



## Pepwave Surf SOHO

### User Manual

### **Pepwave Product: Surf SOHO**

Pepwave Firmware 8.1.1  
May 2021

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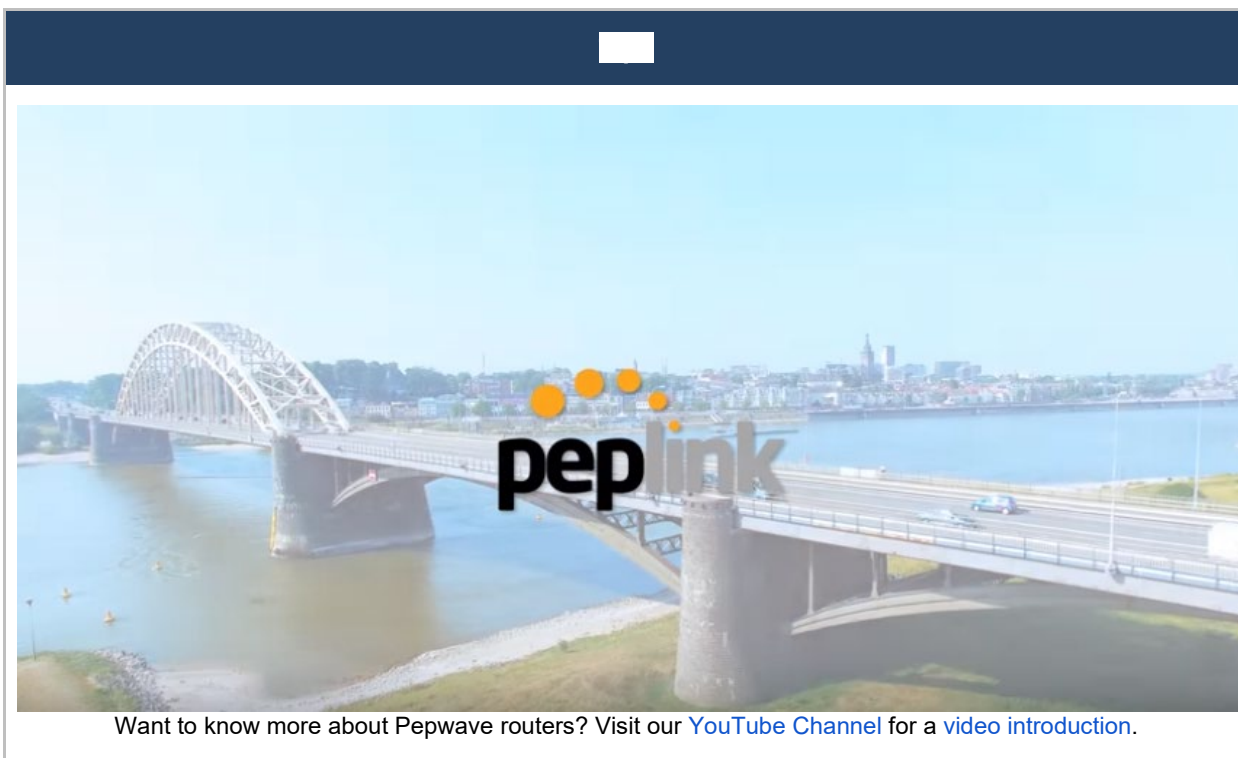
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## Introduction and Scope

The Surf SOHO is a professional-grade router that is secure, reliable, and easy to use.

With the Surf SOHO, you can connect to the Internet using a USB cellular modem, Ethernet, or Wi-Fi. Hook the Surf SOHO up to Ethernet and Cellular connections, and it will automatically fail over from one to the other as needed. That way, you can stay connected even when a connection breaks

This manual covers setting up a Surf SOHO router and provides an introduction to their features and usage.



Want to know more about Pepwave routers? Visit our [YouTube Channel](#) for a [video introduction](#).

## Glossary

The following terms, acronyms, and abbreviations are frequently used in this manual:

3G	3rd generation standards for wireless communications (e.g., HSDPA)
4G	4th generation standards for wireless communications (e.g., LTE)
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EVDO	Evolution-Data Optimized
FQDN	Fully Qualified Domain Name
HSDPA	High-Speed Downlink Packet Access
HTTP	Hyper-Text Transfer Protocol
ICMP	Internet Control Message Protocol
IP	Internet Protocol
LAN	Local Area Network
MAC Address	Media Access Control Address
MTU	Maximum Transmission Unit
MSS	Maximum Segment Size
NAT	Network Address Translation
PPPoE	Point to Point Protocol over Ethernet
QoS	Quality of Service
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	Wide Area Network

WINS	Windows Internet Name Service
WLAN	Wireless Local Area Network

## Product Features

PepwaveSurf SOHO routers enable all LAN users to share broadband Internet connections, and they provide advanced features to enhance Internet access. Our Surf SOHO routers support one Ethernet, one USB 4G LTE/3G WAN, and Wi-Fi as WAN for failover

It also includes three SMA dual-band antennas that allows better reliability, larger bandwidth, and increased wireless coverage.

Below is a list of supported features on Pepwave routers. Features vary by model. For more information, please visit [our website](#).

### WAN

- Ethernet WAN connection in full/half duplex
- Static IP support for PPPoE
- USB mobile connection(s)
- Wi-Fi WAN connection
- Network address translation (NAT)/port address translation (PAT)
- Inbound and outbound NAT mapping
- IPsec NAT-T and PPTP packet pass through
- Intelligent Failover
- MAC address clone and passthrough
- Customizable MTU and MSS values
- WAN connection health check
- Dynamic DNS
- Ping, DNS lookup, and HTTP-based health check

### LAN

- Wi-Fi AP
- Ethernet LAN ports
- DHCP server on LAN
- Extended DHCP option support
- Static routing rules
- VLAN on LAN support

### VPN

- Site-to-Site VPN
- 256-bit AES Encryption
- Dynamic Routing
- Pre-shared key authentication
- PPTP/L2TP/Open VPN - VPN server



## Firewall

- Outbound (LAN to WAN) firewall rules
- Inbound (WAN to LAN) firewall rules per WAN connection
- Intrusion detection and prevention
- Specification of NAT mappings
- Outbound firewall rules can be defined by destination domain name

## Outbound Policy

- Link load distribution per TCP/UDP service
- Persistent routing for specified source and/or destination IP addresses per TCP/UDP service
- Traffic prioritization and DSL optimization
- Prioritize and route traffic to VPN tunnels with Priority and Enforced algorithms

## QoS

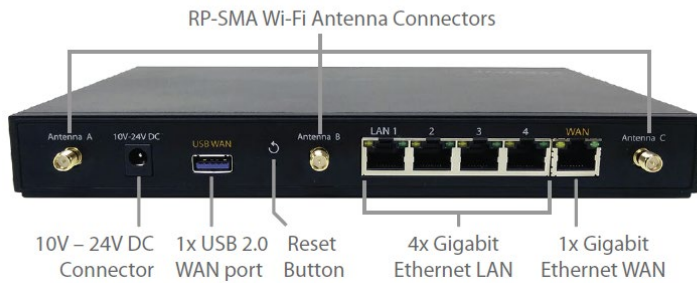
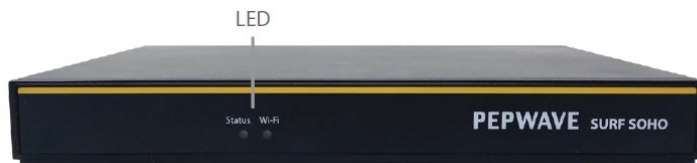
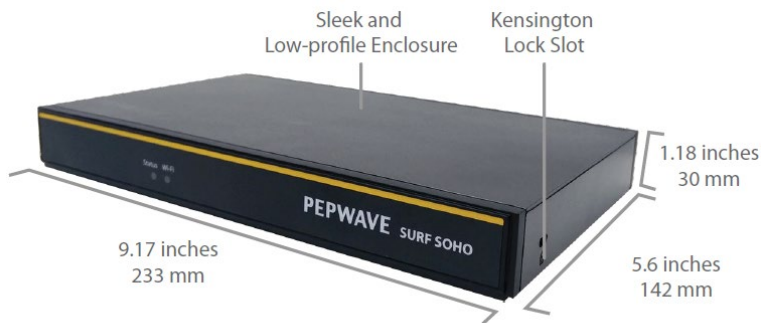
- Quality of service for different applications and custom protocols
- User group classification for different service levels
- Bandwidth usage control and monitoring on group- and user-level
- Application prioritization for custom protocols and DSL/cable optimization

## Other Supported Features

- User-friendly web-based administration interface
- HTTP and HTTPS support for web admin interface
- Configurable web administration port and administrator password
- Firmware upgrades, configuration backups, ping, and traceroute via web admin interface
- Remote web-based configuration (via WAN and LAN interfaces)
- Time server synchronization
- SNMP
- Email notification
- Read-only user for web admin
- Shared IP drop-in mode
- Authentication and accounting by RADIUS server for web admin
- Syslog
- SIP passthrough
- PPTP packet pass through
- Event log
- Active sessions
- Client list
- UPnP / NAT-PMP
- Real-time, hourly, daily, and monthly bandwidth usage reports and charts

# Pepwave Surf SOHO Router Overview

## Panel Appearance



<div style="background-color: white; width: 100px; height: 15px; margin: 0 auto;"></div>	
<b>WAN Interface</b>	1x 100/1000M Ethernet Port 1x USB 2.0 Interface Wi-Fi as WAN
<b>LAN Interface</b>	4x 100/1000M Ethernet Ports Simultaneous Dual-Band 11ac Wi-Fi AP
<b>Wi-Fi AP Operating Frequency</b>	2412 – 2472 MHz and 5180 - 5825 MHz
<b>Wi-Fi Antenna</b>	3x External Wi-Fi Antenna
<b>Recommended Users</b>	1-25
<b>Router Throughput</b>	120Mbps
<b>Number of PPTP VPN Users</b>	3
<b>Number of PPTP VPN Users</b>	2
<b>Power Input</b>	DC Jack: 10V – 24VDC AC Adapter: AC Input 100V – 240V, DC Output 12V, 1.5A
<b>Power Consumption</b>	26W (max) with USB WAN 22W (max) without USB WAN
<b>Dimensions</b>	9.17 x 5.6 x 1.18 inch 233 x 142 x 30 mm
<b>Weight</b>	0.86 pounds 388 grams
<b>Operating Temperature</b>	-14° to 113°F -10° to 45°C
<b>Humidity</b>	15% – 95% (non-condensing)
<b>Certifications</b>	FCC, CE, RoHS
<b>Warranty</b>	1-Year Limited Warranty



## LED Indicators

The statuses indicated by the front panel LEDs are as follows:

Wi-Fi		
OFF	Disabled	Intermittent
Blinking	Enabled	but no client connected
ON	Client(s)	connected to wireless network
Continuous blinking	Transferring	data to wireless network
Status		
OFF	System	initializing
Red	Booting	up or busy
Green	Ready	state

Ethernet		
Green LED	ON	10 / 100 / 1000 Mbps
Orange LED	Blinking	Data is transferring
	OFF	No data is being transferred or port is not connected
Port type	Auto MDI/MDI-X ports	

Signal strength	
Off	No connection
Signal strength	Wi-Fi signal strength (low, medium, and high)

## Advanced Feature Summary

### Drop-in Mode and LAN Bypass: Transparent Deployment



As your organization grows, it may require more bandwidth, but modifying your network can be tedious. In **Drop-in Mode**, you can conveniently install your Peplink router without making any changes to your network. For any reason your Peplink router loses power, the **LAN Bypass** will safely and automatically bypass the Peplink router to resume your original network connection.

### QoS: Clearer VoIP



VoIP and videoconferencing are highly sensitive to latency. With QoS, Peplink routers can detect VoIP traffic and assign it the highest priority, giving you crystal-clear calls.

## USB Modem



For increased WAN diversity, plug in a USB LTE modem as a backup. Peplink routers are compatible with over [250 modem types](#).

## Built-In Remote User VPN Support



Use OpenVPN or L2TP with IPsec to safely and conveniently connect remote clients to your private network. L2TP with IPsec is supported by most devices, but legacy devices can also connect using PPTP.

[Click here for the full instructions on setting up L2TP with IPsec.](#)

[Click here for the full instructions on setting up OpenVPN connections](#)

## DPI Engine

The DPI report written in the updated KB article will show further information on InControl2 through breaking down application categories into subcategories.

sscs

<https://forum.peplink.com/t/updated-ic2-deep-packet-inspection-dpi-reports-and-everything-you-need-to-know-about-it/29658>

## Wi-Fi Air Monitoring

Pepwave routers support Wi-Fi “Air Monitoring Mode” which used to troubleshoot remotely and proactively monitor Wi-Fi and WAN performance. The report can be viewed under InControl 2 > Reports > AirProbe Reports after enabling Wi-Fi Air Monitoring.

Note: To enable this feature, go to <https://<Device's IP>/cgi-bin/MANGA/support.cgi>

- Wi-Fi Air Monitoring
  - Enable
  - WARNING: Any supported Wi-Fi / AP features will cease to function when Wi-Fi Air Monitoring is turned on.

## SP Default Configuration

The SP Default Configuration feature written in the updated KB article allows for the provisioning of custom made settings (a.k.a. InControl2 configuration) via the Ethernet LAN port and is ideal for those wanting to do a bulk deployment of many Peplink devices.

**Note:** If you would like to use this feature, please contact your purchase point (Eg.VAD).



## Installation

The following section details connecting Pepwave routers to your network.

### Preparation

Before installing your Pepwave router, please prepare the following as appropriate for your installation:

- At least one Internet/WAN access account and/or Wi-Fi access information
- Depending on network connection type(s), one or more of the following:
- **Ethernet WAN:** An ethernet cable with RJ45 connector
- **USB:** A USB modem
- **Wi-Fi WAN:** Wi-Fi antennas  
A computer with the TCP/IP network protocol and a web browser installed. Supported browsers include Microsoft Internet Explorer 11 or above, Mozilla Firefox 24 or above, Apple Safari 7 or above, and Google Chrome 18 or above.

### Constructing the Network

Construct the network according to the following steps:

1: With an Ethernet cable, connect a computer to one of the LAN ports on the Pepwave router. Repeat with different cables for up to 4 computers to be connected.

2: With another Ethernet cable or a USB modem/Wi-Fi antenna/, connect to one of the WAN ports on the Pepwave router. Repeat the same procedure for other WAN ports.

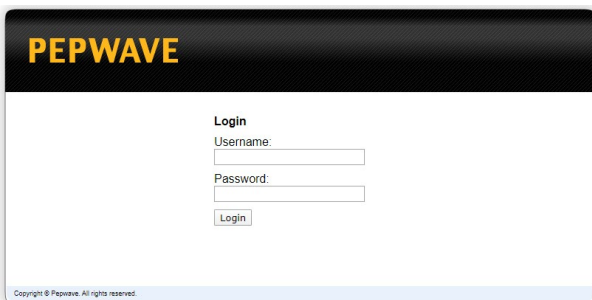
Connect the power adapter to the power connector on the rear panel of the Pepwave router, and then plug it into a power outlet.

## Connecting to the Web Admin Interface

Start a web browser on a computer that is connected with the Pepwave Surf SOHO through the LAN.

To connect to the web admin of the Pepwave Surf SOHO, enter the following LAN IP address in the address field of the web browser: **https://192.168.50.1**

(This is the default LAN IP address of the Pepwave Surf SOHO.) Enter the following to access the web admin interface.



**Username:** admin

**Password:** admin

(This is the default admin user login of the Pepwave Surf SOHO.)

You must change the default password on the first successful logon.

Password requirements are: A minimum of 10 lower AND upper case characters, including at least 1 number.

When HTTP is selected, the URL will be redirected to HTTPS by default.

**PEPWAVE** | [Dashboard](#) | [SpeedFusion Cloud](#) | [Network](#) | [Advanced](#) | [AP](#) | [System](#) | [Status](#) | [Apply Changes](#)

**You must change your default password now to proceed**

**Change Password**

Current Password	<input type="password"/>
New Password	<input type="password"/> *
Require at least 10 characters, lower and upper case, with numbers.	
Confirm New Password	<input type="password"/>

After successful login, the **Dashboard** of the web admin interface will be displayed

**PEPWAVE** | [Dashboard](#) | [SpeedFusion Cloud](#) | [Network](#) | [Advanced](#) | [AP](#) | [System](#) | [Status](#) | [Apply Changes](#)

**WAN Connection Status** ?

Priority 1 (Highest)

Wi-Fi WAN on 5 GHz	Connected to [redacted]	<a href="#">Wireless Networks</a> <a href="#">Details</a>
Priority 2	WAN	No Cable Detected <a href="#">Details</a>
Priority 3	Drag desired (Priority 3) connections here	
Disabled	Wi-Fi WAN on 2.4 ...	<input type="checkbox"/> Disabled <a href="#">Details</a>

**LAN Interface**

Router IP Address: 192.168.50.1

**Wi-Fi AP**  ON [Details](#)

**PepVPN** [Status](#)

Established

**Device Information**

Model:	Pepwave Surf SOHO MK3
Firmware:	8.1.1 build 4994
Uptime:	0 days 10 hours 6 minutes
CPU Load:	39%
Throughput:	↓ 92.0 kbps ↑ 66.0 kbps

**Remote Assistance Status:** [Turn off](#)

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The **Dashboard** shows current WAN, LAN, and Wi-Fi AP statuses. Here, you can change WAN connection priority and switch on/off the Wi-Fi AP.

**Device Information** displays details about the device, including model name, firmware version, CPU Load, throughput and uptime.

Configuration changes (e.g. WAN, LAN, admin settings, etc.) will take effect only after clicking the **Save** button at the bottom of each page. The **Apply Changes** button causes the changes to be saved and applied.

## SpeedFusion Cloud

With Peplink products, your device is able to connect to SpeedFusion Cloud without the use of a second endpoint. This service has wide access to a number of SpeedFusion endpoints hosted from around the world, providing your device with unbreakable connectivity wherever you are.\*



\*SpeedFusion Cloud is supported in firmware version 8.1.0 and above. SpeedFusion Cloud is a subscription basis. SpeedFusion Cloud license can be purchased at <https://store.peplink.com/> > **Cloud Solutions** > **SpeedFusion Cloud Service**.

## Activate SpeedFusion Cloud Service

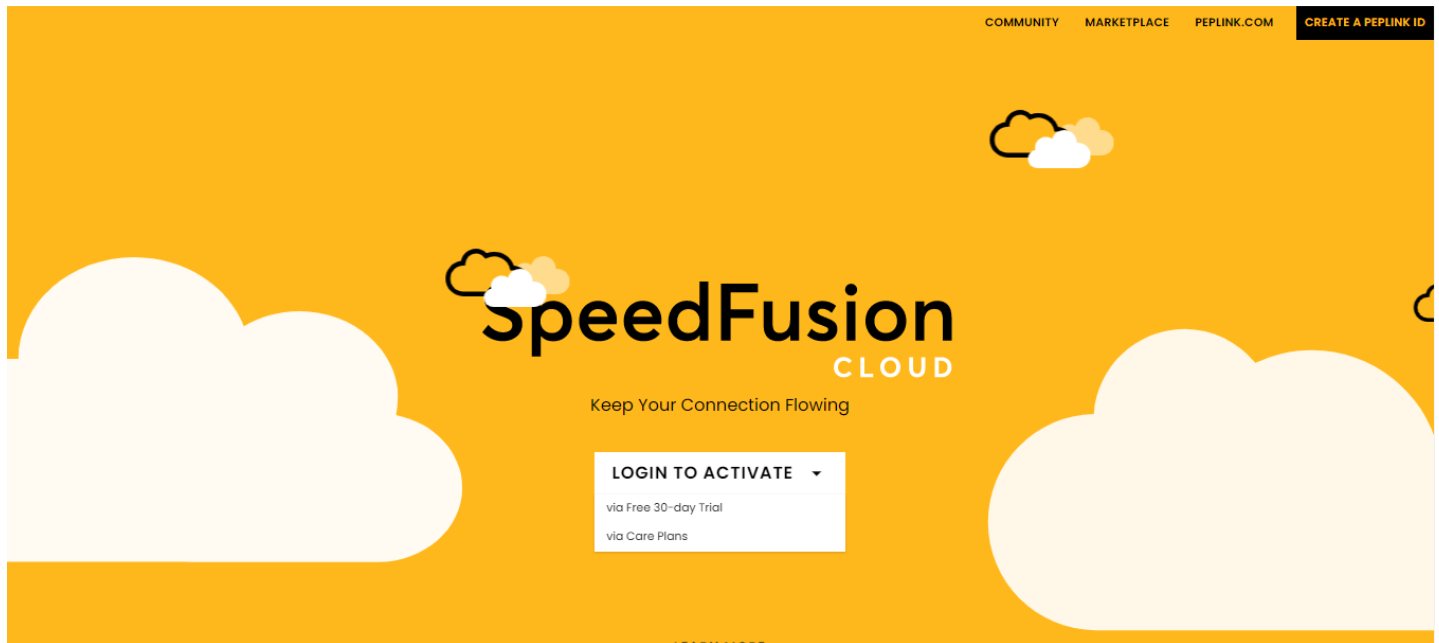
You are entitled to a 30-days free period with 100GB of SpeedFusion usage upon activation of the SpeedFusion Cloud service. This offer is limited to once per device. To get your activation key please visit SpeedFusion Cloud.

The screenshot shows the Peplink web interface for SpeedFusion Cloud. The navigation bar includes: Dashboard, Setup Wizard, SpeedFusion Cloud (highlighted), Network, AP, System, Status, and Apply Changes. The main content area is titled 'SpeedFusion Cloud' with the subtitle 'Aggregate your bandwidth, connect you to different geo-location, and more.' Below this, there are four main action items:

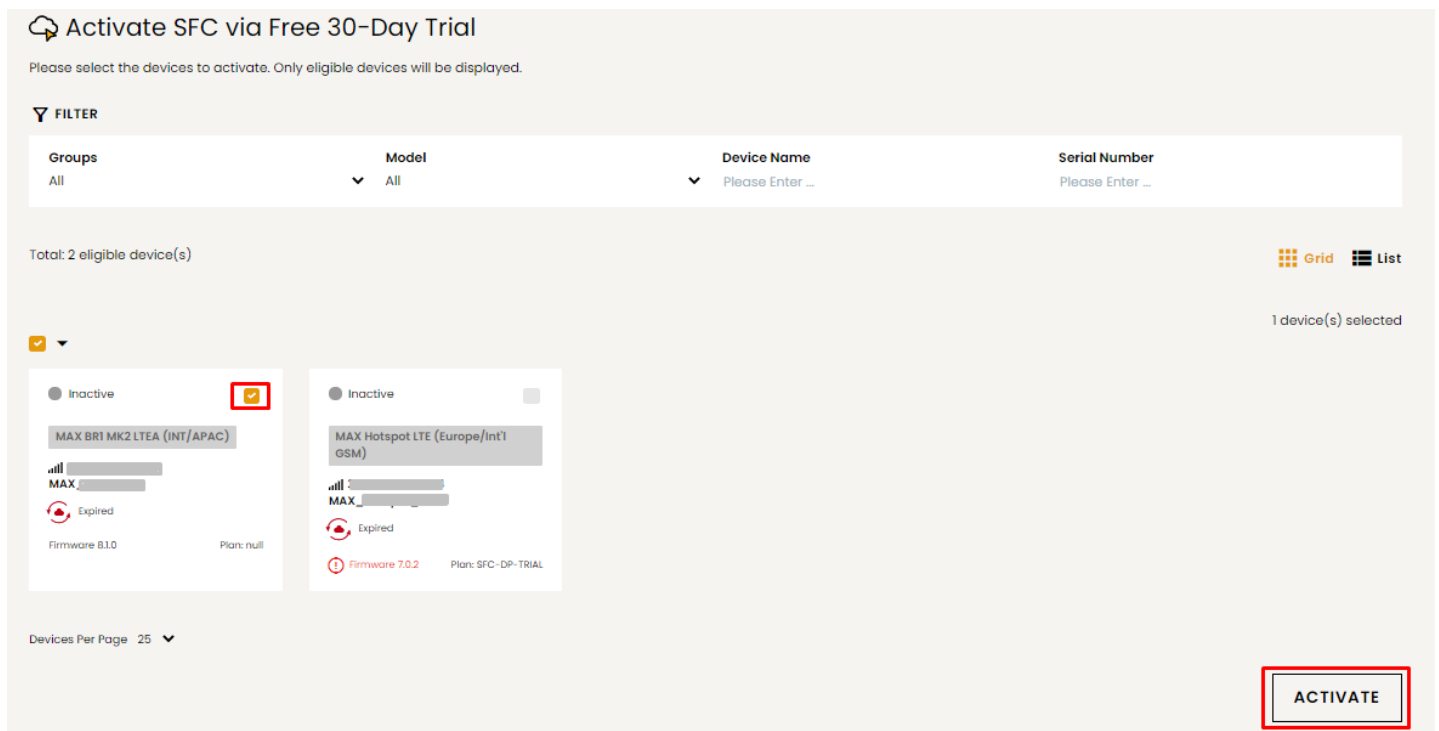
- Get your activation key now**: Enjoy all the delicious features powered by SpeedFusion. (This button is highlighted with a red box in the original image.)
- Choose Cloud Location**: Which cloud you'd like to connect?
- Connect Clients to Cloud**: Select a cloud for your laptops, phones, or other devices.
- Link Wi-Fi to Cloud**: Create a Wi-Fi SSID that is dedicated for the cloud.

A 'Logout' button is visible in the bottom left corner of the interface.

Go to [activate.speedfusion.com](https://activate.speedfusion.com) and select the type of SpeedFusion Cloud service, “Via Free 30-days Trial” or “Via Care Plans”, that you would like to activate. Next, register or login to your account.



Select the devices that you wish to activate SpeedFusion Cloud on and Click **ACTIVATE**.



From **System > Features Add-ons**, paste the license key into the window and click on **Activate** once you have received the license key.

**PEPWAVE** Dashboard SpeedFusion Cloud Network Advanced AP **System** Status Apply Changes

**System**

- Admin Security
- Firmware
- Time
- Schedule
- Email Notification
- Event Log
- SNMP
- SMS Control
- InControl
- Configuration
- Feature Add-ons**
- Reboot

**Tools**

- Ping
- Traceroute
- Wake-on-LAN
- WAN Analysis

**Feature Activation**

Activation Key

```
9629a523e54fe148f876e75cf95df776f248e248b618b618a6199b23e54fe148f876e75
cf95df776f351e640e450b618b618a310ae10a711a219a6249c5af05ef747c958e346e
248c95bf75df309a709a3199c7ae64cf34dd05ce540f947b66afa46e34db668f55dff5ff
75dff46f809dd4cef09be18a619d16bbfa96c3083b48a7d337ade187a5ce2e4e1
```

Activate

## Enable SpeedFusion Cloud

Enable SpeedFusion Cloud from **SpeedFusion Cloud > Choose Cloud Location**.

**peplink** Dashboard **SpeedFusion Cloud** Network AP System Status Apply Changes

**SpeedFusion Cloud**

Aggregate your bandwidth, connect you to different geo-location, and more.

**Choose Cloud Location**  
Which cloud you'd like to connect?

**Connect Clients to Cloud**  
Select a cloud for your laptops, phones, or other devices.

Choose **Automatic** > Click on the green tick button to confirm the change.

The screenshot shows the PEPWAVE interface with the 'SpeedFusion Cloud' tab selected. The page title is 'SpeedFusion Cloud > Choose Cloud Location'. Below the title, it says 'You can connect up to 3 different cloud locations.' A table with two columns, 'SpeedFusion Cloud' and 'Cloud Location', is shown. The 'Cloud Location' dropdown menu is open, displaying a list of options: '--- Automatic ---', 'Australia (SYD)', 'Germany (FRA)', 'Japan (TYO)', 'Singapore (SIN)', 'United Kingdom (LON)', 'United States (NYC)', and 'United States (SFO)'. The '--- Automatic ---' option is highlighted in blue. A green checkmark button is visible to the right of the dropdown.


Click on **Apply Changes** to save the change.

The screenshot shows the PEPWAVE interface after clicking 'Apply Changes'. A yellow notification bar at the top reads 'Saved! Changes will be effective after clicking the 'Apply Changes' button.' The 'SpeedFusion Cloud' tab is still selected. The page title is 'SpeedFusion Cloud > Choose Cloud Location'. Below the title, it says 'You can connect up to 3 different cloud locations.' The table now shows 'SFC' in the 'SpeedFusion Cloud' column and '--- Automatic ---' in the 'Cloud Location' column. A red 'X' button is visible to the right of the dropdown. A red arrow points to the 'Apply Changes' button in the top navigation bar.




**PEPWAVE** Dashboard **SpeedFusion Cloud** Network Advanced AP System Status Apply Changes

Changes applied successfully.

 SpeedFusion Cloud > Choose Cloud Location

You can connect up to 3 different cloud locations.

SpeedFusion Cloud	Cloud Location
SFC	--- Automatic --- 

By default, the router will build a SpeedFusion tunnel to the SpeedFusion Cloud

**PEPWAVE** | Dashboard | **SpeedFusion Cloud** | Network | Advanced | AP | System | Status | Apply Changes

---

**WAN Connection Status** ?

Priority 1 (Highest)  
 Drag desired (Priority 1) connections here

Priority 2

1	Cellular 1	Connected to MY MAXIS <a href="#">LTE-A</a>	<a href="#">Details</a>
2	Cellular 2	Connected to MY MAXIS <a href="#">LTE-A</a>	<a href="#">Details</a>

Priority 3  
 Drag desired (Priority 3) connections here

Disabled

1	WAN 1	<input type="checkbox"/> Disabled	<a href="#">Details</a>
2	WAN 2	<input type="checkbox"/> Disabled	<a href="#">Details</a>
3	Cellular 3	<input type="checkbox"/> Disabled	<a href="#">Details</a>
4	Cellular 4	<input type="checkbox"/> Disabled	<a href="#">Details</a>
	Wi-Fi WAN	<input type="checkbox"/> Disabled	<a href="#">Details</a>
3	LAN 1 as WAN	<input type="checkbox"/> Disabled	<a href="#">Details</a>
4	LAN 2 as WAN	<input type="checkbox"/> Disabled	<a href="#">Details</a>
5	LAN 3 as WAN	<input type="checkbox"/> Disabled	<a href="#">Details</a>

---

**LAN Interface**

Router IP Address: 192.168.50.1

**Wi-Fi AP**  ON [Details](#)

PEPWAVE\_EBB4

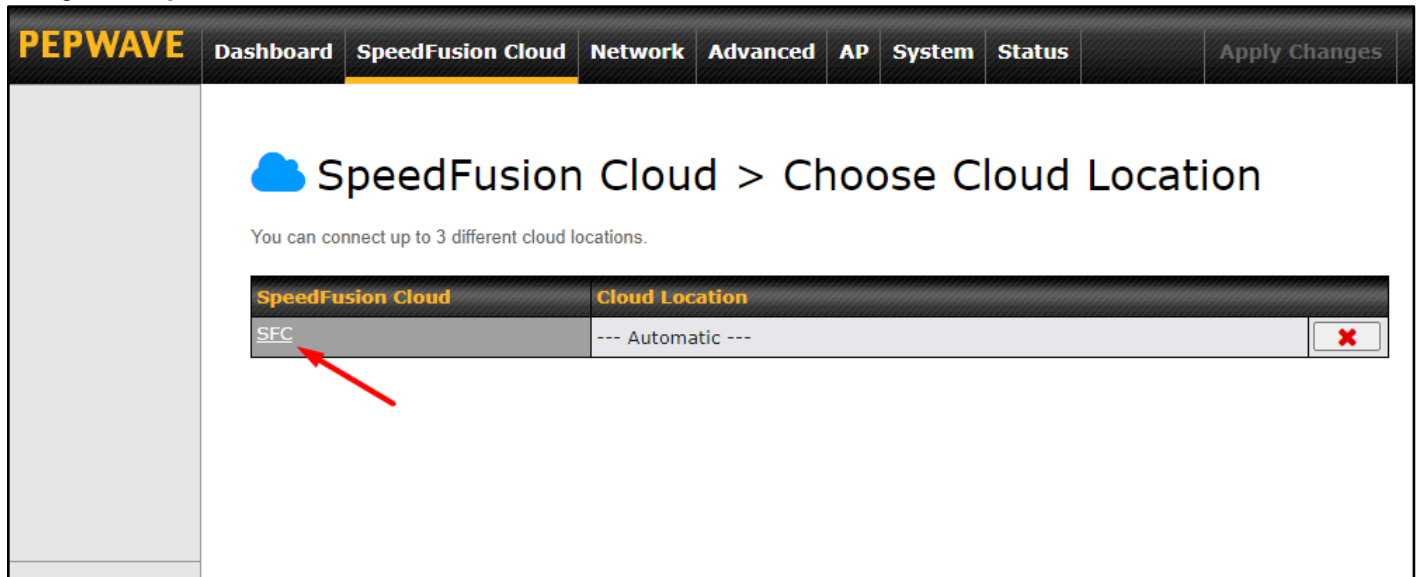
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**SpeedFusion Cloud**

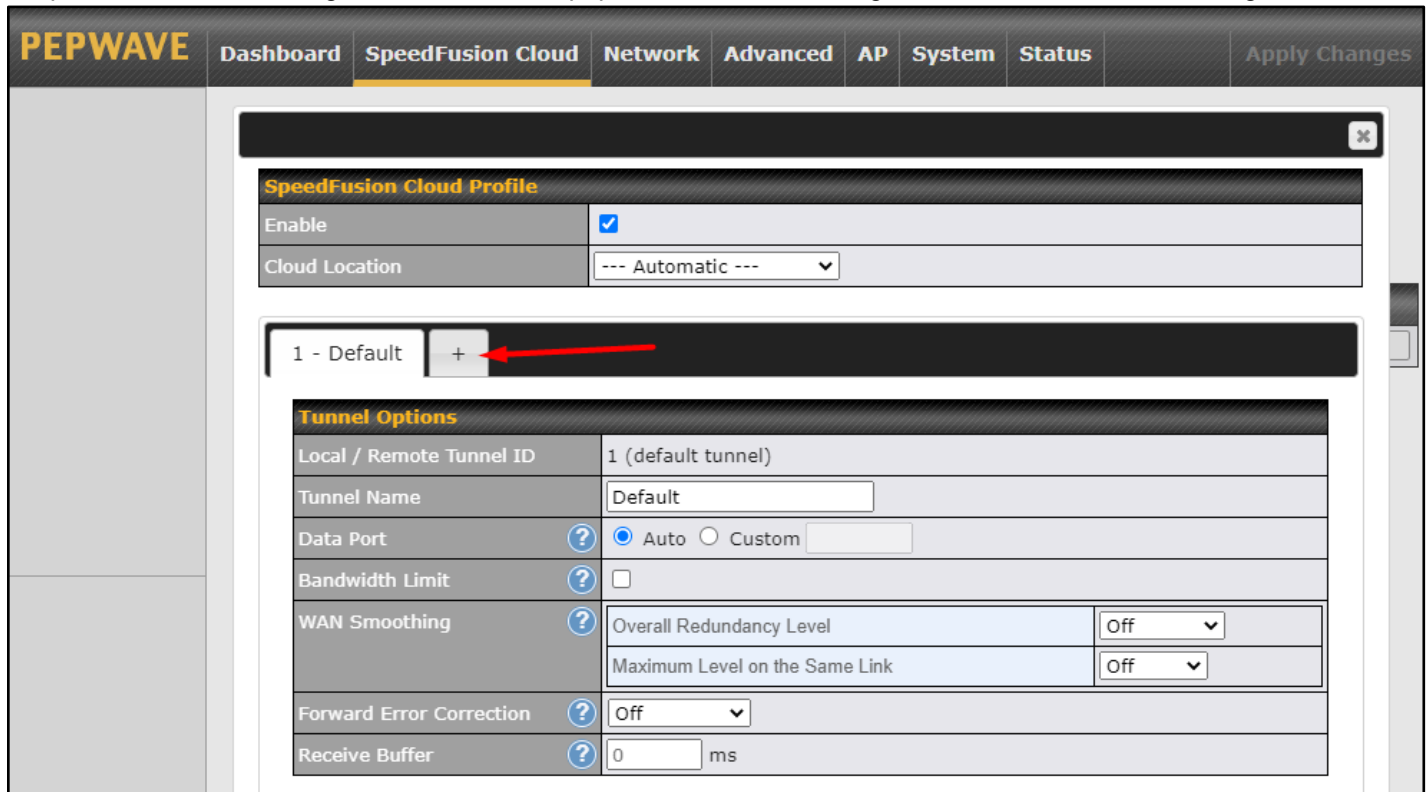
SFC  Established

Data usage allowance: 98.40 GB (Expiry date: Sep 01, 2020)

If you are running a latency sensitive service like video streaming or VOIP, a WAN Smoothing sub-tunnel can be created. Navigate to **Speedfusion Cloud > Choose a cloud location > SFC**.



