# 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 使用手册
2.0	09/12/2018	依韌體 Ver1359 Wed Sep 12 09:12:57 UTC 2018 編修 IWR 使用手册
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	
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	
1.6 外觀尺寸(CASING DIMENSION)	
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	
2. 快速安裝及使用	
3. 狀態功能設定	
3-1 STATUS 狀態資訊	
3-2 FIREWALL 防火牆	
3-3 ROUTES 路由	
3-4 System Log 系統日誌	
3-5 KERNEL LOG 核心日誌	
3-6 REALTIME GRAPHS 即時圖表	
4. 系統功能設定	
4-1 System 系統	
4-2 ADMINISTRATOR 管理員	
4-3 BACKUP / FLASH FIRMWARE 備份還原設定值/更新韌體	
4-4 REBOOT 重啟	
5. 服務功能設定	
5-1 GPS GW 全球定位功能	
5-2 BEACON GW 設定(選配)	
5-3 UHTTPD 服務器	
5-4 SERIAL GW 序列閘道	
6.網路功能設定	
6-1 INTERFACE OVERVIEW 介面狀態	

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

# 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/0 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

Backup / Restore Click "Generate archive" to download a tar a its initial state, click "Perform reset" (only po	.up / Restore 'Generate archive'' to download a tar archive of the current configuration files. To reset the firmware to cial state, click "Perform reset" (only possible with squashfs images).		
Download backup:	Generate archive		
Reset to defaults:	Perform reset		

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



- 4. 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
- 5. 最後再接上電源接頭 (下圖F), 以啟動開機程序



6. 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 <u>https://192.168.10.1</u>

# 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 <u>https://192.168.10.1</u>或 <u>http://192.168.10.1</u>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。

OpenWrt   OpenWrt Designated Driver r	49395   Load: 0.01 0.11 0.23	Administration Fail-safe
Flash Firmware Reboot		
Flash operations		
Flash new firmware image Upload a sysupgrade-compatible im	lage.	
Image:	選擇檔案未選擇任何檔案	🖸 Flash image
Powered by LuCI Master (git-17.165.70	928-dd6cb31)	

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。

Ор	enWrt   OpenWrt Designated Driver r49395	Load: 0.80 0.38 0.31	Administration	Fail-safe	
	No password set! There is no password set on this router. Ple <u>Go to password configuration</u>	ease configure a root password to protect the web	o interface and enable S	SH.	
!	Authorization Required				
	Please enter your username and password.				
	Username	.⊜root			
	Password	1 🖉		2	
			@Reset	Login	
Po	wered by LuCI Master (git-17.165.70928-d	d6cb31)			

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)。

			/er r49395   Lo	oad: 0.04 0.2.	1 0.26   AU	to Refresh: on	Administratio	n Fail-safe
							Unsaved	Changes: (
Status S	System Se	ervices 1	Network	Logout 📄	Main	function		
Overview	Firewall	Routes	System Log	Kernel Log	Realtime	Graphs 📥	Sub-functions	
No passwo There is no <u>Go to passv</u>	ord set! password s word configu	et on this <u>uration</u>	router. Please	configure a r	oot passwo	rd to protect the	web interface and enable SSH.	
OpenWrt   Ope	nWrt Desiar	nated Driv	ver r49395   1 c	oad• 0 04 0 2	1 0 26 L Au	to Pofrachu an	Administratio	- Fail aaf
				0001012	1 0.20   Au	to Kellesii. Oli	Administration	n Fall-Sale
	j				1 0.20   Au	to Refresh. off	Unsaved	Changes: (
Status 9	System Se	ervices	Network	Logout	Main	function	Unsaved 主功能	Changes: (
Status S Overview	System Se Firewall	ervices I Routes	Network System Log	Logout Kernel Log	Main Realtime	function	Unsaved 主功能 Sub-functions 子:	Changes: ( 功能
Status S Overview No passwo There is no Go to passwo	Firewall ord set! password s word configu	Routes Routes Routes	Network System Log router. Please	Logout 2 Kernel Log	Main Realtime	function Graphs	Unsaved 主功能 Sub-functions 子) e web interface and enable SSH.	Changes: ( <u>功能</u>

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。

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 Go to password configuration	configure a root password to protect the	web interface and enable SSH.			
Status					
System					
Hostname	OpenWrt				
Model	MT7620a-IoT				
Firmware Version	OpenWrt Designated Driver r49395 / Lu	CI 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: "Chunghy	va Telecom",7			
Modem Network type	E-UTRAN				
Modem IMEI	861107032979172				
Memory					
Total Available	02348 kB / 125032 kB				
Free	(73%) (73%)				
Duffered	(6%) (6%)				
Builered	(3%)				
Network					
IPv6 WAN Status	Wettingsk: 235:235:235:235:235:235:235:235:235:235:				
Active Connections	2 45 / 16384 (0%)				
Hostname IPv4-Addre	ess 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: <u>HotSpot-00:09:b5:00:00:64</u> Mode: Master Channel: 6 (2.437 GHz) 0% Bitrate: ? Mbit/s BSSID: 00:09:B5:00:00:64 Encryption: None	4			
Associated Stations					
Network MAC-Address	Host Signal / Nois	se RX Rate / TX Rate			
	No information available				
Online (tracking active)	vanz ( <u>wwanU)</u> e (tracking active)				

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 開機後己工作時間
Load Average: 負載平均值
Modem Signal: 模組 CSQ 訊號值
Modem SIM card: SIM card 狀能
Modem Network Registered: SIM card 業者基地台註冊狀能
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	
Buffer	red

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	Type: dhcp         Address: 192.168.100.151         Netmask: 255.255.0         Gateway: 192.168.100.1         eth0.2         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、 己使用租約時間等。

DHCP Leases

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

Vireless Generic 802.11bgn Wireless Controller (radio0) @ 0%	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。



### 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 魚許從 lan 到 wan。(党不招過再個區試時,不嚴格要求轉發部公,因為該規則可以設置為該區

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 箝位。 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 reject	(References: 5)							
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	PEIECT	ten	*	*	0.0.0/0	0.0.0/0	ID:66772200 reject with tcp-reset
ŏ	0.00 B	PEIECT	all	*	*	0.0.0/0	0.0.0.0/0	ID:66772200 reject with icmn port upreachable
v	0.00 B	REJECT	ali			0.0.0.0/0	0.0.0.0/0	10.00773300 reject-with temp-port-unreachable
Chain and fl								
chain syn_tic	ood (References: 1)							
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
20	1.02 KB	RETURN	tcn	*	*	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:66773200
•	0.00 B	DROP	an			0.0.0.0/0	0.0.0.0/0	10.00775500
Chalmanna I	data ACCEPT (D-f-							
Chain zone_i	an_dest_ACCEPT (Refe	rences: 5)						
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	ACCEPT	all	*	br-lan	0.0.0/0	0.0.0.0/0	ID:66773300
						0101010/0	0.0.00,0	10100110000
Chain sono /	an forward (Deference	(r. 1)						
Chain zone_i	an_forward (Reference	5:1)						
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 von dest ACCEPT	all	*	*	0.0.0/0	0.0.0.0/0	ID:66773300 /* forwarding lan -> von */
2510	200.27 KB	zone_vpn_dest_ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* forwarding lan -> wan */
3310	309.37 KB	ZONE WAIT DEST ACCEPT	- 11	*	*	0.0.0/0	0.0.0.0/0	ID:00773300 / IOWarding lait -> walt /
0	0.00 B	ACCEPT	di	*	*	0.0.0/0	0.0.0.0/0	10.00775500 CISIALE DIVAT / ACCEPT POLLTOI WATUS /
U	0.00 B	zone lan dest ACCEPT	ali			0.0.0.0/0	0.0.0/0	ID:00773300
Chain zone_l	an_input (References:	1)						
Pkts	Traffic	Tarnet	Prot	In	Out	Source	Destination	Ontions
2500	191 52 1/8	input lan rulo	all		*	0.0.0.0/0	0.0.0.0/0	ID:66772200 /# user chain for input #/
2399	101.52 Kb	ACCEPT	-11	*	*	0.0.0/0	0.0.0.0/0	ID:66770000 statute DNAT /8 Assess sectored in stime 8/
0	0.00 B	ACCEPT	all			0.0.0/0	0.0.0.0/0	1D:06773300 cistate DNAT / Accept port redirections /
2599	181.52 KB	Zone Ian STC ACCEPT	all			0.0.0/0	0.0.0/0	ID:66//3300
Chain zone_l	an_output (References	: 1)						
Dirte	Traffic	Tarnet	Prot	In	Out	Source	Destination	Ontions
0	0.00.0	autout las suls		*	*	0.0.0/0	0.0.0.0/0	ID: CC770000 /# upper shale for subout #/
0	0.00 B	output_ian_rule	all			0.0.0/0	0.0.0/0	ID:66/73300 /* user chain for output */
0	0.00 B	zone lan dest ACCEPT	all		•	0.0.0/0	0.0.0/0	ID:66773300
Chain zone_l	an_src_ACCEPT (Refere	ences: 1)						
Pkts	Traffic	Tarnet	Prot	In	Out	Source	Destination	Ontions
2500	101 52 1/0	ACCEDT	all	br.lan	*	0.0.0/0	0.0.0/0	10:66773300
2099	101.32 KD	ACCEPT	dii	UI-Iall		0.0.0/0	0.0.0/0	10.00775500
Chain zone_ Pkts.	vpn_forward (Reference Traffic	te <b>s: 0)</b> 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	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 von dest ACCEPT	all	*	*	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 ypp rule	all	*	*	0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for input */
ŏ	0.00 B	ACCEPT	all	*	*	0.0.0/0	0.0.0.0/0	ID:66772200 statate DNAT /* Accent part redirections */
0	0.00 B	ACCEPT	aii			0.0.0/0	0.0.0.0/0	ID:00775500 cistale DNAT / Accept port redirections /
0	0.00 B	ZOIIE_VPII_SIC_ACCEPT	dii			0.0.0.0/0	0.0.0.0/0	10.00773300
al 1		•						
Cildin Zone_	vpn_output (Reierence	5. 0)						
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	output vpp rule	all			0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for output */
ő	0.00 B	zone von dest ACCEPT	all	*	*	0.0.0/0	0.0.0.0/0	ID:66772200
•	0.00 B	zone_vpn_dest_Accern	an			0.0.0.0/0	0.0.0.0/0	15.00775500
Chain zone_	wan_dest_ACCEPT (Re	ferences: 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	ID:66773300
0	0.00 B	ACCEPT	all	*	eth0.2	0.0.0/0	0.0.0/0	ID:66773300
v	0.00 0	ROCET	00		001012	0.0.0.0/0	0101010/0	10.00770000
Chain and	wan doct pracet /p-4	ioroncoc: 1)						
citatii zone_	wan_dest_kEJECT (Ref	erences. 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	ID:66773300
~	0.000	101000			001012	0101010/0	0101010/0	101001/0000
Chain ages	wan forward (Dof	soci 3)						
chain zone_	wan_rorwara (keleren	(5. 2)						
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	MINIUPNPD	all	*	*	0.0.0.0/0	0.0.0.0/0	-
0	0.00 B	forwarding wan rule	all	8	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for forwarding */
Ō	0.00 B	zone lan dest ACCEPT	esp	*	*	0.0.0.0/0	0.0.0/0	ID:66773300 /* @rule[7] */
Ő	0.00 B	zone lan dest ACCEPT	udp	*	*	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	ID:66773300 ctstate DNAT /* Accept port forwards */
ŏ	0.00 B	zone wan dest REIECT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300
v .	V.VV V		MIL			Manufacture M	VIVIVIVIV	

