



OSPF settings

Area ID	0.0.0.0 
Link Type	<input checked="" type="radio"/> Broadcast <input type="radio"/> Point-to-Point
Authentication	None ▼
Interfaces	<input checked="" type="checkbox"/> Untagged LAN (192.168.112.1/24) <input type="checkbox"/> Management VLAN (10.0.2.1/24) <input type="checkbox"/> jamestest (10.22.37.1/24) <input type="checkbox"/> WAN 1 <input type="checkbox"/> WAN 2 <input type="checkbox"/> WAN 3 <input checked="" type="checkbox"/> WAN 4 (192.168.254.10/24) <input type="checkbox"/> WAN 5

Save
Cancel

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	None ▼
Interfaces	<input type="checkbox"/> Untagged LAN (192.168.112.1/24) <input type="checkbox"/> Management VLAN (10.0.2.1/24) <input type="checkbox"/> jamestest (10.22.37.1/24) <input type="checkbox"/> WAN 1 <input type="checkbox"/> WAN 2 <input type="checkbox"/> WAN 3 <input type="checkbox"/> WAN 4 (192.168.254.10/24) <input type="checkbox"/> WAN 5

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	<input type="checkbox"/> Enable		
Network Advertising	<div style="display: flex; align-items: center;"> --- + </div> <small>All LAN/VLAN networks will be advertised when no network advertising is chosen.</small>		
Static Route Advertising	<input checked="" type="checkbox"/> Enable		
	Excluded Networks	Subnet Mask	
	<input type="text"/>	255.255.255.0 (/24) ▼	+

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.

7.13 BGP

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

BGP	AS	Neighbors	
Uplink	64520	172.16.51.1	
Add			

Click "x" to delete a BGP profile

Click "Add" to add a new BGP profile

BGP Profile						
Profile Name	<input type="text"/>					
Enable	<input checked="" type="checkbox"/>					
Interface	WAN 1 ▾					
Router ID	<input checked="" type="radio"/> LAN IP Address <input type="radio"/> Custom: <input type="text"/>					
Autonomous System	<input type="text"/>					
Neighbor	IP Address	Autonomous System	Multihop / TTL	Password	AS-Path Prepending	
	<input type="text"/>	<input type="text"/>	disable	<input type="text"/>	<input type="text"/>	
Hold Time		240 <input type="text"/>				

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 System	Neighbor's ASN

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.

Route Advertisement			
Network Advertising	?	---	+
Static Route Advertising	?	<input checked="" type="checkbox"/> Enable	
		Excluded Networks	Subnet Mask
			255.255.255.0 (/24) +
Advertise OSPF Route	?	<input type="checkbox"/>	

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.

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

Filter Mode	This option selects the route import filter mode.
--------------------	---

	<p>None: all BGP routes will be accepted.</p> <p>Accept: Routes in "Restricted Networks" will be accepted, routes not in the list will be rejected.</p> <p>Reject: Routes in "Restricted Networks" will be rejected, routes not in the list will be accepted.</p>
Restricted Networks	<p>This specifies the network in the "route import" entry</p> <p>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.</p>

Route Export	
Export to other BGP Profile	<input type="checkbox"/>
Export to OSPF	<input type="checkbox"/>

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.


7.14 Remote User Access

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

7.14.1 L2TP with IPsec

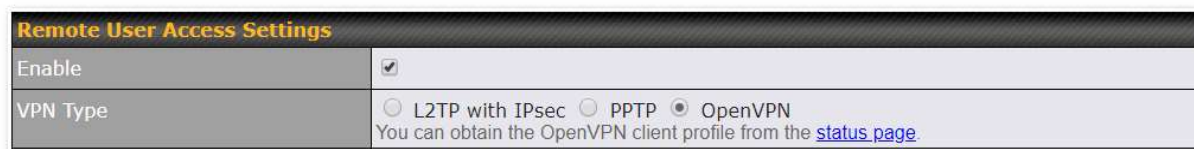
Remote User Access Settings	
Enable	<input checked="" type="checkbox"/>
VPN Type	<input checked="" type="radio"/> L2TP with IPsec <input type="radio"/> PPTP <input type="radio"/> OpenVPN
Preshared Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters

L2TP with IPsec Remote User Access Settings

Pre-shared Key	Enter your pre shared 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 that allow remote user access.
Disable Weak Ciphers	Click the  button to show and enable this option. When checked, weak ciphers such as 3DES will be disabled.

Continue to configure the authentication method.

7.14.2 OpenVPN



Remote User Access Settings

Enable ☒

VPN Type ☐ L2TP with IPsec ☐ PPTP ☒ OpenVPN
 You can obtain the OpenVPN client profile from the [status page](#).

Select OpenVPN and continue to configure the authentication method.

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



OpenVPN Client Profile  [Route all traffic](#) | [Split tunnel](#)

You have a choice between 2 different OpenVPN Client profiles.

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

9.1.1 PPTP



Remote User Access Settings

Enable ☒




VPN Type ☐ L2TP with IPsec ☒ PPTP ☐ OpenVPN

No additional configuration required.

The Point-to-Point Tunneling Protocol (PPTP) is an obsolete method for implementing virtual private

networks. PPTP has many well known security issues
Continue to configure authentication method.

9.1.2 Authentication Methods

Connect to Network	 Untagged LAN ▼		
Authentication	Local User Accounts ▼		
User Accounts	 Username	Password	

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

User accounts:


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

Note:

The username must contain lowercase letters, numerics, underscore(_), dash(-), at sign(@), and period(.) only.

The password must be between 8 and 12 characters long.

LDAP Server:

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

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

Radius Server:

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

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

Active Directory:

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

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

9.2 Misc. Settings

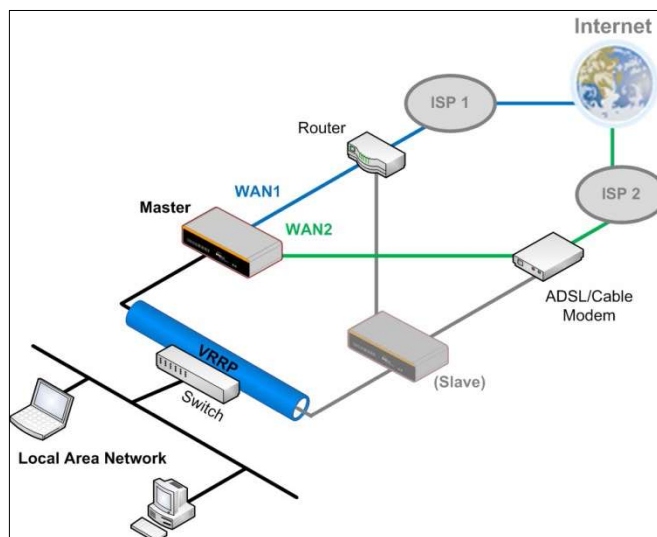
9.2.1 High Availability

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

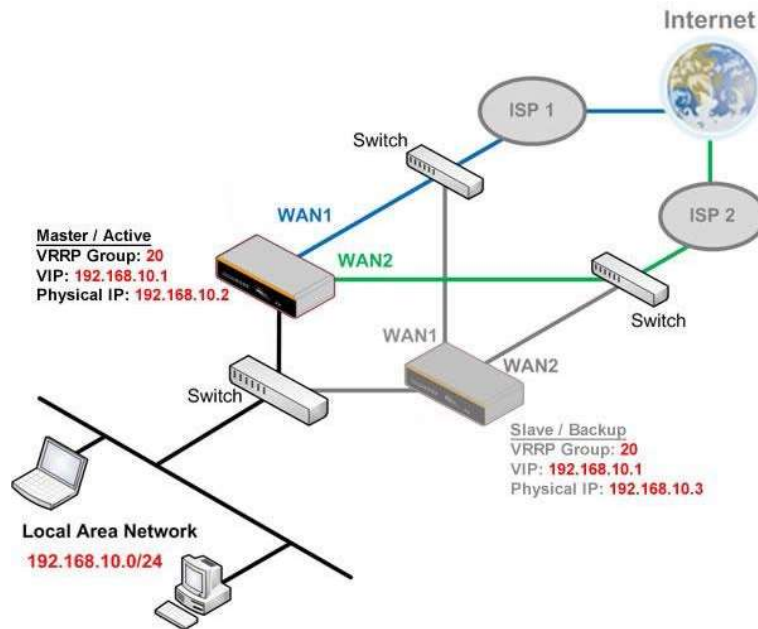
High Availability	
Enable	<input checked="" type="checkbox"/>
Group Number	5
Preferred Role	<input checked="" type="radio"/> Master <input type="radio"/> Slave
Resume Master Role Upon Recovery	<input checked="" type="checkbox"/>
Virtual IP	
LAN Administration IP	192.168.1.1
Subnet Mask	255.255.255.0

Interface for Slave Router

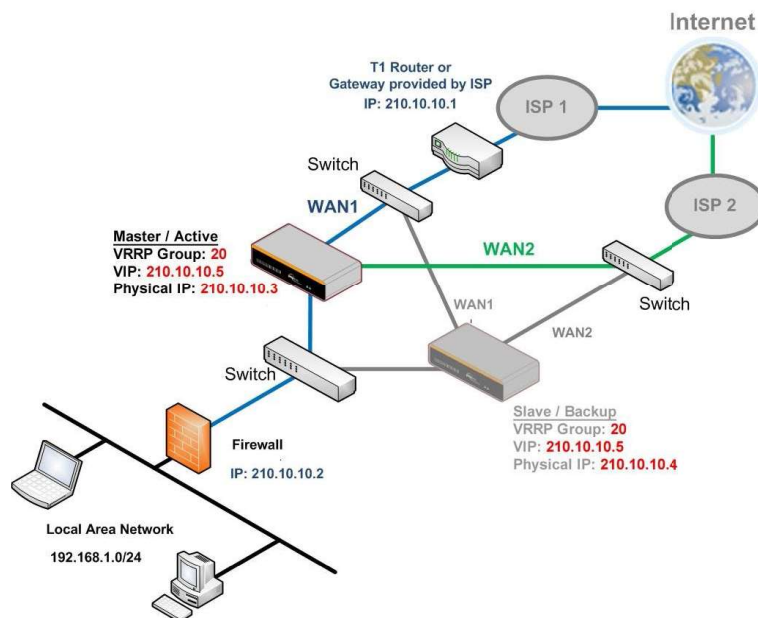
High Availability	
Enable	<input checked="" type="checkbox"/>
Group Number	5
Preferred Role	<input type="radio"/> Master <input checked="" type="radio"/> Slave
Configuration Sync.	<input type="checkbox"/> Master Serial Number: 5454- 5454 - 5454
Virtual IP	
LAN Administration IP	192.168.1.1
Subnet Mask	255.255.255.0

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.

9.2.2 Certificate Manager

Certificate		
VPN Certificate	No Certificate	
Web Admin SSL Certificate	Default Certificate is in use	
Captive Portal SSL Certificate	Default Certificate is in use	
MediaFast Root CA Certificate	Default Certificate is in use	
OpenVPN Root CA Certificate	Default Certificate is in use	

ContentHub Certificate
No Certificates defined
Add Certificate

Wi-Fi WAN Client Certificate
No Certificates defined
Add Certificate

Wi-Fi WAN CA Certificate
No Certificates defined
Add Certificate

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

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

9.2.3 Service Forwarding

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

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

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

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

Custom Service Forwarding Setup	
Custom Service Forwarding	<input type="checkbox"/> 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.

SMTP Forwarding Setup			
SMTP Forwarding		<input checked="" type="checkbox"/> Enable	
Connection	Enable Forwarding?	SMTP Server	SMTP Port
WAN 1	<input type="checkbox"/>		
WAN 2	<input checked="" type="checkbox"/>	22.2.2.2	25
WAN 3	<input checked="" type="checkbox"/>	33.3.3.2	25
WAN 4	<input type="checkbox"/>		

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

Web Proxy Forwarding Setup			
Web Proxy Forwarding		<input checked="" type="checkbox"/> Enable	
Web Proxy Interception Settings			
Proxy Server		IP Address <input type="text" value="123.123.11.22"/> Port <input type="text" value="8080"/> <small>(Current settings in users' browser)</small>	
Connection	Enable Forwarding?	Proxy Server IP Address : Port	
WAN 1	<input type="checkbox"/>		:
WAN 2	<input checked="" type="checkbox"/>	22.2.2.2	: 8765
WAN 3	<input checked="" type="checkbox"/>	33.3.3.2	: 8080
WAN 4	<input type="checkbox"/>		:

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

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

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

Custom Service Forwarding

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

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

9.2.4 Service Passthrough

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

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

(Registered trademarks are copyrighted by their respective owner)

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

	<p>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.</p> <p>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.</p>
H.323	<p>With this option enabled, protocols that provide audio-visual communication sessions will be defined on any packet network and passthrough the Balance.</p>
FTP	<p>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.</p> <p>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.</p>
TFTP	<p>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.</p>
IPsec NAT-T	<p>This field is for enabling the support of IPsec NAT-T passthrough. UDP ports 500, 4500, and 10000 are monitored by default.</p> <p>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.</p>

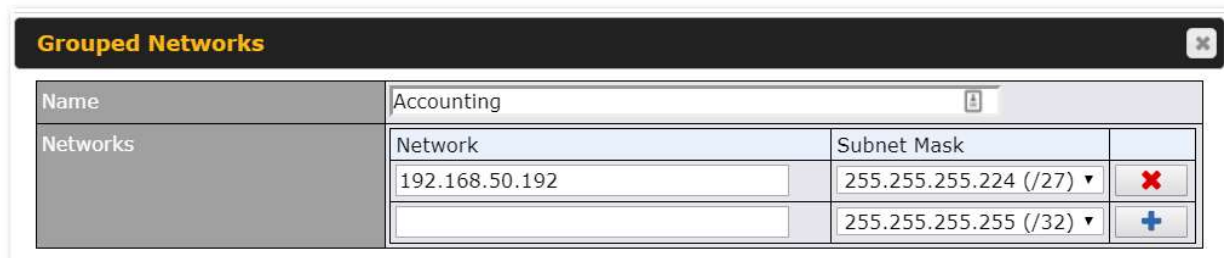
9.2.5 Grouped Networks



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

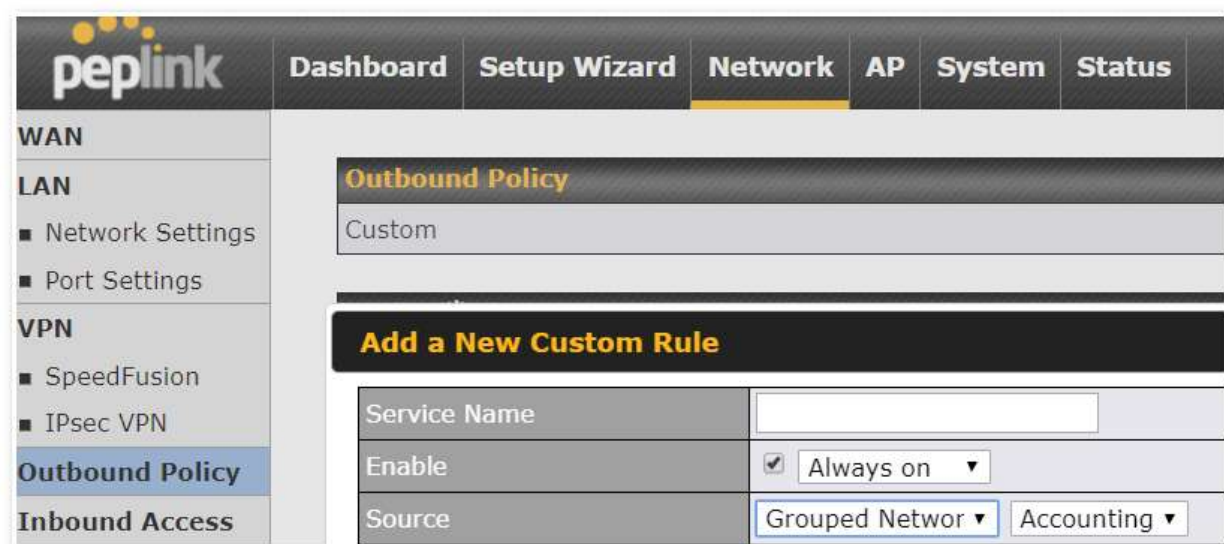
Using “Grouped Networks” you can group and name a range of IP addresses, which can then be used to define firewall rules or outbound policies.

Start by clicking on “add group” then fill in the appropriate field. In this example we’ll create a group “accounting” Click save when you have finished adding the required networks.



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

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



peplink		Dashboard	Setup Wizard	Network	AP	System	Status
WAN							
LAN							
■ Network Settings							
■ Port Settings							
VPN							
■ SpeedFusion							
■ IPsec VPN							
Outbound Policy		Outbound Policy Custom					
Inbound Access							
		Add a New Custom Rule					
		Service Name					
		Enable		<input checked="" type="checkbox"/> Always on ▼			
		Source		Grouped Network ▼ Accounting ▼			

9.2.6 SIM Toolkit

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

USSD

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

SIM Status	
WAN Connection	Cellular
SIM Card	1
IMSI	856195002108538
Tool	USSD

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

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

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

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

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

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

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

SMS

The SMS option allows you to read SMS (text) messages that have been sent to the SIM in your Peplink router.

SIM Status	
WAN Connection	Cellular ▼
SIM Card	1
IMSI	3104911000000000
Tool	SMS ▼

SMS		Refresh
Jun 21, 2017 18:00	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
May 06, 2017 12:23	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
Mar 15, 2017 10:03	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
Mar 06, 2017 14:50	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
Dec 28, 2016 09:53	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
Dec 06, 2016 13:09	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
Nov 08, 2016 11:29	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖
Sep 07, 2016 17:05	Hi, Thank you, your subscription is activated - you can change this when you first login at www.asia	✖

10 AP Tab

10.1 AP

10.1.1 AP Controller

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

AP Controller	
AP Management	<input checked="" type="checkbox"/>
Support Remote AP	<input type="checkbox"/>
Sync. Method	As soon as possible ▾
Permitted AP	<input type="radio"/> Any <input checked="" type="radio"/> Approved List <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <p>(One serial number per line)</p>

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.