A Speedfusion tunnel configuration window will pop out. Click on the **+** sign to create the WAN Smoothing sub-tunnel.



**PEPWAVE** Dashboard **SpeedFusion Cloud** Network Advanced AP System Status Apply Changes

---

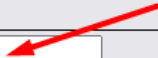
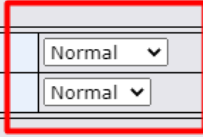
**SpeedFusion Cloud Profile**

Enable	<input checked="" type="checkbox"/>
Cloud Location	--- Automatic ---

---

1 - Default 2 - WAN Smoo... x +

**Tunnel Options**

Local / Remote Tunnel ID	2
Tunnel Name	WAN Smoothing 
Data Port	<input checked="" type="radio"/> Auto <input type="radio"/> Custom <input type="text"/>
Bandwidth Limit	<input type="checkbox"/>
WAN Smoothing	Overall Redundancy Level <span>Normal</span> 
	Maximum Level on the Same Link <span>Normal</span>
Forward Error Correction	<input type="text" value="Off"/>
Receive Buffer	<input type="text" value="0"/> ms

Click on **Save** and **Apply Changes** to save the configuration. Now, the router has 2 Speedfusion tunnels to the Speedfusion Cloud.

PEPWAVE
Dashboard
SpeedFusion Cloud
Network
Advanced
AP
System
Status
Apply Changes

### WAN Connection Status ?

Priority 1 (Highest)

Drag desired (Priority 1) connections here

Priority 2

1	Cellular 1		Connected to MY MAXIS <span style="color: blue;">LTE-A</span>	Details
2	Cellular 2		Connected to MY MAXIS <span style="color: blue;">LTE-A</span>	Details

Priority 3

Drag desired (Priority 3) connections here

Disabled

1	WAN 1	<input type="checkbox"/>	Disabled	Details
2	WAN 2	<input type="checkbox"/>	Disabled	Details
3	Cellular 3	<input type="checkbox"/>	Disabled	Details
4	Cellular 4	<input type="checkbox"/>	Disabled	Details
5	Wi-Fi WAN	<input type="checkbox"/>	Disabled	Details
3	LAN 1 as WAN	<input type="checkbox"/>	Disabled	Details
4	LAN 2 as WAN	<input type="checkbox"/>	Disabled	Details
5	LAN 3 as WAN	<input type="checkbox"/>	Disabled	Details

### LAN Interface

Router IP Address: 192.168.50.1

### Wi-Fi AP ON Details

PEPWAVE\_EBB4

### SpeedFusion Cloud

SFC (1 - Default)	<span style="color: green;">■</span> Established
SFC (2 - WAN Smoothing)	<span style="color: green;">■</span> Established
Data usage allowance: 98.40 GB (Expiry date: Sep 01, 2020)	

Create an outbound policy to steer the internet traffic to go into Speedfusion Cloud. Please go to **Advanced > Outbound Policy**, click on **Add Rule** to create a new outbound policy.

The screenshot shows the PEPWAVE web interface with the 'Advanced' tab selected. The 'Outbound Policy' section is active, and a dialog box titled 'Add a New Custom Rule' is open. The dialog box contains the following fields and options:

- Service Name:** to\_internet
- Enable:**
- Source:** IP Address (dropdown), 192.168.50.10 (input)
- Destination:** Any (dropdown)
- Protocol:** Any (dropdown), :: Protocol Selection :: (dropdown)
- Algorithm:** Priority (dropdown)
- Priority Order:**

Priority Order	Service Name	Status
Highest Priority	Cloud: SFC (1 - Defau...	Not In Use
	Cloud: SFC (2 - WAN ...	
	WAN: WAN 1	
	WAN: WAN 2	
	WAN: Cellular 1	
	WAN: Cellular 2	
	WAN: Cellular 3	
	WAN: Cellular 4	
	WAN: USB	
	WAN: Wi-Fi WAN	
	WAN: LAN 1 as WAN	
	WAN: LAN 2 as WAN	
	WAN: LAN 3 as WAN	
	Lowest Priority	
- When No Connections are Available:** Drop the Traffic (dropdown)
- Terminate Sessions on Connection Recovery:**  Enable

At the bottom of the dialog box, there are 'Save' and 'Cancel' buttons. The 'Cloud: SFC (1 - Defau...)' and 'Cloud: SFC (2 - WAN ...)' entries in the Priority Order list are highlighted with a red box.

**Outbound Policy** ?

Custom ✎

---

**Rules** (🖱️ Drag and drop rows by the left to change rule order) ?

Service	Algorithm	Source	Destination	Protocol / Port	
PepVPN / OSPF / BGP / RIPv2 Routes SpeedFusion Cloud Routes					
<u>to internet</u>	Priority VPN: SFC (1 - Def...	IP Address 192.168.50.10	Any	Any	✖
<u>HTTPS Persistence</u>	Persistence (Src) (Auto)	Any	Any	TCP 443	✖
Default	(Auto)				
<b>Add Rule</b>					

---


**Expert Mode** ?

Enabled ✎


## Connect Clients to Cloud

SpeedFusion Cloud provides a convenient way to route the LAN client to the cloud. From **SpeedFusion Cloud > Connect Clients to Cloud**.

peplink **Dashboard** **SpeedFusion Cloud** Network AP System Status Apply Changes


 **SpeedFusion Cloud**

Aggregate your bandwidth, connect you to different geo-location, and more.



**Choose Cloud Location**

Which cloud you'd like to connect?



**Connect Clients to Cloud**

Select a cloud for your laptops, phones, or other devices.

Choose a client from the drop down list > Click + > Save > Apply Changes.

peplink Dashboard **SpeedFusion Cloud** Network AP System Status Apply Changes

Saved! Changes will be effective after clicking the 'Apply Changes' button.

## SpeedFusion Cloud > Connect Clients to Cloud

Traffic from the selected clients will be redirected to the assigned cloud.

Automatic	Client	IP Address	
	MY-Room-A-DellPC (40:23:43:26:F7:93)	192.168.52.179	✖
	---		+


## Link Wi-Fi to Cloud

SpeedFusion Cloud provides a convenient way to route the Wi-Fi client to the cloud from **SpeedFusion Cloud > Link Wi-Fi to Cloud**. This option is available for **Balance 20X, Balance 30 Pro, and Balance One**.

peplink Dashboard Setup Wizard **SpeedFusion Cloud** Network AP System Status


## SpeedFusion Cloud

Aggregate your bandwidth, connect you to different geo-location, and more.




**Choose Cloud Location**

Which cloud you'd like to connect?



**Connect Clients to Cloud**

Select a cloud for your laptops, phones, or other devices.



**Link Wi-Fi to Cloud**

Create a Wi-Fi SSID that is dedicated for the cloud.



Create a new SSID for SpeedFusion Cloud. The new SSID will inherit all settings from one of the existing SSIDs including the Security Policy. Then click **Save** follow by **Apply Changes**.

**SpeedFusion Cloud > Link Wi-Fi to Cloud**

The new SSID will inherit all settings from the existing SSID including the Security Policy.

SpeedFusion Cloud										
Automatic	<table border="1"> <thead> <tr> <th>Reference SSID</th> <th>SSID for Cloud</th> <th></th> </tr> </thead> <tbody> <tr> <td>Home</td> <td>Home_SFC</td> <td>✖</td> </tr> <tr> <td>---</td> <td></td> <td>+</td> </tr> </tbody> </table>	Reference SSID	SSID for Cloud		Home	Home_SFC	✖	---		+
Reference SSID	SSID for Cloud									
Home	Home_SFC	✖								
---		+								

**Save**

SpeedFusion Cloud SSID will be shown on **Dashboard**.

**LAN Interface**

Router IP Address: 192.168.54.1

**Wi-Fi AP** ON ▾ Details

📶 HomeBunker	📶 Home	📶 Home_SFC
--------------	--------	------------

## Optimize Cloud Application

Optimize Cloud Application allows you to route Internet traffic to SpeedFusion Cloud based on the application. Go to **SpeedFusion Cloud > Optimize Cloud Application**.

**PEPWAVE** Dashboard **SpeedFusion Cloud** Network Advanced AP System Status Apply Changes

### SpeedFusion Cloud

Aggregate your bandwidth, connect you to different geo-location, and more.

- Get your activation key now**  
Enjoy all the delicious features powered by SpeedFusion.
- Choose Cloud Location**  
Which cloud you'd like to connect?
- Connect Clients to Cloud**  
Select a cloud for your laptops, phones, or other devices.
- Link Wi-Fi to Cloud**  
Create a Wi-Fi SSID that is dedicated for the cloud.
- Optimize Cloud Application**  
Connect to Google, Microsoft, Zoom and others using the Cloud.

Select a Cloud application to route through SpeedFusion Cloud from the drop down list > Click + > Save > Apply Changes. Click the x to remove a selected Cloud application to route through SpeedFusion Cloud.

### SpeedFusion Cloud > Optimize Cloud Application

Traffic of the selected cloud application will be redirected to the assigned cloud.

**Singapore (SIN)**

SFC-SIN	Cloud Application	
	Zoom	<span>x</span>
	---	<span>+</span>
	Google Workspace	
	Microsoft Office 365	
	Lifesize	
	Salesforce	

# Configuring the LAN Interface(s)

## Network Settings

LAN interface settings are located at **Network>LAN>Network Settings**. Navigating to that page will show the following dashboard:

LAN	VLAN	Network	
LAN	None	172.16.251.1/24	
VLAN1	1	2.2.2.2/24	<input type="button" value="X"/>
VLAN2	2	3.3.3.3/24	<input type="button" value="X"/>

This represents the LAN interfaces that are active on your router (including VLAN). A grey “X” means that the VLAN is used in other settings and cannot be deleted. You can find which settings are using the VLAN by hovering over the grey “X”.

Alternatively, a red “X” means that there are no settings using the VLAN. You can delete that VLAN by clicking the red “X”

Clicking any of the existing LAN interfaces (or creating a new one) will show the following:

**IP Settings**

IP Address  (/24) ▼

<b>IP Address</b>	The IP address and subnet mask of the Pepwave router on the LAN.
-------------------	--

Network Settings		?
Name	<input type="text"/>	<b>Help</b> <a href="#">Close</a>
VLAN ID	<input type="text"/>	To define a layer-2 bridging based PepVPN, please click <a href="#">here</a> .
Inter-VLAN routing	<input checked="" type="checkbox"/>	

<b>Name</b>	Enter a name for the LAN.
<b>VLAN ID</b>	Enter a number for your VLAN.
<b>Inter-VLAN routing</b>	Check this box to enable routing between virtual LANs.

Layer 2 PepVPN Bridging		?
PepVPN Profiles to Bridge	<input type="text"/> No profile is available	<b>Help</b> <a href="#">Close</a>
Spanning Tree Protocol	<input type="checkbox"/>	If you want to enable DHCP Option 82 Injection, please click <a href="#">here</a> .
Override IP Address when bridge connected	<input checked="" type="radio"/> Do not override <input type="radio"/> Static <input type="radio"/> By DHCP <input type="radio"/> As None	This allow the device to inject Option 82 with Router Name information before forwarding the DHCP Request packet to PepVPN peer, such that the DHCP Server can identify where does this request come from.

DHCP Server	
<b>PepVPN Profiles to Bridge</b>	The remote network of the selected PepVPN profiles will be bridged with this local LAN, creating a Layer 2 PepVPN, they will be connected and operate like a single LAN, and any broadcast or multicast packets will be sent over the VPN.
<b>Remote Network Isolation</b>	Enable this option if you want to block network traffic between the remote networks, this will not affect the connectivity between them and this local LAN.
<b>Spanning Tree Protocol</b>	Click the box will enable STP for this layer 2 profile bridge.
<b>Override IP Address when bridge connected</b>	<p>Select "Do not override" if the LAN IP address and local DHCP server should remain unchanged after the Layer 2 PepVPN is up.</p> <p>If you choose to override IP address when the VPN is connected, the device will not act as a router, and most Layer 3 routing functions will cease to work.</p>
<b>DHCP Option 82</b>	<p>Click on the question Mark if you want to enable DHCP Option 82.</p> <p>This allows the device to inject Option 82 with Router Name information before forwarding the DHCP Request packet to a PepVPN peer, such that the DHCP Server can identify where the request originates from.</p>

DHCP Server			
DHCP Server	<input checked="" type="checkbox"/>	Enable	
DHCP Server Logging	<input type="checkbox"/>		
IP Range		255.255.255.0 (/24)	
Lease Time		0	Mins
DNS Servers	<input checked="" type="checkbox"/>	Assign DNS server automatically	
BOOTP	<input type="checkbox"/>		
Extended DHCP Option	Option	Value	
	<i>No Extended DHCP Option</i>		
	<b>Add</b>		
DHCP Reservation	Name	MAC Address	Static IP
		00:00:00:00:00:00	

**Help** Close  
 Check the *Enable* box to enable the built-in DHCP server which serves DHCP requests on the LAN. If you want to enable DHCP relay server, click [here](#).

<b>DHCP Server</b>	When this setting is enabled, the DHCP server automatically assigns an IP address to each computer that is connected via LAN and configured to obtain an IP address via DHCP. The Pepwave router's DHCP server can prevent IP address collision on the LAN.
<b>DHCP Server Logging</b>	Enable logging of DHCP events in the eventlog by selecting the checkbox.
<b>IP Range &amp; Subnet Mask</b>	These settings allocate a range of IP addresses that will be assigned to LAN computers by the Pepwave router's DHCP server.
<b>Lease Time</b>	This setting specifies the length of time throughout which an IP address of a DHCP client remains valid. Upon expiration of the lease time, the assigned IP address will no longer be valid and renewal of the IP address assignment will be required.
<b>DNS Servers</b>	This option allows you to input the DNS server addresses to be offered to DHCP clients. If <b>Assign DNS server automatically</b> is selected, the Pepwave router's built-in DNS server address (i.e., LAN IP address) will be offered.
<b>BOOTP</b>	Check this box to enable BOOTP on older networks that still require it.
<b>Extended DHCP Option</b>	In addition to standard DHCP options (e.g., DNS server address, gateway address, subnet mask), you can specify the value of additional extended DHCP options, as defined in RFC 2132. With these extended options enabled, you can pass additional configuration information to LAN hosts. To define an extended DHCP option, click the <b>Add</b> button, choose the option to define and enter its value. For values that are in IP address list format, you can enter one IP address per line in the provided text area input control. Each option can be defined once only.
<b>DHCP Reservation</b>	This setting reserves the assignment of fixed IP addresses for a list of computers on the LAN. The computers to be assigned fixed IP addresses on the LAN are identified by their MAC addresses. The fixed IP address assignment is displayed as a cross-reference list between the computers' names, MAC addresses, and fixed IP addresses. <b>Name</b> (an optional field) allows you to specify a name to represent the device. MAC addresses should be in the format of <b>00:AA:BB:CC:DD:EE</b> . Press  to create a new record. Press  to

remove a record. Reserved client information can be imported from the **Client List**, located at **Status>Client List**. For more details, please refer to **Section 22.3**.

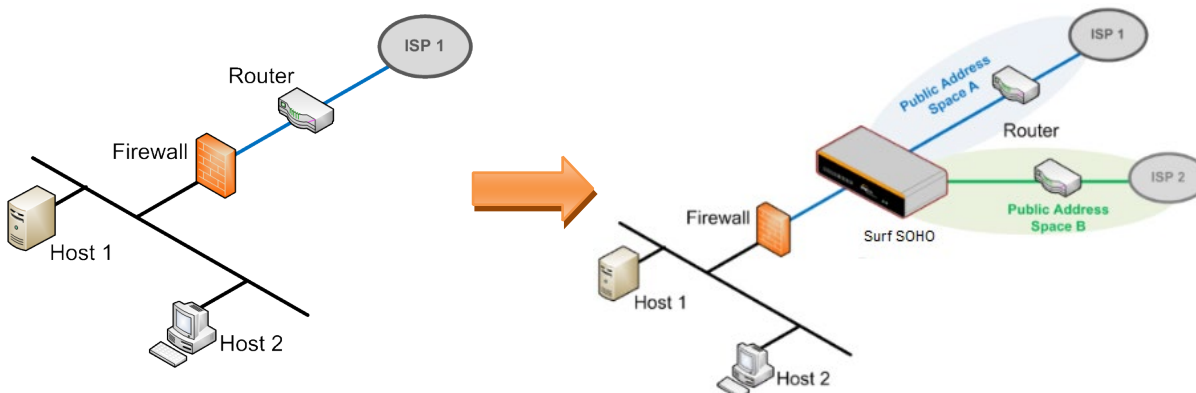
DHCP Relay Settings	
DHCP Relay	<input checked="" type="checkbox"/> Enable
DHCP Server IP Address	DHCP Server 1: <input type="text"/> DHCP Server 2: <input type="text"/>
DHCP Option 82	<input type="checkbox"/>
DHCP Relay Logging	<input type="checkbox"/>

<b>DHCP Relay</b>	Enter the address of the DHCP server here. DHCP requests will be relayed to it.
<b>DHCP Server IP Address</b>	DHCP requests from the LAN are relayed to the entered DHCP server. For active-passive DHCP server configurations, enter active and passive DHCP server IPs into the <b>DHCP Server 1</b> and <b>DHCP Server 2</b> fields.
<b>DHCP Option 82</b>	This feature includes device information as relay agent for the attached client when forwarding DHCP requests from a DHCP client to a DHCP server. Device MAC address and network name are embedded to circuit ID and Remote ID in option 82.
<b>DHCP Relay Logging</b>	Check this box to log DHCP relay activity.

## Drop-In Mode

Drop-in mode (or transparent bridging mode) eases the installation of the Surf SOHO on a live network between the firewall and router, such that changes to the settings of existing equipment are not required.

The following diagram illustrates drop-in mode setup:



Check the box Enable to enable the Drop-in Mode. After enabling this feature and selecting the WAN for Drop-in mode, various settings including the WAN's connection method and IP address will be automatically updated.


When drop-in mode is enabled, the LAN and the WAN for drop-in mode ports will be bridged. Traffic between the LAN hosts and WAN router will be forwarded between the devices. In this case, the hosts on both sides will not notice any IP or MAC address changes.

After successfully setting up the Surf SOHO as part of the network using drop-in mode, it will, depending on model, support one or more WAN connections. Some SOHO units also support multiple WAN connections after activating drop-in mode, though a SpeedFusion license may be required to activate more than one WAN port.




**Please note the Drop-In Mode is mutually exclusive with VLAN.**

Drop-In Mode Settings							
Enable	<input checked="" type="checkbox"/>						
WAN for Drop-In Mode	? WAN <input checked="" type="checkbox"/> Apply NAT on VLAN networks outgoing Internet traffic VLAN network(s) may route their outgoing Internet traffic to this unit. When this checkbox is checked their traffic will be NAT'd before forwarding out of this WAN. Leave this checkbox checked if you are not sure.						
Share Drop-In IP	<input checked="" type="checkbox"/>						
Shared IP Address	<input type="text"/> 255.255.255.0 (/24) <input type="button" value="v"/>						
Static Route	<table border="1"> <thead> <tr> <th>Destination Network</th> <th>Subnet Mask</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="text"/></td> <td>255.255.255.0 (/24) <input type="button" value="v"/></td> <td><input type="button" value="+"/></td> </tr> </tbody> </table>	Destination Network	Subnet Mask		<input type="text"/>	255.255.255.0 (/24) <input type="button" value="v"/>	<input type="button" value="+"/>
Destination Network	Subnet Mask						
<input type="text"/>	255.255.255.0 (/24) <input type="button" value="v"/>	<input type="button" value="+"/>					
WAN Default Gateway	? <input type="text"/> <input checked="" type="checkbox"/> I have other host(s) on WAN segment IP Address <input type="text"/> - <input type="text"/> <input type="button" value="v"/> <input type="text"/> <input type="button" value="x"/>						
WAN DNS Servers	? DNS server 1: <input type="text"/> DNS server 2: <input type="text"/>						
NOTE: The DHCP Server Settings will be overwritten.  The following WAN settings will be overwritten: Connection Method, MTU, Health Check, Additional Public IP, and Dynamic DNS Settings.  The PPTP Server will be disabled.  Tip: please review the DNS Forwarding setting under the Service Forwarding section.							

<b>Enable</b>	Drop-in mode eases the installation of the Surf SOHO on a live network between the existing firewall and router, such that no configuration changes are required on existing equipment. Check the box to enable the drop-in mode feature.
<b>WAN for Drop-In Mode</b>	Select the WAN port to be used for drop-in mode. If <b>WAN</b> is selected, the high availability feature will be disabled automatically.
<b>Shared Drop-In IP<sup>A</sup></b>	When this option is enabled, the passthrough IP address will be used to connect to WAN hosts (email notification, remote syslog, etc.). The SOHO will listen for this IP address when WAN hosts access services provided by the SOHO (web admin access from the WAN, DNS server requests, etc.).

	To connect to hosts on the LAN (email notification, remote syslog, etc.), the default gateway address will be used. The SOHO will listen for this IP address when LAN hosts access services provided by the SOHO(web admin access from the WAN, DNS proxy, etc.).
<b>Shared IP Address<sup>A</sup></b>	Access to this IP address will be passed through to the LAN port if this device is not serving the service being accessed. The shared IP address will be used in connecting to hosts on the WAN (e.g., email notification, remote syslog, etc.) The device will also listen on the IP address when hosts on the WAN access services served on this device (e.g., web admin accesses from WAN, DNS server, etc.)
<b>WAN Default Gateway</b>	Enter the WAN router's IP address in this field. If there are more hosts in addition to the router on the WAN segment, click the  button next to "WAN Default Gateway" and check the other <b>host(s) on the WAN segment</b> box and enter the IP address of the hosts that need to access LAN devices or be accessed by others.
<b>WAN DNS Servers</b>	Enter the selected WAN's corresponding DNS server IP addresses.



<sup>A</sup> - Advanced feature, please click the  button on the top right-hand corner to activate.

Static Route Settings 			
Static Route	Destination Network	Subnet Mask	Gateway
	192.168.113.0	255.255.255.0 (/24) ▼	192.168.112.10 
		255.255.255.0 (/24) ▼	






### Static Route

This table is for defining static routing rules for the LAN segment. A static route consists of the network address, subnet mask, and gateway address. The address and subnet mask values are in w.x.y.z format.

The local LAN subnet and subnets behind the LAN will be advertised to the VPN. Remote routes sent over the VPN will also be accepted. Any VPN member will be able to route to the local subnets.

Press  to create a new route. Press  to remove a route.

Entries in this list will allow traffic to route to a different subnet that is connected to the LAN interface. Any traffic destined for a network/mask pair will be directed to the corresponding gateway instead of routed through WANs.

Virtual Network Mapping 			
One-to-One NAT 	Local Network	Virtual Network	
Many-to-One NAT 	Local Network	Virtual IP Address	

In case of a network address conflict with remote peers (i.e. PepVPN / IPsec VPN / IP Forwarding WAN are considered as remote connections), you can define Virtual Network Mapping to resolve it.

Note: OSPF & RIPv2 settings should be updated as well to avoid advertising conflicted network.

For further details on virtual network mapping watch this video: <https://youtu.be/C1FMdZCn3Z8>



<b>One-to-One NAT</b>	Every IP Address in the Local Network has a corresponding unique Virtual IP Address for NAT. Traffic originating from the Local Network to remote connections will be SNAT'ed and behave like coming from the defined Virtual Network. While traffic initiated by remote peers to the Virtual Network will be DNAT'ed accordingly.
<b>Many-to-One NAT</b>	The subnet range defined in Local Network will be mapped to a single Virtual IP Address for NAT. Traffic can only be initiated from local to remote, and these traffic will be NAT'ed and behaves like coming from the same Virtual IP Address.

**DNS Proxy Settings** ?

Enable	<input checked="" type="checkbox"/>																				
DNS Caching	<input type="checkbox"/>																				
Include Google Public DNS Servers	<input type="checkbox"/>																				
Local DNS Records	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Host Name</th> <th style="width: 30%;">IP Address</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td><input style="width: 95%;" type="text"/></td> <td><input style="width: 95%;" type="text"/></td> <td style="text-align: center;">+</td> </tr> </tbody> </table>			Host Name	IP Address		<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>	+												
Host Name	IP Address																				
<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>	+																			
Domain Lookup Policy	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Domain</th> <th style="width: 30%;">Connection</th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td><input style="width: 95%;" type="text"/></td> <td><input style="width: 95%;" type="text"/></td> <td style="text-align: center;">+</td> </tr> </tbody> </table>			Domain	Connection		<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>	+												
Domain	Connection																				
<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>	+																			
DNS Resolvers	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 65%;">WAN Connection</th> <th style="width: 35%;">DNS Servers</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> WAN 1</td> <td>1.1.1.1 1.0.0.1</td> </tr> <tr> <td><input type="checkbox"/> WAN 2</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 3</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 4</td> <td>8.8.8.8 8.8.4.4</td> </tr> <tr> <td><input type="checkbox"/> WAN 5</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Mobile Internet</td> <td></td> </tr> <tr> <th>LAN Connection</th> <th>DNS Servers</th> </tr> <tr> <td><input type="checkbox"/> Untagged LAN</td> <td><input style="width: 100%;" type="text"/></td> </tr> </tbody> </table> <p style="font-size: small;">Preferred connections are shown with <input checked="" type="checkbox"/></p>			WAN Connection	DNS Servers	<input type="checkbox"/> WAN 1	1.1.1.1 1.0.0.1	<input type="checkbox"/> WAN 2		<input type="checkbox"/> WAN 3		<input type="checkbox"/> WAN 4	8.8.8.8 8.8.4.4	<input type="checkbox"/> WAN 5		<input type="checkbox"/> Mobile Internet		LAN Connection	DNS Servers	<input type="checkbox"/> Untagged LAN	<input style="width: 100%;" type="text"/>
WAN Connection	DNS Servers																				
<input type="checkbox"/> WAN 1	1.1.1.1 1.0.0.1																				
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<input type="checkbox"/> WAN 3																					
<input type="checkbox"/> WAN 4	8.8.8.8 8.8.4.4																				
<input type="checkbox"/> WAN 5																					
<input type="checkbox"/> Mobile Internet																					
LAN Connection	DNS Servers																				
<input type="checkbox"/> Untagged LAN	<input style="width: 100%;" type="text"/>																				

<b>Enable</b>	To enable the DNS proxy feature, check this box, and then set up the feature at <b>Network&gt;LAN&gt;DNS Proxy Settings</b> . A DNS proxy server can be enabled to serve DNS requests originating from LAN/PPTP/SpeedFusion™ peers. Requests are forwarded to the <b>DNS servers/resolvers</b> defined for each WAN connection.
<b>DNS Caching</b>	This field is to enable DNS caching on the built-in DNS proxy server. When the option is enabled, queried DNS replies will be cached until the records' TTL has been reached. This feature can improve DNS response time by storing all received DNS results for faster DNS lookup. However, it cannot return the most updated result for frequently updated DNS records. By default, <b>DNS Caching</b> is disabled.
<b>Include Google Public DNS Servers</b>	When this option is enabled, the DNS proxy server will forward DNS requests to Google's public DNS servers, in addition to the DNS servers defined in each WAN. This could increase the DNS service's availability. This setting is disabled by default.

<b>Local DNS Records</b>	<p>This table is for defining custom local DNS records. A static local DNS record consists of a host name and IP address. When looking up the host name from the LAN to LAN IP of the Pepwave Surf SOHO, the corresponding IP address will be returned. To display the option to set TTL manually, click . Click  to create a new record. Click  to remove a record.</p>
<b>Domain Lookup Policy</b>	<p>DNS proxy will look up the domain names defined here using only the specified connections.</p>
<b>DNS Resolvers<sup>A</sup></b>	<p>Check the box to enable the WINS server. A list of WINS clients will be displayed at <b>Network&gt;LAN&gt;DNS Proxy Settings&gt;DNS Resolvers</b>.          This field specifies which DNS resolvers will receive forwarded DNS requests. If no WAN/VPN/LAN DNS resolver is selected, all of the WAN's DNS resolvers will be selected. If a SpeedFusion™ peer is selected, you may enter the VPN peer's DNS resolver IP address(es). Queries will be forwarded to the selected connections' resolvers. If all of the selected connections are down, queries will be forwarded to all resolvers on healthy WAN connections.</p>

<sup>A</sup> - Advanced feature, please click the button on the top right-hand corner to activate.

## Port Settings

To configure port settings, navigate to **Network > LAN > Port Settings**

**Port Settings**

#	Name	Enable	Speed	Advertise Speed
1	LAN Port 1	<input checked="" type="checkbox"/>		
2	LAN Port 2	<input checked="" type="checkbox"/>		
3	LAN Port 3	<input checked="" type="checkbox"/>	<div style="border: 1px solid #ccc; padding: 2px;">           Auto ▼            Auto            1 Gbps Full Duplex            100 Mbps Full Duplex            100 Mbps Half Duplex            10 Mbps Full Duplex            10 Mbps Half Duplex         </div>	<input checked="" type="checkbox"/>
4	LAN Port 4	<input checked="" type="checkbox"/>		

On this screen, you can enable specific ports, name the LAN ports, as well as determine the speed of the LAN ports.