#### Table: NAT

Chain PREF	ROUTING (Policy: ACC	EPT, 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	ID:66773300 /* user chain for prerouting */
4408	312.89 KB	zone lan prerouting	all	br-lan	*	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	ID:66773300
0	0.00 B	zone wan prerouting	all	eth0.2	*	0.0.0/0	0.0.0/0	ID:66773300
Chain POST	TROUTING (Policy: AC	CEPT, 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	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	ID:66773300
7932	634.35 KB	zone wan postrouting	all	*	wwan0	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	ID:66773300
Chain zone	_lan_postrouting (Re	ferences: 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	ID:66773300 /* user chain for postrouting */
Chain zone	lan prerouting (Refe	erences: 1)						
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Ontions
4408	312.89 KB	prerouting_lan_rule	all	*	*	0.0.0.0/0	0.0.0/0	ID:66773300 /* user chain for prerouting */
Chain zone	von postrouting (Re	eferences: 0)						
Dkto		Target	Brot	In	Out	Courco	Dectination	Ontions
PKLS.	0.00 P	nestrouting yop, rule	PIUL OIL	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for pertrouting */
0	0.00 B	MASOLIEPADE	all	*	*	0.0.0/0	0.0.0.0/0	ID:66772200
0	0.00 D	HASQUEIGADE	an			0.0.0.0/0	0.0.0.0/0	10.00775500
Chain zone	_vpn_prerouting (Ref	erences: 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	ID:66773300 /* user chain for prerouting */
Chain anns	was sectrouting (D	oferences, 2)						
Chain 2011e	_wan_postrouting (K	elerences: 2)						
Pkts.	Iraffic	larget	Prot.	In	Out	Source	Destination	Options
7932	634.35 KB	MINIUPNPD-POSTROUTING	all	*	*	0.0.0/0	0.0.0/0	
7932	634.35 KB	postrouting_wan_rule	all			0.0.0/0	0.0.0/0	ID:66//3300 /* user chain for postrouting */
/932	034.30 KB	MASQUERADE	ali			0.0.0/0	0.0.0/0	ID:06773300
Chain zone	_wan_prerouting (Re	ferences: 2)						
Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	MINIUPNPD	all	*	*	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	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,

penwrt Designated		Unsave	d Changes: U Adr	ministratio
System Service	es Network Logout			
w Firewall <b>Rou</b>	tes System Log Kernel Log Realtime	Graphs		
sword set! no password set o assword configuration	n this router. Please configure a root passwo	ord to protect the web interface an	d enable SSH.	
wing rules are curre	antly active on this system.			
TDv/1-A	1drocc	MAC-Addross	Into	rfaco
192 168	10 181	20:60:00:	hr-	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	eth	0.2
wan2 wan2 wan2 wan2 wan2 lan wan wan	0.0.0,0/0 0.0.0,0/0 0.0.0,0/0 10.162.247.128/28 10.162.247.137 192.168.10.0/24 192.168.100.0/24 192.168.100.1	10.162.247.137 192.168.100.1 10.162.247.137	0 10 30 30 30 0 10 10	2 main main main main main main main
IPv6-Routes	Target	Source	Metric	Table
lan	fdc9:81d:c6c::/64	Source	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
leighbours				
IPv6-	Address	MAC-Address	Interf	ace
IPv6-	Address	MAC-Address	Interf	ace

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 Designa	ated Driver r49395   Load: 0.00 0.01 0.05 Unsaved Changes: 0	Administration	Fail-safe
Status System Ser	rvices Network Logout		-
Overview Firewall F	Routes System Log Kernel Log Realtime Graphs		
System Log			
Tue Can 11 00-50-44 20			
Tue Sep 11 09:58:44 20	J18 daemon.err insmod: module is already loaded - xt_comment		
Tue Sep 11 09:58:44 20	All demon partice collective installes at easy loaded - At Length		
Tue Sep 11 09:58:44 20	all deemon notice canadination in a solution of the solution o	ion	
Tue Sep 11 09:58:45 20	All user notice cost modem setup; init network	1011.	
Tue Sep 11 09:58:46 20	Alls kern infic kernel: [ 23 3934461 8021c, adding VIAN 0 to HW filter on device eth0		
Tue Sep 11 09:58:46 20	18 kern info kernel: [ 23,472868] device eth0.1 entered promiscuous mode		
Tue Sep 11 09:58:46 20	al8 kern.info kernel: [ 23.482500] device eth0 entered promiscuous mode		
Tue Sep 11 09:58:46 20	18 kern info kernel: [ 23,571144] br-lan: port 1(eth0.1) entered forwarding state		
Tue Sep 11 09:58:46 20	218 kern, info kernel: [ 23,582349] br-lan: port 1(eth0.1) entered forwarding state		
Tue Sep 11 09:58:46 20	al8 daemon.notice netifd: Interface 'lan' is enabled		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'lan' is setting up now		
Tue Sep 11 09:58:46 20	al8 daemon.notice netifd: Interface 'lan' is now up		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'loopback' is enabled		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'loopback' is setting up now		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'loopback' is now up		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'wan' is enabled		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'wan6' is enabled		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Interface 'wan2' is enabled		
Tue Sep 11 09:58:46 20	318 daemon.notice netifd: Bridge 'br-lan' link is up		
Tue Sep 11 09:58:46 20	18 daemon.notice netifd: Interface 'lan' has link connectivity		
Tue Sep 11 09:58:46 20	18 daemon.notice netifd: Network device 'eth0' link is up		
Tue Sep 11 09:58:46 20	18 daemon.notice netifd: VLAN 'eth0.1' link is up		
Tue Sep 11 09:58:46 20	J18 daemon.notice netifd: Network device 'lo' link is up		
Tue Sep 11 09:58:46 26	Jis daemon.notice netitd: interface 'looppack' has link connectivity		
Tue Sep 11 09:58:46 20	Jio daemon.notice netito: VLAN etn0.2 link is up		
Tue Sep 11 09:58:46 20	Jis daemon.notice netifa: Interface wan has link connectivity		
Tue Sep 11 09:58:46 26	10 daemon.notice netitu: intertace wan is setting up now		
Tue Sep 11 09:58:46 20	12 daemon notice helito: Interface wand has link connectivity		
Tue Sep 11 09:58:46 20	Alls deemon notice metiful. Interface wand is setting up now		
Tue Sep 11 09:58:46 26	Als deemon notice netifu, Intervork device wwante link is up		
Tue Sep 11 09:58:46 20	All datamon notice netifd: Interface 'wan2' has fill connectivity		
Tue Sep 11 09:58:47 20	18 user notice root: [GREMON] lan ( <-> br-lan ) is if un		
Tue Sep 11 09:58:47 20	Al8 daemon notice petifd: wan (1583): udbrpc (v1.24.1) started		
Tue Sep 11 09:58:47 20	118 daemon notice netifd: wan2 (1582): udhchc (v1.24.1) started		
Tue Sep 11 09:58:47 20	al8 user.notice root; udhcpc script; 1st param=deconfig		
Tue Sep 11 09:58:47 20	218 user.notice root; udhcpc script; deconfig interface		
Tue Sep 11 09:58:47 20	al8 daemon.notice netifd: wan2 (1582): Sending discover		
Tue Sep 11 09:58:48 20	318 daemon.err insmod: module is already loaded - xt multiport		
Tue Sep 11 09:58:48 20	al8 user.notice root: udhcpc script: 1st param=deconfig		

# 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
Status System Services Network Logout	
Ouemieu Finnell Bautes Suster Les Kennelles Basking Granks	
Overview Firewall Routes System Log <b>Kerliel Log</b> Realtime Graphs	
No password set! There is no password set on this router. Please configure a root password to protect the enable SSH. Go to password configuration	e web interface and
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 he control	
[ 0.000000] Figital Pho Set to ho Control	
[ 0.000000] Soc Type: Mediatek Mirozok ver:2 e0:6	
[ 0.000000] CDUC register is: 00010650 (WIDS 24WEG)	
[ 0.000000] MUDS ; working is WT25200 2107	
[ 0.000000] Mirs: machine is Miroba-Solo	
[ 0.000000] Becentined physical Kar map.	
[ 0.000000] Initry of found or empty - disabling initrd	
[ 0.000000] Zone ranges:	
[ 0.000000] Normal [mem 0x00000000000000-0x000000007ffffff]	
[ 0.000000] Movable zone start for each node	
[ 0.000000] Early memory node ranges	
[ 0.000000] node 0: [mem 0x00000000000000000000000007ffffff]	
[ 0.000000] Initmem setup node 0 [mem 0x000000000000000-0x00000000	007ffffff]
[ 0.000000] On node 0 totalpages: 32768	
[ 0.000000] free area init node: node 0, pgdat 803863b0, node mem m	nap 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。

OpenWrt   OpenWrt Designated Driver r49395   Loa	d: 0.09 0.17 0.16   Auto Refresh: on	Administration Fail-safe
		Unsaved Changes: 0
Status System Services Network	Logout	
System Administration Backup / Flash Firm	nware Reboot	
There is no password set on this router. Please <u>Go to password configuration</u>	configure a root password to protect the w	eb interface and enable SSH.
System		
Here you can configure the basic aspects of your	device like its hostname or the timezone.	
System Properties		
General Settings   Logging   Language and	I Style	
Local Time	Thu Jul 19 11:53:15 2018 Sync with brow	wser
Hastname		1
Hostiane	Openvvrt	
Timezone	Asia/Taipei 🔹	
Time Synchronization		
Enable NTP client	s	
Provide NTP server		
NTP server candidates	0.time.google.com	$\mathbf{x}$
	1.openwrt.pool.ntp.org	*
	2.openwrt.pool.ntp.org	×
	3.openwrt.pool.ntp.org	
🙆 Reset		Save 🖸 Save & Apply
Powered by LuCI Master (pit-17,165,70928-dd6cb3	1)	

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:

enWrt   OpenWrt Designated Driver r49395   Load: 0.44 0.25 0.22   Auto Refresh: on Administration Fail-saf
Unsaved Changes:
Status System Services Network Logout
System Administration Backup / Flash Firmware Reboot
<b>No password set!</b> There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. <u>Go to password configuration</u>
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 • kiB
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 r	49395   Load: 0.44 0.25 0.22   Auto Refresh: on	Administration Fail-saf
		Unsaved Changes:
Status System Services Network	Logout	
System Administration Backup / F	lash Firmware Reboot	
No password set! There is no password set on this rout <u>Go to password configuration</u>	er. Please configure a root password to protect the we	b interface and enable SSH.
System		
Here you can configure the basic asp	ects of your device like its hostname or the timezone.	
General Settings Logging Langu	age and Style	
Language	auto	
Design	OpenWrt T	
	OpenWrt	
<b>I </b>	Bootstrap	

## 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

Status System Services Network	Logout
System Administration Backup / Fla	sh Firmware Reboot
outer Password	
hanges the administrator password for a	ccessing the device
Password	🤌 loginpassword 🔗
Confirmation	loginpassword
SH Access	
ropbear offers <u>SSH</u> network shell access	and an integrated SCP server
Dropbear Instance	
Tabadaaa	* Delete
interface	
	wan.g
	wan6: ***
	<ul> <li>wan6: m</li> <li>unspecified</li> </ul>
	<ul> <li>wan6: #</li> <li>unspecified</li> <li>Listen only on the given interface or, if unspecified, on all</li> </ul>
Port	<ul> <li>wan6: ::::</li> <li>unspecified</li> <li>Listen only on the given interface or, if unspecified, on all</li> <li>22</li> <li>Specifies the listening port of this <i>Dropbear</i> instance</li> </ul>
Port Password authentication	<ul> <li>wan6: ::::</li> <li>unspecified</li> <li>Listen only on the given interface or, if unspecified, on all</li> <li>Image: Specifies the listening port of this Dropbear instance</li> <li>Allow SSH password authentication</li> </ul>
Port Password authentication Allow root logins with password	<ul> <li>wan6: ***</li> <li>unspecified</li> <li>Listen only on the given interface or, if unspecified, on all</li> <li>22</li> <li>Specifies the listening port of this Dropbear instance</li> <li>Allow SSH password authentication</li> <li>Allow the root user to login with password</li> </ul>
Port Password authentication Allow root logins with password Gateway ports	<ul> <li>wan6: ***</li> <li>unspecified</li> <li>Listen only on the given interface or, if unspecified, on all</li> <li>22</li> <li>Specifies the listening port of this Dropbear instance</li> <li>Allow SSH password authentication</li> <li>Allow the root user to login with password</li> <li>Allow remote hosts to connect to local SSH forwarded ports</li> </ul>
Port Password authentication Allow root logins with password Gateway ports	<ul> <li>wan6: ***</li> <li>unspecified</li> <li>Listen only on the given interface or, if unspecified, on all</li> <li>22</li> <li>Specifies the listening port of this Dropbear instance</li> <li>Allow SSH password authentication</li> <li>Allow the root user to login with password</li> <li>Allow remote hosts to connect to local SSH forwarded ports</li> </ul>