DNS Proxy Settings								
Enable	<input checked="" type="checkbox"/>							
DNS Caching	<input type="checkbox"/>							
Include Google Public DNS Servers	<input type="checkbox"/>							
Local DNS Records	<table border="1"> <thead> <tr> <th>Host Name</th> <th>IP Address</th> <th></th> </tr> </thead> <tbody> <tr> <td>wlancontroller</td> <td>10.10.10.1</td> <td>+</td> </tr> </tbody> </table>		Host Name	IP Address		wlancontroller	10.10.10.1	+
Host Name	IP Address							
wlancontroller	10.10.10.1	+						

Sync. Method

Select the required option to synchronize the managed AP's. Options are:

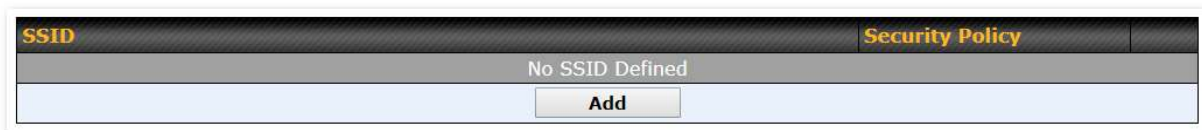
- As soon as possible (default)

- Progressively (synchronize AP's in groups)
- One at a time (synchronize one AP at a time)

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.

10.1.2 Wireless SSID



Current SSID information appears in the **SSID** section. To edit an existing SSID, click its name in the list. To add a new SSID, click **Add**. Note that the following settings vary by model. The below settings show a new SSID window with Advanced Settings enabled (these are available by selecting the question mark in the top right corner).



SSID

SSID Settings


SSID	PEPLINK_63E6
Enable	Always on
VLAN	0 (0: Untagged) <input type="checkbox"/> Use VLAN Pool
Broadcast SSID	<input checked="" type="checkbox"/>
Data Rate	<input checked="" type="radio"/> Auto <input type="radio"/> Fixed
Multicast Filter	<input type="checkbox"/>
Multicast Rate	MCS0/6M
IGMP Snooping	<input type="checkbox"/>
DHCP Relay	<input type="checkbox"/>
DHCP Option 82	<input type="checkbox"/>
Network Priority (QoS)	Gold
Layer 2 Isolation	<input type="checkbox"/>
Maximum number of clients	2.4 GHz: 0 5 GHz: 0 (0: Unlimited)
Band Steering	<input type="button" value="?"/> Disable

SSID Settings	
SSID	This setting specifies the SSID of the virtual AP to be scanned by Wi-Fi clients.
Enable	Click the drop-down menu to apply a time schedule to this interface
VLAN	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). Use of a VLAN pool is enabled by selecting the checkbox.
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 Pepwave router 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 Pepwave router to listen to internet group management protocol (IGMP) network traffic, select this option.
DHCP Relay	Put the address of the DHCP server in this field.. DHCP requests will be relayed to this DHCP server
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.
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	Indicate the maximum number of clients that should be able to connect to each frequency.
Band Steering	To reduce 2.4 GHz band overcrowding, AP with band steering steers clients capable of 5 GHz operation to 5 GHz frequency. Choose between: Force - Clients capable of 5 GHz operation are only offered with 5 GHz frequency. Prefer - Clients capable of 5 GHz operation are encouraged to associate with 5 GHz frequency. If the clients insist to attempt on 2.4 GHz frequency, 2.4 GHz frequency will be offered. Disable - Default

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

Security Settings

Security Policy	WPA/WPA2 - Personal ▼
Encryption	TKIP/AES:CCMP
Shared Key	<div>  <div> <div>••••••••</div> <div>Hide Characters</div> </div> </div>

Security Settings

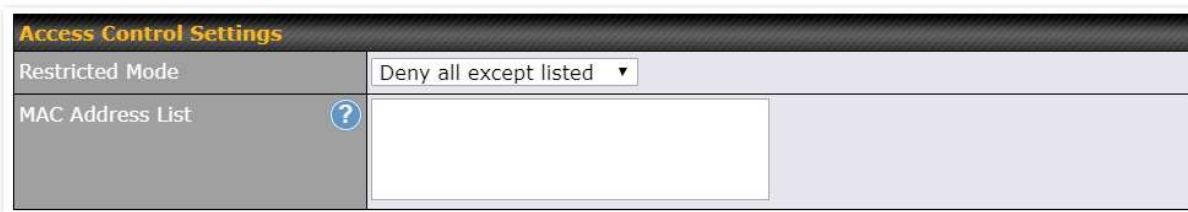
This setting configures the wireless authentication and encryption methods. Available options are :

- **Open** (No Encryption)
- **WPA2 -Personal** (AES:CCMP)
- **WPA2 – Enterprise**
- **WPA/WPA2 - Personal** (TKIP/AES: CCMP)
- **WPA/WPA2 – Enterprise**

Security Policy

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.



Access Control

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

MAC Address List Connections coming from the MAC addresses in this list will be either denied or accepted based on the option selected in the previous field.
If more than one MAC address needs to be entered, you can use a carriage return to separate them.

RADIUS Server Settings	Primary Server	Secondary Server
Host	<input type="text"/>	<input type="text"/>
Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Authentication Port	<input type="text" value="1812"/> <input type="button" value="Default"/>	<input type="text" value="1812"/> <input type="button" value="Default"/>
Accounting Port	<input type="text" value="1813"/> <input type="button" value="Default"/>	<input type="text" value="1813"/> <input type="button" value="Default"/>
NAS-Identifier	<input type="text" value="Device Name"/>	

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 .
NAS-Identifier	Choose between Device Name , LAN MAC address , Device Serial Number and Custom Value

10.1.3 AP > Profiles

AP Settings	
AP Profile Name	<input type="text"/>
SSID	<input checked="" type="checkbox"/> 2.4 GHz <input type="checkbox"/> 5 GHz <input type="text" value="PEPLINK_63E6"/>
Operating Country	<input type="text" value="United States"/>
Preferred Frequency	<input checked="" type="radio"/> 2.4 GHz <input type="radio"/> 5 GHz

AP Settings

AP Profile Name	Ap Profile name
SSID	You can select the wireless networks for 2.4 GHz or 5 GHz separately for each SSID.
Operating Country	<p>This drop-down menu specifies the national/regional regulations which the Wi-Fi radio should follow.</p> <ul style="list-style-type: none"> 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). <p>NOTE: Users are required to choose an option suitable to local laws and regulations.</p>
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	Auto ▾	Auto ▾
Channel	Auto ▾ Edit Channels: 1 2 3 4 5 6 7 8 9 10 11	Auto ▾ Edit Channels: 36 40 44 48 149 153 157 161 165
Auto Channel Update	Daily at 03 ▾ :00 <input checked="" type="checkbox"/> Wait until no active client associated	Daily at 03 ▾ :00 <input checked="" type="checkbox"/> Wait until no active client associated
Output Power	Fixed: Max ▾ <input type="checkbox"/> Boost	Fixed: Max ▾ <input type="checkbox"/> 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**.

Management VLAN ID	 0 (0: Untagged)
Operating Schedule	Always on ▼
Beacon Rate	 1 Mbps ▼
Beacon Interval	 100 ms ▼
DTIM	 1 Default
RTS Threshold	0 Default
Fragmentation Threshold	0 (0: Disable) Default
Distance / Time Converter	<div> <input type="text" value="4050"/> m </div> <small>Note: Input distance for recommended values</small>
Slot Time	 <input type="radio"/> Auto <input checked="" type="radio"/> Custom <input type="text" value="9"/> μs Default
ACK Timeout	 48 μs Default
Frame Aggregation	<input checked="" type="checkbox"/>
Aggregation Length	50000 Default

Advanced AP Settings

Management

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

VLAN ID	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	<input checked="" type="checkbox"/>
Web Access Protocol	<input type="radio"/> HTTP <input checked="" type="radio"/> HTTPS
Management Port	443
HTTP to HTTPS Redirection	<input checked="" type="checkbox"/>
Admin Username	admin
Admin Password	<input type="password" value="....."/> <input type="button" value="Generate"/>
	<input checked="" type="checkbox"/> Hide Characters

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 through HTTP or HTTPS
Management Port	Determines the port at which the management UI can be accessed.
HTTP to HTTPS redirection	Redirects HTTP request to HTTPS
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.

10.2 AP Controller Status

10.2.1 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.

10.2.2 Access Points (Usage)

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


Search Filter	
AP Name / Serial Number / SSID	<input type="text" value="All"/> <input type="checkbox"/> Include Offline APs
Search Result	

Managed APs							Expand	Collapse
Name	IP Address	MAC	Location	Firmware Pack ID	Configuration			
Default (8/9 online)								
 100-4017-8000	10.8.82.11	00:1A:DD:BD:73:E0		3.5.2	None	  		

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	<p>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   buttons.</p> <p>On the right of the table, you will see the following icons:   .</p> <p>Click the  icon to see a usage table for each client:</p>

Client List						
MAC Address	IP Address	Type	Signal	SSID	Upload	Download
80:56:f2:98:75:ff	10.9.2.7	802.11ng	Excellent (37)	Balance	66.26 MB	36.26 MB
c4:6a:b7:bf:d7:15	10.9.2.123	802.11ng	Excellent (42)	Balance	6.65 MB	2.26 MB
70:56:81:1d:87:f3	10.9.2.102	802.11ng	Good (23)	Balance	1.86 MB	606.63 KB
e0:63:e5:83:45:c8	10.9.2.101	802.11ng	Excellent (39)	Balance	3.42 MB	474.52 KB
18:00:2d:3d:4e:7f	10.9.2.66	802.11ng	Excellent (25)	Balance	640.29 KB	443.57 KB
14:5a:05:80:4f:40	10.9.2.76	802.11ng	Excellent (29)	Balance	2.24 KB	3.67 KB
00:1a:dd:c5:4e:24	10.8.9.84	802.11ng	Excellent (29)	Wireless	9.86 MB	9.76 MB
00:1a:dd:bb:29:ec	10.8.9.73	802.11ng	Excellent (25)	Wireless	9.36 MB	11.14 MB
40:b0:fa:c3:26:2c	10.8.9.18	802.11ng	Good (23)	Wireless	118.05 MB	7.92 MB
e4:25:e7:8a:d3:12	10.10.11.23	802.11ng	Excellent (35)	Marketing	74.78 MB	4.58 MB
04:f7:e4:ef:68:05	10.10.11.71	802.11ng	Poor (12)	Marketing	84.84 KB	119.32 KB


Close

Click the  icon to configure each client

AP Details	
Serial Number	1111-2222-3333
MAC Address	00:1A:DD:BD:73:E0
Product Name	Pepwave AP Pro Duo
Name	<input type="text"/>
Location	<input type="text"/>
Firmware Version	3.5.2
Firmware Pack	Default (None) ▼
AP Client Limit	<input checked="" type="radio"/> Follow AP Profile <input type="radio"/> Custom
2.4 GHz SSID List	T4Open
5 GHz SSID List	T4Open
Last config applied by controller	Mon Nov 23 11:25:03 HKT 2015
Uptime	Wed Nov 11 15:00:27 HKT 2015
Current Channel	1 (2.4 GHz) 153 (5 GHz)
Channel	2.4 GHz: Follow AP Profile ▼ 5 GHz: Follow AP Profile ▼
Output Power	2.4 GHz: Follow AP Profile ▼ 5 GHz: Follow AP Profile ▼

Close

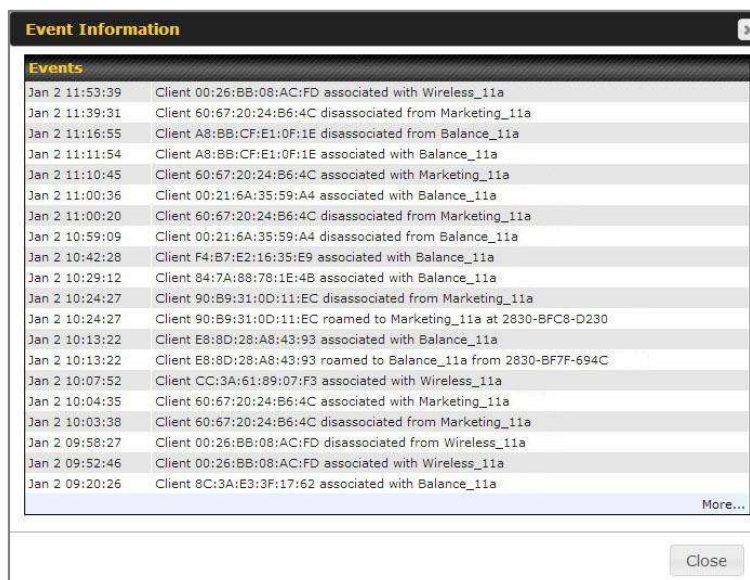
For easier network management, you can give each client a name and designate its location. You can also designate which firmware pack (if any) this client will follow, as well as the channels on which the client will broadcast.

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:



Event Information

Events

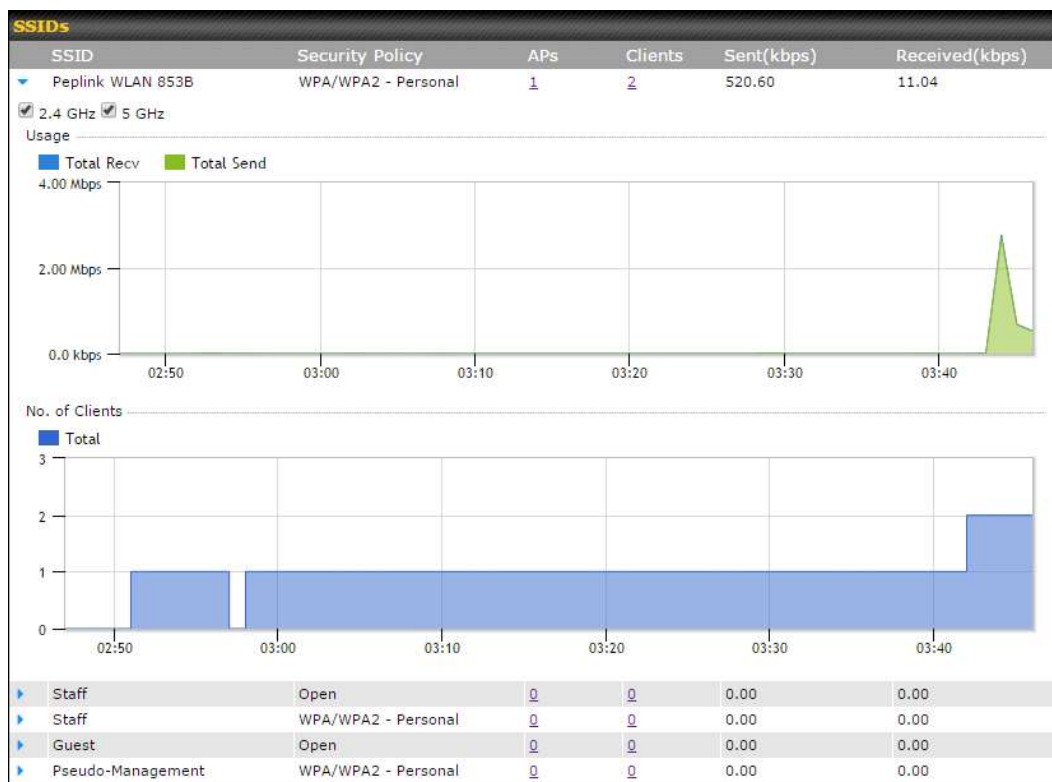
Jan 2 11:53:39	Client 00:26:BB:08:AC:FD associated with Wireless_11a
Jan 2 11:39:31	Client 60:67:20:24:B6:4C disassociated from Marketing_11a
Jan 2 11:16:55	Client A8:BB:CF:E1:0F:1E disassociated from Balance_11a
Jan 2 11:11:54	Client A8:BB:CF:E1:0F:1E associated with Balance_11a
Jan 2 11:10:45	Client 60:67:20:24:B6:4C associated with Marketing_11a
Jan 2 11:00:36	Client 00:21:6A:35:59:A4 associated with Balance_11a
Jan 2 11:00:20	Client 60:67:20:24:B6:4C disassociated from Marketing_11a
Jan 2 10:59:09	Client 00:21:6A:35:59:A4 disassociated from Balance_11a
Jan 2 10:42:28	Client F4:B7:E2:16:35:E9 associated with Balance_11a
Jan 2 10:29:12	Client 84:7A:88:78:1E:4B associated with Balance_11a
Jan 2 10:24:27	Client 90:B9:31:0D:11:EC disassociated from Marketing_11a
Jan 2 10:24:27	Client 90:B9:31:0D:11:EC roamed to Marketing_11a at 2830-BFC8-D230
Jan 2 10:13:22	Client E8:8D:28:A8:43:93 associated with Balance_11a
Jan 2 10:13:22	Client E8:8D:28:A8:43:93 roamed to Balance_11a from 2830-BF7F-694C
Jan 2 10:07:52	Client CC:3A:61:89:07:F3 associated with Wireless_11a
Jan 2 10:04:35	Client 60:67:20:24:B6:4C associated with Marketing_11a
Jan 2 10:03:38	Client 60:67:20:24:B6:4C disassociated from Marketing_11a
Jan 2 09:58:27	Client 00:26:BB:08:AC:FD disassociated from Wireless_11a
Jan 2 09:52:46	Client 00:26:BB:08:AC:FD associated with Wireless_11a
Jan 2 09:20:26	Client 8C:3A:E3:3F:17:62 associated with Balance_11a

More...

Close

10.2.3 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.