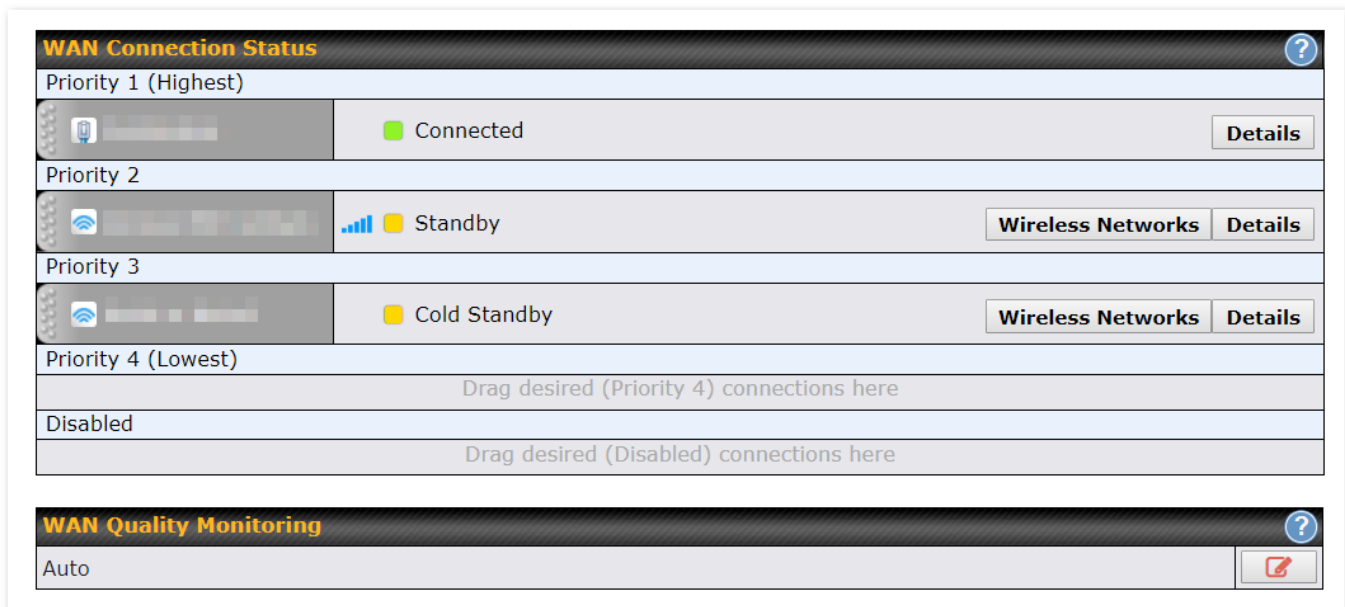
**Speed**

This is the port speed of the LAN interface. It should be set to the same speed as the connected device to avoid port negotiation problems. When a static speed is set, you may choose whether to advertise its speed to the peer device. **Auto** is selected by default. You can choose not to advertise the port speed if the port has difficulty negotiating with the peer device.

## Configuring the WAN interface

WAN Interface settings are located at **Network>WAN**. The router supports wan connections supplied by a USB 2.0 Interface USB cellular modem, Ethernet, or Wi-Fi.

To reorder the WAN priority, drag on the appropriate WAN by holding the left mouse button, move it to the desired priority (the first one would be the highest priority, the second one would be lower priority, and so on), and drop it by releasing the mouse button.



To disable a particular WAN connection, drag on the appropriate WAN by holding the left mouse button, move it the **Disabled** row, and drop it by releasing the mouse button.

You can also set priorities on the **Dashboard**. Click the **Details** button in the corresponding row to modify the connection setting.

## WAN > Quality Monitoring

This setting advice how WAN Quality information is being gathered.

By default, WAN Quality information will always be collected automatically for all WAN connections.

With a customized choice of WAN connections, the router will only collect the WAN Quality information of those selected WAN connections.

Connection details will be changed and become effective immediately after clicking the **Save and Apply** button.


## WAN > Ethernet WAN

WAN connection details need to be configured to connect the router to the internet or another WAN

To start configuring the WAN connection choose **Network>WAN** from the menu and choose a WAN connection and then click **Details**.

WAN Connection Settings	
WAN Connection Name	<input type="text"/> <b>Default</b>
Connection Method	<input type="button" value="?"/> DHCP ▾
Routing Mode	<input type="button" value="?"/> <input checked="" type="radio"/> NAT
Hostname (Optional)	<input type="text"/> <input type="checkbox"/> Use custom hostname
DNS Servers	<input checked="" type="checkbox"/> Obtain DNS server address automatically <input type="checkbox"/> Use the following DNS server address(es) DNS Server 1: <input type="text"/> DNS Server 2: <input type="text"/>
IP Passthrough	<input type="button" value="?"/> <input type="checkbox"/>
Independent from Backup WANs	<input type="button" value="?"/> <input type="checkbox"/>
Standby State	<input type="button" value="?"/> <input checked="" type="radio"/> Remain connected <input type="radio"/> Disconnect
Reply to ICMP Ping	<input type="button" value="?"/> <input checked="" type="radio"/> Yes <input type="radio"/> No
Upload Bandwidth	<input type="button" value="?"/> 10 <input type="text"/> Mbps ▾
Download Bandwidth	<input type="button" value="?"/> 110 <input type="text"/> Mbps ▾

<b>WAN Connection Name</b>	Enter a name to represent this WAN connection.
<b>Schedule</b>	Click the drop-down menu to apply a time schedule to this interface (only visible if Schedules have been created in <b>System &gt; Schedule</b> )
<b>Connection Method</b>	<p>There are five possible connection methods for Ethernet WAN:</p> <ul style="list-style-type: none"> <li>• <b>DHCP</b></li> <li>• <b>Static IP</b></li> <li>• <b>PPPoE</b></li> <li>• <b>L2TP</b></li> <li>• <b>GRE</b></li> </ul> <p>The connection method and details are determined by, and can be obtained from the ISP.</p>
<b>Routing Mode</b>	This field shows that <b>NAT</b> (network address translation) will be applied to the traffic routed over this

	WAN connection. <b>IP Forwarding</b> is available when you click the link in the help text.
<b>Hostname (Optional)</b>	Provide a hostname for this WAN port if requested by the ISP
<b>Management IP Address</b>	<p><b>Management IP Address</b> is available for configuration when you click the link in the help  icon via the Hostname.</p> <p>This option allows you to configure the management IP address for the DHCP WAN connection.</p>
<b>DNS Servers</b>	Select a DNS server for this port to use. This port can either be automatically selected or manually designated.
<b>Ip Passthrough</b>	When this IP Passthrough option is active, after the ethernet WAN connection is up, the router's DHCP server will offer the connection's IP address to one LAN client. All incoming or outgoing traffic will be routed without NAT.
<b>Independent from Backup WANs</b>	If this is checked, the connection will be working independent from other Backup WAN connections. Those in Backup Priority will ignore the status of this WAN connection, and will be used when none of the other higher priority connections are available
<b>Standby State</b>	This option allows you to choose whether to remain the connection connected or disconnect it when this WAN connection is no longer in the highest priority and has entered the standby state.
<b>Reply to ICMP Ping</b>	If No is selected, this option is disabled and the system will not reply to any ICMP ping echo requests to the WAN IP addresses of this WAN connection(Default option is "Yes")
<b>Upload Bandwidth</b>	<p>This field refers to the maximum upload speed.</p> <p>This value is referenced when default weight is chosen for outbound traffic and traffic prioritization. A correct value can result in effective traffic prioritization and efficient use of upstream bandwidth.</p>
<b>Download Bandwidth</b>	<p>This field refers to the maximum download speed.</p> <p>Default weight control for outbound traffic will be adjusted according to this value.</p>

## WAN > Physical Interface Settings

[Redacted]	
<b>Port Speed</b>	This setting specifies port speed and duplex configurations of the WAN port. By default, <b>Auto</b> is selected and the appropriate data speed is automatically detected by the Pepwave router. In the event of negotiation issues, the port speed can be manually specified. You can also choose whether or not to advertise the speed to the peer by selecting the <b>Advertise Speed</b> checkbox.
<b>MTU</b>	This setting specifies the maximum transmission unit. By default, MTU is set to <b>Custom 1440</b> . You may adjust the MTU value by editing the text field. Click <b>Default</b> to restore the default MTU value. Select <b>Auto</b> and the appropriate MTU value will be automatically detected. Auto-detection will run each time the WAN connection establishes.

**MSS**

This setting should be configured based on the maximum payload size that the local system can handle. The MSS (maximum segment size) is computed from the MTU minus 40 bytes for TCP over IPv4. If the MTU is set to **Auto**, the MSS will also be set automatically. By default, MSS is set to **Auto**.

**MAC Address Clone**

Some service providers (e.g., cable providers) identify the client's MAC address and require the client to always use the same MAC address to connect to the network. In such cases, change the WAN interface's MAC address to the original client PC's MAC address via this field. The default MAC address is a unique value assigned at the factory. In most cases, the default value is sufficient. Clicking **Default** restores the MAC address to the default value.

**VLAN**

Click the square if you wish to enable VLAN functionality for the WAN connection and enable multiple broadcast domains. Once you enable VLAN, you will be able to enter a name for your network.

## WAN > Health Check Settings

To ensure traffic is routed to healthy WAN connections only, the Pepwave router can periodically check the health of each WAN connection. The health check settings for each WAN connection can be independently configured.

Health Check Settings	
Health Check Method	<span>?</span> PING ▾
PING Hosts	<span>?</span> Host 1: <input type="text"/> Host 2: <input type="text"/> <input checked="" type="checkbox"/> Use first two DNS servers as PING Hosts
Timeout	<span>?</span> 5 ▾ second(s)
Health Check Interval	<span>?</span> 5 ▾ second(s)
Health Check Retries	<span>?</span> 3 ▾
Recovery Retries	<span>?</span> 3 ▾

## Health Check Methods

**PING:** The router will send an ICMP/PING packet to the specified IP address (or host name) to test WAN connectivity.

**DNS Lookup:** The router will perform a DNS lookup to the specified DNS server.

**HTTP:** The router will perform an HTTP request to the specified URLs. Optional with strings to match.

**SmartCheck:** Available in Cellular/USB WAN only, SmartCheck initiates when outbound traffic goes unresponded for 10

seconds. When SmartCheck initiates, it will run an ICMP health check.

## Health Check Parameters

**Timeout:** During any health check, the router will send a health check packet. The router will wait the specified number of seconds for a response before the health check is considered as failed.

**Health Check Interval:** This number specifies the period between each health check.

**Health Check Retries:** This number specified the number of health check attempts the router will make. Upon reaching this number, the link will be considered as failed

**Recovery Retries:** This specified the number of successful health checks a failed links needs before the link is considered as up again.

## WAN > Bandwidth Allowance Monitor

The Bandwidth Allowance Monitor helps to keep track of your network usage. To enable this function, connect to the Web Admin Interface and go to **Network > WAN**. Check the box **Enable** next to Bandwidth Allowance Monitor and you can see the following:

Bandwidth Allowance Monitor	
Bandwidth Allowance Monitor ?	<input checked="" type="checkbox"/> Enable
Action ?	Email notification is currently disabled. You can get notified when usage hits 75%/95% of monthly allowance by enabling <a href="#">Email Notification</a> . <input type="checkbox"/> Reserve for management traffic when usage hits 100% of monthly allowance <input checked="" type="checkbox"/> Disconnect when usage hits 100% of monthly allowance
Start Day ?	On <input type="text" value="1st"/> of each month at 00:00 midnight
Monthly Allowance ?	<input type="text"/> GB ▾

**Action:** If the feature **Email Notification** is enabled, you will be notified through email when usage hits 75% and 95% of the monthly allowance.

If the box **Disconnect when usage hits 100% of monthly allowance** is checked, this WAN connection will be disconnected automatically when the usage hits the monthly allowance. It will not resume connection unless this option has been turned off or the usage has been reset when a new billing cycle starts.

**Start Day:** This option allows you to define which day in the month each billing cycle begins.

**Monthly Allowance:** This field is for defining the maximum bandwidth usage allowed for the WAN connection each month.



## WAN > Additional IP Address Settings

The **IP Address** list represents the list of fixed Internet IP addresses assigned by the ISP, in the event that more than one Internet IP address is assigned to this WAN connection.

Enter the subnet IP Address and Subnet Mask, press the down arrow button, and the list will be populated by the IP addresses of the specified subnet. You should delete the WAN connection's primary IP address and the gateway address from the list by pressing the *Delete* button after selecting them in the list. These additional IP addresses can be assigned to a device on the LAN using NAT Mappings

## WAN > Dynamic DNS Settings

Pepwave Surf SOHO routers allow registering domain name relationships to dynamic DNS service providers. Through registration with dynamic DNS service provider(s), the default public Internet IP address of each WAN connection can be associated with a hostname.

With dynamic DNS service enabled for a WAN connection, you can connect to your WAN's IP address externally even if its IP address is dynamic.

You must register for an account from the listed dynamic DNS service providers before enabling this option.

If the WAN connection's IP address is a reserved private IP address (i.e., behind a NAT router), the public IP of each WAN will be automatically reported to the DNS service provider.

Either upon a change in IP addresses or every 23 days without link reconnection, the Pepwave Surf SOHO will connect to the dynamic DNS service provider to update the provider's IP address records.

If your desired provider is not listed, you may check with **DNS-O-Matic**. This service supports updating 30 other dynamic DNS service providers. (Note: Peplink is not affiliated with DNS-O-Matic.)

## Wi-Fi WAN and USB WiFi Network connection


To access Wi-Fi WAN settings, click **Network>WAN>Wireless network connection**.

The WiFi-WAN and USB WiFi Network connection configuration is similar to the Ethernet WAN configuration, but has a few unique options that are shown in this section.

The options that are the same as the ethernet WAN connection configuration are shown in the Ethernet WAN section.

Wi-Fi WAN Settings <span style="float: right;">?</span>	
Channel Width	20/40 MHz <span style="float: right;">▼</span>
Channel	<input type="radio"/> Auto <input checked="" type="radio"/> Custom <span style="float: right;">Edit</span> Channels:
Output Power	Max <span style="float: right;">▼</span> <input type="checkbox"/> Boost
Data Rate	<input checked="" type="radio"/> Auto <input type="radio"/> Fixed
Roaming	<input checked="" type="checkbox"/> Enable
Roaming Algorithm	<input checked="" type="radio"/> Normal <input type="radio"/> Advanced
Roaming Signal Level Threshold	-75 dBm
Roaming Signal Level Gain	5 dBm
Roaming Check Interval	30 seconds
Connect to Any Open Mode AP <span style="float: right;">?</span>	<input type="radio"/> Yes <input checked="" type="radio"/> No
Beacon Miss Counter	5
Channel Scan Interval	50 ms

<b>Channel Width</b>	choose between the available options 20 Mhz, 20/40Mhz, 20/40/80 Mhz												
<b>Channel Selection</b>	Determine whether the channel will be automatically selected. If you select custom, the following table will appear: <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Edit auto channel <span style="float: right;">✕</span></th> </tr> <tr> <th>Scan Channels</th> <th>Clear All</th> </tr> </thead> <tbody> <tr> <td colspan="2">2.4 GHz:</td> </tr> <tr> <td><input checked="" type="checkbox"/> 1</td> <td><input checked="" type="checkbox"/> 2    <input checked="" type="checkbox"/> 3    <input checked="" type="checkbox"/> 4    <input checked="" type="checkbox"/> 5</td> </tr> <tr> <td><input checked="" type="checkbox"/> 6</td> <td><input checked="" type="checkbox"/> 7    <input checked="" type="checkbox"/> 8    <input checked="" type="checkbox"/> 9    <input checked="" type="checkbox"/> 10</td> </tr> <tr> <td><input checked="" type="checkbox"/> 11</td> <td></td> </tr> </tbody> </table> <div style="text-align: right; margin-top: 5px;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> </div> </div>	Edit auto channel <span style="float: right;">✕</span>		Scan Channels	Clear All	2.4 GHz:		<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/> 7 <input checked="" type="checkbox"/> 8 <input checked="" type="checkbox"/> 9 <input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/> 11	
Edit auto channel <span style="float: right;">✕</span>													
Scan Channels	Clear All												
2.4 GHz:													
<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input checked="" type="checkbox"/> 5												
<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/> 7 <input checked="" type="checkbox"/> 8 <input checked="" type="checkbox"/> 9 <input checked="" type="checkbox"/> 10												
<input checked="" type="checkbox"/> 11													
<b>Output Power</b>	Low, Medium, High, Max (boost options for tickbox). Max is the Maximum transmit power supported for that country / Maximum power supported												

	of that device (the smaller value). High, Medium, Low is having -3dBm each from the previous level. Transmit power of 2.4Ghz is generally approximately 20dBm.
<b>Data Rate</b>	One of the available advanced options is the ability to configure the Data rate according to the MCS Index (see <a href="http://mcsindex.com/">http://mcsindex.com/</a> )
<b>Roaming</b>	Checking this box will enable Wi-Fi roaming. Click the  icon for additional options.
<b>Roaming Algorithm</b>	select Normal (default) or Advanced (enables Intensive Scan options)
<b>Roaming Signal Level Threshold</b>	Configure the Roaming Signal Level Threshold in dBm
<b>Roaming Signal Level Gain</b>	Configure the Roaming Signal Level Gain in dBm
<b>Roaming Check Interval</b>	Configure the Roaming Check Interval in Seconds
<b>Connect to Any Open Mode AP</b>	This option is to specify whether the Wi-Fi WAN will connect to any open mode access points it finds.
<b>Beacon Miss Counter</b>	Client devices will disconnect from the AP when this amount of beacons is missed
<b>Channel Scan Interval</b>	Configure Channel Scan Interval in ms.

## WAN > WiFi Connection Profiles

You can manually create a profile to connect to a Wi-Fi connection. This is useful for creating a profile for connecting to hidden-SSID access points. Click **Network>WAN>Details>Create Profile...** to get started.

Wi-Fi Connection Profiles		
Network Name (SSID)	Security	
[blurred]	WPA/WPA2-Personal	
[blurred]	Open	
[blurred]	Open	
[blurred]	WPA/WPA2-Personal	
[blurred]	Open	

[Create Profile...](#)

This will open a window similar to the one shown below:

**Create Wi-Fi Connection Profile** ✕

---

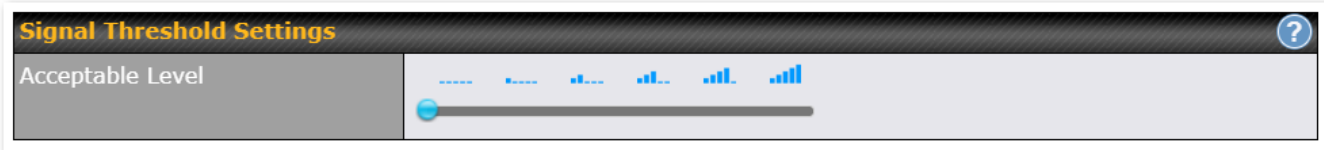
**Wi-Fi Connection**

Network Name (SSID)	<input type="text"/>
Security	Open <span style="float: right;">▼</span>
Preferred BSSID	<input type="checkbox"/>
Connection Method <span style="float: right;">?</span>	DHCP <span style="float: right;">▼</span>
DNS Servers	<input type="checkbox"/> Obtain DNS server address automatically <input type="checkbox"/> Use the following DNS server address(es) DNS Server 1: <input type="text"/> DNS Server 2: <input type="text"/>

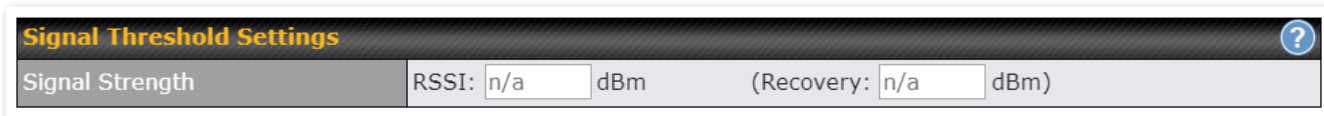
	<input type="text"/>
<b>Network Name (SSID)</b>	Enter a name to represent this Wi-Fi connection.
<b>Security</b>	This option allows you to select which security policy is used for this wireless network. Available options: <ul style="list-style-type: none"> <li>• <b>Open</b></li> </ul>

	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; background-color: #f2f2f2;">Security</td> <td>Open ▾</td> </tr> <tr> <td colspan="2"><b>• WEP</b></td> </tr> <tr> <td style="background-color: #f2f2f2;">Security</td> <td>WEP ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">Encryption Key</td> <td><input type="text"/> <input checked="" type="checkbox"/> Hide Characters</td> </tr> <tr> <td colspan="2"><b>• WPA/WPA2 – Personal</b></td> </tr> <tr> <td style="background-color: #f2f2f2;">Security</td> <td>WPA/WPA2-Personal ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">Shared Key</td> <td><input type="text"/> <input checked="" type="checkbox"/> Hide Characters</td> </tr> <tr> <td colspan="2"><b>• WPA/WPA2 – Enterprise</b></td> </tr> <tr> <td style="background-color: #f2f2f2;">Security</td> <td>WPA/WPA2-Enterprise ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">Login ID</td> <td><input type="text"/></td> </tr> <tr> <td style="background-color: #f2f2f2;">Password</td> <td><input type="text"/></td> </tr> <tr> <td style="background-color: #f2f2f2;">Confirm Password</td> <td><input type="text"/></td> </tr> <tr> <td style="background-color: #f2f2f2;">EAP Method</td> <td>PEAP ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">EAP Phase 2 Method</td> <td>EAP/CHAP ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">EAP outer authentication identity</td> <td> <input checked="" type="radio"/> Anonymous  <input type="radio"/> User Credentials  <input type="radio"/> Other: <input type="text"/> </td> </tr> <tr> <td colspan="2"><b>• WPA3 – Personal</b></td> </tr> <tr> <td style="background-color: #f2f2f2;">Security</td> <td>WPA3-Personal ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">Shared Key</td> <td><input type="text"/> <input checked="" type="checkbox"/> Hide Characters</td> </tr> <tr> <td colspan="2"><b>• WPA2/WPA3 – Personal</b></td> </tr> <tr> <td style="background-color: #f2f2f2;">Security</td> <td>WPA2/WPA3-Personal ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">Shared Key</td> <td><input type="text"/> <input checked="" type="checkbox"/> Hide Characters</td> </tr> <tr> <td colspan="2"><b>• 802.1x with dynamic WEP key</b></td> </tr> <tr> <td style="background-color: #f2f2f2;">Security</td> <td>802.1x with dynamic WEP key ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">EAP Method</td> <td>PEAP ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">EAP Phase 2 Method</td> <td>EAP/CHAP ▾</td> </tr> <tr> <td style="background-color: #f2f2f2;">Login ID</td> <td><input type="text"/></td> </tr> <tr> <td style="background-color: #f2f2f2;">Password</td> <td><input type="text"/></td> </tr> <tr> <td style="background-color: #f2f2f2;">Confirm Password</td> <td><input type="text"/></td> </tr> <tr> <td style="background-color: #f2f2f2;">EAP outer authentication identity</td> <td> <input checked="" type="radio"/> Anonymous  <input type="radio"/> User Credentials  <input type="radio"/> Other: <input type="text"/> </td> </tr> </table>	Security	Open ▾	<b>• WEP</b>		Security	WEP ▾	Encryption Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<b>• WPA/WPA2 – Personal</b>		Security	WPA/WPA2-Personal ▾	Shared Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<b>• WPA/WPA2 – Enterprise</b>		Security	WPA/WPA2-Enterprise ▾	Login ID	<input type="text"/>	Password	<input type="text"/>	Confirm Password	<input type="text"/>	EAP Method	PEAP ▾	EAP Phase 2 Method	EAP/CHAP ▾	EAP outer authentication identity	<input checked="" type="radio"/> Anonymous <input type="radio"/> User Credentials <input type="radio"/> Other: <input type="text"/>	<b>• WPA3 – Personal</b>		Security	WPA3-Personal ▾	Shared Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<b>• WPA2/WPA3 – Personal</b>		Security	WPA2/WPA3-Personal ▾	Shared Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<b>• 802.1x with dynamic WEP key</b>		Security	802.1x with dynamic WEP key ▾	EAP Method	PEAP ▾	EAP Phase 2 Method	EAP/CHAP ▾	Login ID	<input type="text"/>	Password	<input type="text"/>	Confirm Password	<input type="text"/>	EAP outer authentication identity	<input checked="" type="radio"/> Anonymous <input type="radio"/> User Credentials <input type="radio"/> Other: <input type="text"/>
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<b>Preferred BSSID</b>	Configure the BSSID; the BSSID is the MAC address of the wireless access point (WAP)																																																										
<b>Connection Method</b>	Choose DHCP or Static IP																																																										
<b>DNS servers</b>	Configure the DNS servers that this WAN connection should use																																																										

## WAN > Signal threshold settings



If signal threshold is defined, this connection will be treated as down when a weaker than threshold signal is determined. The signal threshold can also be configured using values (this option can be enabled after selecting the question mark)



Indication of WiFi strength values:

Value	Description
-30 dBm	Maximum signal strength
-50 dBm	Excellent signal strength
-60 dBm	Good, reliable signal strength
-67 dBm	Minimum signal strength for applications that require very reliable, timely delivery of data packets.
-70 dBm	Not strong; goof for soet internet browsing and email
-80 dBm	Unreliable
-90 dBm	Unusable

## PepVPN

PepVPN is the core engine of Peplink site-to-site VPN technology. It is ideal for establishing a secure tunnel over any WAN link. On top of all the benefits of IPsec and other conventional VPN technologies, the PepVPN engine also offers:

**Long-distance Ethernet cable** – PepVPN allows a secure and seamless Ethernet tunnel over any IP connection (Layer 2 over Layer 3). It virtually provides a long-distance Ethernet cable over any WAN link.

**Works in any dynamic IP environment** – PepVPN is fully compatible with any dynamic IP environment and NAT, allowing you to establish a VPN behind a NAT gateway or firewall without worrying about static IP addresses (one public IP address is needed to establish a PeVPN Connection).

To start, navigate to Network > VPN > SpeedFusion and enter a Local ID and click save.

This device will be identified by other SpeedFusion Peers by this local ID

When a PepVPN connection is established between sites, the local LAN subnet and subnets behind the LAN (defined under **Static Route** on the LAN settings page) will be advertised to the VPN. All VPN members (branch offices and headquarters) will be able to route to local subnets.

Note that all LAN subnets and the subnets behind them must be unique. Otherwise, VPN members will not be able to access each other.

All data can be routed over the VPN using the 256-bit AES encryption standard. Each profile specifies the settings for creating a VPN connection with one remote Pepwave or Peplink device.

The Pepwave Surf Soho supports 2 PepVPN remote peers per device (5 with upgrade license).

PEPWAVE
Dashboard
SpeedFusion Cloud
Network
Advanced
AP
System
Status
Apply Changes

**Advanced**

- PepVPN
- GRE Tunnel
- Port Forwarding

**NAT Mappings**

**QoS**

- Bandwidth Control
- Application

**Firewall**

- Access Rules
- Content Blocking

**Routing Protocols**

- OSPF & RIPv2
- BGP

**Remote User Access**

**Misc. Settings**

- RADIUS Server
- Certificate Manager
- Service Forwarding
- Service Passthrough
- Grouped Networks
- SIM Toolkit

Logout

## PepVPN

InControl management enabled. Settings can now be configured on [InControl](#).

Profile	Remote ID	Remote Address(es)	?
No VPN Connection Defined			
<span style="border: 1px solid #ccc; padding: 2px 10px;">New Profile</span>			

**Send All Traffic To**

No PepVPN profile selected
 ✎

**Rules ( Drag and drop rows by the left to change rule order )**
?

Service	Algorithm	Source	Destination	Protocol / Port	
(Auto)					
<span style="border: 1px solid #ccc; padding: 2px 10px;">Add Rule</span>					

**PepVPN Local ID**

Local ID	?	SURF_SOHO_8F18	✎
----------	---	----------------	---

**PepVPN Settings**
?

Link Failure Detection Time	?	<input checked="" type="radio"/> Recommended (Approx. 15 secs) <input type="radio"/> Fast (Approx. 6 secs) <input type="radio"/> Faster (Approx. 2 secs) <input type="radio"/> Extreme (Under 1 sec) <small>Shorter detection time incurs more health checks and higher bandwidth overhead</small>
-----------------------------	---	--

Save

To configure PepVPN, navigate to **Advanced > PepVPN** and select **New Profile**. The example below had allPepVPN advanced features enabled.




**PepVPN Profile** ?

Name	<input type="text"/>	
Active	<input checked="" type="checkbox"/>	
Encryption	<input checked="" type="radio"/> 256-bit AES <input type="radio"/> OFF	
Authentication	<input checked="" type="radio"/> Remote ID / Pre-shared Key	
Remote ID / Pre-shared Key	Remote ID	Pre-shared Key
	<input type="text"/>	<input type="text"/>
NAT Mode	<input type="checkbox"/>	
Remote IP Address / Host Names (Optional)	<input type="text"/>	
	If this field is empty, this field on the remote unit must be filled	
Cost	<input type="text" value="10"/>	

1
2
3 ✕
+

**Tunnel Options**

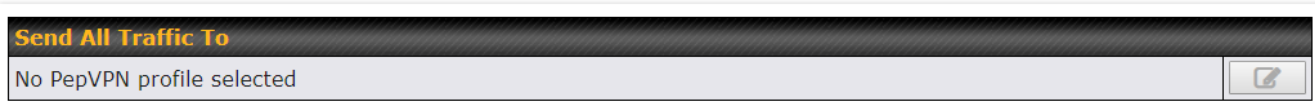
Local / Remote Tunnel ID	<input type="text" value="1 (default tunnel)"/>	
Tunnel Name	<input type="text"/>	
Data Port	UDP <input type="button" value="v"/> <input checked="" type="radio"/> Auto <input type="radio"/> Custom <input type="text"/>	
Bandwidth Limit	<input checked="" type="checkbox"/> Download: <input type="text"/> <input type="button" value="v"/> kbps (0: Unlimited) <input type="checkbox"/> Upload: <input type="text"/> <input type="button" value="v"/> kbps (0: Unlimited)	
Receive Buffer	<input type="text" value="0"/> ms	
Use IP ToS	<input checked="" type="checkbox"/>	
Latency Difference Cutoff	<input type="text" value="500"/> ms	


<b>[Redacted]</b>	
<b>Name</b>	This field is for specifying a name to represent this profile. The name can be any combination of alphanumeric characters (0-9, A-Z, a-z), underscores (_), dashes (-), and/or non-leading/trailing spaces ( ).
<b>Active</b>	When this box is checked, this VPN connection profile will be enabled. Otherwise, it will be disabled.
<b>Encryption</b>	By default, VPN traffic is encrypted with <b>256-bit AES</b> . If <b>Off</b> is selected on both sides of a VPN connection, no encryption will be applied.
<b>Authentication</b>	Select from <b>By Remote ID Only</b> , <b>Preshared Key</b> . When selecting <b>By Remote ID Only</b> , be sure to enter a unique peer ID number in the <b>Remote ID</b> field.
<b>Remote ID / Pre-shared Key</b>	This optional field becomes available when <b>Remote ID / Pre-shared Key</b> is selected as the Pepwave Surf SOHO's VPN <b>Authentication</b> method, as explained above. <b>Pre-shared Key</b> defines the pre-shared key used for this particular VPN connection. The VPN connection's session key will be further protected by the pre-shared key. The connection will be up only if the pre-shared keys on each side match. When the peer is running firmware 5.0+, this setting will be ignored.
<b>NAT Mode</b>	Check this box to allow the local DHCP server to assign an IP address to the remote peer. When <b>NAT Mode</b> is enabled, all remote traffic over the VPN will be tagged with the assigned IP address using network address translation.
<b>Remote IP Address / Host Names (Optional)</b>	<p>If <b>NAT Mode</b> is not enabled, you can enter a remote peer's WAN IP address or hostname(s) here. If the remote uses more than one address, enter only one of them here. Multiple hostnames are allowed and can be separated by a space character or carriage return. Dynamic-DNS host names are also accepted.</p> <p>This field is optional. With this field filled, the Pepwave Surf SOHO will initiate connection to each of the remote IP addresses until it succeeds in making a connection. If the field is empty, the Pepwave Surf SOHO will wait for connection from the remote peer. Therefore, at least one of the two VPN peers must specify this value. Otherwise, VPN connections cannot be established.</p> <p>Click the  icon to configure data stream using TCP protocol [EXPERIMENTAL]. In the case TCP protocol is used, the exposed TCP session option can be authorised to work with TCP accelerated WAN link.</p>
<b>Cost</b>	Define path cost for this profile. OSPF will determine the best route through the network using the assigned cost. Default: 10
<b>Data Port</b>	This field is used to specify a UDP or TCP port number for transporting outgoing VPN data. If <b>Default</b> is selected, UDP port 4500 will be used. Port 32015 will be used if port 4500 is unavailable. If <b>Custom</b> is selected, enter an outgoing port number from 1 to 65535.
<b>Bandwidth Limit</b>	Define maximum download and upload speed to each individual peer. This functionality requires the peer to use PepVPN version 4.0.0 or above.
<b>Receive Buffer</b>	Receive Buffer can help to reduce out-of-order packets and jitter, but will introduce extra latency to the tunnel. Default is 0 ms, which disable the buffer, and maximum buffer size is 2000 ms.

