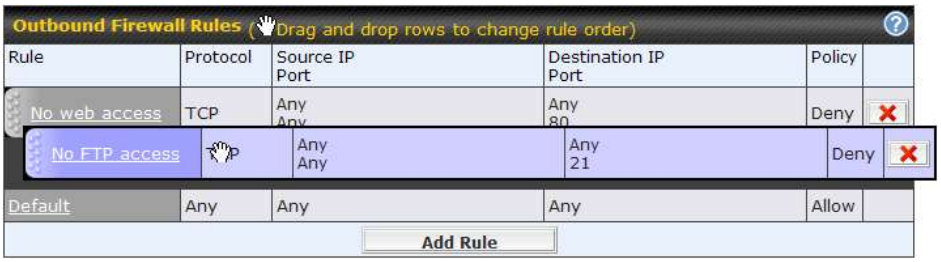
Action	This setting specifies the action to be taken by the router upon encountering traffic that matches the both of the following: • Source IP & port • Destination IP & port With the value of **Allow** for the **Action** setting, the matching traffic passes through the router (to be routed to the destination). If the value of the **Action** setting is set to **Deny**, the matching traffic does not pass through the router (and is discarded).
Event Logging	This setting specifies whether or not to log matched firewall events. The logged messages are shown on the page **Status>Event Log**. A sample message is as follows: 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 • **CONN:** The connection where the log entry refers to • **SRC:** Source IP address • **DST:** Destination IP address • **LEN:** Packet length • **PROTO:** Protocol • **SPT:** Source port • **DPT:** Destination port

Click **Save** to store your changes. To create an additional firewall rule, click **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.



To remove a rule, click the button.

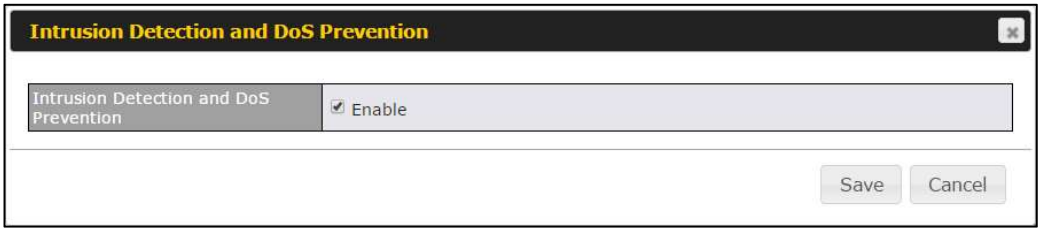
Rules are matched from top to the bottom. If a connection matches any one of the upper rules, the matching process will stop. If none of the rules match the connection, the **Default** rule will be applied.

The **Default** rule is **Allow** for both outbound and inbound access.

Tip

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



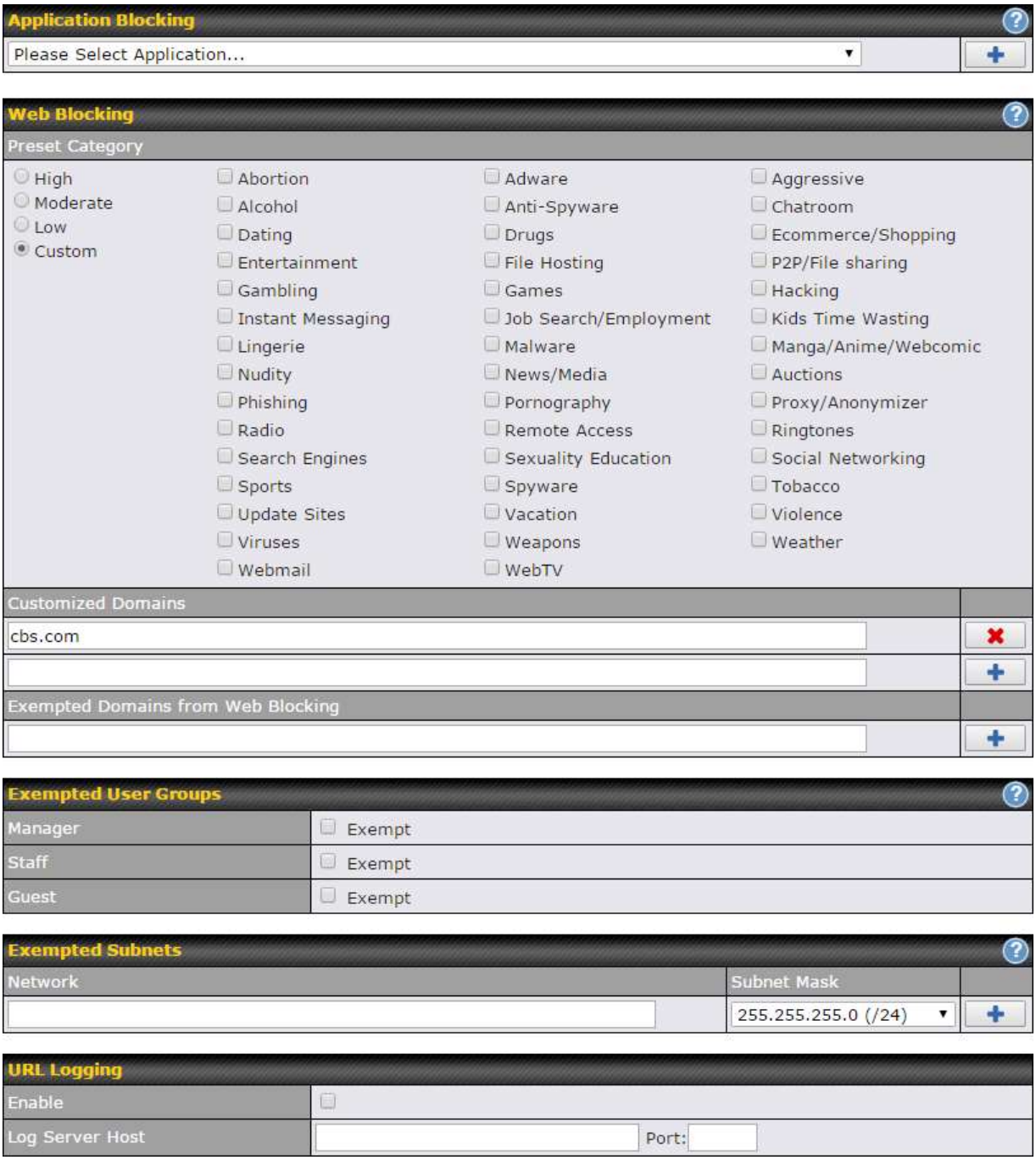
The Balance can detect and prevent intrusions and denial-of-service (DoS) attacks from the Internet. To turn on this feature, click , check the **Enable** check box for the **Intrusion Detection and DoS Prevention**, and press the **Save** button.

When this feature is enabled, the Balance 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

10.12.2 Content Blocking



Application Blocking

Choose applications to be blocked from LAN/PPTP/PepVPN peer clients' access, except for those on the Exempted User Groups or Exempted Subnets defined below.

Web Blocking

Defines web site domain names to be blocked from LAN/PPTP/PepVPN peer clients' access except for those on the Exempted User Groups or Exempted Subnets defined below.

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 traffic. Secure web (HTTPS) traffic is not supported.

Customized Domains

Enter an appropriate website address, and the Peplink Balance will block and disallow LAN/PPTP/SpeedFusion™ peer clients to access these websites. Exceptions can be added using the instructions in **Sections 21.2.1.4** and **21.2.1.5.**

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. For example, 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 Peplink Balance will inspect and look for blocked domain names on all HTTP traffic. Secure web (HTTPS) traffic is not supported.

Exempted User Groups

Check and select pre-defined user group(s) who can be exempted from the access blocking rules. User groups can be defined at **QoS>User Groups** section. Please refer to **Section 20.1** for details.

Exempted Subnets

With the subnet defined in the field, clients on the particular subnet(s) can be exempted from the

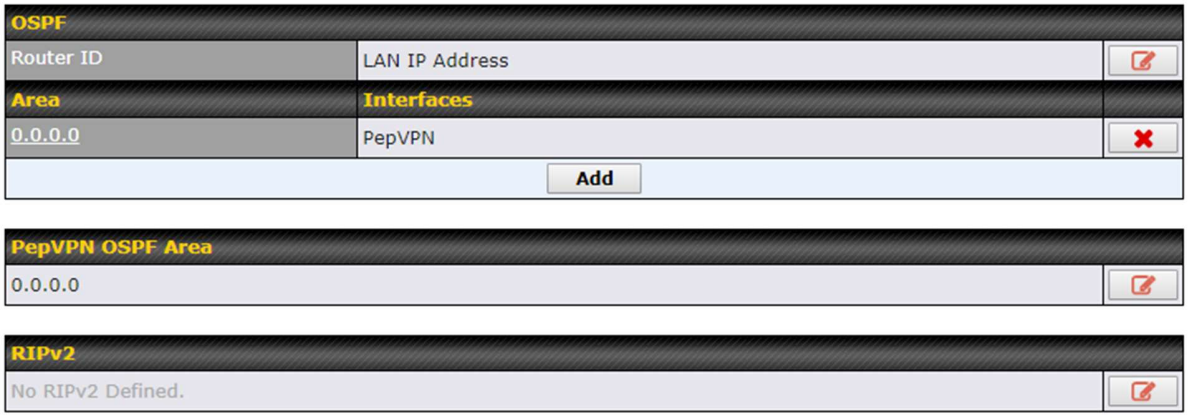
access blocking rules.

URL Logging

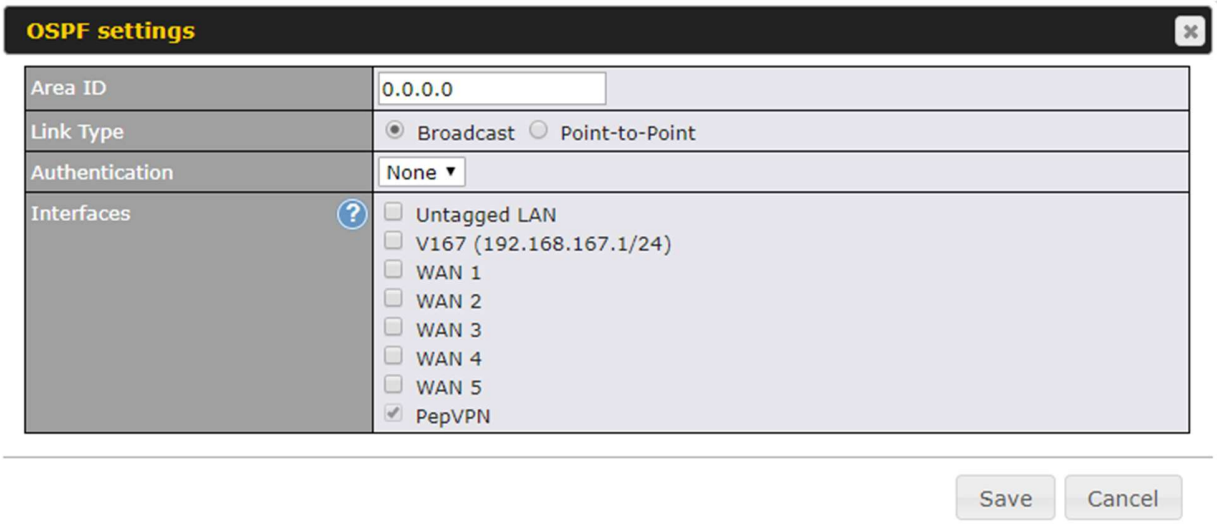
Click **enable**, and the enter the ip address and port (if applicable) where your remote syslog server is located.

10.13 OSPF & RIPv2

The Peplink Balance supports OSPF and RIPv2 dynamic routing protocols. Click the **Network** tab from the top bar, and then click the **OSPF & RIPv2** item on the sidebar to reach the following menu:

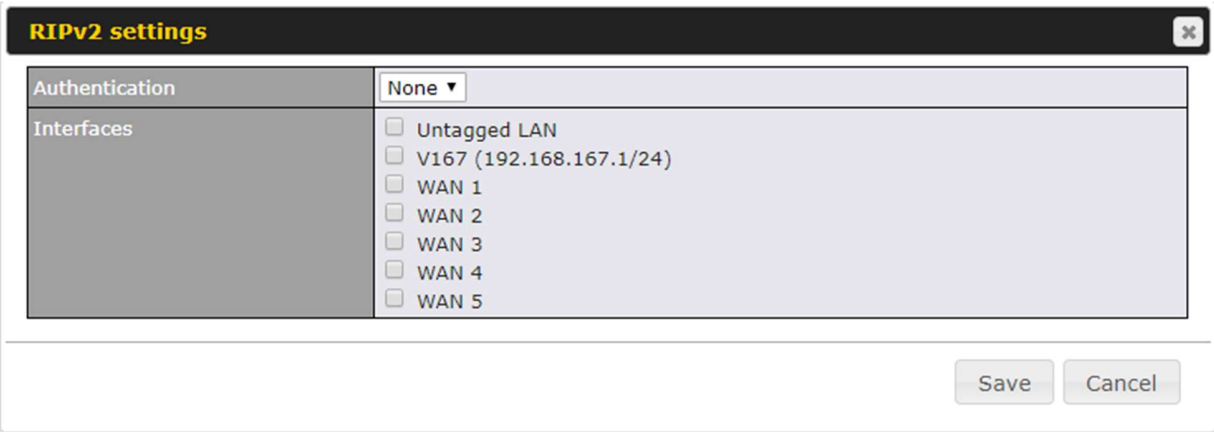


OSPF	
Router ID	This field determines the ID of the router. By default, this is specified as the LAN IP address. If you want to specify your own ID, enter it in the **Custom** field.
Area	This is an overview of the OSPFv2 areas you have defined. Click on the area name to configure it. To set a new area,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

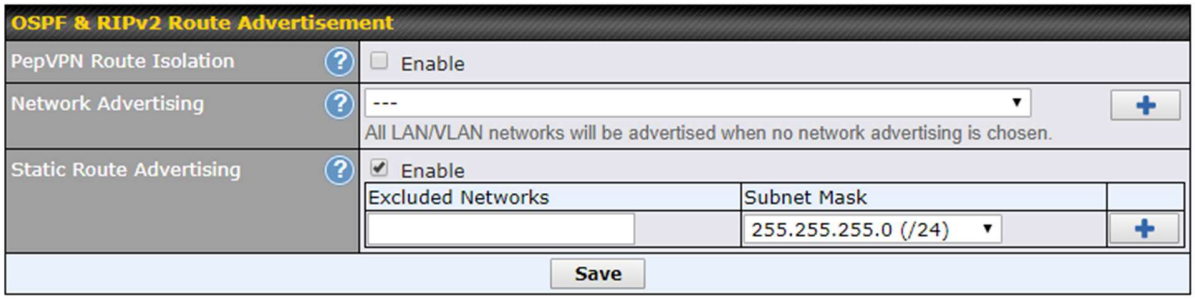


OSPF Settings	
Area ID	Determine the name of your **Area ID** to apply to this group. Machines linked to this group will send and receive related OSPF packets, while unlinked machines will ignore it.
Link Type	Choose the network type that this area will use.
Authentication	Choose an authentication method, if one is used, from this drop-down menu. Available options are **MD5** and **Text**. Enter the authentication key next to the drop-down menu.
Interfaces	Determine which interfaces this area will use to listen to and deliver OSPF packets

To access RIPv2 settings, click  .



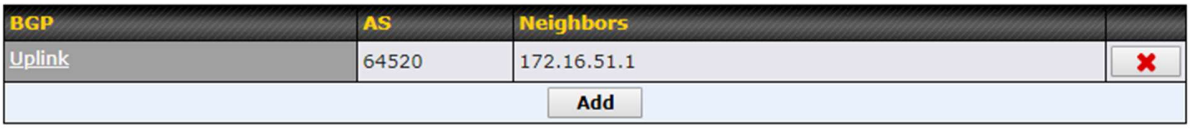
RIPv2 Settings	
Authentication	Choose an authentication method, if one is used, from this drop-down menu. Available options are **MD5** and **Text**. Enter the authentication key next to the drop-down menu.
Interfaces	Determine which interfaces this group will use to listen to and deliver RIPv2 packets.



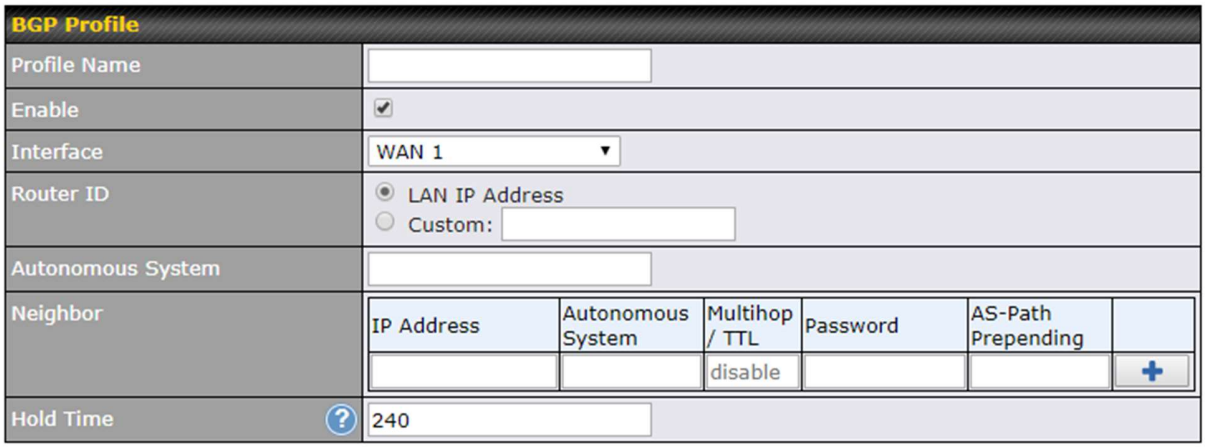
OSPF & RIPv2 Route Advertisement	
PepVPN Route Isolation	Isolate PepVPN peers from each other. Received PepVPN routes will not be forwarded to other PepVPN peers to reduce bandwidth consumption..
Network Advertising	Networks to be advertised over OSPF & RIPv2. If no network is selected, all LAN / VLAN networks will be advertised by default.
Static Route Advertising	Enable this option to advertise LAN static routes over OSPF & RIPv2. Static routes that match the Excluded Networks table will not be advertised.

10.14 BGP

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

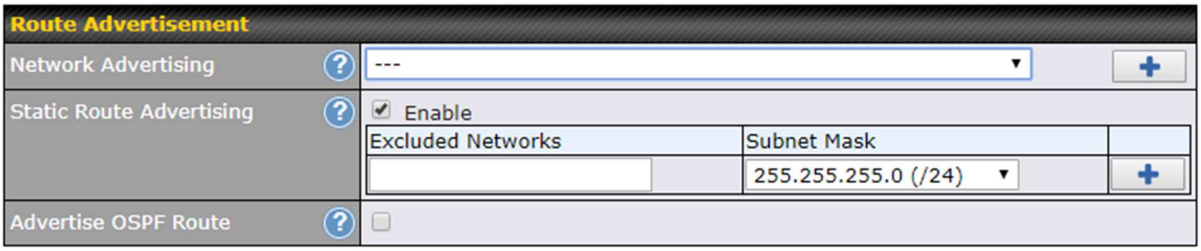


Click "x" to delete a BGP profile
Click "Add" to add a new BGP profile

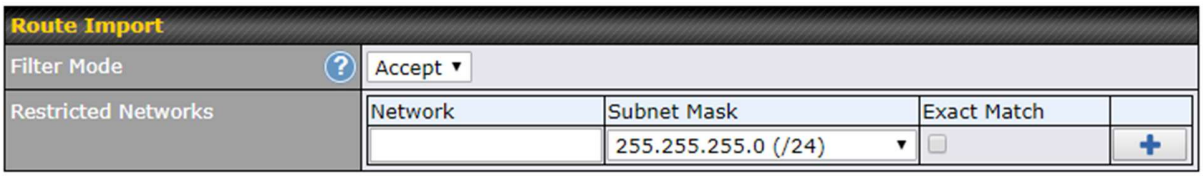


BGP	
Name	This field is for specifying a name to represent this profile.
Enable	When this box is checked, this BGP profile will be enabled. Otherwise, it will be disabled.
Interface	The interface where BGP neighbor is located
Autonomous System	The Autonomous System Number (ASN) of this profile
Neighbor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

System	
Multihop/TTL	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.
Password	Optional password for MD5 authentication of BGP sessions.
AS-Path Prepending:	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.
Hold Time	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.



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

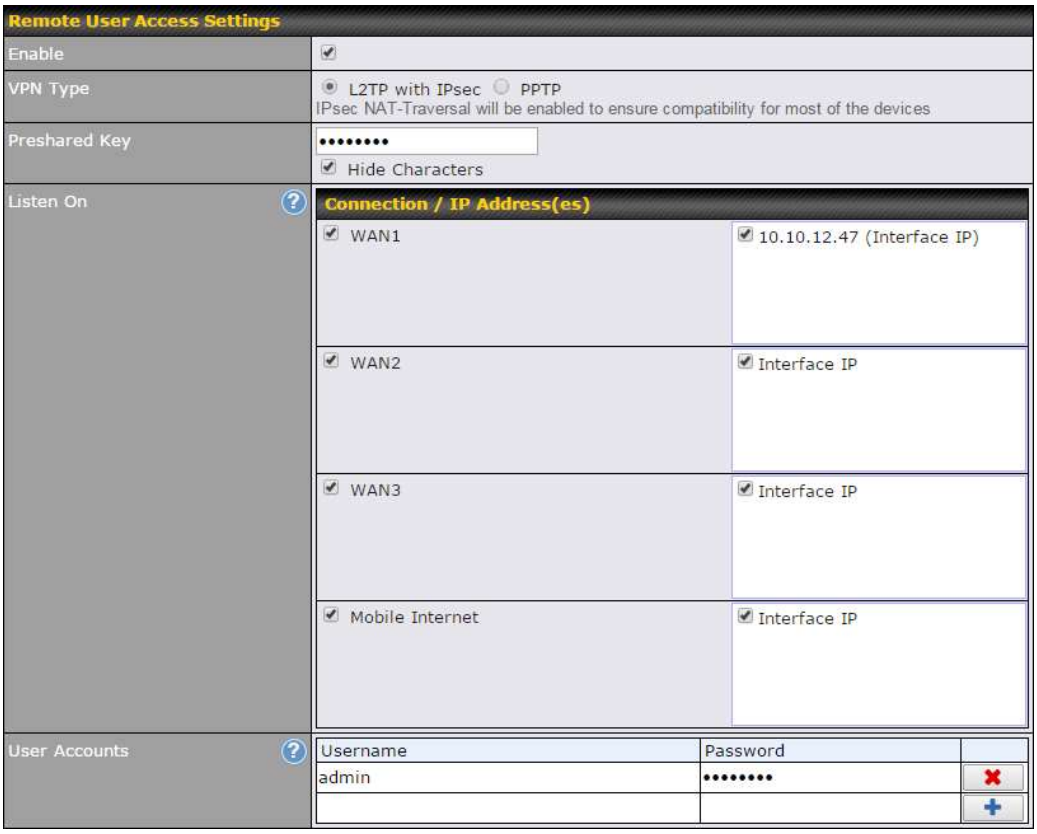


Filter Mode	This option selects the route import filter mode. **None**: all BGP routes will be accepted. **Accept**: Routes in "Restricted Networks" will be accepted, routes not in the list will be rejected. **Reject**: Routes in "Restricted Networks" will be rejected, routes not in the list will be accepted.
Restricted 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.

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

10.15 Remote User Access

Networks routed by a Peplink Balance can be remotely accessed via L2TP with IPsec or PPTP. To configure this feature, navigate to **Network > Remote User Access**



Remote User Access Settings	
Enable	Click the checkbox to enable Remote User Access.
VPN Type	Determine whether remote devices can connect to the Balance using L2TP with IPsec or PPTP. For greater security, we recommend you connect using L2TP with IPsec.
Preshared Key	Enter your preshared key in the text field. Please note that remote devices will need this preshared key to access the Balance.
Listen On	This setting is for specifying the WAN IP addresses where the PPTP server of the router should listen on.
User Accounts	This setting allows you to define the PPTP 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. Click the button X to delete the account in its corresponding row.

Click the button to switch to enters user accounts by pasting the information in.CSV format.

10.16 Misc. Settings

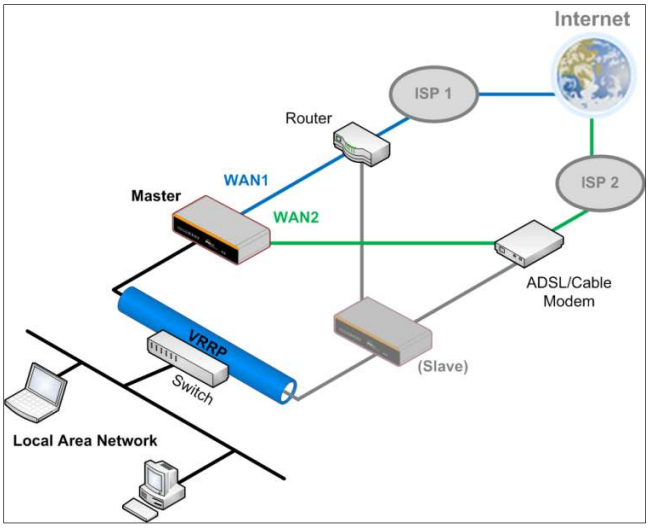
10.16.1 High Availability

The Peplink Balance supports high availability (HA) configurations via an open standard virtual router redundancy protocol (VRRP, RFC 3768).

