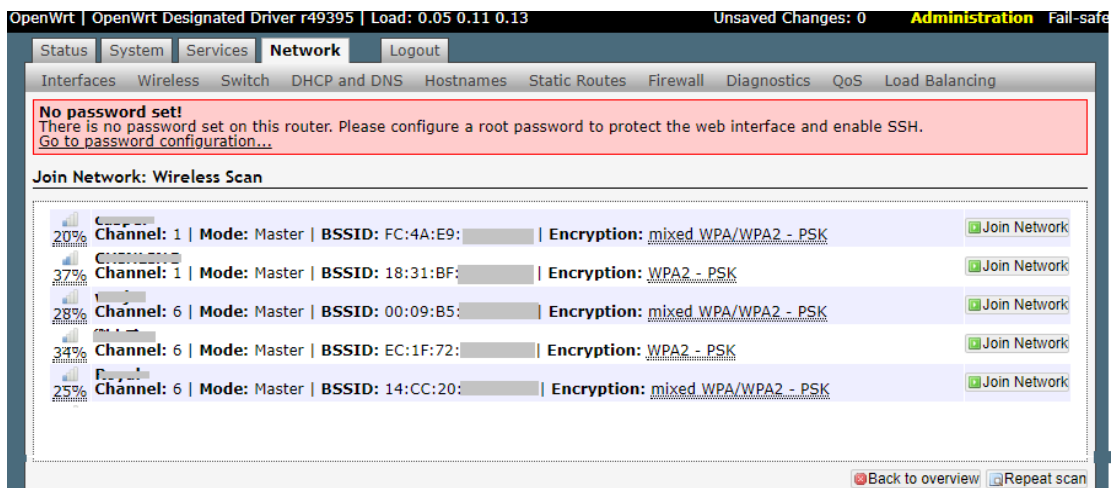
Isolate Clients：防止客戶端到客戶端的通信

Interface name：覆蓋默認接口名稱



Join Network: Wireless Scan：Network→Wireless→Scan

周圍的無線裝置掃描，掃描結果會顯示周圍有那些無線網路，包含訊號強度、SSID、Channel、Mode、MAC Address、加密方式等



6-3 Switch 開關設置

SWITCH 網路開關：Network→Switch

此設備上的網路端口可以組合到多個 VLAN，電腦可以在這些 VLAN 之間直接相互通信。

VLAN 通常用於分隔不同的網段，通常默認情況下有一個上行鏈路端口用於連接到下一個更大的網絡，如互聯網和本地網絡的其他端口。

Enable VLAN functionality：勾選啟用此功能

Add：增加新的 VLAN1 設定

Delete：刪除 VLAN1 設定

Save / Save & Apply：儲存及套用

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.08 0.09 0.10 | Auto Refresh: **on** | Unsaved Changes: 0 | **Administration** | Fail-safe

Status System Services **Network** Logout

Interfaces Wireless **Switch** DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Switch

The network ports on this device can be combined to several VLANs in which computers can communicate directly with each other. VLANs are often used to separate different network segments. Often there is by default one Uplink port for a connection to the next greater network like the internet and other ports for a local network.

Switch "switch0" (mt7620)

Enable VLAN functionality

VLANs on "switch0" (mt7620)

VLAN ID	CPU (eth0)	LAN	WAN	Port status:
1	1000baseT full-duplex tagged	100baseT full-duplex untagged	no link off	<input type="checkbox"/>
2	1000baseT full-duplex tagged	100baseT full-duplex off	no link untagged	<input type="checkbox"/>

[Add](#) [Delete](#) [Delete](#)

[Reset](#) [Save](#) [Save & Apply](#)

Powered by LuCI Master (git-17.165.70928-dd6cb31)

6-4 DHCP & DNS

DHCP & DNS : Network → DHCP and DNS

是設定 DHCP 服務器和 DNS 透過 NAT 轉發通過防火牆

6-4.1 General setup 一般設置

Domain required : 勾選表示不要在沒有 DNS 名稱的情況下轉發 DNS 請求

Authoritative : 勾選表示這是本地網絡中唯一的 DHCP

Local server : 規範與此域匹配的名稱永遠不會轉發，只能從 DHCP 或主機文件中解析

Local domain : 附加到 DHCP 名稱和主機文件條目

Log queries : 是否將收到的 DNS 請求寫入 syslog

DNS forwardings : 請求轉發到的 DNS 服務器列表

Rebind protection : 丟棄上層 RFC1918 回應重新綁定保護

Local Service Only : 限制 DNS 服務只提供給 subnets interfaces

Non-wildcard : 僅綁定到特定接口

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.12 0.20 0.23 | Auto Refresh: **on** | Unsaved Changes: 0 | **Administration** | Fail-sa

Status System Services **Network** Logout

Interfaces Wireless Switch **DHCP and DNS** Hostnames Static Routes Firewall Diagnostics
QoS Load Balancing

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

DHCP and DNS

Dnsmasq is a combined DHCP-Server and DNS-Forwarder for NAT firewalls

Server Settings

General Settings | **Resolve and Hosts Files** | TFTP Settings | Advanced Settings

Domain required Don't forward DNS-Requests without DNS-Name

Authoritative This is the only DHCP in the local network

Local server
 Local domain specification. Names matching this domain are never forwarded and are resolved from DHCP or hosts files only

Local domain
 Local domain suffix appended to DHCP names and hosts file entries

Log queries Write received DNS requests to syslog

DNS forwardings
 List of DNS servers to forward requests to

Rebind protection Discard upstream RFC1918 responses

Local Service Only Limit DNS service to subnets interfaces on which we are serving DNS.

Non-wildcard Bind only to specific interfaces rather than wildcard address.

Active DHCP Leases

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
----------	--------------	-------------	---------------------

Active DHCP Leases : 顯示 ipv4 現已取得 DHCP 租約的電腦名稱、IP、MAC、租約時間

Active DHCPv6 Leases : 顯示 ipv6 現已取得 DHCP 租約的電腦名稱、IP、MAC、租約時間

Static Leases : 顯示靜態租約，為 DHCP 客戶端分配固定 IP 地址和主機名稱

Active DHCP Leases			
Hostname	IPv4-Address	MAC-Address	Leasetime remaining
Aspir...	192.168.10.181	2c:60:0c:...	10h 9m 17s

Active DHCPv6 Leases			
Host	IPv6-Address	DUID	Leasetime remaining
There are no active leases.			

Static Leases

Static leases are used to assign fixed IP addresses and symbolic hostnames to DHCP clients. They are also required for non-dynamic interface configurations where only hosts with a corresponding lease are served. Use the *Add* Button to add a new lease entry. The *MAC-Address* identifies the host, the *IPv4-Address* specifies to the fixed address to use and the *Hostname* is assigned as symbolic name to the requesting host. The optional *Lease time* can be used to set non-standard host-specific lease time, e.g. 12h, 3d or infinite.