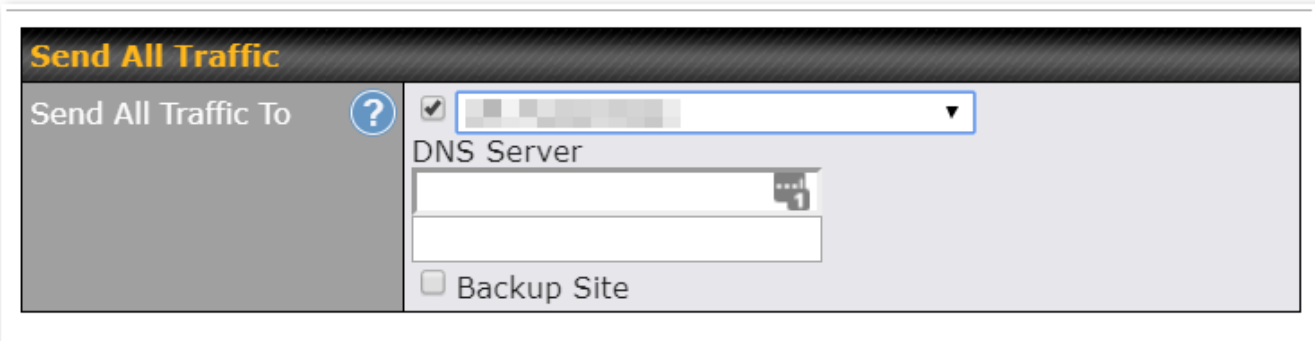
**Multiple PepVPN profiles between the same 2 sites**

Enable this advanced feature to create up to 5 PepVPN tunnels from your router to the same remote location, each with different behavior.  
See: <https://forum.peplink.com/t/outbound-policies-within-a-pepvpn-or-speedfusion-tunnel/>

PepVPN > Send ALL traffic

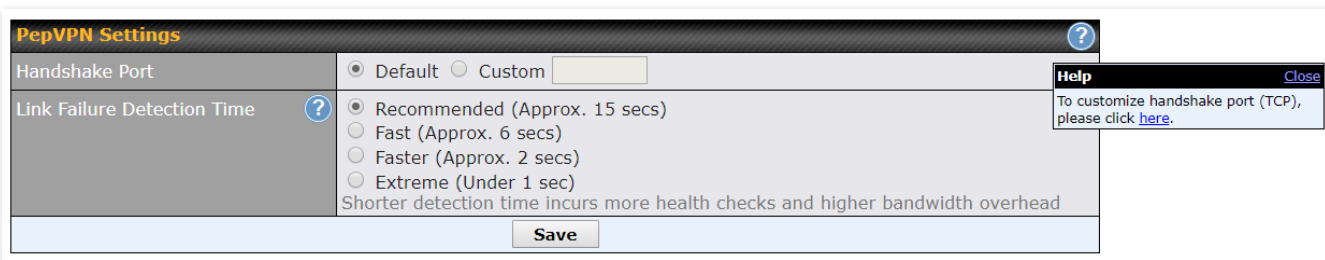


This feature allows you to redirect all traffic to a specified PepVPN connection. Click the  button to select your connection and the following menu will appear:




You can (optionally) specify a DNS server to resolve incoming DNS requests. Click the checkbox next to **Backup Site** to designate a backup SpeedFusion profile that will take over should the main PepVPN connection fail.

Handshake Port and Link Failure Detection Time



**Handshake Port**

Click the  icon to customize the handshake port (TCP) used to initialize the PepVPN connection. The handshake uses TCP port 32015 by default.

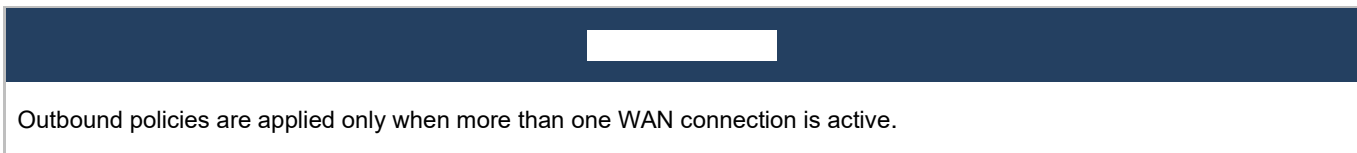
## Link Failure Detection Time

The bonded VPN can detect routing failures on the path between two sites over each WAN connection. Failed WAN connections will not be used to route VPN traffic. Health check packets are sent to the remote unit to detect any failure. The more frequently checks are sent, the shorter the detection time, although more bandwidth will be consumed.

- When Recommended (default) is selected, a health check packet is sent every five seconds, and the expected detection time is 15 seconds.
- When Fast is selected, a health check packet is sent every three seconds, and the expected detection time is six seconds.
- When Faster is selected, a health check packet is sent every second, and the expected detection time is two seconds.
- When Extreme is selected, a health check packet is sent every 0.1 second, and the expected detection time is less than one second.

## Outbound Policy Management

Pepwave routers can flexibly manage and load balance outbound traffic among WAN connections.



The settings for managing and load balancing outbound traffic are located at **Advanced > PepVPN**

The screenshot below shows the Outbound Policy window with Expert mode enabled.

Rules ( Drag and drop rows by the left to change rule order )					
Service	Algorithm	Source	Destination	Protocol / Port	
PepVPN / OSPF / BGP / RIPv2 Routes					
HTTPS_Persistence	Enforced WAN: WAN	Any	Any	TCP 443	
<b>Add Rule</b>					

The bottom-most rule HTTPS\_Persistence is **Default**. This rule manages the device's default manner of controlling outbound traffic for all connections that do not match any of the rules above it. To rearrange the priority of outbound rules, drag and drop them into the desired sequence.

Under Expert Mode, a special rule is displayed on the Custom Rules table which is "PepVPN Routes". It presents all PepVPN routes learned from remote VPN peers. By default, this bar is on the top of all custom rules. That means traffic for remote VPN subnets will be routed to its corresponding VPN peer. You can create custom Priority or Enforced rules and move them above the bar to override the PepVPN Routes.

Upon disabling the Expert Mode, all rules above the bar will be deleted.

## Adding new Custom Outbound Policies

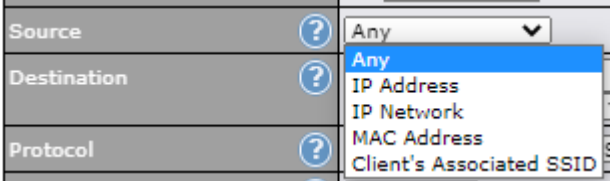
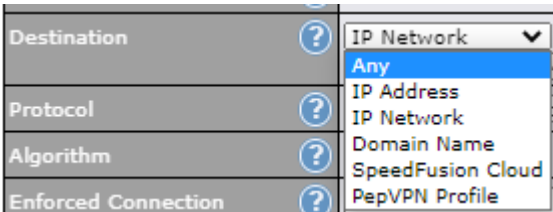
To add new custom rules (Outbound Policies) select Add Rule.

The Pepwave Surf SOHO supports 2 algorithms for the Outbound Policies, Enforced and Priority.

The options for Outbound policies are:

**Add a New Custom Rule**
✕

Service Name	<input type="text"/>		
Enable	<input checked="" type="checkbox"/>		
Source	Any ▾		
Destination	<input type="text" value="IP Network"/> ▾	Mask:	<input type="text" value="255.255.255.0 (/24)"/> ▾
Protocol	<input type="text" value="Any"/> ▾	←	<input type="text" value=":: Protocol Selection ::"/> ▾
Algorithm	<input type="text" value="Enforced"/> ▾		
Enforced Connection	<input type="text" value=""/> ▾		

<b>Service Name</b>	This field is for specifying a name to represent this profile. The name can be any combination of alphanumeric characters (0-9, A-Z, a-z), underscores (_), dashes (-), and/or non-leading/trailing spaces ( ).
<b>Enable</b>	When this box is checked, this outbound policy will be enabled. Otherwise, it will be disabled.
<b>Source</b>	<p>This setting specifies the source IP address, IP network, MAC address or Client's Associated SSID for traffic that matches the rule.</p> 
<b>Destination</b>	<p>This setting specifies the destination IP address, IP network, Domain name, SpeedFusion Cloud, PepVPN Profile or Grouped network for traffic that matches the rule.</p> 

<p><b>Protocol</b></p>	<p>This setting specifies the IP protocol and port of traffic that matches this rule. Via a drop-down menu, the following protocols can be specified:</p> <ul style="list-style-type: none"> <li>• Any</li> <li>• TCP</li> <li>• UDP</li> <li>• IP</li> <li>• DSCP</li> </ul> <p>Alternatively, the <b>Protocol Selection Tool</b> drop-down menu can be used to automatically fill in the protocol and port number of common Internet services (e.g., HTTP, HTTPS, etc.) After selecting an item from the <b>Protocol Selection Tool</b> drop-down menu, the protocol and port number remains manually modifiable.</p>
<p><b>Algorithm</b></p>	<p>This setting specifies the behavior of the Pcpwave router for the custom rule. One of the following values can be selected:</p> <ul style="list-style-type: none"> <li>• Enforced : Enforce traffic matching this rule through a selected WAN or VPN connection.</li> <li>• Priority: Prioritise traffic matching this rule through selected WAN or VPN connection(s)</li> </ul>
<p><b>Enforced Connection</b></p>	<p>Specify the WAN or VPN connection to be used for routing traffic regardless of the connection's health status.</p>
<p><b>When No Connections are Available</b></p>	<p>This field allows you to configure the default action when all the selected Connections are not available.</p> <ul style="list-style-type: none"> <li>• Drop the Traffic - Traffic will be discarded.</li> <li>• Use Any Available Connections - Traffic will be routed to any available Connection, even it is not selected in the list.</li> <li>• Fall-through to Next Rule - Traffic will continue to match next Outbound Policy rule just like this rule is inactive.</li> </ul>
<p><b>Terminate Sessions on Connection Recovery</b></p>	<p>In the case when the highest priority connection is unavailable, matching sessions may routed through a lower priority connection or skipped to next matching rule (Fall-through to Next Rule). By checking this option, those sessions will be terminated upon connection recovery of any higher priority connections. Terminated sessions will go through all the rules again to determine the outgoing connection. When Source is a MAC address, this option will be disabled automatically. Default: Disable</p>

## Port Forwarding

Pepwave routers can act as a firewall that blocks, by default, all inbound access from the Internet. By using port forwarding, Internet users can access servers behind the Pepwave router. Inbound port forwarding rules can be defined at **Advanced>Port Forwarding**.

Service	IP Address(es)	Server	Protocol
No Services Defined			
<input type="button" value="Add Service"/>			

To define a new service, click **Add Service**.

**Port Forwarding** ✕

Enable	<input checked="" type="checkbox"/>																								
Service Name	<input type="text"/>																								
Protocol	TCP <span style="font-size: small;">← :: Protocol Selection ::</span> <span style="font-size: small;">▼</span>																								
Port	Any Port <span style="font-size: small;">▼</span>																								
Inbound IP Address(es) (Require at least one IP address)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">?</th> <th style="width: 80%;">Connection / IP Address(es)</th> <th style="width: 10%;">All</th> <th style="width: 5%;">Clear</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td></td><td></td><td></td></tr> <tr><td><input type="checkbox"/></td><td></td><td></td><td></td></tr> <tr><td><input type="checkbox"/></td><td></td><td></td><td></td></tr> <tr><td><input type="checkbox"/></td><td></td><td></td><td></td></tr> <tr><td><input type="checkbox"/></td><td></td><td></td><td></td></tr> </tbody> </table>	?	Connection / IP Address(es)	All	Clear	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>			
?	Connection / IP Address(es)	All	Clear																						
<input type="checkbox"/>																									
<input type="checkbox"/>																									
<input type="checkbox"/>																									
<input type="checkbox"/>																									
<input type="checkbox"/>																									
Server IP Address	<input type="text"/> <span style="font-size: small;">?</span>																								

<b>Enable</b>	This setting specifies whether the inbound service takes effect. When <b>Enable</b> is checked, the inbound service takes effect: traffic is matched and actions are taken by the Pepwave router based on the other parameters of the rule. When this setting is disabled, the inbound service does not take effect: the Pepwave router disregards the other parameters of the rule.
<b>Service Name</b>	This setting identifies the service to the system administrator. Valid values for this setting consist of only alphanumeric and underscore “_” characters.
<b>Protocol</b>	The <b>Protocol</b> setting, along with the <b>Port</b> setting, specifies the protocol of the service as TCP, UDP, ICMP, or IP. Traffic that is received by the Pepwave router via the specified protocol at the specified port(s) is forwarded to the LAN hosts specified by the <b>Servers</b> setting. Please see below for details on the <b>Port</b> and <b>Servers</b> settings. Alternatively, the <b>Protocol Selection Tool</b> drop-down menu can be used to automatically fill in the protocol and a single port number of common Internet services (e.g. HTTP, HTTPS, etc.). After selecting an item from the <b>Protocol Selection Tool</b> drop-down menu, the protocol and port number remain manually

modifiable.

## Port

The **Port** setting specifies the port(s) that correspond to the service, and can be configured to behave in one of the following manners:

### Any Port, Single Port, Port Range, Port Map, and Range Mapping

Port		Any Port
------	--	----------

**Any Port:** all traffic that is received by the Pepwave router via the specified protocol is forwarded to the servers specified by the **Servers** setting. For example, with **IP Protocol** set to **TCP**, and **Port** set to **Any Port**, all TCP traffic is forwarded to the configured servers.

Port		Single Port	Service Port: 80
------	--	-------------	------------------

**Single Port:** traffic that is received by the Pepwave router via the specified protocol at the specified port is forwarded via the same port to the servers specified by the **Servers** setting. For example, with **IP Protocol** set to **TCP**, and **Port** set to **Single Port** and **Service Port** 80, TCP traffic received on port 80 is forwarded to the configured servers via port 80.

Port		Port Range	Service Ports: 80 - 88
------	--	------------	------------------------

**Port Range:** traffic that is received by the Pepwave router via the specified protocol at the specified port range is forwarded via the same respective ports to the LAN hosts specified by the **Servers** setting. For example, with **IP Protocol** set to **TCP**, and **Port** set to **Port Range** and **Service Ports** 80-88, TCP traffic received on ports 80 through 88 is forwarded to the configured servers via the respective ports.

Port		Port Mapping	Service Port: 80	Map to Port: 88
------	--	--------------	------------------	-----------------

**Port Mapping:** traffic that is received by Pepwave router via the specified protocol at the specified port is forwarded via a different port to the servers specified by the **Servers** setting.

For example, with **IP Protocol** set to **TCP**, and **Port** set to **Port Mapping**, **Service Port** 80, and **Map to Port** 88, TCP traffic on port 80 is forwarded to the configured servers via port 88.

(Please see below for details on the **Servers** setting.)

Port		Range Mapping	Service Ports: 80 - 88	Map to Ports: 88 - 96
------	--	---------------	------------------------	-----------------------

**Range Mapping:** traffic that is received by the Pepwave router via the specified protocol at the specified port range is forwarded via a different port to the servers specified by the **Servers** setting.



## UPnP / NAT-PMP Settings

UPnP and NAT-PMP are network protocols which allow a computer connected to a LAN port or WiFi AP to automatically configure the router to allow parties on the WAN port to connect to itself. That way, the process of inbound port forwarding becomes automated.

When a computer creates a rule using these protocols, the specified TCP/UDP port of all WAN connections' default IP address will be forwarded.

Check the corresponding box(es) to enable UPnP and/or NAT-PMP. Enable these features only if you trust the computers connected to a LAN port or WiFi AP.

UPnP / NAT-PMP Settings	
UPnP	<input type="checkbox"/> Enable
NAT-PMP	<input type="checkbox"/> Enable
<input type="button" value="Save"/>	

When the options are enabled, a table listing all the forwarded ports under these two protocols can be found at **Status>UPnP** / **NAT-PMP**.

Forwarded Ports						
External	Internal	Internal Address	UPnP / NAT-PMP	Protocol	Description	
8080	8080	192.168.1.10	UPnP	TCP	Test8080	<input type="button" value="X"/>

In the example above, the UPnP device is running. When the UPnP device is disconnected, the router will suspend the service and incoming traffic will be dropped (without error/notification message). The UPnP rule will remain for an interval after the UPnP device is disconnected before being removed.

## NAT Mappings

NAT mappings allow IP address mapping of all inbound and outbound NAT'd traffic to and from an internal client IP address. Settings to configure NAT mappings are located at **Advanced>NAT Mappings**.

LAN Clients	Inbound Mappings	Outbound Mappings	
192.168.1.23	(WAN 1):10.88.3.158 (Interface IP)	Use <i>Interface IP</i> only	
<a href="#">Add NAT Rule</a>			

To add a rule for NAT mappings, click **Add NAT Rule**.

LAN Client(s)	IP Address ▾												
Address	<input type="text"/>												
Inbound Mappings	<b>Connection / Inbound IP Address(es)</b> <input type="checkbox"/> WAN 1 <input type="checkbox"/> WAN 2 <input type="checkbox"/> Wi-Fi WAN <input type="checkbox"/> Cellular 1 <input type="checkbox"/> Cellular 2 <input type="checkbox"/> USB												
Outbound Mappings	<b>Connection / Outbound IP Address</b> <table border="1"> <tr> <td>WAN 1</td> <td>10.88.3.158 (Interface IP) ▾</td> </tr> <tr> <td>WAN 2</td> <td>Interface IP ▾</td> </tr> <tr> <td>Wi-Fi WAN</td> <td>Interface IP ▾</td> </tr> <tr> <td>Cellular 1</td> <td>Interface IP ▾</td> </tr> <tr> <td>Cellular 2</td> <td>Interface IP ▾</td> </tr> <tr> <td>USB</td> <td>Interface IP ▾</td> </tr> </table>	WAN 1	10.88.3.158 (Interface IP) ▾	WAN 2	Interface IP ▾	Wi-Fi WAN	Interface IP ▾	Cellular 1	Interface IP ▾	Cellular 2	Interface IP ▾	USB	Interface IP ▾
WAN 1	10.88.3.158 (Interface IP) ▾												
WAN 2	Interface IP ▾												
Wi-Fi WAN	Interface IP ▾												
Cellular 1	Interface IP ▾												
Cellular 2	Interface IP ▾												
USB	Interface IP ▾												

<b>LAN Client(s)</b>	NAT mapping rules can be defined for a single LAN <b>IP Address</b> , an <b>IP Range</b> , or an <b>IP Network</b> .
<b>Address</b>	This refers to the LAN host's private IP address. The system maps this address to a number of public IP addresses (specified below) in order to facilitate inbound and outbound traffic. This option is only available when <b>IP Address</b> is selected.
<b>Range</b>	The IP range is a contiguous group of private IP addresses used by the LAN host. The system maps these addresses to a number of public IP addresses (specified below) to facilitate outbound traffic. This option is only available when <b>IP Range</b> is selected.
<b>Network</b>	The IP network refers to all private IP addresses and ranges managed by the LAN host. The system maps

these addresses to a number of public IP addresses (specified below) to facilitate outbound traffic. This option is only available when **IP Network** is selected.

**Inbound Mappings**

This setting specifies the WAN connections and corresponding WAN-specific Internet IP addresses on which the system should bind. Any access to the specified WAN connection(s) and IP address(es) will be forwarded to the LAN host. This option is only available when **IP Address** is selected in the **LAN Client(s)** field.

Note that inbound mapping is not needed for WAN connections in drop-in mode or IP forwarding mode. Also note that each WAN IP address can be associated to one NAT mapping only.

**Outbound Mappings**

This setting specifies the WAN IP addresses that should be used when an IP connection is made from a LAN host to the Internet. Each LAN host in an IP range or IP network will be evenly mapped to one of each selected WAN's IP addresses (for better IP address utilization) in a persistent manner (for better application compatibility).

Note that if you do not want to use a specific WAN for outgoing accesses, you should still choose default here, then customize the outbound access rule in the **Outbound Policy** section. Also note that WAN connections in drop-in mode or IP forwarding mode are not shown here.

Click **Save** to save the settings when configuration has been completed.

Inbound firewall rules override the **Inbound Mappings** settings.

# QoS

## Bandwidth Control

The default download and upload limits are set to unlimited (set as 0). This can be changed as necessary to restrict the speeds to individual devices connected to the router, either wired or wireless. Note, this limit is applied to all devices..


Individual Bandwidth Limit		
Enable	<input checked="" type="checkbox"/>	
User Bandwidth Limit	Download 0 <input type="text"/> Mbps <input type="button" value="v"/>	Upload 0 <input type="text"/> Mbps <input type="button" value="v"/> (0: Unlimited)

## Application Prioritization

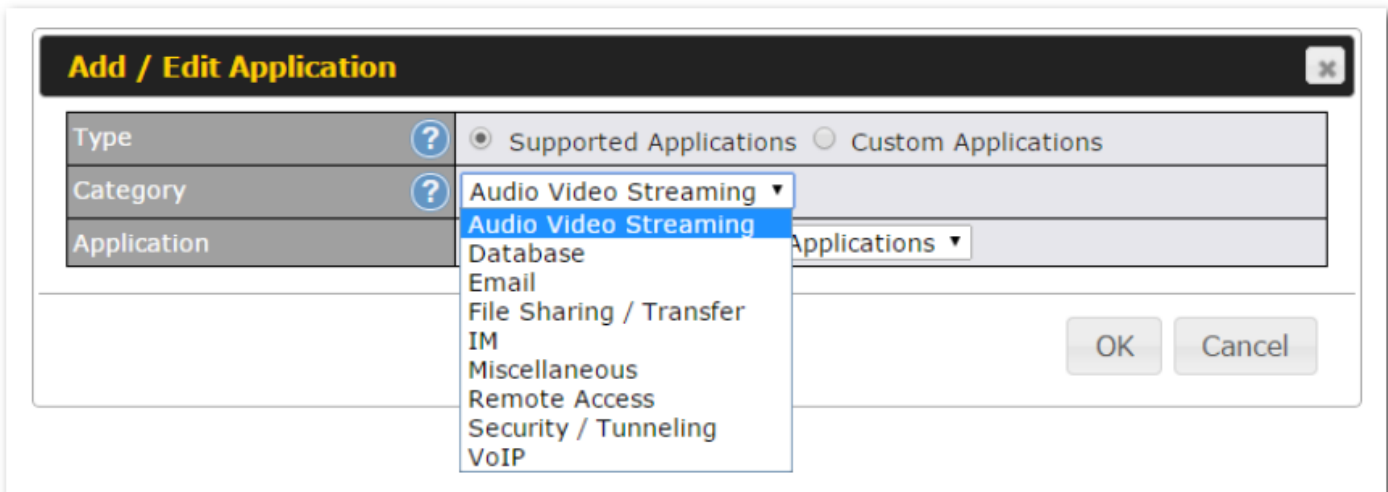
Three application priority levels can be set: ↑ High, — Normal, and ↓ Low. Pepwave routers can detect various application traffic types by inspecting the packet content. Select an application by choosing a supported application, or by defining a custom application manually. The priority preference of supported applications is placed at the top of the table. Custom applications are at the bottom.

Application	Priority	<input type="button" value="v"/>	<input type="button" value="x"/>
	↑ High	<input type="button" value="v"/>	<input type="button" value="x"/>
	↑ High	<input type="button" value="v"/>	<input type="button" value="x"/>
	↑ High	<input type="button" value="v"/>	<input type="button" value="x"/>
	↑ High	<input type="button" value="v"/>	<input type="button" value="x"/>
<input type="button" value="Add"/>			

## Prioritization for Custom Applications

Click the **Add** button to define a custom application. Click the button  in the **Action** column to delete the custom application in the corresponding row.

When **Supported Applications** is selected, the Pepwave router will inspect network traffic and prioritize the selected applications. Alternatively, you can select **Custom Applications** and define the application by providing the protocol, scope, port number, and DSCP value.



**Add / Edit Application**

Type:  Supported Applications  Custom Applications

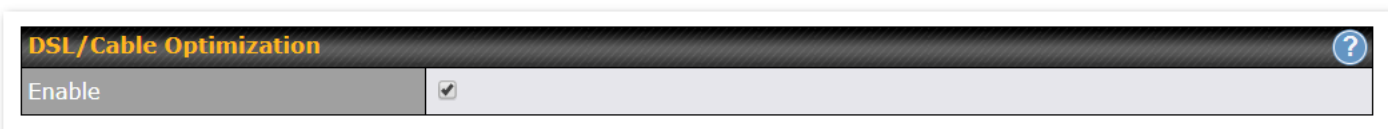
Category: **Audio Video Streaming** (dropdown menu open with options: Audio Video Streaming, Database, Email, File Sharing / Transfer, IM, Miscellaneous, Remote Access, Security / Tunneling, VoIP)

Application:

OK Cancel

## DSL/Cable Optimization

DSL/cable-based WAN connections have lower upload bandwidth and higher download bandwidth. When a DSL/cable circuit's uplink is congested, the download bandwidth will be affected. Users will not be able to download data at full speed until the uplink becomes less congested. **DSL/Cable Optimization** can relieve such an issue. When it is enabled, the download speed will become less affected by the upload traffic. By default, this feature is enabled.

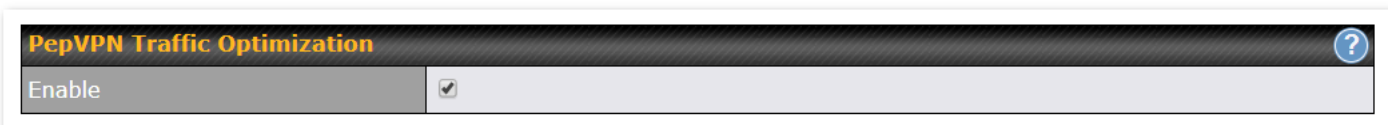


**DSL/Cable Optimization**

Enable

## PepVPN Traffic Optimization

Enable this option to grant PepVPN traffic the highest priority when WAN is congested.



**PepVPN Traffic Optimization**

Enable

# Firewall

A firewall is a mechanism that selectively filters data traffic between the WAN side (the Internet) and the LAN side of the network. It can protect the local network from potential hacker attacks, access to offensive websites, and/or other inappropriate uses.

The firewall functionality of Pepwave routers supports the selective filtering of data traffic in both directions:

- Outbound (LAN to WAN)
- Inbound (WAN to LAN)
- Internal Network (VLAN to VLAN)

The firewall also supports the following functionality:

- Intrusion detection and DoS prevention
- Web blocking

The screenshot shows the PEPWAVE web interface with the following components:

- Navigation Bar:** Dashboard, SpeedFusion Cloud, Network, **Advanced**, AP, System, Status, Apply Changes
- Left Sidebar:**
  - Advanced
    - PepVPN
    - GRE Tunnel
    - Port Forwarding
  - NAT Mappings
  - QoS
    - Bandwidth Control
    - Application
  - Firewall**
    - Access Rules
    - Content Blocking
  - Routing Protocols
    - OSPF & RIPv2
    - BGP
  - Remote User Access
  - Misc. Settings
    - RADIUS Server
    - Certificate Manager
    - Service Forwarding
    - Service Passthrough
    - Grouped Networks
    - SIM Toolkit
- Main Content Area:**
  - Outbound Firewall Rules** (Drag and drop rows by the left to change rule order)
 

Rule	Protocol	Source	Destination	Action
Default	Any	Any	Any	✓
  - Inbound Firewall Rules** (Drag and drop rows by the left to change rule order)
 

Rule	Protocol	WAN	Source	Destination	Action
Default	Any	Any	Any	Any	✓
  - Internal Network Firewall Rules** (Drag and drop rows by the left to change rule order)
 

Rule	Protocol	Source	Destination	Action
Default	Any	Any	Any	✓
  - Intrusion Detection and DoS Prevention**

Disabled
  - Local Service Firewall Rules** (Drag and drop rows by the left to change rule order)
 

Rule	Service	WAN	Source	Action
Default	Any	Any	Any	✓

## Outbound and Inbound Firewall Rules

The outbound and inbound firewall settings are located at **Advanced>Firewall>Access Rules**.

Outbound Firewall Rules ( Drag and drop rows by the left to change rule order)					
Rule	Protocol	Source	Destination	Action	
test	Any	Any	Any		
Default	Any	Any	Any		

**Add Rule**

Click **Add Rule** to display the following screen:

**Add a New Outbound Firewall Rule** ✕

---

**New Firewall Rule**

Rule Name	<input type="text"/>
Enable	<input checked="" type="checkbox"/> Always on ▾
Protocol	<span>?</span> Any ▾ ← :: Protocol Selection :: ▾
Source	<span>?</span> Any Address ▾
Destination	<span>?</span> Any Address ▾
Action	<span>?</span> <input checked="" type="radio"/> Allow <input type="radio"/> Deny
Event Logging	<span>?</span> <input type="checkbox"/> Enable

Inbound firewall settings are located at **Advanced>Firewall>Access Rules>Inbound Firewall Rules**.

Inbound Firewall Rules ( Drag and drop rows by the left to change rule order)						
Rule	Protocol	WAN	Source	Destination	Action	
test	Any	Any	Any	Any		
Default	Any	Any	Any	Any		

**Add Rule**

Click **Add Rule** to display the following screen:

**Add a New Inbound Firewall Rule** ✕

---

**New Firewall Rule**

Rule Name	<input type="text"/>
Enable	<input checked="" type="checkbox"/> Always on ▾
WAN Connection	<input type="text" value="Any"/> ▾
Protocol	<input type="text" value="Any"/> ▾ ← :: Protocol Selection :: ▾
Source	<input type="text" value="Any Address"/> ▾
Destination	<input type="text" value="Any Address"/> ▾
Action	<input checked="" type="radio"/> Allow <input type="radio"/> Deny
Event Logging	<input type="checkbox"/> Enable

Internal Network Firewall settings are located at **Advanced>Firewall>Access Rules**.

**Internal Network Firewall Rules** ( Drag and drop rows by the left to change rule order ) ?

Rule	Protocol	Source	Destination	Action	
<u>test</u>	Any	Any	Any		
<u>Default</u>	Any	Any	Any		



Click **Add Rule** to display the following screen:

**Add a New Internal Network Firewall Rule** ✕

New Firewall Rule	
Rule Name	<input style="width: 95%;" type="text"/>
Enable	<input checked="" type="checkbox"/> Always on ▼
Protocol	<span style="border: 1px solid #ccc; padding: 2px;">? Any ▼</span> ← <span style="border: 1px solid #ccc; padding: 2px;">:: Protocol Selection :: ▼</span>
Source	<span style="border: 1px solid #ccc; padding: 2px;">? Any Address ▼</span>
Destination	<span style="border: 1px solid #ccc; padding: 2px;">? Any Address ▼</span>
Action	<span style="border: 1px solid #ccc; padding: 2px;">? <input checked="" type="radio"/> Allow <input type="radio"/> Deny</span>
Event Logging	<span style="border: 1px solid #ccc; padding: 2px;">? <input type="checkbox"/> Enable</span>

Save
Cancel

<input style="width: 95%; height: 15px;" type="text"/>	
<b>Rule Name</b>	This setting specifies a name for the firewall rule.
<b>Enable</b>	<p>This setting specifies whether the firewall rule should take effect. If the box is checked, the firewall rule takes effect. If the traffic matches the specified protocol/IP/port, actions will be taken by the Pepwave router based on the other parameters of the rule. If the box is not checked, the firewall rule does not take effect. The Pepwave router will disregard the other parameters of the rule.</p> <p>Click the dropdown menu next to the checkbox to place this firewall rule on a time schedule.</p>
<b>WAN Connection (Inbound)</b>	Select the WAN connection that this firewall rule should apply to.
<b>Protocol</b>	<p>This setting specifies the protocol to be matched. Via a drop-down menu, the following protocols can be specified:</p> <ul style="list-style-type: none"> <li>• Any</li> <li>• TCP</li> <li>• UDP</li> <li>• ICMP</li> <li>• DSCP</li> <li>• IP</li> </ul> <p>Alternatively, the <b>Protocol Selection Tool</b> drop-down menu can be used to automatically fill in the protocol and port number of common Internet services (e.g., HTTP, HTTPS, etc.)</p> <p>After selecting an item from the <b>Protocol Selection Tool</b> drop-down menu, the protocol and port number remains manually modifiable.</p>
<b>Source IP &amp; Port</b>	This specifies the source IP address(es) and port number(s) to be matched for the firewall rule. A single

address, Network, MAC Address or Grouped Network can be specified as the **Source** setting.