In an HA configuration, two same-model Peplink Balance units provide redundancy and failover in a master-slave arrangement. In the event that the master unit is down, the slave unit becomes active.

High availability will be disabled automatically where there is a drop-in connection configured on a LAN bypass port.

The following diagram illustrates an HA configuration with two Peplink Balance units and two Internet connections:



In the diagram, the WAN ports of each Peplink Balance unit connect to the router and to the modem. Both Peplink Balance units connect to the same LAN switch via a LAN port.

An elaboration on the technical details of the implementation of virtual router redundancy protocol (VRRP, RFC 3768) by the Balance follows:

- In an HA configuration, the two Peplink Balance units communicate with each other using VRRP over the LAN.
- The two Peplink Balance units broadcast heartbeat signals to the LAN at a frequency of one heartbeat signal per second.

- In the event that no heartbeat signal from the master Peplink Balance unit is received in 3 seconds (or longer) since the last heartbeat signal, the slave Peplink Balance unit becomes active.
- The slave Peplink Balance unit initiates the WAN connections and binds to a previously configured LAN IP address.
- At a subsequent point when the master Peplink Balance unit recovers, it will once again become active.

You can configure high availability at **Network>Misc. Settings>High Availability**.

Interface for Master Router

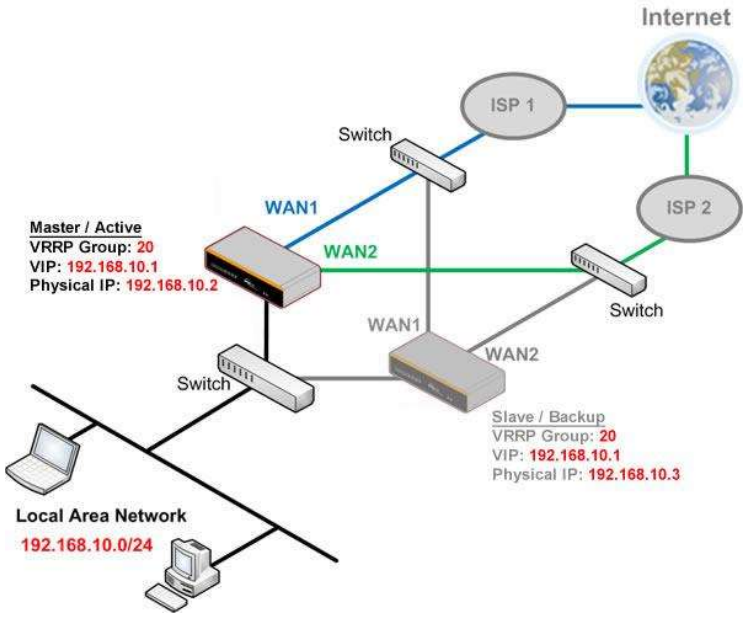
Interface for Slave Router

High Availability	
Enable	Checking this box specifies that the Peplink Balance unit is part of a high availability configuration.
Group Number	This number identifies a pair of Peplink Balance units operating in a high availability configuration. The two Peplink Balance units in the pair must have the same **Group Number** value.
Preferred Role	This setting specifies whether the Peplink Balance unit operates in master or slave mode. Click the corresponding radio button to set the role of the unit. One of the units in the pair must be configured as the master, and the other unit must be configured as the slave.
Resume Master Role Upon Recovery	This option is displayed when **Master** mode is selected in **Preferred Role**. If this option is enabled, once the device has recovered from an outage, it will take over and resume its **Master** role from the slave unit.
Configuration Sync.	This option is displayed when **Slave** mode is selected in **Preferred Role**. If this option is enabled and the **Master Serial Number** entered matches with the actual master unit's, the master unit will automatically transfer the configuration to this unit. Please make sure the **LAN IP Address** and the **Subnet Mask** fields are set correctly in the LAN settings page. You can refer to the **Event Log** for the configuration synchronization status.
Master Serial Number	If **Configuration Sync.** is checked, the serial number of the master unit is required here for the feature to work properly.

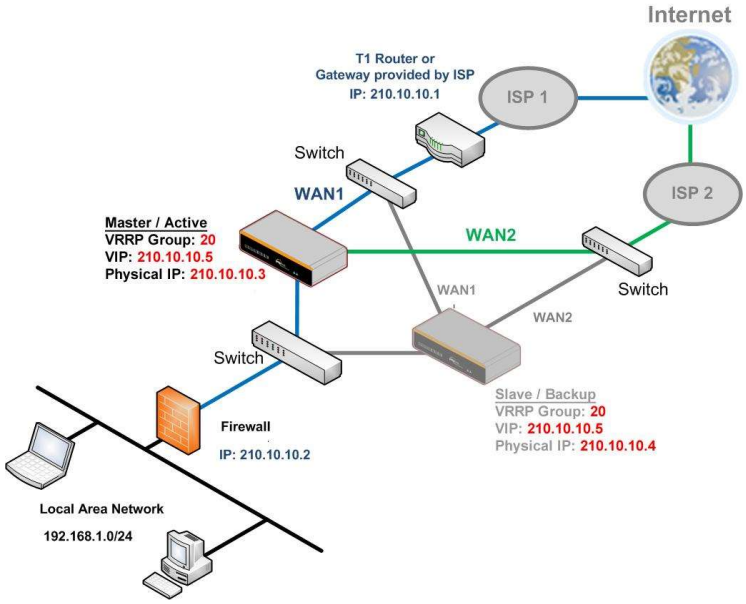
Virtual IP	The HA pair must share the same **Virtual IP**. The **Virtual IP** and the **LAN Administration IP** must be under the same network.
LAN Administration IP	This setting specifies a LAN IP address to be used for accessing administration functionality. This address should be unique within the LAN.
Subnet Mask	This setting specifies the subnet mask of the LAN.

Important Note

For Balance routers in NAT mode, the virtual IP (VIP) should be set as the default gateway for all hosts sitting on the LAN segment. For example, a firewall sitting behind the Balance should set its default gateway as the virtual IP instead of the IP of the master Balance.



In drop-in mode, no other configuration needs to be set.



Please note that the drop-in WAN cannot be configured as a LAN bypass port while it is configured for high availability.

10.16.2 Certificate Manager

Certificate Manager		
VPN Certificate	No Certificate	Assign
Web Admin SSL Certificate	No Certificate	Assign
Captive Portal SSL Certificate	No Certificate	Assign

This section allows you to assign certificates for local VPN and web admin SSL. The local keys will not be transferred to another device by any means.

10.16.3 Service Forwarding

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

SMTP Forwarding Setup	
SMTP Forwarding	Enable

Web Proxy Forwarding Setup	
Web Proxy Forwarding	Enable

DNS Forwarding Setup	
Forward Outgoing DNS Requests to Local DNS Proxy	Enable

Custom Service Forwarding Setup	
Custom Service Forwarding	Enable

Service Forwarding	
SMTP Forwarding	When this option is enabled, all outgoing SMTP connections destined for any host at TCP port 25 will be intercepted. These connections will be redirected to a specified SMTP server and port number. SMTP server settings for each WAN can be specified after selecting **Enable**.
Web Proxy Forwarding	When this option is enabled, all outgoing connections destined for the proxy server specified in **Web Proxy Interception Settings** will be intercepted. These connections will be redirected to a specified web proxy server and port number. Web proxy interception settings and proxy server settings for each WAN can be specified after selecting **Enable**.
DNS Forwarding	When this option is enabled, all outgoing DNS lookups will be intercepted and redirected to the built-in DNS name server. If any LAN device is using the DNS name servers of a WAN connection, you may want to enable this option to enhance the DNS availability without modifying the DNS server setting of the clients. The built-in DNS name server will distribute DNS lookups to corresponding DNS servers of all available WAN connections. In this case, DNS service will not be interrupted, even if any WAN connection is down.
Custom Service Forwarding	When custom service forwarding is enabled, outgoing traffic with the specified TCP port will be forwarded to a local or remote server by defining its IP address and port number.

SMTP Forwarding

Some ISPs require their users to send e-mails via the ISP's SMTP server. All outgoing SMTP connections are blocked except those connecting to the ISP's. The Peplink Balance supports the interception and redirection of all outgoing SMTP connections (destined for TCP port 25) via a WAN connection to the WAN's corresponding SMTP server.

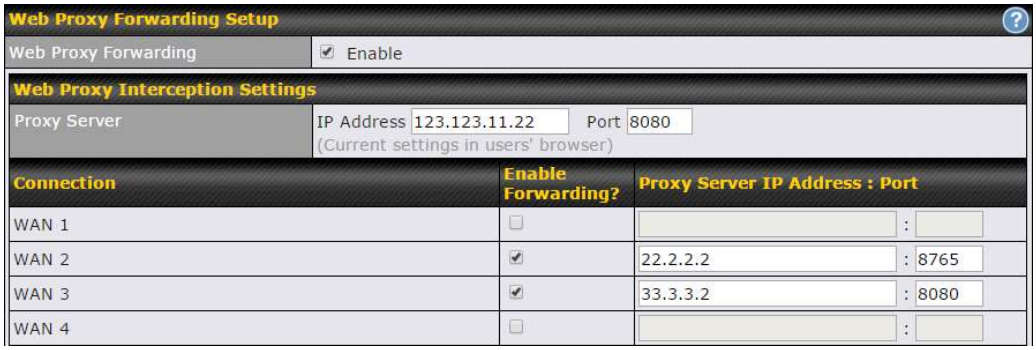
To enable the feature, select **Enable** under **SMTP Forwarding Setup**. Check **Enable Forwarding** for the WAN connection(s) that needs forwarding. Under **SMTP Server**, enter the ISP's e-mail server host name or IP address. Under **SMTP Port**, enter the TCP port number for each WAN.

The Peplink Balance 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.

Note

If you want to route all SMTP connections only to particular WAN connection(s), you should create a custom rule in outbound policy (see **Section 16.1**).

Web Proxy Forwarding



When this feature is enabled, the Peplink Balance will intercept all outgoing connections destined for the proxy server specified in **Web Proxy Server Interception Settings**. Then it will choose a WAN connection according to the outbound policy and forward the connection 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, then web proxy connections for that WAN will simply be forwarded to the connection's original destination.

DNS Forwarding

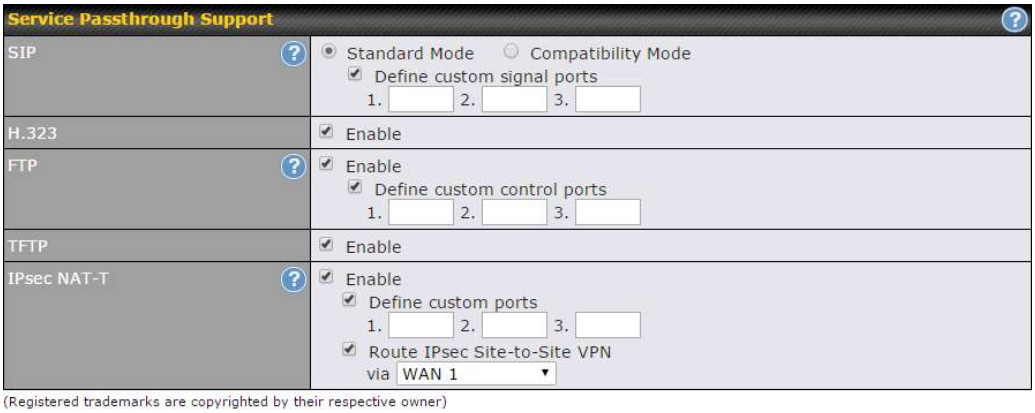
When DNS forwarding is enabled, all clients' outgoing DNS requests will also be intercepted and forwarded to the built-in DNS proxy server.

Custom Service Forwarding

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.

10.16.4 Service Passthrough

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



Some Internet services need to be specially handled in a multi-WAN environment. The Peplink Balance can handle these services such that Internet applications do not notice it is behind a multi-WAN router. Settings for service passthrough support are available here.

Service Passthrough Support

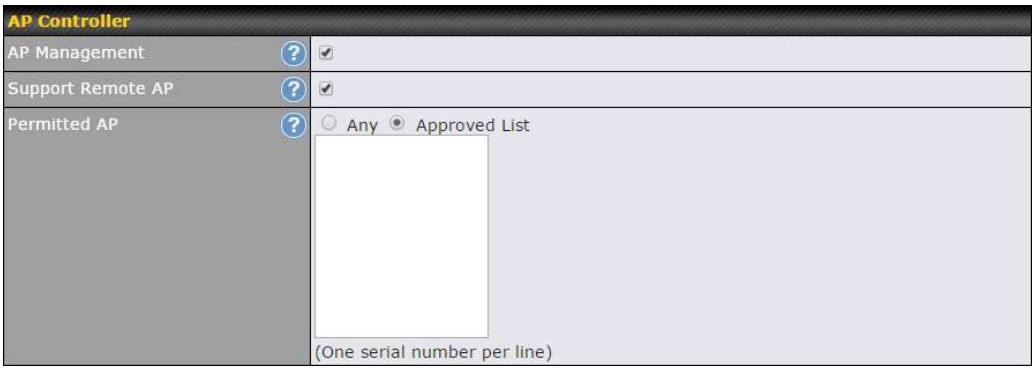
SIP	Session initiation protocol, aka SIP, is a voice-over-IP protocol. The Peplink Balance can act as a SIP application layer gateway (ALG) which binds connections for the same SIP session to the same WAN connection and translate IP address in the SIP packets correctly in NAT mode. Such passthrough support is always enabled and there are two modes for selection: **Standard Mode** and **Compatibility Mode**. If your SIP server's signal port number is non-standard, you can check the box **Define custom signal ports** and input the port numbers to the text boxes.
H.323	With this option enabled, protocols that provide audio-visual communication sessions will be defined on any packet network and passthrough the Balance.
FTP	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 Peplink Balance 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 **Define custom control ports** and enter the port numbers in the text boxes.
TFTP	The Peplink Balance monitors outgoing TFTP connections and routes any incoming TFTP data packets back to the client. Select **Enable** if you want to enable TFTP passthrough support.
IPsec NAT-T	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 **Define custom ports**. If the VPN contains IPsec site-to-site VPN traffic, check **Route IPsec Site-to-Site VPN** and choose the WAN connection to route the traffic to.

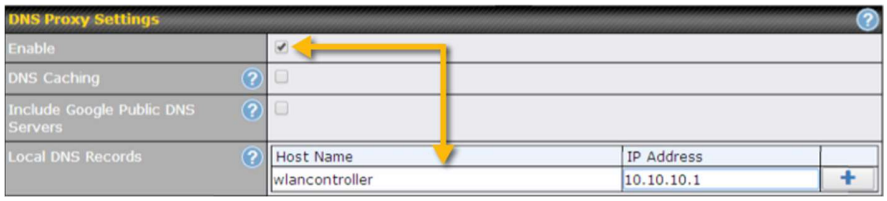
11 AP Tab

11.1 AP

11.1.1 AP Controller

Clicking on the **AP** tab will default to this menu, where you can view basic AP management options:

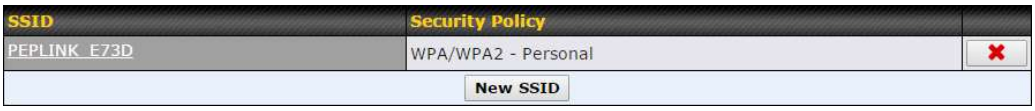


AP Controller	
AP Management	The AP controller for managing Pepwave APs can be enabled by checking this box. When this option is enabled, the AP controller will wait for management connections originating from APs over the LAN on TCP and UDP port 11753. It will also wait for captive portal connections on TCP port 443. An extended DHCP option, **CAPWAP Access Controller addresses** (field 138), will be added to the DHCP server. A local DNS record, **AP Controller**, will be added to the local DNS proxy.
Support Remote AP	The AP controller supports remote management of Pepwave APs. When this option is enabled, the AP controller will wait for management connections originating from remote APs over the WAN on TCP and UDP port 11753. It will also wait for captive portal connections on TCP port 443. The DHCP server and/or local DNS server of the remote AP's network should be configured in the **DNS Proxy Settings menu** under **Network>LAN**. The procedure is as follows: 1. Define an extended DHCP option, **CAPWAP Access Controller addresses** (field 138), in the DHCP server, where the values are the AP controller's public IP addresses; and/or 2. Create a local DNS record for the AP controller with a value corresponding to the AP controller's public IP address. 
Permitted AP	Access points to manage can be specified here. If **Any** is selected, the AP controller will manage any AP that reports to it. If **Approved List** is selected, only APs with serial numbers listed in the provided text box will be managed.

11.1.2 Wireless SSID

Wireless network settings, including the name of the network (SSID) and security policy, can be

defined and managed in this section. After defining a wireless network, users can choose the network in **AP Profiles**.



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

SSID Settings	
SSID	This setting specifies the SSID of the virtual AP to be scanned by Wi-Fi clients.
Enable	Choose an operating schedule for this SSID. Define schedules under **System > Schedule**
VLAN ID	This setting specifies the VLAN ID to be tagged on all outgoing packets generated from this wireless network (i.e., packets that travel from the Wi-Fi segment through the Pepwave AP One unit to the Ethernet segment via the LAN port). The default value of this setting is **0**, which means VLAN tagging is disabled (instead of tagged with zero).
Broadcast SSID	This setting specifies whether or not Wi-Fi clients can scan the SSID of this wireless network. **Broadcast SSID** is enabled by default.
Data Rate [A]	Select **Auto** to allow the Peplink Balance to set the data rate automatically, or select **Fixed** and choose a rate from the displayed drop-down menu.
Multicast Filter[A]	This setting enables the filtering of multicast network traffic to the wireless SSID.
Multicast Rate[A]	This setting specifies the transmit rate to be used for sending multicast network traffic. The selected **Protocol** and **Channel Bonding** settings will affect the rate options and values available here.

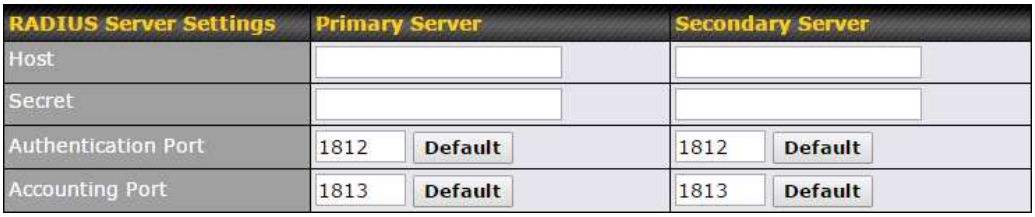
IGMP Snooping [A]	To allow the Peplink Balance to listen to internet group management protocol (IGMP) network traffic, select this option.
DHCP Option 82 [A]	If you use a distributed DHCP server/relay environment, you can enable this option to provide additional information on the manner in which clients are physically connected to the network.
Network Priority (QoS) [A]	Select from **Gold**, **Silver**, and **Bronze** to control the QoS priority of this wireless network's traffic.
Layer 2 Isolation [A]	**Layer 2** refers to the second layer in the ISO Open System Interconnect model. When this option is enabled, clients on the same VLAN, SSID, or subnet are isolated to that VLAN, SSID, or subnet, which can enhance security. Traffic is passed to upper communication layer(s). By default, the setting is disabled.
Maximum Number of Clients	Enter the maximum number of clients on the 2.4Ghz channel and on the 5Ghz channel.
Band Steering [A]	Band steering allows the Peplink Balance to steer AP clients from the 2.4 GHz band to the 5GHz band for better usage of bandwidth. To make steering mandatory, select **Enforce**. To cause the Peplink Balance to preferentially choose steering, select **Prefer**. The default for this setting is **Disable**.

[A] - Advanced feature. Click the button on the top right-hand corner to activate.

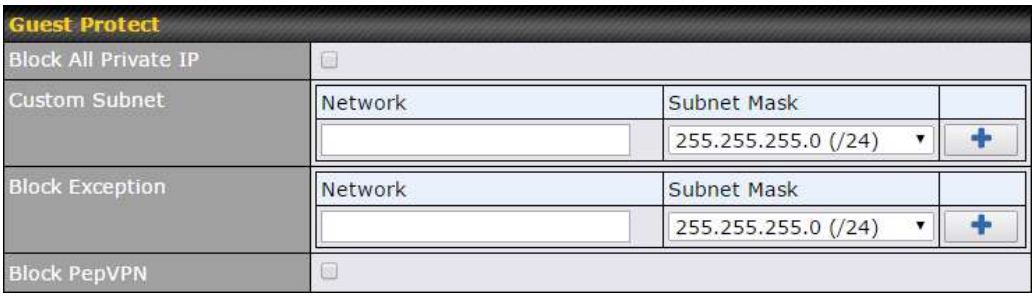
Security Settings	
Security Policy	This setting configures the wireless authentication and encryption methods. Available options are **Open (No Encryption)**, **WPA/WPA2 - Personal**, **WPA/WPA2 – Enterprise** and **Static WEP**.

Access Control	
Restricted	The settings allow administrator to control access using Mac address filtering. Available options are **None**, **Deny all except listed**, **Accept all except listed**, and **RADIUS MAC**

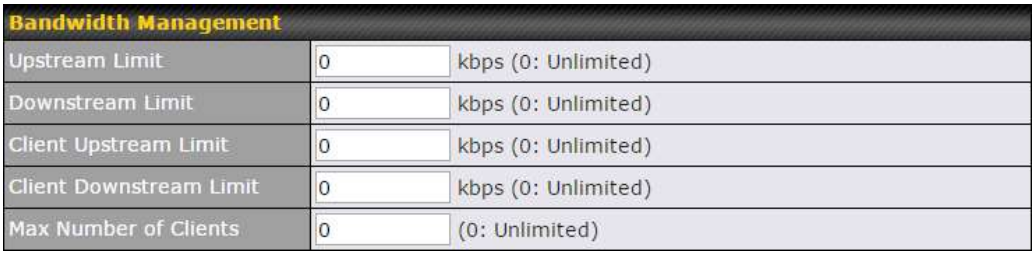
Mode	**Authentication**. When **WPA/WPA2 - Enterprise** is configured, RADIUS-based 802.1 x authentication is enabled. Under this configuration, the **Shared Key** option should be disabled. When using this method, select the appropriate version using the **V1**/**V2** controls. The security level of this method is known to be very high. When **WPA/WPA2- Personal** is configured, 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. The configuration of **Static WEP** parameters enables pre-shared WEP key encryption. Authentication is not supported by this method. The security level of this method is known to be weak.
MAC Address List	Connection coming from the MAC addresses in this list will be either denied or accepted based the option selected in the previous field.



RADIUS Server Settings	
Host	Enter the IP address of the primary RADIUS server and, if applicable, the secondary RADIUS server.
Secret	Enter the RADIUS shared secret for the primary server and, if applicable, the secondary RADIUS server.
Authentication Port	In field, enter the UDP authentication port(s) used by your RADIUS server(s) or click the **Default** button to enter **1812**.
Accounting Port	In field, enter the UDP accounting port(s) used by your RADIUS server(s) or click the **Default** button to enter **1813**.



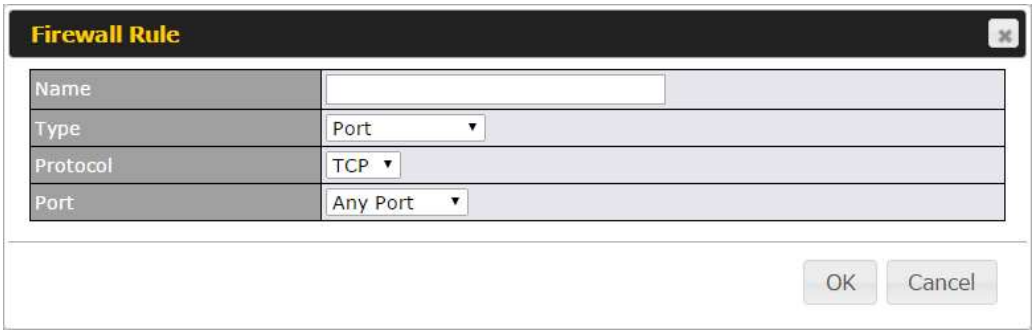
Guest Protect	
Block All Private IP	Check this box to deny all connection attempts by private IP addresses.
Custom Subnet	To create a custom subnet for guest access, enter the IP address and choose a subnet mask from the drop-down menu. To add the new subnet, click +. To delete a custom subnet, click ✖.
Block Exception	To block access from a particular subnet, enter the IP address and choose a subnet mask from the drop-down menu. To add the new subnet, click +. To delete a blocked subnet, click ✖.
Block PepVPN	To block PepVPN access, check this box.



Bandwidth Management	
Upstream Limit	Enter a value in kpbs to limit the wireless network's upstream bandwidth. Enter **0** to allow unlimited upstream bandwidth.
Downstream Limit	Enter a value in kpbs to limit the wireless network's downstream bandwidth. Enter **0** to allow unlimited downstream bandwidth.

Client Upstream Limit	Enter a value in kpbs to limit connected clients' upstream bandwidth. Enter **0** to allow unlimited upstream bandwidth.
Client Downstream Limit	Enter a value in kpbs to limit connected clients' downstream bandwidth. Enter **0** to allow unlimited downstream bandwidth.
Max Number of Clients	Enter the maximum number of clients that can simultaneously connect to the wireless network or enter **0** to allow an unlimited number of connections.