Hostname	MAC-Address	IPv4-Address	Lease time	IPv6-Suffix (hex)
This section contains no values yet				

[Add](#)

6-4.2 Resolv and Hosts Files 解析和託管文件

Use /etc/ethers : 勾選讀取 / etc / ethers 以配置 DHCP 服務器

Leasefile : 將存儲存給定 DHCP 租約的文件

Ignore resolve file : 勾選則忽略解析文件

Resolve file : 本地 DNS 解析文件所在位置

Ignore /etc/hosts : 忽略 / etc / hosts

Additional Hosts files : 設定其他主機文件

The screenshot shows the OpenWrt Administration interface for the 'DHCP and DNS' section. At the top, there is a navigation bar with 'Status', 'System', 'Services', 'Network', and 'Logout'. Below this, there are tabs for 'Interfaces', 'Wireless', 'Switch', 'DHCP and DNS', 'Hostnames', 'Static Routes', 'Firewall', 'Diagnostics', 'QoS', and 'Load Balancing'. A red warning box states: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. Go to password configuration...'. The main content area is titled 'DHCP and DNS' and includes the text: 'Dnsmasq is a combined DHCP-Server and DNS-Forwarder for NAT firewalls'. Under 'Server Settings', there are four tabs: 'General Settings', 'Resolv and Hosts Files', 'TFTP Settings', and 'Advanced Settings'. The 'Resolv and Hosts Files' tab is active, showing the following settings:

- Use /etc/ethers**: Read /etc/ethers to configure the DHCP-Server
- Leasefile**: /tmp/dhcp.leases (file where given DHCP-leases will be stored)
- Ignore resolve file**:
- Resolve file**: /tmp/resolv.conf.auto (local DNS file)
- Ignore /etc/hosts**:
- Additional Hosts files**: (empty field with an add button)

6-4.3 TFTP Settings TFTP 設置：略

6-4.4 Advanced Settings 高級設置

Suppress logging : 設定是否禁止記錄這些協定日常的日誌

Allocate IP sequentially : 設定是否從最低可用地址開始按順序分配 IP 地址

Filter private : 設定是否過濾私密，不要轉發從本地網絡來的反向查找

Localise queries : 設定是否使用本地化查詢，如果有多個 IP 可用，則根據請求的子網本地化主機名

Expand hosts：設定是否擴充主機，增加從 hosts 文件提供的名稱

No negative cache：沒有負面緩存，不要緩存否定回答，例如 對於不存在的域

Additional servers file：其他服務器文件，此文件可能包含 “server = / domain / 1.2.3.4” 或 “server = 1.2.3.4” 等行，用於特定於域或完整的上層 DNS 服務器。

Strict order：設定是否 DNS 服務器將在 resolvfile 的順序進行查詢

Bogus NX Domain Override：設定是否提供虛假 NX 域結果的主機列表

DNS server port：設定 DNS 伺服器連接埠

DNS query port：設定 DNS 伺服器查詢埠

Max. DHCP leases：設定 DHCP 最大租約

Max. EDNS0 packet size：設定 DHCP 最大允許的 UDP 封包大小

Max. concurrent queries：設定允許發送的最大 DNS 查詢數

DHCP and DNS	
Dnsmasq is a combined <u>DHCP-Server</u> and <u>DNS-Forwarder</u> for <u>NAT</u> firewalls	
Server Settings	
<div style="display: flex; justify-content: space-between; border-bottom: 1px solid #ccc; padding-bottom: 5px;"> General Settings Resolv and Hosts Files TFTP Settings Advanced Settings </div>	
Suppress logging	<input type="checkbox"/> Suppress logging of the routine operation of these protocols
Allocate IP sequentially	<input checked="" type="checkbox"/> Allocate IP addresses sequentially, starting from the lowest available address
Filter private	<input checked="" type="checkbox"/> Do not forward reverse lookups for local networks
Filter useless	<input checked="" type="checkbox"/> Do not forward requests that cannot be answered by public name servers
Localise queries	<input type="checkbox"/> Localise hostname depending on the requesting subnet if multiple IPs are available
Expand hosts	<input checked="" type="checkbox"/> Add local domain suffix to names served from hosts files
No negative cache	<input type="checkbox"/> Do not cache negative replies, e.g. for not existing domains
Additional servers file	<input type="text"/> This file may contain lines like 'server=/domain/1.2.3.4' or 'server=1.2.3.4' for domain-specific or full upstream <u>DNS</u> servers.
Strict order	<input type="checkbox"/> <u>DNS</u> servers will be queried in the order of the resolvfile
Bogus NX Domain Override	<input type="text" value="67.215.65.132"/> List of hosts that supply bogus NX domain results
<u>DNS</u> server port	<input type="text" value="53"/> Listening port for inbound <u>DNS</u> queries
<u>DNS</u> query port	<input type="text" value="any"/> Fixed source port for outbound <u>DNS</u> queries
Max. <u>DHCP</u> leases	<input type="text" value="unlimited"/> Maximum allowed number of active <u>DHCP</u> leases
Max. <u>EDNS0</u> packet size	<input type="text" value="1280"/> Maximum allowed size of <u>EDNS.0</u> UDP packets
Max. concurrent queries	<input type="text" value="150"/> Maximum allowed number of concurrent <u>DNS</u> queries

6-5 Hostnames 主機名稱

Hostnames 主機名：Network → Hostnames

設定LAN 端使用者之主機名稱

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.03 0.05 Unsaved Changes: 0 Administration Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS **Hostnames** Static Routes Firewall Diagnostics QoS Load Balancing

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Hostnames

Host entries

Hostname	IP address
This section contains no values yet	

[Add](#) [Reset](#) [Save](#) [Save & Apply](#)

Powered by LuCI Master (git-17.165.70928-dd6cb31)

可自行新增主機名稱給 DHCP 租約下或自定之 IP 位置

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.07 0.39 0.27 Administration Fail-safe

Unsaved Changes: 7

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS **Hostnames** Static Routes Firewall Diagnostics QoS Load Balancing

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Hostnames

Host entries

Hostname	IP address	
	192.168.10.202 (00:12:17:.....)	Delete

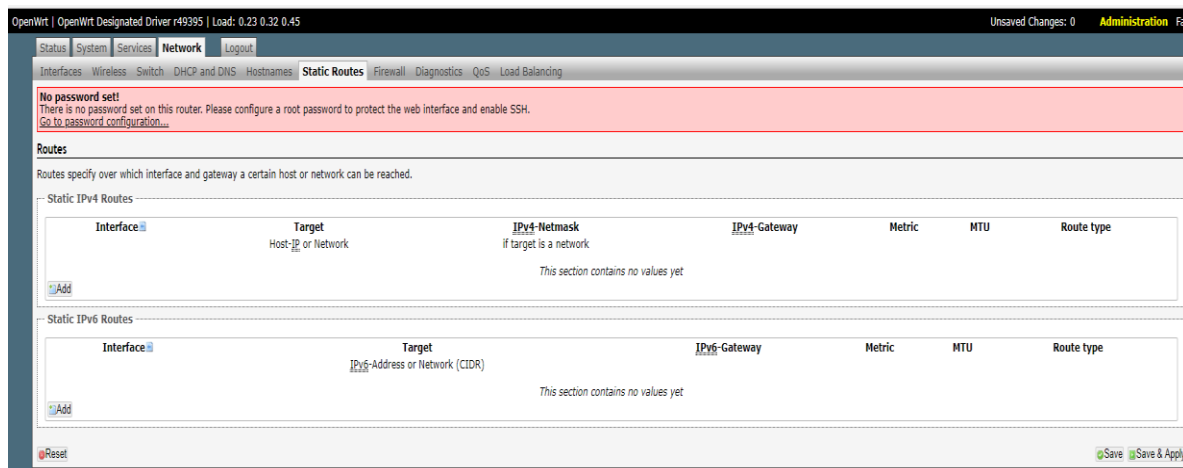
[Add](#) [Reset](#) [Save](#) [Save & Apply](#)