<b>Destination IP &amp; Port</b>	This specifies the destination IP address(es) and port number(s) to be matched for the firewall rule. A single address, Network, MAC Address or a Grouped Network, can be specified as the <b>Destination</b> setting.
<b>Action</b>	This option allows you to define whether to allow or deny an IP session matching this Firewall Rule
<b>Event Logging</b>	<p>This setting specifies whether or not to log matched firewall events. The logged messages are shown on the page <b>Status&gt;Event Log</b>. A sample message is as follows:</p> <p>Aug 13 23:47:44 Denied CONN=Ethernet WAN SRC=20.3.2.1 DST=192.168.1.20 LEN=48 PROTO=TCP SPT=2260 DPT=80</p> <ul style="list-style-type: none"> <li>• <b>CONN:</b> The connection where the log entry refers to</li> <li>• <b>SRC:</b> Source IP address</li> <li>• <b>DST:</b> Destination IP address</li> <li>• <b>LEN:</b> Packet length</li> <li>• <b>PROTO:</b> Protocol</li> <li>• <b>SPT:</b> Source port</li> <li>• <b>DPT:</b> Destination port</li> </ul>

Click **Save** to store your changes. To create an additional firewall rule, click the **Add Rule** and repeat the above steps. To change a rule's priority, simply drag and drop the rule:

- Hold the left mouse button on the rule.
- Move it to the desired position.
- Drop it by releasing the mouse button.

Rule	Protocol	Source IP Port	Destination IP Port	Policy	
No web access	TCP	Any Any	Any 80	Deny	X
No FTP access	TCP	Any Any	Any 21	Deny	X
Default	Any	Any	Any	Allow	

**Add Rule**

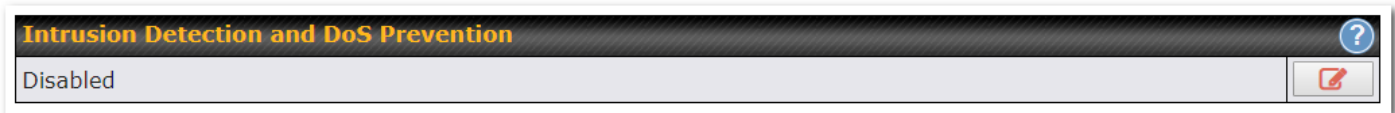
To remove a rule, click the button.


Rules are matched from top to bottom. If a connection matches any one of the upper rules, the matching process will stop. If none of the rules match, the Default rule will be applied. By default, the **Default** rule is set as **Allow** for Outbound, Inbound and Internal Network access.

If the default inbound rule is set to **Allow** for NAT-enabled WANs, no inbound Allow firewall rules will be required for inbound port forwarding and inbound NAT mapping rules. However, if the default inbound rule is set as **Deny**, a corresponding Allow firewall rule

will be required.

## Intrusion Detection and DoS Prevention



Pepwave routers can detect and prevent intrusions and denial-of-service (DoS) attacks from the Internet. To turn on this feature, click , check the **Enable** check box, and press the **Save** button.

When this feature is enabled, the Pepwave router will detect and prevent the following kinds of intrusions and denial-of-service attacks.

- Port scan
  - NMAP FIN/URG/PSH
  - Xmas tree
  - Another Xmas tree
  - Null scan
  - SYN/RST
  - SYN/FIN
- SYN flood prevention
- Ping flood attack prevention

## Content Blocking

**Application Blocking** ?

Please Select Application... +

**Web Blocking** ?

Preset Category
 

<input type="radio"/> High	<input type="checkbox"/> Adware	<input type="checkbox"/> Audio-Video	<input type="checkbox"/> File Hosting
<input type="radio"/> Moderate	<input type="checkbox"/> P2P/File sharing	<input type="checkbox"/> Pornography	<input type="checkbox"/> Update Sites
<input type="radio"/> Low			
<input checked="" type="radio"/> Custom			

Content Filtering Database Auto Update ?

Customized Domains ?+

Exempted Domains from Web Blocking ?+

**Exempted Subnets** ?

Network	Subnet Mask	
	255.255.255.0 (/24) ▾	+

**URL Logging**

Enable	<input type="checkbox"/>
Log Server Host	<div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <input style="width: 100%;" type="text"/> </div> <span style="font-size: small;">Port: 514</span>

### Application Blocking

Choose applications to be blocked from LAN/PPTP/PepVPN peer clients' access, except for those on the Exempted Subnets defined in that particular section on the same page.

### Web Blocking

Defines website domain names to be blocked from LAN/PPTP/PepVPN peer clients' access except for those on the Exempted Subnets defined in that particular section on the same page.

If "foobar.com" is entered, any web site with a host name ending in foobar.com will be blocked, e.g. www.foobar.com, foobar.com, etc. However, "myfoobar.com" will not be blocked.

You may enter the wild card "." at the end of a domain name to block any web site with a host name having the domain name in the middle. If you enter "foobar.\*", then "www.foobar.com", "www.foobar.co.jp", or "foobar.co.uk" will be blocked. Placing the wild card in any other position is not supported.

The device will inspect and look for blocked domain names on all HTTP and HTTPS traffic.

### Exempted Subnets

With the subnet defined in the field, clients on the particular subnet(s) will be exempted from the Web blocking rules.

## URL Logging

Click **enable**, and enter the ip address and port (if applicable) where your remote syslog server is located.

## Routing Protocols

The Pepwave Surf SOHO supports OSPF, RIPv2 and BGP dynamic routing protocols.

### OSPF & RIPv2

Click the **Advanced** tab from the top bar, and then click the **Routing Protocols > OSPF & RIPv2** item on the sidebar to reach the following menu.

OSPF		
Router ID	LAN IP Address	
Area	Interfaces	
0.0.0.0	No interface is selected	
<input type="button" value="Add"/>		

RIPv2	
No RIPv2 Defined.	

OSPF & RIPv2 Route Advertisement								
PepVPN Route Isolation		<input type="checkbox"/> Enable						
Network Advertising		<div style="border: 1px solid #ccc; padding: 2px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>---</span> <span></span> <span></span> </div> <div style="font-size: 0.8em; margin-top: 2px;">All LAN/VLAN networks will be advertised when no network advertising is chosen.</div> </div>						
Static Route Advertising		<input checked="" type="checkbox"/> Enable <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>Excluded Networks</th> <th>Subnet Mask</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="text"/></td> <td>255.255.255.0 (/24) </td> <td></td> </tr> </tbody> </table>	Excluded Networks	Subnet Mask		<input type="text"/>	255.255.255.0 (/24)	
Excluded Networks	Subnet Mask							
<input type="text"/>	255.255.255.0 (/24)							
<input type="button" value="Save"/>								

<b>Router ID</b>	This field determines the ID of the router. By default, this is specified as the LAN IP address. If you want to specify your own ID, enter it in the <b>Custom</b> field.
<b>Area</b>	This is an overview of the OSPFv2 areas you have defined. Click on the area name to configure it. To set a new area, click <b>Add</b> . To delete an existing area, click  .

**OSPF settings** ✕

Area ID	<input type="text"/>
Link Type	<input checked="" type="radio"/> Broadcast <input type="radio"/> Point-to-Point
Authentication	None ▾
Interfaces	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**Help** Close  
 Click [here](#) to customize interface cost

<input type="text"/>	
<b>Area ID</b>	Determine the name of your <b>Area ID</b> to apply to this group. Machines linked to this group will send and receive related OSPF packets, while unlinked machines will ignore it.
<b>Link Type</b>	Choose the network type that this area will use.
<b>Authentication</b>	Choose an authentication method, if one is used, from this drop-down menu. Available options are <b>MD5</b> and <b>Text</b> . Enter the authentication key next to the drop-down menu.
<b>Interfaces</b>	Determine which interfaces this area will use to listen to and deliver OSPF packets
<b>Interface Cost</b>	Enable the advanced option (question mark) to be able to configure a custom cost for each interface.

To access RIPv2 settings, click .

**RIPv2 settings** ✕

Authentication	None ▾
Interfaces	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

<input type="text"/>	
<b>Authentication</b>	Choose an authentication method, if one is used, from this drop-down menu. Available options are <b>MD5</b> and <b>Text</b> . Enter the authentication key next to the drop-down menu.
<b>Interfaces</b>	Determine which interfaces this group will use to listen to and deliver RIPv2 packets.

OSPF & RIPv2 Route Advertisement	
PepVPN Route Isolation	<input type="checkbox"/> Enable
Network Advertising	<input type="text" value="---"/> <input type="button" value="+"/> <p>All LAN/VLAN networks will be advertised when no network advertising is chosen.</p>
Static Route Advertising	<input type="checkbox"/> Enable
<input type="button" value="Save"/>	

<b>PepVPN Route Isolation</b>	<p>Enable this option if you want to isolate PepVPN peers from each other. Received PepVPN routes will not be forwarded to other PepVPN peers to reduce bandwidth consumption.</p> <p>Note: This will only hide routing information between PepVPN peers, if you want to fully block inter-PepVPN traffics, you should configure Firewall rules instead.</p>
<b>Network Advertising</b>	<p>Selected networks will be advertised over OSPF &amp; RIPv2. If no network is selected, all LAN / VLAN networks will be advertised by default.</p> <p>All the networks belonging to interfaces that have OSPF or RIPv2 enabled will be advertised even if they are not selected in this table.</p>
<b>Static Route Advertising</b>	<p>Enable this option to advertise LAN static routes over OSPF &amp; RIPv2. Static routes that match the Excluded Networks table will not be advertised.</p>

## BGP

BGP (Border Gateway Protocol) is a protocol that manages how packets are routed across the internet through the exchange of routing and reachability information between edge routers. BGP directs packets between autonomous systems (AS) -- networks managed by a single enterprise or service provider.

Click the Network tab from the top bar, and then click the **BGP** item on the sidebar to configure BGP.

BGP	AS	Neighbors
No BGP Profile Defined.		
<input type="button" value="Add"/>		

Click "x" to delete a BGP profile

Click "Add" to add a new BGP profile

BGP Profile						
Profile Name	<input type="text"/>					
Enable	<input checked="" type="checkbox"/>					
Interface	Untagged LAN <input type="button" value="v"/>					
Router ID	<input checked="" type="radio"/> LAN IP Address <input type="radio"/> Custom: <input type="text"/>					
Autonomous System	<input type="text"/>					
Neighbor <span style="float: right;">?</span>	IP Address	Autonomous System	Multihop / TTL	Password	AS-Path Prepending	<input type="button" value="+"/>
	<input type="text"/>	<input type="text"/>	disable	<input type="text"/>	<input type="text"/>	
Hold Time <span style="float: right;">?</span>	<input type="text" value="240"/>					
Next Hop Self <span style="float: right;">?</span>	<input type="checkbox"/>					
iBGP Local Preference <span style="float: right;">?</span>	<input type="text" value="100"/>					
BFD <span style="float: right;">?</span>	<input type="checkbox"/> Enable					

[Profile Name]	
<b>Name</b>	This field is for specifying a name to represent this profile.
<b>Enable</b>	When this box is checked, this BGP profile will be enabled. Otherwise, it will be disabled.
<b>Interface</b>	The interface where BGP neighbor is located
<b>Autonomous System</b>	The Autonomous System Number (ASN) of this profile
<b>Neighbor</b>	BGP Neighbor's details
<b>IP address</b>	Neighbor's IP address
<b>Autonomous System</b>	Neighbor's ASN



<b>Multihop/TTL</b>	Time-to-live (TTL) of BGP packet. Leave it blank if BGP neighbor is directly connected, otherwise you must specify a TTL value. Accurately, this option should be used if the configured neighbor IP address does not match the selected Interface's network subnets. TTL value must be between 2 to 255.
<b>Password</b>	Optional password for MD5 authentication of BGP sessions.
<b>AS-Path Prepending:</b>	AS path to be prepended to the routes received from this neighbor. The value must be a comma separated ASN. For example "64530,64531" will prepend "64530, 64531" to received routes.
<b>Hold Time</b>	Time in seconds to wait for a keepalive message from the neighbor before considering the BGP connection is staled. This value must be either 0 (infinite hold time) or between 3 and 65535 inclusively.
<b>Next Hop Self</b>	Enable this option to advertise own source address as next hop when propagate routes.
<b>iBGP Local Preference</b>	Metric advertised to iBGP neighbors to indicate the preference for external routes. Value must between 0 to 4294967295 inclusively. Default: 100
<b>BFD</b>	Enable this option to add Bidirectional Forwarding Detection for path failure detection. All direct connected neighbors use the same physical interface share same BFD settings. All multi hop neighbors share same Multihop BFD settings. You can configure BFD settings in the BGP profile listing page after this option is enabled.

Route Advertisement								
Network Advertising	?	---	+					
Static Route Advertising	?	<input type="checkbox"/> Enable						
Custom Route Advertising	?	<table border="1"> <thead> <tr> <th>Networks</th> <th>Subnet Mask</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td>255.255.255.0 (/24)</td> <td>+</td> </tr> </tbody> </table>	Networks	Subnet Mask			255.255.255.0 (/24)	+
Networks	Subnet Mask							
	255.255.255.0 (/24)	+						
Advertise OSPF Route	?	<input type="checkbox"/>						
Set Community	?	<table border="1"> <thead> <tr> <th>Community</th> <th>Route Prefix</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>+</td> </tr> </tbody> </table>	Community	Route Prefix				+
Community	Route Prefix							
		+						

<b>Network Advertising</b>	Networks to be advertised to BGP neighbor.
<b>Static Route Advertising</b>	Enable this option to advertise LAN static routes. Static routes that match the Excluded Networks table will not be advertised.
<b>Custom Route Advertising</b>	Additional routes advertise to BGP neighbor.
<b>Advertise OSPF Route</b>	When this box is checked, all learnt OSPF routes will be advertised.

Assign Community to matched prefixes.

Community:

Two numbers in new-format.

e.g. 65000:21344

Well-known communities:

no-export 65535:65281

no-advertise 65535:65282

no-export-subconfed 65535:65283

no-peer 65535:65284

### Set Community

Route Import			
Filter Mode	Reject ▼		
Blocked Networks	Network	Subnet Mask	Exact Match
		255.255.255.0 (/24) ▼	<input type="checkbox"/>
			+

### Filter Mode

This option selects the route import filter mode.

**None:** all BGP routes will be accepted.

**Accept:** Routes in "Restricted Networks" will be accepted, routes not in the list will be rejected.

**Reject:** Routes in "Blocked Networks" will be rejected, routes not in the list will be accepted.

### Restricted / Blocked Networks

This specifies the network in the "route import" entry

**Exact Match:** When this box is checked, only routes with the same Networks and Subnet Mask will be filtered.

Otherwise, routes within the Networks and Subnet will be filtered.

Route Export			
Filter Mode	Accept ▼		
Restricted Networks	Network	Subnet Mask	Exact Match
		255.255.255.0 (/24) ▼	<input type="checkbox"/>
Export to other BGP Profile	<input type="checkbox"/>		
Export to OSPF	<input type="checkbox"/>		

### Filter Mode

This option selects the route export filter mode.

**None:** all BGP routes will be accepted.

**Accept:** Routes in "Restricted Networks" will be accepted, routes not in the list will be rejected.

**Reject:** Routes in "Blocked Networks" will be rejected, routes not in the list will be accepted.

### Restricted / Blocked Networks

This specifies the network in the "route export" entry

**Exact Match:** When this box is checked, only routes with the same Networks and Subnet Mask will be filtered.

Otherwise, routes within the Networks and Subnet will be filtered.


<b>Export to other BGP Profile</b>	When this box is checked, routes learnt from this BGP profile will export to other BGP profiles.
<b>Export to OSPF</b>	When this box is checked, routes learnt from this BGP profile will export to the OSPF routing protocol.

## Remote User Access

A remote-access VPN connection allows an individual user to connect to a private business network from a remote location using a laptop or desktop computer connected to the Internet. Networks routed by a Peplink router can be remotely accessed via OpenVPN, L2TP with IPsec or PPTP. To configure this feature, navigate to **Network > Remote User Access** and choose the required VPN type.

### L2TP with IPsec

Remote User Access Settings	
Enable	<input checked="" type="checkbox"/>
VPN Type	<input checked="" type="radio"/> L2TP with IPsec <input type="radio"/> PPTP <input type="radio"/> OpenVPN
Preshared Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters

<b>Pre-shared Key</b>	Enter your pre shared key in the text field. Please note that remote devices will need this preshared key to access the Balance.
<b>Listen On</b>	This setting is for specifying the WAN IP addresses that allow remote user access.
<b>Disable Weak Ciphers</b>	Click the  button to show and enable this option. When checked, weak ciphers such as 3DES will be disabled.

Continue to configure the authentication method.

### OpenVPN

Remote User Access Settings	
Enable	<input checked="" type="checkbox"/>
VPN Type	<input type="radio"/> L2TP with IPsec <input type="radio"/> PPTP <input checked="" type="radio"/> OpenVPN You can obtain the OpenVPN client profile from the <a href="#">status page</a> .

Select OpenVPN and continue to configure the authentication method.

The OpenVPN Client profile can be downloaded from the **Status > device** page after the configuration has been saved.

OpenVPN Client Profile	<a href="#">Route all traffic</a>   <a href="#">Split tunnel</a>
------------------------	--

You have a choice between 2 different OpenVPN Client profiles.

- **"route all traffic" profile** :Using this profile, VPN clients will send all the traffic through the OpenVPN tunnel
- **"split tunnel" profile**: Using this profile, VPN clients will ONLY send those traffic designated to the untagged LAN and VLAN segment through the OpenVPN tunnel.

## PPTP

Remote User Access Settings	
Enable	<input checked="" type="checkbox"/>
VPN Type	<input type="radio"/> L2TP with IPsec <input checked="" type="radio"/> PPTP <input type="radio"/> OpenVPN

No additional configuration required.

The Point-to-Point Tunneling Protocol (PPTP) is an obsolete method for implementing virtual private networks. PPTP has many well known security issues

Continue to configure authentication methods.

## Authentication Methods

Connect to Network	<a href="#">?</a>	Untagged LAN ▾						
Authentication		Local User Accounts ▾						
User Accounts	<a href="#">?</a>	<table border="1"> <thead> <tr> <th>Username</th> <th>Password</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="text"/></td> <td><input type="password"/></td> <td><input type="button" value="+"/></td> </tr> </tbody> </table>	Username	Password		<input type="text"/>	<input type="password"/>	<input type="button" value="+"/>
Username	Password							
<input type="text"/>	<input type="password"/>	<input type="button" value="+"/>						

<b>Connect to Network</b>	Select the VLAN network for remote users to enable remote user access on.
<b>Authentication</b>	Determine the method of authenticating remote users

### User accounts:

This setting allows you to define the Remote User Accounts. Click Add to input username and password to create an account. After adding the user accounts, you can click on a username to edit the account password.

### Note:

The username must contain lowercase letters, numerics, underscores(\_), dash(-), at sign(@), and period(.) only. The password must be between 8 and 12 characters long.

### LDAP Server:

Connect to Network	<span>?</span> Untagged LAN ▾
Authentication	LDAP Server ▾
LDAP Server	<input type="text"/> Port <input type="text" value="389"/> <span>Default</span>
	<input type="checkbox"/> Use DN/Password to bind to LDAP Server
Base DN	<input type="text"/>
Base Filter	<input type="text"/>

Enter the matching LDAP server details to allow for LDAP server authentication.

### Radius Server:

Authentication	RADIUS Server ▾
Auth Protocol	MS-CHAP v2 ▾
Auth Server	<input type="text"/> Port <input type="text" value="1812"/> <span>Default</span>
Auth Server Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Accounting Server	<input type="text"/> Port <input type="text" value="1813"/> <span>Default</span>
Accounting Server Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters

Enter the matching Radius server details to allow for Radius server authentication.

### Active Directory:

Connect to Network	<span>?</span> Untagged LAN ▾
Authentication	Active Directory ▾
Server Hostname	<input type="text"/>
Domain	<input type="text"/>
Admin Username	<input type="text"/>
Admin Password	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters

Enter the matching Active Directory details to allow for Active Directory server authentication.

## Miscellaneous Settings

### RADIUS Server

RADIUS Server settings are located at **Advanced>Misc. Settings>RADIUS Server**.

Authentication Server	Host	Port
No server profiles defined		
<a href="#">New Profile</a>		

Accounting Server	Host	Port
No server profiles defined		
<a href="#">New Profile</a>		

Click **New Profile** to display the following screen:

**Authentication Server** ✕

Name	<input type="text"/>
Host	<input type="text"/>
Port	<input type="text" value="1812"/>
Secret	<input type="password"/> <input checked="" type="checkbox"/> Hide Characters

<b>Name</b>	This field is for specifying a name to represent this profile.
<b>Host</b>	Specifies the IP address or hostname of the RADIUS server host.
<b>Authentication Port</b>	This setting specifies the UDP destination port for authentication requests. By default, the port number is 1812.
<b>Secret</b>	This field is for entering the secret key for communicating to the RADIUS server.
<b>Accounting Port</b>	This setting specifies the UDP destination port for accounting requests. By default, the port number is 1813.

**Accounting Server**
✕

Name	<input style="width: 95%;" type="text"/>
Host	<input style="width: 95%;" type="text"/>
Port	<input style="width: 95%;" type="text" value="1813"/>
Secret	<input style="width: 95%;" type="text"/> <input checked="" type="checkbox"/> Hide Characters

[Redacted]	
<b>Name</b>	This field is for specifying a name to represent this profile.
<b>Host</b>	Specifies the IP address or hostname of the RADIUS server host.
<b>Authentication Port</b>	This setting specifies the UDP destination port for authentication requests. By default, the port number is 1812.
<b>Secret</b>	This field is for entering the secret key for communicating to the RADIUS server.
<b>Accounting Port</b>	This setting specifies the UDP destination port for accounting requests. By default, the port number is 1813.

## Certificate Manager

Certificate		
PepVPN	No Certificate	
Web Admin SSL	Default Certificate is in use	
OpenVPN CA	Default Certificate is in use	

Wi-Fi WAN Client Certificate	
No Certificates defined	
<a href="#">Add Certificate</a>	

Wi-Fi WAN CA Certificate	
No Certificates defined	
<a href="#">Add Certificate</a>	

This section allows you to assign certificates for the local VPN, OpenVPN, Captive Portal, Mediafast, Contenthub, Wi-Fi WAN (Client and CA) and web admin SSL for extra security.

Read the following knowledgebase article for full instructions on how to create and import a self-signed certificate: <https://forum.peplink.com/t/how-to-create-a-self-signed-certificate-and-import-it-to-a-peplink-product/>

## Service Forwarding

Service forwarding settings are located at **Advanced>Misc. Settings>Service Forwarding**.

SMTP Forwarding Setup	
SMTP Forwarding	<input type="checkbox"/> Enable

Web Proxy Forwarding Setup	
Web Proxy Forwarding	<input type="checkbox"/> Enable

DNS Forwarding Setup	
Forward Outgoing DNS Requests to Local DNS Proxy	<input type="checkbox"/> Enable

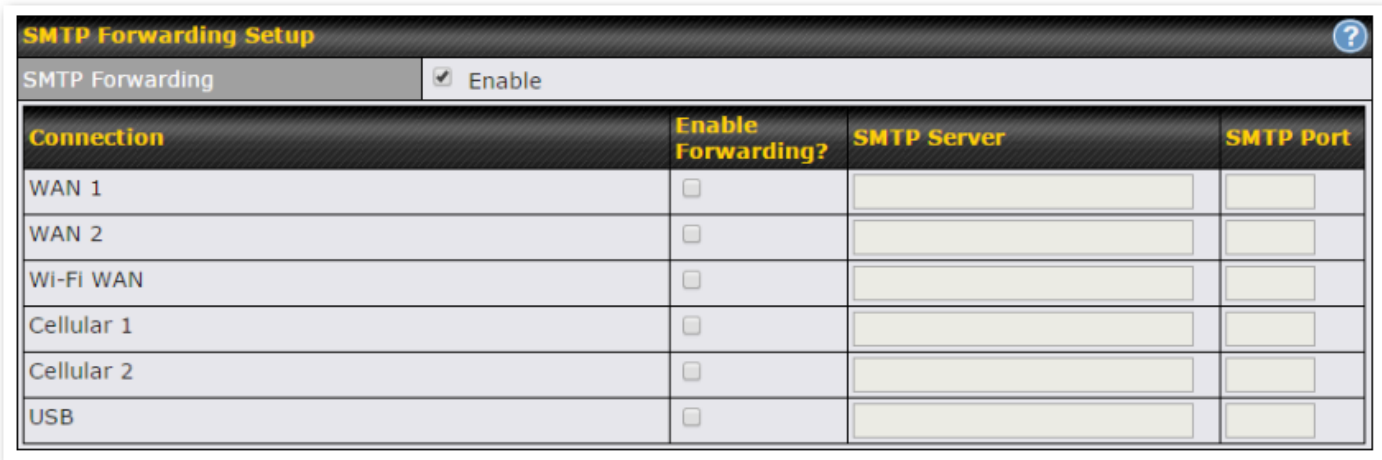
  

Custom Service Forwarding Setup				
Custom Service Forwarding	<input checked="" type="checkbox"/> Enable			
Settings	Source Network	TCP Port	Server IP Address	Server Port
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
				<a href="#">+</a>



## SMTP Forwarding

Some ISPs require their users to send emails via the ISP's SMTP server. All outgoing SMTP connections are blocked except those connecting to the ISP's. Pepwave routers support intercepting and redirecting all outgoing SMTP connections (destined for TCP port 25) via a WAN connection to the WAN's corresponding SMTP server.



**SMTP Forwarding Setup** ?

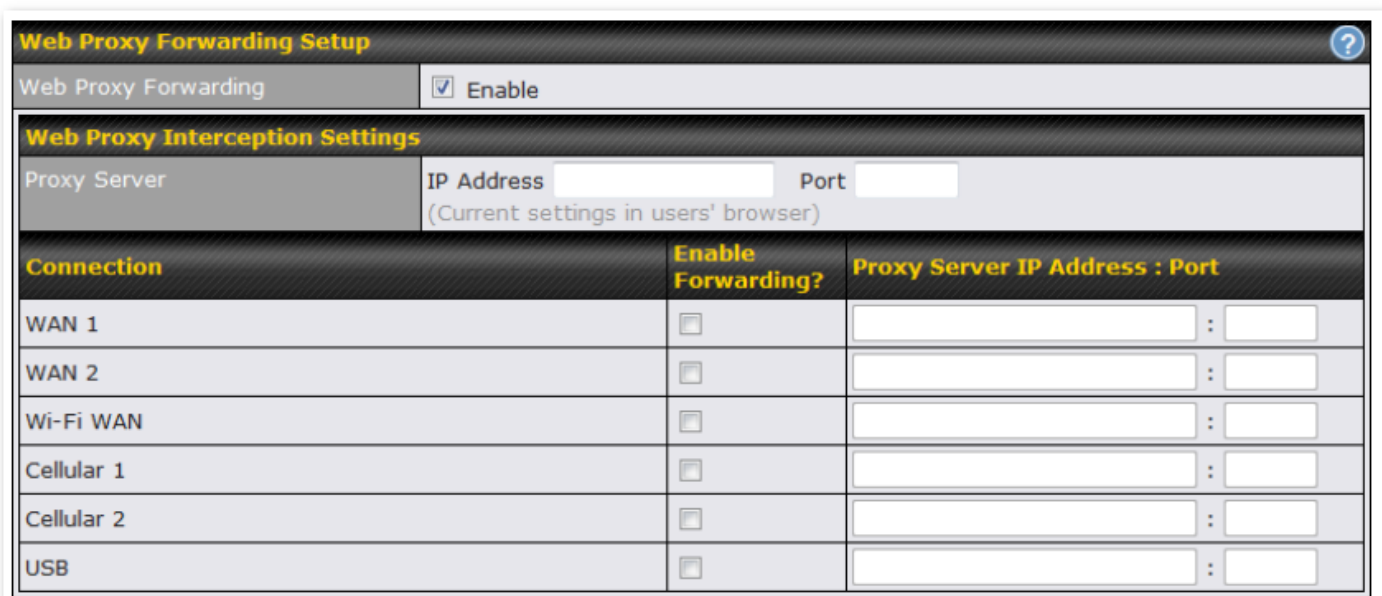
SMTP Forwarding  Enable

Connection	Enable Forwarding?	SMTP Server	SMTP Port
WAN 1	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
WAN 2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
Wi-Fi WAN	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
Cellular 1	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
Cellular 2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
USB	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>

To enable the feature, select **Enable** under **SMTP Forwarding Setup**. Check **Enable Forwarding** for the WAN connection(s) that needs forwarding. Under **SMTP Server**, enter the ISP's email server hostname or IP address. Under **SMTP Port**, enter the TCP port number for each WAN.

The Pepwave router will intercept SMTP connections. Choose a WAN port according to the outbound policy, and then forward the connection to the SMTP server if the chosen WAN has enabled forwarding. If the forwarding is disabled for a WAN connection, SMTP connections for the WAN will be simply be forwarded to the connection's original destination.

## Web Proxy Forwarding



**Web Proxy Forwarding Setup** ?

Web Proxy Forwarding  Enable

**Web Proxy Interception Settings**

Proxy Server IP Address  Port   
(Current settings in users' browser)

Connection	Enable Forwarding?	Proxy Server IP Address : Port
WAN 1	<input type="checkbox"/>	<input type="text"/> : <input type="text"/>
WAN 2	<input type="checkbox"/>	<input type="text"/> : <input type="text"/>
Wi-Fi WAN	<input type="checkbox"/>	<input type="text"/> : <input type="text"/>
Cellular 1	<input type="checkbox"/>	<input type="text"/> : <input type="text"/>
Cellular 2	<input type="checkbox"/>	<input type="text"/> : <input type="text"/>
USB	<input type="checkbox"/>	<input type="text"/> : <input type="text"/>

When this feature is enabled, the Pepwave router will intercept all outgoing connections destined for the proxy server

specified in **Web Proxy Interception Settings**, choose a WAN connection with reference to the outbound policy, and then forward them to the specified web proxy server and port number. Redirected server settings for each WAN can be set here. If forwarding is disabled for a WAN, web proxy connections for the WAN will be simply forwarded to the connection's original destination.

## DNS Forwarding

DNS Forwarding Setup <span style="float: right;">?</span>	
Forward Outgoing DNS Requests to Local DNS Proxy	<input type="checkbox"/> Enable

When DNS forwarding is enabled, all clients' outgoing DNS requests will also be intercepted and forwarded to the built-in DNS proxy server.

## Custom Service Forwarding

Custom Service Forwarding Setup					
Custom Service Forwarding	<input checked="" type="checkbox"/> Enable				
Settings	Source Network	TCP Port	Server IP Address	Server Port	
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	+

After clicking the **enable** checkbox, enter your TCP port for traffic heading to the router, and then specify the IP Address and Port of the server you wish to forward to the service to.

## Service Passthrough

Service passthrough settings can be found at **Advanced>Misc. Settings>Service Passthrough**.

Service Passthrough Support <span style="float: right;">?</span>	
SIP <span style="float: right;">?</span>	<input type="radio"/> Standard Mode <input checked="" type="radio"/> Compatibility Mode <input checked="" type="checkbox"/> Define custom signal ports 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
H.323	<input checked="" type="checkbox"/> Enable
FTP <span style="float: right;">?</span>	<input checked="" type="checkbox"/> Enable <input checked="" type="checkbox"/> Define custom control ports 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
TFTP	<input type="checkbox"/> Enable
IPsec NAT-T <span style="float: right;">?</span>	<input checked="" type="checkbox"/> Enable <input checked="" type="checkbox"/> Define custom ports 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/> <input checked="" type="checkbox"/> Route IPsec Site-to-Site VPN via <input type="text"/>

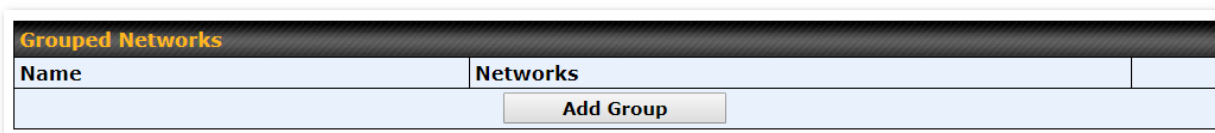
(Registered trademarks are copyrighted by their respective owner)

Some Internet services need to be specially handled in a multi-WAN environment. Pepwave routers can handle these

services such that Internet applications do not notice being behind a multi-WAN router. Settings for service passthrough support are available here.