Firewall Settings	
Firewall Mode	Choose Flexible – **Allow all except…** or **Lockdown – Block all except…** to turn on the firewall. Once you save changes, the New Rule. Button will appear for you to create rules for the firewall exceptions. See the discussion below for details on creating a firewall rule. To delete a rule, click the associated ✖ button. To turn off the firewall, select **Disable**.



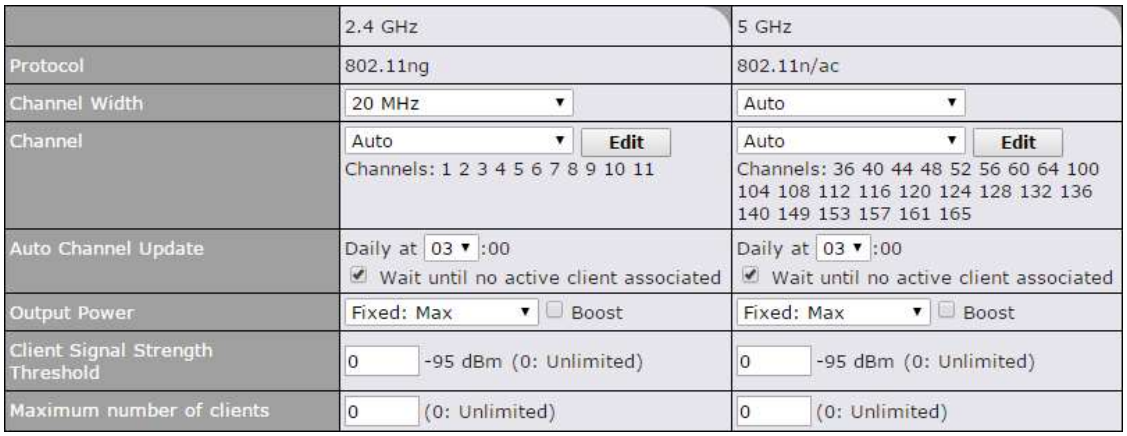
Firewall Rule	
Name	Enter a descriptive name for the firewall rule in this field.
Type	Choose **Port**, **Domain**, **IP Address**, or **MAC Address** to allow or deny traffic from any of those identifiers. Depending on the option chosen, the following fields will vary.
Protocol /	Choose **TCP** or **UDP** from the **Protocol** drop-down menu to allow or deny traffic using either of those protocols. From the **Port** drop-down menu, choose **Any Port** to allow or deny TCP or

Port	UDP traffic on any port. Choose **Single Port** and then enter a port number in the provided field to allow or block TCP or UDP traffic from that port only. You can also choose **Port Range** and enter a range of ports in the provided fields to allow or deny TCP or UDP traffic from the specified port range.
IP Address / Subnet Mask	If you have chosen **IP Address** as your firewall rule type, enter the IP address and subnet mask identifying the subnet to allow or deny.
MAC Address	If you have chosen **MAC Address** as your firewall rule type, enter the MAC address identifying the machine to allow or deny.

11.1.3 Settings

AP Settings	
SSID	You can select the wireless networks for 2.4 GHz or 5 GHz seperately for each SSID.
Operating Country	This drop-down menu specifies the national/regional regulations which the Wi-Fi radio should follow. • If a North American region is selected, RF channels 1 to 11 will be available and the maximum transmission power will be 26 dBm (400 mW). • If European region is selected, RF channels 1 to 13 will be available. The maximum transmission power will be 20 dBm (100 mW). NOTE: Users are required to choose an option suitable to local laws and regulations.
Preferred Frequency	Indicate the preferred frequency to use for clients to connect.

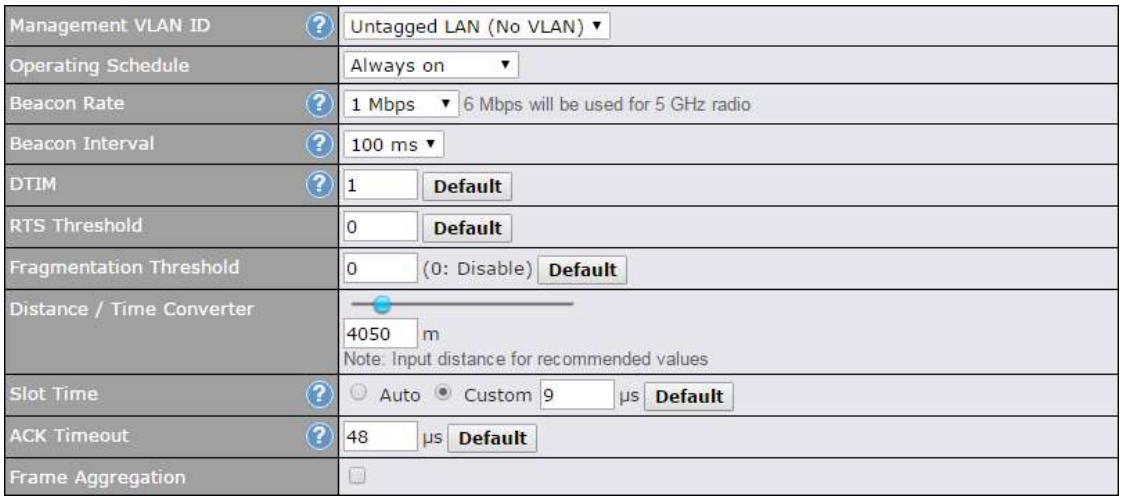
Important Note
Per FCC regulation, the country selection is not available on all models marketed in the US. All US models are fixed to US channels only.



	2.4 GHz	5 GHz
Protocol	802.11ng	802.11n/ac
Channel Width	20 MHz	Auto
Channel	Auto Edit Channels: 1 2 3 4 5 6 7 8 9 10 11	Auto Edit Channels: 36 40 44 48 52 56 60 64 100 104 108 112 116 120 124 128 132 136 140 149 153 157 161 165
Auto Channel Update	Daily at 03 :00 Wait until no active client associated	Daily at 03 :00 Wait until no active client associated
Output Power	Fixed: Max Boost	Fixed: Max Boost
Client Signal Strength Threshold	0 -95 dBm (0: Unlimited)	0 -95 dBm (0: Unlimited)
Maximum number of clients	0 (0: Unlimited)	0 (0: Unlimited)

AP Settings (part 2)	
Protocol	This option allows you to specify whether 802.11b and/or 802.11g client association requests will be accepted. Available options are **802.11ng** and **802.11na**. By default, **802.11ng** is selected.
Channel Width	Available options are **20 MHz**, **40 MHz**, and **Auto (20/40 MHz)** . Default is **Auto (20/40 MHz),** which allows both widths to be used simultaneously.
Channel	This option allows you to select which 802.11 RF channel will be utilized. **Channel 1 (2.412 GHz)** is selected by default.
Auto Channel Update	Indicate the time of day at which update automatic channel selection.
Output Power	This option is for specifying the transmission output power for the Wi-Fi AP. There are 4 relative power levels available – **Max**, **High**, **Mid**, and **Low**. The actual output power will be bound by the regulatory limits of the selected country.
Client Signal Strength Threshold	This setting determines the maximum strength at which the Wi-Fi AP can broadcast
Maximum number of clients	This setting determines the maximum number of clients that can connect to this Wi-Fi frequency.

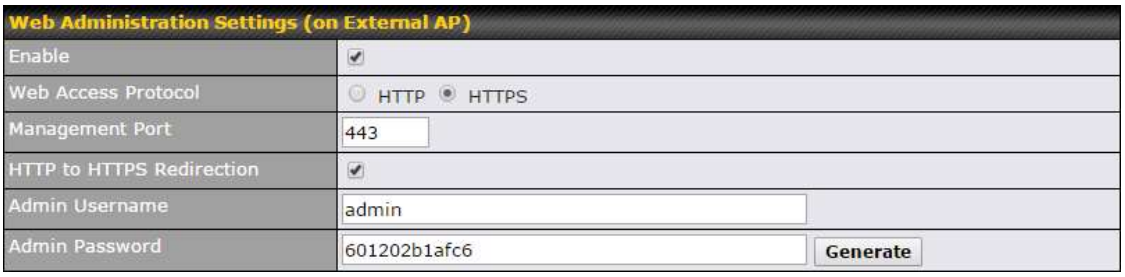
Advanced Wi-Fi AP settings can be displayed by clicking the on the top right-hand corner of the **Wi-Fi AP Settings** section, which can be found at **AP>Settings**. Other models will display a separate section called **Wi-Fi AP Advanced Settings**, which can be found at **Advanced>Wi-Fi Settings**.



Advanced AP Settings	
Management VLAN ID	This field specifies the VLAN ID to tag to management traffic, such as communication traffic between the AP and the AP Controller. The value is zero by default, which means that no VLAN tagging will be applied. NOTE: Change this value with caution as alterations may result in loss of connection to the AP Controller.
Operating Schedule	Choose from the schedules that you have defined in System>Schedule. Select the schedule for the integrated AP to follow from the drop-down menu.
Beacon Rate [A]	This option is for setting the transmit bit rate for sending a beacon. By default, **1Mbps** is selected.
Beacon Interval [A]	This option is for setting the time interval between each beacon. By default, **100ms** is selected.
DTIM [A]	This field allows you to set the frequency for the beacon to include delivery traffic indication messages. The interval is measured in milliseconds. The default value is set to **1 ms**.
RTS Threshold [A]	The RTS (Request to Clear) threshold determines the level of connection required before the AP starts sending data. The recommended standard of the RTS threshold is around 500.
Fragmentation Threshold [A]	This setting determines the maximum size of a packet before it gets fragmented into multiple pieces.
Distance / Time Convertor	Select the range you wish to cover with your Wi-Fi, and the router will make recommendations for the Slot Time and ACK Timeout.

Slot Time [A]	This field is for specifying the unit wait time before transmitting a packet. By default, this field is set to **9 µs**.
ACK Timeout [A]	This field is for setting the wait time to receive an acknowledgement packet before performing a retransmission. By default, this field is set to **48 µs**.
Frame Aggregation [A]	This option allows you to enable frame aggregation to increase transmission throughput.

[A] - Advanced feature, please click the button on the top right-hand corner to activate.



Web Administration Settings	
Enable	Ticking this box enables web admin access for APs located on the WAN.
Web Access Protocol	Determines whether the web admin portal can be accessed thorugh HTTP or HTTPS
Management Port	Determines the port at which the management UI can be accessed.
Admin Username	Determines the username to be used for logging into the web admin portal
Admin Password	Determines the password for the web admin portal on external AP.

11.2 AP Controller Status

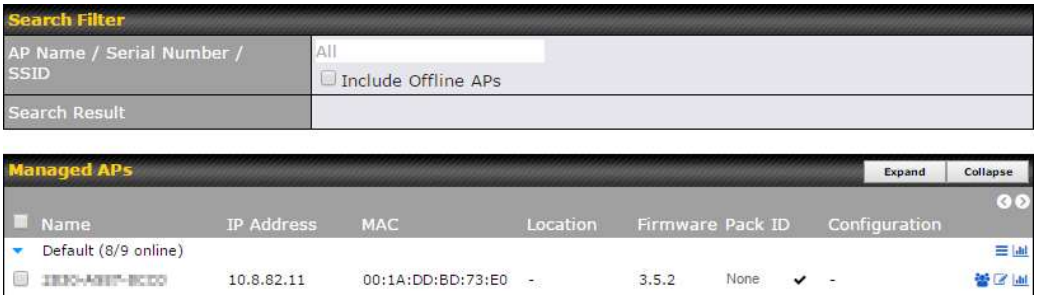
11.2.1 Info

A comprehensive overview of your AP can be accessed by navigating to **AP > Info**.

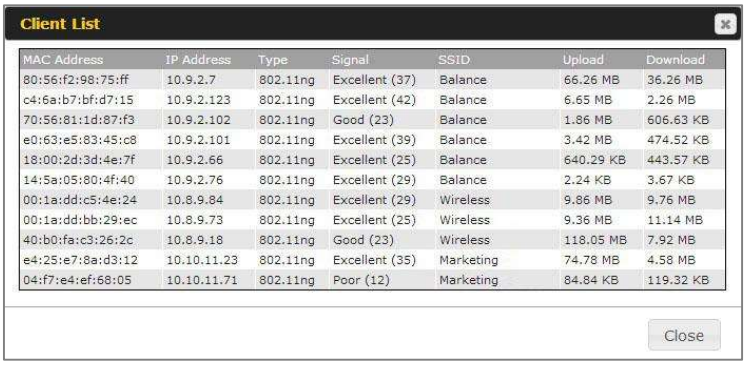
AP Controller	
License Limit	This field displays the maximum number of AP your Balance router can control. You can purchase licenses to increase the number of AP you can manage.
Frequency	Underneath, there are two check boxes labeled **2.4 Ghz** and **5 Ghz**. Clicking either box will toggle the display of information for that frequency. By default, the graphs display the number of clients and data usage for both 2.4GHz and 5 GHz frequencies.
SSID	The colored boxes indicate the SSID to display information for. Clicking any colored box will toggle the display of information for that SSID. By default, all the graphs show information for all SSIDs.
No. of APs	This pie chart and table indicates how many APs are online and how many are offline.
No.of Clients	This graph displays the number of clients connected to each network at any given time. Mouse over any line on the graph to see how many clients connected to a specific SSID for that point in time.
Data Usage	This graph enables you to see the data usage of any SSID for any given time period. Mouse over any line on the graph to see the data usage by each SSID for that point in time. Use the buttons next to **Zoom** to select the time scale you wish to view. In addition, you could use the sliders at the bottom to further refine your timescale.

11.2.2 Access Points (Usage)

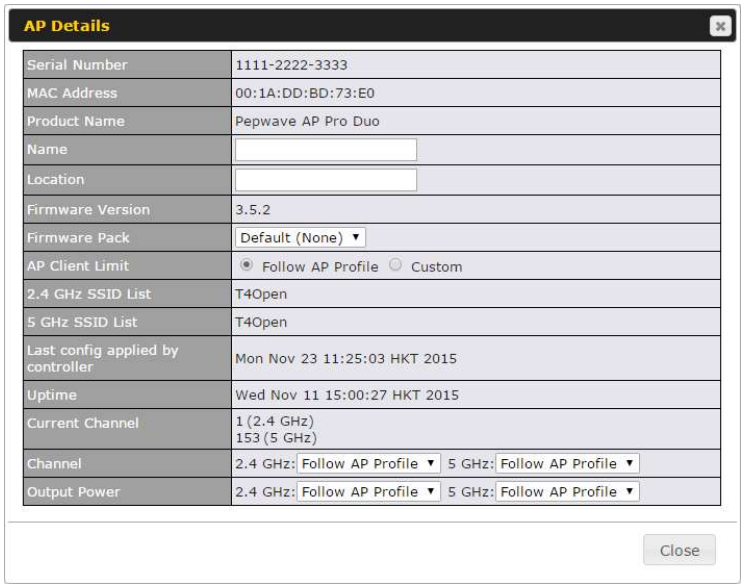
A detailed breakdown of data usage for each AP is available at **AP> Access Point**.



Usage	
AP Name/Serial Number	This field enables you to quickly find your device if you know its name or serial number. Fill in the field to begin searching. Partial names and serial numbers are supported.
Online Status	This button toggles whether your search will include offline devices.
Managed Wireless Devices	This table shows the detailed information on each AP, including channel, number of clients, upload traffic, and download traffic. Click the blue arrows at the left of the table to expand and collapse information on each device group. You could also expand and collapse all groups by using the Expand Collapse buttons. On the right of the table, you will see the following icons: . Click the icon to see a usage table for each client:

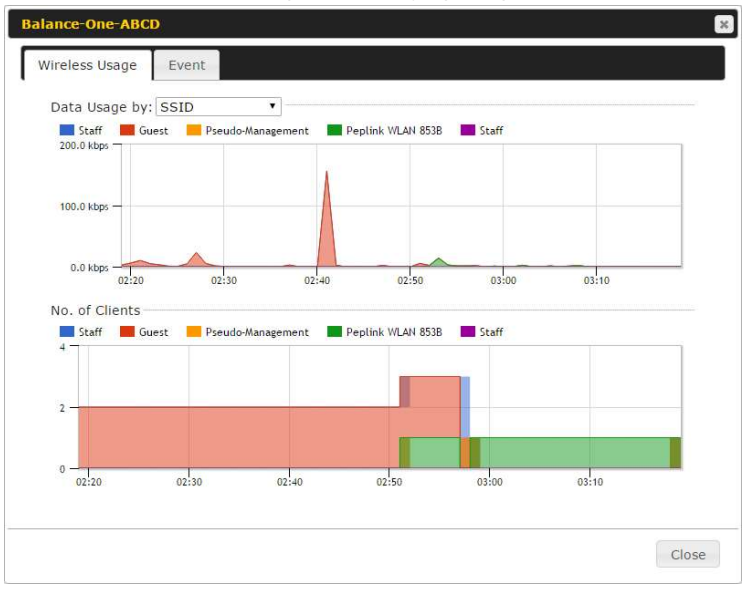


Click the icon to configure each client



For easier network management, you can give each client a name and designate its location. You can also designate which firmware pack (if any) this client will follow, as well as the channels on which the client will broadcast.

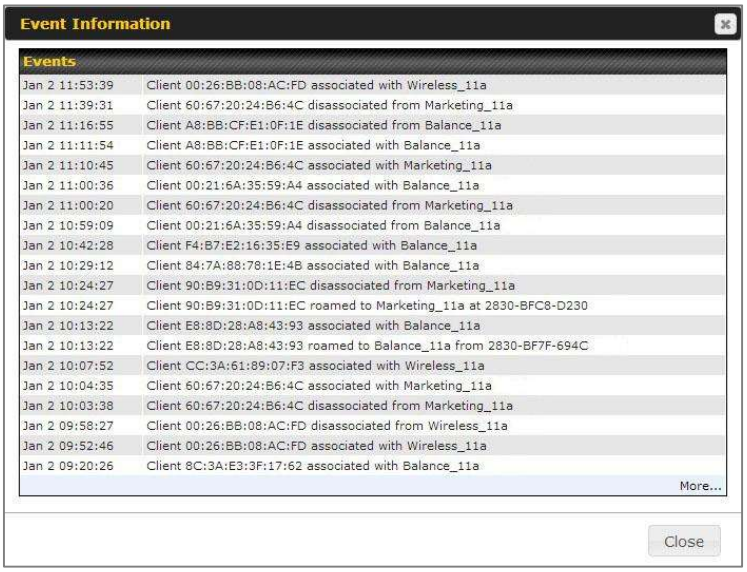
Click the icon to see a graph displaying usage:



Click any point in the graphs to display detailed usage and client information for that device, using that SSID, at that point in time. On the **Data Usage by** menu, you can

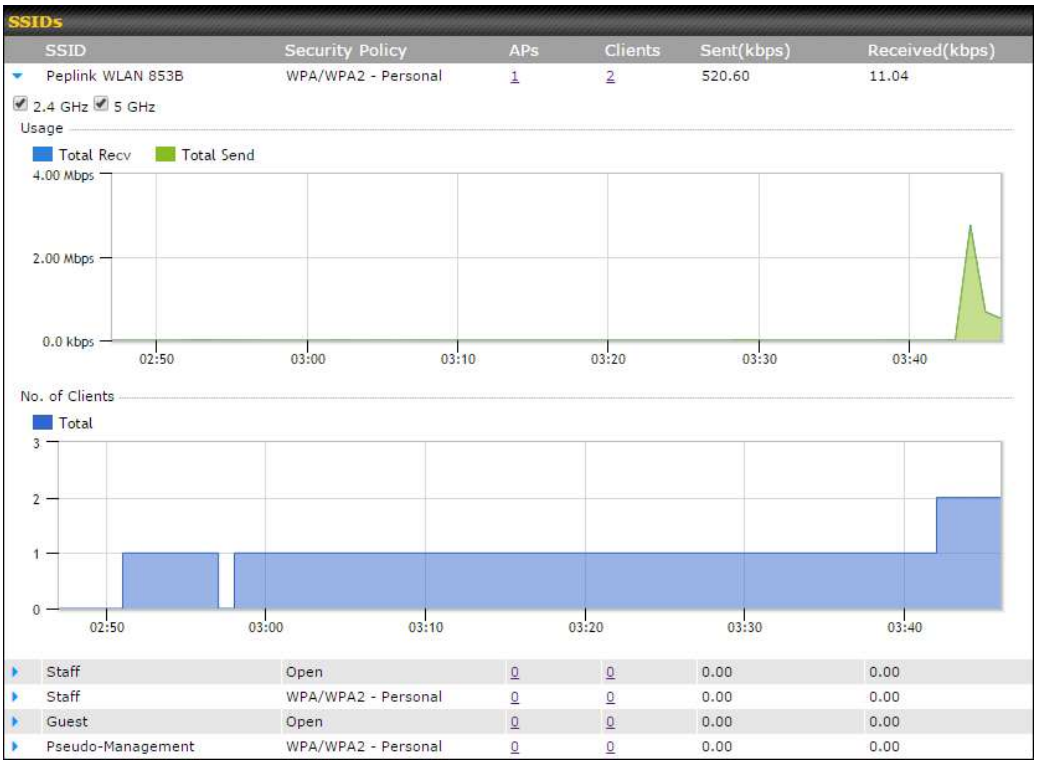
display the information by SSID or by AP send/receive rate.

Click the **Event** tab next to **Wireless Usage** to view a detailed event log for that particular device:



11.2.3 Wireless SSID

In-depth SSID reports are available under AP > SSID.



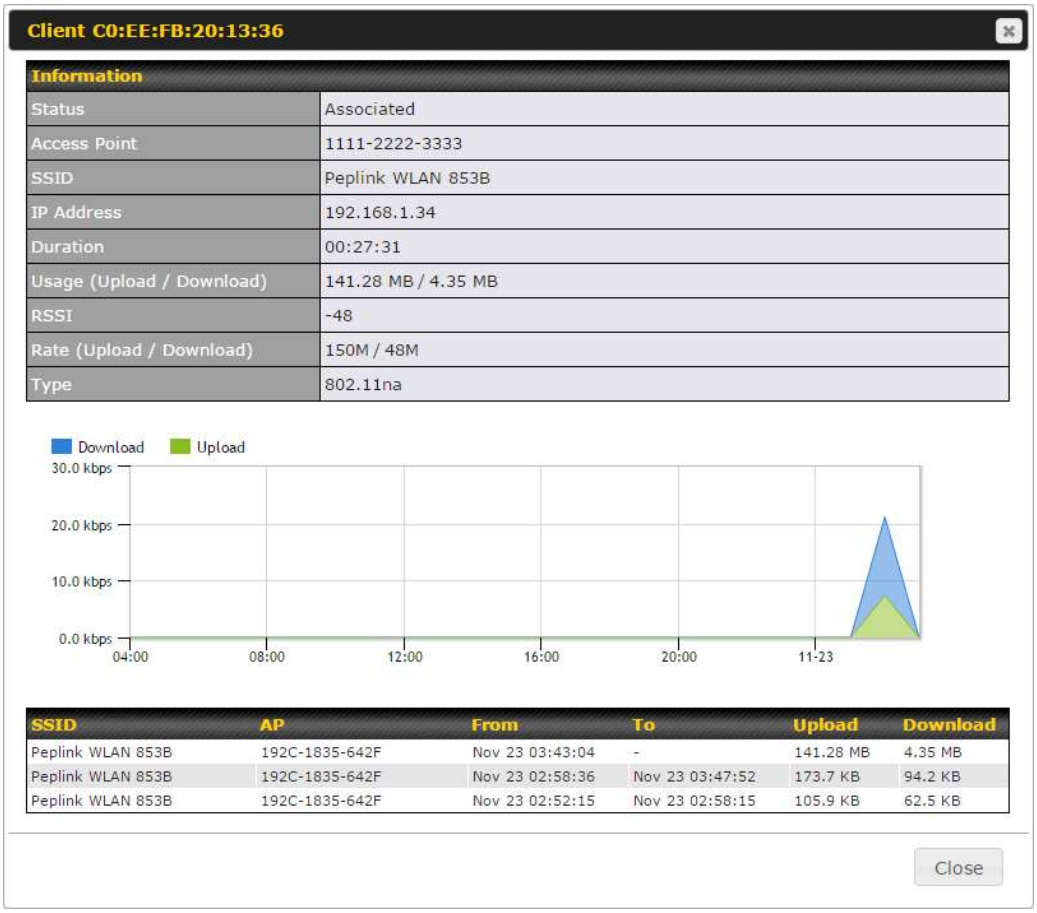
Click the blue arrow on any SSID to obtain more detailed usage information on each SSID.

11.2.4 Wireless Client

You can search for specific Wi-Fi users by navigating to **AP > Wireless Client**.

Here, you will be able to see your network's heaviest users as well as search for specific users. Click the ☆ icon to bookmark specific users, and click the icon for additional

details about each user:



11.2.5 Nearby Device

A listing of near devices can be accessed by navigating to **AP > Controller Status > Nearby Device**.