192.168.10.202 (00:12:17:.....)
192.168.100.253 (00:11:32:.....)
192.168.100.1 (f8:d1:11:.....)
192.168.10.200 (00:12:.....)
192.168.10.181 (2c:60:0c:a.....)
-- custom --

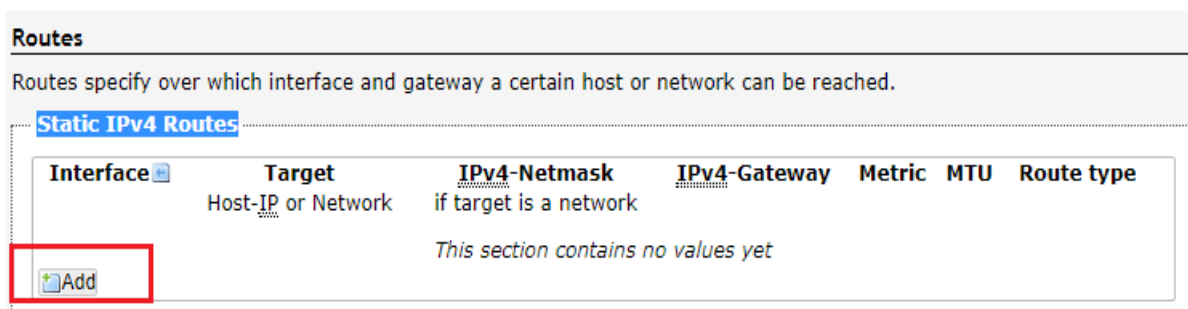
6-6 Static Routes 靜態路由

Static Routes 靜態路由：Network→Static Routes

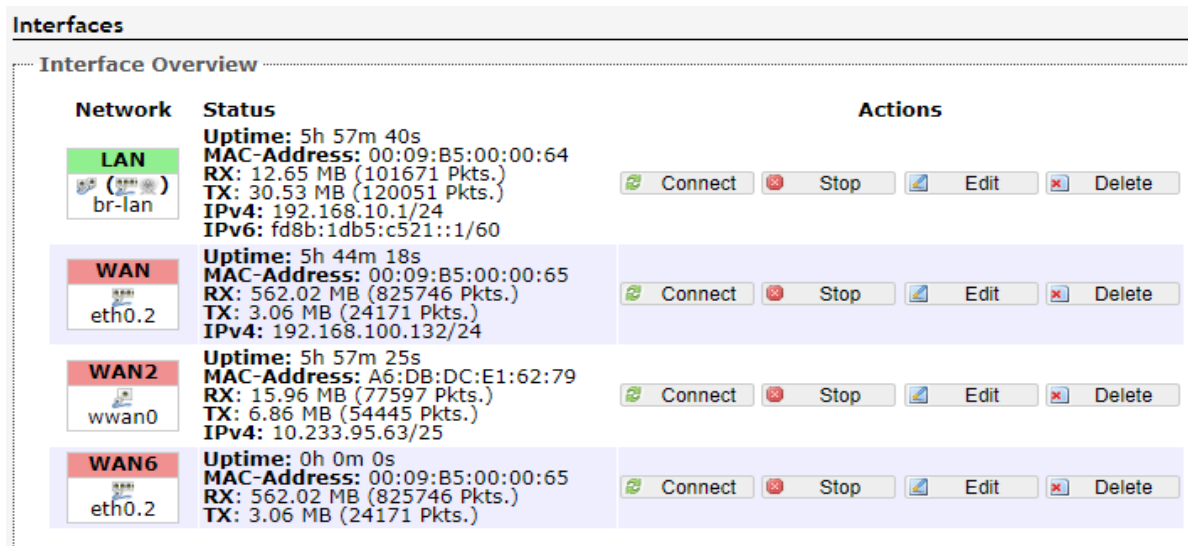
顯示及設定路由指定可以到達某個主機或網路的接口（interface）和通訊閘（gateway）



Add Static IPv4 Routes：新增一 IPv4 靜態路由



Interface：選擇要新增加的靜態路由是那個網路界面
接口（interface）所指如下圖所示



Tarage：新增目標，指定主機 IP or 網路

IPv4-Netmask：指定一個子網路遮罩

IPv4-Gateway：指定一個閘道器

Metric：權值，預設權值為 0

MTU：最大傳輸單位(Maximum Transmission Unit) 一般的網路介面預設值 1500

Route type：指定路由類型

Routes

Routes specify over which interface and gateway a certain host or network can be reached.

Static IPv4 Routes

Interface	Target Host-IP or Network	IPv4-Netmask if target is a network	IPv4-Gateway	Metric	MTU	Route type	
lan		255.255.255.255		0	1500	unicast	Delete

Add

6-7 Firewall 防火牆

Firewall 防火牆：Network→Firewall

設定網路的連入/連出及轉發，包含 Port forwarding/Traffic Rules/Custom Rules

6-7.1 General setup 一般設置

Enable SYN-flood protection：設定是否啟用 SYN-flood 保護

是一種阻斷服務攻擊，起因於攻擊者傳送一系列的 SYN 請求到目標系統，企圖消耗服務器資源，使系統無法響應合法的通信請求

Drop invalid packets：設定是否丟棄無效數據包(封包)

Input：對進入之數據包做設定，丟棄/接受/拒絕

Output：對出去之數據包做設定，丟棄/接受/拒絕

Forward：對轉發之數據包做設定，丟棄/接受/拒絕

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.09 0.27 0.42

Unsaved Changes: 0 Administration

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing

General Settings Port Forwards Traffic Rules Custom Rules

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Firewall - Zone Settings
The firewall creates zones over your network interfaces to control network traffic flow.

General Settings

Enable SYN-flood protection	<input checked="" type="checkbox"/>
Drop invalid packets	<input type="checkbox"/>
Input	accept
Output	accept
Forward	reject

Zones

Zone ⇒ Forwards	Input	Output	Forward	Masquerading	MSS clamping	
lan: lan: ⇒ wan vpn	accept	accept	accept	<input type="checkbox"/>	<input type="checkbox"/>	Edit Delete
wan: wan: ⇒ wan2: ⇒ REJECT	reject	accept	reject	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Edit Delete
vpn: (empty) ⇒ lan	accept	accept	accept	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit Delete

Add

Reset Save Save & Apply

Masquerading：設定偽裝

MSS clamping：設定 MSS 箱位

Covered networks：設定涵蓋那些網絡

Firewall - Zone Settings - Zone "lan"

Zone "lan"
This section defines common properties of "lan". The *input* and *output* options set the default policies for traffic entering and leaving this zone while the *forward* option describes the policy for forwarded traffic between different networks within the zone. *Covered networks* specifies which available networks are members of this zone.