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

Rou	uter Password		
Cha	anges the administrator password for accessin	g the device	
	Password	»	] #
	Confirmation	2	] #

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 SSII 轉發端口

	*De
Interface	• lan: 📰 🖷
	• wan: m
	• wan2: 🗷
	<ul> <li>wan6: m</li> </ul>
	<ul> <li>unspecified</li> </ul>
	<ul> <li>Listen only on the given interface or, if unspecified, on all</li> </ul>
Port	22 • Specifies the listening port of this <i>Dropbear</i> instance
Password authentication	Allow SSH password authentication
Allow root logins with password	a o Allow the root user to login with password
Gateway ports	Allow remote hosts to connect to local SSH forwarded ports

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

int   Openwitt Designated Driver I		changes. V Administration
tus System Services Netwo	rk Logout	
stem Administration Backup /	Flash Firmware Reboot	
h anarstianr		
ions Configuration		
Backup / Restore		
Click "Generate archive" to down initial state, click "Perform reset"	load a tar archive of the current configuratio (only possible with squashfs images).	on files. To reset the firmware to its
Download backup:	Generate archive	
Download Dackup.		
Reset to defaults:	Perform reset	
To restore configuration files, you	ı can upload a previously generated backup	archive here.
Restore backup:	選擇檔案 未選擇任何檔案	Upload archive
Flash new firmware image		
Upload a sysupgrade-compatible current configuration (requires a	image here to replace the running firmware compatible firmware image).	. Check "Keep settings" to retain the
Keep settings:	×	
Image:	選擇檔案 未選擇任何檔案	Flash image

(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

enWrt   OpenWrt Designated Driver	r49395   Load: 0.12 0.13	3 0.18 Unsave	ed Changes: O	Administration Fail-
Status System Services N	letwork Logout			
System Administration Back	up / Flash Firmware 🛛 F	Reboot		
No password set! There is no password set on this ro <u>Go to password configuration</u>	outer. Please configure a	root password to prot	ect the web inter	face and enable SSH.
Flash operations				
Actions				
Backup / Restore				
Click "Generate archive" to dow state, click "Perform reset" (only	nload a tar archive of the y possible with squashfs i	current configuration mages).	files. To reset the	firmware to its initial
Download backup:	🖸 Genera	te archive		
Reset to defaults:	Perform	n reset		
To restore configuration files, yo	ou can upload a previousl	y generated backup a	rchive here.	
Restore backup:	選擇檔案	未選擇任何檔案	🖸 Upload a	archive
Elach nou firmularo imago				
Upload a sysupgrade-compatibl current configuration (requires a	e image here to replace t a compatible firmware ima	he running firmware. ( age).	Check "Keep setti	ngs" to retain the
Keep settings:				
Image:	選擇檔案	2018-07-05_B… ait15s	s-1.dat 🖪 Flash im	nage
wered by LuCI Master (git <u>-17-165-3</u>	70928-dd6ch31)			

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。

Op	enWrt   O	oenWrt Desig	gnated [	Driver r49395	Load: 0.18 0	.13 0.15	Unsaved Changes: O	Administration Fail-	safe
	Status	System 🛛	Services	5 Network	Logout				_
ŀ	System	Administra	tion <b>I</b>	Backup / Flas	h Firmware	Rebpot			4
	No passy There is r <u>Go to pas</u>	<b>vord set!</b> no password isword confic	set on t guration	this router. Ple	ase configure	a root passwoi	d to protect the web inte	rface and enable SSH.	
	Flash Fi	rmware -	Verify	у					_
	The flash i integrity. Click "Proc	mage was up eed" below t	ploaded to start (	. Below is the the flash proce	checksum and edure.	l file size listed,	compare them with the o	riginal file to ensure data	
	• Cher MD5 SHA:	cksum : 8d540747ab) 256:	b01f325	80cfc7b4b56aa	d2				
	Size     Cont	: 5.50 MB (15 figuration file	5.69 MB s will be	available) e kept.					
								Cancel 🔲 Procee	d
P	owered by	LuCI Master	(git-17.	.165.70928-dd	6cb31)				

### 4-4 Reboot 重啟

#### Reboot 重新啟動:System→Reboot

重新啟動設備的操作系統

OpenWrt   OpenWrt Designated Driver r49395   Load: 0.00 0.11 0.27 Unsaved Changes: 0 Administration Fail-sa						
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 Reboot						
Reboots the operating system of your device						

# 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

 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並定。 Path of URL to report GPS: 紀錄網址路徑 <u>http://demo.pnpipcameras.com/IWR\_GPS/iotcurlgps.php</u>

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

OpenWrt   OpenWrt Designated Driver r49395   Load: 0.02 0.04 0.05		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 th Go to password configuration	e web interface and enable SSH	I.	
IoT router gps gateway			
GPS gateway gethers GPS data and sends to cloud server GPS GW parameters CFG027DB1 CFG027DB1			
Start GPS GateWay service			
GPS Report interval(3 ~ 65535 seconds) 5			
Path of URL to report GPS http://demo.pnpipcameras.com/l	WR_GPS/iot		
Report user name username			
Report password password			
©Reset		Save Save	& Apply

#### 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/

		<u>Searcher</u> Get Total Rows : 8		
MAC	IMEI	Date Time (DDMMYY HHMMSS)	GPS address	Map link
00:09:b5.00.77.00	861107031320121	200718 040633	2504.134719,N, 12137.344393,E	Click Map
00:09:b5	861107035028035	220818 074546	2504.123576,N, 12137.328417,E	Click Map
00:09:b5:	861107036162627	170918 034349	2503.583186,N, 12132.661951,E	<u>Click Map</u>
00:09:b5	861107037130920	240818 103439	2504.154933,N, 12137.354538,E	<u>Click Map</u>
00:09:b5:	863424030864548	180718 015810	2503.586610,N, 12132.648894,E	Click Map
00:09:b5	863424030864803	160718 084200	2503.581382,N, 12132.677074,E	Click Map
00:09:b5:	863424030866329	310718 033527	2504.132246,N, 12137.347423,E	<u>Click Map</u>
00:09: <b>b</b> 5	866758040407070	170918 013307	2504.139912,N, 12137.356030,E	Click Map

# GPS

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 <u>Click Map</u>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。



### 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

00 0.01 0.09	Unsaved Changes: 0	Administration	Fail-s
t			
			_
gure a root password to protect th	ne web interface and enable SS	н.	
oud server			
			_
N			
A1234567-890B-1234-5678-90C	123456789		
22345678-90ab-cdef-1234-5678	90abcdef		
32345678-90ab-cdef-1234-5678	90abcdef		
42345678-90ab-cdef-1234-5678	90abcdef		
52345678-90ab-cdef-1234-5678	90abcdef		
62345678-90ab-cdef-1234-5678	90abcdef		
72345678-90ab-cdef-1234-5678	90abcdef		
82345678-90ab-cdef-1234-5678	90abcdef		
60			
30			
61.56.193.66			
1883			
username			
password			
Beacon			
Heartbeat			
	b0 0.01 0.09         t         pure a root password to protect the         bud server         bud server	00 0.01 0.09         00 0.01 0.09         00 0.01 0.09           t         00 0.01 0.09         00 0.01 0.09         00 0.01 0.09           t         00 0.01 0.09         00 0.01 0.09         00 0.01 0.09           pure a root password to protect the web interface and enable SS         00 0.01 0.09         00 0.01 0.09           pure a root password to protect the web interface and enable SS         00 0.01 0.09         00 0.01 0.09           pure a root password to protect the web interface and enable SS         00 0.01 0.09         00 0.01 0.09           pure a root password to protect the web interface and enable SS         00 0.01 0.09         00 0.01 0.09           pure a root password to protect the web interface and enable SS         00 0.01 0.09         00 0.01 0.09           pure a root password to protect the web interface and enable SS         00 0.01 0.09         00 0.01 0.09           pure a root password to protect 1234-567890abcdef         00 0.01 0.09         00 0.00         0	Or OUT OLDS       Onsaved Changes: 0       Administration         t       Improve a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pure a root password to protect the web interface and enable SSH.         pastbook codef.1234-567890abcdef         pastbook codef.1234-567890abcdef

### 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

HTTPd	
( ightweight single-threaded HTTP(3) server	
MAIN	Delete
General Settings    Full Web Server Settings    A	dvanced Settings
HTTP listeners (address:port)	0.0.0:80
HTTPS listener (address:port)	0.0.0:443 [::]:443 Bind to specific interface:port (by specifying interface address
Redirect all HTTP to HTTPS	2
Ignore private IPs on public interface	o Prevent access from private (RFC1918) IPs on an interface if it has an 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	<ul> <li>Remove old certificate and key</li> <li>uHTTPd will generate a new self-signed certificate using the configuration shown below.</li> </ul>
Remove configuration for certificate and key	<ul> <li>Remove configuration for certificate and key</li> <li>This permanently deletes the cert, key, and configuration to use same.</li> </ul>

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

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

Wrt   OpenWrt Designated Driver r49395   Load: 0.	00 0.06 0.11	Unsaved Changes: 0	Administration	Fail-saf
Status System Services Network Logou	t.			
GPS GW Beacon GW uHTTPd Serial GW				_
<b>No password set!</b> There is no password set on this router. Please config <u>So to password configuration</u>	ure a root password to pro	tect the web interface and enable :	55Н.	
T router serial gateway				
erial gateway connects RS232 device and sends data	to cloud server by TCP			
Serial GW parameters				
CFG02E751				
Start Serial GateWay service	0			
TCP port number(1024 $\sim$ 65535) which SerGW	12345			
connects with				
IP address which SerGW connects with by TCP	123.234.123.234			
duplex	half ② Send to remote only	▼ / Send and Receive		
baud	115200	T		
data_bits	8 RS232 number of da	▼ ata bits		
parity	None RS232 Parity selecti	▼ on		
stop_bits	1 RS232 number of st	▼ op bits		
Reset			Save Save 8	& Apply

# 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

tatus System	Services Network Logout				UIIS	aveu	Chang
nterfaces Wirel oad Balancing VAN WAN6 WA	ess Switch DHCP and DNS Hostnames N2 LAN	Static Routes Firewall	Diagn	ostics	s Qos	5	
terfaces	<i>2</i>						
Interface Overv Network	view Status Uptime: 2h 23m 18s		Ac	tions			
LAN ⊮ (ഈ⊛) br-lan	MAC-Address: 00:09:85: RX: 12.59 MB (107507 Pkts.) TX: 57.21 MB (121638 Pkts.) IPv4: 192.168.10.1/24 IPv6: fdf9:17aa:a712::1/60	2 Connect	Stop	2	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	S Connect S	Stop	2	Edit	×	Delete
WAN2 wwwan0	Uptime: 2h 23m 2s MAC-Address: F6:28:79:777777777777777777777777777777777	Seconnect Seconnect	Stop	2	Edit	×	Delete
eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09:85 RX: 220.63 MB (306318 Pkts.) TX: 807.65 KB (8653 Pkts.)	8 Connect 🧔	Stop		Edit	*	Delete
Global network	options						
IPv6 ULA-Prefix	fdf9:17aa:a712::/4	8	14				