Suspected Rogue APs

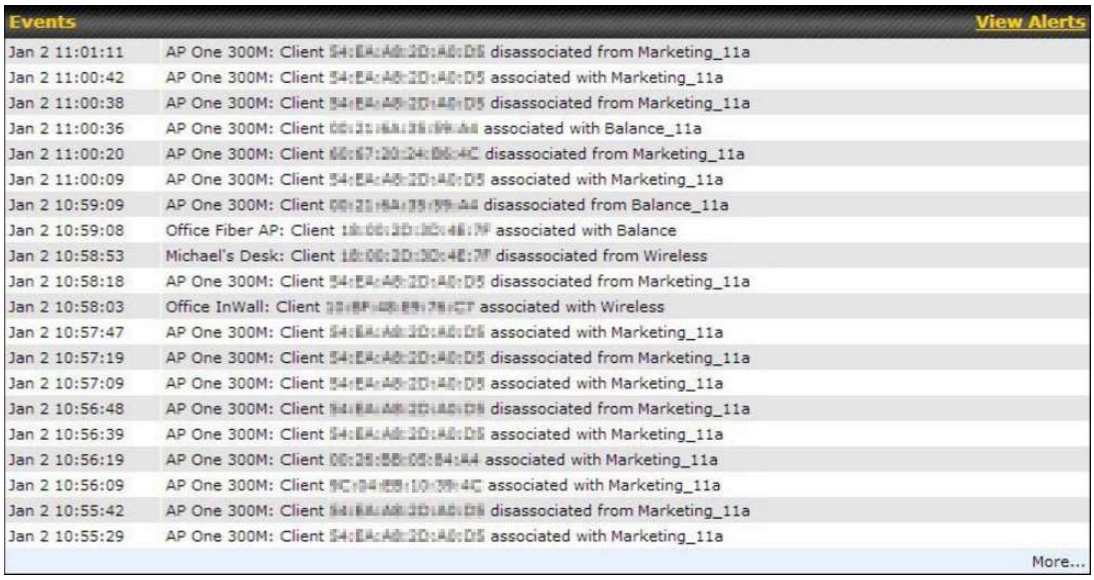
BSSID	SSID	Channel	Encryption	Last Seen	Mark as
00:1A:DD:EC:25:22	Wireless	11	WPA2	10 hours ago	
00:1A:DD:EC:25:23	Accounting	11	WPA2	10 hours ago	
00:1A:DD:EC:25:24	Marketing	11	WPA2	11 hours ago	
00:03:7F:00:00:00	MYB1PUSH	1	WPA & WPA2	11 minutes ago	
00:03:7F:00:00:01	MYB1	1	WPA2	15 minutes ago	
00:1A:DD:B9:60:88	PEPWAVE_CB7E	1	WPA & WPA2	5 minutes ago	
00:1A:DD:BB:09:C1	Micro_S1_1	6	WPA & WPA2	1 hour ago	
00:1A:DD:BB:52:A8	MAX HD2 Gobi	11	WPA & WPA2	2 minutes ago	
00:1A:DD:BF:75:81	PEPLINK_05B5	4	WPA & WPA2	1 minute ago	
00:1A:DD:BF:75:82	LK_05B5	4	WPA2	1 minute ago	
00:1A:DD:BF:75:83	LK_05B5_VLAN22	4	WPA2	1 minute ago	
00:1A:DD:C1:ED:E4	dev_captive_portal_test	1	WPA & WPA2	3 minutes ago	
00:1A:DD:C2:E4:C5	PEPWAVE_7052	11	WPA & WPA2	2 hours ago	
00:1A:DD:C3:F1:64	dev_captive_portal_test	6	WPA & WPA2	6 minutes ago	
00:1A:DD:C4:DC:24	ssid_test	8	WPA & WPA2	2 minutes ago	
00:1A:DD:C4:DC:25	SSID New	8	WPA & WPA2	2 minutes ago	
00:1A:DD:C5:46:04	Guest SSID	9	WPA2	2 minutes ago	
00:1A:DD:C5:47:04	PEPWAVE_67B8	1	WPA & WPA2	5 minutes ago	
00:1A:DD:C5:4E:24	G BR1 Portal	2	WPA2	2 minutes ago	
00:1A:DD:C6:9A:48	ssid_test	8	WPA & WPA2	2 hours ago	

Nearby Devices

Hovering over the device MAC address will result in a popup with information on how this device was detected. Click the ☹ icons and the device will be moved to the bottom table of identified devices.

11.2.6 Event Log

You can access the AP Controller Event log by navigating to **AP > Controller Status > Event Log**.

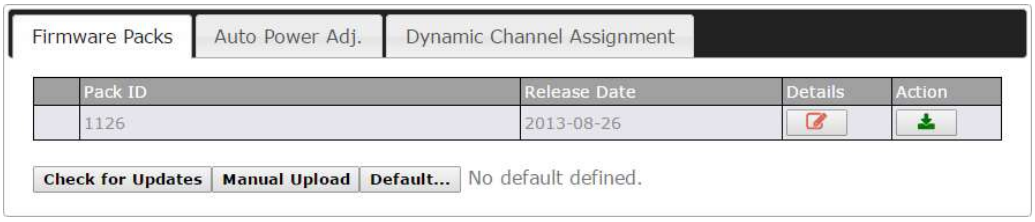


Events

This event log displays all activity on your AP network, down to the client level. Use to filter box to search by MAC address, SSID, AP Serial Number, or AP Profile name. Click **View Alerts** to see only alerts, and click the **More…** link for additional records.

11.3 Toolbox

Additional tools for managing firmware packs, power adjustment, and channel assignment can be found at **AP>Toolbox**.



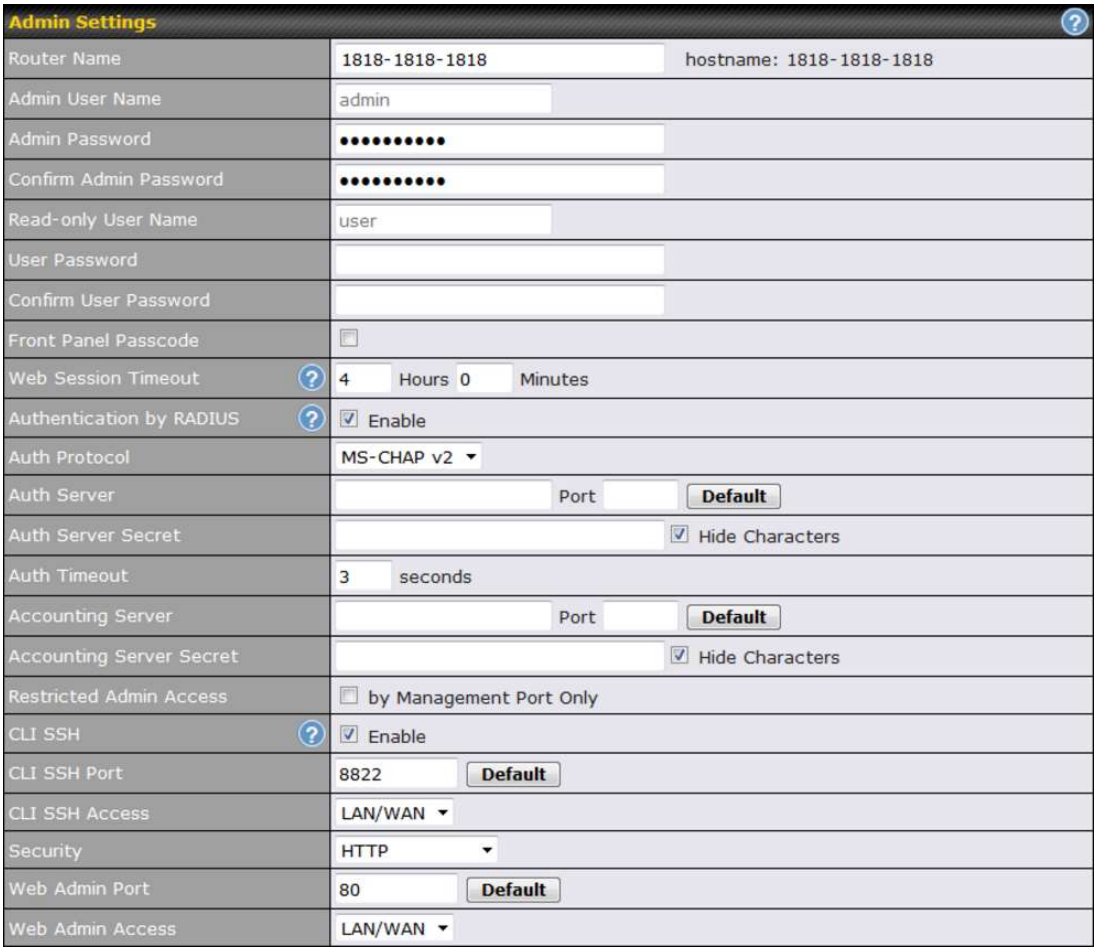
Firmware Packs

This is the first menu that will appear. Here, you can manage the firmware of your AP. Clicking on  will display information regarding each firmware pack. To receive new firmware packs, you can either press Check for Updates to download new packs or you can press Manual Upload to manually upload a firmware pack. Press Default... to define which firmware pack is default.

12 System Tab

12.1 System

12.1.1 Admin Security



Admin Settings	
Router Name	This field allows you to define a name for this Peplink Balance unit. By default, **Router Name** is set as **Balance_XXXX**, where *XXXX* refers to the last 4 digits of the serial number of that balance unit.
Admin User Name	**Admin User Name** is set as **admin** by default, but can be changed, if desired.

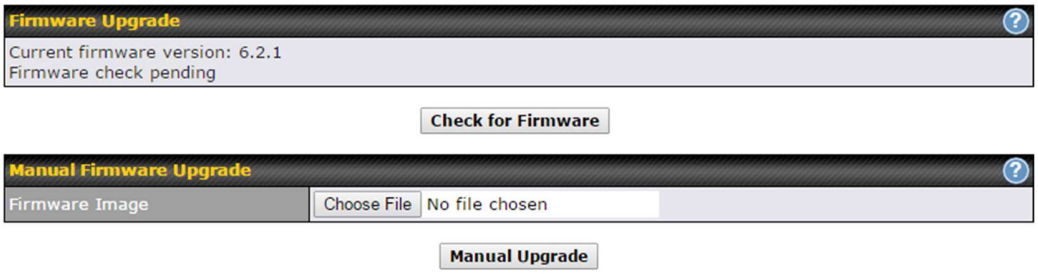
Admin Password	This field allows you to specify a new administrator password.
Confirm Admin Password	This field allows you to verify and confirm the new administrator password.
Read-only User Name	Read-only User Name is set as **user** by default, but can be changed, if desired.
User Password	This field allows you to specify a new user password. Once the user password is set, the read-only user feature will be enabled.
Confirm User Password	This field allows you to verify and confirm the new user password.
Front Panel Passcode	To require a 4-digit passcode to access front panel controls, check this box and then select the code from the drop-down menus.
Web Session Timeout	This field specifies the number of hours and minutes that a web session can remain idle before the Balance terminates its access to the web admin interface. By default, it is set to **4 hours**.
Authentication by RADIUS	With this box is checked, the web admin will authenticate using an external RADIUS 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. When the device is not able to communicate with the external RADIUS server, local accounts will be enabled again for emergency access. Additional authentication options will be available once this box is checked.
Auth Protocol	This specifies the authentication protocol used. Available options are **MS-CHAP v2** and **PAP**.
Auth Server	This specifies the access address and port of the external RADIUS server.
Auth Server Secret	This field is for entering the secret key for accessing the RADIUS server.
Auth Timeout	This option specifies the time value for authentication timeout.
Accounting Server	This specifies the access address and port of the external accounting server.
Accounting Server Secret	This field is for entering the secret key for accessing the accounting server.
Network Connection	This option is for specifying the network connection to be used for authentication. Users can choose from LAN, WAN, and VPN connections.

Restricted Admin Access	Check this box to restrict management to administrators connected to the management port.
CLI SSH & Console	The CLI (command line interface) can be accessed via SSH. It can also be accessed from the serial console port on some Peplink Balance models. This field enables CLI support. For additional information regarding CLI, please refer to **Section 22.5**.
CLI SSH Port	This field determines the port on which clients can access CLI SSH.
CLI SSH Access	This menu allows you to choose between granting access to LAN and WAN clients, or to LAN clients only.
Security	This option is for specifying the protocol(s) through which the web admin interface can be accessed: • HTTP • HTTPS • HTTP/HTTPS
Web Admin Port	This field is for specifying the port number on which the web admin interface can be accessed.
Web Admin Access	This option is for specifying the network interfaces through which the web admin interface can be accessed: • LAN only • LAN/WAN If LAN/WAN is chosen, the **WAN Connection Access Settings** form will be displayed.

LAN Connection Access Settings	
Allowed LAN Networks	This field allows you to permit only specific networks or VLANs to access the Web UI.

12.1.2 Firmware

The firmware of Peplink Balance is upgradeable through the web admin interface. Firmware upgrade functionality is located at **System>Firmware**.



There are two ways to upgrade the unit. The first method is through an online download. The second method is to upload a firmware file manually.

To perform an online download, click on the **Check for Firmware** button. The Peplink Balance will check online for new firmware. If new firmware is available, the Peplink Balance will automatically download the firmware. The rest of the upgrade process will be automatically initiated.

You may also download a firmware image from the Peplink website and update the unit manually. To update using a firmware image, click **Choose File** to select the firmware file from the local computer, and then click **Manual Upgrade** to send the firmware to the Peplink Balance. It will then automatically initiate the firmware upgrade process.

Please note that all Peplink devices can store two different firmware versions in two different partitions. A firmware upgrade will always replace the inactive partition. If you want to keep the inactive firmware, you can simply reboot your device with the inactive firmware and then perform the firmware upgrade.

Firmware Upgrade Status

Status LED Information during firmware upgrade:

- OFF – Firmware upgrade in progress (DO NOT disconnect power.)
- Red – Unit is rebooting
- Green – Firmware upgrade successfully completed

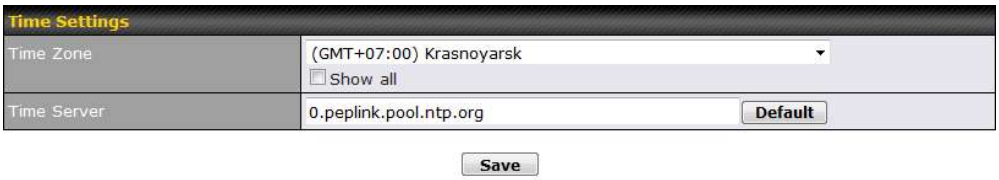
Important Note

The firmware upgrade process may not necessarily preserve the previous configuration, and the behavior varies on a case-by-case basis. Consult the release notes for the particular firmware version before installing. Do not disconnect the power during firmware upgrade process. Do not attempt to upload a non-firmware file or a firmware file that is not supported by Peplink. Upgrading the Peplink Balance with an invalid firmware file will damage the unit and may void the warranty.

12.1.3 Time

The time server functionality enables the system clock of the Peplink Balance to be

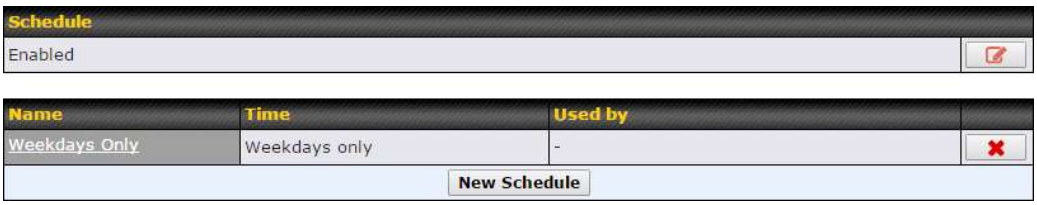
synchronized with a specified time server. The settings for time server configuration are located at **System>Time**.



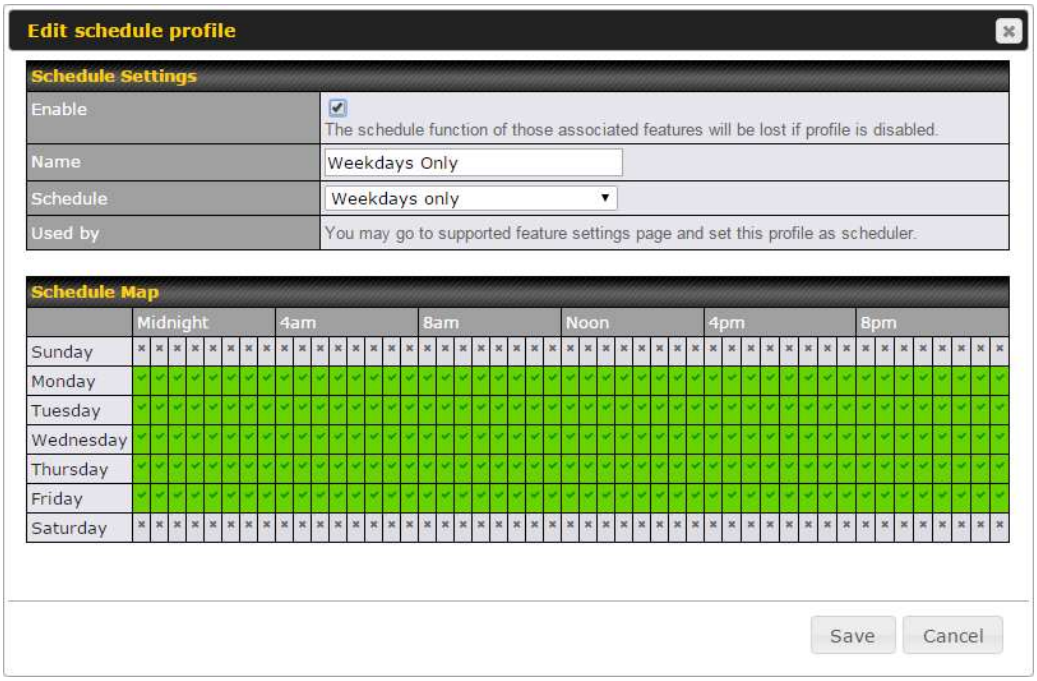
Time Settings	
Time Zone	This specifies the time zone (along with the corresponding Daylight Savings Time scheme) in which Peplink Balance operates. The **Time Zone** value affects the time stamps in the event log of the Peplink Balance and e-mail notifications. Check **Show all** to show all time zone options.
Time Server	This setting specifies the NTP network time server to be utilized by the Peplink Balance.

12.1.4 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**



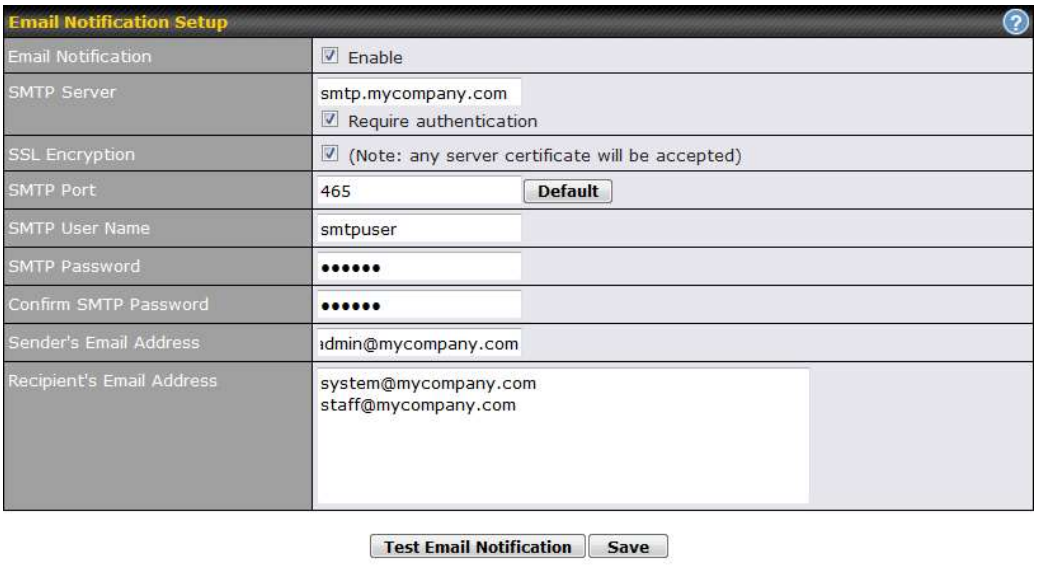
Enable scheduling, and then click on your schedule name or on the **New Schedule** button to begin.



Edit Schedule Profile	
Enabling	Click this checkbox to enable this schedule profile. Note that if this is disabled, then any associated features will also have their scheduling disabled.
Name	Enter your desired name for this particular schedule profile.
Schedule	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.
Schedule Map	Click on the desired times to enable features at that time period. You can hold your mouse for faster entry.

12.1.5 Email Notification

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



Email Notification Settings	
Email Notification	This setting specifies whether or not to enable email notification. If **Enable** is checked, the Peplink Balance will send email messages to system administrators when the WAN status changes or when new firmware is available. If **Enable** is not checked, email notification is disabled and the Peplink Balance will not send email messages.

SMTP Server	This setting specifies the SMTP server to be used for sending email. If the server requires authentication, check **Require authentication**.
SSL Encryption	Check the box to enable SMTPS. When the box is checked, **SMTP Port** will be changed to **465** automatically.
SMTP Port	This field is for specifying the SMTP port number. By default, this is set to **25**; when **SSL Encryption** is checked, the default port number will be set to **465**. You may customize the port number by editing this field. Click **Default** to restore the number to its default setting.
SMTP User Name / Password	This setting specifies the SMTP username and password while sending email. These options are shown only if **Require authentication** is checked in the **SMTP Server** setting.
Confirm SMTP Password	This field allows you to verify and confirm the new administrator password.
Sender's Email Address	This setting specifies the email address which the Peplink Balance will use to send its reports.
Recipient's Email Address	This setting specifies the email address(es) to which the Peplink Balance will send email notifications. For multiple recipients, separate each email using the enter key.

After you have finsihed 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:

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

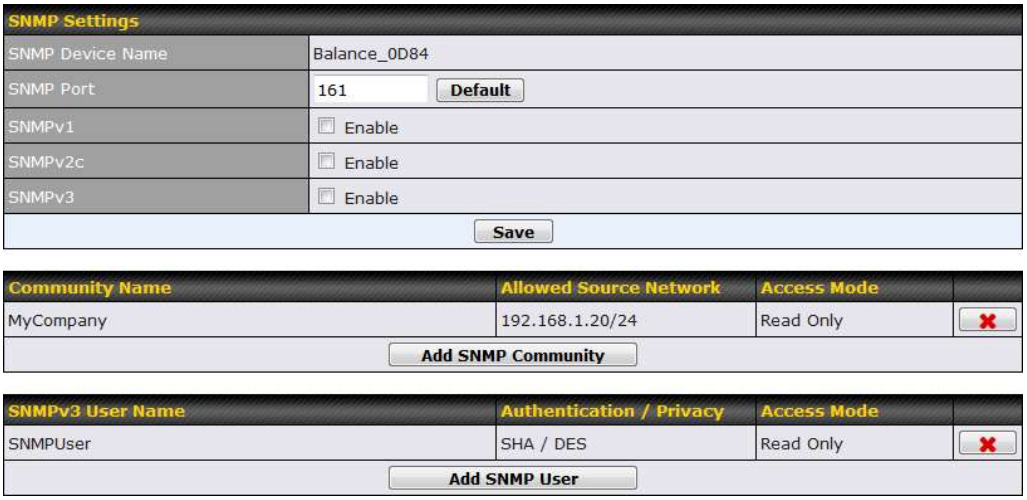
12.1.6 Event Log

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**.

Remote Syslog Settings	
Remote Syslog	This setting specifies whether or not to log events at the specified remote syslog server.
Remote Syslog Host	This setting specifies the IP address or hostname of the remote syslog server.
Push Events	The Peplink Balance 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: www.peplink.com/products/router-utility

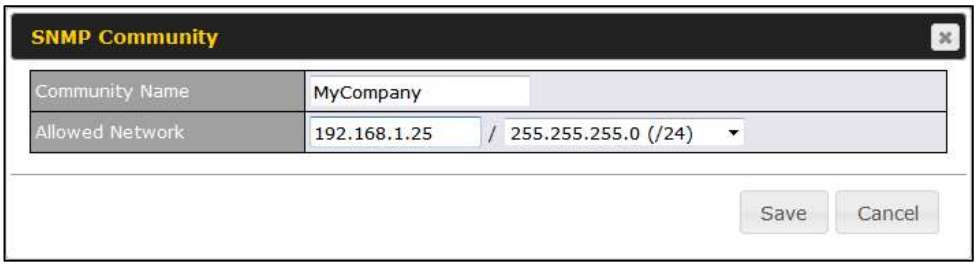
12.1.7 SNMP

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



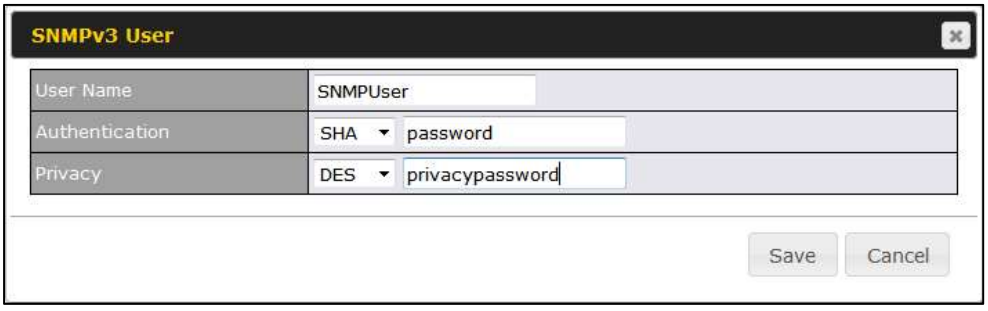
SNMP Settings	
SNMP Device Name	This field shows the router name defined at **System>Admin Security**.
SNMP Port	This option specifies the port which SNMP will use. The default port is **161**.
SNMPv1	This option allows you to enable SNMP version 1.
SNMPv2	This option allows you to enable SNMP version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

To add a community for either SNMPv1 or SNMPv2, click the **Add SNMP Community** button in the **Community Name** table, upon which the following screen is displayed:



SNMP Community Settings	
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.