General Settings | **Advanced Settings**

Name	lan
Input	accept
Output	accept
Forward	accept
Masquerading	<input type="checkbox"/>
MSS clamping	<input type="checkbox"/>
Covered networks	<input checked="" type="checkbox"/> lan: <input type="checkbox"/> wan: <input type="checkbox"/> wan2: <input type="checkbox"/> wan6: <input type="checkbox"/> create: <input type="text"/>

Inter-Zone Forwarding 區域間轉發

Allow forward to destination zones: 允許轉發到目標區域

Allow forward from source zones: 允許自來源區域轉發

Inter-Zone Forwarding
The options below control the forwarding policies between this zone (lan) and other zones. *Destination zones* cover forwarded traffic **originating from "lan"**. *Source zones* match forwarded traffic from other zones **targeted at "lan"**. The forwarding rule is *unidirectional*, e.g. a forward from lan to wan does *not* imply a permission to forward from wan to lan as well.

Allow forward to *destination zones*:

vpn: (empty)

wan: wan: wan2: wan6:

Allow forward from *source zones*:

vpn: (empty)

wan: wan: wan2: wan6:

6-7.2 Advanced Settings 高級設置

Restrict to address family：設定選擇限制位址類型為 IPv4 / IPv6 / 二者皆是

Restrict Masquerading to given source：限制偽裝來源 IP

Restrict Masquerading to given destination：限制偽裝目的地 IP

Force connection tracking：強制連接跟踪

Enable logging on this zone：啟用此區域的日誌記錄

Firewall - Zone Settings - Zone "lan"

Zone "lan"

This section defines common properties of "lan". The *input* and *output* options set the default policies for traffic entering and leaving this zone while the *forward* option describes the policy for forwarded traffic between different networks within the zone. *Covered networks* specifies which available networks are members of this zone.

General Settings | **Advanced Settings**

Restrict to address family: IPv4 and IPv6

Restrict Masquerading to given source: 0.0.0.0/0

subnets

Restrict Masquerading to given destination: 0.0.0.0/0

subnets

Force connection tracking:

Enable logging on this zone:

6-7.3 Port Forwards 埠轉發

允許 Internet 上的遠程計算機連接到專用 LAN 內的特定計算機或服務，最常用於通過將通信的目標 IP 地址和端口號重新映射到駐留在網關（外部網絡）相對端的主機上的受保護或偽裝（內部）網絡上的主機上進行服務

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.01 0.04 0.05

Status | System | Services | **Network** | Logout

Interfaces | Wireless | Switch | DHCP and DNS | Hostnames | Static Routes | **Firewall**

Load Balancing

General Settings | **Port Forwards** | Traffic Rules | Custom Rules

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and SSH.
[Go to password configuration...](#)

Firewall - Port Forwards

Port forwarding allows remote computers on the Internet to connect to a specific computer or private LAN.

Port Forwards

Name	Match	Forward to
This section contains no values yet		

New port forward:

6-7.4 Traffic Rules 流量傳送規則

流量傳送規則定義在不同區域之間傳輸的數據包的策略，例如拒絕某些主機之間的流量或打開路由器上的 WAN 端口。

Firewall - Traffic Rules

Traffic rules define policies for packets traveling between different zones, for example to reject traffic between certain hosts or to open WAN ports on the router.

Traffic Rules

Name	Match	Action	Enable	Sort
Allow-DHCP-Renew	IPv4-udp From <i>any host</i> in wan To <i>any router IP</i> at port 68 on this device	Accept input	<input checked="" type="checkbox"/>	
Allow-Ping	IPv4-icmp with type <i>echo-request</i> From <i>any host</i> in wan To <i>any router IP</i> on this device	Accept input	<input checked="" type="checkbox"/>	
Allow-IGMP	IPv4-igmp From <i>any host</i> in wan To <i>any router IP</i> on this device	Accept input	<input checked="" type="checkbox"/>	
Allow-DHCPv6	IPv6-udp From IP range <i>fc00::/6</i> in wan To IP range <i>fc00::/6</i> at port 546 on this device	Accept input	<input checked="" type="checkbox"/>	
Allow-MLD	IPv6-icmp with types <i>130/0, 131/0, 132/0, 143/0</i> From IP range <i>fe80::/10</i> in wan To <i>any router IP</i> on this device	Accept input	<input checked="" type="checkbox"/>	
Allow-ICMPv6-Input	IPv6-icmp with types <i>echo-request, echo-reply, destination-unreachable, packet-too-big, time-exceeded, bad-header, unknown-header-type, router-solicitation, neighbour-solicitation, router-advertisement, neighbour-advertisement</i> From <i>any host</i> in wan To <i>any router IP</i> on this device	Accept input and limit to 1000 pkts. per second	<input checked="" type="checkbox"/>	
Allow-ICMPv6-Forward	IPv6-icmp with types <i>echo-request, echo-reply, destination-unreachable, packet-too-big, time-exceeded, bad-header, unknown-header-type</i> From <i>any host</i> in wan To <i>any host</i> in any zone	Accept forward and limit to 1000 pkts. per second	<input checked="" type="checkbox"/>	
-	Any esp From <i>any host</i> in wan To <i>any host</i> in lan	Accept forward	<input checked="" type="checkbox"/>	
-	Any udp From <i>any host</i> in wan To <i>any host</i> , port 500 in lan	Accept forward	<input checked="" type="checkbox"/>	

Open ports on router:

Name	Protocol	External port
<input type="text" value="New input rule"/>	TCP+UDP	<input type="text"/>

New forward rule:

Name	Source zone	Destination zone
<input type="text" value="New forward rule"/>	lan	wan

6-7.5 Custom Rules 自定義規則

自定義規則允許您執行防火牆框架未涵蓋的 arbitrary iptables 命令，在每個防火牆重新啟動後，在加載默認規則集後立即執行這些命令。

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.05 0.21 0.14 Administration Fail-sa

Unsaved Changes:

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes **Firewall** Diagnostics QoS Load Balancing

General Settings Port Forwards Traffic Rules **Custom Rules**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Firewall - Custom Rules

Custom rules allow you to execute arbitrary iptables commands which are not otherwise covered by the firewall framework. The commands are executed after each firewall restart, right after the default ruleset has been loaded.

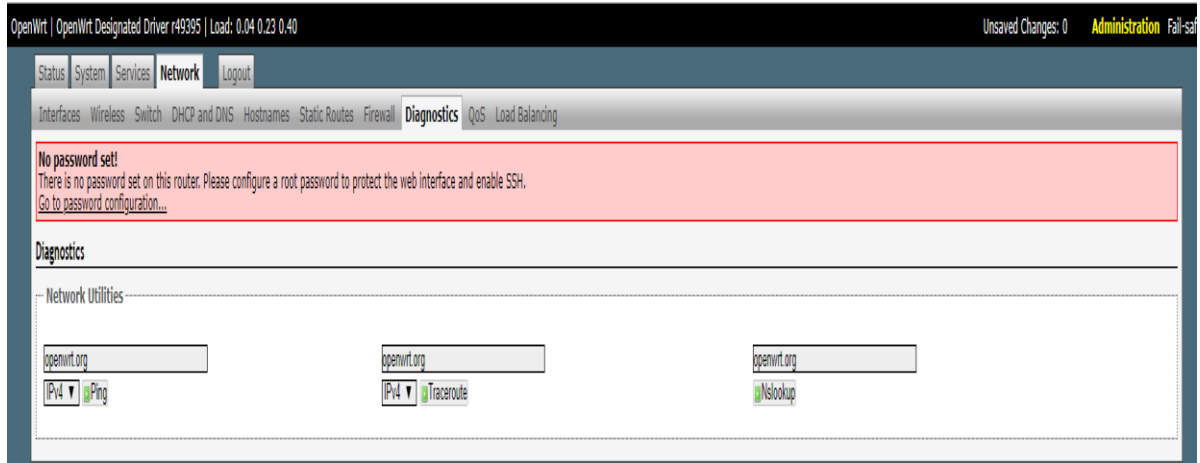
```
# This file is interpreted as shell script.
# Put your custom iptables rules here, they will
# be executed with each firewall (re-)start.

# Internal uci firewall chains are flushed and recreated on reload, so
# put custom rules into the root chains e.g. INPUT or FORWARD or into the
# special user chains, e.g. input_wan_rule or postrouting_lan_rule.
```