<b>SIP</b>	Session initiation protocol, aka SIP, is a voice-over-IP protocol. The Pepwave router can act as a SIP application layer gateway (ALG) which binds connections for the same SIP session to the same WAN connection and translate IP address in the SIP packets correctly in NAT mode. Such passthrough support is always enabled, and there are two modes for selection: <b>Standard Mode</b> and <b>Compatibility Mode</b> . If your SIP server's signal port number is non-standard, you can check the box <b>Define custom signal ports</b> and input the port numbers to the text boxes.
<b>H.323</b>	With this option enabled, protocols that provide audio-visual communication sessions will be defined on any packet network and pass through the Pepwave router.
<b>FTP</b>	FTP sessions consist of two TCP connections; one for control and one for data. In a multi-WAN situation, they must be routed to the same WAN connection. Otherwise, problems will arise in transferring files. By default, the Pepwave router monitors TCP control connections on port 21 for any FTP connections and binds TCP connections of the same FTP session to the same WAN. If you have an FTP server listening on a port number other than 21, you can check <b>Define custom control ports</b> and enter the port numbers in the text boxes.
<b>TFTP</b>	The Pepwave router monitors outgoing TFTP connections and routes any incoming TFTP data packets back to the client. Select <b>Enable</b> if you want to enable TFTP passthrough support.
<b>IPsec NAT-T</b>	This field is for enabling the support of IPsec NAT-T passthrough. UDP ports 500, 4500, and 10000 are monitored by default. You may add more custom data ports that your IPsec system uses by checking <b>Define custom ports</b> . If the VPN contains IPsec site-to-site VPN traffic, check <b>Route IPsec Site-to-Site VPN</b> and choose the WAN connection to route the traffic to.

## Grouped Networks



Grouped Networks	
Name	Networks
<input type="button" value="Add Group"/>	

Using “Grouped Networks” you can group and name a range of IP addresses, which can then be used to define firewall rules or outbound policies.

Start by clicking on “add group” then fill in the appropriate fields.

In this example we'll create a group “accounting”

Click save when you have finished adding the required networks.

Grouped Networks			
Name	Accounting		
Networks	Network	Subnet Mask	
	192.168.50.192	255.255.255.224 (/27) ▼	✖
		255.255.255.255 (/32) ▼	+

The grouped network “accounting” can now be used to configure a group policy or firewall rule.

**PEPWAVE** | Dashboard | SpeedFusion Cloud | Network | **Advanced** | AP | System

**Advanced**

- PeppVPN
- GRE Tunnel
- Port Forwarding

**NAT Mappings**

**QoS**

- Bandwidth Control
- Application

**Firewall**

- Access Rules

**Add a New Outbound Firewall Rule**

**New Firewall Rule**

Rule Name			
Enable	<input checked="" type="checkbox"/>		
Protocol	Any ▼	←	:: Protocol Selection :: ▼
Source	Grouped Network ▼	Accounting ▼	
Destination	Any Address ▼		
Action	<input checked="" type="radio"/> Allow <input type="radio"/> Deny		

## SIM Toolkit

The SIM Toolkit, accessible via **Advanced>Settings>SIM Toolkit** supports two functionalities, USSD and SMS.

SIM Status
No SIM information

## USSD

Unstructured Supplementary Service Data (USSD) is a protocol used by mobile phones to communicate with their service provider’s computers. One of the most common uses is to query the available balance.

SIM Status	
WAN Connection	Cellular
SIM Card	1
IMSI	XXXXXXXXXXXX
Tool	USSD

USSD	
USSD Code	<input type="text"/> <input type="button" value="Submit"/>

Enter your USSD code under the **USSD Code** text field and click **Submit**.

SIM Status	
WAN Connection	Cellular
SIM Card	1
IMSI	856195002108538
USSD Code	*138# <input type="button" value="Submit"/>
Receive SMS	<input type="button" value="Get"/>

You will receive a confirmation. To check the SMS response, click **Get**.

SIM Status	
WAN Connection	Cellular
SIM Card	1
IMSI	856195002108538
USSD Code	*138# <input type="button" value="Submit"/>
USSD Status	Request is sent successfully
Receive SMS	<input type="button" value="Get"/>

After a few minutes you will receive a response to your USSD code

Received SMS		
May 27 20:02	<b>PCX</b> As of May 27th Account Balance: \$ 0.00 Amount Unbilled Voice Calls: 0 minutes Video Calls: 0 minutes SMS (Roaming): 0 SMS (Within Network): 0 MMS (Roaming): 0 MMS (Within Network): 0 Data Usage: 7384KB (For reference only, please refer to bill)	<input type="button" value="✘"/>
Aug 8 , 2013 14:51	<b>PCX</b> iPhone & Android users need to make sure "PCX" is entered as the APN under "Settings" > "Mobile network setting" for web browsing and mobile data service. Other handset models will receive handset settings via SMS shortly (PIN: 1234) (Consumer Service Hotline: 1000 / Business Customer Hotline 10088)	<input type="button" value="✘"/>

## SMS



# AP

Use the controls on the AP tab to set the wireless SSID and AP settings.

## Wireless SSID

Wireless network settings, including the name of the network (SSID) and security policy can be defined and managed in this section.

Click **Add** to create a new network profile, or click the existing network profile to modify its settings.

SSID Settings	
SSID	<input type="text"/>
Enable	Always on ▾
VLAN	Untagged LAN ▾
Broadcast SSID	<input checked="" type="checkbox"/>
Data Rate	<input checked="" type="radio"/> Auto <input type="radio"/> Fixed
Multicast Filter	<input type="checkbox"/>
Multicast Rate	MCS16/MCS8/MCS0/6M ▾
IGMP Snooping	<input type="checkbox"/>
Layer 2 Isolation	<input type="checkbox"/>
Maximum number of clients	2.4 GHz: <input type="text" value="0"/> 5 GHz: <input type="text" value="0"/> (0: Unlimited)
Band Steering	<input type="checkbox"/> Disable ▾

<b>SSID</b>	This setting specifies the Router SSID that Wi-Fi clients will see when scanning.
<b>Enable</b>	Click the drop-down menu to choose predefined schedules as your starting point. Please note that

upon selection, previous changes on the schedule map will be deleted.

<b>VLAN</b>	Some service providers require the router to enable VLAN tagging for Internet traffic. If it is required by your service provider, you can enable this field and enter the VLAN ID that the provider requires.
<b>Broadcast SSID</b>	This setting specifies whether or not Wi-Fi clients can scan the SSID of this wireless network. Broadcast SSID is enabled by default.
<b>Data Rate</b>	Select Auto to allow your access point to set the data rate automatically, or select Fixed and choose a rate from the drop-down menu. Click the MCS Index link to display a reference table containing MCS and matching HT20 and HT40 values.
<b>Multicast Filter</b>	This setting enables the filtering of multicast network traffic to the wireless SSID.
<b>Multicast Rate</b>	This setting specifies the transmit rate to be used for sending multicast network traffic.
<b>IGMP Snooping</b>	To allow your access point to convert multicast traffic to unicast traffic for associated clients, select this option.
<b>Layer 2 Isolation</b>	Layer 2 refers to the second layer in the ISO Open System Interconnect model. When this option is enabled, it will block communication between Wi-Fi clients within the same VLAN, SSID or subnet, as a security measure that best suits a company Guest/Visitor Wi-Fi access scenario. Do refer to this link ( <a href="https://forum.peplink.com/t/lan-isolation-with-balance30-and-ap-one-ac-mini-help-needed/3914/4">https://forum.peplink.com/t/lan-isolation-with-balance30-and-ap-one-ac-mini-help-needed/3914/4</a> ) for visual illustration of the feature. By default, the setting is disabled.
<b>Maximum number of Clients</b>	Enter the maximum number of clients that can simultaneously connect to your SSID, or enter 0 to allow unlimited Wi-Fi clients.
<b>Band Steering</b>	To reduce 2.4 GHz band overcrowding, AP with band steering steers clients capable of 5 GHz operation to 5 GHz frequency.  <b>Force</b> - Clients capable of 5 GHz operation are only offered with 5 GHz frequency.  <b>Prefer</b> - Clients capable of 5 GHz operation are encouraged to associate with 5 GHz frequency. If the clients insist to attempt on 2.4 GHz frequency, 2.4 GHz frequency will be offered.  Default: <b>Disable</b>



Security Settings	
Security Policy	WPA2 - Personal ▼
Encryption	AES:CCMP
Shared Key <span>?</span>	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Management Frame Protection	Default (Disabled) ▼
Fast Transition <span>?</span>	<input type="checkbox"/>

Security Settings	
Security Policy	WPA2 - Enterprise ▼
Encryption	AES:CCMP
802.1X Version	<input checked="" type="radio"/> V1 <input type="radio"/> V2
Management Frame Protection	Default (Disabled) ▼
Fast Transition <span>?</span>	<input type="checkbox"/>

<input type="text"/>	
<b>Security Policy</b>	<p>This setting configures the wireless authentication and encryption methods. Available options: :</p> <ul style="list-style-type: none"> <li>• Open (No Encryption)</li> <li>• WPA3 -Personal (AES:CCMP)</li> <li>• WPA2/WPA3 -Personal (AES:CCMP)</li> <li>• WPA2 -Personal (AES:CCMP)</li> <li>• WPA2 – Enterprise</li> <li>• WPA/WPA2 - Personal (TKIP/AES: CCMP)</li> <li>• WPA/WPA2 – Enterprise</li> </ul> <p>When WPA/WPA2 - Enterprise is selected, RADIUS-based 802.1 x authentication is enabled. Under this configuration, the Shared Key option does not apply and is therefore hidden. When using this method, select the appropriate version using the V1/V2 controls. The security level of this method is known to be very high.</p> <p>When WPA/WPA2 - Personal is selected, a shared key is used for data encryption and authentication. When using this configuration, the Shared Key option should be enabled. Key length must be between eight and 63 characters (inclusive). The security level of this method is known to be high.</p> <p><b>NOTE:</b> When WPA2/WPA3- Personal is configured, if a managed AP which is NOT WPA3 PSK capable, the AP Controller will not push those WPA3 and WPA2/WPA3 SSID to that AP.</p>
<b>Management Frame Protection</b>	<p>This feature protects stations against forged management frames spoofed from other devices. Frames that are protected include Disassociation, Deauthentication and QoS Action.</p>
<b>Fast Transition</b>	<p>When WPA2/WPA3 - (Personal / Enterprise) is selected, the Fast Transition option is the standard defined for 801.11r to reduce the association process when it roams from one Access Point to another Access Point.</p>

Access Control Settings	
Restricted Mode	Deny all except listed ▾
MAC Address List <span style="float: right;">?</span>	<input type="text"/>

<b>Restricted Mode</b>	The settings allow administrators to control access using Mac address filtering. Available options are <b>None</b> , <b>Deny all except listed</b> , <b>Accept all except</b> and <b>RADIUS MAC Authentication</b> .
<b>MAC Address List</b>	Connections originating from the MAC addresses in this list will be either denied or accepted based on the option selected in the previous field.

RADIUS Settings	Primary Server	Secondary Server
	You may click <a href="#">here</a> to define RADIUS Server Authentication profile, or you may go to <a href="#">RADIUS Server</a> page to define multiple profiles	
Authentication Host	<input type="text"/>	<input type="text"/>
Authentication Port	1812	1812
Authentication Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
	You may click <a href="#">here</a> to define RADIUS Server Accounting profile, or you may go to <a href="#">RADIUS Server</a> page to define multiple profiles	
Accounting Host	<input type="text"/>	<input type="text"/>
Accounting Port	1813	1813
Accounting Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
NAS-Identifier	Device Name ▾	

<b>Host</b>	Specifies the IP address or hostname of the RADIUS server host.
<b>Secret</b>	This field is for entering the secret key for communicating to the RADIUS server.
<b>Authentication Port</b>	This setting specifies the UDP destination port for authentication requests. By default, the port number is 1812.

<b>Accounting Port</b>	This setting specifies the UDP destination port for accounting requests. By default, the port number is 1813.
<b>NAS-Identifier</b>	The setting allows administrators to identify the client to the RADIUS server. Available options are <b>Device Name</b> , <b>LAN Mac Address</b> , <b>Device Serial Number</b> and <b>Custom Value</b> .

**Firewall Settings**

Firewall Mode	Lockdown - Block all except... ▼	
Firewall Exceptions	Disable Flexible - Allow all except... Lockdown - Block all except...	<b>Item</b> <input type="button" value="New Rule"/>

<b>Firewall Mode</b>	The settings allow administrator to control access to the SSID based on Firewall Rules. Available options are <b>Disable</b> , <b>Lockdown - Block all except...</b> and <b>Flexible -Allow all except...</b>
<b>Firewall Exceptions</b>	Create Firewall Rules based on <b>Port</b> , <b>IP Network</b> , <b>MAC address</b> or <b>Domain Name</b>

## Settings

Navigating to **AP>Settings** displays a screen similar to the one shown below:

Wi-Fi Radio Settings																
Operating Country	United States <input type="text"/>															
SSID	<table border="0"> <tr> <td>2.4GHz</td> <td>5GHz</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td></td> </tr> </table>	2.4GHz	5GHz		<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.4GHz	5GHz															
<input checked="" type="checkbox"/>	<input type="checkbox"/>															
<input type="checkbox"/>	<input checked="" type="checkbox"/>															
<input checked="" type="checkbox"/>	<input type="checkbox"/>															
<input checked="" type="checkbox"/>	<input type="checkbox"/>															

Wi-Fi AP Settings <span style="float: right;">?</span>																																																	
Protocol	802.11ng <input type="text"/>   802.11ac <input type="text"/>																																																
Channel Width	20/40 MHz <input type="text"/>   80 MHz <input type="text"/>																																																
Channel	Auto <input type="text"/> <input type="button" value="Edit"/>   Auto <input type="text"/> <input type="button" value="Edit"/> Channels: 1 2 3 4 5 6 7 8 9 10 11   Channels: 36 40 44 48 149 153 157 161																																																
Auto Channel Update	<table border="0"> <tr> <td>Daily at</td> <td><input type="button" value="Clear"/></td> <td><input type="button" value="All"/></td> <td>Daily at</td> <td><input type="button" value="Clear"/></td> <td><input type="button" value="All"/></td> </tr> <tr> <td><input type="checkbox"/> 00:00</td> <td><input type="checkbox"/> 01:00</td> <td><input type="checkbox"/> 02:00</td> <td><input checked="" type="checkbox"/> 03:00</td> <td><input type="checkbox"/> 00:00</td> <td><input type="checkbox"/> 01:00</td> </tr> <tr> <td><input type="checkbox"/> 04:00</td> <td><input type="checkbox"/> 05:00</td> <td><input type="checkbox"/> 06:00</td> <td><input type="checkbox"/> 07:00</td> <td><input type="checkbox"/> 04:00</td> <td><input type="checkbox"/> 05:00</td> </tr> <tr> <td><input type="checkbox"/> 08:00</td> <td><input type="checkbox"/> 09:00</td> <td><input type="checkbox"/> 10:00</td> <td><input type="checkbox"/> 11:00</td> <td><input type="checkbox"/> 08:00</td> <td><input type="checkbox"/> 09:00</td> </tr> <tr> <td><input type="checkbox"/> 12:00</td> <td><input type="checkbox"/> 13:00</td> <td><input type="checkbox"/> 14:00</td> <td><input type="checkbox"/> 15:00</td> <td><input type="checkbox"/> 12:00</td> <td><input type="checkbox"/> 13:00</td> </tr> <tr> <td><input type="checkbox"/> 16:00</td> <td><input type="checkbox"/> 17:00</td> <td><input type="checkbox"/> 18:00</td> <td><input type="checkbox"/> 19:00</td> <td><input type="checkbox"/> 16:00</td> <td><input type="checkbox"/> 17:00</td> </tr> <tr> <td><input type="checkbox"/> 20:00</td> <td><input type="checkbox"/> 21:00</td> <td><input type="checkbox"/> 22:00</td> <td><input type="checkbox"/> 23:00</td> <td><input type="checkbox"/> 20:00</td> <td><input type="checkbox"/> 21:00</td> </tr> <tr> <td><input checked="" type="checkbox"/> Wait until no active client associated</td> <td colspan="2"></td> <td><input checked="" type="checkbox"/> Wait until no active client associated</td> <td colspan="2"></td> </tr> </table>	Daily at	<input type="button" value="Clear"/>	<input type="button" value="All"/>	Daily at	<input type="button" value="Clear"/>	<input type="button" value="All"/>	<input type="checkbox"/> 00:00	<input type="checkbox"/> 01:00	<input type="checkbox"/> 02:00	<input checked="" type="checkbox"/> 03:00	<input type="checkbox"/> 00:00	<input type="checkbox"/> 01:00	<input type="checkbox"/> 04:00	<input type="checkbox"/> 05:00	<input type="checkbox"/> 06:00	<input type="checkbox"/> 07:00	<input type="checkbox"/> 04:00	<input type="checkbox"/> 05:00	<input type="checkbox"/> 08:00	<input type="checkbox"/> 09:00	<input type="checkbox"/> 10:00	<input type="checkbox"/> 11:00	<input type="checkbox"/> 08:00	<input type="checkbox"/> 09:00	<input type="checkbox"/> 12:00	<input type="checkbox"/> 13:00	<input type="checkbox"/> 14:00	<input type="checkbox"/> 15:00	<input type="checkbox"/> 12:00	<input type="checkbox"/> 13:00	<input type="checkbox"/> 16:00	<input type="checkbox"/> 17:00	<input type="checkbox"/> 18:00	<input type="checkbox"/> 19:00	<input type="checkbox"/> 16:00	<input type="checkbox"/> 17:00	<input type="checkbox"/> 20:00	<input type="checkbox"/> 21:00	<input type="checkbox"/> 22:00	<input type="checkbox"/> 23:00	<input type="checkbox"/> 20:00	<input type="checkbox"/> 21:00	<input checked="" type="checkbox"/> Wait until no active client associated			<input checked="" type="checkbox"/> Wait until no active client associated		
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<input checked="" type="checkbox"/> Wait until no active client associated			<input checked="" type="checkbox"/> Wait until no active client associated																																														
Output Power	Max <input type="text"/> <input type="checkbox"/> Boost   Max <input type="text"/> <input type="checkbox"/> Boost																																																
Client Signal Strength Threshold	0 <input type="text"/> -95 dBm (0: Unlimited)   0 <input type="text"/> -95 dBm (0: Unlimited)																																																
Maximum number of clients	0 <input type="text"/> (0: Unlimited)   0 <input type="text"/> (0: Unlimited)																																																
Beacon Rate <span style="float: right;">?</span>	1 Mbps <input type="text"/>																																																
Beacon Interval <span style="float: right;">?</span>	100 ms <input type="text"/>																																																
DTIM <span style="float: right;">?</span>	1 <input type="text"/> <input type="button" value="Default"/>																																																
RTS Threshold	0 <input type="text"/> <input type="button" value="Default"/>																																																
Fragmentation Threshold	0 <input type="text"/> (0: Disable) <input type="button" value="Default"/>																																																
Distance / Time Converter	<input type="range"/> 4050 <input type="text"/> m Note: Input distance for recommended values																																																
Slot Time <span style="float: right;">?</span>	<input type="radio"/> Auto <input checked="" type="radio"/> Custom 9 <input type="text"/> $\mu$ s <input type="button" value="Default"/>																																																
ACK Timeout <span style="float: right;">?</span>	48 <input type="text"/> $\mu$ s <input type="button" value="Default"/>																																																
Frame Aggregation	<input type="checkbox"/>																																																

<b>Operating Country</b>	
<b>Operating Country</b>	This option sets the country whose regulations the PEPwave router follows.
<b>SSID</b>	Select if an SSID is broadcasting on 2.4 Ghz, 5 Ghz or both bands

<b>Protocol</b>	
<b>Protocol</b>	This option allows you to specify which client association requests will be accepted. By default, <b>802.11ng</b> is selected.
<b>Channel Width</b>	Settings for 2.4 GHz AP and 5GHz AP can be configured here: <b>2.4 GHz: 40 MHz, 20/40 MHz and 20 MHz</b> are available. The default setting is <b>20/40 MHz</b> , which allows both widths to be used simultaneously. <b>80 MHz , 40 Mhz, 20 Mhz, and(20/40 MH)</b> are available. The default setting is <b>80 MHz</b> . Note: 802.11ng and 802.11na are not part of the 802.11 standard. It is simply a notation for indicating 802.11n use on the 2.4-GHz band (11ng) or 802.11n use on the 5-GHz band (11na).
<b>Channel</b>	This option allows you to select which 802.11 RF channel will be used.
<b>Auto Channel Update</b>	Indicate the time of day for updating the automatic channel selection.
<b>Output Power</b>	This option is for specifying the transmission output power for the Wi-Fi AP. There are 4 relative power levels available – <b>Max, High, Mid, and Low</b> . The actual output power will be bound by the regulatory limits of the selected country.
<b>Client Signal Strength Threshold<sup>A</sup></b>	This field determines that maximum signal strength each individual client will receive. The measurement unit is dBm.
<b>Maximum number of clients</b>	Enter the maximum number of clients that can simultaneously connect to the wireless network or enter 0 to allow an unlimited number of connections.
<b>Beacon Rate<sup>A</sup></b>	This option is for setting the transmit bit rate for sending a beacon. By default, <b>1Mbps</b> is selected.
<b>Beacon Interval<sup>A</sup></b>	This option is for setting the time interval between each beacon. By default, <b>100ms</b> is selected.
<b>DTIM<sup>A</sup></b>	This field allows you to set the frequency for the beacon to include a delivery traffic indication message. The interval is measured in milliseconds. The default value is set to <b>1 ms</b> .
<b>RTS Threshold</b>	Set the minimum packet size for your access point to send an RTS using the RTS/CTS handshake. Setting 0 disables this feature.

<b>Fragmentation Threshold<sup>A</sup></b>	Determines the maximum size (in bytes) that each packet fragment will be broken down into. Set 0 to disable fragmentation.
<b>Distance/Time Converter<sup>A</sup></b>	Select the distance you want your Wi-Fi to cover in order to adjust the below parameters. Default values are recommended.
<b>Slot Time<sup>A</sup></b>	This field is for specifying the wait time before the Surf SOHO transmits a packet. By default, this field is set to <b>9 μs</b> .
<b>ACK Timeout<sup>A</sup></b>	This field is for setting the wait time to receive an acknowledgement packet before performing a retransmission. By default, this field is set to <b>48 μs</b> .
<b>Frame Aggregation<sup>A</sup></b>	This option allows you to enable frame aggregation to increase transmission throughput.

## System Settings

The options on the System tab control login and security settings, firmware upgrades, SNMP settings, and other settings.

## Admin Security

The **Admin Security** section allows you to set up your access point's name, password, security settings, and other options

<b>Device Name</b>	This field allows you to define a name for this Pepwave router. By default, <b>Router Name</b> is set as <b>surf-soho-XXXX</b> , where <b>XXXX</b> refers to the last 4 digits of the unit's serial number.
<b>Admin User Name</b>	<b>Admin User Name</b> is set as <i>admin</i> by default, but can be changed, if desired.
<b>Admin Password</b>	This field allows you to specify a new administrator password.
<b>Confirm Admin Password</b>	This field allows you to verify and confirm the new administrator password.
<b>Read-only User Name</b>	<b>Read-only User Name</b> is set as <i>user</i> by default, but can be changed, if desired.
<b>User Password</b>	This field allows you to specify a new user password. Once the user password is set, the read-only user feature will be enabled.
<b>Confirm User Password</b>	This field allows you to verify and confirm the new user password.
<b>Web Session Timeout</b>	This field specifies the number of hours and minutes that a web session can remain idle before the Pepwave router terminates its access to the web admin interface. By default, it is set to <b>4 hours</b> .

With this external authentication is selected, the web admin will authenticate using the corresponding external server. Authenticated users are treated as either "admin" with full read-write permission or "user" with read-only access. Local admin and user accounts will be disabled. However, when the device is not able to communicate with the external server, local accounts are enabled to allow emergency access. By default, it is set to Local Account.

Available options:

- Local Account
- RADIUS

### Authentication Method

Authentication Method	<input type="radio"/> Local Account <input checked="" type="radio"/> RADIUS <input type="radio"/> TACACS+
Authentication Protocol	MS-CHAP v2 ▼
	You may click <a href="#">here</a> to define RADIUS Server Authentication profile, or you may go to <a href="#">RADIUS Server</a> page to define multiple profiles
Authentication Host	<input type="text"/>
Authentication Port	1812
Authentication Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
	You may click <a href="#">here</a> to define RADIUS Server Accounting profile, or you may go to <a href="#">RADIUS Server</a> page to define multiple profiles
Accounting Host	<input type="text"/>
Accounting Port	1813
Accounting Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Authentication Timeout	3 seconds

<b>Authentication Protocol</b>	This specifies the authentication protocol used. Available options are <b>MS-CHAP v2</b> and <b>PAP</b> .
--------------------------------	---

<b>Authentication Host</b>	This specifies the IP address or hostname of the RADIUS server host.
----------------------------	--

<b>Authentication Port</b>	This setting specifies the UDP destination port for authentication requests.
<b>Authentication Secret</b>	This field is for entering the secret key for accessing the RADIUS server.
<b>Accounting Host</b>	This specifies the IP address or hostname of the RADIUS server host.
<b>Accounting Port</b>	This setting specifies the UDP destination port for accounting requests.
<b>Accounting Secret</b>	This field is for entering the secret key for accessing the accounting server.
<b>Authentication Timeout</b>	This option specifies the time value for authentication timeout

- TACACS+

Authentication Method	<input type="radio"/> Local Account <input type="radio"/> RADIUS <input checked="" type="radio"/> TACACS+
TACACS+ Server	<input type="text"/>
TACACS+ Server Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
TACACS+ Server Timeout	<input type="text" value="3"/> seconds

<b>TACACS+ Server</b>	This specifies the access address of the external TACACS+ server.
<b>TACACS+ Server Secret</b>	This field is for entering the secret key for accessing the RADIUS server.
<b>TACACS+ Server Timeout</b>	This option specifies the time value for TACACS+ timeout

<b>CLI SSH &amp; Console</b>	The CLI (command line interface) can be accessed via SSH. This field enables CLI support. For additional information regarding CLI, please refer to <b>Section 30.5</b> .
<b>CLI SSH Access</b>	This menu allows you to choose between granting access to LAN and WAN clients, or to LAN clients only.
<b>CLI SSH Port</b>	This field determines the port on which clients can access CLI SSH.
<b>Security</b>	<p>This option is for specifying the protocol(s) through which the web admin interface can be accessed:</p> <ul style="list-style-type: none"> <li>• HTTP</li> <li>• HTTPS</li> <li>• HTTP/HTTPS</li> </ul> <p>HTTP to HTTPS redirection is enabled by default to force HTTPS access to the web admin interface.</p>
<b>Web Admin Access</b>	<p>This option is for specifying the network interfaces through which the web admin interface can be accessed:</p> <ul style="list-style-type: none"> <li>• LAN only</li> <li>• LAN/WAN</li> </ul> <p>If LAN/WAN is chosen, the <b>WAN Connection Access Settings</b> form will be displayed.</p>

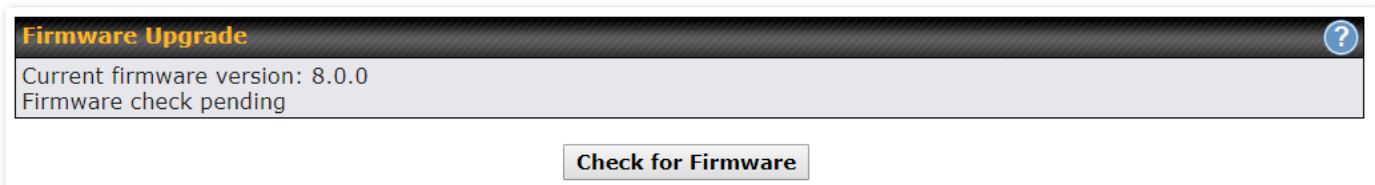


**Web Admin Port** This field is for specifying the port number on which the web admin interface can be accessed.

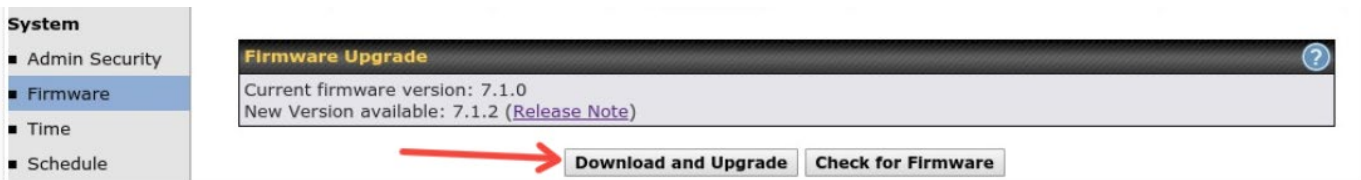
## Firmware

Upgrading firmware can be done in one of three ways. Using the router's interface to automatically check for an update, using the router's interface to manually upgrade the firmware, or using InControl2 to push an upgrade to a router.

The automatic upgrade can be done from **System > Firmware**.



If an update is found the buttons will change to allow you to **Download and Update** the firmware.



Click on the **Download and Upgrade** button. A prompt will be displayed advising to download the Current Active Configuration. Please click on the underlined download text. After downloading the current config click the **Ok** button to start the upgrade process.

The router will download and then apply the firmware. The time that this process takes will depend on your internet connection's speed.



The firmware will now be applied to the router\*. The amount of time it takes for the firmware to upgrade will also depend on the router that's being upgraded.

### Firmware Upgrade

It may take up to 8 minutes.



**\*Upgrading the firmware will cause the router to reboot.**

### Web admin interface : install updates manually

In some cases, a special build may be provided via a ticket or it may be found in the forum. Upgrading to the special build can be done using this method, or using IC2 if you are using that to manage your firmware upgrades. A manual upgrade using the GA firmware posted on the site may also be recommended or required for a couple of reasons.

All of the Peplink/Pepwave GA firmware can be found [here](#). Navigate to the relevant product line (ie. Balance, Max, FusionHub, SOHO, etc). Some product lines may have a dropdown that lists all of the products in that product line. Here is a screenshot from the Balance line.

### Balance

Product Search:

Product	Hardware Revision	Firmware Version	Download Link	Release Notes	User Manual
Balance 1350	HW2	7.1.2	<a href="#">Download</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
Balance 1350	HW1	6.3.4	<a href="#">Download</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
Balance 20	HW1-6	7.1.2	<a href="#">Download</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
Balance 210	HW4	7.1.2	<a href="#">Download</a>	<a href="#">PDF</a>	<a href="#">PDF</a>

If the device has more than one firmware version the current hardware revision will be required to know what firmware to download.

Navigate to System > Firmware and click the Choose File button under the Manual Firmware Upgrade section. Navigate to the location that the firmware was downloaded to select the “.img” file and click the Open button.

Click on the Manual Upgrade button to start the upgrade process.

**Manual Firmware Upgrade** ?

Firmware Image

No file chosen

A prompt will be displayed advising to download the Current Active Configuration. Please click on the underlined download text. After downloading the current config click the Ok button to start the upgrade process. The firmware will now be applied to the router\*. The amount of time it takes for the firmware to upgrade will depend on the router that’s being upgraded.

**\*Upgrading the firmware will cause the router to reboot.**

## The InControl method

[Described in this knowledgebase article on our forum.](#)

## Time

**Time Settings** enables the system clock of the Pepwave router to be synchronized with a specified time server. Time settings are located at **System>Time**.

**Time Settings**

Time Zone

Show all

Time Server

<b>Time Zone</b>	This specifies the time zone (along with the corresponding Daylight Savings Time scheme). The <b>Time Zone</b> value affects the time stamps in the Pepwave router's event log and e-mail notifications. Check <b>Show all</b> to show all time zone options.
<b>Time Server</b>	This setting specifies the NTP network time server to be utilized by the Pepwave router.

## Schedule

Enable and disable different functions (such as WAN connections, outbound policy, and firewalls at different times, based on a user-scheduled configuration profile. The settings for this are located at **System > Schedule**

Name	Time	Used by
No schedule profile defined		
<input type="button" value="New Schedule"/>		

Enable scheduling, and then click on your schedule name or on the **New Schedule** button to begin.

**Edit schedule profile** ✕

**Schedule Settings**

Enable	<input checked="" type="checkbox"/> <small>The schedule function of those associated features will be lost if profile is disabled.</small>
Name	<input type="text"/>
Schedule	Always on ▾
Used by	




**Schedule Map**

	Midnight	4am	8am	Noon	4pm	8pm
Sunday	✓	✓	✓	✓	✓	✓
Monday	✓	✓	✓	✓	✓	✓
Tuesday	✓	✓	✓	✓	✓	✓
Wednesday	✓	✓	✓	✓	✓	✓
Thursday	✓	✓	✓	✓	✓	✓
Friday	✓	✓	✓	✓	✓	✓
Saturday	✓	✓	✓	✓	✓	✓

<b>Enabling</b>	Click this checkbox to enable this schedule profile. Note that if this is disabled, then any associated features will also have their scheduling disabled.
<b>Name</b>	Enter your desired name for this particular schedule profile.
<b>Schedule</b>	Click the drop-down menu to choose pre-defined schedules as your starting point. Please note that upon selection, previous changes on the schedule map will be deleted.
<b>Schedule Map</b>	Click on the desired times to enable features at that time period. You can hold your mouse for faster entry.

## Email Notification

Email notification functionality provides a system administrator with up-to-date information on network status. The settings for configuring email notifications are found at **System>Email Notification**.