10.2.4 Wireless Client


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

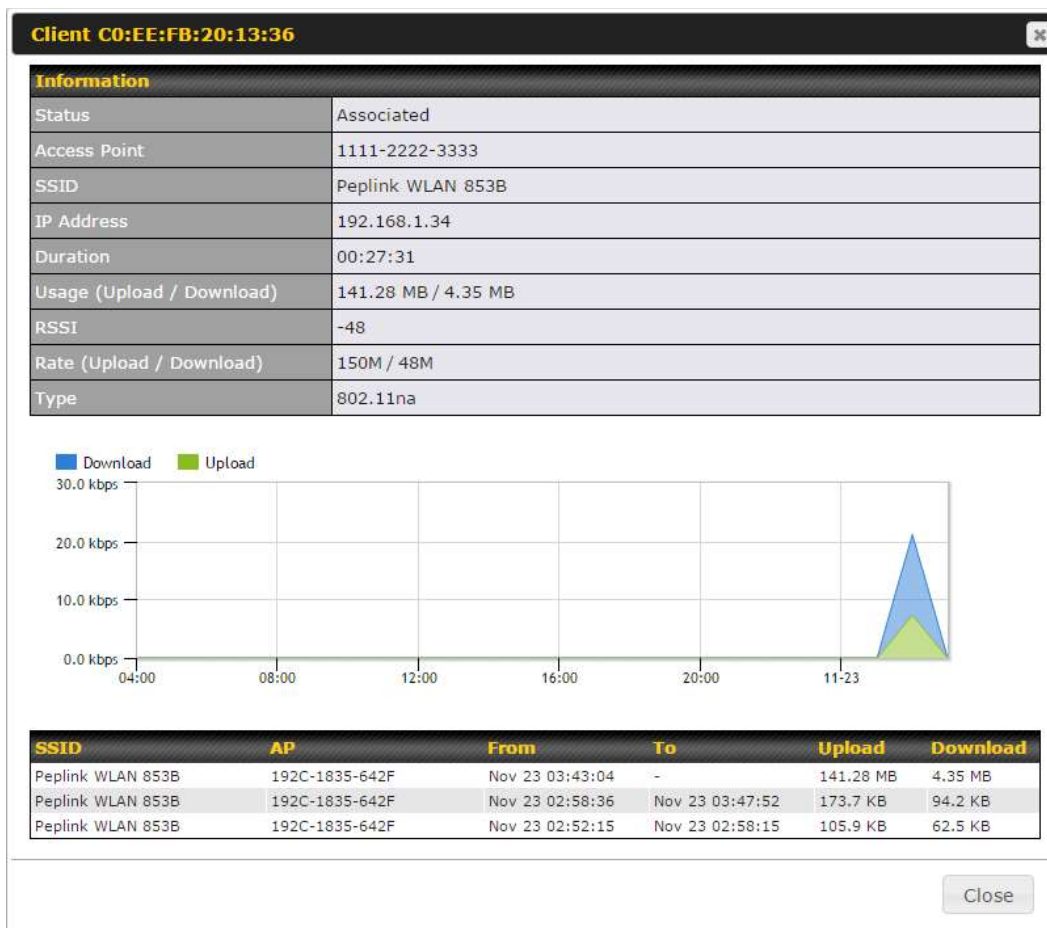
Search Filter

Client MAC / SSID / AP Serial Number	<input type="text"/>
Maximum Result (1-256)	<input type="text" value="50"/>
Search Result	

Top 10 Clients of last hour (Updated at 03:00)









































Client MAC Address	Upload	Download	
C0:EE:FB:20:13:36	53.5 KB	101.4 KB	☆ 

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:





10.2.5 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.

10.2.6 Event Log

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

Filter	
Search key	<input type="text" value="Client MAC Address / Wireless SSID / AP Serial Number / AP Profile Name"/>
Time	From <input type="text"/> hh:mm to <input type="text"/> hh:mm
Alerts only	<input type="checkbox"/>
<input type="button" value="Search"/>	

Events		View Alerts
Jan 2 11:01:11	AP One 300M: Client 54:EA:A0:2D:A0:D5 disassociated from Marketing_11a	
Jan 2 11:00:42	AP One 300M: Client 54:EA:A0:2D:A0:D5 associated with Marketing_11a	
Jan 2 11:00:38	AP One 300M: Client 54:EA:A0:2D:A0:D5 disassociated from Marketing_11a	
Jan 2 11:00:36	AP One 300M: Client 00:11:6A:2B:09:A8 associated with Balance_11a	
Jan 2 11:00:20	AP One 300M: Client 60:67:20:24:06:4C disassociated from Marketing_11a	
Jan 2 11:00:09	AP One 300M: Client 54:EA:A0:2D:A0:D5 associated with Marketing_11a	
Jan 2 10:59:09	AP One 300M: Client 00:11:6A:2B:09:A8 disassociated from Balance_11a	
Jan 2 10:59:08	Office Fiber AP: Client 10:00:2D:30:40:7F associated with Balance	
Jan 2 10:58:53	Michael's Desk: Client 10:00:2D:30:40:7F disassociated from Wireless	
Jan 2 10:58:18	AP One 300M: Client 54:EA:A0:2D:A0:D5 disassociated from Marketing_11a	
Jan 2 10:58:03	Office InWall: Client 00:11:6A:2B:09:A8 associated with Wireless	
Jan 2 10:57:47	AP One 300M: Client 54:EA:A0:2D:A0:D5 associated with Marketing_11a	
Jan 2 10:57:19	AP One 300M: Client 54:EA:A0:2D:A0:D5 disassociated from Marketing_11a	
Jan 2 10:57:09	AP One 300M: Client 54:EA:A0:2D:A0:D5 associated with Marketing_11a	
Jan 2 10:56:48	AP One 300M: Client 54:EA:A0:2D:A0:D5 disassociated from Marketing_11a	
Jan 2 10:56:39	AP One 300M: Client 54:EA:A0:2D:A0:D5 associated with Marketing_11a	
Jan 2 10:56:19	AP One 300M: Client 00:20:85:00:04:A4 associated with Marketing_11a	
Jan 2 10:56:09	AP One 300M: Client 9C:04:0B:10:09:4C associated with Marketing_11a	
Jan 2 10:55:42	AP One 300M: Client 54:EA:A0:2D:A0:D5 disassociated from Marketing_11a	
Jan 2 10:55:29	AP One 300M: Client 54:EA:A0:2D:A0:D5 associated with Marketing_11a	
		More...



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.

10.3 Toolbox

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


Firmware PacksAuto Power Adj.Dynamic Channel Assignment

Pack ID	Release Date	Details	Action
1126	2013-08-26		

Check for UpdatesManual UploadDefault...

No default defined.

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 to download new packs or you can press to manually upload a firmware pack. Press to define which firmware pack is default.

11 System Tab

11.1 System

11.1.1 Admin Security

There are two types of user accounts available for accessing the web admin: *admin* and *user*. They represent two user levels: the admin level has full administrative access, while the user level is read-only. The user level can access only the device's status information; users cannot make any changes on the device.

A web login session will be logged out automatically when it has been idle longer than the **Web Session Timeout**. Before the session expires, you may click the **Logout** button in the web admin to exit the session.

0 hours 0 minutes signifies an unlimited session time. This setting should be used only in special situations, as it will lower the system security level if users do not log out before closing the browser. The **default** is 4 hours, 0 minutes.

For security reasons, after logging in to the web admin Interface for the first time, it is recommended to change the administrator password. Configuring the administration interface to be accessible only from the LAN can further improve system security. Administrative settings configuration is located at **System>Admin Security**.

Admin Settings	
Router Name	<div> <div></div> <div>hostname: <div></div></div> </div> <div>⚙️ This configuration is being managed by InControl.</div>
Admin User Name	admin
Admin Password	••••••••
Confirm Admin Password	••••••••
Read-only User Name	user
User Password	
Confirm User Password	
Front Panel Passcode	<input type="checkbox"/>
Web Session Timeout	<div> <div>4</div> <div>Hours</div> <div>0</div> <div>Minutes</div> </div>
Authentication by RADIUS	<input type="checkbox"/> Enable
CLI SSH & Console	<input type="checkbox"/> Enable
Security	<div>HTTP / HTTPS ▾</div> <div><input checked="" type="checkbox"/> Redirect HTTP to HTTPS</div>
Web Admin Access	<div>HTTP: LAN Only</div> <div>HTTPS: LAN Only ▾</div>
Web Admin Port	<div>HTTP: 80</div> <div>HTTPS: 443</div>

LAN Connection Access Settings	
Allowed LAN Networks	<input checked="" type="radio"/> Any <input type="radio"/> Allow this network only

Save

Admin Settings	
Router Name	This field allows you to define a name for this Pepwave router. By default, Router Name is set as MAX_XXXX , where XXXX refers to the last 4 digits of the unit's serial number.
Admin User Name	Admin User Name is set as <i>admin</i> 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 <i>user</i> 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.
Web Session Timeout	This field specifies the number of hours and minutes that a web session can remain idle before the Pepwave router terminates its access to the web admin interface. By default, it is set to 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.
CLI SSH	The CLI (command line interface) can be accessed via SSH. This field enables CLI support. For additional information regarding CLI, please refer to Section 30.5 .
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	<p>This option is for specifying the protocol(s) through which the web admin interface can be accessed:</p> <ul style="list-style-type: none"> • HTTP • HTTPS • HTTP/HTTPS

	HTTP to HTTPS redirection is enabled by default to force HTTPS access to the web admin interface.
Web Admin Port	This field is for specifying the port number on which the web admin interface can be accessed.
Web Admin Access	<p>This option is for specifying the network interfaces through which the web admin interface can be accessed:</p> <ul style="list-style-type: none"> • LAN only • LAN/WAN <p>If LAN/WAN is chosen, the WAN Connection Access Settings form will be displayed.</p>



LAN Connection Access Settings

Allowed LAN Networks ☐ Any ☒ Allow this network only Public (10) ▼

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



WAN Connection Access Settings

Allowed Source IP Subnets ☐ Any ☒ Allow access from the following IP subnets only

Allowed WAN IP Address(es)

Connection / IP Address(es)	All	Clear
<input checked="" type="checkbox"/> WAN 1	<input checked="" type="checkbox"/> 10.88.3.158 (Interface IP)	
<input type="checkbox"/> WAN 2		
<input type="checkbox"/> Wi-Fi WAN		
<input type="checkbox"/> Cellular 1		
<input type="checkbox"/> Cellular 2		
<input type="checkbox"/> USB		

WAN Connection Access Settings	
Allowed Source IP Subnets	<p>This field allows you to restrict web admin access only from defined IP subnets.</p> <ul style="list-style-type: none"> • Any - Allow web admin accesses to be from anywhere, without IP address restriction. • Allow access from the following IP subnets only - Restrict web admin access only from the defined IP subnets. When this is chosen, a text input

	<p>area will be displayed beneath:</p> <p>The allowed IP subnet addresses should be entered into this text area. Each IP subnet must be in form of <i>w.x.y.z/m</i>, where <i>w.x.y.z</i> is an IP address (e.g., <i>192.168.0.0</i>), and <i>m</i> is the subnet mask in CIDR format, which is between 0 and 32 inclusively (For example, <i>192.168.0.0/24</i>).</p> <p>To define multiple subnets, separate each IP subnet one in a line. For example:</p> <ul style="list-style-type: none"> • 192.168.0.0/24 • 10.8.0.0/16
Allowed WAN IP Address(es)	This is to choose which WAN IP address(es) the web server should listen on.

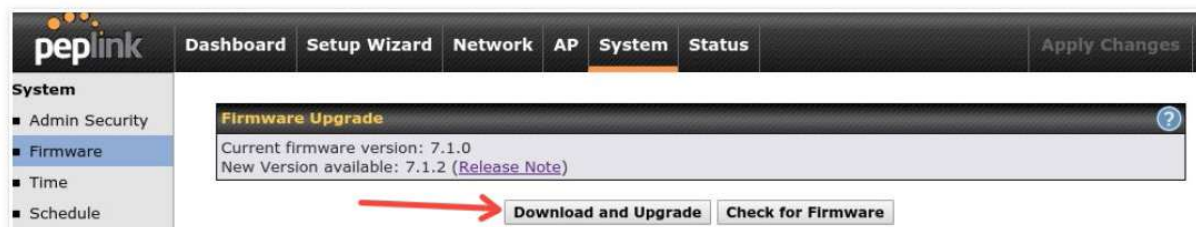
11.1.2 Firmware

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

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



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



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

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

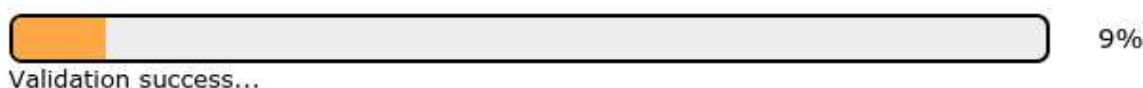


The firmware will now be applied to the router*. The amount of time it takes for the firmware to upgrade will

also depend on the router that's being upgraded.

Firmware Upgrade

It may take up to 8 minutes.



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

Web admin interface : install updates manually

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

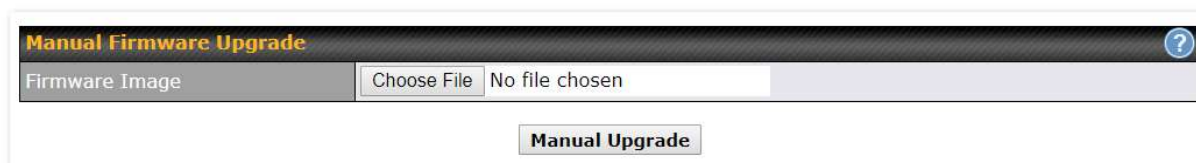
All of the Peplink/Pepwave GA firmware can be found [here](#). Navigate to the relevant product line (ie. Balance, Max, FusionHub, SOHO, etc). Some product lines may have a dropdown that lists all of the products in that product line. Here is a screenshot from the Balance line.

Balance					
<div>Product ▼</div> <div>Search: <input type="text"/></div>					
Product	Hardware Revision	Firmware Version	Download Link	Release Notes	User Manual
Balance 1350	HW2	7.1.2	Download	PDF	PDF
Balance 1350	HW1	6.3.4	Download	PDF	PDF
Balance 20	HW1-6	7.1.2	Download	PDF	PDF
Balance 210	HW4	7.1.2	Download	PDF	PDF

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

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

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



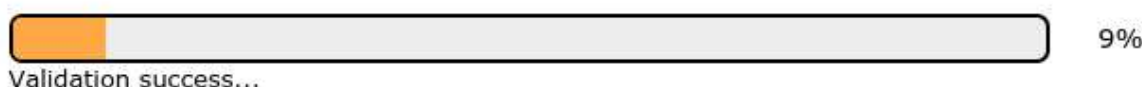
Manual Firmware Upgrade ?

Firmware Image No file chosen

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

Firmware Upgrade

It may take up to 8 minutes.



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

The InControl method

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

11.1.3 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 Show all

Time Server

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.
--------------------	---

11.1.4 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**

Schedule			
Enabled			
Name	Time	Used by	
<u>Weekdays Only</u>	Weekdays only	-	
<div>New Schedule</div>			

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

[illegible]

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.

11.1.5 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 Setup	
Email Notification	<input checked="" type="checkbox"/> Enable
SMTP Server	smtp.mycompany.com <input checked="" type="checkbox"/> Require authentication
SSL Encryption	<input checked="" type="checkbox"/> (Note: any server certificate will be accepted)
SMTP Port	465 Default
SMTP User Name	smtpuser
SMTP Password	•••••
Confirm SMTP Password	•••••
Sender's Email Address	admin@mycompany.com
Recipient's Email Address	system@mycompany.com staff@mycompany.com

Test Email Notification
Save

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

Test Email Notification	
SMTP Server	smtp.mycompany.com
SMTP Port	465
SMTP UserName	smtpuser
Sender's Email Address	admin@mycompany.com
Recipient's Email Address	system@mycompany.com staff@mycompany.com

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

Test email sent. Email notification settings are not saved, it will be saved after clicked the 'Save' button.

Test Result

```
[INFO] Try email through connection #3
[<-] 220 ESMTP
[->] EHLO balance
[<-] 250-smtp Hello balance [210.210.210.210]
250-SIZE 100000000
250-8BITMIME
250-PIPELINING
250-AUTH PLAIN LOGIN
250-STARTTLS
250-ENHANCEDSTATUSREPORTING=150
```


11.1.6 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**.

Send Events to Remote Syslog Server	
Remote Syslog	<input checked="" type="checkbox"/>
Remote Syslog Host	<input type="text"/>

Push Events to Mobile Devices	
Push Events	<input checked="" type="checkbox"/>

Save

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

11.1.7 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**.

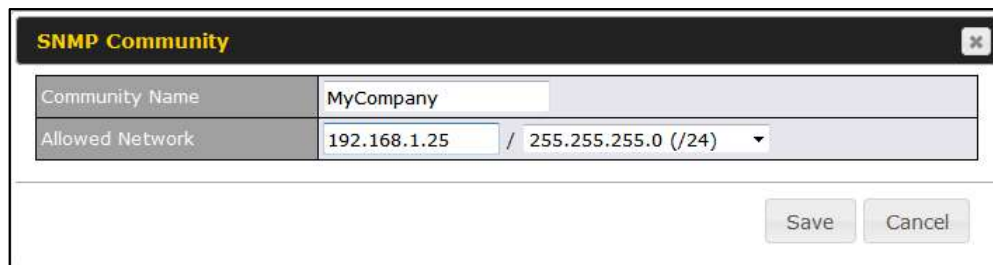
SNMP Settings	
SNMP Device Name	Balance_0D84
SNMP Port	161 <input type="button" value="Default"/>
SNMPv1	<input type="checkbox"/> Enable
SNMPv2c	<input type="checkbox"/> Enable
SNMPv3	<input type="checkbox"/> Enable
<input type="button" value="Save"/>	

Community Name	Allowed Source Network	Access Mode	
MyCompany	192.168.1.20/24	Read Only	<input type="button" value="X"/>
<input type="button" value="Add SNMP Community"/>			

SNMPv3 User Name	Authentication / Privacy	Access Mode	
SNMPUser	SHA / DES	Read Only	<input type="button" value="X"/>
<input type="button" value="Add SNMP User"/>			

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:



The dialog box titled "SNMP Community" contains two input fields: "Community Name" with the value "MyCompany" and "Allowed Network" with the value "192.168.1.25 / 255.255.255.0 (/24)". At the bottom right are "Save" and "Cancel" buttons.

SNMP Community Settings

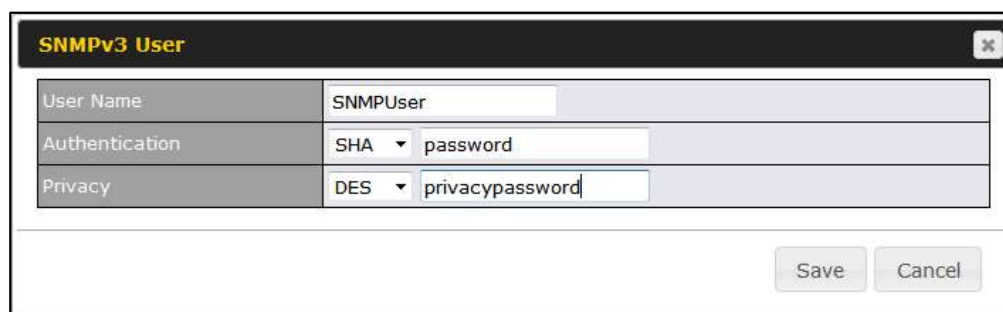
Community Name

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:



The dialog box titled "SNMPv3 User" contains three input fields: "User Name" with the value "SNMPUser", "Authentication" with a dropdown menu set to "SHA" and a password field containing "password", and "Privacy" with a dropdown menu set to "DES" and a privacy password field containing "privacypassword". At the bottom right are "Save" and "Cancel" buttons.