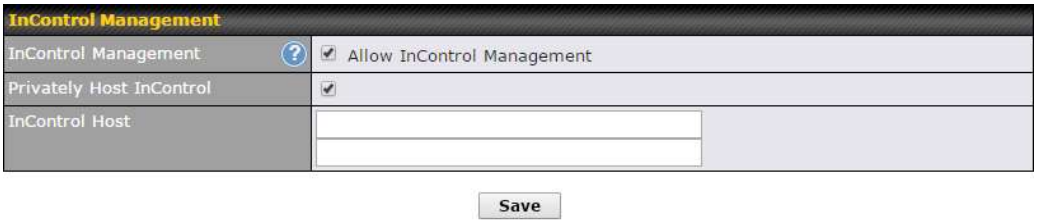
To define a user name for SNMPv3, click **Add SNMP User** in the **SNMPv3 User Name** table, upon which the following screen is displayed:



SNMPv3 User Settings	
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 When DES is selected, an entry field will appear for the password.

12.1.8 InControl



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 check box 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.

Alternately, you could 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.

12.1.9 Configuration

Backing up Peplink Balance settings immediately after successful completion of initial setup is strongly recommended. The functionality to download and upload Peplink Balance settings is found at **System>Configuration**.

Configuration	
Restore Configuration to Factory Settings	The **Restore Factory Settings** button is to reset the configuration to factory default settings. After clicking the button, you will need to click the **Apply Changes** button on the top right corner to make the settings effective.
Download Active Configurations	Click **Download** to backup the current active settings.
Upload Configurations	To restore or change settings based on a configuration file, click **Choose File** to locate the configuration file on the local computer, and then click **Upload**. The new settings can then be applied by clicking the **Apply Changes** button on the page header, or you can cancel the procedure by pressing **discard** on the main page of the web admin interface.
Upload Configurations	In a high availability (HA) configuration, the Balance unit can quickly load the configuration of its HA counterpart. To do so, click the **Upload** button. After loading the settings, configure the LAN IP address of the Peplink Balance unit so that it is different from the HA

from High Availability Pair	counterpart.

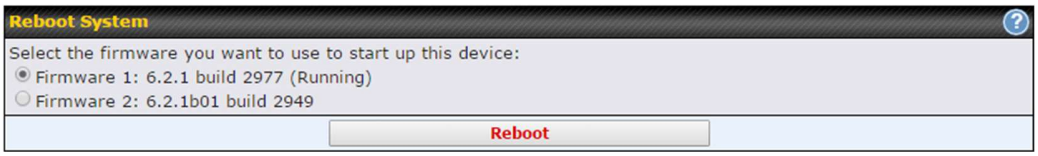
12.1.10 Feature Add-ons

Some balance models 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**.

12.1.11 Reboot

This page provides a reboot button for restarting the system. For maximum reliability, the Peplink Balance Series can equip with two copies of firmware, and 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.

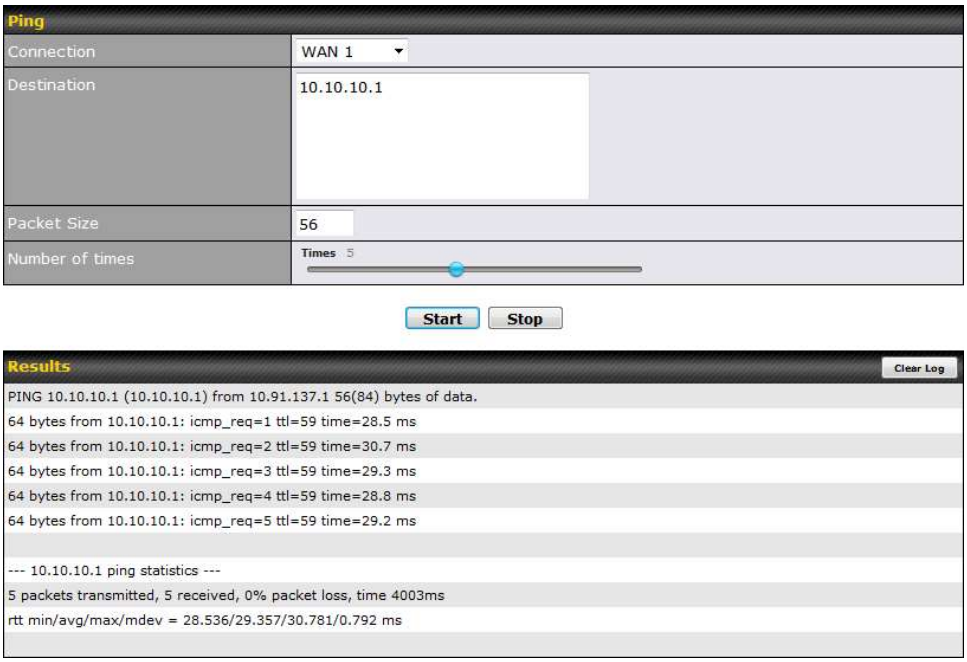
Please note that a firmware upgrade will always replace the inactive firmware partition.



12.2 Tools

12.3 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:

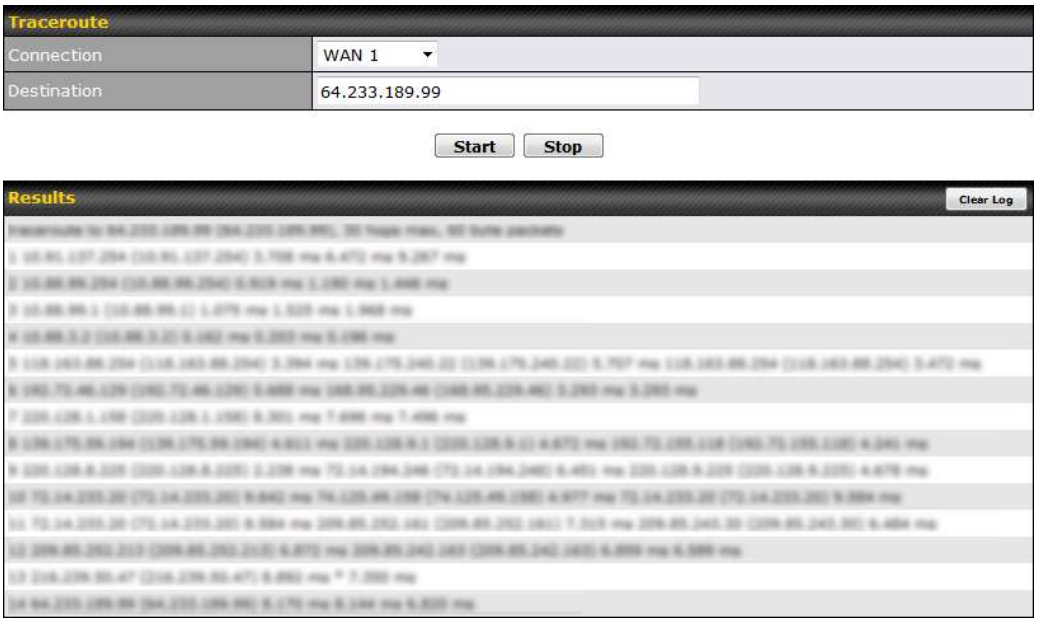


Tip

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

12.4 Traceroute

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

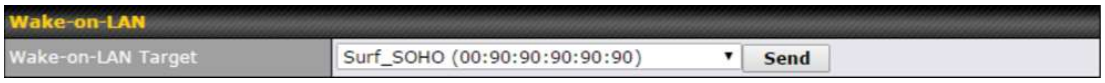


Tip

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

12.5 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**

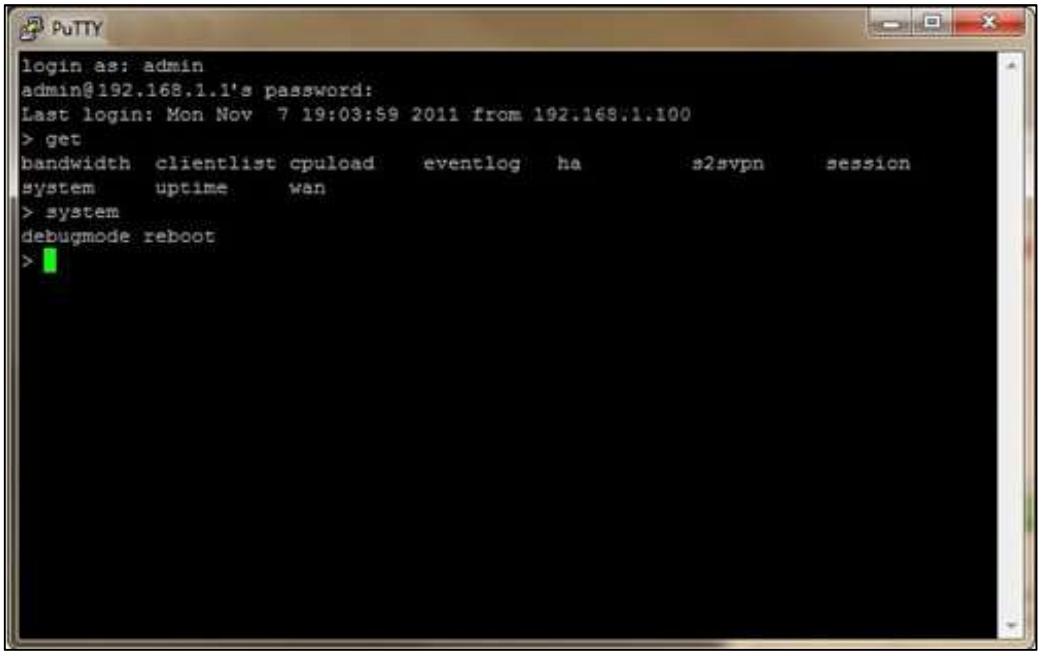


Select a client from the drop-down list and click **Send** to send a “magic packet”

12.6 CLI (Command Line) Support

The serial console connector on some Peplink Balance units is RJ-45. To access the serial console port, prepare a RJ-45 to DB-9 console cable. Connect the RJ-45 end to the unit's console port and the DB-9 end to a terminal's serial port. The port setting will be *115200,8N1*.

The serial console connector on other Peplink Balance units is a DB-9 male connector. To access the serial console port, connect a null modem cable with a DB-9 connector on both ends to a terminal with the port setting of *115200,8N1*.



13 Status Tab

13.1 Status

13.1.1 Device

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

System Information	
Router Name	1818-1818-1818
Model	Peplink Balance 30
Hardware Revision	2
Serial Number	1818-1818-1818
Firmware	6.2.1 build 2977
PepVPN Version	4.0.0
Modem Support Version	1018 (Modem Support List)
Host Name	1818-1818-1818
Uptime	8 days 1 hour 12 minutes
System Time	Sun Jun 21 07:51:07 WET 2015
Diagnostic Report	Download
Remote Assistance	Turn on

Interface	MAC Address
LAN	10:56:56:56:56:BC
WAN 1	10:56:56:56:56:BD
WAN 2	10:56:56:56:56:BE
WAN 3	10:56:56:56:56:BF

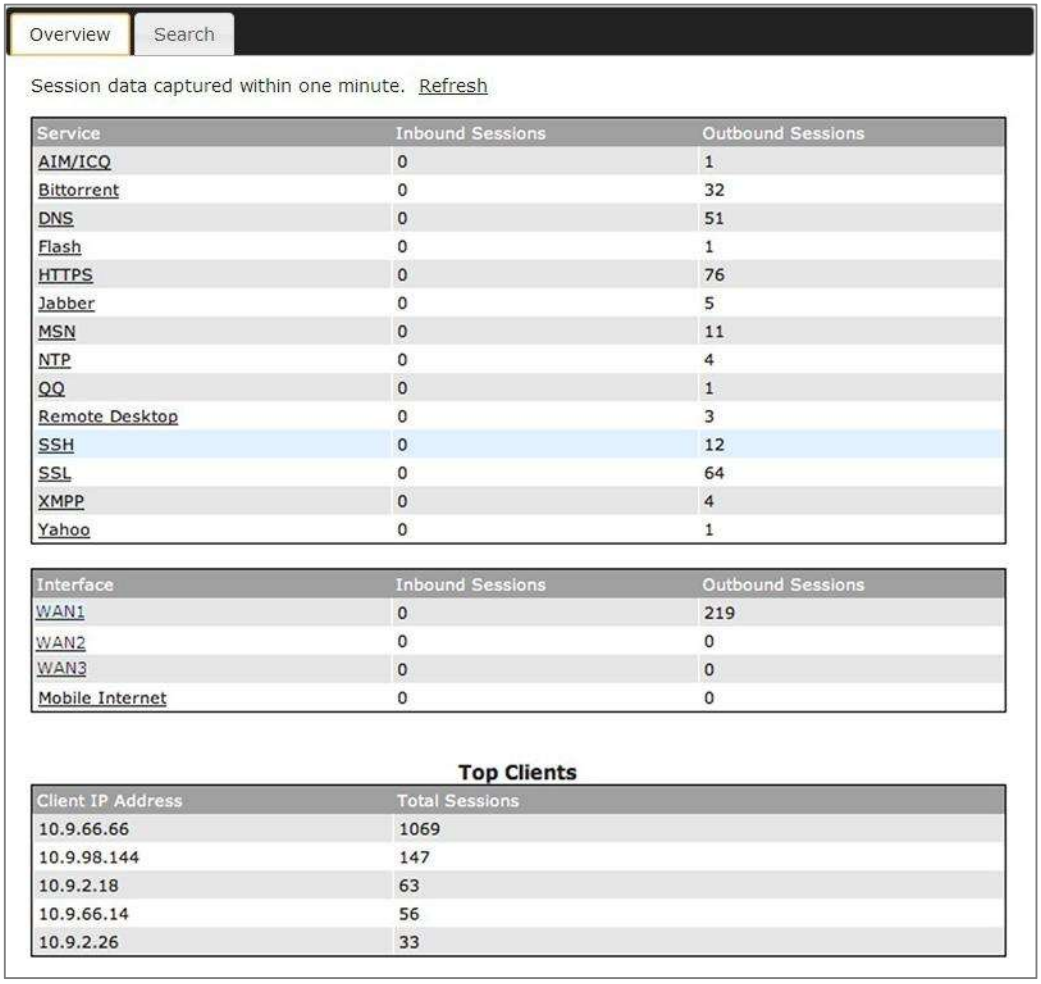
System Information	
Router Name	This is the name specified in the **Router Name** field located at **System>Admin Security**.
Model	This shows the model name and number of this device.
Hardware Revision	This shows the hardware version of this device.
Serial Number	This shows the serial number of this device.
Firmware	This shows the firmware version this device is currently running.
Uptime	This shows the length of time since the device has been rebooted.
System Time	This shows the current system time.
Diagnostic Report	The **Download** link is for exporting a diagnostic report file required for system investigation.
Remote Assistance	Click **Turn on** to enable remote assistance.

The second table shows the MAC address of each LAN/WAN interface connected.

Important Note
If you encounter issues and would like to contact the Peplink Support Team (http://www.peplink.com/contact/), please download the diagnostic report file and attach it along with a description of your issue. In Firmware 5.1 or before, the diagnostic report file can be obtained at **System>Reboot**.

13.1.2 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
AIM/ICQ	0	1
Bittorrent	0	32
DNS	0	51
Flash	0	1
HTTPS	0	76
Jabber	0	5
MSN	0	11
NTP	0	4
QQ	0	1
Remote Desktop	0	3
SSH	0	12
SSL	0	64
XMPP	0	4
Yahoo	0	1

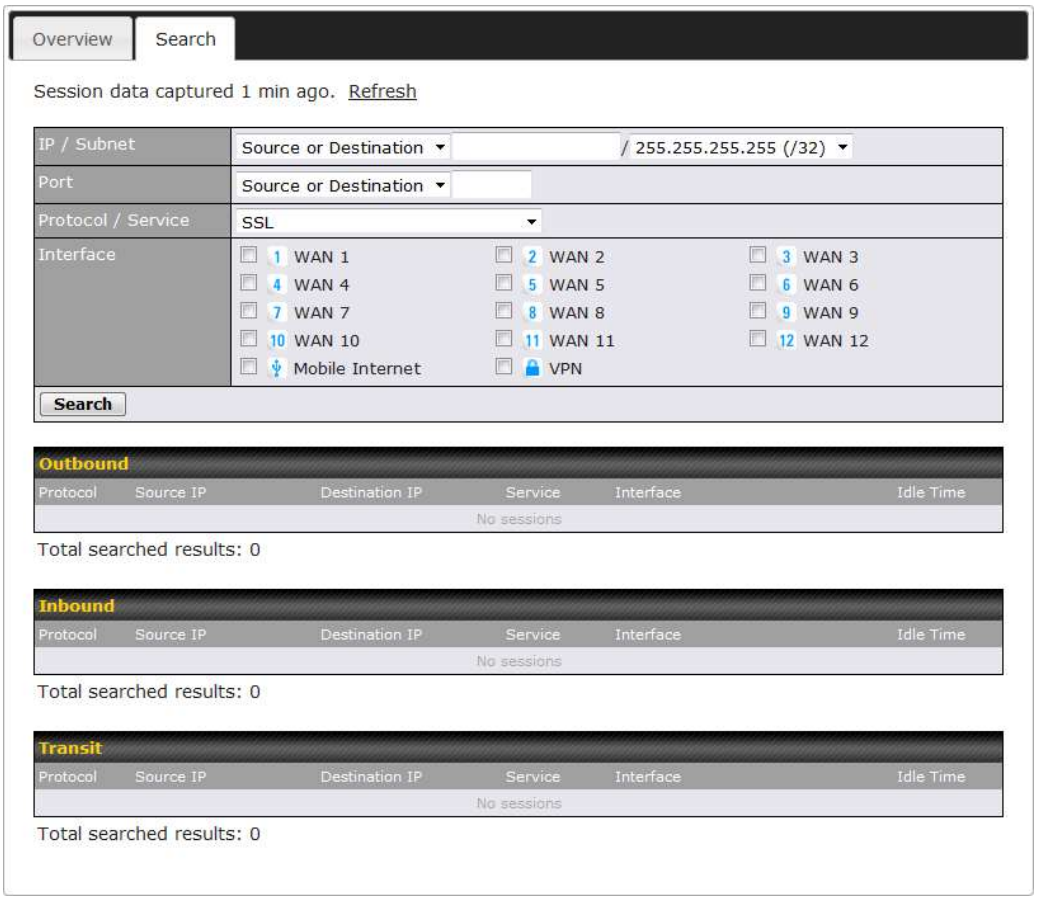
Interface	Inbound Sessions	Outbound Sessions
WAN1	0	219
WAN2	0	0
WAN3	0	0
Mobile Internet	0	0

Top Clients

Client IP Address	Total Sessions
10.9.66.66	1069
10.9.98.144	147
10.9.2.18	63
10.9.66.14	56
10.9.2.26	33

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. Finally, you can see which clients are initiating the most sessions.

In addition, 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**.

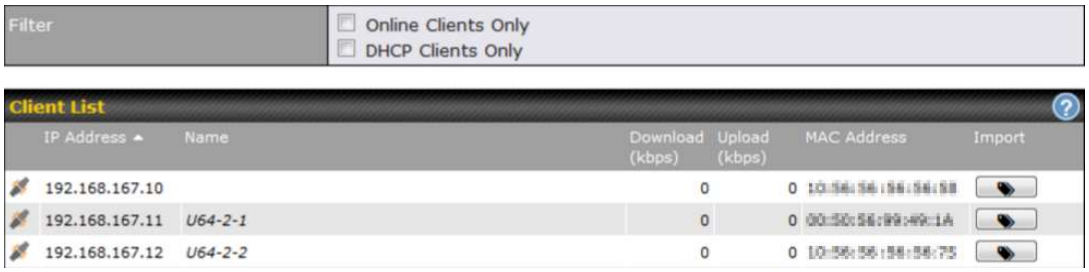


This **Active Sessions** section displays the active inbound / outbound sessions of each WAN connection on the Peplink Balance. A filter is available to help sort out the active session information. Enter a keyword in the field or check one of the WAN connection boxes for filtering.

13.1.3 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.

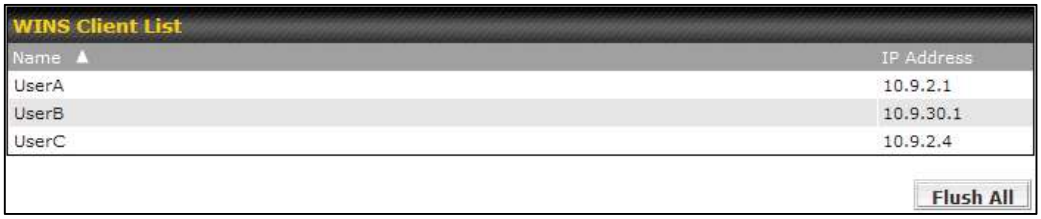
Clients can be imported into the DHCP reservation table by clicking the button on the right. Further update the record after the import by going to **Network>LAN**.



If the PPTP server SpeedFusion™, or AP controller is enabled, you may see the corresponding connection name listed in the **Name** field.

13.1.4 WINS Clients

The WINS client list table is located at **Status>WINS Client**.



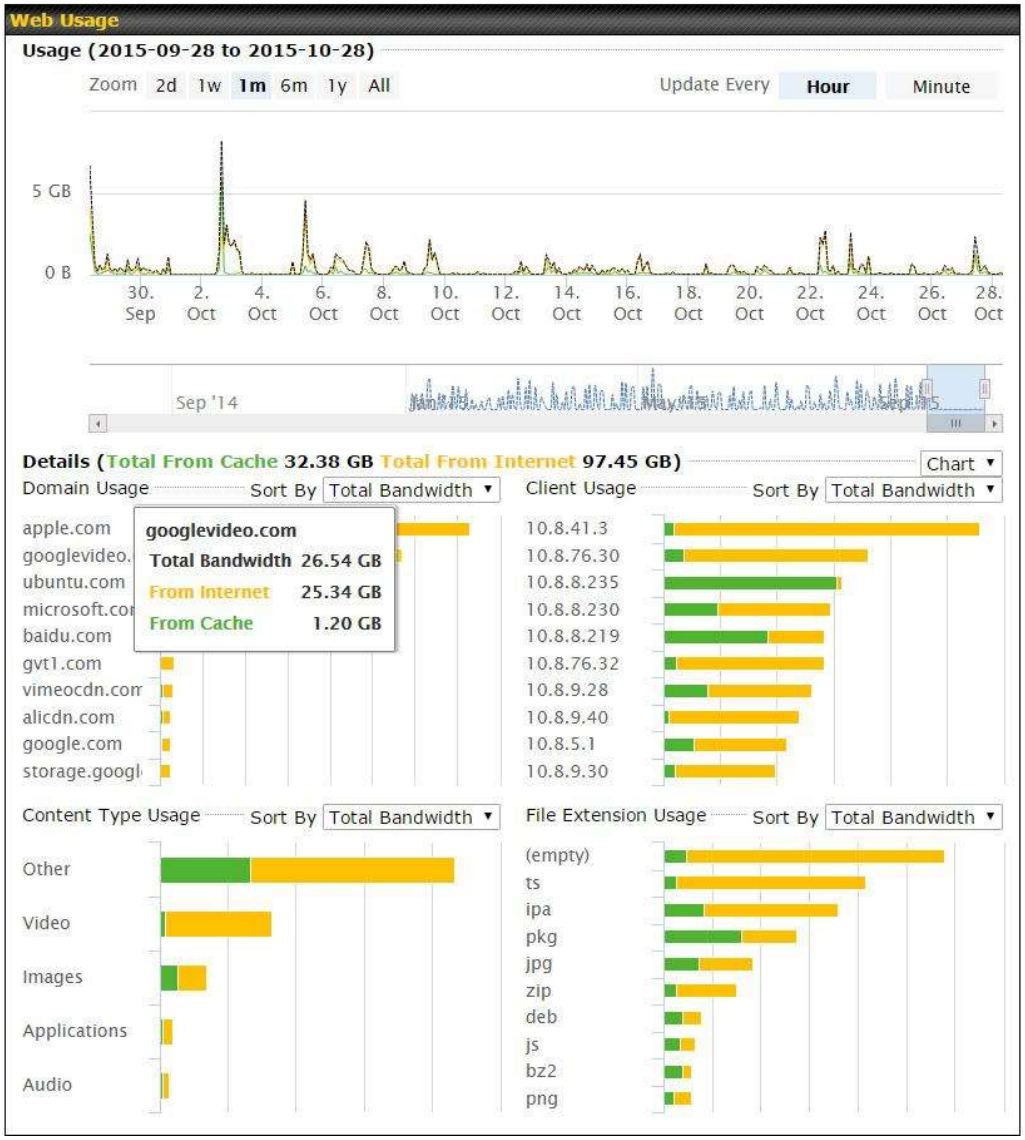
The WINS client table lists the IP addresses and names of WINS clients. This option will only be available when you have enabled the WINS server The names of clients retrieved will be automatically matched into the Client List (see previous section). Click **Flush All** to flush all WINS client records.