6-8 Diagnostics 診斷

Diagnostics 診斷：Network→Diagnostics

可設置遠端主機透過網路工具（Ping /Traceroute/Nslookup）來診斷網狀況



Ping

```

PING openwrt.org (139.59.209.225): 56 data bytes
64 bytes from 139.59.209.225: seq=0 ttl=44 time=270.137 ms
64 bytes from 139.59.209.225: seq=1 ttl=44 time=269.737 ms
64 bytes from 139.59.209.225: seq=2 ttl=44 time=286.656 ms
64 bytes from 139.59.209.225: seq=3 ttl=44 time=267.156 ms
64 bytes from 139.59.209.225: seq=4 ttl=44 time=266.836 ms

--- openwrt.org ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 266.836/272.104/286.656 ms

```

Traceroute

```

traceroute to openwrt.org (139.59.209.225), 30 hops max, 38 byte packets
 1 *
 2 10.156.65.41 14.580 ms
 3 10.156.67.103 14.679 ms
 4 10.156.67.113 13.960 ms
 5 210.65.126.162 19.320 ms
 6 220.128.3.190 23.340 ms
 7 220.128.26.77 15.399 ms
 8 220.128.7.41 19.300 ms
 9 220.128.7.45 21.820 ms
10 80.231.200.78 241.897 ms
11 80.231.200.78 378.435 ms
12 195.219.87.18 247.556 ms
13 195.219.50.90 272.657 ms
14 139.59.209.225 275.136 ms

```

Nslookup

```

nslookup: can't resolve '(null)': Name does not resolve

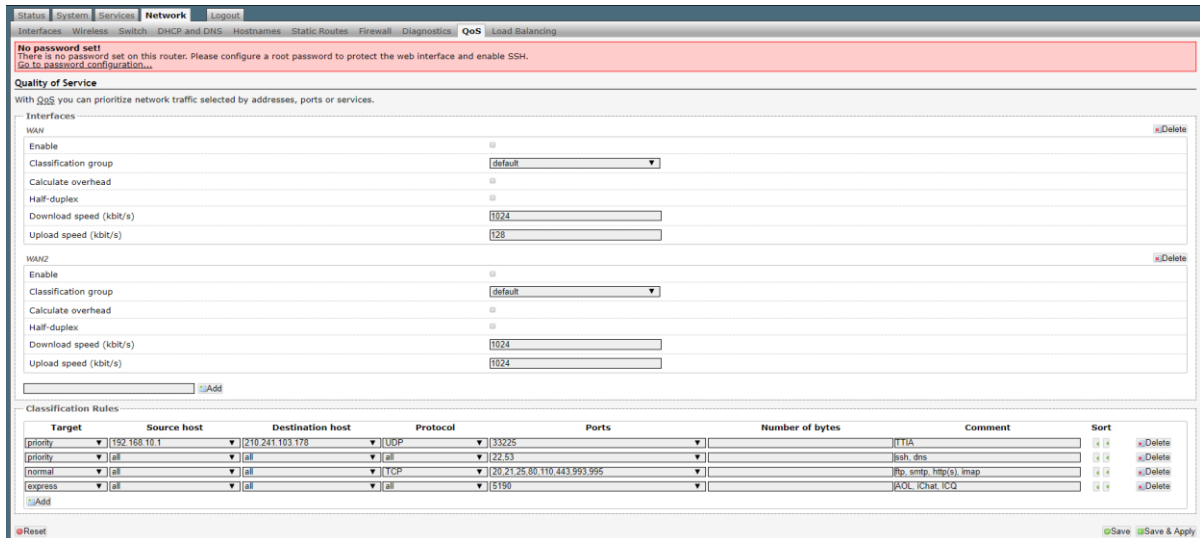
Name:      openwrt.org
Address 1: 139.59.209.225 wiki-01.infra.lede-project.org
Address 2: 2a03:b0c0:3:d0::1af1:1 wiki-01.infra.lede-project.org

```

6-9 QoS 服務質量

QoS 服務質量(流量控制)：Network→QoS

QoS 的英文全稱為 Quality of Service，中文名為服務質量。QoS 是網路的一種安全機制，是用來解決網路延遲和阻塞等問題的一種技術。在正常情況下，如果網路只用於特定的無時間限制的應用系統，並不需要 QoS，如 Web 應用或 E-mail 設置等，但是對關鍵應用和多媒體應用就十分必要。當網路過載或擁塞時，QoS 能確保重要業務量不受延遲或丟棄，同時保證網路的高效運行，進行帶寬限制、帶寬保證、優先順序控制，從而使關鍵業務能得到充分的服務質量保證。



用戶可針對 interfaces(WAN/WAN2)自定義 QoS 規則

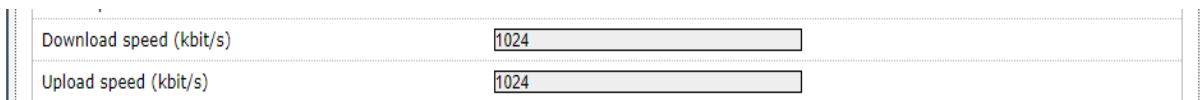
QoS 為您提供了進階的配置項，包括端口，協議和傳輸。QoS 目標類別的切換可為每個客戶端設置優先 Priority/快速 Express/正常 Normal/低 Low 等級之設置。

[如何設定 QoS]

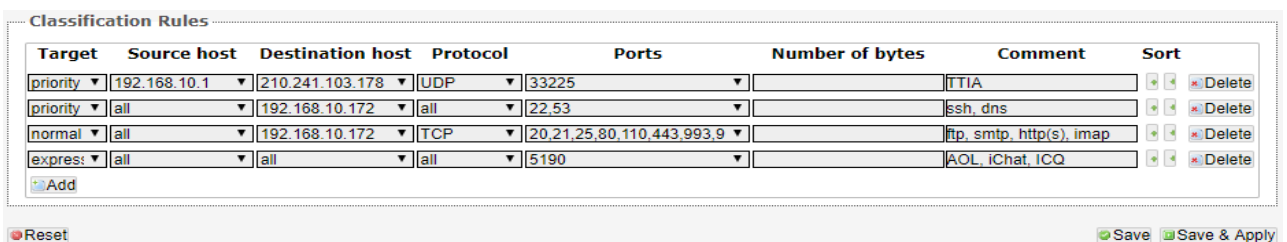
1. 啟用 QoS



2. 設定限制您的上傳、下載的頻寬(kbit/s)