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

	<ul style="list-style-type: none"> • SHA <p>When MD5 or SHA is selected, an entry field will appear for the password.</p>
Privacy Protocol	<p>This setting specifies via a drop-down menu one of the following valid privacy protocols:</p> <ul style="list-style-type: none"> • NONE • DES <p>When DES is selected, an entry field will appear for the password.</p>

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

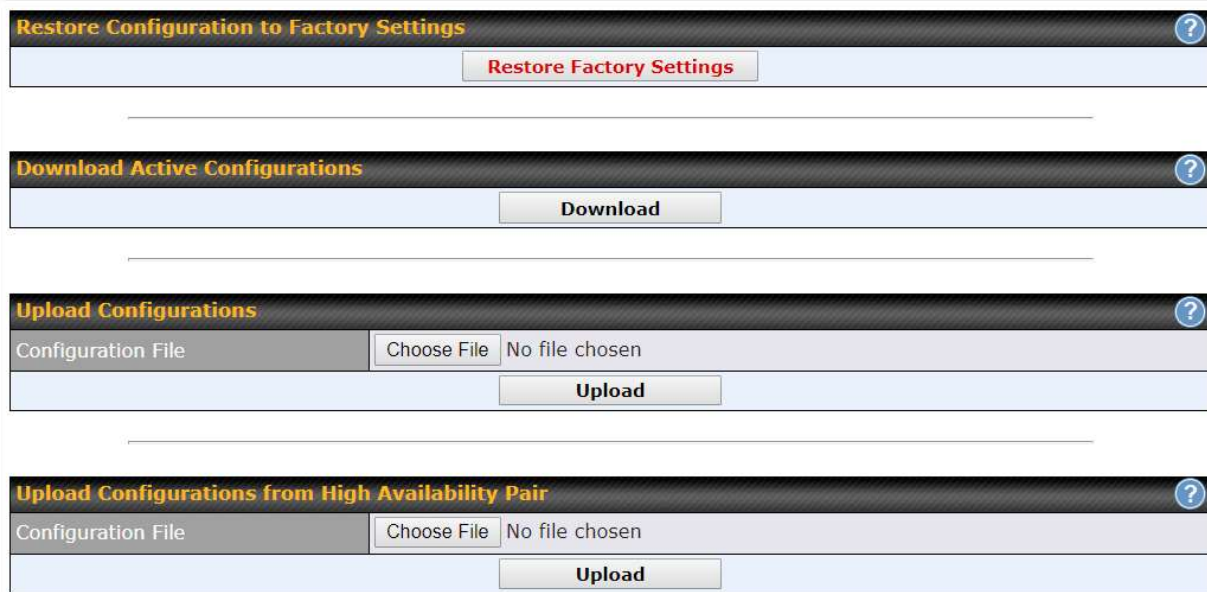
When the box **Restricted to Status Reporting Only** is ticked, the router will only report its status, but can't be managed or configured by InControl.

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

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

11.1.9 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 from High Availability Pair

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 counterpart.

11.1.10 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**.



The screenshot shows a web form titled "Feature Activation". It has a label "Activation Key" on the left and a large, empty text input field on the right.

11.1.11 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.



The screenshot shows a web form titled "Reboot System" with a help icon (question mark) in the top right corner. The form contains the text "Select the firmware you want to use to start up this device:" followed by two radio button options: "Firmware 1: 8.0.1b01 build 2658 (Running)" (which is selected) and "Firmware 2: 8.0.0 build 2636". At the bottom of the form is a button labeled "Reboot".

11.2 Tools

11.3 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:

Ping

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

Start **Stop**

Results Clear Log

PING 8.8.8.8 (8.8.8.8) from 10.22.1.182 56(84) bytes of data.

64 bytes from 8.8.8.8: icmp_req=1 ttl=121 time=11.8 ms

64 bytes from 8.8.8.8: icmp_req=2 ttl=121 time=11.7 ms

64 bytes from 8.8.8.8: icmp_req=3 ttl=121 time=11.6 ms

64 bytes from 8.8.8.8: icmp_req=4 ttl=121 time=11.6 ms

64 bytes from 8.8.8.8: icmp_req=5 ttl=121 time=11.4 ms

--- 8.8.8.8 ping statistics ---

5 packets transmitted, 5 received, 0% packet loss, time 4006ms

rtt min/avg/max/mdev = 11.427/11.680/11.888/0.166 ms

Tip

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

11.4 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**.

Traceroute

Connection
WAN 1

Destination
64.233.189.99

Start
Stop

Results
Clear Log

```

Traceroute to 64.233.189.99 (64.233.189.99), 30 hops max, 60 bytes packet
 0 10.0.0.1 [10.0.0.1] <10.0.0.1> 0.000 ms 0.000 ms 0.000 ms
 1 10.0.0.2 [10.0.0.2] <10.0.0.2> 0.000 ms 0.000 ms 0.000 ms
 2 10.0.0.3 [10.0.0.3] <10.0.0.3> 0.000 ms 0.000 ms 0.000 ms
 3 10.0.0.4 [10.0.0.4] <10.0.0.4> 0.000 ms 0.000 ms 0.000 ms
 4 10.0.0.5 [10.0.0.5] <10.0.0.5> 0.000 ms 0.000 ms 0.000 ms
 5 10.0.0.6 [10.0.0.6] <10.0.0.6> 0.000 ms 0.000 ms 0.000 ms
 6 10.0.0.7 [10.0.0.7] <10.0.0.7> 0.000 ms 0.000 ms 0.000 ms
 7 10.0.0.8 [10.0.0.8] <10.0.0.8> 0.000 ms 0.000 ms 0.000 ms
 8 10.0.0.9 [10.0.0.9] <10.0.0.9> 0.000 ms 0.000 ms 0.000 ms
 9 10.0.0.10 [10.0.0.10] <10.0.0.10> 0.000 ms 0.000 ms 0.000 ms
 10 10.0.0.11 [10.0.0.11] <10.0.0.11> 0.000 ms 0.000 ms 0.000 ms
 11 10.0.0.12 [10.0.0.12] <10.0.0.12> 0.000 ms 0.000 ms 0.000 ms
 12 10.0.0.13 [10.0.0.13] <10.0.0.13> 0.000 ms 0.000 ms 0.000 ms
 13 10.0.0.14 [10.0.0.14] <10.0.0.14> 0.000 ms 0.000 ms 0.000 ms
 14 10.0.0.15 [10.0.0.15] <10.0.0.15> 0.000 ms 0.000 ms 0.000 ms
 15 10.0.0.16 [10.0.0.16] <10.0.0.16> 0.000 ms 0.000 ms 0.000 ms
 16 10.0.0.17 [10.0.0.17] <10.0.0.17> 0.000 ms 0.000 ms 0.000 ms
 17 10.0.0.18 [10.0.0.18] <10.0.0.18> 0.000 ms 0.000 ms 0.000 ms
 18 10.0.0.19 [10.0.0.19] <10.0.0.19> 0.000 ms 0.000 ms 0.000 ms
 19 10.0.0.20 [10.0.0.20] <10.0.0.20> 0.000 ms 0.000 ms 0.000 ms
 20 10.0.0.21 [10.0.0.21] <10.0.0.21> 0.000 ms 0.000 ms 0.000 ms
 21 10.0.0.22 [10.0.0.22] <10.0.0.22> 0.000 ms 0.000 ms 0.000 ms
 22 10.0.0.23 [10.0.0.23] <10.0.0.23> 0.000 ms 0.000 ms 0.000 ms
 23 10.0.0.24 [10.0.0.24] <10.0.0.24> 0.000 ms 0.000 ms 0.000 ms
 24 10.0.0.25 [10.0.0.25] <10.0.0.25> 0.000 ms 0.000 ms 0.000 ms
 25 10.0.0.26 [10.0.0.26] <10.0.0.26> 0.000 ms 0.000 ms 0.000 ms
 26 10.0.0.27 [10.0.0.27] <10.0.0.27> 0.000 ms 0.000 ms 0.000 ms
 27 10.0.0.28 [10.0.0.28] <10.0.0.28> 0.000 ms 0.000 ms 0.000 ms
 28 10.0.0.29 [10.0.0.29] <10.0.0.29> 0.000 ms 0.000 ms 0.000 ms
 29 10.0.0.30 [10.0.0.30] <10.0.0.30> 0.000 ms 0.000 ms 0.000 ms
 30 10.0.0.31 [10.0.0.31] <10.0.0.31> 0.000 ms 0.000 ms 0.000 ms
 31 10.0.0.32 [10.0.0.32] <10.0.0.32> 0.000 ms 0.000 ms 0.000 ms
 32 10.0.0.33 [10.0.0.33] <10.0.0.33> 0.000 ms 0.000 ms 0.000 ms
 33 10.0.0.34 [10.0.0.34] <10.0.0.34> 0.000 ms 0.000 ms 0.000 ms
 34 10.0.0.35 [10.0.0.35] <10.0.0.35> 0.000 ms 0.000 ms 0.000 ms
 35 10.0.0.36 [10.0.0.36] <10.0.0.36> 0.000 ms 0.000 ms 0.000 ms
 36 10.0.0.37 [10.0.0.37] <10.0.0.37> 0.000 ms 0.000 ms 0.000 ms
 37 10.0.0.38 [10.0.0.38] <10.0.0.38> 0.000 ms 0.000 ms 0.000 ms
 38 10.0.0.39 [10.0.0.39] <10.0.0.39> 0.000 ms 0.000 ms 0.000 ms
 39 10.0.0.40 [10.0.0.40] <10.0.0.40> 0.000 ms 0.000 ms 0.000 ms
 40 10.0.0.41 [10.0.0.41] <10.0.0.41> 0.000 ms 0.000 ms 0.000 ms
 41 10.0.0.42 [10.0.0.42] <10.0.0.42> 0.000 ms 0.000 ms 0.000 ms
 42 10.0.0.43 [10.0.0.43] <10.0.0.43> 0.000 ms 0.000 ms 0.000 ms
 43 10.0.0.44 [10.0.0.44] <10.0.0.44> 0.000 ms 0.000 ms 0.000 ms
 44 10.0.0.45 [10.0.0.45] <10.0.0.45> 0.000 ms 0.000 ms 0.000 ms
 45 10.0.0.46 [10.0.0.46] <10.0.0.46> 0.000 ms 0.000 ms 0.000 ms
 46 10.0.0.47 [10.0.0.47] <10.0.0.47> 0.000 ms 0.000 ms 0.000 ms
 47 10.0.0.48 [10.0.0.48] <10.0.0.48> 0.000 ms 0.000 ms 0.000 ms
 48 10.0.0.49 [10.0.0.49] <10.0.0.49> 0.000 ms 0.000 ms 0.000 ms
 49 10.0.0.50 [10.0.0.50] <10.0.0.50> 0.000 ms 0.000 ms 0.000 ms
 50 10.0.0.51 [10.0.0.51] <10.0.0.51> 0.000 ms 0.000 ms 0.000 ms
 51 10.0.0.52 [10.0.0.52] <10.0.0.52> 0.000 ms 0.000 ms 0.000 ms
 52 10.0.0.53 [10.0.0.53] <10.0.0.53> 0.000 ms 0.000 ms 0.000 ms
 53 10.0.0.54 [10.0.0.54] <10.0.0.54> 0.000 ms 0.000 ms 0.000 ms
 54 10.0.0.55 [10.0.0.55] <10.0.0.55> 0.000 ms 0.000 ms 0.000 ms
 55 10.0.0.56 [10.0.0.56] <10.0.0.56> 0.000 ms 0.000 ms 0.000 ms
 56 10.0.0.57 [10.0.0.57] <10.0.0.57> 0.000 ms 0.000 ms 0.000 ms
 57 10.0.0.58 [10.0.0.58] <10.0.0.58> 0.000 ms 0.000 ms 0.000 ms
 58 10.0.0.59 [10.0.0.59] <10.0.0.59> 0.000 ms 0.000 ms 0.000 ms
 59 10.0.0.60 [10.0.0.60] <10.0.0.60> 0.000 ms 0.000 ms 0.000 ms
 60 10.0.0.61 [10.0.0.61] <10.0.0.61> 0.000 ms 0.000 ms 0.000 ms
 61 10.0.0.62 [10.0.0.62] <10.0.0.62> 0.000 ms 0.000 ms 0.000 ms
 62 10.0.0.63 [10.0.0.63] <10.0.0.63> 0.000 ms 0.000 ms 0.000 ms
 63 10.0.0.64 [10.0.0.64] <10.0.0.64> 0.000 ms 0.000 ms 0.000 ms
 64 10.0.0.65 [10.0.0.65] <10.0.0.65> 0.000 ms 0.000 ms 0.000 ms
 65 10.0.0.66 [10.0.0.66] <10.0.0.66> 0.000 ms 0.000 ms 0.000 ms
 66 10.0.0.67 [10.0.0.67] <10.0.0.67> 0.000 ms 0.000 ms 0.000 ms
 67 10.0.0.68 [10.0.0.68] <10.0.0.68> 0.000 ms 0.000 ms 0.000 ms
 68 10.0.0.69 [10.0.0.69] <10.0.0.69> 0.000 ms 0.000 ms 0.000 ms
 69 10.0.0.70 [10.0.0.70] <10.0.0.70> 0.000 ms 0.000 ms 0.000 ms
 70 10.0.0.71 [10.0.0.71] <10.0.0.71> 0.000 ms 0.000 ms 0.000 ms
 71 10.0.0.72 [10.0.0.72] <10.0.0.72> 0.000 ms 0.000 ms 0.000 ms
 72 10.0.0.73 [10.0.0.73] <10.0.0.73> 0.000 ms 0.000 ms 0.000 ms
 73 10.0.0.74 [10.0.0.74] <10.0.0.74> 0.000 ms 0.000 ms 0.000 ms
 74 10.0.0.75 [10.0.0.75] <10.0.0.75> 0.000 ms 0.000 ms 0.000 ms
 75 10.0.0.76 [10.0.0.76] <10.0.0.76> 0.000 ms 0.000 ms 0.000 ms
 76 10.0.0.77 [10.0.0.77] <10.0.0.77> 0.000 ms 0.000 ms 0.000 ms
 77 10.0.0.78 [10.0.0.78] <10.0.0.78> 0.000 ms 0.000 ms 0.000 ms
 78 10.0.0.79 [10.0.0.79] <10.0.0.79> 0.000 ms 0.000 ms 0.000 ms
 79 10.0.0.80 [10.0.0.80] <10.0.0.80> 0.000 ms 0.000 ms 0.000 ms
 80 10.0.0.81 [10.0.0.81] <10.0.0.81> 0.000 ms 0.000 ms 0.000 ms
 81 10.0.0.82 [10.0.0.82] <10.0.0.82> 0.000 ms 0.000 ms 0.000 ms
 82 10.0.0.83 [10.0.0.83] <10.0.0.83> 0.000 ms 0.000 ms 0.000 ms
 83 10.0.0.84 [10.0.0.84] <10.0.0.84> 0.000 ms 0.000 ms 0.000 ms
 84 10.0.0.85 [10.0.0.85] <10.0.0.85> 0.000 ms 0.000 ms 0.000 ms
 85 10.0.0.86 [10.0.0.86] <10.0.0.86> 0.000 ms 0.000 ms 0.000 ms
 86 10.0.0.87 [10.0.0.87] <10.0.0.87> 0.000 ms 0.000 ms 0.000 ms
 87 10.0.0.88 [10.0.0.88] <10.0.0.88> 0.000 ms 0.000 ms 0.000 ms
 88 10.0.0.89 [10.0.0.89] <10.0.0.89> 0.000 ms 0.000 ms 0.000 ms
 89 10.0.0.90 [10.0.0.90] <10.0.0.90> 0.000 ms 0.000 ms 0.000 ms
 90 10.0.0.91 [10.0.0.91] <10.0.0.91> 0.000 ms 0.000 ms 0.000 ms
 91 10.0.0.92 [10.0.0.92] <10.0.0.92> 0.000 ms 0.000 ms 0.000 ms
 92 10.0.0.93 [10.0.0.93] <10.0.0.93> 0.000 ms 0.000 ms 0.000 ms
 93 10.0.0.94 [10.0.0.94] <10.0.0.94> 0.000 ms 0.000 ms 0.000 ms
 94 10.0.0.95 [10.0.0.95] <10.0.0.95> 0.000 ms 0.000 ms 0.000 ms
 95 10.0.0.96 [10.0.0.96] <10.0.0.96> 0.000 ms 0.000 ms 0.000 ms
 96 10.0.0.97 [10.0.0.97] <10.0.0.97> 0.000 ms 0.000 ms 0.000 ms
 97 10.0.0.98 [10.0.0.98] <10.0.0.98> 0.000 ms 0.000 ms 0.000 ms
 98 10.0.0.99 [10.0.0.99] <10.0.0.99> 0.000 ms 0.000 ms 0.000 ms
 99 10.0.0.100 [10.0.0.100] <10.0.0.100> 0.000 ms 0.000 ms 0.000 ms
  