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 / Geteway / DNS

enWrt   OpenWrt Designated Driver r49395   Load: 0.00 0.10	0.15   Auto Refresh: on	Unsaved Changes: 6	Administration	Fail-saf
Status System Services Network Logout				
Interfaces Wireless Switch DHCP and DNS Hostname	s Static Routes Firewall Diagnostics	QoS Load Balancing		
WAN WAN6 WAN2 LAN				_
Interfaces - WAN				
On this page you can configure the network interfaces. You can interfaces separated by spaces. You can also use <u>VLAN</u> notation	n bridge several interfaces by ticking the on INTERFACE.VLANNR (e.g.: eth0.1).	"bridge interfaces" field and enter the name	es of several network	
Common Configuration				
General Setup Advanced Settings Physical Settings Fi	rewall Settings			
Status	Uptime: 8h 24m 25s MAC-Address: 00:09:1 eth0.2 TX: 1.54 GB (1618785 TX: 13.22 MB (183346 IPv4: 192.168.100.121	35:00:00:65 Pkts.) Pkts.) /24		
Protocol	Static address	T		
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	<u>1</u>		
IPv6 assignment length	disabled Assign a part of given length	<ul> <li>v</li> <li>of every public IPv6-prefix to this interface</li> </ul>		
IPv6 address				
IPv6 gateway				
IPv6 routed prefix	Public prefix routed to this de	vice for distribution to clients.		
IPv6 suffix	Optional. Allowed values: 'eu (like 'a:b:c:d::') is received fror address ('a:b:c:d::1') for the in	[64', 'random', fixed value like '::1' or '::1:2', n a delegating server, use the suffix (like '::1 terface.	. When IPv6 prefix ') to form the IPv6	

DHCP	設定	:	自	動	取得	IP
PHOL			-	-		

OpenWrt   OpenWrt Designated Driver r49395   Load: 0.01 0.03 0.05   Auto Refresh: on Administration Fail-s
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 <u>VLAN</u> notation INTERFACE.VLANNR (e.g.: eth0.1).
Common Configuration
General Setup Advanced Settings Physical Settings Firewall Settings
Status       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 DHCP client
Hostname to send when requesting DHCP OpenWrt
Back to Overview Reset Save Save Save Save Save Save Save Save

### 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	0.03 0.05   Auto Refresh: on Un	saved Changes: 5	Administration	Fail-safe
Status System Services Network Logout				
Interfaces Wireless Switch DHCP and DNS Hostnames S	Static Routes Firewall Diagnostics QoS L	oad Balancing		
WAN WAN6 WAN2 LAN				
No password set! There is no password set on this router. Please configure a Go to password configuration	a root password to protect the web inter	face and enable SSH.		
Interfaces - WAN				
On this page you can configure the network interfaces. Yo names of several network interfaces separated by spaces.	u can bridge several interfaces by tickin You can also use <u>VLAN</u> notation INTERF.	g the "bridge interfaces ACE.VLANNR ( <u>e.g.</u> : eth0.	" field and enter th 1).	e
Common Configuration General Setup Advanced Settings Physical Settings Fir Status	ewall Settings RX: 0 B (0 Pkts.) pppoe-wan TX: 0 B (0 Pkts.)			
Protocol	PPPoE •	7		
PAP/CHAP username	88888888@hinet.net			
PAP/CHAP password				
Access Concentrator	auto Leave empty to autodetect			
Service Name	auto 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   L	oad: 0.01 0.03 0.05   Auto Refresh: on Administration Fail-sa
	Unsaved Changes
Status System Services Network Lo	ogout
Interfaces Wireless Switch DHCP and DI	NS Hostnames Static Routes Firewall Diagnostics QoS
Load Balancing	
WAN WANG WANZ LAN	
Interfaces - WAN	
On this page you can configure the network int interfaces" field and enter the names of severa notation INTERFACE.VLANNR (e.g.: eth0.1).	erfaces. You can bridge several interfaces by ticking the "bridge I network interfaces separated by spaces. You can also use <u>VLAN</u>
Common Configuration	
General Setup Advanced Settings Physic	al Settings Firewall Settings
Bring up on boot	
Use builtin IPv6-management	
Force link	carrier sense events do not invoke hotplug handlers).
Use broadcast flag	Required for certain ISPs, e.g. Charter with DOCSIS 3
Use default gateway	🗷 💿 If unchecked, no default route is configured
Use DNS servers advertised by peer	If unchecked, the advertised DNS server addresses are ignored
Use gateway metric	10
Client ID to send when requesting DHCP	
Vendor Class to send when requesting DHC	P
Override MAC address	00:09:B5:00:00:65
Override MTU	1500
Dial-up User name for modem using RNDIS	
driver	
Dial-up Password for modem using RNDIS	2
driver	
Dial-up APN for modem using RNDIS driver	
SIM card PIN code for modem using RNDIS	

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

Open	Nrt   Open	Wrt Designa	ted Drive	r49395   Load: 0	.89 0.39 0.39	Auto Refresh:	on	Unsaved	Chang	es: 0	Administration	Fail-safe
S	tatus Sys	stem Serv	ices Ne	twork Logo	ut							
Ι	nterfaces	Wireless	Switch	DHCP and DNS	Hostnames	Static Routes	Firewall	Diagnostics	QoS	Load Bala	incing	
V	AN WAI	N6 WAN2	LAN				_		_	_		-
N T G	o passwoi nere is no p o to passwi	<b>rd set!</b> bassword se ord configur	t on this r ation	outer. Please confi	gure a root pa	assword to prote	ct the web	interface and	enable	SSH.		
In	erfaces -	WAN										
Or of	this page several net	you can con twork interfa	figure the aces separ	network interface ated by spaces. Y	s. You can bri ou can also us	dge several inte e <u>VLAN</u> notation	faces by t INTERFACE	icking the "bri .VLANNR ( <u>e.g.</u> :	dge inte eth0.1	erfaces" fiel ).	d and enter the	names
	Common	Configurati	ion									
	General Se	etup Adva	nced Sett	ings Physical Se	ttings Firew	all Settings						
	Bridge int	erfaces			🗆 😢 C	reates a bridge (	over specifi	ed interface(s	)			
	Interface					Ethernet Switch: Switch VLAN: "el Switch VLAN: "el Ethernet Adaptel Ethernet Adaptel Wireless Networl Custom Interface	"eth0" h0.1" ( <u>lan</u> h0.2" ( <u>war</u> : "teql0" : "wwan0" :: Master " e:	) <u>n, wan6</u> ) ( <u>wan2</u> ) HotSpot-00:09	9:b5:00	):00:64" ( <u>la</u>	<u>an)</u>	
	Back to Ove	rview 🔞 Rese	t								Save Save	& Apply

enWrt   OpenWrt Designated Driver r4939!	5   Load: 0.01 0.03 0.05   Auto Refresh: on	Administration Fail-s
		Unsaved Changes
Status System Services Network	Logout	
Interfaces Wireless Switch DHCP an	d DNS Hostnames Static Routes Firewall Diag	nostics QoS
Load Balancing		
WAN WAN6 WAN2 LAN		
nterfaces - WAN		
eld and enter the names of several network NTERFACE.VLANNR (e.g.: eth0.1).	rk interfaces separated by spaces. You can also use	VLAN notation
General Setup Advanced Settings Ph	ysical Settings Firewall Settings	
Create / Assign firewall-zone	○ lan: lan: ﷺ 👳	
	• vpn: (empty)	
	wan: wan: wan6: wan2: 2	
	• unspecified -or- create:	
	Choose the firewall zone you want to assign Select unspecified to remove the interface fro zone or fill out the create field to define a new interface to it.	n to this interface. m the associated v zone and attach the
Back to Overview Reset		Save Save & App

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

# 6-2 Wireless 無線設置

Wireless 無線設定:Network→Wireless

OpenWrt   OpenWrt Desig	nated Driver r49	9395   Load: 0	00 0.05 0.21	Auto Refresh:	on	Unsaved	Change	s: 0 Admir	nistratio	n Fail-safe
Status System S	ervices Netwo	ork Logou	ut							
Interfaces Wireles	s Switch DH	HCP and DNS	Hostnames	Static Routes	Firewall	Diagnostics	QoS	Load Balancing	_	_
radio0: Master "HotS	pot-00:09:b5:00	0:00:64"	_	_	_	_	_	_	_	_
No password set! There is no password Go to password confi	set on this route juration	er. Please confi	gure a root pa	assword to prote	ct the web	interface and	enable (	SSH.		
Wireless Overview										
Generic MA Channel: 6	C80211 802.11 (2.437 GHz)   Bi SSID: HotSpot- BSSID: 00:09:1	1bgn (radio0) itrate: ? Mbit/s -00:09:b5:00:0 B5:00:00:64	0:64   Mode Encryption:	: Master None				Scan Disable		Add Edit
Associated Stations										
SSID	MAC-Add	dress	Host	Signa	/ Noise		I	RX Rate / TX R	ate	
			No	information ava	ilable					
Powered by LuCI Master	(git-17.165.709	28-dd6cb31)								

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<sup>[11]</sup>,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

General Setup Advanced Settings	
Country Code	00 - World ▼ ② Use ISO/IEC 3166 alpha2 country codes.
Distance Optimization	Distance to farthest network member in meters.
Fragmentation Threshold	
RTS/CTS Threshold	

#### 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

<sup>))</sup> 無線網路連線 4		Þ
網路工作	選擇一個無線網路	
🛃 重新整理網路清單	按下列清單中的一個項目來連線到範圍內的無線網路或取得其他資訊(型)	
💐 為住家或小型辦公室設	((Q)) <sup>123ss</sup>	<u>^</u>
人上开开和某种句话合	▲ 督用安全性的無線網路	•000
相關的工作	((Q)) RealTek-PQA-Jerry	
<li>(j) 了解有關無線網路</li>	₿ 啓用安全性的無線網路	
▲ 総東支に畑段的順度	((Q)) default	
Sector and and a sector and a s	無安全性的無線網路	
🎐 變更進階設定	((Q)) 2900G	
	■ 無安全性的無線網路	util
	((Q)) 2800¥GI	
	■ 無安全性的無線網路	ull
	((Q)) 2900¥GI	~
		連線(C)

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

ESSID	HotSpot-00:09:b5:00:00:64
Mode	Access Point
Network	<pre>✓ lan: ഈ  wan: ഈ wan2: ₽ wan6: ₽ </pre>
Hide ESSID	<ul> <li>Choose the network(s) you want to attach to this wireless interface or fill out the create field to define a new network.</li> </ul>
WMM Mode	2

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

Interface Configuration	
General Setup Wireless Security MAC-Filter Adv	anced Settings
Encryption	No Encryption 🔻
	No Encryption
	WEP Open System
	WEP Shared Key
Back to Overview BReset	WPA-PSK
	WPA2-PSK
	WPA-PSK/WPA2-PSK Mixed Mode
	WPA-EAP
	WPA2-EAP

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

General Setup Wireless Security	MAC-Filter Advanced Settings	
Encryption	WEP Open System	T
Used Key Slot	Key #1	T
Key #1	ø	<i>ø</i>
Key #2	ø	<i>#</i>
Key #3	<i>»</i>	<i>ø</i>
Kev #4	2	

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 混合模式中可以與 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

Encryption	WPA2-PSK
Cipher	auto 🔹
<еу	2345678
302.11r Fast Transition	Image: Image: Provide the state of the state of the state of the same Mobility Domain
802.11w Management Frame Protection	Disabled (default)  Carbon Disabled (default)  C

40

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

General Setup Wireless Security MAC-Filte	r Advanced Settings	
MAC-Address Filter MAC-List	Allow all except listed disable Allow listed only	 ™
	Allow all except listed	

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

Interface Configuration		
General Setup Wireless Security	MAC-Filter Advanced Settings	
Isolate Clients	🗆 🔋 Prevents client-to-client communic	ation
Interface name	Override default interface name	]
Back to Overview 🕲 Reset		Save Dave & Apply