3. 自定義分類規則，用戶可依優先等級及端口，協議，來源，目的，傳輸來自行定義流量控制



4. 點選[儲存&應用](Save & Apply)來儲存設定。

6-A Load Balancing 負載平衡

Load Balancing 負載平衡：Network→Load Balancing

WAN Load Balance，當 Router 對外線路有兩種（Wlan/4G）以上的時候，WLB 就可以擔負起網際網路（Internet）與內部網路（Intranet）之間多條連外線路流量平衡的工作，有助於調整、控制封包的進出順序。可以在使用多條線路的情況下動態分配內網的數據流量，動態的實現帶寬匯聚的功能。

界面即時狀態 Interface Live Status：

The screenshot shows the OpenWrt web interface for Load Balancing. At the top, there's a status bar with 'OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.01 0.05 0.16 | Auto Refresh: on' and 'Unsaved Changes: 0 Administration Fail-safe'. The main navigation includes 'Status', 'System', 'Services', 'Network', and 'Logout'. Under 'Network', there are sub-menus for 'Interfaces', 'Wireless', 'Switch', 'DHCP and DNS', 'Hostnames', 'Static Routes', 'Firewall', 'Diagnostics', 'QoS', and 'Load Balancing'. The 'Load Balancing' section has tabs for 'Overview', 'Configuration', and 'Advanced'. A red warning box states: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. Go to password configuration...'. Below this, the 'Interface Status' section shows 'wan (eth0.2) Online (tracking active)' and 'wan2 (wwan0) Online (tracking active)'. The 'MWAN Interface Systemlog' section displays a list of systemlog entries, including messages about connection tracking, interface status changes, and signal issues.

詳細狀態 Detailed Status：

The screenshot shows the 'Detailed Status' page for Load Balancing. The status bar at the top indicates 'OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.08 0.03 0.05 | Auto Refresh: on' and 'Unsaved Changes: 1 Administration Fail-safe'. The navigation and tabs are similar to the overview page. The 'MWAN Detailed Status' section provides a detailed view of the interface status and policies. It shows that 'interface wan is online and tracking is active' and 'interface wan2 is online and tracking is down'. Under 'Current ipv4 policies', it lists 'balanced' (wan2 40%, wan 60%), 'wan2_only' (wan2 100%), 'wan2_wan' (wan2 100%), 'wan_only' (wan 100%), and 'wan_wan2' (wan 100%). The 'Current ipv6 policies' section shows 'balanced' as 'unreachable' and other modes as 'unreachable'. Finally, the 'Directly connected ipv4 networks' section lists several IP ranges including 127.0.0.0/8, 192.168.10.1, 192.168.100.0/24, 127.255.255.255, 10.228.103.208/28, 192.168.10.0, 192.168.10.0/24, 127.0.0.1, and 10.228.103.217.

界面接口配置 Interface Configuration：最多支持 250 個物理和/或邏輯接口

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.57 0.27 0.13 Unsaved Changes: 1 Administration Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS **Load Balancing**

Overview **Configuration** Advanced

Interfaces Members Policies Rules

MWAN Interface Configuration

There are currently 2 of 250 supported interfaces configured

Interfaces

MWAN supports up to 250 physical and/or logical interfaces
 MWAN requires that all interfaces have a unique metric configured in /etc/config/network
 Names must match the interface name found in /etc/config/network (see advanced tab)
 Names may contain characters A-Z, a-z, 0-9, _ and no spaces
 Interfaces may not share the same name as configured members, policies or rules

Interface	Enabled	Tracking IP	Tracking reliability	Ping count	Ping timeout	Ping interval	Interface down	Interface up	Metric	Errors
wan	Yes	8.8.4.4 208.67.222.222	1	1	2s	10s	5	1	10	Edit Delete
wan2	Yes	8.8.8.8 208.67.220.220	1	1	2s	10s	5	1	30	Edit Delete

[Add](#)

[Reset](#) [Save](#) [Save & Apply](#)

Powered by LuCI Master (git-17.165.70928-dd6cb31)

會員配置 Member Configuration：
 是將 Metric 和 Weight 附加到 MWAN 接口的配置

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.02 0.06 0.08 Unsaved Changes: 1 Administration Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS **Load Balancing**

Overview **Configuration** Advanced

Interfaces **Members** Policies Rules

MWAN Member Configuration

Members

Members are profiles attaching a metric and weight to an MWAN interface
 Names may contain characters A-Z, a-z, 0-9, _ and no spaces
 Members may not share the same name as configured interfaces, policies or rules

Member	Interface	Metric	Weight	Sort
wan_m1_w3	wan	1	3	↑ ↓ Edit Delete
wan_m2_w3	wan	2	3	↑ ↓ Edit Delete
wan2_m1_w2	wan2	1	2	↑ ↓ Edit Delete
wan2_m2_w2	wan2	2	2	↑ ↓ Edit Delete

[Add](#)

[Reset](#) [Save](#) [Save & Apply](#)

Powered by LuCI Master (git-17.165.70928-dd6cb31)

策略配置 Policy Configuration :

是對控制 MWAN 如何分配流量的一個或多個成員進行分組的配置

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.03 0.07 Unsaved Changes: 1 Administration Fail-safe

Network > Load Balancing > Policies

MWAN Policy Configuration

Policies

Policies are profiles grouping one or more members controlling how MWAN distributes traffic
 Member interfaces with lower metrics are used first. Interfaces with the same metric load-balance
 Load-balanced member interfaces distribute more traffic out those with higher weights
 Names may contain characters A-Z, a-z, 0-9, _ and no spaces. Names must be 15 characters or less
 Policies may not share the same name as configured interfaces, members or rules

Policy	Members assigned	Last resort	Errors	Sort
wan_only	wan_m1_w3	unreachable (reject)		↕ ↕ Edit Delete
wan2_only	wan2_m1_w2	unreachable (reject)		↕ ↕ Edit Delete
balanced	wan_m1_w3 wan2_m1_w2	unreachable (reject)		↕ ↕ Edit Delete
wan_wan2	wan_m1_w3 wan2_m2_w2	unreachable (reject)		↕ ↕ Edit Delete
wan2_wan	wan_m2_w3 wan2_m1_w2	unreachable (reject)		↕ ↕ Edit Delete

Add

規則配置 Rule Configuration :

指定哪些流量將使用於 IP 地址，端口或協議的特定 MWAN 策略

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.12 0.09 0.08 Unsaved Changes: 1 Administration Fail-safe

Network > Load Balancing > Rules

MWAN Rule Configuration

Traffic Rules

Rules specify which traffic will use a particular MWAN policy based on IP address, port or protocol
 Rules are matched from top to bottom. Rules below a matching rule are ignored. Traffic not matching any rule is routed using the main routing table
 Traffic destined for known (other than default) networks is handled by the main routing table. Traffic matching a rule, but all WAN interfaces for that policy are down will be blackholed
 Names may contain characters A-Z, a-z, 0-9, _ and no spaces
 Rules may not share the same name as configured interfaces, members or policies

Rule	Source address	Source port	Destination address	Destination port	Protocol	Sticky	Sticky timeout	IPset	Policy assigned	Errors	Sort
https	—	—	—	443	tcp	Yes	600s	—	balanced		↕ ↕ Edit Delete
default_rule	—	—	0.0.0.0/0	—	all	No	—	—	balanced		↕ ↕ Edit Delete

Add

Powered by LuCI Master (git-17.165.70928-dd6cb31)