```

Tip

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

11.5 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**

Wake-on-LAN

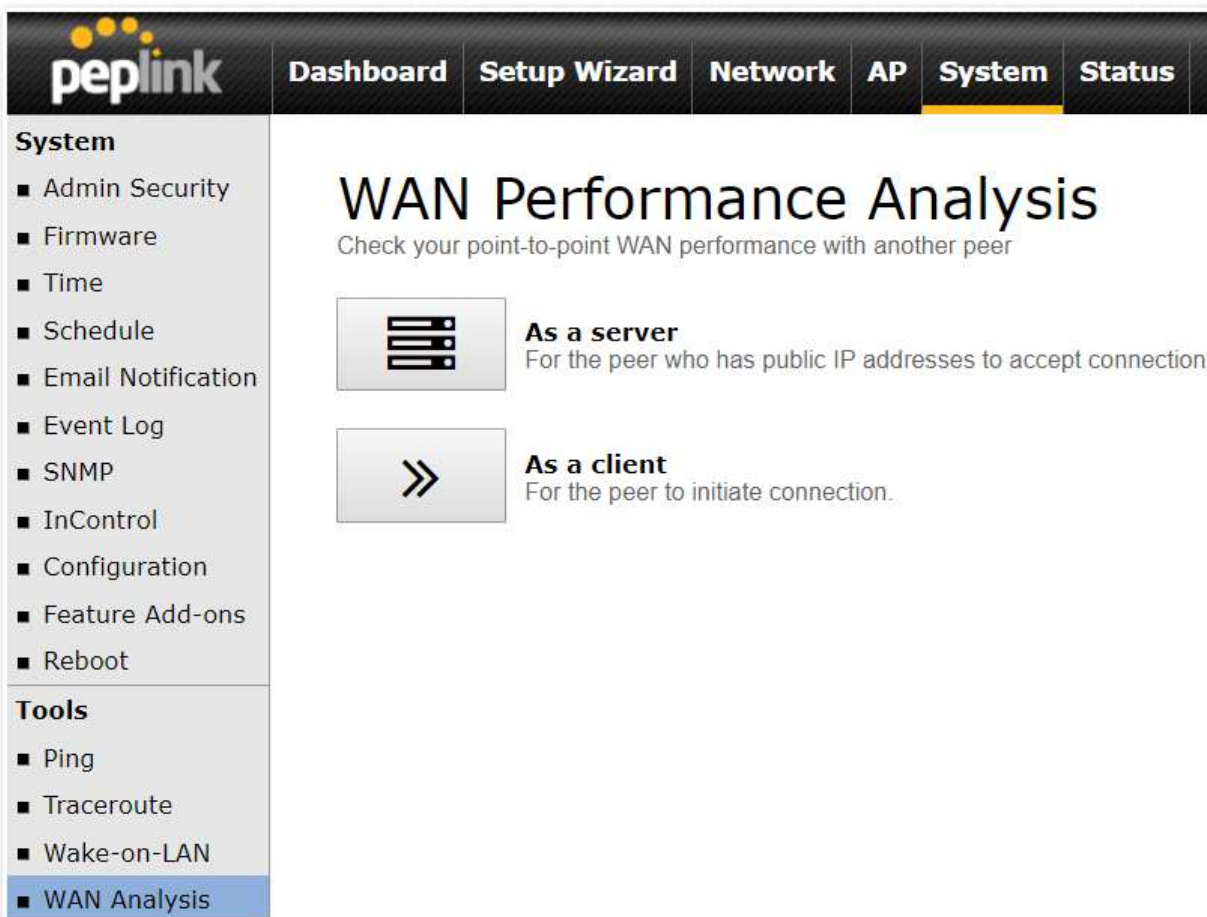
Wake-on-LAN Target
Custom MAC Address...
00:00:00:00:00:00
Send

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

11.6 WAN Analysis


The WAN Analysis feature allows you to run a WAN to WAN speed test between 2 Peplink devices .

You can set a device up as a **Server** or a **Client**. One device must be set up as a server to run the speed tests and the server must have a public IP address.



The screenshot shows the Peplink web interface. At the top is a navigation bar with tabs: Dashboard, Setup Wizard, Network, AP, System (highlighted), and Status. On the left is a sidebar menu. Under the 'System' section, there is a list of items: Admin Security, Firmware, Time, Schedule, Email Notification, Event Log, SNMP, InControl, Configuration, Feature Add-ons, and Reboot. Under the 'Tools' section, there is a list: Ping, Traceroute, Wake-on-LAN, and WAN Analysis (highlighted in blue). The main content area is titled 'WAN Performance Analysis' with the subtitle 'Check your point-to-point WAN performance with another peer'. Below this, there are two options: 'As a server' (represented by a server rack icon) and 'As a client' (represented by a double arrow icon). The 'As a server' option includes the text 'For the peer who has public IP addresses to accept connection.' and the 'As a client' option includes the text 'For the peer to initiate connection.'

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



Dashboard

Setup Wizard

Network

AP

System

Status

Apply Changes

System

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

Tools

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

WAN Performance Analysis

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

Server Settings

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

WAN Connection Status


1 WAN 1	<input checked="" type="checkbox"/> 10.22.1.182
2 WAN 2	<input type="checkbox"/> Disabled
3 WAN 3	<input type="checkbox"/> Disabled
4 WAN 4	<input type="checkbox"/> Disabled
5 WAN 5	<input type="checkbox"/> Disabled
Mobile Internet	<input type="checkbox"/> Disabled

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

<https://www.peplink.com>

182

Copyright @ 2020 Peplink



Dashboard
Setup Wizard
Network
AP
System
Status

System

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

Tools

- Ping
- Traceroute
- Wake-on-LAN
- WAN Analysis
- Storage Manager
- Package Manager

WAN Performance Analysis

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

Client Settings

Control Port	6000
Data Port	57280 - 57287
Type	<input checked="" type="radio"/> TCP <input type="radio"/> UDP
Direction	<input checked="" type="radio"/> Upload <input type="radio"/> Download
Duration	20 seconds (5 - 600)

Data Streams

Local WAN Connection	Remote IP Address
1. -- Not Used --	
2. -- Not Used --	
3. -- Not Used --	
4. -- Not Used --	
5. -- Not Used --	
6. -- Not Used --	
7. -- Not Used --	
8. -- Not Used --	

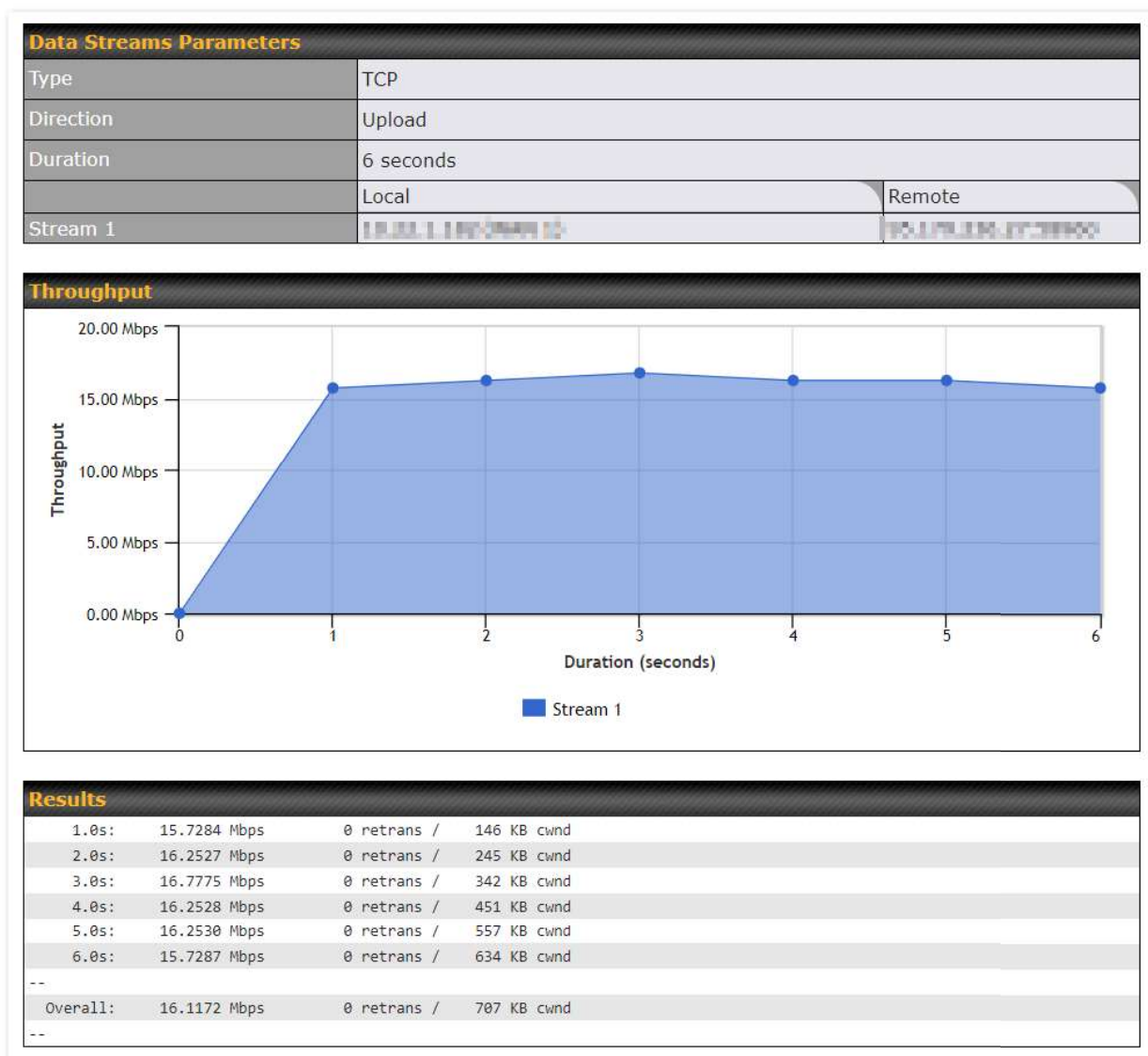
Start Test

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

<https://www.peplink.com>

183

Copyright @ 2020 Peplink



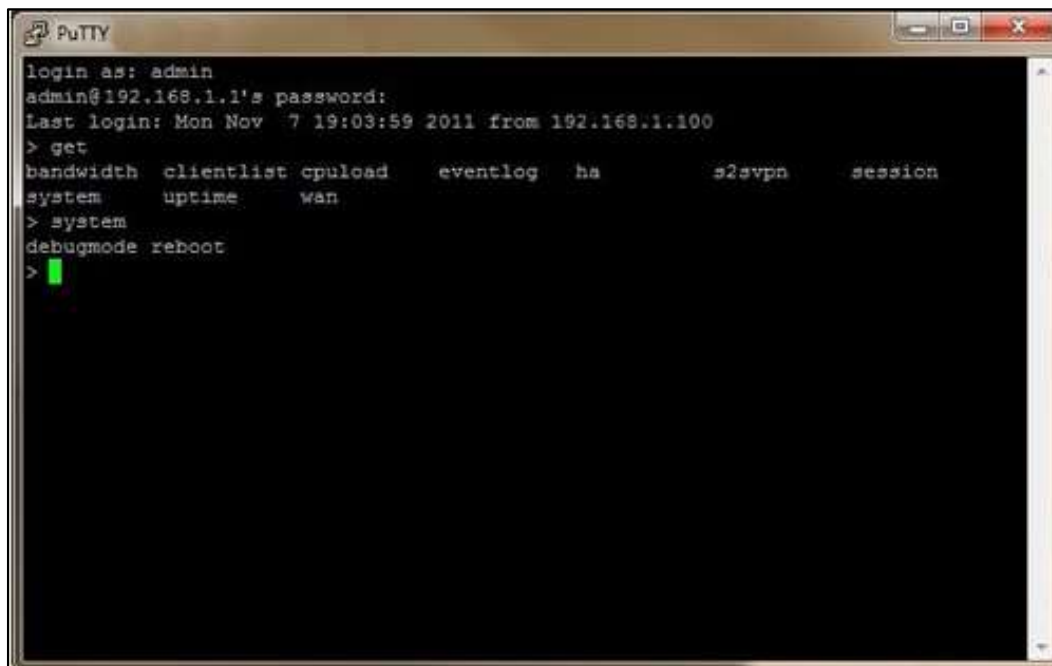
The test can be run again once it's complete by clicking the **Start** button or you can click **Close** and change the parameters for the test.

11.7 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*.






```
login as: admin
admin@192.168.1.1's password:
Last login: Mon Nov  7 19:03:59 2011 from 192.168.1.100
> get
bandwidth  clientlist  cpuload    eventlog  ha        s2svpn    session
system    uptime    wan
> system
debugmode reboot
>
```





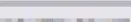

12 Status Tab

12.1 Status

12.1.1 Device

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

System Information	
Router Name	Mediafast 
Model	Peplink MediaFast 500
Product Code	MFA-500-B
Hardware Revision	2
Serial Number	
Firmware	8.0.0b03 build 2593
PepVPN Version	8.0.0
Modem Support Version	1022 (Modem Support List)
Host Name	mediafast 
Uptime	54 days 23 hours 7 minutes
System Time	Wed Apr 17 14:08:23 BST 2019
Content Filtering Database	Download (r20180514) Update
Diagnostic Report	Download
Remote Assistance	Turn On

MAC Address	
LAN	10:56: 
WAN 1	10:56: 
WAN 2	10:56: 
WAN 3	10:56: 
WAN 4	10:56: 
WAN 5	10:56: 

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.

12.1.2 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
DNS	0	51
Facebook	0	1
Google	0	33
Google Ads	0	5
HTTP	0	2
IPsec	0	2
QUIC	0	19
SIP	0	8
SSH	0	3
SSL	1	136
Skype	0	6
Spotify	0	4

Interface	Inbound Sessions	Outbound Sessions
BT	1	360
Virgin Media	0	0
WAN 3	0	0
WAN 4	0	6
[Redacted]	0	2
[Redacted]	0	0

Top Clients

Client IP Address	Total Sessions
10.22.1.100	116
10.22.1.100	90
172.16.1.100	86
10.22.1.100	83
172.16.1.100	73

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**.

Overview

Search

Session data captured 2 mins ago. [Refresh](#)

IP / Subnet	Source or Destination ▾	255.255.255.255 (/32) ▾
Port	Source or Destination ▾	
Protocol / Service	Spotify ▾	
Interface	<input type="checkbox"/> 1 BT <input type="checkbox"/> 2 Virgin Media <input type="checkbox"/> 3 WAN 3 <input type="checkbox"/> 4 WAN 4 <input type="checkbox"/> 5 Peplink HK Net... <input type="checkbox"/> Mobile Internet <input type="checkbox"/> VPN	
Search		

Outbound

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
TCP	10.0.0.1:58827	104.199.64.136:443	SSL/Spotify	BT	00:00:09
TCP	10.0.0.1:58828	104.199.64.136:443	SSL/Spotify	BT	00:00:09
TCP	10.0.0.1:58784	35.186.224.47:443	SSL/Spotify	BT	00:00:10
TCP	10.0.0.1:65369	35.186.224.53:443	SSL/Spotify	BT	00:00:29

Total searched results: 4

Inbound

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

Transit

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

This **Active Sessions** section displays the active inbound / outbound sessions of each WAN connection on the 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.

12.1.3 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**.

Filter

☐ Online Clients Only
 ☐ DHCP Clients Only

Client List

IP Address	Name	Download (kbps)	Upload (kbps)	MAC Address	Import
192.168.167.10		0	0	10:56:56:56:56:56	
192.168.167.11	U64-2-1	0	0	00:50:56:56:56:1A	
192.168.167.12	U64-2-2	0	0	10:56:56:56:56:75	

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

12.1.4 WINS Clients

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

WINS Client List	
Name ▲	IP Address
UserA	10.9.2.1
UserB	10.9.30.1
UserC	10.9.2.4
<div>Flush All</div>	

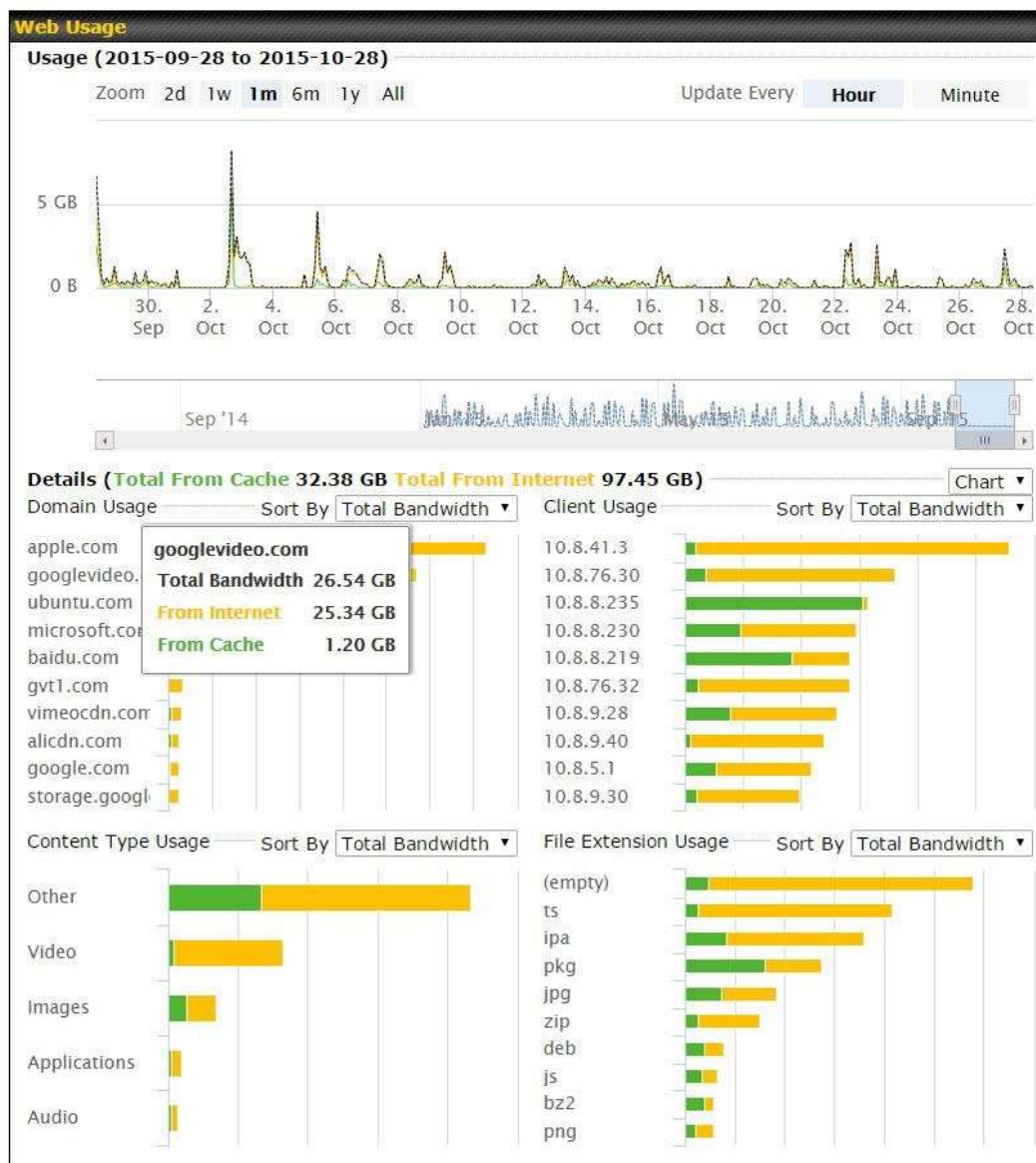
The WINS client table lists the IP addresses and names of WINS clients. This option will only be available when you have enabled the WINS server. The names of clients retrieved will be automatically matched into the Client List (see previous section). Click **Flush All** to flush all WINS client records.