Email Notification Setup 	
Email Notification	<input checked="" type="checkbox"/> Enable
SMTP Server	smtp.mycompany.com <input checked="" type="checkbox"/> Require authentication
Connection Security	None 
SMTP Port	25
SMTP User Name	smtpuser
SMTP Password	••••
Confirm SMTP Password	••••
Sender's Email Address	admin@mycompany.com
Recipient's Email Address	system@mycompany.com staff@mycompany.com 

<b>Email Notification</b>	This setting specifies whether or not to enable email notification. If <b>Enable</b> is checked, the Pepwave router will send email messages to system administrators when the WAN status changes or when new firmware is available. If <b>Enable</b> is not checked, email notification is disabled and the Pepwave router will not send email messages.
<b>SMTP Server</b>	This setting specifies the SMTP server to be used for sending email. If the server requires authentication, check <b>Require authentication</b> .

<b>Connection Security</b>	<p>This setting specifies via a drop-down menu one of the following valid connection security:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• STARTTLS</li> <li>• SSL/TTS</li> </ul> <p>When connection security is selected, <b>SMTP Port</b> will set a default port number automatically.</p>
<b>SMTP Port</b>	<p>This field is for specifying the SMTP port number. By default, this is set to <b>25</b>; when <b>STARTTLS</b> is selected, the default port number will be set to <b>587</b>. When <b>SSL/TTS</b> is selected, the default port number will be set to <b>465</b>. You may customize the port number by editing this field.</p>
<b>SMTP User Name / Password</b>	<p>This setting specifies the SMTP username and password while sending email. These options are shown only if <b>Require authentication</b> is checked in the <b>SMTP Server</b> setting.</p>
<b>Confirm SMTP Password</b>	<p>This field allows you to verify and confirm the new administrator password.</p>
<b>Sender's Email Address</b>	<p>This setting specifies the email address the Pepwave router will use to send reports.</p>
<b>Recipient's Email Address</b>	<p>This setting specifies the email address(es) to which the Pepwave router will send email notifications. For multiple recipients, separate each email addresses using the enter key.</p>

After you have finished setting up email notifications, you can click the **Test Email Notification** button to test the settings before saving. After **Test Email Notification** is clicked, you will see this screen to confirm the settings:

<b>Test Email Notification</b>	
SMTP Server	smtp.mycompany.com
SMTP Port	465
SMTP UserName	smtuser
Sender's Email Address	admin@mycompany.com
Recipient's Email Address	system@mycompany.com staff@mycompany.com

Click **Send Test Notification** to confirm. In a few seconds, you will see a message with detailed test results.

**Test email sent.**  
 (NOTE: Settings are not saved. To confirm the update, click 'Save' button.)

Email Notification Setup <span style="float: right;">?</span>	
Email Notification	<input checked="" type="checkbox"/> Enable
SMTP Server	<input type="text"/> <input checked="" type="checkbox"/> Require authentication
Connection Security	SSL/TLS <span style="font-size: small;">(Note: any server certificate will be accepted)</span>
SMTP Port	<input type="text" value="465"/>
SMTP User Name	<input type="text"/>
SMTP Password	<input type="password"/>
Confirm SMTP Password	<input type="password"/>
Sender's Email Address	<input type="text"/>
Recipient's Email Address	<input type="text"/>

**Test Result**

```
[INFO] Try email through auto detected connection
[INFO] SMTP through SSL connected
[<-] 220 smtp.gmail.com ESMTP h11sm3907691pjq.46 - gsmt
[->] EHLO balance.peplink.com
[<-] 250-smtp.gmail.com at your service, [14.192.209.255]
[<-] 250-SIZE 35882577
[<-] 250-8BITMIME
[<-] 250-AUTH LOGIN PLAIN XOAUTH2 PLAIN-CLIENTTOKEN OAUTHBEARER XOAUTH
[<-] 250-ENHANCEDSTATUSCODES
[<-] 250-PIPELINING
[<-] 250-CHUNKING
[<-] 250 SMTPUTF8
[->] AUTH PLAIN AGdwc2dhbjk0QGdtYWlsLmNvbQBwdnJ6bWF6cGhtYXJpanpp
```

## Event Log

Event log functionality enables event logging at a specified remote syslog server. The settings for configuring the remote system log can be found at **System>Event Log**.

**Send Events to Remote Syslog Server** ?

Remote Syslog	<input type="checkbox"/>
Remote Syslog Host	<input style="width: 100%;" type="text"/> Port: <input style="width: 50px;" type="text" value="514"/>

**Push Events to Mobile Devices** ?

Push Events	<input type="checkbox"/>
-------------	--------------------------

Event Log Settings	
<b>Remote Syslog</b>	This setting specifies whether or not to log events at the specified remote syslog server.
<b>Remote Syslog Host</b>	This setting specifies the IP address or hostname of the remote syslog server and port that is used.
<b>Push Events</b>	The Pepwave router can also send push notifications to mobile devices that have our Mobile Router Utility installed. Check the box to activate this feature. For more information on the Router Utility, go to: <a href="http://www.peplink.com/products/router-utility">www.peplink.com/products/router-utility</a>



## SNMP

SNMP or simple network management protocol is an open standard that can be used to collect information about the Pepwave router. SNMP configuration is located at **System>SNMP**.

SNMP Settings	
SNMP Device Name	<input type="text"/>
Location <span style="float: right;">?</span>	<input type="text"/>
SNMP Port	<input type="text" value="161"/> <input type="button" value="Default"/>
SNMPv1	<input type="checkbox"/> Enable
SNMPv2c	<input type="checkbox"/> Enable
SNMPv3	<input type="checkbox"/> Enable
SNMP Trap	<input type="checkbox"/> Enable
<input type="button" value="Save"/>	

Community Name	Allowed Source Network	Access Mode
No SNMPv1 / SNMPv2c Communities Defined		
<input type="button" value="Add SNMP Community"/>		

SNMPv3 User Name	Authentication / Privacy	Access Mode
No SNMPv3 Users Defined		
<input type="button" value="Add SNMP User"/>		

<b>SNMP Device Name</b>	This field shows the router name defined at <b>System&gt;Admin Security</b> .
<b>SNMP Port</b>	This option specifies the port which SNMP will use. The default port is <b>161</b> .
<b>SNMPv1</b>	This option allows you to enable SNMP version 1.
<b>SNMPv2</b>	This option allows you to enable SNMP version 2.
<b>SNMPv3</b>	This option allows you to enable SNMP version 3.
<b>SNMP Trap</b>	This option allows you to enable SNMP Trap

To add an SNMP community, click the **Add SNMP Community** button in the **Community Name** table; the following screen will be displayed:

**SNMP Community** ✕

Community Name	<input style="width: 90%;" type="text"/>
Allowed Network	<input style="width: 30%;" type="text"/> / 255.255.255.0 (/24) ▼

**Community Name** This setting specifies the SNMP community name.

**Allowed Source Subnet Address** This setting specifies a subnet from which access to the SNMP server is allowed. Enter subnet address here (e.g., 192.168.1.0) and select the appropriate subnet mask.

To define a username for SNMPv3, click **Add SNMP User** in the **SNMPv3 User Name** table, upon which the following screen is displayed:

**SNMPv3 User** ✕

User Name	<input style="width: 90%;" type="text"/>
Authentication	SHA ▼ <input style="width: 60%;" type="text"/>
Privacy	DES ▼ <input style="width: 60%;" type="text"/>

**User Name** This setting specifies a user name to be used in SNMPv3.

**Authentication Protocol** This setting specifies via a drop-down menu one of the following valid authentication protocols:

- NONE
- MD5
- SHA

When MD5 or SHA is selected, an entry field will appear for the password.

**Privacy Protocol** This setting specifies via a drop-down menu one of the following valid privacy protocols:

- None
- DES
- AES

When AES or DES is selected, an entry field will appear for the password.

## InControl

Controller Management Settings	
Controller	InControl <input type="checkbox"/> Restricted to Status Reporting Only
Privately Host InControl	<input checked="" type="checkbox"/>
InControl Host	<input type="text"/> <input type="text"/> <input type="checkbox"/> Fail over to InControl in the cloud.

InControl is a cloud-based service which allows you to manage all of your Peplink and Pepwave devices with one unified system. With it, you can generate reports, gather statistics, and configure your devices automatically. All of this is now possible with InControl.

When this checkbox is checked, the device's status information will be sent to the Peplink InControl system. This device's usage data and configuration will be sent to the system if you enable the features in the system.

When the box **Restricted to Status Reporting Only** is ticked, the router will only report its status, but can't be managed or configured by InControl.

Alternatively, you can also privately host InControl. Simply check the box beside the "Privately Host InControl" open, and enter the IP Address of your InControl Host.

You can sign up for an InControl account at <https://incontrol2.peplink.com/>. You can register your devices under the account, monitor their status, see their usage reports, and receive offline notifications.

## Configuration

Backing up Pepwave router settings immediately after successful completion of initial setup is strongly recommended. The functionality to download and upload Pepwave router settings is found at **System>Configuration**. Note that the available options vary by model.

Restore Configuration to Factory Settings	
<input type="button" value="Restore Factory Settings"/>	

---

Download Active Configurations	
<input type="button" value="Download"/>	

---

Upload Configurations	
Configuration File	<input type="button" value="Choose File"/> No file chosen
<input type="button" value="Upload"/>	

<p><b>Restore Configuration to Factory Settings</b></p>	<p>The <b>Restore Factory Settings</b> button is to reset the configuration to factory default settings. After clicking the button, you will need to click the <b>Apply Changes</b> button on the top right corner to make the settings effective.</p>
<p><b>Download Active Configurations</b></p>	<p>Click <b>Download</b> to backup the current active settings.</p>
<p><b>Upload Configurations</b></p>	<p>To restore or change settings based on a configuration file, click <b>Choose File</b> to locate the configuration file on the local computer, and then click <b>Upload</b>. The new settings can then be applied by clicking the <b>Apply Changes</b> button on the page header, or you can cancel the procedure by pressing <b>discard</b> on the main page of the web admin interface.</p>

## Feature Add-ons

Some Pepwave routers have features that can be activated upon purchase. Once the purchase is complete, you will receive an activation key. Enter the key in the **Activation Key** field, click **Activate**, and then click **Apply Changes**.

**Feature Activation**

Activation Key

## Reboot

This page provides a reboot button for restarting the system. For maximum reliability, the Pepwave router can equip with two copies of firmware. Each copy can be a different version. You can select the firmware version you would like to reboot the device with. The firmware marked with **(Running)** is the current system boot up firmware.

**Please note that a firmware upgrade will always replace the inactive firmware partition.**

**Reboot System** ?

Select the firmware you want to use to start up this device:

Firmware 1: 8.0.1b01 build 2658 (Running)

Firmware 2: 8.0.0 build 2636

## Tools

### Ping

The ping test tool sends pings through a specific Ethernet interface or a SpeedFusion™ VPN connection. You can specify the number of pings in the field **Number of times**, to a maximum number of 10 times. **Packet Size** can be set to a maximum of 1472 bytes. The ping utility is located at **System>Tools>Ping**, illustrated below:

Ping	
Connection	WAN 1
Destination	8.8.8.8
Packet Size	56
Number of times	Times 5

Results	Clear Log
PING 8.8.8.8 (8.8.8.8) from 10.22.1.182 56(84) bytes of data.	
64 bytes from 8.8.8.8: icmp_req=1 ttl=121 time=11.8 ms	
64 bytes from 8.8.8.8: icmp_req=2 ttl=121 time=11.7 ms	
64 bytes from 8.8.8.8: icmp_req=3 ttl=121 time=11.6 ms	
64 bytes from 8.8.8.8: icmp_req=4 ttl=121 time=11.6 ms	
64 bytes from 8.8.8.8: icmp_req=5 ttl=121 time=11.4 ms	
---	
--- 8.8.8.8 ping statistics ---	
5 packets transmitted, 5 received, 0% packet loss, time 4006ms	
rtt min/avg/max/mdev = 11.427/11.680/11.888/0.166 ms	

A system administrator can use the ping utility to manually check the connectivity of a particular LAN/WAN connection.

## Traceroute Test

The traceroute test tool traces the routing path to the destination through a particular Ethernet interface. The traceroute test utility is located at **System>Tools>Traceroute**.

**Traceroute**

Connection	WAN 1
Destination	64.233.189.99

**Results**

```

Traceroute to 64.233.189.99 (64.233.189.99), 30 hops max, 90 bytes packet size
 0 10.91.137.254 (10.91.137.254) 0.708 ms 0.472 ms 0.267 ms
 1 10.88.88.254 (10.88.88.254) 0.919 ms 1.190 ms 1.498 ms
 2 10.88.88.1 (10.88.88.1) 1.075 ms 1.523 ms 1.992 ms
 3 10.88.8.2 (10.88.8.2) 0.162 ms 0.207 ms 0.198 ms
 4 1.18.143.88.254 (1.18.143.88.254) 0.294 ms 1.76.176.240.22 (1.76.176.240.22) 0.707 ms 1.18.143.88.254 (1.18.143.88.254) 0.472 ms
 5 192.75.46.128 (192.75.46.128) 0.888 ms 148.85.229.46 (148.85.229.46) 0.297 ms 0.297 ms
 6 209.128.1.128 (209.128.1.128) 0.261 ms 7.696 ms 7.498 ms
 7 1.76.176.88.254 (1.76.176.88.254) 0.811 ms 209.128.8.2 (209.128.8.2) 0.472 ms 192.75.195.128 (192.75.195.128) 0.241 ms
 8 209.128.8.229 (209.128.8.229) 0.238 ms 72.14.194.246 (72.14.194.246) 0.491 ms 209.128.8.229 (209.128.8.229) 0.478 ms
 9 72.14.233.20 (72.14.233.20) 0.842 ms 74.125.46.128 (74.125.46.128) 0.877 ms 72.14.233.20 (72.14.233.20) 0.584 ms
10 72.14.233.20 (72.14.233.20) 0.584 ms 209.85.243.30 (209.85.243.30) 7.318 ms 209.85.243.30 (209.85.243.30) 0.484 ms
11 209.85.243.30 (209.85.243.30) 0.472 ms 209.85.243.143 (209.85.243.143) 0.898 ms 0.588 ms
12 216.239.80.47 (216.239.80.47) 0.892 ms * 7.392 ms
13 64.233.189.99 (64.233.189.99) 0.170 ms 0.146 ms 0.822 ms

```

A system administrator can use the traceroute utility to analyze the connection path of a LAN/WAN connection.

## Wake-on-LAN

Peplink routers can send special “magic packets” to any client specified from the Web UI. To access this feature, navigate to **System > Tools > Wake-on-LAN**.

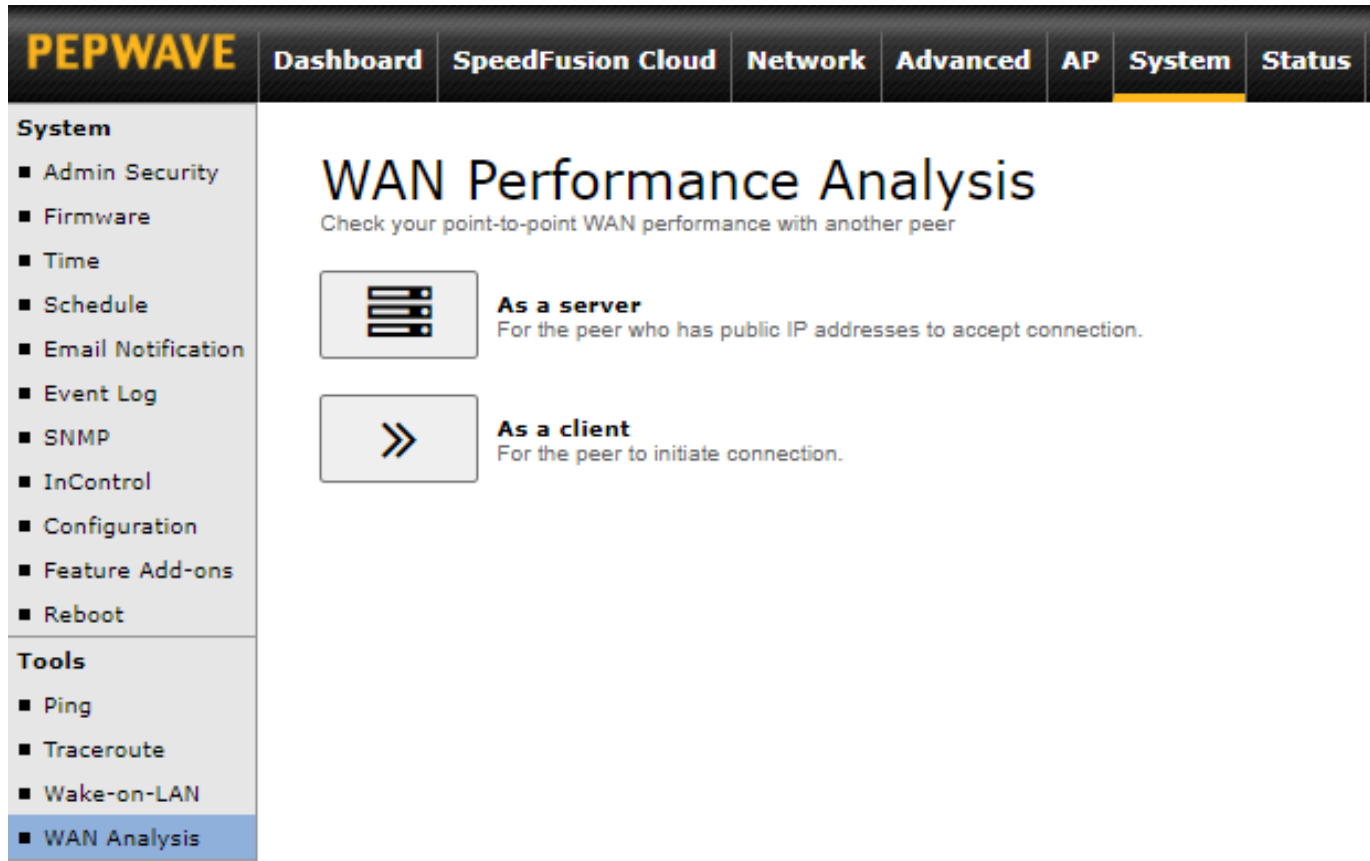
**Wake-on-LAN**

Wake-on-LAN Target	Custom MAC Address...	00:00:00:00:00:00	<input type="button" value="Send"/>
--------------------	-----------------------	-------------------	-------------------------------------

Select a client from the drop-down list and click **Send** to send a “magic packet”

## WAN Analysis

The WAN Analysis feature allows you to run a WAN to WAN speed test between 2 Peplink devices . You can set a device up as a **Server** or a **Client**. One device must be set up as a server to run the speed tests and the server must have a public IP address.



The screenshot shows the Peplink PEPWAVE web interface. At the top is a navigation bar with tabs: Dashboard, SpeedFusion Cloud, Network, Advanced, AP, System (highlighted), and Status. On the left is a sidebar menu with categories: System (Admin Security, Firmware, Time, Schedule, Email Notification, Event Log, SNMP, InControl, Configuration, Feature Add-ons, Reboot) and Tools (Ping, Traceroute, Wake-on-LAN, WAN Analysis - highlighted). The main content area is titled "WAN Performance Analysis" with the subtitle "Check your point-to-point WAN performance with another peer". Below the title are two options: "As a server" (represented by a server rack icon) and "As a client" (represented by a right-pointing arrow icon).

The default port is 6000 and can be changed if required. The IP address of the WAN interface will be shown in the **WAN Connection Status** section.

**PEPWAVE** Dashboard SpeedFusion Cloud Network Advanced AP **System** Status Apply Changes

**System**

- Admin Security
- Firmware
- Time
- Schedule
- Email Notification
- Event Log
- SNMP
- InControl
- Configuration
- Feature Add-ons
- Reboot

**Tools**

- Ping
- Traceroute
- Wake-on-LAN
- WAN Analysis

## WAN Performance Analysis

Check your point-to-point WAN performance with another peer

**Server Settings**

Status	<input checked="" type="checkbox"/> Listening (Control Port: 6000)
Control Port	<input type="text" value="6000"/>

**WAN Connection Status**

WAN	<input checked="" type="checkbox"/> <div style="width: 100px; height: 10px; background-color: #ccc;"></div>
USB	No Device Detected
Wi-Fi WAN on 2.4 GHz	<input type="checkbox"/> Disabled
Wi-Fi WAN on 5 GHz	<input type="checkbox"/> Disabled

The client side has a few more settings that can be changed. Make sure that the **Control Port** matches what's been entered on the server side. Select the WAN(s) that will be used for testing and enter the Servers WAN IP address. Once all of the options have been set, click the **Start Test** button.



- System**
    - Admin Security
    - Firmware
    - Time
    - Schedule
    - Email Notification
    - Event Log
    - SNMP
    - InControl
    - Configuration
    - Feature Add-ons
    - Reboot
  - Tools**
    - Ping
    - Traceroute
    - Wake-on-LAN
    - WAN Analysis
- [Logout](#)

## WAN Performance Analysis

Check your point-to-point WAN performance with another peer

Client Settings	
Control Port	<input type="text" value="6000"/>
Data Port	<input type="text" value="45232"/> - <input type="text" value="45239"/>
Type	<input checked="" type="radio"/> TCP <input type="radio"/> UDP
Direction	<input checked="" type="radio"/> Upload <input type="radio"/> Download
Duration	<input type="text" value="20"/> seconds (5 - 600)

Data Streams		
Local WAN Connection	Remote IP Address	
1. -- Not Used --	<input type="text"/>	✘
2. -- Not Used --	<input type="text"/>	✘
3. -- Not Used --	<input type="text"/>	✘
4. -- Not Used --	<input type="text"/>	✘
5. -- Not Used --	<input type="text"/>	✘
6. -- Not Used --	<input type="text"/>	✘
7. -- Not Used --	<input type="text"/>	✘
8. -- Not Used --	<input type="text"/>	+

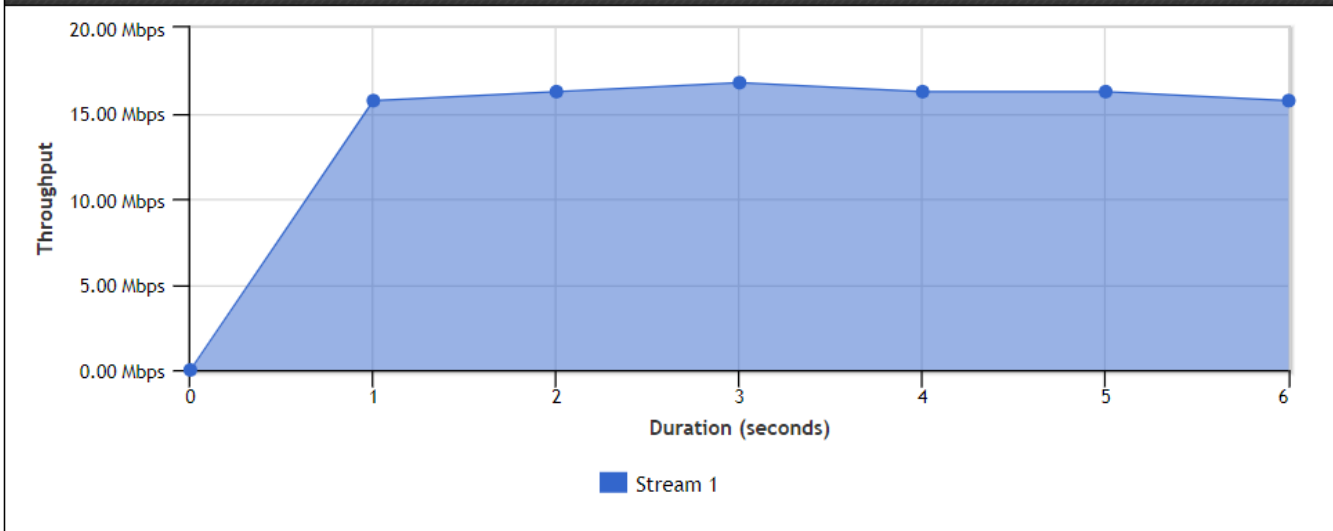
[Start Test](#)

The test output will show the **Data Streams Parameters**, the **Throughput** as a graph, and the **Results**.

### Data Streams Parameters

Type	TCP	
Direction	Upload	
Duration	6 seconds	
	Local	Remote
Stream 1	192.168.1.100:80	192.168.1.100:80

### Throughput



### Results

1.0s:	15.7284 Mbps	0 retrans /	146 KB cwnd
2.0s:	16.2527 Mbps	0 retrans /	245 KB cwnd
3.0s:	16.7775 Mbps	0 retrans /	342 KB cwnd
4.0s:	16.2528 Mbps	0 retrans /	451 KB cwnd
5.0s:	16.2530 Mbps	0 retrans /	557 KB cwnd
6.0s:	15.7287 Mbps	0 retrans /	634 KB cwnd
--			
Overall:	16.1172 Mbps	0 retrans /	707 KB cwnd
--			

The test can be run again once it's complete by clicking the **Start** button or you can click **Close** and change the parameters for the test.

# Status

## Device

System information is located at **Status>Device**.

System Information	
Router Name	[REDACTED]
Model	Pepwave Surf SOHO MK3
Product Code	SUS-SOHO
Hardware Revision	1
Serial Number	[REDACTED]
Firmware	[REDACTED]
PepVPN Version	8.0.0
Modem Support Version	1023 ( <a href="#">Modem Support List</a> )
InControl Managed Configurations	Firmware, Scheduled Reboot
Host Name	[REDACTED]
Uptime	6 days 3 hours 30 minutes
System Time	Fri Sep 06 03:00:20 MST 2019
Diagnostic Report	<a href="#">Download</a>
Remote Assistance	<a href="#">Turn On</a>

[REDACTED]	
<b>Router Name</b>	This is the name specified in the <b>Router Name</b> field located at <b>System&gt;Admin Security</b> .
<b>Model</b>	This shows the model name and number of this device.
<b>Product Code</b>	If your model uses a product code, it will appear here.
<b>Hardware Revision</b>	This shows the hardware version of this device.
<b>Serial Number</b>	This shows the serial number of this device.
<b>Firmware</b>	This shows the firmware version this device is currently running.
<b>PepVPN Version</b>	This shows the current PepVPN version.

<b>Modem Support Version</b>	This shows the modem support version. For a list of supported modems, click <b>Modem Support List</b> .
<b>InControl Managed Configurations</b>	If the router is (partly) managed by InControl, the options controlled by InControl are listed in this field.
<b>Hostname</b>	The host name assigned to the Pepwave router appears here.
<b>Uptime</b>	This shows the length of time since the device has been rebooted.
<b>System Time</b>	This shows the current system time.
<b>Diagnostic Report</b>	The <b>Download</b> link is for exporting a diagnostic report file required for system investigation.
<b>Remote Assistance</b>	Click <b>Turn on</b> to enable remote assistance.

MAC Address	
LAN	00:1A:DD:68: [blurred]
WAN	00:1A:DD:68: [blurred]
Wi-Fi WAN on 5 GHz	00:1A:DD:68: [blurred]

[Legal](#)

The second table shows the MAC address of each LAN/WAN interface connected. To view your device's End User License Agreement (EULA), follow the **Legal link**

If you encounter issues and would like to contact the Pepwave Support Team, please download the diagnostic report file and attach it along with a description of your issue.

## Active Sessions

Information on active sessions can be found at **Status>Active Sessions>Overview**.

Overview
Search

Session data captured within one minute. [Refresh](#)

Service	Inbound Sessions	Outbound Sessions
<a href="#">Amazon</a>	0	1
<a href="#">DNS</a>	0	55
<a href="#">Facebook</a>	0	2
<a href="#">Google</a>	0	19
<a href="#">Google Play Store</a>	0	1
<a href="#">HTTP</a>	0	2
<a href="#">IPsec</a>	0	2
<a href="#">Office 365</a>	0	42
<a href="#">SIP</a>	0	46
<a href="#">SSH</a>	0	1
<a href="#">SSL</a>	3	170
<a href="#">STUN</a>	0	2
<a href="#">Skype</a>	0	5
<a href="#">XMPP</a>	0	1

Interface	Inbound Sessions	Outbound Sessions
	0	308
	2	155
	0	0
	0	0
	0	42
	0	0

### Top Clients

Client IP Address	Total Sessions
172.16.150.10	174
10.22.1.253	151
10.22.1.166	91
172.16.150.12	75
10.22.1.157	60

This screen displays the number of sessions initiated by each application. Click on each service listing for additional information. This screen also indicates the number of sessions initiated by each WAN port. In addition, you can see which clients are initiating the most sessions.

You can also perform a filtered search for specific sessions. You can filter by subnet, port, protocol, and interface. To perform a search, navigate to **Status>Active Sessions>Search**.

Overview
Search

Session data captured within one minute. [Refresh](#)

IP / Subnet	Source or Destination ▾ <input type="text" value="255.255.255.255 (/32)"/> ▾
Port	Source or Destination ▾ <input type="text"/>
Protocol / Service	TCP ▾
Interface	<input type="checkbox"/> WAN 1 <input type="checkbox"/> WAN 2 <input type="checkbox"/> Wi-Fi WAN <input type="checkbox"/> Cellular 1 <input type="checkbox"/> Cellular 2 <input type="checkbox"/> USB <input type="checkbox"/> VPN
<input type="button" value="Search"/>	

**Outbound**

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

**Inbound**

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

**Transit**

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

This **Active Sessions** section displays the active inbound/outbound sessions of each WAN connection on the Pepwave router. A filter is available to sort active session information. Enter a keyword in the field or check one of the WAN connection boxes for filtering.

## Client List

The client list table is located at **Status>Client List**. It lists DHCP and online client IP addresses, names (retrieved from the DHCP reservation table or defined by users), current download and upload rate, and MAC address. Clients can be imported into the DHCP reservation table by clicking the  button on the right. You can update the record after import by going to **Network>LAN**.

Filter							
		<input checked="" type="checkbox"/> Online Clients Only <input type="checkbox"/> DHCP Clients Only					
Client List <span style="float: right;">?</span>							
IP Address ▲	Name	Download (kbps)	Upload (kbps)	MAC Address	Network Name (SSID)	Signal (dBm)	Import
10.10.1.1		0	0	00:00:00:00:00:00			
10.10.1.2	peplink-10000	0	0	00:00:00:00:00:00			
10.10.1.3		0	0	00:00:00:00:00:00			
10.10.1.100	alberta	0	0	00:00:00:00:00:00			
10.10.1.101	alberta	0	0	00:00:00:00:00:00			
10.10.1.102	alberta-1001	0	0	00:00:00:00:00:00			
10.10.1.107	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.108		0	0	00:00:00:00:00:00			
10.10.1.109	alberta-1001	0	0	00:00:00:00:00:00			
10.10.1.140	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.141	alberta-1001	0	0	00:00:00:00:00:00			
10.10.1.142	James Bradley	0	0	00:00:00:00:00:00			
10.10.1.143	alberta-1001	0	0	00:00:00:00:00:00			
10.10.1.170		0	0	00:00:00:00:00:00			
10.10.1.174	10-1001-1001	0	0	00:00:00:00:00:00	PEP_WAVE_1	-62	
10.10.1.175		0	0	00:00:00:00:00:00			
10.10.1.183	Steven Li	0	0	00:00:00:00:00:00	PEP_WAVE_1	-46	
10.10.1.184	Steven Bradley	0	0	00:00:00:00:00:00			
10.10.1.186	10-1001-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.184	10-1001-1001-1001	0	0	00:00:00:00:00:00	PEP_WAVE_1	-39	
10.10.1.185	den	0	0	00:00:00:00:00:00			
10.10.1.186		0	0	00:00:00:00:00:00			
10.10.1.188		0	0	00:00:00:00:00:00			
10.10.1.189	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.190	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.191	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.192	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.193	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.194	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.195	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.196	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.197	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.198	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.199	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.200	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.201	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.202	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.203	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.204	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.205	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.206	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.207	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.208	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.209	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.210	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.211	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.212	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.213	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.214	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.215	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.216	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.217	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.218	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.219	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.220	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.221	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.222	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.223	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.224	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.225	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.226	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.227	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.228	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.229	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.230	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.231	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.232	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.233	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.234	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.235	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.236	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.237	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.238	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.239	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.240	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.241	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.242	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.243	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.244	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.245	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.246	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.247	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.248	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.249	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.250	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.251	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.252	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.253	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.254	10-1001-1001	0	0	00:00:00:00:00:00			
10.10.1.255	10-1001-1001	0	0	00:00:00:00:00:00			

Scale:  kbps  Mbps

## OSPF & RIPv2

Area	Remote Networks
0.0.0.0	
PepVPN	192.168.0.0/24

Information on OSPF and RIPv2 can be found in this section.

## BGP

Profile	Neighbor
	No information

Information on BGP can be found in this section.

## PepVPN Status

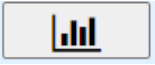
PepVPN Status shows the current connection status of each connection profile and is displayed at **Status> PepVPN/SpeedFusion**.