高級設置 advanced：*本部分非專業人員，建議勿修改*

Hotplug Script

本部分允許您修改/etc/hotplug.d/iface/16-mwancustom的內容
基於接口 ifup 或 ifdown hotplug 事件運行系統命令

MWAN Config

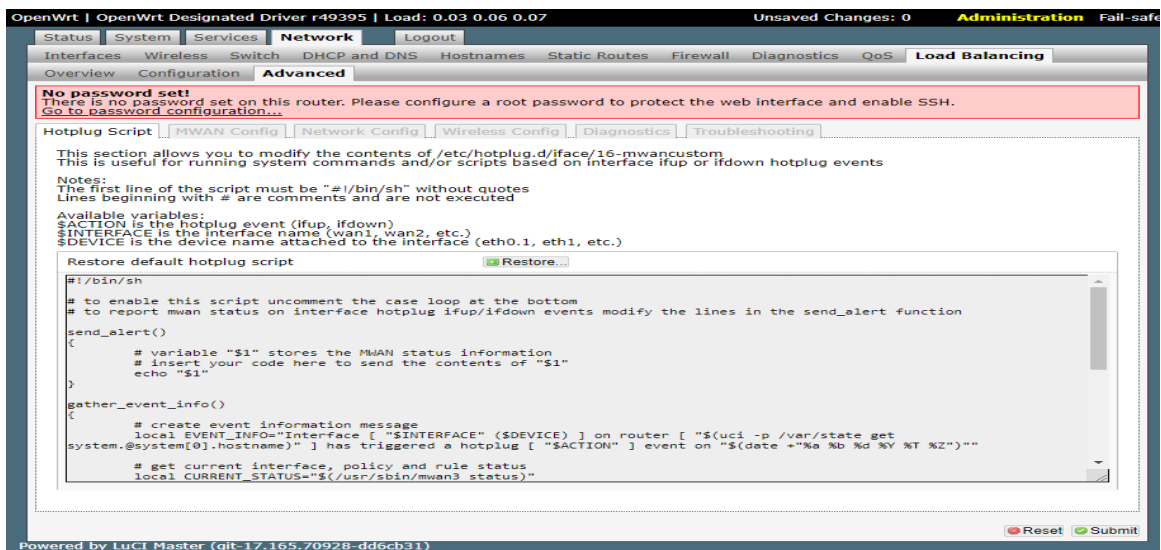
本部分允許您修改/ etc / config / mwan3 的內容

Network Config

本部分允許您修改/ etc / config / network 的內容

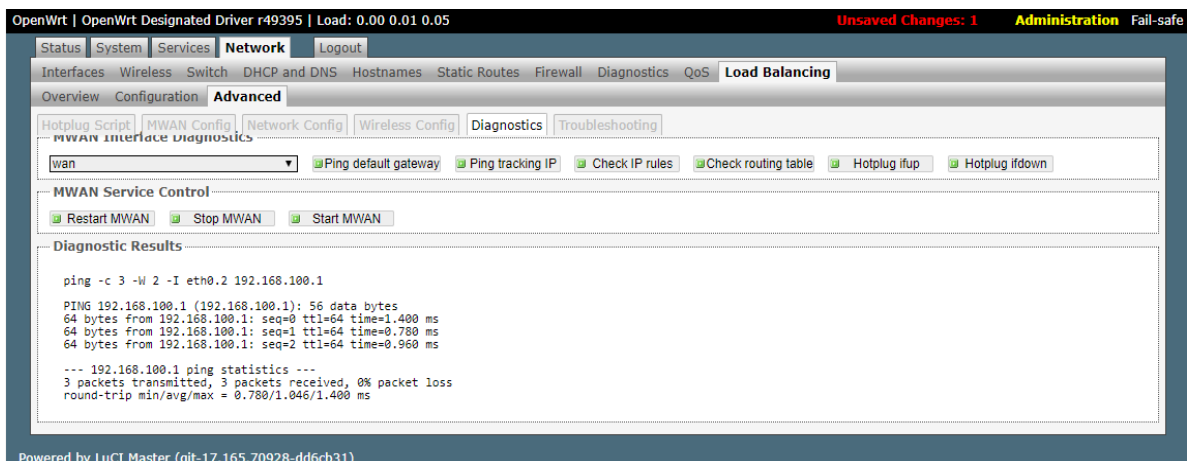
Wireless Config

本部分允許您修改/etc/config/wireless 的內容



界面接口診斷 Interface Diagnostics：

界面接口診斷包含（Ping default gateway/ Ping tracking IP/ Check IP nles/ Check routingtable 等等…）及界面服務的控制



Ping default gateway

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.04 0.05 Unsaved Changes: 0 **Administration** Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS **Load Balancing**

Overview Configuration **Advanced**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Hotplug Script MWAN Config Network Config Wireless Config Diagnostics Troubleshooting

MWAN Interface Diagnostics

wan2

Ping default gateway Ping tracking IP Check IP rules Check routing table Hotplug ifup Hotplug ifdown

MWAN Service Control

Restart MWAN Stop MWAN Start MWAN

Diagnostic Results

```
ping -c 3 -W 2 -I wwan0 10.41.231.245
PING 10.41.231.245 (10.41.231.245): 56 data bytes
--- 10.41.231.245 ping statistics ---
3 packets transmitted, 0 packets received, 100% packet loss
```

Powered by LuCI Master (git-17.165.70928-dd6cb31)

Ping tracking IP

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.04 0.05 Unsaved Changes: 0 **Administration** Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS **Load Balancing**

Overview Configuration **Advanced**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Hotplug Script MWAN Config Network Config Wireless Config Diagnostics Troubleshooting

MWAN Interface Diagnostics

wan2

Ping default gateway Ping tracking IP Check IP rules Check routing table Hotplug ifup Hotplug ifdown

MWAN Service Control

Restart MWAN Stop MWAN Start MWAN

Diagnostic Results

```
ping -c 3 -W 2 -I wwan0 8.8.8.8
PING 8.8.8.8 (8.8.8.8): 56 data bytes
64 bytes from 8.8.8.8: seq=0 ttl=55 time=54.400 ms
64 bytes from 8.8.8.8: seq=1 ttl=55 time=43.320 ms
64 bytes from 8.8.8.8: seq=2 ttl=55 time=43.659 ms
--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 43.320/47.126/54.400 ms

ping -c 3 -W 2 -I wwan0 208.67.220.220
PING 208.67.220.220 (208.67.220.220): 56 data bytes
64 bytes from 208.67.220.220: seq=0 ttl=50 time=76.440 ms
64 bytes from 208.67.220.220: seq=1 ttl=50 time=63.120 ms
64 bytes from 208.67.220.220: seq=2 ttl=50 time=74.519 ms
--- 208.67.220.220 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 63.120/71.359/76.440 ms
```

Powered by LuCI Master (git-17.165.70928-dd6cb31)

Check IP nles

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.04 0.05 Unsaved Changes: 0 **Administration** Fail-safe

Status System Services **Network** Logout

Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS **Load Balancing**

Overview Configuration **Advanced**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Hotplug Script MWAN Config Network Config Wireless Config Diagnostics Troubleshooting

MWAN Interface Diagnostics

wan2

Ping default gateway Ping tracking IP Check IP rules Check routing table Hotplug ifup Hotplug ifdown