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

penWrt   Oper	nWrt Design	ated Driv	er r49395	Load: 0.05 0.	11 0.13		Unsaved Char	nges: 0	Administ	ration Fail-s
Status Sy	stem Ser	vices	letwork	Logout						
Interfaces	Wireless	Switch	DHCP and	DNS Hostna	mes Static Rou	utes Firewal	I Diagnostics	QoS	Load Balancin	g
No passwo There is no <u>Go to passw</u>	ord set! password s vord configu	et on this iration	router. Plea	se configure a	root password to	protect the v	veb interface ar	nd enab	le SSH.	
Join Netwo	rk: Wireles	is Scan								
20% Cha	nnel: 1   M	lode: Mas	ster   <b>BSSID</b>	: FC:4A:E9:	Encry	otion: mixed	WPA/WPA2 - PS	K		Join Network
37% Cha	nnel: 1   M	lode: Mas	ster   <b>BSSID</b>	: 18:31:BF:	Encry	otion: <u>WPA2</u>	PSK			Join Network
28% Cha	nnel: 6   M	lode: Mas	ster   <b>BSSID</b>	: 00:09:B5:	Encry	otion: mixed	WPA/WPA2 - PS	K		Join Network
34% Cha	nnel: 6   M	lode: Mas	ster   BSSID	: EC:1F:72:	Encry	otion: WPA2 -	PSK			Join Network
25% Cha	nnel: 6   M	lode: Mas	ster   <b>BSSID</b>	: 14:CC:20:	Encry	ption: <u>mixed</u>	WPA/WPA2 - PS	5K		Join Network
-										
								8	Back to overview	Repeat scan

## 6-3 Switch 開關設置

#### SWITCH 網路開闢:Network→Switch

此設備上的網絡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

Status       System       Services       Network       Logout         Interfaces       Wireless       Switch       DHCP and DNS       Hostnames       Static Routes       Firewall       Diagnostics       QoS       Load Balancing         No       password set       on this router. Please configure a root password to protect the web interface and enable SSH.       So to password set on this router. Please configure a root password to protect the web interface and enable SSH.         Switch       Switch       Switch       Hermony 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       Image: CPU (eth0)       LAN       WAN         Port status:       Image: Double set full-duplex       Image: Full-duplex       Image: Full-duplex       Image: Full-duplex         1       tagged       Imagged	Оре	enWrt   Ope	nWrt Design	ated Drive	er r49395   Loa	d: 0.08 0.09 0.1	0   Auto Ref	resh: on	Unsave	d Changes	s: 0 Ad	ministration	Fail-safe
Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing          Mo password set:         There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.         Soutch         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)         VLANs on "switch0" (mt7620)         Interfaces         Integged		Status S	ystem Ser	vices Ne	etwork l	.ogout							
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)         VLANs on "switch0" (mt7620)         Image: the image of the image		Interfaces	Wireless	Switch	DHCP and DI	IS Hostnames	Static Rou	ites Firewall	Diagnosti	cs QoS	Load Bala	ncing	-
Switch         The network ports on this device can be combined to several <u>VLANs</u> in which computers can communicate directly with each other. <u>VLANs</u> are often used to separate different network.         Switch "switch0" (mt7620)         Enable VLAN functionality         VLANs on "switch0" (mt7620)         VLANs on "switch0" (mt7620)         VLANs on "switch0" (mt7620)         VLANs on "switch0" (mt7620)         Image: CPU (eth0)         LAN         VLAN ID         PU (eth0)         LAN         Image: CPU (eth0)         LAN         VLAN ID         PU (eth0)         LAN         Image: CPU (eth0)         LAN         Port status:         Image:		No passw There is no <u>Go to pass</u>	o <b>rd set!</b> password s word configu	et on this iration	router. Please (	configure a root p	assword to	protect the we	eb interface	and enable	e SSH.		
The network ports on this device can be combined to several <u>VLANs</u> in which computers can communicate directly with each other. <u>VLANs</u> 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)  VLANs on "switch0" (mt7620)  Internet and other ports for a local network  Do the next greater network like the internet and other vLANs are often used to separate different network like the internet and other ports for a local network.  Switch "switch0" (mt7620)  VLANs on "switch0" (mt7620)  Internet and other ports for a local network  Number of the next greater network like the internet and other vLANs are often used to separate different network.  Number of the next greater network like the internet and other ports for a local network.  Number of the next greater network like the internet and other ports for a local network.  Number of the next greater network like the internet and other ports for a local network.  Number of the next greater network like the internet and other ports for a local network.  Number of the next greater network like the internet and other ports for a local network.  Number of the next greater network like the internet and other ports for a local network.  Number of the next greater network like the internet and lik	1	Switch											
Enable VLAN functionality         VLANs on "switch0" (mt7620)         VLAN ID       CPU (eth0)       LAN       WAN         Port status:       Image: CPU (eth0)       Image: CPU (eth0)       Image: CPU (eth0)         1000baseT       100baseT       no link       mo link         1000baseT       100baseT       no link       mo link         1       Itagged       v untagged       v off       v Delete         2       Itagged       off       v Delete         Add       Image: CPU (eth0)       Image: CPU (eth0)       Image: CPU (eth0)       Image: CPU (eth0)		The network often used t internet and Switch "	c ports on th o separate d l other ports switch0" (1	is device o lifferent ne for a loca mt7620)	can be combine etwork segmer I network.	d to several VLA ts. Often there is	Ns in which by default	computers car one Uplink por	n communica t for a conn	ate directly ection to t	y with each ( he next grea	other. <u>VLAN</u> s a iter network li	re ke the
VLANs on "switch0" (mt7620)         VLAN ID       CPU (eth0)       LAN       WAN         Port status:       Image: CPU (eth0)       Image: CPU (eth0)       Image: CPU (eth0)         1000baseT       100baseT       no link       Image: CPU (eth0)       Image: CPU (eth0)         1000baseT       100baseT       no link       Image: CPU (eth0)       Image: CPU (eth0) <td></td> <td>Enable V</td> <td>'LAN function</td> <td>nality</td> <td></td> <td>V</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		Enable V	'LAN function	nality		V							
VLANs on "switch0" (mt7620) VLAN ID CPU (eth0) LAN WAN Port status: 1000baseT 100baseT no link full-duplex full-duplex 1 tagged V off V what we have a set of the set of th													
VLAN ID       CPU (eth0)       LAN       WAN         Port status:       Image: Comparison of the status o		VLANs o	n "switch0	" (mt762	0)								
Port status: 1000baseT full-duplex 100baseT full-duplex 100baseT full-duplex 100baseT no link No link			VI	AN ID		CPU (e	th0)	LAN		W	AN		
1000baseT     100baseT     no link       full-duplex     full-duplex       1     tagged     untagged       2     tagged     off       Lagged     off     Imaged       Add     Image     Image			Por	t status:		<i>j</i>	]	jî)		1			
1     tagged     Intagged     off     Imagged       2     tagged     off     Intagged     Imagged       *Add						1000ba full-duj	aseT plex	100bas full-dup	seT llex	nol	ink		
2 [tagged ▼] off ▼] untagged ▼		1				tagged	•	untagged	▼ 0	f	¥	× Delete	
dbA≊		2				tagged	۲	Off	▼ u	ntagged	۲	× Delete	
		Add											
© Save Save & Apply													

### 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 ar	d DNS Hostnames Static Routes Firewall Diagnostics							
QoS Load Balancing								
No password set! There is no password set on this router. Plea enable SSH. <u>Go to password configuration</u>	se configure a root password to protect the web interface and							
DHCP and DNS								
Dnsmasq is a combined <u>DHCP</u> -Server and <u>DNS</u>	-Forwarder for <u>NAT</u> firewalls							
Server Settings								
General Settings Resolv and Hosts Files	TFTP Settings Advanced Settings							
Domain required	Icon't forward DNS-Requests without DNS-Name							
Authoritative	Inis is the only DHCP in the local network							
Local server	/lan/ Cocal domain specification. Names matching this domain are never forwarded and are resolved from DHCP or hosts files only							
Local domain	lan ② Local domain suffix appended to DHCP names and hosts file entries							
Log queries	🔲 😰 Write received DNS requests to syslog							
DNS forwardings	/example.org/10.1.2.3							
Rebind protection	🗏 😰 Discard upstream RFC1918 responses							
Local Service Only	✓							
Non-wildcard	Bind only to specific interfaces rather than wildcard address.							
Active DHCP Leases	MAC-Address Leasetime remaining							

Active DHCP Leases:顯示 ipv4 現己取得 DHCP 租約的電腦名稱、IP、MAC、租約時間 Active DHCPv6 Leases:顯示 ipv6 現己取得 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

Hostname	IPv4-Address	MAC-Address	Leasetime remaining						
Aspire	192.168.10.181	2c:60:0c:	10h 9m 17s						
Active DHCPv6 Le	ases								
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 indentifies 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.									
dynamic interface co Use the <i>Add</i> Button t address to use and t set non-standard ho	nfigurations where only ho to add a new lease entry. T he <i>Hostname</i> is assigned a st-specific lease time, e.g.	sts with a corresponding lease are he MAC-Address indentifies the ho s symbolic name to the requesting 12h, 3d or infinite.	served. st, the <i>IPv4-Address</i> specifies to the fixed host. The optional <i>Lease time</i> can be used to						
dynamic interface co Use the <i>Add</i> Button t address to use and t set non-standard hos <b>Hostname</b>	infigurations where only ho to add a new lease entry. T he <i>Hostname</i> is assigned a: st-specific lease time, e.g. MAC-Address	sts with a corresponding lease are he <i>MAC-Address</i> indentifies the ho s symbolic name to the requesting 12h, 3d or infinite. <u>IPv4</u> -Address Lease	served. st, the <i>IPv4-Address</i> specifies to the fixed host. The optional <i>Lease time</i> can be used to time <u>IPv6</u> -Suffix (hex)						

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

Status System Services Networ	k Logout
nterfaces Wireless Switch DHC	P and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancin
lo password set! here is no password set on this router to to password configuration	Please configure a root password to protect the web interface and enable SSH.
HCP and DNS	
nsmasq is a combined DHCP-Server a	nd <u>DNS</u> -Forwarder for <u>NAT</u> firewalls
Server Settings	
General Settings Resolv and Hosts	Files TFTP Settings Advanced Settings
	Read /etc/ethers to configure the DHCP-Server
USE /etc/ethers	a wead /ccc/cclici's to conligate the brief betver
Leasefile	/tmp/dhcp.leases
Use /etc/ethers Leasefile	/tmp/dhcp.leases iiii where given <u>DHCP</u> -leases will be stored
Use /etc/ethers Leasefile Ignore resolve file	/tmp/dhcp.leases file where given <u>DHCP</u> -leases will be stored
Use /etc/ethers Leasefile Ignore resolve file Resolve file	/tmp/dhcp.leases i file where given <u>DHCP</u> -leases will be stored /tmp/resolv.conf.auto i local <u>DNS</u> file
Use /etc/ethers Leasefile Ignore resolve file Resolve file Ignore /etc/hosts	/tmp/dhcp.leases i file where given <u>DHCP</u> -leases will be stored /tmp/resolv.conf.auto i local <u>DNS</u> file

- 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D NS 伺服器連接埠
DNS query port:設定D NS 伺服器查詢埠
Max. DHCP leases:設定 DHCP 最大和約
Max. EDNS0 packet size:設定 DHCP 最大允計的 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 DHCP-Server and DNS-Forwarder for NAT firewalls