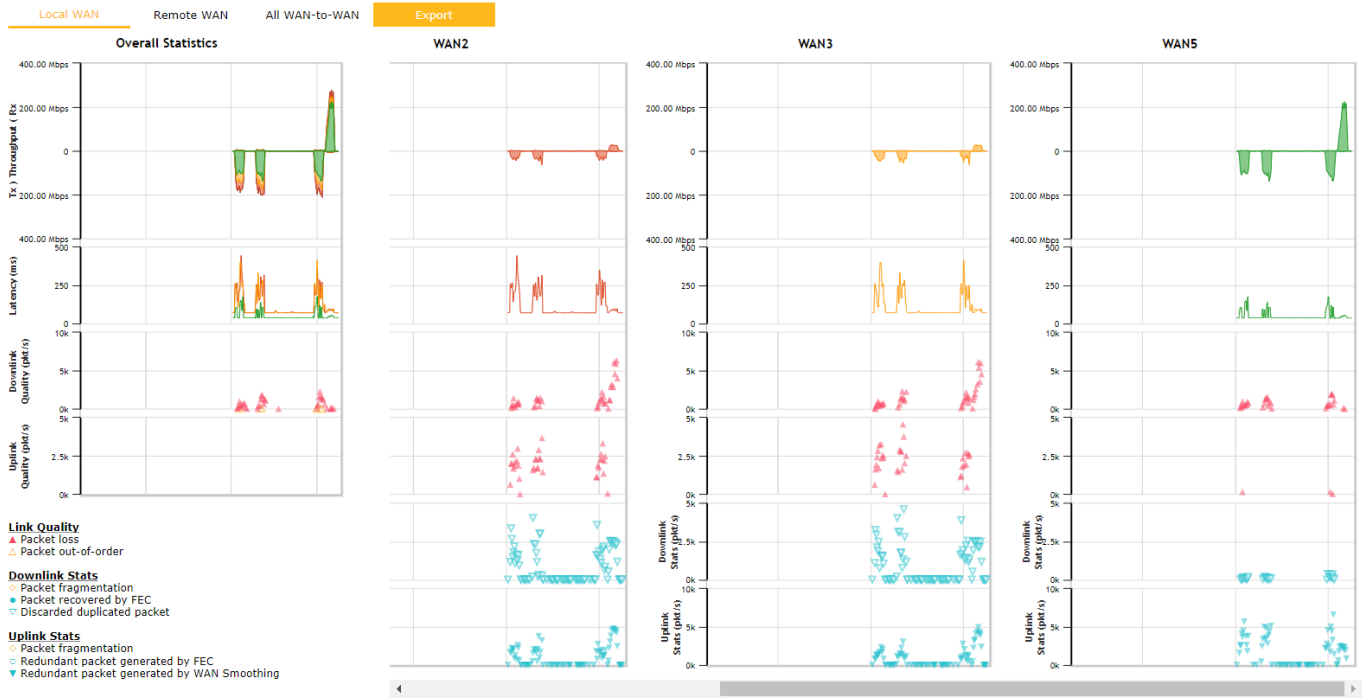
PepVPN with SpeedFusion - Remote Peer Details			<input type="checkbox"/> Show disconnected profiles
Remote Peer	Profile	Information	
ADA0-FFFC-11F8	FH	192.168.77.0/24	
3ED2-8F63-1824	380-5 - NO NAT	192.168.3.0/24	

Click on the corresponding peer name to explore the WAN connection(s) status and subnet information of each VPN peer.

PepVPN with SpeedFusion - Remote Peer			<input type="checkbox"/> Show all profiles
Remote Peer	Profile	Information	
SFC-SIN-001 (SFC-SIN-001)	SFC	SpeedFusion Cloud	
WAN1		Not available - WAN disabled	
WAN2	Rx: < 1 kbps Tx: < 1 kbps	Loss rate: 0.0 pkt/s Latency: 42 ms	
WAN3	Rx: < 1 kbps Tx: < 1 kbps	Loss rate: 0.0 pkt/s Latency: 42 ms	
WAN4		Not available - WAN disabled	
WAN5	Rx: < 1 kbps Tx: < 1 kbps	Loss rate: 0.0 pkt/s Latency: 10 ms	
Mobile Internet	Rx: < 1 kbps Tx: < 1 kbps	Loss rate: 0.0 pkt/s Latency: 32 ms	
Total	Rx: < 1 kbps Tx: 1.1 kbps	Loss rate: 0.0 pkt/s	



Click  button for a chart displaying real-time throughput, latency, and drop-rate information for each WAN connection.



When pressing the  button the following menu will appear:

**PepVPN Details** ✕

**Connection Information** More information

Profile	SFC
Remote ID	SFC-SIN-001
Device Name	SFC-SIN-001
Serial Number	1197-A047-2E3D

**WAN Statistics** 📊

Remote Connections	<input type="checkbox"/> Show remote connections					
WAN Label	<input checked="" type="radio"/> WAN Name <input type="radio"/> IP Address and Port					
<span style="color: red;">■</span> WAN1	Not available - WAN disabled					
<span style="color: green;">■</span> WAN2	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s Latency: 43 ms
<span style="color: green;">■</span> WAN3	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s Latency: 44 ms
<span style="color: red;">■</span> WAN4	Not available - WAN disabled					
<span style="color: green;">■</span> WAN5	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s Latency: 10 ms
<span style="color: green;">■</span> Mobile Internet	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s Latency: 42 ms
Total	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s

**PepVPN Test Configuration** ?

Type	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<div style="border: 1px solid gray; padding: 5px; width: 50px; margin: auto;">Start</div>
Streams	4 ▼	
Direction	<input checked="" type="radio"/> Upload <input type="radio"/> Download	
Duration	20 seconds (5 - 600)	

The Speedfusion status page shows all related information about the PepVPN connection. This screen also allows you to run PepVPN Tests allowing throughput tests.

Peplink also published a whitepaper about Speedfusion which can be downloaded from the following url: <http://download.peplink.com/resources/whitepaper-speedfusion-and-best-practices-2019.pdf>

## Event Log

Event log information is located at **Status>Event Log**

The screenshot displays the Peplink PEPWAVE web interface. The top navigation bar includes 'Dashboard', 'SpeedFusion Cloud', 'Network', 'Advanced', 'AP', 'System', and 'Status' (which is highlighted). Below the navigation bar is a sidebar menu with sections: 'Status' (containing Device, Active Sessions, Client List, OSPF & RIPv2, BGP, and Event Log), 'WAN Quality', and 'Usage Reports' (containing Real-Time, Hourly, Daily, and Monthly). A 'Logout' button is located at the bottom of the sidebar. The main content area shows the 'Device Event Log' section, which includes a 'Firewall Event Log' tab and an 'Auto Refresh' checkbox (checked). The event log table contains the following data:

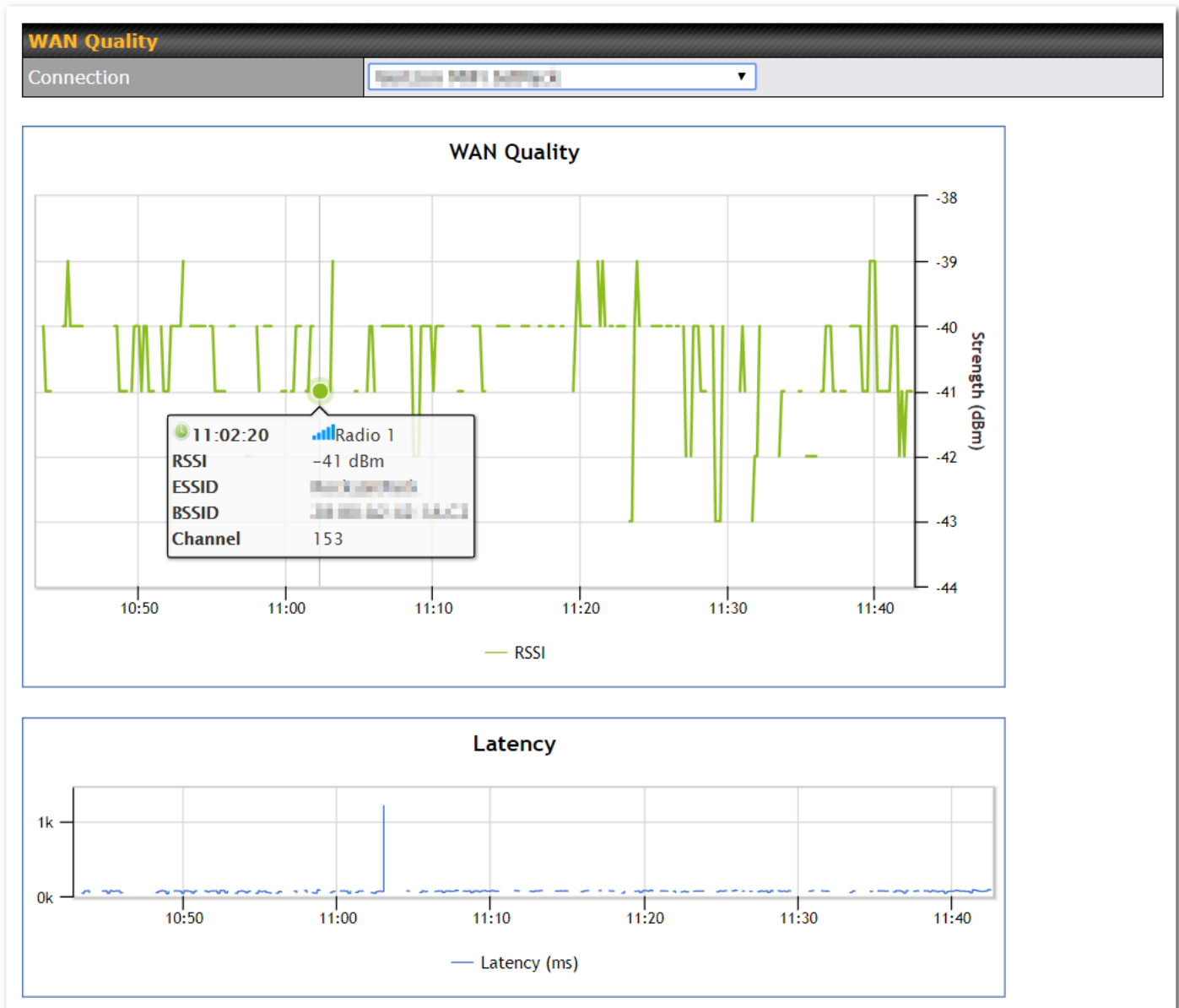
Timestamp	Event Description
Sep 30 09:23:29	Port: F
Sep 30 09:17:09	System:
Sep 30 09:10:39	Port
Sep 30 09:10:17	WA
Sep 30 09:09:09	Admir
Sep 30 09:08:23	Admir
Sep 30 09:07:53	Admir
Sep 30 09:07:32	Pc
Sep 30 08:56:33	WAN:
Sep 30 08:56:05	WAN:
Sep 30 08:55:52	WAN:
Sep 30 08:55:15	WAN:
Sep 30 08:55:11	WAN:
Sep 30 08:54:42	WAN:
Sep 30 08:54:04	WAN:
Sep 30 08:53:46	WAN:
Sep 30 08:52:51	WAN:
Sep 30 08:52:19	WAN:
Sep 30 08:35:56	WAN:
Sep 30 08:35:36	WAN:
Sep 30 07:24:06	WAN:

At the bottom of the event log section, there is a 'Clear Log' button.

The log section displays a list of events that has taken place on the Peplink router. Check **Auto Refresh** to refresh log entries automatically. Click the **Clear Log** button to clear the log.

## WAN Quality

WAN Quality allows you to select each WAN and view current WAN Quality. Detailed information can be seen when selecting a point on the graph.

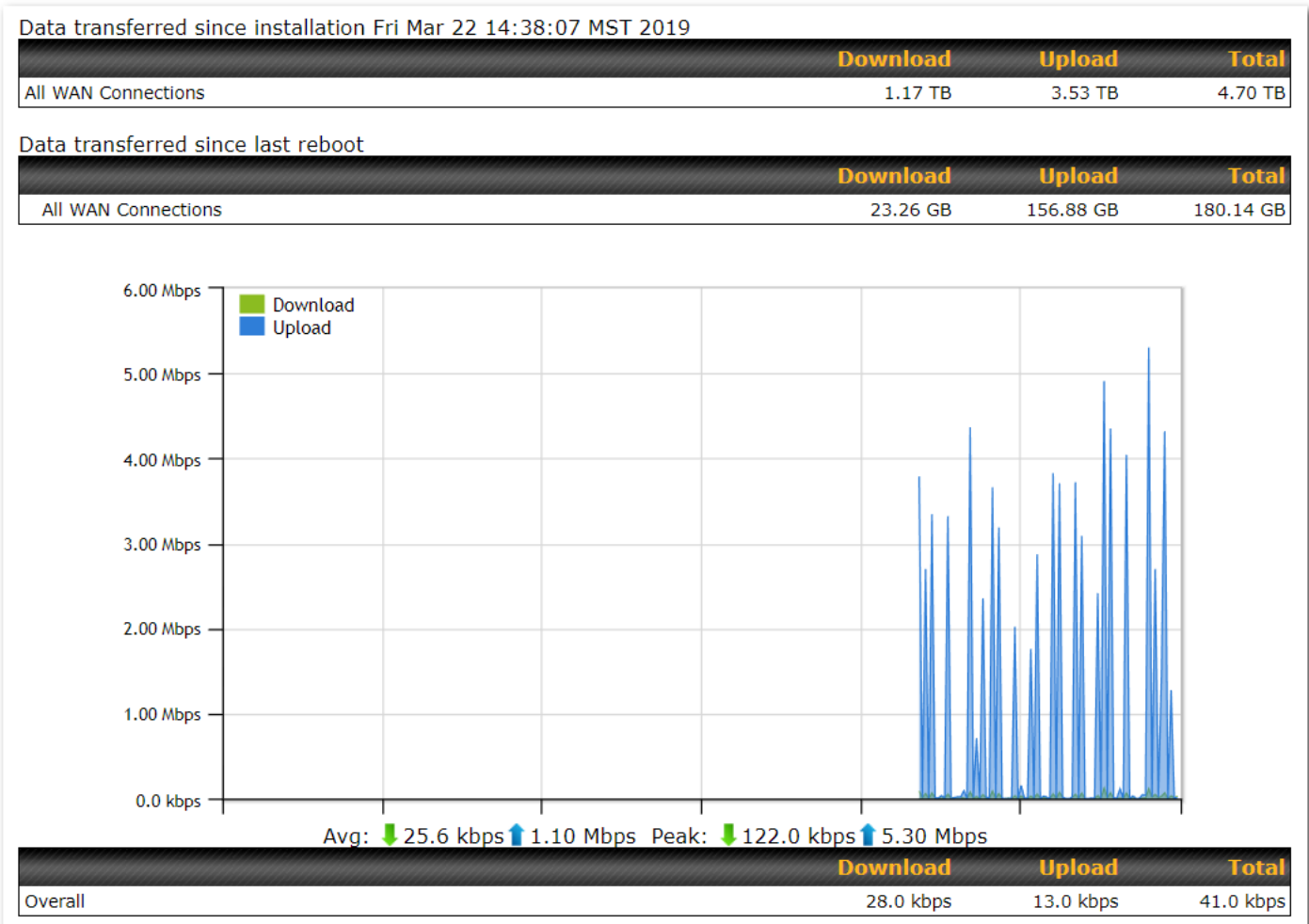


## Usage Reports

This section shows bandwidth usage statistics and is located at **Status>Bandwidth**. Bandwidth usage at the LAN while the device is switched off (e.g., LAN bypass) is neither recorded nor shown.

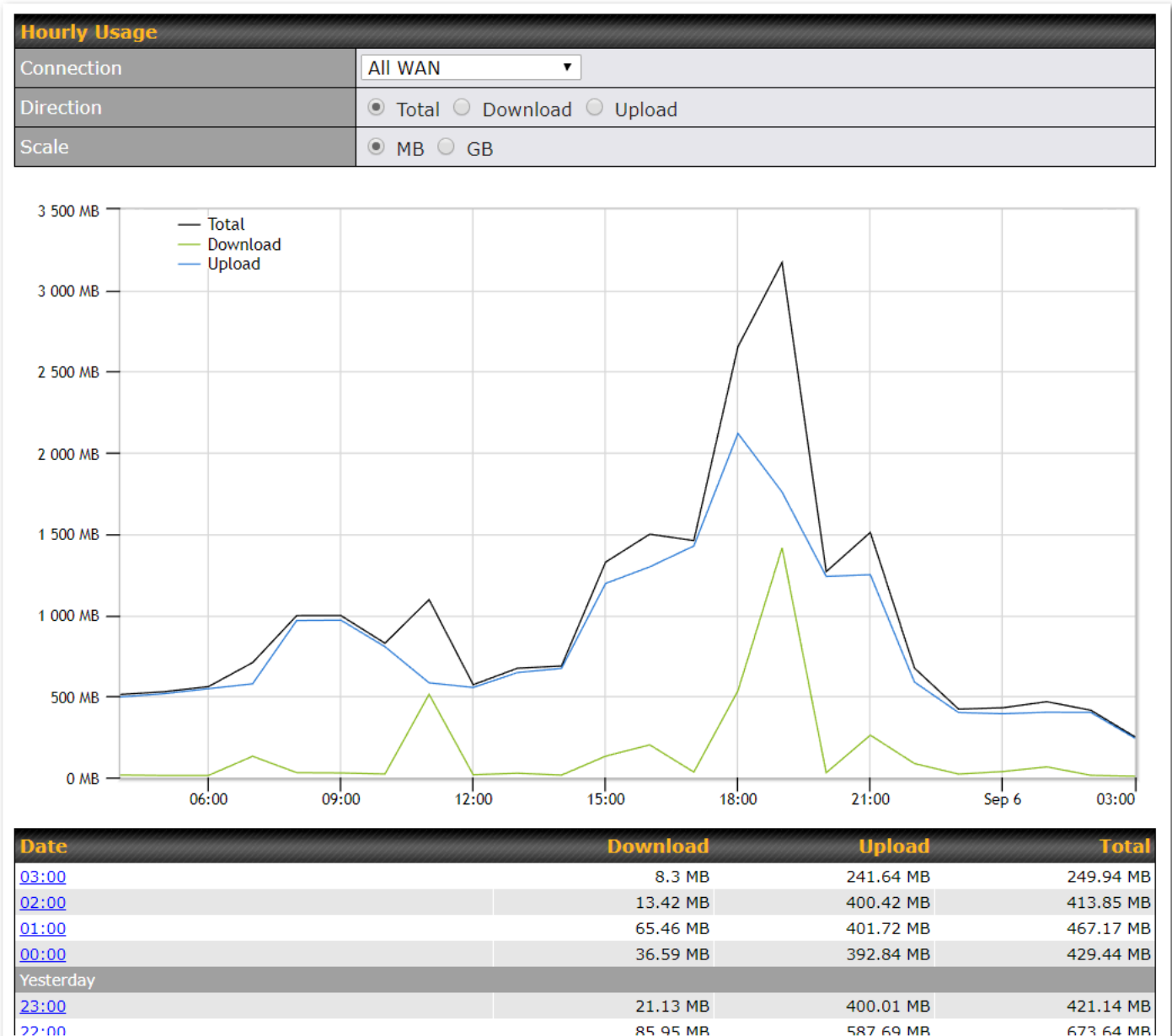
### Real Time

The **Data transferred since installation** table indicates how much network traffic has been processed by the device since the first bootup. The **Data transferred since last reboot** table indicates how much network traffic has been processed by the device since the last boot up.



## Hourly

This page shows the hourly bandwidth usage for all WAN connections, with the option of viewing each individual connection. Select the desired connection to check from the drop-down menu.

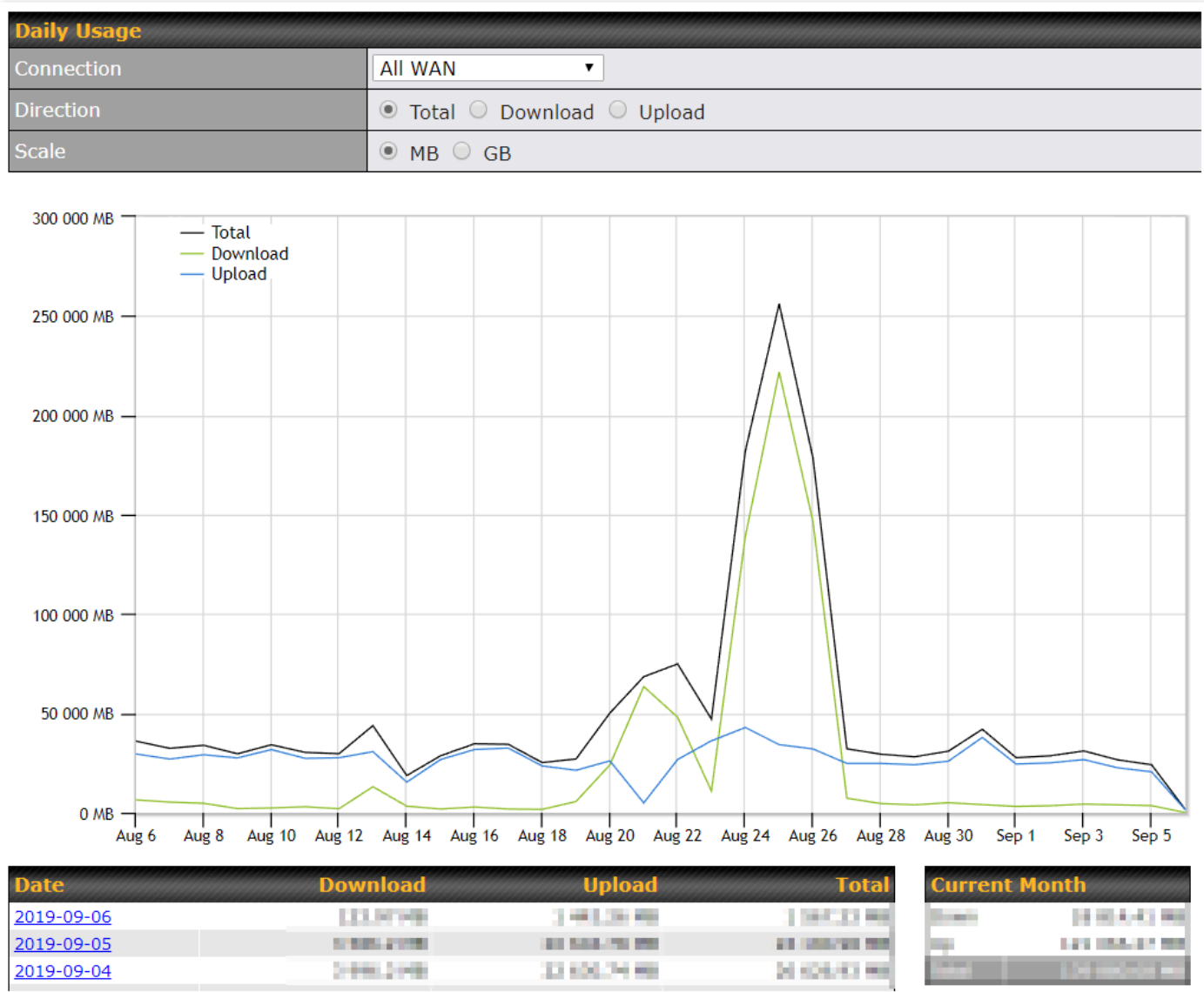


## Daily

This page shows the daily bandwidth usage for all WAN connections, with the option of viewing each individual connection.

Select the connection to check from the drop-down menu. If you have enabled the **Bandwidth Monitoring** feature, the **Current Billing Cycle** table for that WAN connection will be displayed.

Click on a date to view the client bandwidth usage of that specific date. This feature is not available if you have selected to view the bandwidth usage of only a particular WAN connection. The scale of the graph can be set to display megabytes (**MB**) or gigabytes (**GB**).

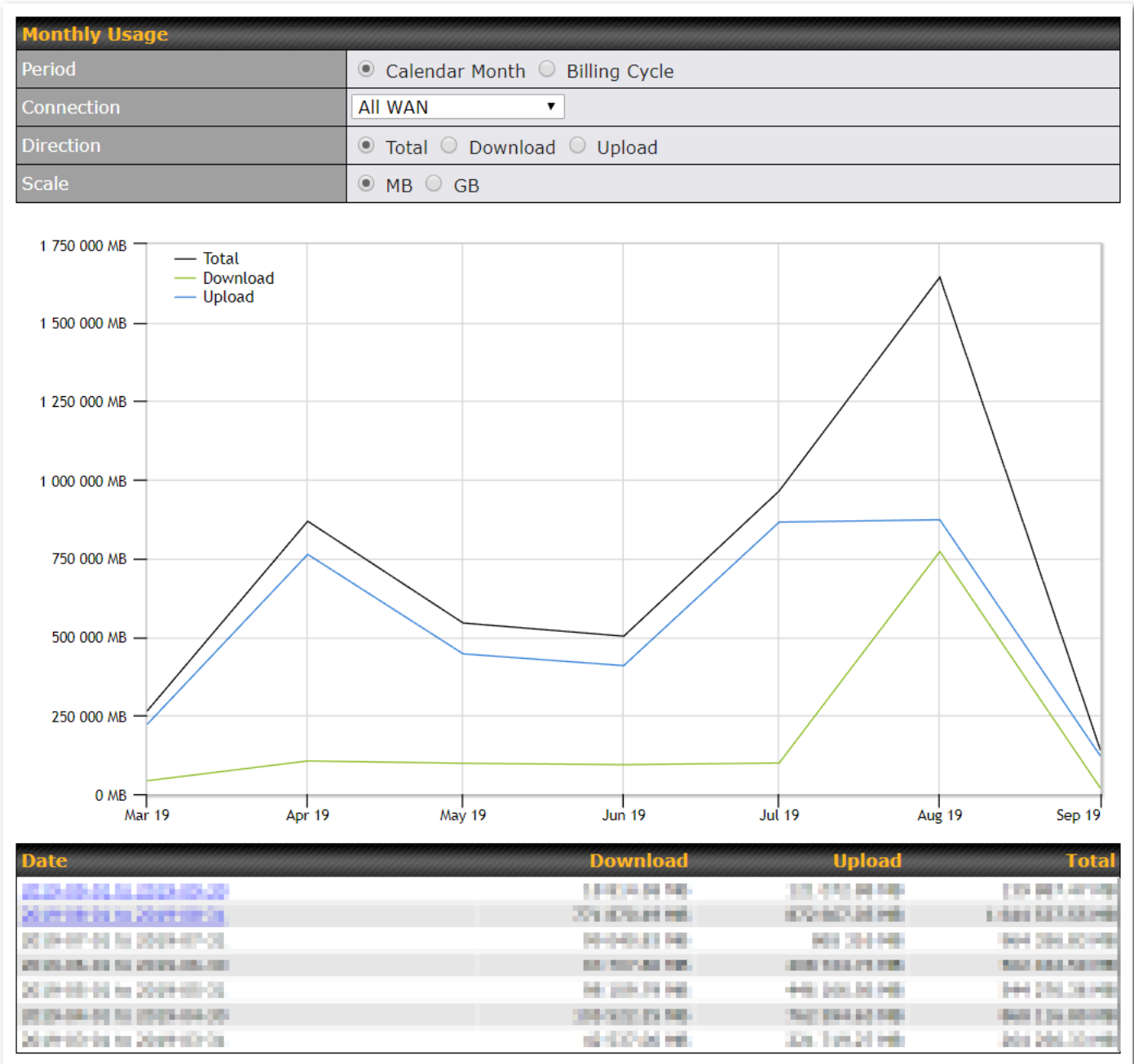


## Monthly

This page shows the monthly bandwidth usage for each WAN connection. If you have enabled the **Bandwidth Monitoring** feature, you can check the usage of each particular connection and view the information by **Billing Cycle** or by **Calendar Month**.

Click the first two rows to view the client bandwidth usage in the last two months. This feature is not available if you have chosen to view the bandwidth of an individual WAN connection. The scale of the graph can be set to display megabytes (**MB**) or gigabytes (**GB**).





## Appendix A: Restoration of Factory Defaults

To restore the factory default settings on your Pepwave Surf SOHO unit, follow the steps below:

1. Locate the reset button on the back panel of the Pepwave Surf SOHO.
2. With a paperclip, press and keep the reset button pressed.

Note: There is a dual function to the reset button.

Hold for 5-10 seconds for admin password reset (Note: The LED status light blinks in RED 2 times and release the button, green status light starts blinking)

Hold for approximately 20 seconds for factory reset (Note: The LED status light blinks in RED 3 times and release the button, all WAN/LAN port lights start blinking)

After the Pepwave Surf SOHO finishes rebooting, the factory default settings will be restored.

All previous configurations and bandwidth usage data will be lost after restoring factory default settings. Regular backup of configuration settings is strongly recommended.

## Appendix B: Declaration

- **The device supports time division technology**
- **Federal Communication Commission Interference Statement**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

**The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination.**

- **CE Statement for Pepwave Routers**

Europe – EU Declaration of Conformity  
 This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN 60950-1: 2006 + A11 : 2009+A1 : 2010+ A12: 2011  
 Safety of Information Technology Equipment

EN50385 : 2002 / Article 3(1)(a)  
 Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110MHz - 40 GHz) - General public

EN 300 328 V1.7.1: 2006  
 Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

EN 301 908-1 V5.2.1: 2011  
 Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE Directive

EN 301 511 V9.0.2: 2003  
 Global System for Mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands covering essential requirements under article 3.2 of the R&TTE directive (1999/5/EC)


EN 301 489-1 V1.9.2: 2008  
 Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements









EN 301 489-7 V1.3.1: 2005  
 ElectroMagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment ad services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)

EN 301 489-17 V2.2.1: 2012  
 Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

EN 301 489-24 V1.5.1: 2010  
 Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) for Mobile and portable (UE) radio and ancillary equipment



 Český [Czech]	<p><i>[Jméno výrobce]</i> tímto prohlašuje, že tento <i>[typ zařízení]</i> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.</p>
 Dansk [Danish]	<p>Undertegnede <i>[fabrikantens navn]</i> erklærer herved, at følgende udstyr <i>[udstyrets typebetegnelse]</i> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.</p>
 Deutsch [German]	<p>Hiermit erkläre <i>[Name des Herstellers]</i>, dass sich das Gerät <i>[Gerätetyp]</i> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.</p>
 Eesti [Estonian]	<p>Käesolevaga kinnitab <i>[tootja nimi = name of manufacturer]</i> seadme <i>[seadme tüüp = type of equipment]</i> vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.</p>
 English	<p>Hereby, <i>[name of manufacturer]</i>, declares that this <i>[type of equipment]</i> is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.</p>
 Español [Spanish]	<p>Por medio de la presente <i>[nombre del fabricante]</i> declara que el <i>[clase de equipo]</i> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.</p>
 Ελληνική [Greek]	<p>ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ <i>[name of manufacturer]</i> ΔΗΛΩΝΕΙ ΟΤΙ <i>[type of equipment]</i> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.</p>
 Français [French]	<p>Par la présente <i>[nom du fabricant]</i> déclare que l'appareil <i>[type d'appareil]</i> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.</p>
 Italiano [Italian]	<p>Con la presente <i>[nome del costruttore]</i> dichiara che questo <i>[tipo di apparecchio]</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.</p>
 Latviski [Latvian]	<p>Ar šo <i>[name of manufacturer / izgatavotāja nosaukums]</i> deklarē, ka <i>[type of equipment / iekārtas tips]</i> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.</p>
 Lietuvių [Lithuanian]	<p>Šiuo <i>[manufacturer name]</i> deklaruojama, kad šis <i>[equipment type]</i> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.</p>
 Nederlands [Dutch]	<p>Hierbij verklaart <i>[naam van de fabrikant]</i> dat het toestel <i>[type van toestel]</i> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.</p>

 Malti [Maltese]	<p>Hawnhekk, <i>[isem tal-manifattur]</i>, jiddikjara li dan <i>[il-mudel tal-prodott]</i> jikkonforma mal- nġigijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.</p>
 Magyar [Hungarian]	<p>Alulírott, <i>[gyártó neve]</i> nyilatkozom, hogy a <i>[... típus]</i> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.</p>
 Polski [Polish]	<p>Niniejszym <i>[nazwa producenta]</i> oświadczam, że <i>[nazwa wyrobu]</i> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.</p>
 Português [Portuguese]	<p><i>[Nome do fabricante]</i> declara que este <i>[tipo de equipamento]</i> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.</p>
 Slovensko [Slovenian]	<p><i>[Ime proizvajalca]</i> izjavlja, da je ta <i>[tip opreme]</i> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.</p>
 Slovensky [Slovak]	<p><i>[Meno výrobcu]</i> týmto vyhlasuje, že <i>[typ zariadenia]</i> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.</p>
 Suomi [Finnish]	<p><i>[Valmistaja = manufacturer]</i> vakuuttaa täten että <i>[type of equipment = laitteen tyyppimerkintä]</i> tyypinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.</p>
 Svenska [Swedish]	<p>Härmed intygar <i>[företag]</i> att denna <i>[utrustningstyp]</i> står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.</p>