13.1.5 OSPF & RIPv2

Information on OSPF and RIPv2 routing setup can be found at **Status>OSPF & RIPv2**.

13.1.6 MediaFast

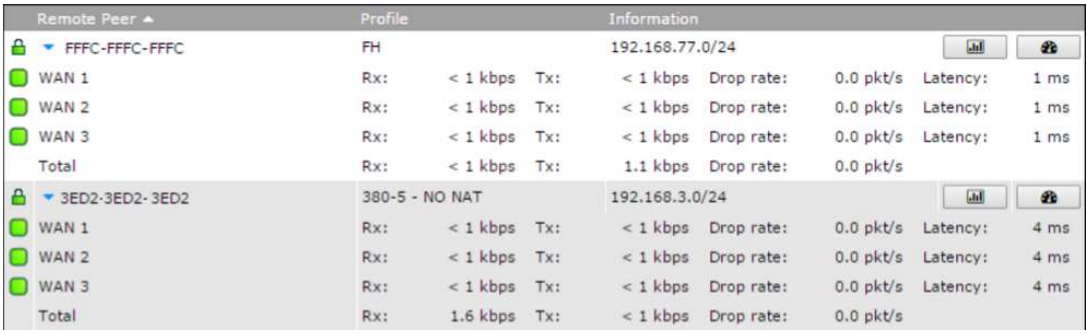
To get details on storage and bandwidth usage, select **Status>MediaFast**.



13.1.7 SpeedFusion Status

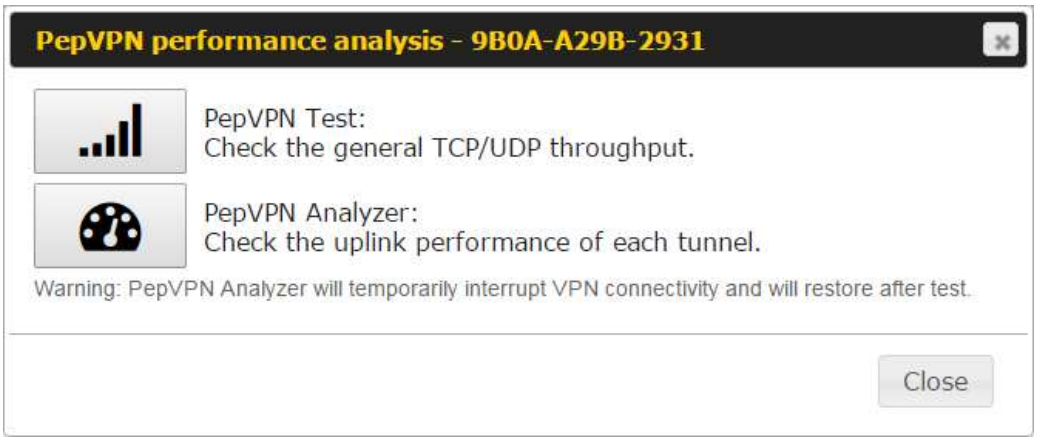
Current SpeedFusion™ status information is located at **Status>SpeedFusion™**. Details about SpeedFusion™ connection peers appears as below:

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



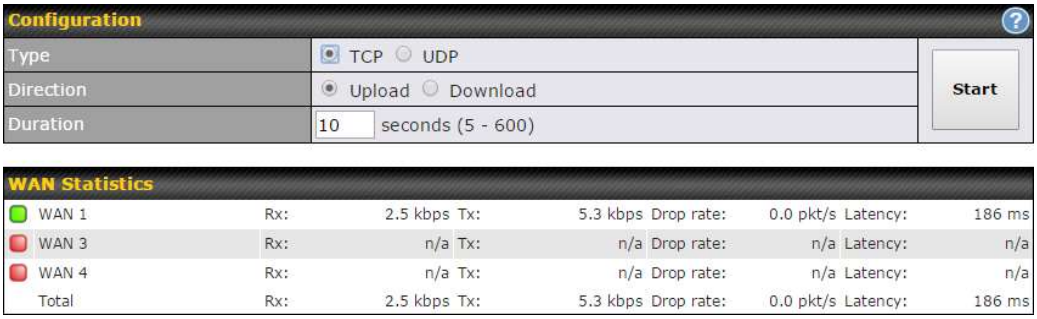
Click the  button for a chart displaying real-time throughput, latency, and drop-rate information for each WAN connection.

When pressing the  button, the following menu will appear:




PepVPN Test:
Check the general TCP/UDP throughput.

After clicking the icon, the following menu appears:

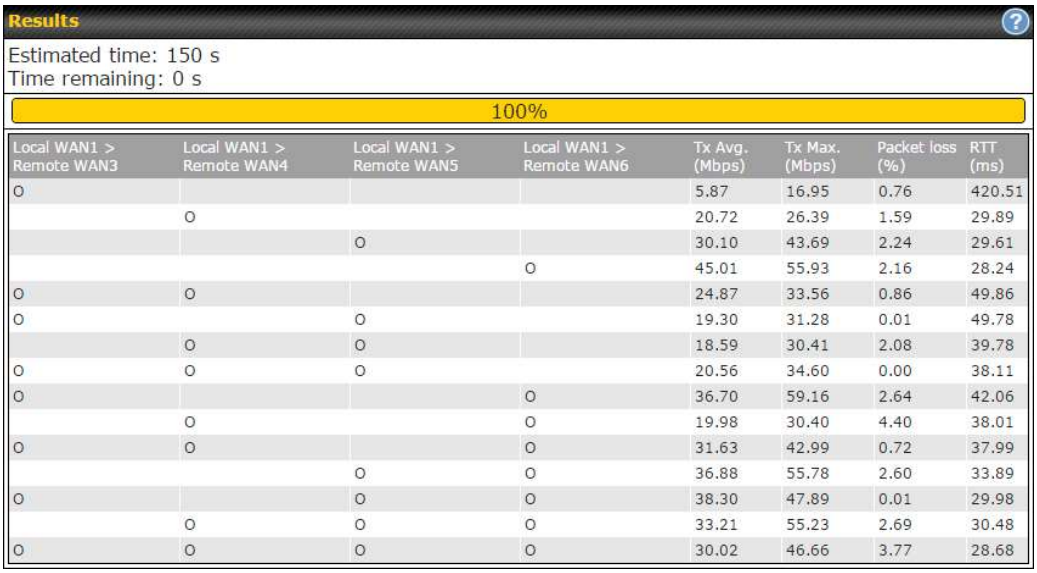


Select the L2 protocol (TCP/UDP), direction, and duration and click the **Start** button to begin the general throughput test.

PepVPN Analyzer:
Check the uplink performance of each tunnel.

The bandwidth bonding feature of PepVPN occurs when multiple WAN lines from one end merge with multiple WAN lines from the other end. For this to happen, each WAN line needs to form a connection with all the WAN lines on the opposite end. The function of the PepVPN analyzer is to report the throughput, packet loss, and latency of all possible combinations of connections. **Please note that the PepVPN Analyzer will temporarily interrupt VPN connectivity and will restore after test.**

After clicking the icon, the analyzer will require several minutes to perform its analysis depending the number of WAN links in the SpeedFusion™ Tunnel. Once the test the complete, the report will appear:



Results

Estimated time: 150 s
Time remaining: 0 s

100%

Local WAN1 > Remote WAN3	Local WAN1 > Remote WAN4	Local WAN1 > Remote WAN5	Local WAN1 > Remote WAN6	Tx Avg. (Mbps)	Tx Max. (Mbps)	Packet loss (%)	RTT (ms)
O				5.87	16.95	0.76	420.51
	O			20.72	26.39	1.59	29.89
		O		30.10	43.69	2.24	29.61
			O	45.01	55.93	2.16	28.24
O	O			24.87	33.56	0.86	49.86
O		O		19.30	31.28	0.01	49.78
	O	O		18.59	30.41	2.08	39.78
O	O	O		20.56	34.60	0.00	38.11
O			O	36.70	59.16	2.64	42.06
	O		O	19.98	30.40	4.40	38.01
O	O		O	31.63	42.99	0.72	37.99
		O	O	36.88	55.78	2.60	33.89
O		O	O	38.30	47.89	0.01	29.98
	O	O	O	33.21	55.23	2.69	30.48
O	O	O	O	30.02	46.66	3.77	28.68

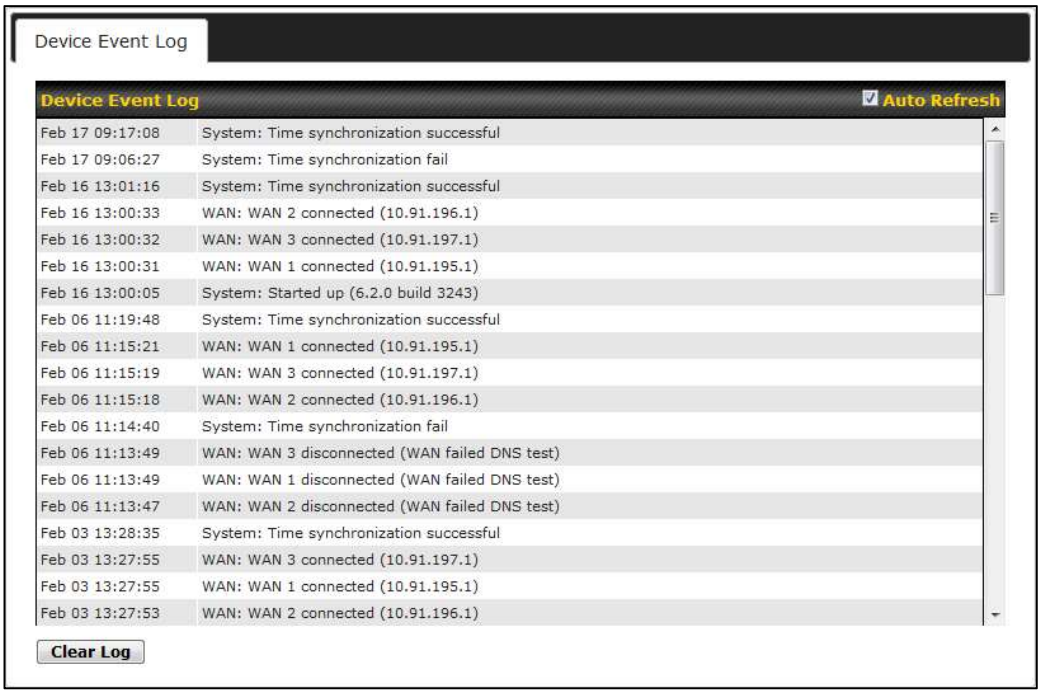
"O" indicates that specific WAN / Tunnel is active for that particular test.

"Tx Avg." is the averaged throughput across the full 10 seconds time, while "Tx Max." is the averaged throughput of the fastest 30% of time.

13.1.8 Event Log

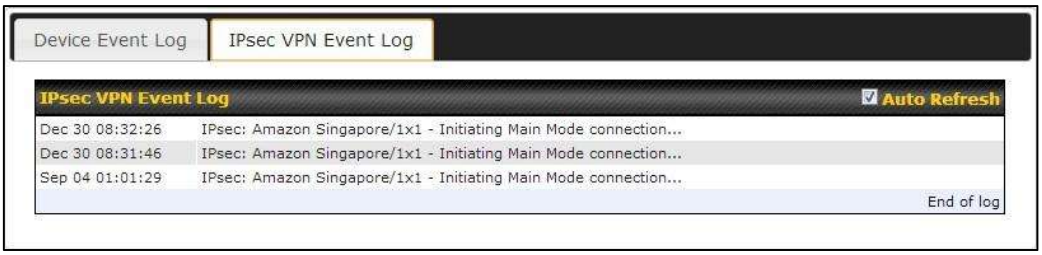
Event log information is located at **Status>Event Log**.

Device Event Log



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

IPsec Event Log



This section displays a list of events that has taken place within an IPsec VPN connection. Check the box next to **Auto Refresh** and the log will be refreshed automatically. For an AP event log, navigate to **AP>Info**.

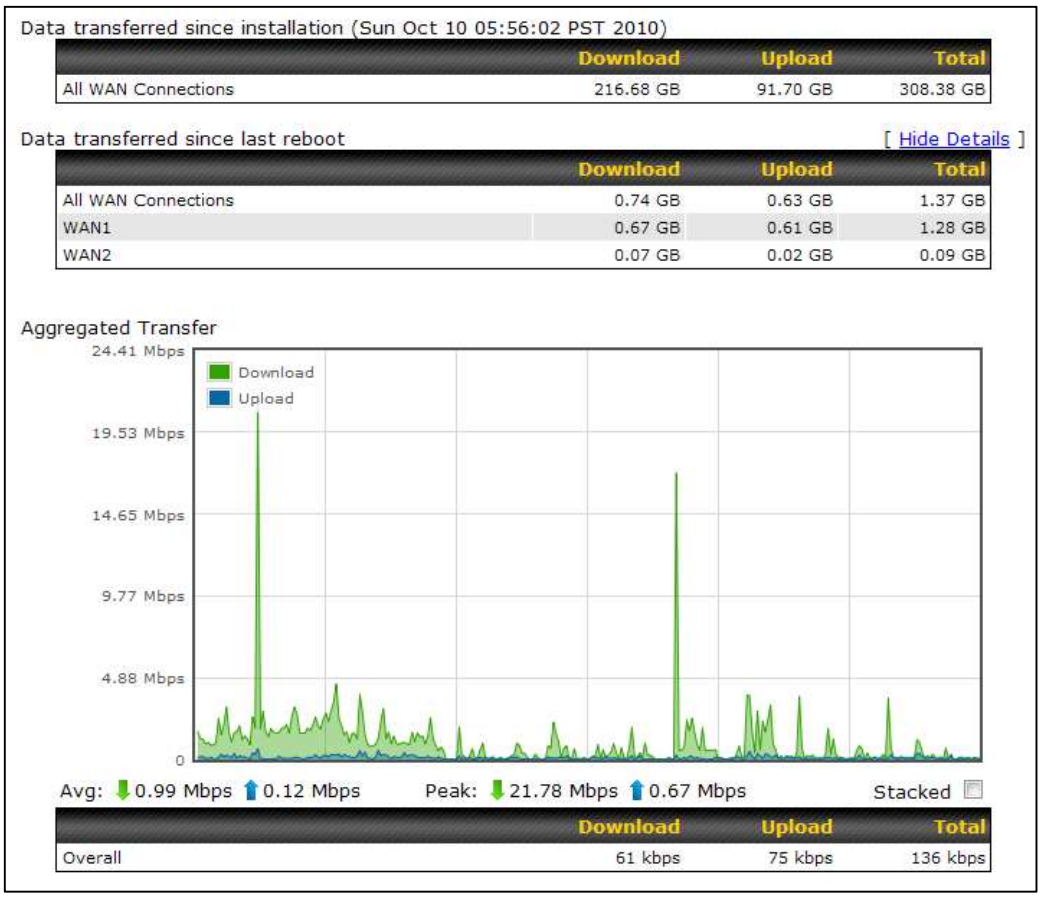
13.2 Bandwidth

This section shows the bandwidth usage statistics, located at **Status>Bandwidth**.

Bandwidth usage at the LAN while the device is switched off (e.g., LAN bypass) is neither recorded nor shown.

13.2.1 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 bootup.



13.2.2 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.

Date	Download	Upload	Total
13:00	5 047 MB	295 MB	5 342 MB
12:00	5 117 MB	439 MB	5 556 MB
11:00	2 414 MB	526 MB	2 940 MB
10:00	2 470 MB	812 MB	3 282 MB
09:00	725 MB	488 MB	1 213 MB
08:00	64 MB	211 MB	275 MB

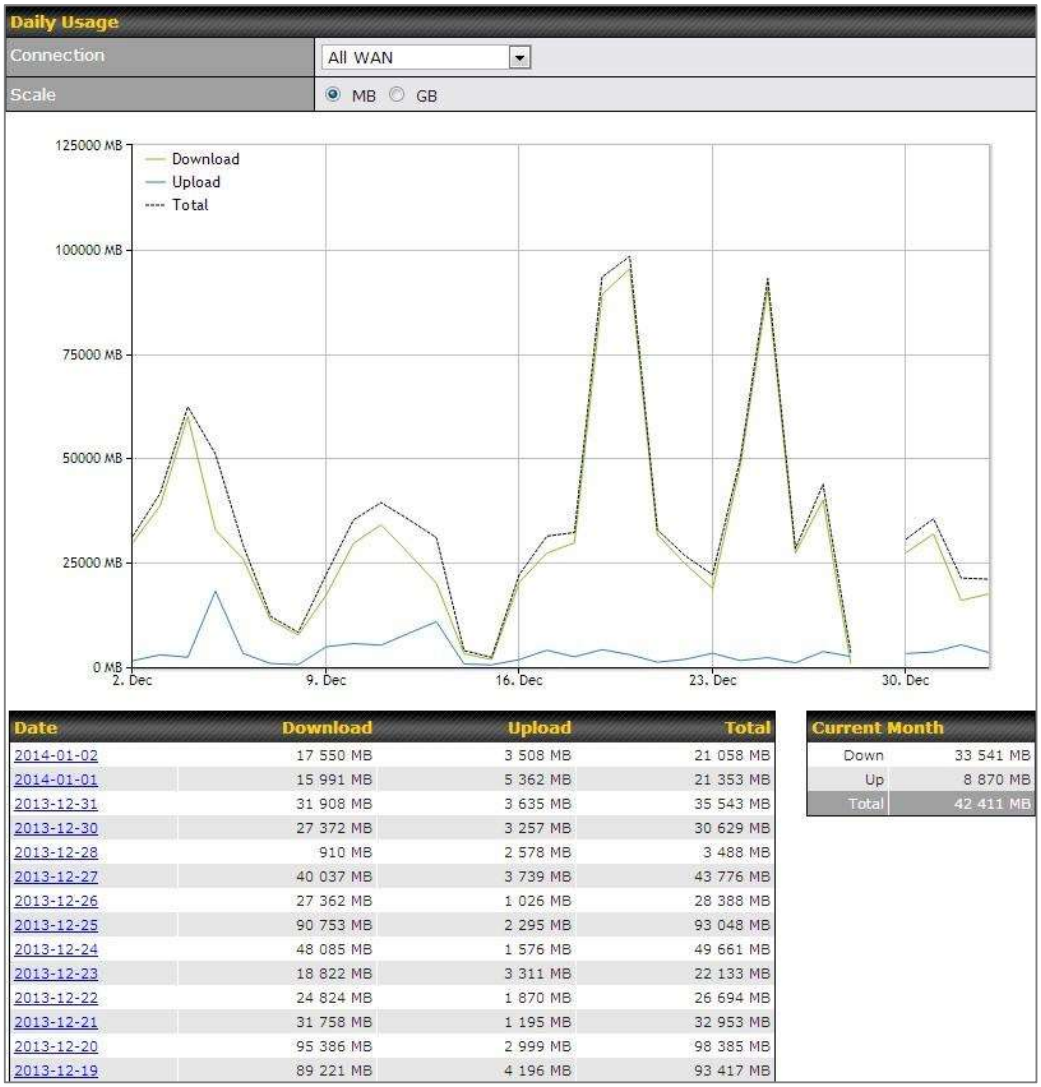
13.2.3 Daily

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 as shown in **Section 13.4,** 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

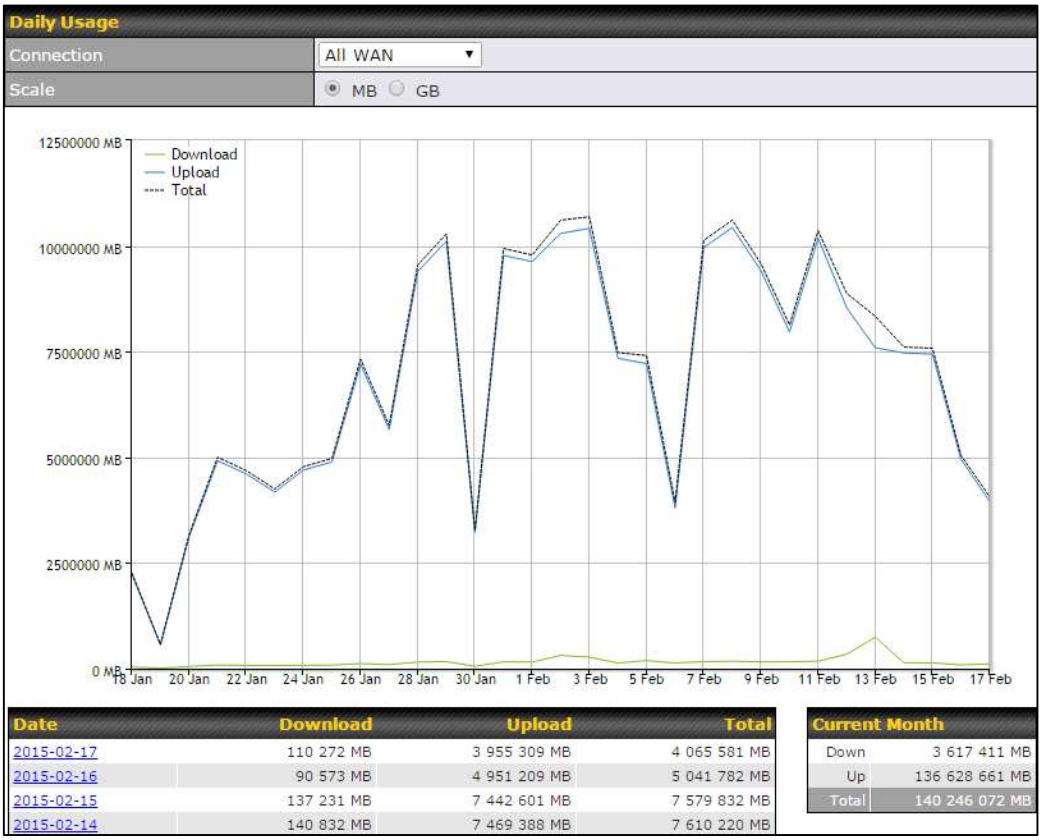
(**GB**).



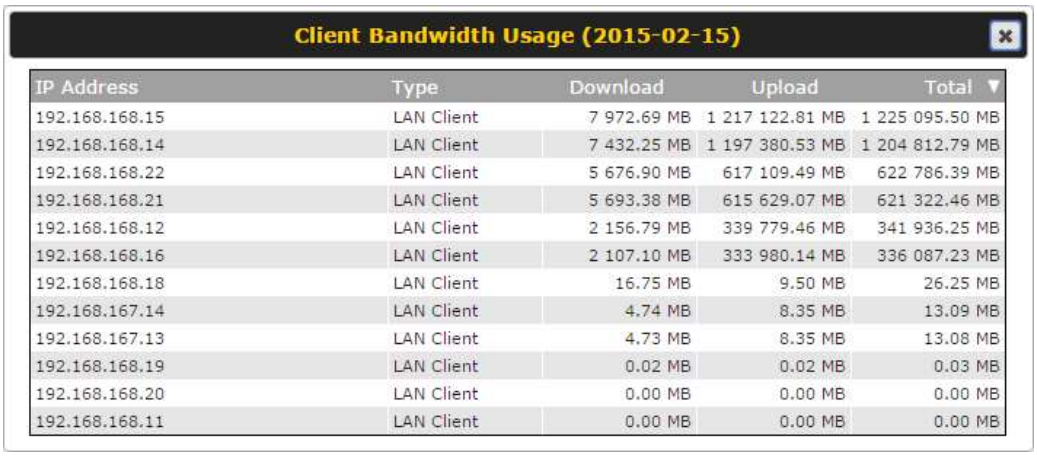
Date	Download	Upload	Total
2014-01-02	17 550 MB	3 508 MB	21 058 MB
2014-01-01	15 991 MB	5 362 MB	21 353 MB
2013-12-31	31 908 MB	3 635 MB	35 543 MB
2013-12-30	27 372 MB	3 257 MB	30 629 MB
2013-12-28	910 MB	2 578 MB	3 488 MB
2013-12-27	40 037 MB	3 739 MB	43 776 MB
2013-12-26	27 362 MB	1 026 MB	28 388 MB
2013-12-25	90 753 MB	2 295 MB	93 048 MB
2013-12-24	48 085 MB	1 576 MB	49 661 MB
2013-12-23	18 822 MB	3 311 MB	22 133 MB
2013-12-22	24 824 MB	1 870 MB	26 694 MB
2013-12-21	31 758 MB	1 195 MB	32 953 MB
2013-12-20	95 386 MB	2 999 MB	98 385 MB
2013-12-19	89 221 MB	4 196 MB	93 417 MB

Current Month	
Down	33 541 MB
Up	8 870 MB
Total	42 411 MB

Status



Click on a specific date to receive a breakdown of all client usage for that date.