12.1.5 OSPF & RIPv2

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

12.1.6 MediaFast

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







12.1.7 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.

Remote Peer	Profile	Information		
FFFC-FFFC-FFFC	FH	192.168.77.0/24		
WAN 1	Rx: < 1 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s Latency: 1 ms		
WAN 2	Rx: < 1 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s Latency: 1 ms		
WAN 3	Rx: < 1 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s Latency: 1 ms		
Total	Rx: < 1 kbps Tx: 1.1 kbps	Drop rate: 0.0 pkt/s		
3ED2-3ED2-3ED2	380-5 - NO NAT	192.168.3.0/24		
WAN 1	Rx: < 1 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s Latency: 4 ms		
WAN 2	Rx: < 1 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s Latency: 4 ms		
WAN 3	Rx: < 1 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s Latency: 4 ms		
Total	Rx: 1.6 kbps Tx: < 1 kbps	Drop rate: 0.0 pkt/s		

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 Details

Connection Information
☒ More information


Profile	BT		
Remote ID	JNT1-74BC-4B44		
Router Name	H27-8B1-4B11		
Serial Number	JNT1-74BC-4B44		
Encapsulation Protocol	UDP		
Latency Difference Cutoff	500 ms		

WAN Statistics


Remote Connections ☐ Show remote connections

WAN Label ☒ WAN Name ☐ IP Address and Port

BT	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s	Latency:	18 ms
Virgin Media	Not available - WAN disabled							
WAN 3	Not available - WAN disabled							
WAN 4	Not available - link failure, no data received							
Peplink 4G LTE	Not available - link failure, no data received							
Peplink 4G LTE	Not available - WAN down							
Total	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate:	0.0 pkt/s		

PepVPN Test Configuration


Type	<input checked="" type="radio"/> TCP <input type="radio"/> UDP		<div>Start</div>
Streams	4		
Direction	<input checked="" type="radio"/> Upload <input type="radio"/> Download		
Duration	20 seconds (5 - 600)		

PepVPN Test Results

No information

Close

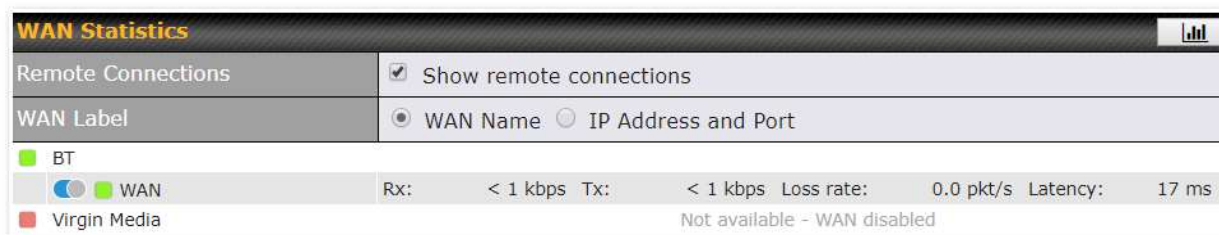
The **connection information** shows the details of the selected PepVPN profile, consisting of the Profile name, **Router ID**, **Router Name** and **Serial Number** of the remote router

Advanced features for the PepVPN profile will also be shown when the **More Information** checkbox is selected.

The **WAN statistics** show information about the local and remote WAN connections (when **show Remote**

connections) is selected.

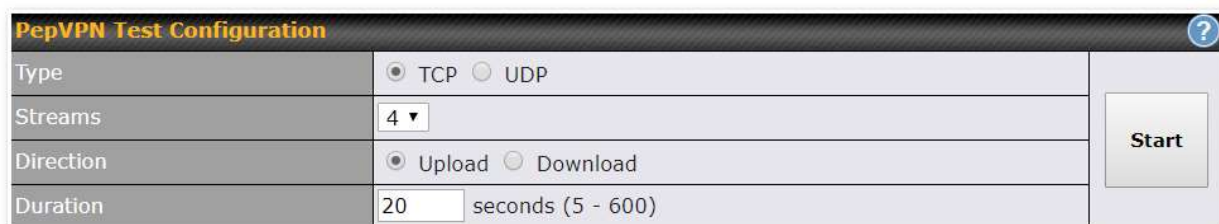
The available details are **WAN Name**, **IP address** and **port** used for the Speedfusion connection. **Rx and Tx rates, Loss rate and Latency**. Connections can be temporarily disabled by sliding the switch button next to a WAN connection to the left. The wan-to-wan connection disabled by the switch is temporary and will be re-enabled after 15 minutes without any action. This can be used when testing the PepVPN speed between two locations to see if there is interference or network congestion between certain WAN connections.



WAN Statistics

Remote Connections	<input checked="" type="checkbox"/> Show remote connections				
WAN Label	<input checked="" type="radio"/> WAN Name <input type="radio"/> IP Address and Port				
BT					
WAN	Rx:	< 1 kbps	Tx:	< 1 kbps	Loss rate: 0.0 pkt/s Latency: 17 ms
Virgin Media	Not available - WAN disabled				

The PepVPN test configuration allows to configure and perform throughput tests. This is usually done after the initial installation of the routers and in case there are problems with aggregation.



PepVPN Test Configuration

Type	<input checked="" type="radio"/> TCP <input type="radio"/> UDP		Start
Streams	4 ▼		
Direction	<input checked="" type="radio"/> Upload <input type="radio"/> Download		
Duration	20 seconds (5 - 600)		

Press the Start button to perform throughput test according to the configured options.

If TCP is selected, 4 parallel streams will be generated to get the optimal results by default. This can be customized by selecting a different value of streams.

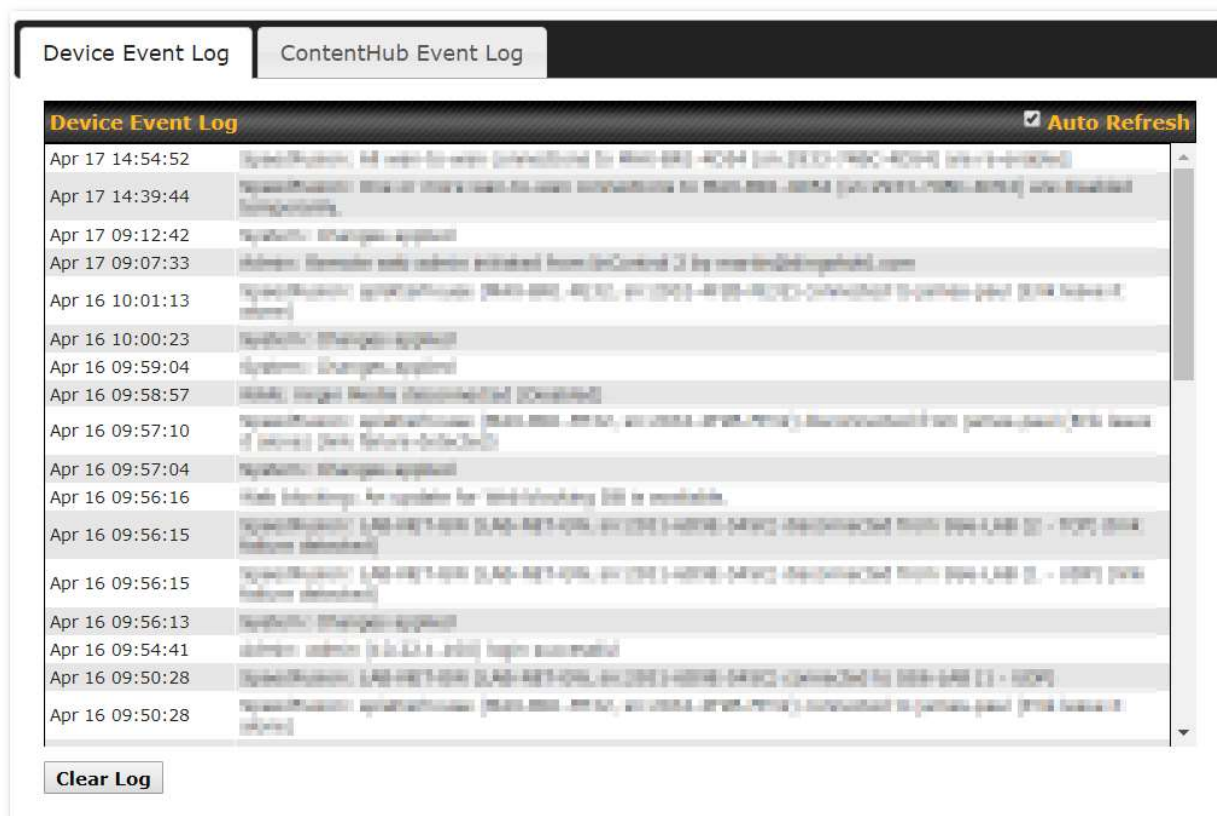
Using more streams will typically get better results if the latency of the tunnel is high.

PepVPN Test Results			
1.0s:	14.6724 Mbps	0 retrans /	323 KB cwnd
2.0s:	15.1620 Mbps	0 retrans /	416 KB cwnd
3.0s:	15.2438 Mbps	0 retrans /	513 KB cwnd
4.0s:	16.2522 Mbps	0 retrans /	609 KB cwnd
5.0s:	14.6811 Mbps	0 retrans /	699 KB cwnd
6.0s:	15.2058 Mbps	0 retrans /	804 KB cwnd
7.0s:	15.7294 Mbps	0 retrans /	935 KB cwnd
8.0s:	15.2053 Mbps	0 retrans /	1024 KB cwnd
9.0s:	15.6881 Mbps	0 retrans /	1045 KB cwnd
10.0s:	14.7147 Mbps	0 retrans /	1045 KB cwnd
--			
Stream 1:	4.0414 Mbps	0 retrans /	254 KB cwnd
Stream 2:	4.2783 Mbps	0 retrans /	253 KB cwnd
Stream 3:	2.8789 Mbps	0 retrans /	285 KB cwnd
Stream 4:	4.1534 Mbps	0 retrans /	253 KB cwnd
Overall:	15.3520 Mbps	0 retrans /	1045 KB cwnd
--			
TEST DONE			

12.1.8 Event Log

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

Device Event Log



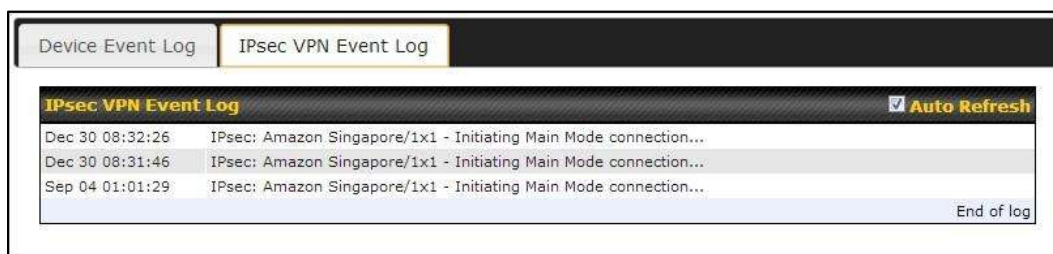
The screenshot shows the 'Device Event Log' tab selected. The log contains the following entries:

Timestamp	Event Description
Apr 17 14:54:52	SpeedStream: All user licenses (connected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000])
Apr 17 14:39:44	SpeedStream: User license for user connected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 17 09:12:42	System: Changes applied
Apr 17 09:07:33	Admin: Remote web admin enabled from 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 16 10:01:13	SpeedStream: SpeedStream (192.168.1.104 [ip: 192.168.1.104] [port: 10000]) connected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 16 10:00:23	System: Changes applied
Apr 16 09:59:04	System: Changes applied
Apr 16 09:58:57	WAN: Single Mode disconnected (Closed)
Apr 16 09:57:10	SpeedStream: SpeedStream (192.168.1.104 [ip: 192.168.1.104] [port: 10000]) disconnected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 16 09:57:04	System: Changes applied
Apr 16 09:56:16	WAN: Single Mode disconnected (Closed)
Apr 16 09:56:15	SpeedStream: 192.168.1.104 [ip: 192.168.1.104] [port: 10000] disconnected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 16 09:56:15	SpeedStream: 192.168.1.104 [ip: 192.168.1.104] [port: 10000] disconnected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 16 09:56:13	System: Changes applied
Apr 16 09:54:41	Admin: Admin (192.168.1.104) login successful
Apr 16 09:50:28	SpeedStream: 192.168.1.104 [ip: 192.168.1.104] [port: 10000] connected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]
Apr 16 09:50:28	SpeedStream: SpeedStream (192.168.1.104 [ip: 192.168.1.104] [port: 10000]) connected to 192.168.1.104 [ip: 192.168.1.104] [port: 10000]

Clear Log

The log section displays a list of events that have 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



The screenshot shows the 'IPsec VPN Event Log' tab selected. The log contains the following entries:

Timestamp	Event Description
Dec 30 08:32:26	IPsec: Amazon Singapore/1x1 - Initiating Main Mode connection...
Dec 30 08:31:46	IPsec: Amazon Singapore/1x1 - Initiating Main Mode connection...
Sep 04 01:01:29	IPsec: Amazon Singapore/1x1 - Initiating Main Mode connection...

End of log

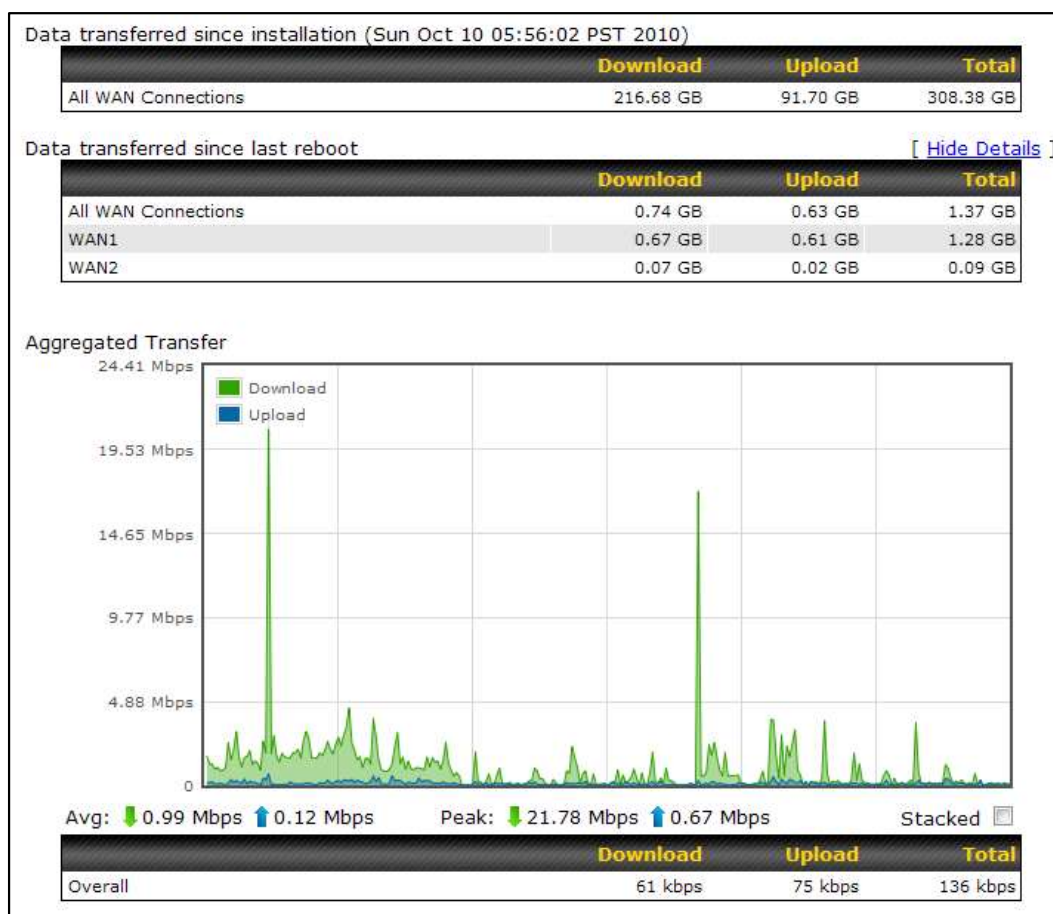
This section displays a list of events that have taken place within an IPsec VPN connection. Check the box next to **Auto Refresh** and the log will be refreshed automatically. For an AP event log, navigate to **AP>Info**.

12.2 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.