General Settings Resolv and Hosts Fi	Ies TFTP Settings Advanced Settings
Suppress logging	Suppress logging of the routine operation of these protocols
Allocate IP sequentially	Allocate IP addresses sequentially, starting from the lowest available address
Filter private	I lo not forward reverse lookups for local networks
Filter useless	$\ensuremath{\mathnormal{B}}$ @ Do not forward requests that cannot be answered by public name servers
Localise queries	Iccalise hostname depending on the requesting subnet if multiple IPs are available
Expand hosts	$\ensuremath{\mathbb{Z}}$ @ Add local domain suffix to names served from hosts files
No negative cache	Ø Do not cache negative replies, e.g. for not existing domains
Additional servers file	This file may contain lines like 'server=/domain/1.2.3.4' or 'server=1.2.3.4' fordomain-specific or full upstream <u>DNS</u> servers.
Strict order	$\square$ $\bigcirc$ <u>DNS</u> servers will be queried in the order of the resolvfile
Bogus NX Domain Override	67.215.65.132 G hosts that supply bogus NX domain results
DNS server port	53
DNS query port	any Fixed source port for outbound DNS queries
Max. DHCP leases	unlimited Maximum allowed number of active DHCP leases
Max. EDNS0 packet size	1280 Maximum allowed size of EDNS.0 UDP packets
Max. concurrent queries	150 Maximum allowed number of concurrent DNS 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

O	OpenWrt   OpenWrt Designated Driver r49395   Load: 0.00 0.03 0.05 Unsaved Changes: 0 Administratio										Administration	Fail-safe
	Status 9	system Se	rvices	letwork	.ogout							
	Interfaces	Wireless	Switch	DHCP and DN	S Hostnames	Static Routes	Firewall	Diagnostics	QoS	Load	Balancing	
	<b>No password set!</b> There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. <u>Go to password configuration</u>											
	Hostname	5										
	Host en	tries										
			Hos	tname				IP address				
	This section contains no values vet											
	Add											
												. Annh
	Reset										Save Save	s Apply
P	owered by L	uCI Master (	git-17.16	5.70928-dd6cb3	31)							

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 r493	Administration Fail-safe						
		Unsaved Changes: 7					
Status System Services Network	Logout						
Interfaces Wireless Switch DHCP	and DNS <b>Hostnames</b> Static Routes Firewa	all 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. <u>Go to password configuration</u>							
Hostnames							
Host entries							
Hostname	IP address						
	192.168.10.202 (00:12:17:	▼ ×Delete					
1 Add	192.168.10.202 (00:12:17:						
@Reset	192.168.100.253 (00:11:32 (1000)) 192.168.100.1 (f8:d1:11 (1000)) 192.168.10.200 (00:12 (1000)) 192.168.10.181 (2c:60:0c:a0.000)) custom	ve 🖬 Save & Apply					

# 6-6 Static Routes 靜態路由

#### Static Routes 静態路由:Network→Static Routes

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

Oper	Wrt   OpenWrt Designated Driver r49395   L	.oad: 0.23 0.32 0.45				Unsaved Ch	anges: 0 Administration F	
	Status System Services Network	Logout						
	Interfaces Wireless Switch DHCP and	DNS Hostnames Static Routes Firewall Diag	nostics QoS Load Balancing		_			
	No password set! There is no password set on this router. Ple <u>Go to password configuration</u>	ase configure a root password to protect the web int	erface and enable SSH.					
	Routes							
	Routes specify over which interface and gat	eway 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	
			This section contains no val	ues yet				
	10Add							
	Static IPv6 Routes							
	Interface	Target <u>IPv6</u> -Address or Netr	work (CIDR)	IPv6-Gateway	Metric	MTU	Route type	
	This section contains no values yet							
	Add							
	©Reset						Save Save & App	

Add Static IPv4 Routes:新增一 IPv4 静態路由

Route	25							
Routes specify over which interface and gateway a certain host or network can be reached.								
- Sta	tic IPv4 Ro	utes						
Ir	terface 🖻	Target	IPv4-Netmask	IPv4-Gateway	Metric	мти	Route type	
		Host-IP or Network	if target is a network					
1	٨dd		This section contains n	o values yet				

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

erfaces	erview	
Network         Status           Uptime:         5h           LAN         MAC-Address:           00:09:B5:00:00:64           PY:         12.65           PY:         12.65		Actions
<b>☞ (ഈ⊛)</b> br-lan	TX: 30.53 MB (120051 Pkts.) IPv4: 192.168.10.1/24 IPv6: fd8b:1db5:c521::1/60	🧟 Connect 🧐 Stop 🗹 Edit 💌 Delete
WAN eth0.2	Uptime: 5h 44m 18s MAC-Address: 00:09:B5:00:00:65 RX: 562.02 MB (825746 Pkts.) TX: 3.06 MB (24171 Pkts.) IPv4: 192.168.100.132/24	🖉 Connect 🕲 Stop 🗹 Edit 💌 Delete
WAN2	Uptime: 5h 57m 25s MAC-Address: A6:DB:DC:E1:62:79 RX: 15.96 MB (77597 Pkts.) TX: 6.86 MB (54445 Pkts.) IPv4: 10.233.95.63/25	🖉 Connect 🕲 Stop 🗹 Edit 💌 Delete
eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09:B5:00:00:65 RX: 562.02 MB (825746 Pkts.) TX: 3.06 MB (24171 Pkts.)	🖉 Connect 🧐 Stop 🖉 Edit 🛛 Delete

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	Static IPv4 Routes							
Interface	Target	IPv4-Netmask	IPv4-Gateway	Metric	мти	Route t	уре	
	Host- <u>IP</u> or Network	if target is a network						
lan 🔻	8	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

Status System Services Network Logod. Interfaces Wrieles Skills DetE and DNE Hostnames Static Routes Firewall Diagnostics QoS Load Balancing Ceneral Settings Ret Forwards Traffic Roles Costing Rules  Firewall - Zone Settings  Firewall - Zone Settings  Zone of Forwardings  Input  Zone of Forwardings  Input  Zone of Forwarding  Input  Input  Input  Input  Input  Input  In	enWrt   OpenWrt Designated Driver r49395   L	oad: 0.09 0.27 0.42					Unsaved Ch	anges: 0 Administration F			
Interfaces Wireless   Switch DHCP and DHS   Hostnames Static Routes	Status System Services Network	Logout									
Ceneral Settings       Port Remarks Traffic Rules Custom Rules         No password set:         The fire no password set:         Call conserved configure a root password to protect the web interface and enable SSH.         Call conserved configure a root password to protect the web interface and enable SSH.         Firewall - Zone Setting:         Concert Settings:         Concert Settings:         To firewall creates zones over your network traffic flow.         Optimual gadeets         To getting:         To getting:         Voltage addets         To getting:         Voltage addets         Voltage addets         Voltage          Voltage	Interfaces Wireless Switch DHCP and	DNS Hostnames Static Routes Firewall Di	agnostics QoS Load Balanci	ng							
No packword set!       There is no password set! in this route. Rease configure a root password to protect the web interface and enable SSH.         Firewall - Zone Settings	General Settings Port Forwards Traffic	General Settings Port Forwards Traffic Rules Custom Rules									
Firewall - Zone Settings         Enable SYN-Rood protection         Branker Syn-Rood protection         Input         accept         Output         Forward         relect         Zones         Zone	No password set! There is no password set on this router. Ple Go to password configuration	ase configure a root password to protect the web	interface and enable SSH.								
The firenall creates zones over your network interfaces to control network traffic flow.  Conceral Settings  Topic   Topic   Conceral Settings  Topic   Conceral Settings  Conceral Sett	Firewall - Zone Settings										
General Settings-         Enable SYN-flood protection         Drop invalid packets         Input         accept         Output         eraded	The firewall creates zones over your networ	k interfaces to control network traffic flow.									
Enable SYN-flood protection     #       Drop invalid packets     ■       Input     accept       Output     accept       Forward     •	General Settings										
Drop invalid packets       Input       Qutput       googt       Forward         Zones         Zone ⇒ Forwardings     Input     Output     Forward     Masquerading     MSS clamping       Imput, Imply     wan, Vpn     googt ▼ googt ▼ googt ▼     0     googt ∞	Enable SYN-flood protection		8								
Input accept T Output accept T Forward reject T Zones Zones Zone = Forwardings Input Output Forward Masquerading MSS clamping Innu: In: T = Van Vpn accept T accept T accept T accept T accept T accept T &	Drop invalid packets		0								
Output     iscogt       Forward     reject         Zones         Zones         Zones         Imput van:     van:       van:     van: </td <td>Input</td> <td></td> <td>accept</td> <td></td> <td>۲</td> <td></td> <td></td> <td></td>	Input		accept		۲						
Forward     reject       Zones       Zone = forwardings       Iant: Ian:::::::::::::::::::::::::::::::::::	Output		accept		۲						
Zones Zone = Forwardings Iant: Ian: T = van vpn wan: van: T van6: T ian: T = exact v accept v accep	Forward		reject		۲						
Zone = Forwardings     Input     Output     Forward     Masquerading     MSS damping       Iant: Ian: :::::::::::::::::::::::::::::::::	Zones										
Iant:Ian: [] = van     vpn     accept ▼   accept ▼     accept ™     accept ™ </td <td>2</td> <td>one ⇒ Forwardings</td> <td>Input</td> <td>Output</td> <td>Forward</td> <td>Masquerading</td> <td>MSS clamping</td> <td></td>	2	one ⇒ Forwardings	Input	Output	Forward	Masquerading	MSS clamping				
want; want; want; want; want; want; want;     >     REFECT     (eject ▼)     >     >	lan: l	an:ஜ 👷 ⇒ wan vpn	accept	▼ accept	<ul> <li>accept</li> </ul>	•	8	ZEdit Delete			
vpn: (empty)     ⇒     lan     accept     ▼     accept     ▼     accept     ▼     accept     ZEdt * Delete	wan: wan: 👳	wan6: ﷺ wan2: ﷺ ⇒ REJECT	reject	▼ accept	reject	<b>v</b> 8	8	ZEdit Delete			
	v	pn: (empty) ⇒ lan	accept	▼ accept	accept	8		ZEdit Delete			
	Add										
- Cause - Cause 2	a Danat							-Cour -Cour & Ang			

Masquerading:設定偽裝 MSS clamping:設定 MSS 箝位 Covered networks:設定涵蓋那些網絡

Zone "lan"		
This section defines common prop traffic entering and leaving this zo between different networks within members of this zone.	erties of "lan". The <i>input</i> and <i>output</i> of ne while the <i>forward</i> option describes the zone. <i>Covered networks</i> specifies	ptions set the default policies for the policy for forwarded traffic which available networks are
General Settings Advanced Set	tings	
Name	lan	
Input	accept	T
Output	accept	▼
Forward	accept	▼
Masquerading		
MSS clamping		
Covered networks	<ul> <li>✓ lan: ഈ ⊛</li> <li>wan: ഈ</li> <li>wan2: ₽</li> <li>wan5: ™</li> </ul>	
	create:	

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 cover forwarded traffic originating from targeted at "lan". The forwarding rule permission to forward from wan to lan a	g policies between this zone (Ian) and other zones. <i>Destination zones</i> <b>n "Ian"</b> . <i>Source zones</i> match forwarded traffic from other zones is <i>unidirectional</i> , e.g. a forward from Ian to wan does <i>not</i> imply a s well.
Allow forward to <i>destination zones</i> :	<ul> <li>vpn: (empty)</li> <li>wan: wan: wan2: kan6: wan6: wan6:</li></ul>
Allow forward from source zones:	<pre>vpn: (empty) wan: wan: wan2: wan6: wa</pre>

#### 6-7.2 Advanced Settings 高級設置

Restrict to address family:設定選擇限制位走址類型為 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

one "lan"		
his section defines common properties o affic entering and leaving this zone whil etween different networks within the zon lembers of this zone.	of "lan". The input and output options set the default e the forward option describes the policy for forward ne. Covered networks specifies which available networks.	t policies for ded traffic /orks are
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 destinati	on0.0.0.0/0 🛍	
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

OpenWr	t   OpenWrt D	esignated Driver r	49395   Load:	0.01 0.04 0.0	05	Ad
Stat	us System	Services Netw	vork Log	out		
Inte Load	rfaces Wirel d Balancing	ess Switch DH	ICP and DNS	Hostnames	Static Routes	Firewall
Gen	eral Settings	Port Forwards	Traffic Rules	Custom Ru	les	
No I Ther SSH <u>Go t</u> Firev	vall - Port Fo	:! ord set on this rou onfiguration rwards	ter. Please con	figure a root (	password to prot	tect the web i
Port f priva	forwarding allo te LAN. ort Forwards	ows remote compu	ters on the Int	ernet to conn	ect to a specific	computer or
Na	ame	Match			Forward	to
			This section	contains no v	ralues yet	
			New	port forward	1:	

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.