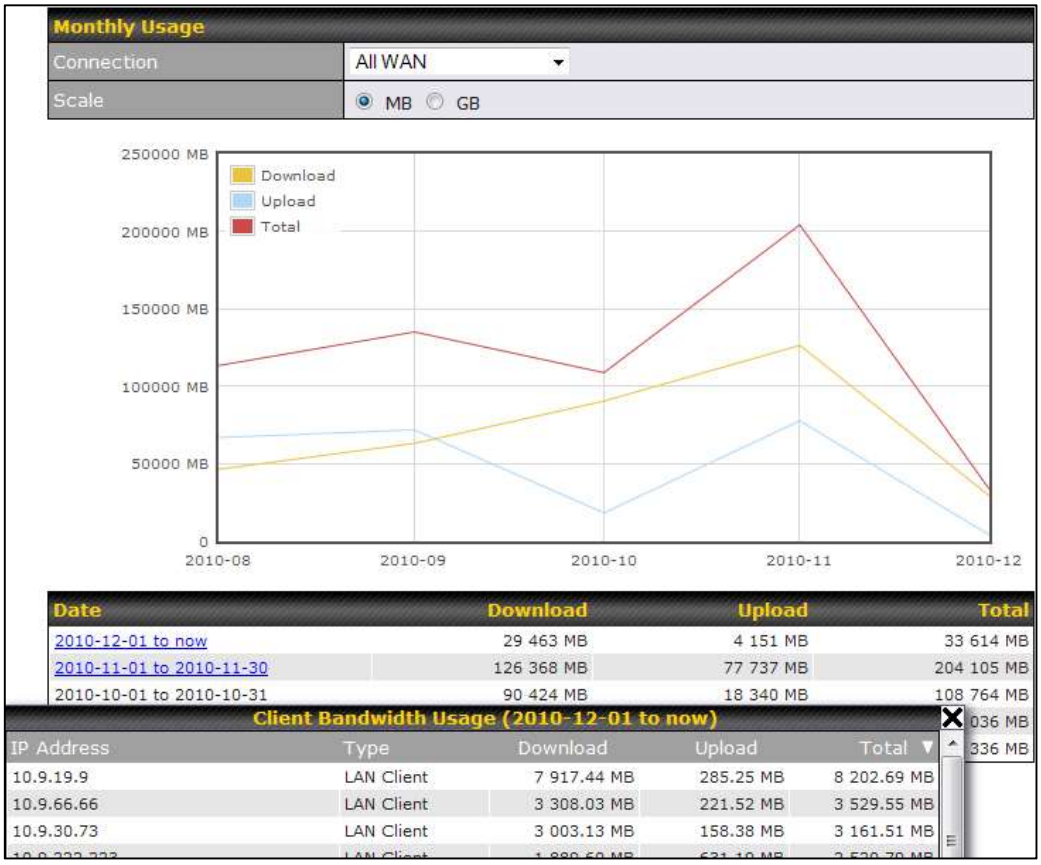


IP Address	Type	Download	Upload	Total
192.168.168.15	LAN Client	7 972.69 MB	1 217 122.81 MB	1 225 095.50 MB
192.168.168.14	LAN Client	7 432.25 MB	1 197 380.53 MB	1 204 812.79 MB
192.168.168.22	LAN Client	5 676.90 MB	617 109.49 MB	622 786.39 MB
192.168.168.21	LAN Client	5 693.38 MB	615 629.07 MB	621 322.46 MB
192.168.168.12	LAN Client	2 156.79 MB	339 779.46 MB	341 936.25 MB
192.168.168.16	LAN Client	2 107.10 MB	333 980.14 MB	336 087.23 MB
192.168.168.18	LAN Client	16.75 MB	9.50 MB	26.25 MB
192.168.167.14	LAN Client	4.74 MB	8.35 MB	13.09 MB
192.168.167.13	LAN Client	4.73 MB	8.35 MB	13.08 MB
192.168.168.19	LAN Client	0.02 MB	0.02 MB	0.03 MB
192.168.168.20	LAN Client	0.00 MB	0.00 MB	0.00 MB
192.168.168.11	LAN Client	0.00 MB	0.00 MB	0.00 MB

13.2.4 Monthly

This page shows the monthly bandwidth usage for each WAN connection. If you have enabled **Bandwidth Monitoring** feature as shown in **Section 13.4**, 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**).



Click on a specific month to receive a breakdown of all client usage for that month.

Appendix A. Restoration of Factory Defaults

To restore the factory default settings on a Peplink Balance unit, perform the following:

For Balance models with a reset button:

1. Locate the reset button on the Peplink Balance unit.
2. With a paper clip, press and keep the reset button pressed for at least 10 seconds, until the unit reboots itself.

For Balance/MediaFast models with an LCD menu:

- Use the buttons on front panel to control the LCD menu to go to **Maintenance**>**Factory Defaults**, and then choose **Yes** to confirm.

Afterwards, the factory default settings will be restored.

Important Note
All user settings will be lost after restoring the factory default settings. Regular backup of configuration parameters is strongly recommended.

Appendix B. Routing under DHCP, Static IP, and PPPoE

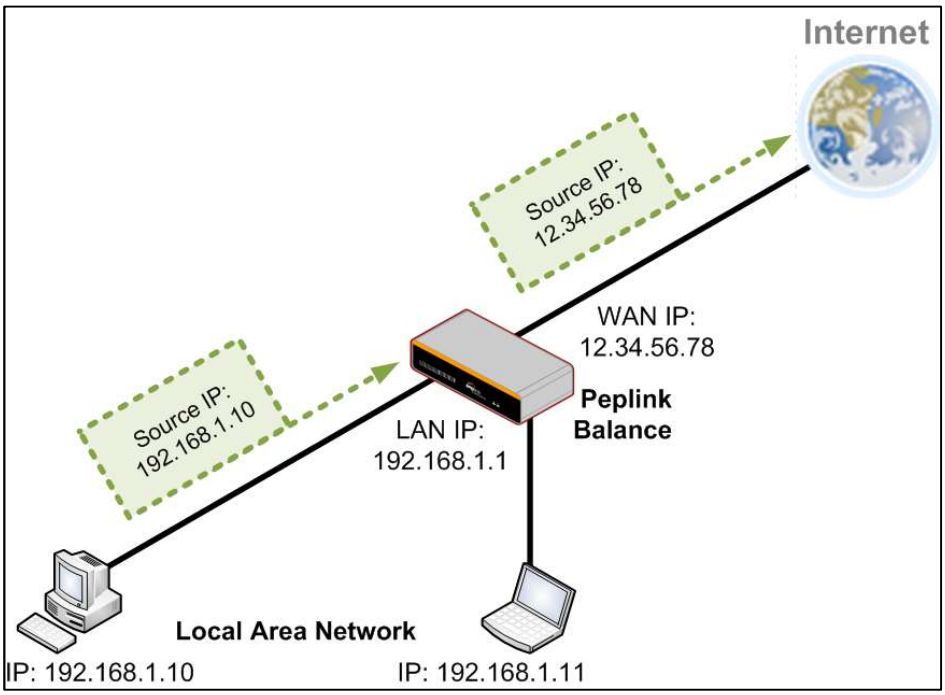
The information in this appendix applies only to situations where the Peplink Balance operates a WAN connection under DHCP, Static IP, or PPPoE.

B.1 Routing Via Network Address Translation (NAT)

When the Peplink Balance is operating under NAT mode, the source IP addresses of outgoing IP packets are translated to the WAN IP address of the Peplink Balance. With NAT, all LAN devices share the same WAN IP address to access the Internet (i.e., the WAN IP address of the Peplink Balance).

Operating the Peplink Balance in NAT mode requires only one WAN (Internet) IP address. In addition, operating in NAT mode also has security advantages because LAN devices are hidden behind the Peplink Balance. They are not directly accessible from the Internet and hence less vulnerable to attacks.

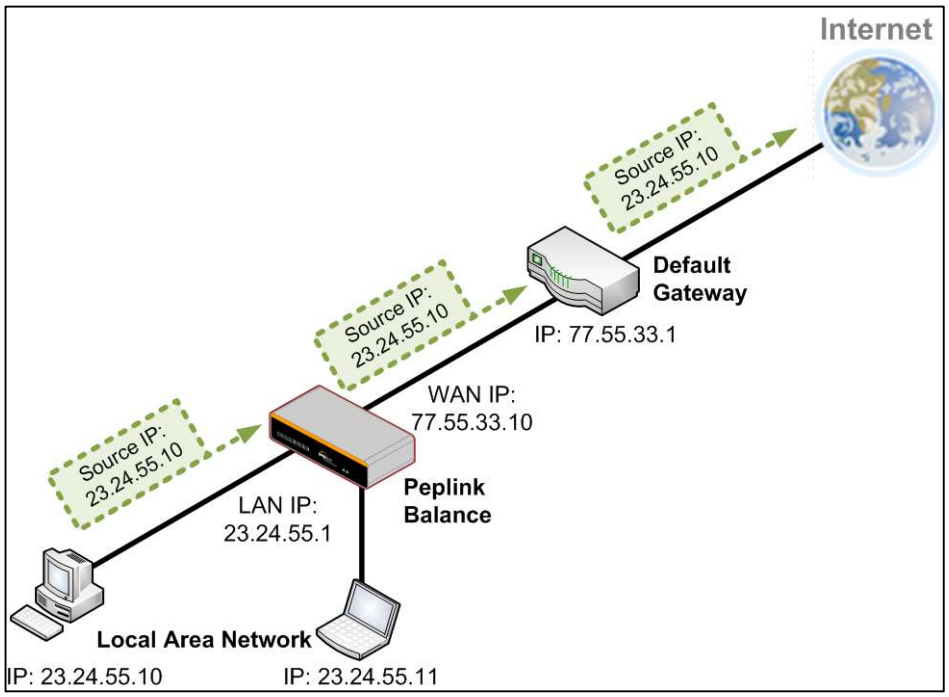
The following figure shows the packet flow in NAT mode:



B.2 Routing Via IP Forwarding

When the Peplink Balance is operating under IP forwarding mode, the IP addresses of IP packets are unchanged; the Peplink Balance forwards both inbound and outbound IP packets without changing their IP addresses.

The following figure shows the packet flow in IP forwarding mode:



Appendix C. **Case Studies**

MPLS Alternative

Our SpeedFusion enabled routers can be used to bond multiple low-cost/commodity Internet connections to replace an expensive managed business Internet connection, private leased line, MPLS, and frame relay without sacrificing reliability and availability.

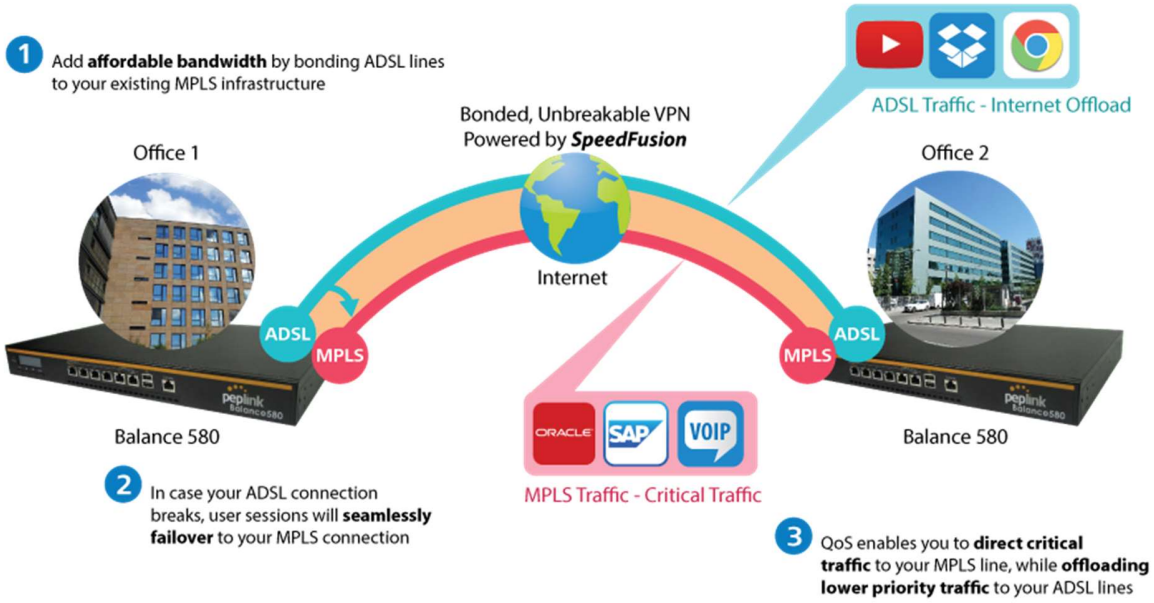
Belows are typical deployment for using our Balance routers to replace expensive MPLS connection with commodity connections, such as ADSL, 3G, and 4G LTE links.

Special features of Balance 580: have high availability capability
Special features of Balance 2500: have high availability capability and capable of connecting to optical fiber based LAN through SFP+ connector

Our WAN-bonding routers which comprise our Balance series and MediaFast series are capable of connecting multiple devices, and end users' networks to the Internet through multiple Internet connections.

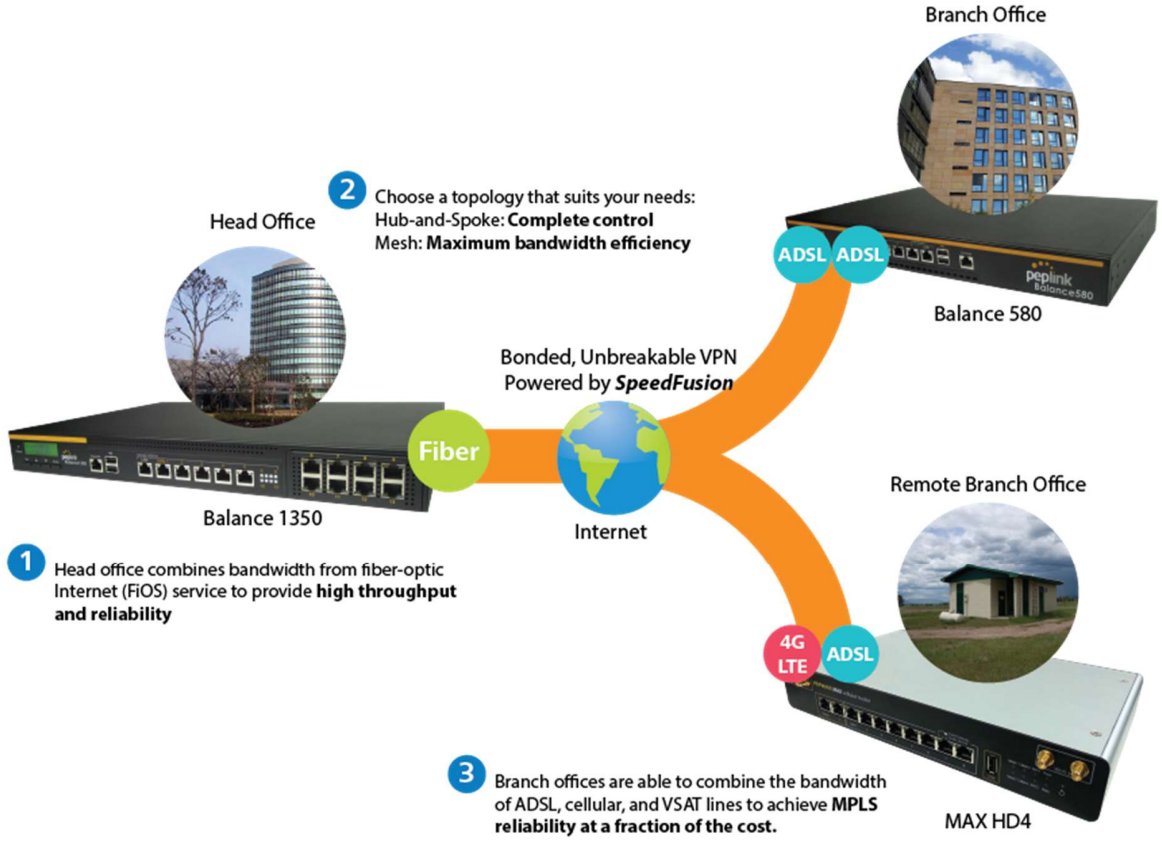
Our MediaFast series routers have been helping students at many education institutions to enjoy uninterrupted learning

Option 1: MPLS Supplement



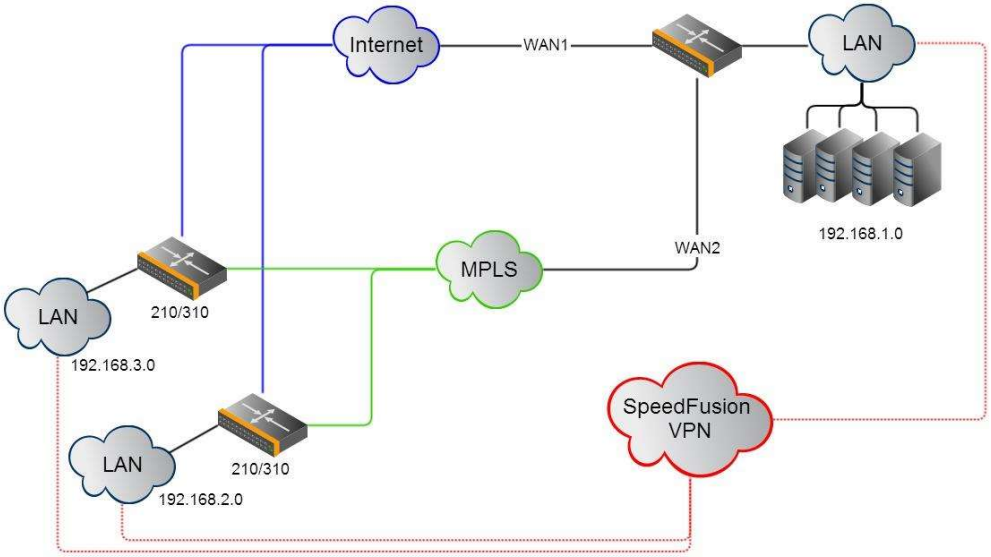
Affordably increase your bandwidth by adding commodity ADSL links to your MPLS connection. SpeedFusion technology bonds all your connections together, enabling session-persistent, user-transparent hot failover. QoS support, bandwidth control, and traffic prioritization gives you total control over your network.

Option 2: MPLS Alternative



Achieve faster speeds and greater reliability while paying only 20% of MPLS costs by connecting multiple ADSL, 3G, and 4G LTE links. Choose a topology that suits your requirements: a hub-and-spoke topology maximizes control over your network, while a meshed topology can reduce your bandwidth overhead by enabling your devices to form Unbreakable VPN connections directly with each other.

Here is an example of to supplement of existing Multi-Office MPLS network with DSL bonding through SpeedFusion using a Balance 580 at the headquarters and Balance 210/310 at branch offices.



Environment:

- This organization has one head office with and two branch offices, with most of the crucial information stored in a server room at the head office.
- They are connecting the offices together using a managed MPLS Solution. However, the MPLS Network is operating at capacity and upgrading the links is cost prohibitive.
- As the organization grows, it needs a cost-efficient way to to add more bandwidth to its wide area network.
- Internet access at the remote sites is sent via a web proxy at head office for corporate web filtering compliance.

Requirement:

- User sessions need to remain uninterrupted
- More bandwidth is required at the head office location for direct internet access.

Recommended Solution:

- Form a SpeedFusion tunnel between the branch offices and head office to bond the MPLS and additional DSL lines.
- SpeedFusion allows for hot failover, maintaining a persistent session while switching connections.

- The DSLs at head office can be used for direct internet access providing lots of cheap internet bandwidth.
- Head office can use outbound policies to send internet traffic out over the DSLs and only use the MPLS connection for speedfusion, freeing up bandwidth.

Devices Deployed: Balance 210, Balance 310, Balance 580

Harrington Industrial Plastics

Overview

Harrington Plastics, the US's largest industrial plastics distributor, was looking to upgrade its network equipment. Harrington's team came across Peplink and started thinking about MPLS alternatives. By choosing Peplink, they saved a fortune on upgrades and ended up with yearly savings of up to $100,000.

Requirements

- Zero network outages
- Flexible resilience options
- Cost-effective solution

Solution

- Peplink Balance 1350

- Peplink Balance 380
- Unbreakable VPN

Benefits

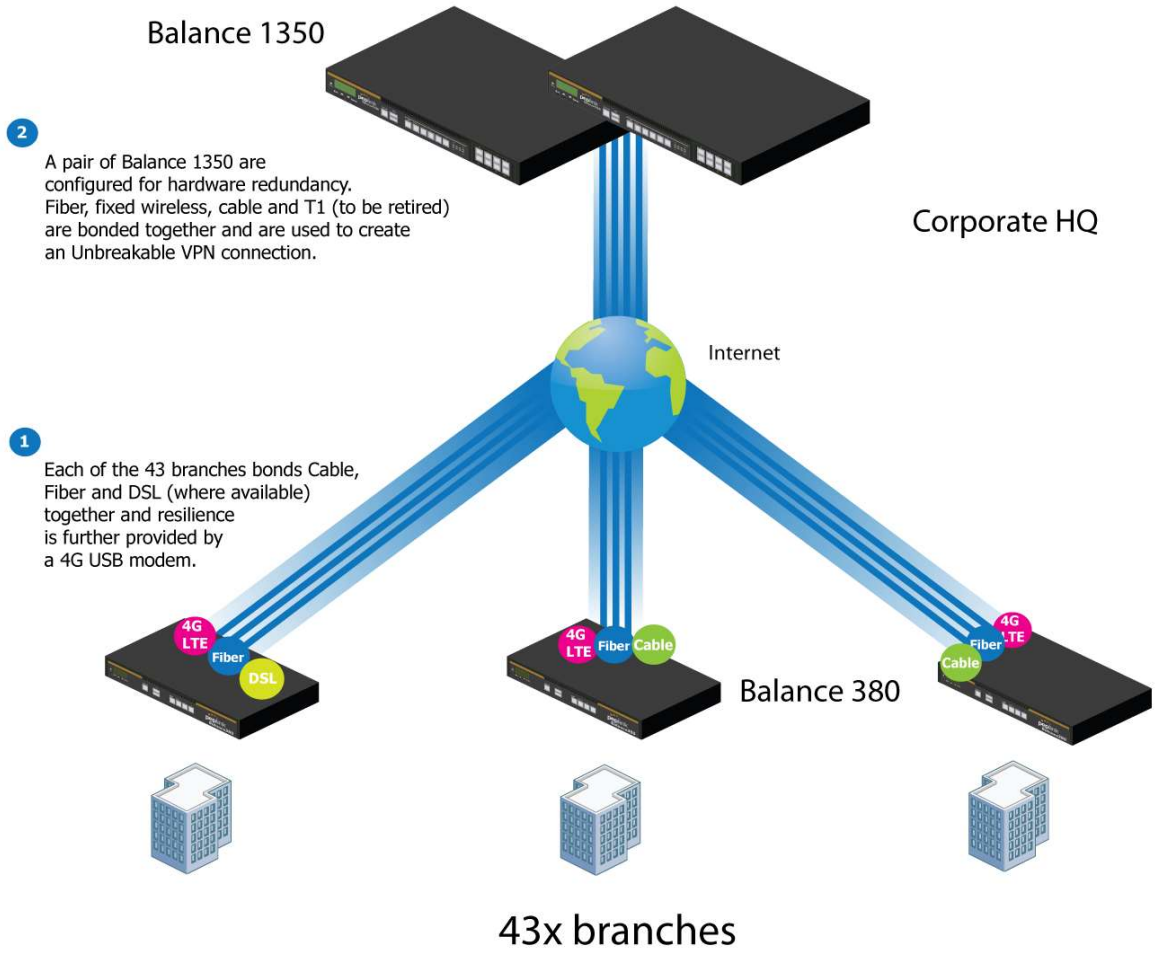
- Extreme savings of $100,000 per year
- 4x the bandwidth
- Seamless hardware failover
- Highly available network due to WAN diversity
- Highly cost-effective compared to competing solutions
- Easy resilience achieved by adding 4G USB modems

Time For An Upgrade

Harrington Industrial Plastics decided it was time to upgrade its network equipment. Its existing solution used redundant MPLS for site-to-site traffic and broadband connections for Internet access. Harrington is the US's largest distributor of industrial plastics piping, serving all industries with corrosive and high-purity applications. It requires peak performance at all times in order to serve its large customer base and 43 busy branches.

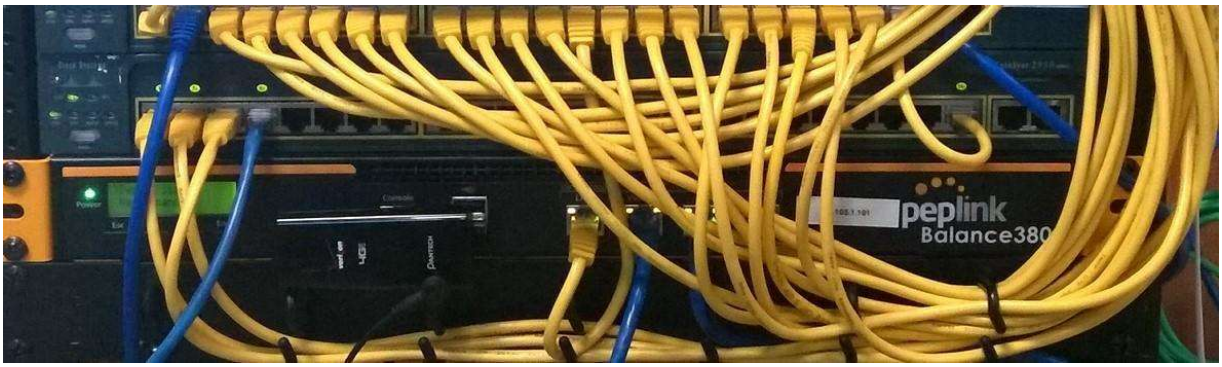
Quick Deployment and Unbreakable Connectivity

In evaluating an upgrade to its network infrastructure, it was only natural that Harrington settled on the best in the industry — Peplink. Peplink partner Frontier Computer Corporation was chosen to help design and deploy the solution. Since Peplink gear is so easy to configure and install, Harrington was able to design, prototype and roll out the entire solution to the corporate headquarters and all 43 branches within just one year.