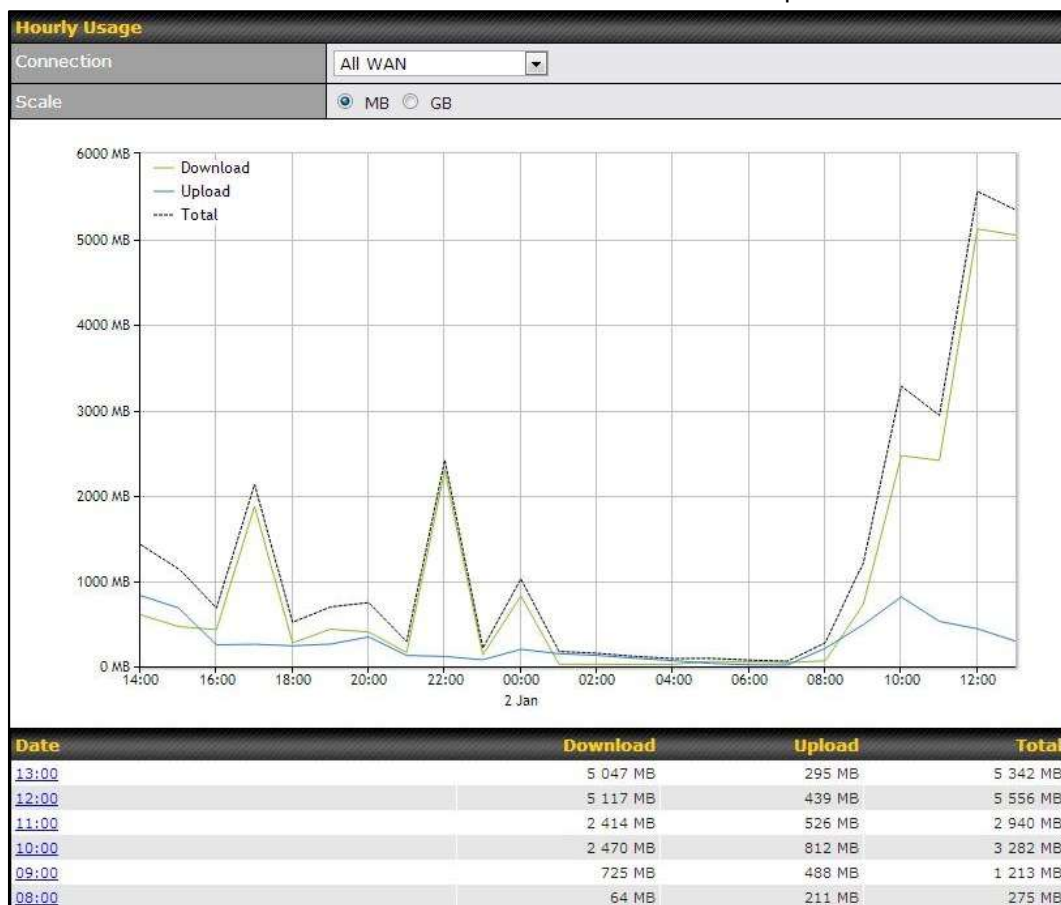
12.2.1 Real-Time

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.



12.2.2 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.



12.2.3 Daily

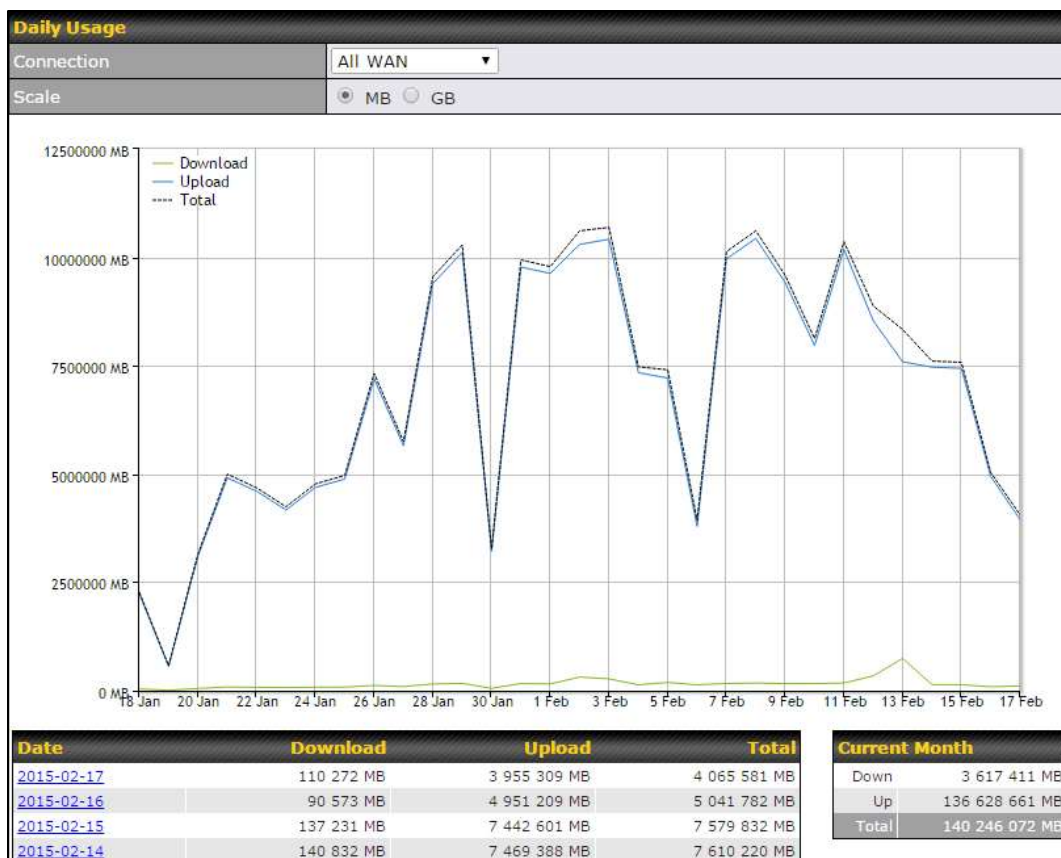
This page shows the daily bandwidth usage for all WAN connections, with the option of viewing each individual connection.

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**).



Status



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

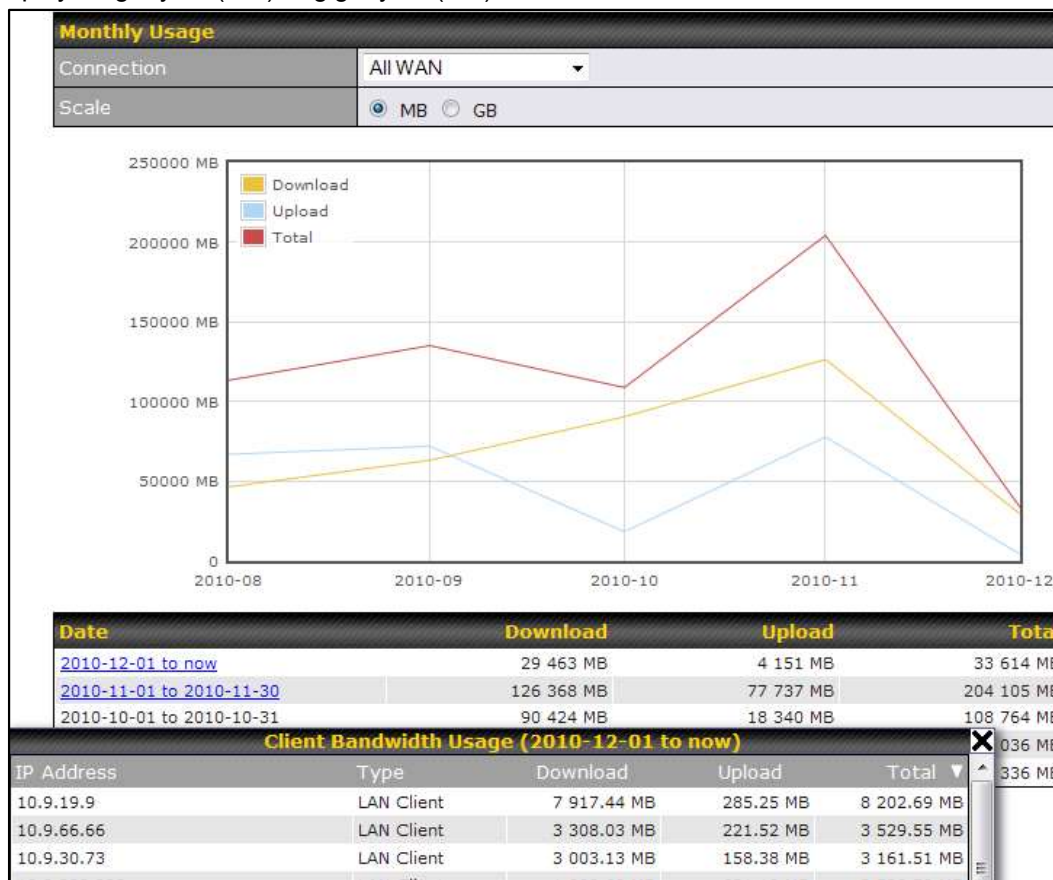
Client Bandwidth Usage (2015-02-15)

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

12.2.4 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 paperclip, press and keep the reset button pressed.

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

Hold for 5-10 seconds for admin password reset (green status light starts blinking)

Hold for more than 10 seconds for a factory reset (until all WAN/LAN port lights start blinking).

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

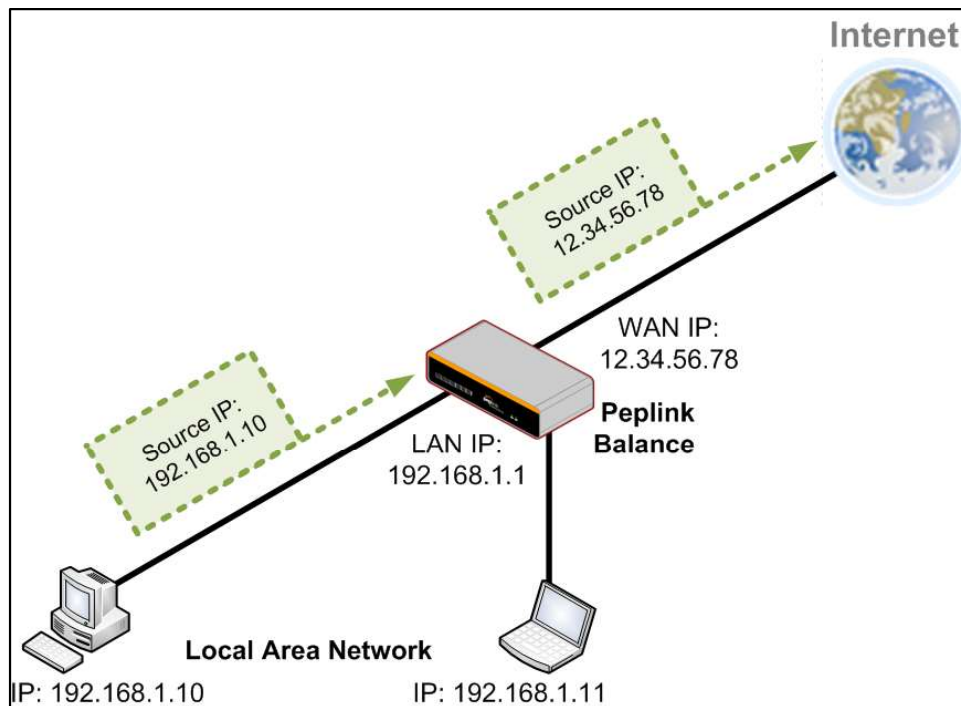
The information in this appendix applies only to situations where the Peplink Balance operates a WAN connection under DHCP, Static IP, or PPPoE.

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.

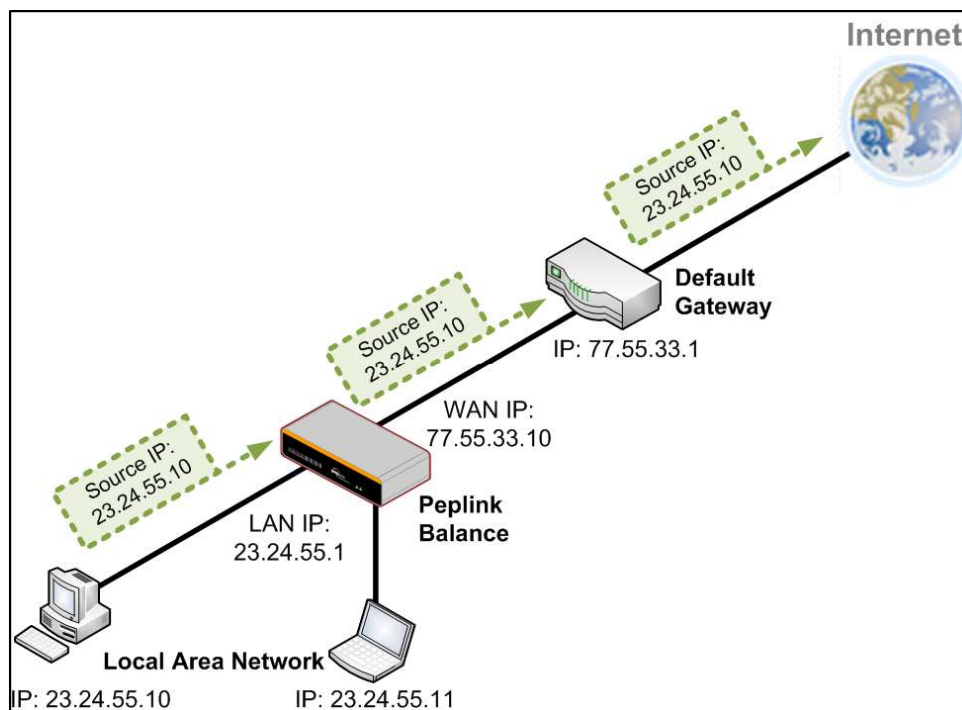
The following figure shows the packet flow in NAT mode:



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.

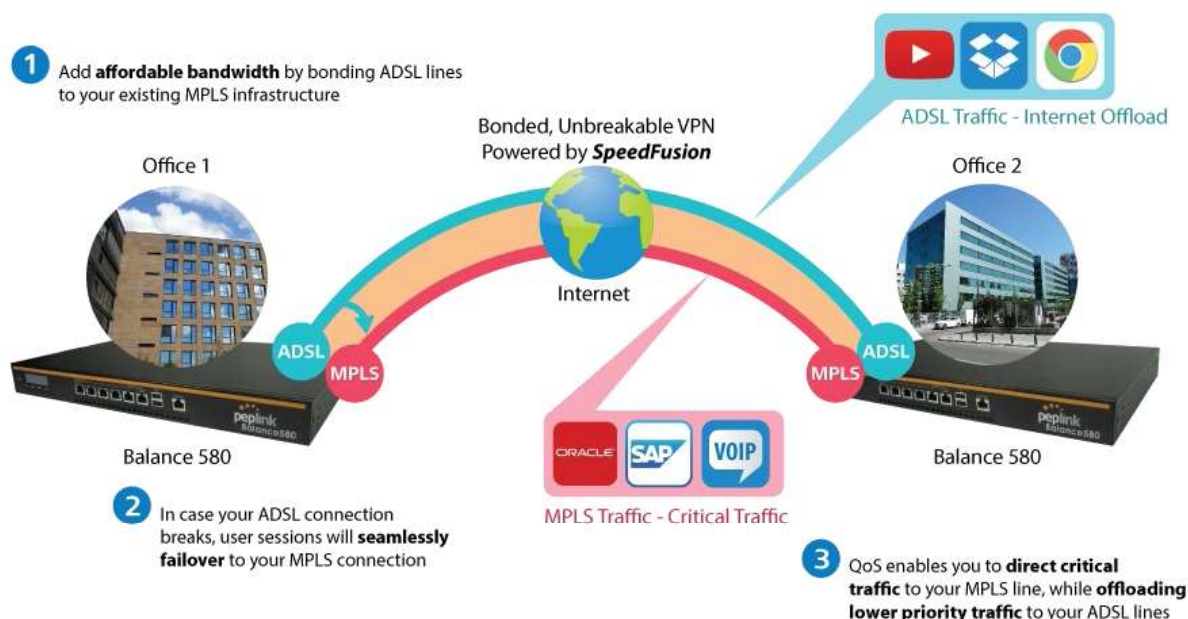
Special features of Balance 580: have high availability capability

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.

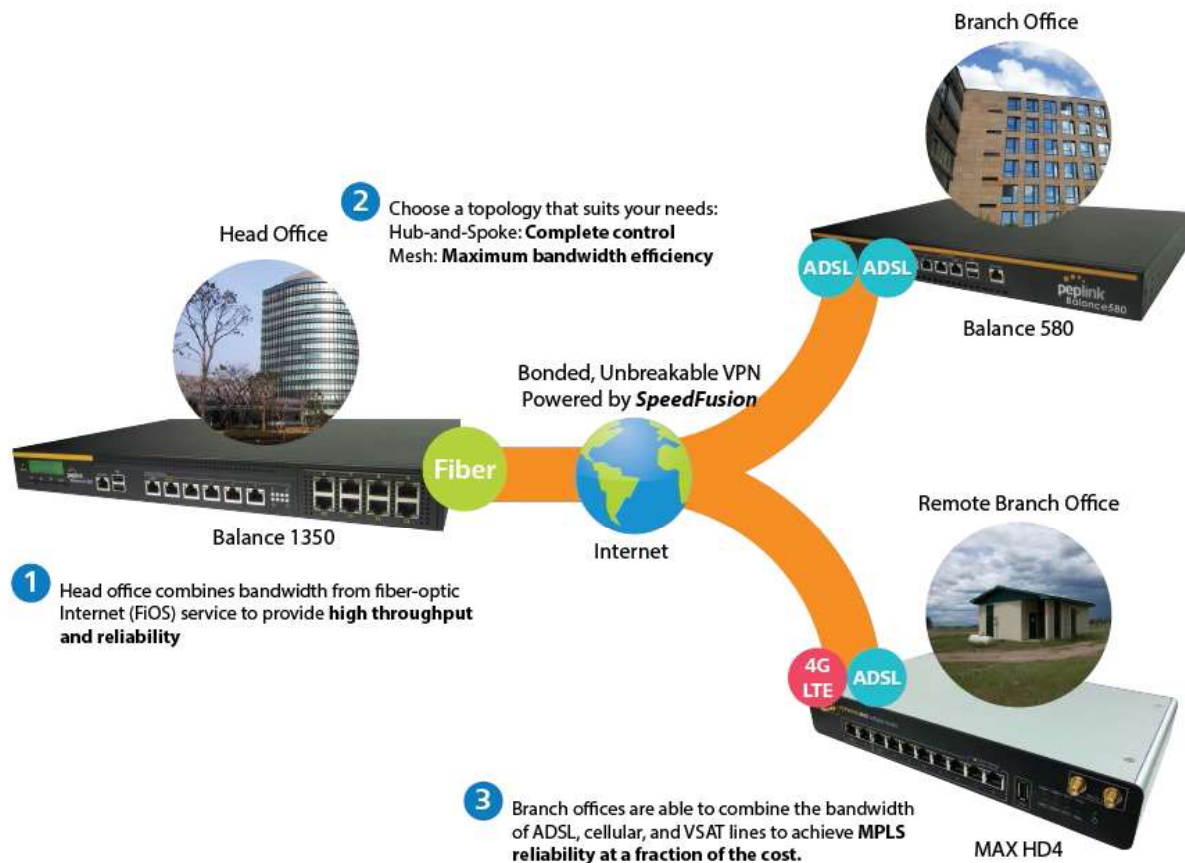
Our MediaFast series routers have been helping students at many education institutions to enjoy uninterrupted learning