Name	Match	Action	Enable	Sort			
Allow- DHCP- Renew	IPv4-udp From <i>any host</i> in <i>wan</i> To <i>any router IP</i> at port 68 on <i>this device</i>	Accept input	×	• •	ZEdit	× Dele	
Allow- Ping	IPv4-icmp with type echo-request From any host in wan To any router IP on this device	Accept input	¥	•	ZEdit	Dele	
Allow- IGMP	IPv4-igmp From any host in wan To any router IP on this device	Accept input	V	•	ZEdit	× Dele	
Allow- HCPv6	IPv6-udp From IP range <i>fc00::/6</i> in <i>wan</i> To IP range <i>fc00::/6</i> at port <i>546</i> on <i>this device</i>	Accept input	×	•	ZEdit	× Dele	
Allow- MLD	IPv6-icmp with types 130/0, 131/0, 132/0, 143/0 From IP range fe80::/10 in wan To any router IP on this device	Accept input		•	ZEdit	× Dele	
Allow- CMPv6- Input	IPv6-icmp with types echo-request, echo-reply, destination-unreachable, packet-too-big, time- exceeded, bad-header, unknown-header-type, router-solicitation, neighbour-solicitation, router- advertisement, neighbour-advertisement From any host in wan To any router IP on this device	Accept input and limit to 1000 pkts. per second	¥	•	l∎Edit	× Dele	
Allow- CMPv6- orward	IPv6-icmp with types echo-request, echo-reply, destination-unreachable, packet-too-big, time- exceeded, bad-header, unknown-header-type From any host in wan To any host in any zone	Accept forward and limit to 1000 pkts. per second	¥	• •	ZEdit	× Dele	
-	Any esp From <i>any host</i> in <i>wan</i> To <i>any host</i> in <i>lan</i>	Accept forward	¥	•	ZEdit	Dele	
-	Any udp From <i>any host</i> in <i>wan</i> To <i>any host</i> , port <i>500</i> in <i>lan</i>	Accept forward		•	ZEdit	× Dele	
Open ports on router:       Name       Protocol       External port         New input rule       TCP+UDP ▼       ▲Add							
New forward rule:							
Name Source zone Destination zone							

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 arbritary 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 F Load Balancing	Firewall Diagnostics QoS
General Settings Port Forwards Traffic Rules Custom Rules	
<b>No password set!</b> There is no password set on this router. Please configure a root password to protect SSH. <u>Go to password configuration</u>	t the web interface and enable
Firewall - Custom Rules	
Custom rules allow you to execute arbritary iptables commands which are not other framework. The commands are executed after each firewall restart, right after the d	wise covered by the firewall default ruleset has been loaded.
<pre># 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.</pre>	

# 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

Open	NWt   OpenWrt Designated Driver r49395   Load: 0.04 0.23 0.40	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. <u>Go to password configuration</u>		
	Diagnostics		
	- Network Utilities		
	ppenwit.org ppenwit.org [Pi4 T] gPing [Pi4 T] gTacerode gNslookup		

#### 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=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

tra	ceroute 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。

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. Got password:configuration													
uality of Service													
With QoS you can prioritize network traffic selected by addresses, ports or services.													
Interfaces													
WAN		× Delete											
Enable	0												
Classification group	default 🔻												
Calculate overhead													
Half-duplex	0												
Download speed (kbit/s)	1024												
Upload speed (kbit/s)	128												
WANZ		× Delete											
Enable	0												
Classification group	default 🔻												
Calculate overhead	8												
Half-duplex	0												
Download speed (kbit/s)	1024												
Upload speed (kbit/s)	1024												
bbA:													
Classification Rules													
Target Source host Destination host Protocol	Ports Number of bytes Comment	Sort											
priority V 192.168.10.1 V 210.241.103.178 V UDP	▼ 33225 ▼ TTIA	< < Delete											
[priority ▼ ] all ▼ ] all ▼	▼ [22,53 ▼ [ssh, dns	< < Delete											
normal V all V TCP	[20,21,25,80,110,443,993,995     [ftp, smtp, http(s), imap	<      Elete											
express V all V all V	V 5190 V AOL, IChat, ICQ	<ul> <li>Delete</li> </ul>											
MAdd													
@Roset		Save Save & Apply											

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 Nomal/低 Low 等級之設置。

#### [如何設定 QoS]

1. 啟用 QoS

Interfaces		
WAN	* Delete	
Enable	8	

2. 設定限制您的上傳、下載的頻寬(kbit/s)

Download speed (kbit/s)	1024	
Upload speed (kbit/s)	1024	

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

Target	Source host	Destination ho	ost	Protocol	Ports	Number of bytes	Comment	Sort	
priority 🔻	192.168.10.1	210.241.103.178	V	UDP 🔻	33225 🔻		TTIA	• •	Delete
priority 🔻	all 🔹	192.168.10.172	•	all 🔻	22,53		ssh, dns	• •	Delete
normal 🔻	all 🔻	192.168.10.172	•	TCP 🔻	20,21,25,80,110,443,993,9 🔻		ftp, smtp, http(s), imap	• •	Delete
expres: V	all 🔻	all	•	all 🔻	5190 🔻		AOL, iChat, ICQ	• •	* Delete
<b>™Add</b>									

Reset

Save Save & Apply

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:

DpenWrt   OpenWrt Designated Driver r4	49395   Load: 0.01 0.05 0.16   Auto R	efresh: on Unsav	red Changes: 0 Administration Fa
Status System Services Netw	vork Logout		
Interfaces Wireless Switch DH	HCP and DNS Hostnames Static Ro	utes Firewall Diagnostics	QoS Load Balancing
Overview Configuration Advance	ced		
No password set! There is no password set on this rout <u>Go to password configuration</u>	iter. Please configure a root password t	o protect the web interface ar	nd enable SSH.
Interface Status Detailed Status MWAN Interface Live Status			
wan ( <u>eth0.2</u> ) Online (tracking active)	wan2 ( <u>wwan0</u> ) Online (tracking active)		
MWAN Interface Systemlog			
Last 50 MWAN systemlog entries	s. Newest entries sorted at the top	:	
Tue Oct 2 01:07:00 2018 user. Tue Oct 2 01:06:57 2018 user. Tue Oct 2 01:06:05 2018 user. Tue Oct 2 01:06:10 2018 user. Tue Oct 2 01:06:07 2018 user. Tue Oct 2 01:06:07 2018 user. Tue Oct 2 01:06:06 2018 user. Tue Oct 2 01:06:06 2018 user.	.info mwan3: connection tracking not notice mwan3track[2669]: Stopping m notice mwan3: irup interface wan (e intice mwan3: ifup interfack wan2 info mwan3: connection tracking not nafo mwan3: connection tracking not nwarn mwan3: Unable to send signal L notice mwan3: ifdown interface wan2	flushed on interface wan wan3track for interface "wa th.2) with an interface wan wand) flushed on interface wan2 SR1 to mwan3track on interf (unknown)	eth0.2) ifup in2" (wwan0) ifup (ifdown) Face wan2 with pid
Doworod by LuCI Mactor (git 17 165 70	028 dd6cb21)		

詳細狀態 Detailed Status:

penWrt   Op	enWrt Desig	nated D	river r4939	5   Load: 0	0.08 0.03 0	0.05   Auto Refr	esh: on	l	Insave	ed Changes: 1	Administration	Fail-safe
Status S	ystem Ser	vices	Network	Logout								
Interfaces	Wireless	Switch	DHCP and	d DNS Ho	ostnames	Static Routes	Firewall	Diagnostics	QoS	Load Balancing		
Overview	Configura	ation A	dvanced	_	_	_	_		-			_
	Status Del Decaneu Si	tailed St	atus									
Interf inter inter	ace status: face wan is face wan2 i	online s onlin	and tracki e and track	ing is act ing is do	ive wn							
Curren balanc wan2 wan (	t ipv4 poli ed: (40%) 60%)	cies:										
wan2_o wan2	nly: (100%)											
wan2_w wan2	an: (100%)											
wan_on wan (	ly: 100%)											
wan_wa wan (	n2: 100%)											
Curren balanc unrea	t ipv6 poli ed: chable	cies:										
wan2_o unrea	nly: chable											
wan2_w unrea	an: chable											
wan_on unrea	ly: chable											
wan_wa unrea	n2: chable											
Direct 127.0 192.1 127.2 10.22 192.1 192.1 192.1 127.0 10.22	ly connecte .0.0/8 68.10.1 68.100.0/24 55.255.255 8.103.208/2 68.10.0 68.10.0/24 .0.1 8.103.217	ed ipv4 4 18	networks:									

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

Ор	enWrt   Ope	nWrt Desig	gnated Driver r49	395   Load	: 0.57 0.27 (	).13				Unsave	d Changes:	1	Administration	Fail-safe
	Status Sy	stem Se	rvices Network	Logo	ut									
	Interfaces	Wireless	Switch DHCP	and DNS	Hostnames	Static Route	es Firewall	Diagnostics	QoS	Load Balancing		-		
	Overview	Configu	ration Advanced		_	_	_	_	-	_	_	_	_	-
	Interfaces Members Policies Rules													
	MWAN Interface Configuration													
	There are currently 2 of 250 supported interfaces configured													
	Interfac	es												
	MWAN su MWAN re	pports up juires that	to 250 physical ar	nd/or logic	al interfaces e metric conf	iaured in /etc	/config/netw	ork						
	Names m	ust match	the interface nam	e found in	/etc/config/ and no space	network (see	advanced ta	ib)						
	Interfaces	may not	share the same n	ame as co	nfigured men	nbers, policie	s or rules							_
	Interfac	e Enable	d Tracking IP	Tracking	reliability	Ping count F	ing timeou	t Ping interv	al Int	erface down Inte	erface up M	1etric E	Errors	
	wan	Yes	8.8.4.4 208.67.222.222		1	1	2s	10s		5	1	10	∠Edit ≥De	lete
	wan2	Yes	8.8.8.8 208.67.220.220		1	1	2s	10s		5	1	30	ZEdit De	lete
				*Add										
	L													
	Reset												Save Save &	Apply
P	owered by Lu	CI Master	(git-17.165.7092	8-dd6cb31	.)									