The corporate office houses a pair of redundant Balance 1350s for hardware resilience. Served by 4 separate links from multiple service providers, the network's chance of an outage is practically zero. All 43 branches are now equipped with a fleet of Balance 380s, bonding a combination of DSL, cable and fiber-optic links together with an additional 4G USB modem for added resilience. These work together to create an Unbreakable VPN connection to the Balance 1350s at the corporate office, connecting the final dot.

Dependable, Resilient Networking that's also Very Budget-friendly



Harrington Industrial Plastics couldn't be happier. They now benefit from an extremely reliable and cost-effective network. Supplying additional resilience is as easy as plugging in a 4G USB modem. Where the MPLS 768kb deployed previously had cost them $192000 a year for all 40 sites, their new solution is now only costing them $92000. Their total bandwidth has been bumped from 36 Mbps to 138 Mbps.

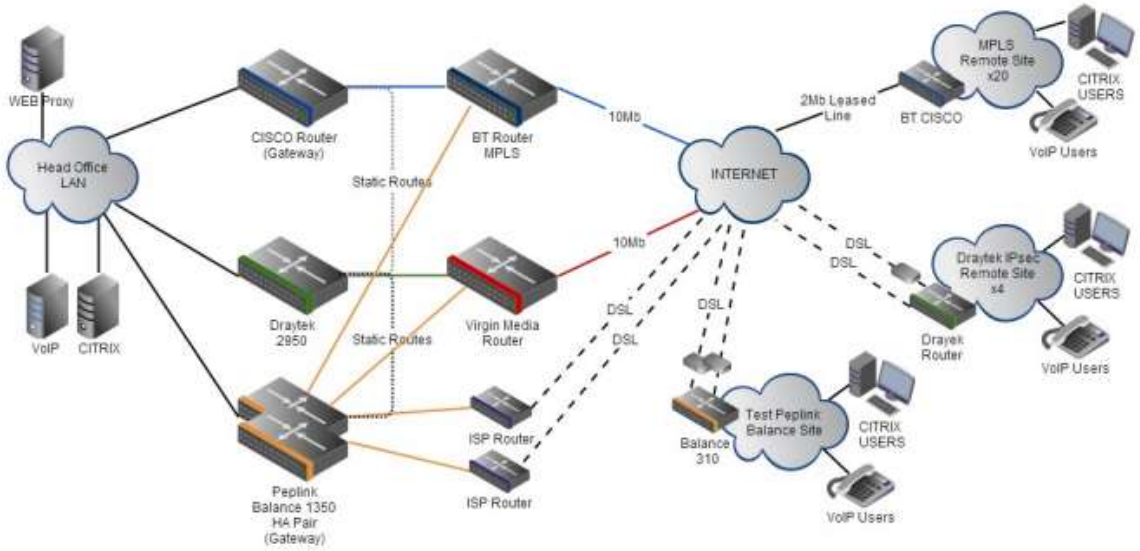
PLUSS

Peplink + Citrix + VoIP Adds Up to Fast, Cost-Effective WAN for Pluss

A Peplink customer since 2006, Pluss is a social enterprise that each year makes gainful employment a reality for more than 5000 disabled and disadvantaged UK citizens. With 37 locations and 300+ active users, Pluss makes heavy use of its WAN infrastructure, which until recently was built on managed MPLS lines.

Hoping to cut expenses and, if possible, boost performance at the same time, Steve Taylor, IT Manager at Pluss, set out to find a solution that would allow Pluss to replace costly MPLS service with a commodity alternative, such as DSL or EFM.

Steve found the solution Pluss needed in Peplink products, especially the Balance series of high-performance enterprise routers and SpeedFusion bonding technology. Pluss now powers its entire WAN infrastructure with simple-to-install, highly reliable, and cost-effective Peplink gear, which allows it to aggregate DSL and other commodity connections and replace expensive leased lines.



Colégio Next - Enabling eLearning

Colégio Next, a recognized Apple Distinguished School - deploys over 500 iPads to its 600 students as a teaching and learning tool.

Despite being equipped with iPads, teachers and students alike were not making use of them. The reason for this was because of the slow network access speeds. Apps would not download and course contents were inaccessible. Often, having more than a couple students connected to the same Wi-Fi access point was enough to bring it to its knees.

Colégio Next needed a unique solution, so they contacted Peplink.

Requirements

- Solve network congestion problem caused by 600 students over rural Internet connections
- Wi-Fi that can handle 50+ users per classroom
- An affordable network infrastructure that can provide simultaneous access to media-rich educational content

Solution

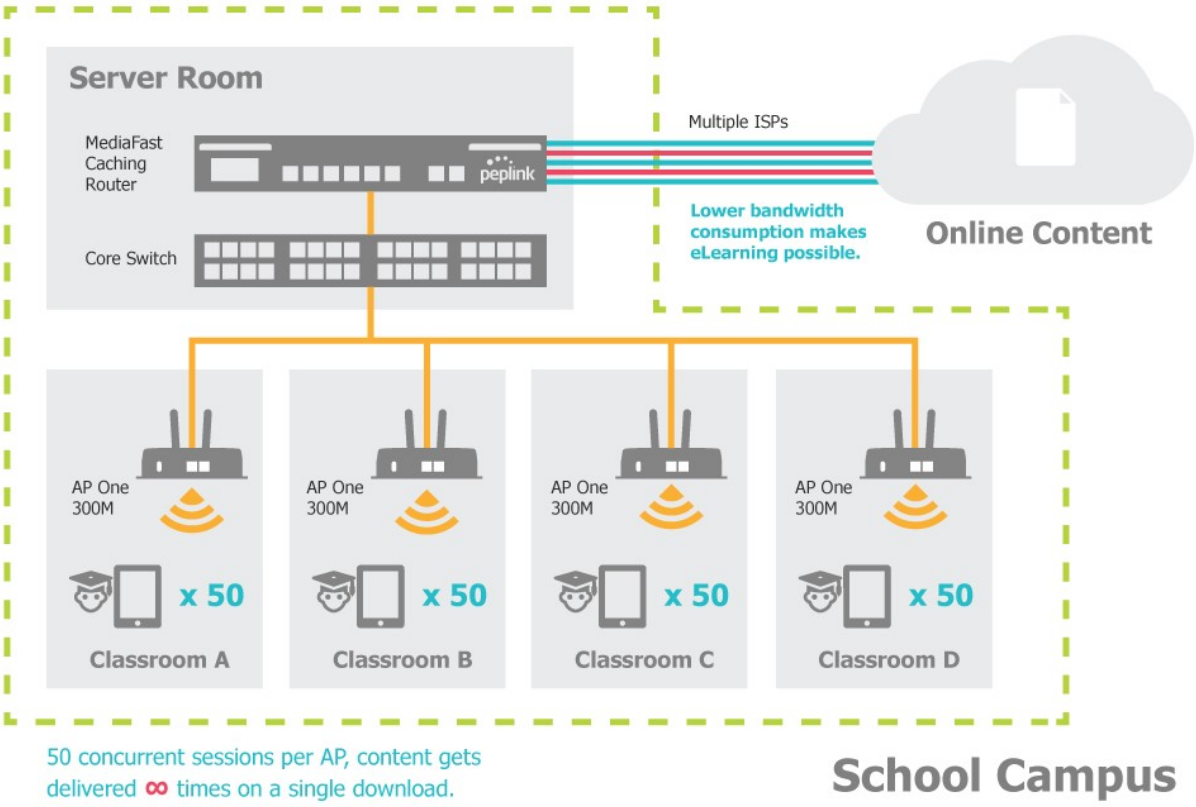
- Peplink MediaFast
- Multi-WAN Content-caching router, tailor-made for Education networking.
- AP One 300M
- Enterprise grade AP, 5GHz Wi-Fi, up to 60 concurrent users.

Benefits

- Instant, simultaneous access to media-rich educational content for 500+ iPads
- Wi-Fi connection stability for 50+ users per classroom, not achievable by other tested equipment
- Teachers, students and guests can be assigned access priority to available bandwidth, further preventing congestion
- iOS updates (often 2GB size) no longer congest the network as they are downloaded only once, cached on the MediaFast and then distributed to all iOS devices

- AP Controller makes MAC Address Filtering easy. Students are assigned to designated APs by their devices' MAC Address in order to prevent saturating any single AP.
- Flawless iPad AirPlay mirroring at all times
- iPads are used all day, reaching their full potential with a fast and stable network all the time

- Students are far more engaged and teachers rely on their iPads all day



Performance Optimization

Scenario

In this scenario, email and web browsing are the two main Internet services used by LAN users.

The mail server is external to the network. The connections are ADSL (WAN1, with slow uplink and fast downlink) and Metro Ethernet (WAN2, symmetric).

Solution

For optimal performance with this configuration, individually set the WAN load balance according to the characteristics of each service.

- Web browsing mainly downloads data; sending e-mails mainly consumes upload bandwidth.
- Both connections offer good download speeds; WAN2 offers good upload speeds.
- Define WAN1 and WAN2's inbound and outbound bandwidths to be 3M/512k and 4M/4M, respectively. This will ensure that outbound traffic is more likely to be routed through WAN2.
- For HTTP, set the weight to 3:4.
- For SMTP, set the weight to 1:8, such that users will have a greater chance to be routed via WAN2 when sending e-mail.

Maintaining the Same IP Address Throughout a Session

Scenario

Some IP address-sensitive websites (for example, Internet banking) use both client IP address and cookie matching for session identification. Since load balancing uses different IP addresses, the session is dropped when a mismatched IP is detected, resulting in frequent interruptions while visiting such sites.

Solution

Make use of the persistence functionality of the Peplink Balance. With persistence configured and the **By Destination** option selected, the Peplink Balance will use a consistent WAN connection for source-destination pairs of IP addresses, preventing sessions from being dropped.

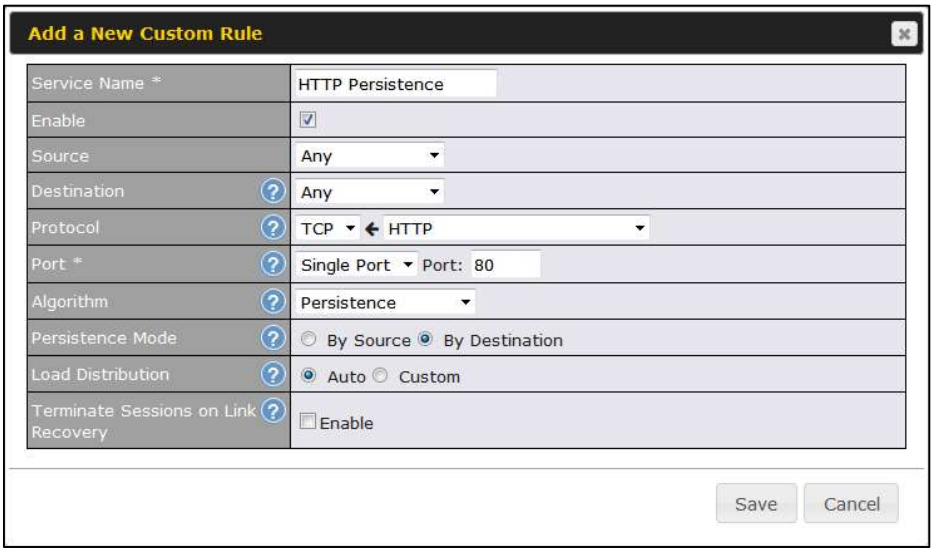
With persistence configured and the option **By Source** is selected, the Peplink Balance uses a consistent WAN connection for same-source IP addresses. This option offers

higher application compatibility but may inhibit the load balancing function unless there are many clients using the Internet.

Settings

Set persistence in at **Advanced>Outbound Policy**.

Click **Add Rule**, select **HTTP** (TCP port 80) for web service, and select **Persistence**. Click **Save** and then **Apply Changes**, located at the top right corner, to complete the process.



Tip

A network administrator can use the traceroute utility to manually analyze the connection path of a particular WAN connection.

Bypassing the Firewall to Access Hosts on LAN

Scenario

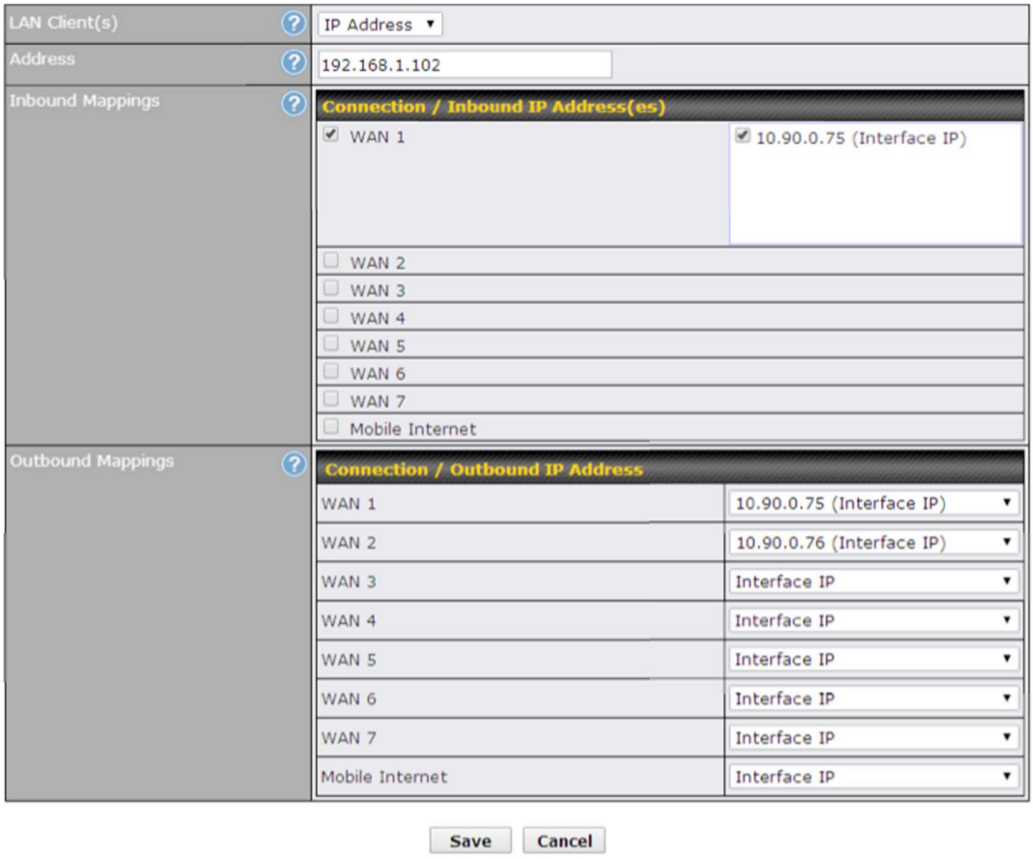
There are times when remote access to computers on the LAN is desirable; for example, when hosting web sites, online businesses, FTP download and upload areas, etc. In such cases, it may be appropriate to create an inbound NAT mapping for the network to allow some hosts on the LAN to be accessible from outside of the firewall.

Solution

The web admin interface can be used to add an inbound NAT mapping to a host and to

bind the host to the WAN connection(s) of your choice. To begin, navigate to **Network>NAT Mappings**.

In this example, the host with an IP address of 192.168.1.102 is bound to 10.90.0.75 of WAN1:



Click **Save** and then **Apply Changes**, located at the top right corner, to complete the process.

Inbound Access Restriction

Scenario

A firewall is required in order to protect the network from potential hacker attacks and other Internet security threats.

Solution

Firewall functionality is built into the Peplink Balance. By default, inbound access is

unrestricted. Enabling a basic level of protection involves setting up firewall rules.

For example, in order to protect your private network from external access, you can set up a firewall rule between the Internet and your private network. To do so, navigate to **Advanced>Firewall>Access Rules**. Then click the **Add Rule** button in the **Inbound Firewall Rules** table and change the settings according to the following screenshot:

After the fields have been entered as in the screenshot, click **Save** to add the rule. Afterwards, change the default inbound rule to **Deny** by clicking the **default** rule in the **Inbound Firewall Rules** table. Click **Apply Changes** on the top right corner to complete the process.

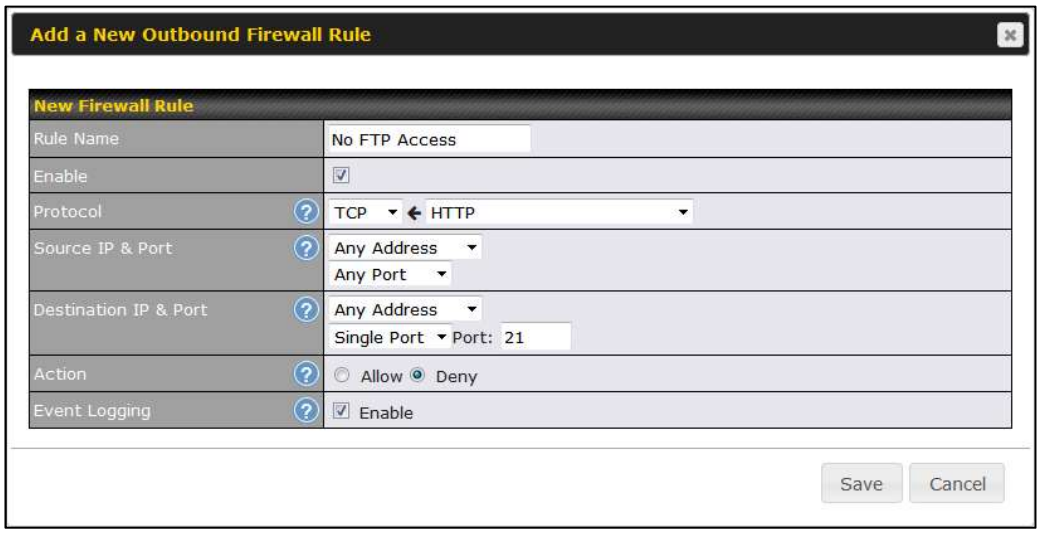
Outbound Access Restriction

Scenario

For security reasons, it may be appropriate to restrict outbound access. For example, you may want to prevent LAN users from using ftp to transfer files to and from the Internet. This can easily be achieved by setting up an outbound firewall rule with the Peplink Balance.

Solution

To setup a firewall between Internet and private network for outbound access, navigate to **Advanced>Firewall>Access Rules**. Click the **Add Rule** button in the **Outbound Firewall Rules** table, and then adjust settings according the screenshot:



After the fields have been entered as in the screenshot, click **Save** to add the rule. Click **Apply Changes** on the top right corner to complete the process.

Appendix D. **Troubleshooting**

Problem 1

Outbound load is only distributed over one WAN connection.

Solution

Outbound load balancing can only be distribute traffic evenly between available WAN connections if many outbound connections are made. If there is only one user on the LAN and only one download session is made from his/her browser, the WAN connections cannot be fully utilized.

For a single user, download management applications are recommended. The applications can split a file into pieces and download the pieces simultaneously. Examples include: DownThemAll (Firefox Extension), iGetter (Mac), etc.

If the outbound traffic is going across the SpeedFusion™ tunnel, (i.e., transferring a file to a VPN peer) the bandwidth of all WAN connections will be bonded. In this case, all bandwidth will be utilized and a file will be transferred across all available WAN connections.

For additional details, please refer to this FAQ:

http://www.peplink.com/knowledgebase/maximizing-your-wan-connections-without-speedfusion/

Problem 2

I am using a download manager program (e.g., Download Accelerator Plus, DownThemAll, etc.). Why is the download speed still only that of a single link?

Solution

First, check whether all WAN connections are up. Second, ensure your download manager application has split the file into 3 parts or more. It is also possible that all of 2 or even 3 download sessions were being distributed to the same link by chance.

Problem 3

I am using some websites to look up my public IP address, e.g., www.whatismyip.com. When I press the browser's Refresh button, the server almost always returns the same address. Isn't the IP address supposed to be changing for every refresh?

Solution

The web server has enabled the **Keep Alive** function, which ensures that you use the same TCP session to query the server. Try to test with a website that does not enable

Keep Alive.

For example, try http://private.dnsstuff.com/tools/aboutyou.ch. (This third-party web site is provided only for reference. Peplink has no association with the site and does not guarantee the site's validity or availability.)

Problem 4

What can I do if I suspect a problem on my LAN connection?

Solution

You can test the LAN connection using ping. For example, if you are using DOS/Windows, at the command prompt, type *ping 192.168.1.1.* This pings the Peplink Balance device (provided that Peplink Balance's IP is 192.168.1.1) to test whether the connection to the Peplink Balance is OK.

Problem 5

What can I do if I suspect a problem on my Internet/WAN connection?

Solution

You can test the WAN connection using ping, as in the solution to Problem 4. As we want to isolate the problems from the LAN, ping will be performed from the Peplink Balance. By using **Ping**/**Traceroute** under the **Status** tab of the Peplink Balance, you may able to find the source of problem.

Problem 6

When I upload files to a server via FTP, the transfer stalls after a few kilobytes of data are sent. What should I do?

Solution

The maximum transmission unit (MTU) or MSS setting may need to be adjusted. By default, the MTU is set at 1440. Choose **Auto** for all of your WAN connections. If that does not solve the problem, you can try the MTU 1492 if a connection is DSL. If problem still persists, change the size to progressive smaller values until your problem is resolved (e.g., 1462, 1440, 1420, 1400, etc).

Additional troubleshooting resources:

Peplink Community Forums: https://forum.peplink.com/

Appendix E. **Declaration**

CAUTION:
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

Radiation Exposure Statement :

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 49 cm between the radiator and your body.

Note: The country code selection is for non-US models only and is not available to all US models. Per FCC regulation, all WiFi products marketed in US must fixed to US operation channels only.

EU Declaration of Conformity

Name of manufacturer: PISMO LABS TECHNOLOGY LIMITED

Address of the manufacturer: FLAT/RM A5 5/F HK SPINNERS IND BLDG PHASE 6, 481 CASTLE PEAK ROAD CHEUNG SHA WAN, Kowloon, Hong Kong

We affirm the electrical equipment manufactured by us fulfils the requirements of the Radio Equipment Directive 2014/53/EU.

Description of the appliance: PEPWAVE / PEPLINK Wireless Product

Model name of the appliance: Peplink Balance 30 Pro / BPL-031-LTEA-W-T / Balance 30 Pro / Pismo811AC / B30 Pro

Trademark: PEPWAVE / PEPLINK

The construction of the appliance is in accordance with the following standards:

EN 300 328 V2.1.1
EN 301 893 V2.1.1
EN 301908-1 V11.1.1
EN 301 489-1 V2.2.0
EN 301 489-17 V3.2.0
EN 301 489-52 V1.1.0
EN 55032: 2015 + AC:2016
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 55024: 2010 + A1 :2015
EN 62311 : 2008
EN 62368-1:2014/AC:2015

Hong Kong, May 7, 2019

Antony Chong
Director of Hardware Engineering
Peplink International Limited

Operations in the 5.15-5.35GHz band are restricted to indoor usage only.

CE

cs Česky [Czech]	*[Jméno výrobce]* tímto prohlašuje, že tento *[typ zařízení]* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
da Dansk [Danish]	Undertegnede *[fabrikantens navn]* erklærer herved, at følgende udstyr *[udstyrets typebetegnelse]* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
de Deutsch [German]	Hiermit erklärt *[Name des Herstellers]*, dass sich das Gerät *[Gerätetyp]* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
et Eesti [Estonian]	Käesolevaga kinnitab *[tootja nimi = name of manufacturer]* seadme *[seadme tüüp = type of equipment]* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
en English	Hereby, *[name of manufacturer]*, declares that this *[type of equipment]* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
es Español [Spanish]	Por medio de la presente *[nombre del fabricante]* declara que el *[clase de equipo]* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *[name of manufacturer]* ΔΗΛΩΝΕΙ ΟΤΙ *[type of equipment]* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
fr Français [French]	Par la présente *[nom du fabricant]* déclare que l'appareil *[type d'appareil]* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

it Italiano [Italian]	Con la presente *[nome del costruttore]* dichiara che questo *[tipo di apparecchio]* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
lv Latviski [Latvian]	Ar šo *[name of manufacturer / izgatavotāja nosaukums]* deklarē, ka *[type of equipment / iekārtas tips]* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
lt Lietuvių [Lithuanian]	Šiuo *[manufacturer name]* deklaruoja, kad šis *[equipment type]* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
nl Nederlands [Dutch]	Hierbij verklaart *[naam van de fabrikant]* dat het toestel *[type van toestel]* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
mt Malti [Maltese]	Hawnhekk, *[isem tal-manifattur]*, jiddikjara li dan *[il-mudel tal-prodott]* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
hu Magyar [Hungarian]	Alulírott, *[gyártó neve]* nyilatkozom, hogy a *[... típus]*megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
pl Polski [Polish]	Niniejszym *[nazwa producenta]* oświadcza, że *[nazwa wyrobu]* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
pt Português [Portuguese]	*[Nome do fabricante]* declara que este *[tipo de equipamento]* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
sl Slovensko [Slovenian]	*[Ime proizvajalca]* izjavlja, da je ta *[tip opreme]* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
sk Slovensky [Slovak]	*[Meno výrobcu]* týmto vyhlasuje, že *[typ zariadenia]*spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
fi Suomi [Finnish]	*[Valmistaja = manufacturer]* vakuuttaa täten että *[type of equipment = laitteen tyyppimerkintä]* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
sv Svenska [Swedish]	Härmed intygar *[företag]* att denna *[utrustningstyp]* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