Option 1: MPLS Supplement



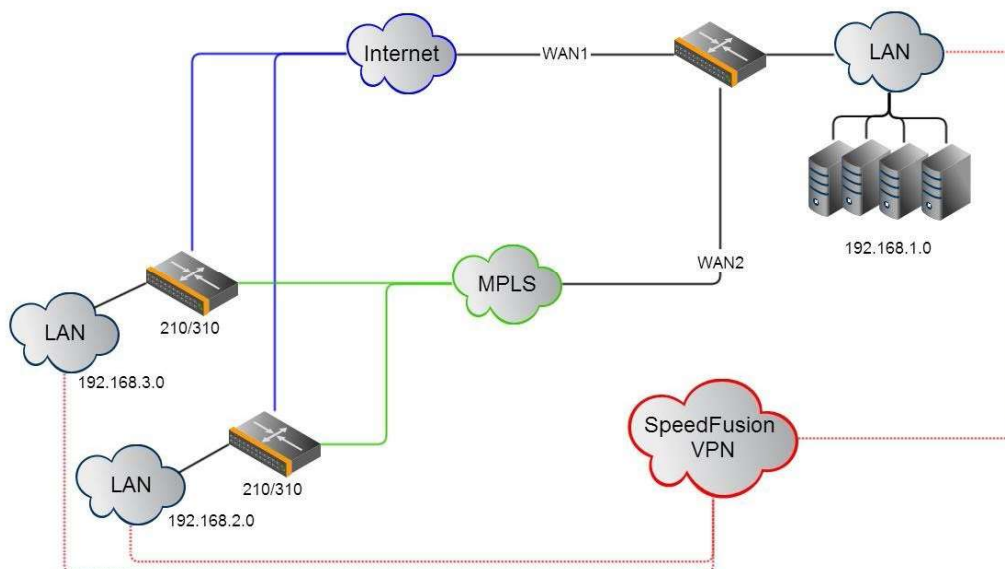
Affordably increase your bandwidth by adding commodity ADSL links to your MPLS connection. SpeedFusion technology bonds all your connections together, enabling session-persistent, user-transparent hot failover. QoS support, bandwidth control, and traffic prioritization gives you total control over your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

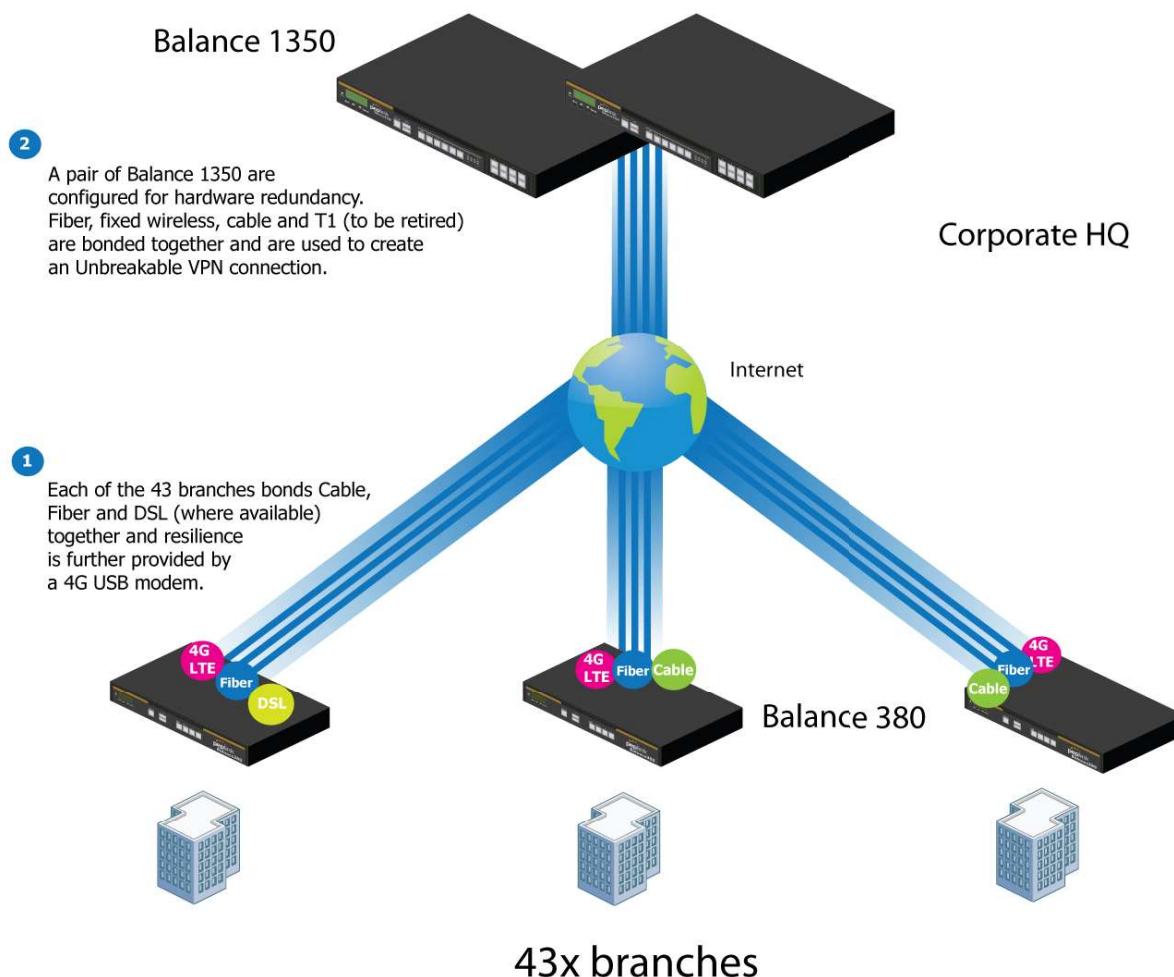
- Extreme savings of \$100,000 per year
- 4x the bandwidth
- Seamless hardware failover
- Highly available network due to WAN diversity
- Highly cost-effective compared to competing solutions
- Easy resilience achieved by adding 4G USB modems

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.

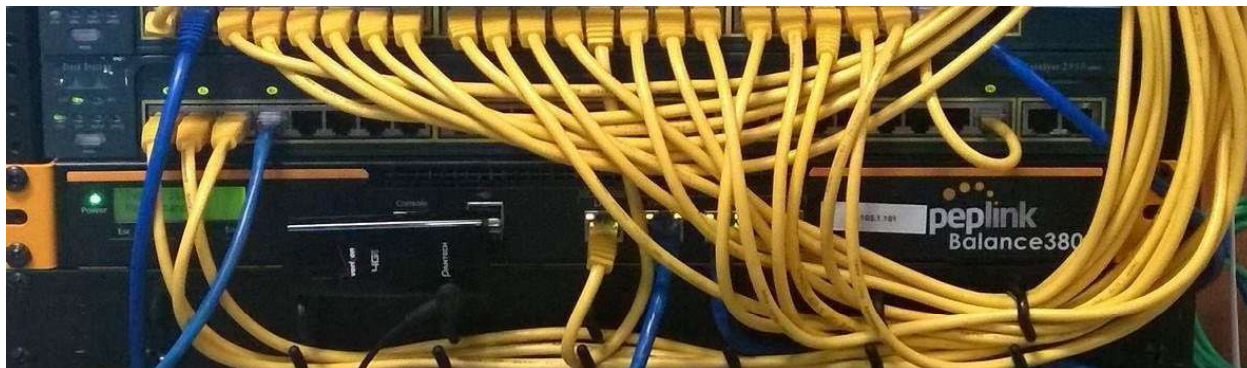
Quick Deployment and Unbreakable Connectivity

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

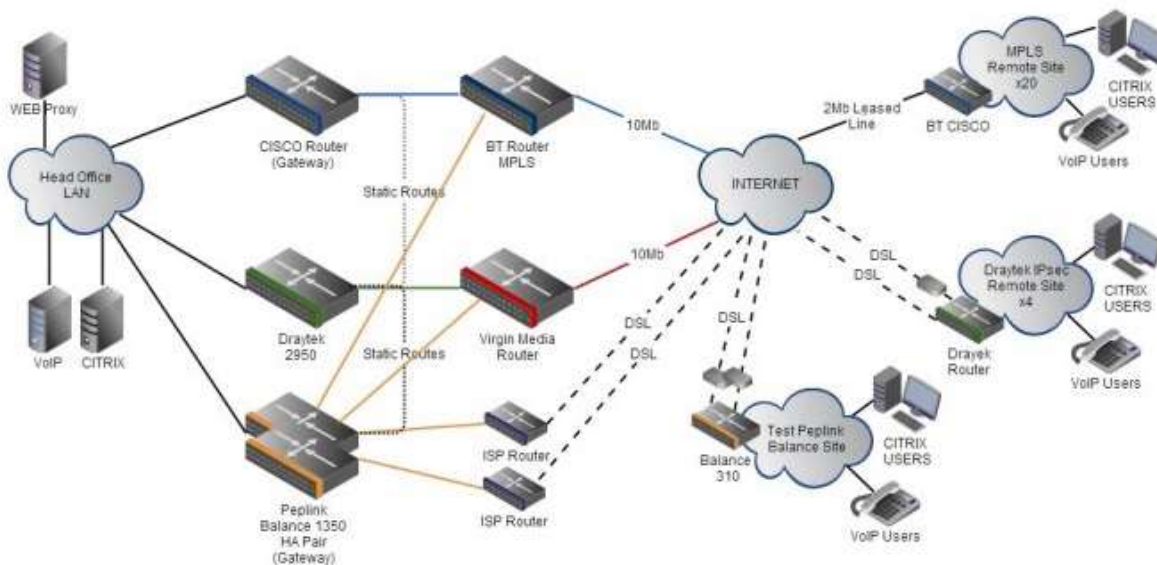


A Peplink customer since 2006, Pluss is a social enterprise that each year makes gainful employment a reality for more than 5000 disabled and disadvantaged UK citizens. With 37 locations and 300+ active users, Pluss makes heavy use of its WAN infrastructure, which until recently was built on managed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

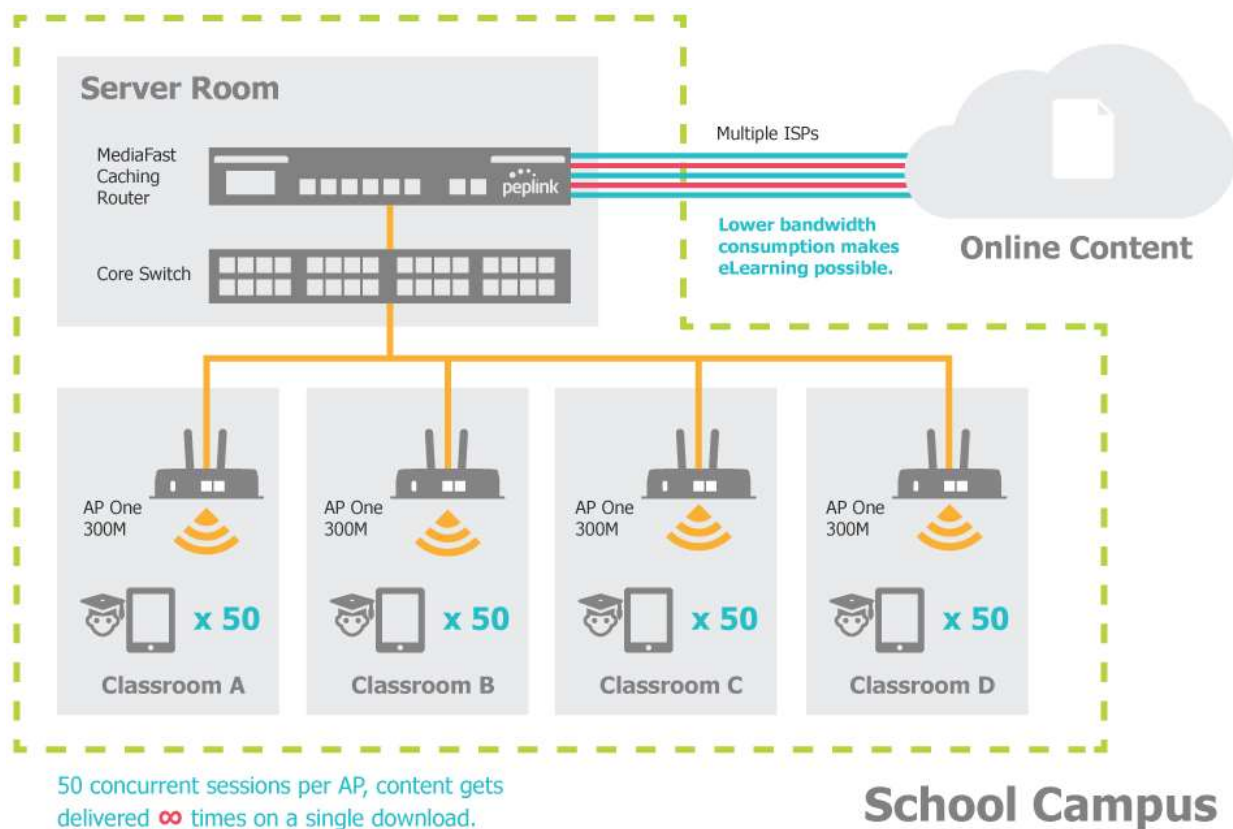
- Solve network congestion problem caused by 600 students over rural Internet connections
- Wi-Fi that can handle 50+ users per classroom
- An affordable network infrastructure that can provide simultaneous access to media-rich educational content

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 30M/2M and 50M/50M, 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.

Add a New Custom Rule

Service Name *	HTTP Persistence
Enable	<input checked="" type="checkbox"/>
Source	Any
Destination	Any
Protocol	TCP <input checked="" type="checkbox"/> HTTP
Port *	Single Port Port: 80
Algorithm	Persistence
Persistence Mode	<input type="radio"/> By Source <input checked="" type="radio"/> By Destination
Load Distribution	<input checked="" type="radio"/> Auto <input type="radio"/> Custom
Terminate Sessions on Link Recovery	<input type="checkbox"/> Enable

Save
Cancel

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:

LAN Client(s) ?	IP Address ▾																
Address ?	192.168.1.102																
Inbound Mappings ?	<div> Connection / Inbound IP Address(es) </div> <table> <tr> <td><input checked="" type="checkbox"/> WAN 1</td> <td><input checked="" type="checkbox"/> 10.90.0.75 (Interface IP)</td> </tr> <tr> <td><input type="checkbox"/> WAN 2</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 3</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 4</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 5</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 6</td> <td></td> </tr> <tr> <td><input type="checkbox"/> WAN 7</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Mobile Internet</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> WAN 1	<input checked="" type="checkbox"/> 10.90.0.75 (Interface IP)	<input type="checkbox"/> WAN 2		<input type="checkbox"/> WAN 3		<input type="checkbox"/> WAN 4		<input type="checkbox"/> WAN 5		<input type="checkbox"/> WAN 6		<input type="checkbox"/> WAN 7		<input type="checkbox"/> Mobile Internet	
<input checked="" type="checkbox"/> WAN 1	<input checked="" type="checkbox"/> 10.90.0.75 (Interface IP)																
<input type="checkbox"/> WAN 2																	
<input type="checkbox"/> WAN 3																	
<input type="checkbox"/> WAN 4																	
<input type="checkbox"/> WAN 5																	
<input type="checkbox"/> WAN 6																	
<input type="checkbox"/> WAN 7																	
<input type="checkbox"/> Mobile Internet																	
Outbound Mappings ?	<div> Connection / Outbound IP Address </div> <table> <tr> <td>WAN 1</td> <td>10.90.0.75 (Interface IP) ▾</td> </tr> <tr> <td>WAN 2</td> <td>10.90.0.76 (Interface IP) ▾</td> </tr> <tr> <td>WAN 3</td> <td>Interface IP ▾</td> </tr> <tr> <td>WAN 4</td> <td>Interface IP ▾</td> </tr> <tr> <td>WAN 5</td> <td>Interface IP ▾</td> </tr> <tr> <td>WAN 6</td> <td>Interface IP ▾</td> </tr> <tr> <td>WAN 7</td> <td>Interface IP ▾</td> </tr> <tr> <td>Mobile Internet</td> <td>Interface IP ▾</td> </tr> </table>	WAN 1	10.90.0.75 (Interface IP) ▾	WAN 2	10.90.0.76 (Interface IP) ▾	WAN 3	Interface IP ▾	WAN 4	Interface IP ▾	WAN 5	Interface IP ▾	WAN 6	Interface IP ▾	WAN 7	Interface IP ▾	Mobile Internet	Interface IP ▾
WAN 1	10.90.0.75 (Interface IP) ▾																
WAN 2	10.90.0.76 (Interface IP) ▾																
WAN 3	Interface IP ▾																
WAN 4	Interface IP ▾																
WAN 5	Interface IP ▾																
WAN 6	Interface IP ▾																
WAN 7	Interface IP ▾																
Mobile Internet	Interface IP ▾																

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 **Network>Firewall>Access Rules**. Then click the **Add Rule** button in the **Inbound Firewall Rules** table and change the settings according to the following screenshot:

Add a New Inbound Firewall Rule
✕

New Firewall Rule

Rule Name	Inbound Firewall Rule Exce
Enable	<input checked="" type="checkbox"/>
WAN Connection	Any
Protocol	TCP ← HTTP
Source	Any Address Any Port
Destination	Any Address Single Port Port: 80
Action	<input checked="" type="radio"/> Allow <input type="radio"/> Deny
Event Logging	<input type="checkbox"/> Enable

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

Add a New Outbound Firewall Rule ✕

New Firewall Rule

Rule Name	No FTP access	
Enable	<input checked="" type="checkbox"/>	
Protocol	? TCP ▾	← FTP ▾
Source	? Any Address ▾	Any Port ▾
Destination	? Any Address ▾	Single Port ▾ Port: 21
Action	? <input type="radio"/> Allow <input checked="" type="radio"/> Deny	
Event Logging	? <input checked="" type="checkbox"/> Enable	

Save Cancel

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:

<https://forum.peplink.com/t/speed-test-tool-for-combined-download-speed-in-multi-wan-environment/8457>

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**.

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 be 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 B: Declaration

FCC Requirements for Operation in the United States Federal Communications Commission (FCC) Compliance Notice:

For Flex module Mini

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