會員配置 Member Configuration:

是將 Metric 和 Weight 附加到 MWAN 接口的配置

OpenWrt   Open	Wrt Design	ated Driver r49395   Load	1: 0.02 0.06	0.08				Unsaved	Changes: 1	Administration	Fail-safe
Status Sys	tem Serv	vices Network Logo	out								
Interfaces	Wireless	Switch DHCP and DNS	Hostnames	Static Routes	Firewall	Diagnostics	QoS	Load Balancing			_
Overview	Configura	tion Advanced									-
Interfaces	Members	Policies Rules	_	_	_	_	-				
MWAN Membe	r Configurat	tion									
Members	-										
Members a	re profiles	attaching a metric and we	eighț to an M	WAN interface							
Names ma Members n	y contain c nay not sha	are the same name as cor	and no spac ifigured inter	es faces, policies o	r rules						
	Membe	er	Interface	Me	etric	Weig	ht	Sort			
	wan_m1_	_w3	wan		1	3		•	ZEdi	it »Delete	
	wan_m2_	_w3	wan		2	3		• •	ZEdi	it »Delete	
	wan2_m1	_w2	wan2		1	2		• •	ZEdi	it <b>*</b> Delete	
	wan2_m2	_w2	wan2		2	2		• •	ZEdi	it »Delete	
		bbA 😂									
Reset										Save Save 8	& Apply

### 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

Oper	nWrt   OpenWrt Designa	ted Driver r49395   Load: 0.00 0.03 0	.07		Unsaved (	Changes: 1	Administration	Fail-s
l	Status System Servi	ces Network Logout						
	Interfaces Wireless S	Switch DHCP and DNS Hostnames	Static Routes Firewall Di	agnostics QoS	Load Balancing			
	Overview Configurati	on Advanced				_		-
	Interfaces Members	Policies Rules		_	_	_	_	
N	WAN Policy Configuration							
	Policies							
	Policies are profiles gro	ouping one or more members controllir	ng how MWAN distributes tra	ffic				
	Member interfaces with Load-balanced membe	n lower metrics are used first. Interface r interfaces distribute more traffic out	es with the same metric load those with higher weights	-balance				
	Names may contain ch Policies may not share	aracters A-Z, a-z, 0-9, _ and no space the same name as configured interfac	s. Names must be 15 charac es, members or rules	ters or less				
	Policy	Members assigned	Last reso	ort	Errors	Sort		
	wan_only	wan_m1_w3	unreachable (	reject)		•	ZEdit Delete	
	wan2_only	wan2_m1_w2	unreachable (	reject)		• •	ZEdit Delete	
	balanced	wan_m1_w3 wan2_m1_w2	unreachable (	reject)		•	ZEdit Delete	
	wan_wan2	wan_m1_w3 wan2_m2_w2	unreachable (	reject)		•	ZEdit Delete	
	wan2_wan	wan_m2_w3 wan2_m1_w2	unreachable (	reject)			ZEdit Delete	
		bAd						

#### 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

Ор	enWrt   Ope	nWrt Desig	nated Driv	er r49395   Loa	d: 0.12 0.09 0	.08					Unsa	wed Changes: 1	Administration	Fail-safe
	Status S	ystem Se	rvices Ne	etwork Log	out									
	Interfaces	Wireless	Switch	DHCP and DNS	Hostnames	Static Routes	Firewall	Diagnostics	QoS	Load Balancin	g			_
	Overview	Configur	ation Ad	vanced	_		_	_	_		_			_
	Interfaces	Members	Policies	Rules					_		_			_
	MWAN Rule	Configuratio	n											
	- Traffic F	Rules												
	Rules are Traffic de blackhole Names m Rules ma	e matched f estined for l ed nay contain ay not share Sourc	rom top to known (oth characters the same ce address	bottom. Rules t er than default) A-Z, a-z, 0-9, name as config Source port [	below a match networks is h and no space ured interfaces Destination a	ing rule are ign andled by the n as s, members or p <b>ddress Destin</b>	ored. Traffi nain routin policies <b>ation por</b> f	c not matching table. Traffi	ng any c matc ticky s	rule is routed us hing a rule, but a Sticky timeout	ing the all WAN IPset F	main routing table interfaces for that poli Policy assigned Error	cy are down will b rs Sort	e
	https	5	-	-	-		443	tcp	Yes	600s	-	balanced	🔹 🔹 🗷 Edit 🔳 D	elete
	default_	rule	-	-	0.0.0/	0	-	all	No	-	_	balanced	🖪 🔮 🗷 Edit 🔳 D	elete
				⇒Add										
	Reset												Save Save 8	Apply
Pc	owered by Lu	uCI Master	(git-17.16)	5.70928-dd6cb3	1)									

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

penWrt   OpenWrt Designated Driver r49395   Load: 0.00 0.04 0.05	Unsaved Changes: 0 Administration Fail-s
Status System Services Network Logout	
Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firew	wall 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 Go to password configuration	e web interface and enable SSH.
Hotplug Script MWAN Config Network Config Wireless Config Diagnostics Tr MWAN Interface Diagnostics	roubleshooting
wan2 v	
Ping default gateway Ping tracking IP Check IP rules	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	

#### Ping tracking IP



#### Check IP nles



### Check routingtable

OpenWrt   OpenWrt Designated Driver r49395   Load: 0.00 0.04 0.0	5	Unsaved (	Changes: 0	Administration	Fail-safe
Status System Services Network Logout					
Interfaces Wireless Switch DHCP and DNS Hostnames	Static Routes Fir	rewall Diagnostics	QoS Load	l Balancing	
Overview Configuration Advanced					
No password set! There is no password set on this router. Please configure a root p Go to password configuration	assword to protect	the web interface an	d enable SSH		
Hotplug Script MWAN Config Network Config Wireless Con MWAN Interface Diagnostics	fig Diagnostics	Troubleshooting			
wan2 🔻					
Ping default gateway Ping tracking IP Check IP rules	s 📃 Check routin	ng table 🔯 Hotplu	g ifup 📃 🔃	Hotplug ifdown	
MWAN Service Control					
💷 Restart MWAN 🔯 Stop MWAN 🔯 Start MWAN					
Diagnostic Results					
Interface couting 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

Op	enWrt   OpenWrt Designated Driver r49395   Load: 0.42 0.16 0.16   Auto Refresh: on Unsaved Changes:					ges: 0	Administration	Fail-safe					
	Status Sy	vstem Ser	vices N	letwork	Logout								
	Interfaces	Wireless	Switch	DHCP and	DNS Hostn	ames Sta	tic Routes	Firewall	Diagnostics	QoS	Load Ba	alancing	
	Overview	Configura	ation Ad	vanced									_
	No passwo There is no <u>Go to pass</u> v	o <b>rd set!</b> password s vord configu	et on this uration	router. Pleas	se configure a	a root passv	word to pro	tect the we	b interface an	d enabl	e SSH.		
	Interface St MWAN II	tatus Det nterface Li	ailed Stat ve Statu	us 5									
	0	wan (et Inline (track	t <mark>h0.2)</mark> ting active	e)	<b>wan2 (</b> <u>w</u> Online (track	<u>wan0)</u> ing active)							
	MWAN In Last 50	MWAN syste	/stemlog emlog ent	ries. Newest	entries so	rted at the	e top :				10.00		
	Tue Oct Tue Oct Tue Oct Tue Oct Tue Oct Tue Oct Tue Oct	2 01:07: 2 01:06: 2 01:06: 2 01:06: 2 01:06: 2 01:06: 2 01:06: 2 01:06:	2018 u 57 2018 u 56 2018 u 10 2018 u 28 2018 u 27 2018 u 26 2018 u 26 2018 u	ser.info mwa ser.notice r ser.info mwa ser.notice r ser.info mwa ser.info mwa ser.warn mwa ser.notice r	wan3track[2 wan3track[2 wan3: ifup m3: connect wan3: ifup m3: connect wan3: ifdow	ion trackir 669]: Stopp interface w ion trackir interface w ion trackir to send sig n interface	ig not flus ing mwan34 ian (eth0.2 ig not flus ian2 (wwan4 ig not flus mal USR1 4 is wan2 (unh	shed on int track for i 2) shed on int 3) shed on int to mwan3tra known)	ertace wan (e nterface "war erface wan2 ( erface wan2 ( ck on interfa	(wwan0) (wwan0) (ifdown ace wan	ifup ) 2 with pi	d	
Р	owered by Lu	CI Master (	git-17.16	5.70928-dd6	cb31)								
Оре	enWrt   Open'	Wrt Designa	ated Drive	er r49395   L	oad: 0.04 0.	10 0.13						Administration	Fail-safe
	Flash Firm	ware Reb	oot										
	Flash operat	ions											
	Flash new Upload a sy	/ firmware /supgrade-(	image compatible	e image.									
	Image:					選擇檔案	未選擇任何	檔案	🛄 Flash	image			

Powered by LuCI Master (git-17.165.70928-dd6cb31)

# 7. 快速無線 4G 上網/APN 設定

Network→Interfaces : 選擇 WAN2 的 Edit

penWrt   OpenWrt Designated Driv	ver r49395   Load: 0.48	0.17 0.19   Au	to Refresh: on				Un	saved Ch	anges: 0	) <mark>/</mark>	dminist	ration	Fail-sa
Status System Services	Network Logo	out											
Interfaces Wireless Sw	itch DHCP and DNS	Hostnames	Static Routes	Firewall	Diagnost	ics QoS	Loa	d Balanci	ng	_	_	_	
No password set! There is no password set on th Go to password configuration	is router. Please configur -	e a root passw	ord to protect th	e web inter	face and e	nable SSH.							
Interfaces													
Interface Overview													
Network	Status							1	Actions				
LAN 양 (말%) br-lan	Uptime: 0h 29m 34s MAC-Address: 00:09 RX: 2.52 MB (20395 TX: 24.78 MB (26597 IPv4: 192.168.10.1/ IPv6: fd8b:1db5:c52	9:B5:00:00:64 Pkts.) 'Pkts.) 24 1::1/60	ł		₹₽	Connect		Stop		Edit	*	Delete	
WAN eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09 RX: 0 B (0 Pkts.) TX: 206.37 KB (621 F	9:B5:00:00:65 Pkts.)	i		2	Connect	8	Stop		Edit	×	Delete	
WAN2	Uptime: 0h 29m 19s MAC-Address: DA:30 RX: 23.89 MB (25860 TX: 2.34 MB (19313) IPv4: 10.41.231.244	F:15:58:33:C7 ) Pkts.) Pkts.) /29	,		2	Connect	8	Stop		Edit	Edit this ii	nterface Delete	
WAN6 eth0.2	Uptime: 0h 0m 0s MAC-Address: 00:09 RX: 0 B (0 Pkts.) TX: 206.37 KB (621 F	9:B5:00:00:65 Pkts.)	i		2	Connect		Stop		Edit	×	Delete	
Clabel actions													
IPv6 ULA-Prefix			fd8b:1db5:c521::.	/48									
Reset										Øs	Save 🗈	Save & A	\pply

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 C	hanges: 0 Administration	Fail-safe
Status System Services Network Logout		
Interfaces Wireless Switch DHCP and DNS Hostnames Static Routes Firewall Diagnostics QoS Load Balancing	9	
WAN WANG 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. <u>Go to password configuration</u>		
Interfaces - WAN2		
On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter interfaces separated by spaces. You can also use <u>VLAN</u> notation INTERFACE.VLANNR ( <u>e.g.</u> : eth0.1). Common Configuration	the names of several network	
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 DHCP client V		
Hostname to send when requesting DHCP OpenWrt		
Back to Overview Reset	Save DSave &	Apply

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。

nWrt   OpenWrt Designated Driver r49395   Load: 0.18 0.36 0.29   Auto Refres	1: on	Unsaved Change	s: 0 Administration Fail-
Status System Services Network Logout			
Interfaces Wireless Switch DHCP and DNS Hostnames Static Route	s 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 pr <u>Go to password configuration</u>	tect the web interface and	enable SSH.	
Interfaces - WAN2			
On this page you can configure the network interfaces. You can bridge several in interfaces separated by spaces. You can also use VI AN notation INTERFACE, VI AN	terfaces by ticking the "bri	dge interfaces" field and enter the na	mes of several network
Common Configuration			
General Setup Advanced Settings Physical Settings Firewall Settings			
Bring up on boot			
Use builtin IPv6-management			
Force link	interface properties regard otplug handlers).	dless of the link carrier (If set, carrier	sense events do not
Use broadcast flag 🛛 🔅 🔞 Rei	uired for certain ISPs, e.g.	Charter with DOCSIS 3	
Use default gateway 🖉 🥝 If u	nchecked, no default route	is configured	
Use DNS servers advertised by peer 🖉 🙆 If u	nchecked, the advertised [	DNS server addresses are ignored	
Use gateway metric 30			
Client ID to send when requesting DHCP			
Vendor Class to send when requesting DHCP			
Override MAC address DA:3F:15	58:33:C7		
Override MTU 1500			
Dial-up User name for modem using RNDIS driver			
Dial-up Password for modem using RNDIS driver		2	
Dial-up APN for modem using RNDIS driver internet			
SIM card PIN code for modem using RNDIS driver			
Back to Overview SReset			Save 🛛 Save & Apply
ered by LuCI Master (git-17 165 70928-dd6ch31)			