MWAN Service Control

Restart MWAN Stop MWAN Start MWAN

Diagnostic Results

```
All required interFace IP rules found:
1002: from all iif wwan0 lookup main
2002: from all fwmark 0x200 lookup 2
```

Powered by LuCI Master (git-17.165.70928-dd6cb31)

Check routingtable

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.00 0.04 0.05 | Unsaved Changes: 0 | Administration | Fail-safe

Status | System | Services | **Network** | Logout

Interfaces | Wireless | Switch | DHCP and DNS | Hostnames | Static Routes | Firewall | Diagnostics | QoS | **Load Balancing**

Overview | Configuration | **Advanced**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Hotplug Script | MWAN Config | Network Config | Wireless Config | **Diagnostics** | Troubleshooting

MWAN Interface Diagnostics

wan2

Ping default gateway | Ping tracking IP | Check IP rules | Check routing table | Hotplug ifup | Hotplug ifdown

MWAN Service Control

Restart MWAN | Stop MWAN | Start MWAN

Diagnostics Results

Interface routing table 2 was found:
default via 10.41.231.245 dev wwan0

Powered by LuCI Master (git-17.165.70928-dd6cb31)

登出 Logout :
離開設定頁面

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.42 0.16 0.16 | Auto Refresh: on | Unsaved Changes: 0 | Administration | Fail-safe

Status | System | Services | **Network** | **Logout**

Interfaces | Wireless | Switch | DHCP and DNS | Hostnames | Static Routes | Firewall | Diagnostics | QoS | **Load Balancing**

Overview | Configuration | Advanced

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Interface Status | Detailed Status

MWAN Interface Live Status

wan (eth0.2) Online (tracking active) | wan2 (wwan0) Online (tracking active)

MWAN Interface Systemlog

Last 50 MWAN systemlog entries. Newest entries sorted at the top :

```
Tue Oct 2 01:07:00 2018 user.info mwan3: connection tracking not flushed on interface wan (eth0.2) ifup
Tue Oct 2 01:06:57 2018 user.notice mwan3track[2669]: Stopping mwan3track for interface "wan2"
Tue Oct 2 01:06:56 2018 user.notice mwan3: ifup interface wan (eth0.2)
Tue Oct 2 01:06:10 2018 user.info mwan3: connection tracking not flushed on interface wan2 (wwan0) ifup
Tue Oct 2 01:06:08 2018 user.notice mwan3: ifup interface wan2 (wwan0)
Tue Oct 2 01:06:07 2018 user.info mwan3: connection tracking not flushed on interface wan2 (ifdown)
Tue Oct 2 01:06:06 2018 user.warn mwan3: Unable to send signal USR1 to mwan3track on interface wan2 with pid
Tue Oct 2 01:06:06 2018 user.notice mwan3: ifdown interface wan2 (unknown)
```

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OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.04 0.10 0.13 | Administration | **Fail-safe**

Flash Firmware | Reboot

Flash operations

Flash new firmware image
Upload a sysupgrade-compatible image.

Image:

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7. 快速無線 4G 上網/APN 設定

Network → Interfaces : 選擇 WAN2 的 Edit

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.48 0.17 0.19 | Auto Refresh: **on** | Unsaved Changes: 0 | **Administration** Fail-safe

Interfaces | Wireless | Switch | DHCP and DNS | Hostnames | Static Routes | Firewall | Diagnostics | QoS | Load Balancing

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Interfaces

Interface Overview

Network	Status	Actions
LAN br-lan	Uptime: 0h 29m 34s MAC-Address: 00:09:B5:00:00:64 RX: 2.52 MB (20395 Pkts.) TX: 24.78 MB (26597 Pkts.) IPv4: 192.168.10.1/24 IPv6: fd8b:1db5:c521::1/60	Connect Stop Edit Delete
WAN eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09:B5:00:00:65 RX: 0 B (0 Pkts.) TX: 206.37 KB (621 Pkts.)	Connect Stop Edit Delete
WAN2 wwan0	Uptime: 0h 29m 19s MAC-Address: DA:3F:15:58:33:C7 RX: 23.89 MB (25860 Pkts.) TX: 2.34 MB (19313 Pkts.) IPv4: 10.41.231.244/29 IPv6: fd8b:1db5:c521::1/60	Connect Stop Edit Delete
WAN6 eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09:B5:00:00:65 RX: 0 B (0 Pkts.) TX: 206.37 KB (621 Pkts.)	Connect Stop Edit Delete

Global network options

IPv6 ULA-Prefix:

Reset Save Save & Apply

General Setup → Protocol : 選擇連線模式，4G SIM Card 連線為需選 DHCP.

OpenWrt | OpenWrt Designated Driver r49395 | Load: 0.18 0.36 0.29 | Auto Refresh: **on** | Unsaved Changes: 0 | **Administration** Fail-safe

Interfaces | Wireless | Switch | DHCP and DNS | Hostnames | Static Routes | Firewall | Diagnostics | QoS | Load Balancing

WAN WAN6 **WAN2** LAN

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Interfaces - WAN2

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANID (e.g.: eth0.1).

Common Configuration

General Setup | Advanced Settings | Physical Settings | Firewall Settings

Status

Uptime: 0h 36m 42s
MAC-Address: DA:3F:15:58:33:C7
RX: 25.36 MB (28458 Pkts.)
TX: 2.65 MB (21949 Pkts.)
IPv4: 10.41.231.244/29

Protocol:

Hostname to send when requesting DHCP:

Back to Overview Reset Save Save & Apply

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進入 Advanced Settings 作相關設定

如：User name、Password、PIN Code、Dial-up、..... 等等

如果是使用中華電信之 SIM CARD，請設置 APN 為 internet，無需設置用戶名和密碼

其他電信業者請參考各電信業者的相關設定，設置完成後，請按 Save & Apply 並重新啟動系統。

The screenshot shows the OpenWrt web interface for configuring the WAN2 network interface. The top navigation bar includes 'Status', 'System', 'Services', 'Network', and 'Logout'. The 'Network' section is active, with sub-tabs for 'Interfaces', 'Wireless', 'Switch', 'DHCP and DNS', 'Hostnames', 'Static Routes', 'Firewall', 'Diagnostics', 'QoS', and 'Load Balancing'. The 'Interfaces' sub-tab is selected, and the 'WAN2' interface is highlighted. A red warning box at the top states: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. Go to password configuration...'. Below this, the 'Interfaces - WAN2' section provides instructions on configuring network interfaces. The 'Common Configuration' section is expanded, showing various settings: 'Bring up on boot' (checked), 'Use builtin IPv6-management' (checked), 'Force link' (unchecked), 'Use broadcast flag' (unchecked), 'Use default gateway' (checked), 'Use DNS servers advertised by peer' (checked), 'Use gateway metric' (set to 30), 'Client ID to send when requesting DHCP' (empty), 'Vendor Class to send when requesting DHCP' (empty), 'Override MAC address' (DA:3F:15:58:33:C7), 'Override MTU' (1500), 'Dial-up User name for modem using RNDIS driver' (empty), 'Dial-up Password for modem using RNDIS driver' (empty), 'Dial-up APN for modem using RNDIS driver' (internet), and 'SIM card PIN code for modem using RNDIS driver' (empty). At the bottom, there are buttons for 'Back to Overview', 'Reset', 'Save', and 'Save & Apply'. The footer indicates the system is powered by LuCI Master (git-17.165.70928-dd6cb31).