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

9.1.2 Authentication Methods

Connect to Network	?	Untagged LAN V		
Authentication		Local User Accounts 🔻		
User Accounts	?	Username	Password	
	<u> </u>			+

	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	⑦ Untagged LAN ▼
Authentication	LDAP Server
LDAP Server	Port 389 Default
	Use DN/Password to bind to LDAP Server
Base DN	
Base Filter	

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

Radius Server:



Authentication	RADIUS Server
Auth Protocol	MS-CHAP v2 V
Auth Server	Port 1812 J Default
Auth Server Secret	🗹 Hide Characters
Accounting Server	Port 1813 Default
Accounting Server Secret	Hide Characters

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

Active Directory:

Connect to Network 🛛 🕐	Untagged LAN 🔻		
Authentication	Active Directory		
Server Hostname			
Domain			
Admin Username			
Admin Password	✓ Hide Characters		

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

9.2 Misc. Settings

9.2.1 High Availability

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

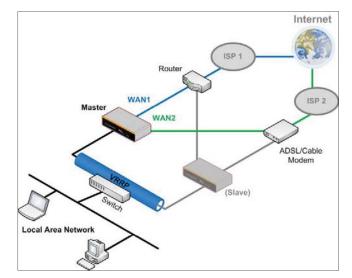
In an HA configuration, two same-model Peplink Balance units provide redundancy and failover in a master-slave arrangement. In the event that the master unit is down, the slave unit becomes active.

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

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

Peplink Balance User Manual

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

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

- In an HA configuration, the two Peplink Balance units communicate with each other using VRRP over the LAN.
- The two Peplink Balance units broadcast heartbeat signals to the LAN at a frequency of one heartbeat signal per second.
- In the event that no heartbeat signal from the master Peplink Balance unit is received in 3 seconds (or longer) since the last heartbeat signal, the slave Peplink Balance unit becomes active.
- The slave Peplink Balance unit initiates the WAN connections and binds to a previously configured LAN IP address.
- At a subsequent point when the master Peplink Balance unit recovers, it will once again become active.

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

Interface for Master Router

Interface for Slave Router

lity		High Availability	High Availability		
	 Image: Construction 	Enable	?		
	3 🔹	Group Number	0	5 💌	
	🕜 🖲 Master (Slave Preferred Role	0	🔘 Master 🖲 Slave	
Role Upon		Configuration Sync.	0	🗇 Master Serial Number: 5454- 5454 - 5454	
-	0	Virtual IP	0		
tion IP	(2) 192.168.1.1	LAN Administration IP	0	192.168.1.1	
	255.255.255	.0 Subnet Mask	?	255.255.255.0	

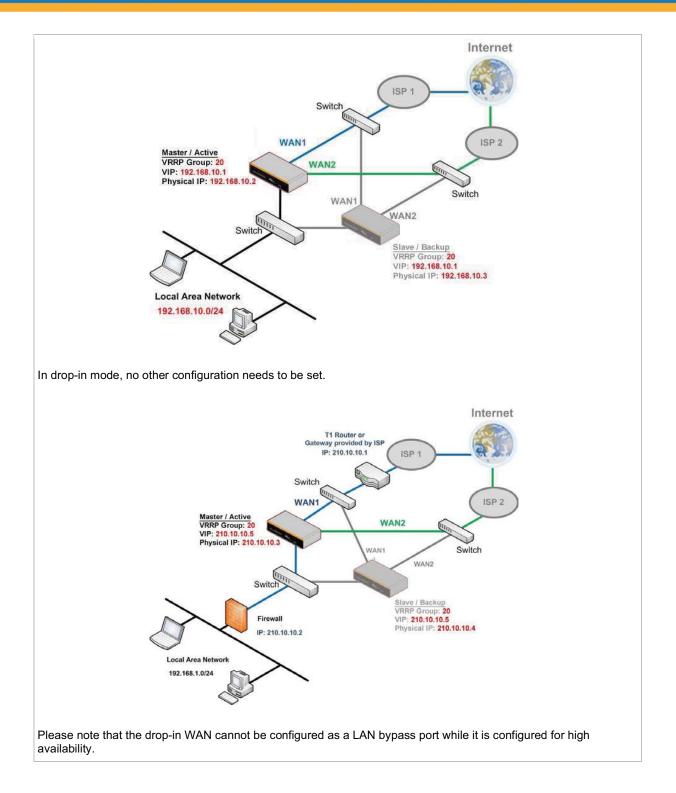
	High Availability
Enable	Checking this box specifies that the Peplink Balance unit is part of a high availability configuration.
Group Number	This number identifies a pair of Peplink Balance units operating in a high availability configuration. The two Peplink Balance units in the pair must have the 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.

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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	

No Certificates defined	
NO Certificates defilied	
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: <u>https://forum.peplink.com/t/how-to-create-a-self-signed-certificate-and-import-it-to-a-peplink-product/</u>

9.2.3 Service Forwarding

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

SMTP Forwarding Setup		?
SMTP Forwarding	Enable	
Web Proxy Forwarding Setup		?
Web Proxy Forwarding	🗉 Enable	
DNS Forwarding Setup		?
Forward Outgoing DNS Requests to Local DNS Proxy	Enable .	
Custom Service Forwarding So	stup	
Custom Service Forwarding	Enable	

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



SMTP Forwarding

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

SMTP Forwarding	Enable			
Connection		Enable Forwarding?	SMTP Server	SMTP Port
WAN 1				
WAN 2		2	22.2.2.2	25
WAN 3			33.3.3.2	25
WAN 4				

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 Set	up			(?	
Web Proxy Forwarding	🖉 Enable				
Web Proxy Interception S	ettings				
Proxy Server	IP Address 123.123.11.22 Port 8080 (Current settings in users' browser)				
Connection		Enable Forwarding?	Proxy Server IP A	ddress : Port	
WAN 1					
WAN 2			22.2.2.2	: 8765	
WAN 3			33.3.3.2	: 8080	
WAN 4				:	

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	🕑 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 🗹 Enable							
Settings	TCP Port	Server IP Address	Server Port				
			+				

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 S	upport 🕜
SIP	 Standard Mode Compatibility Mode Define custom signal ports 1. 2. 3.
H.323	Enable
FTP	 Enable Define custom control ports 1. 2. 3.
TFTP	Enable
IPsec NAT-T	 Enable Define custom ports 2. 3. Route IPsec Site-to-Site VPN waw WAN 1

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

Service Passthrough Support

SIP

Session initiation protocol, aka SIP, is a voice-over-IP protocol. The Peplink Balance can act as a SIP application layer gateway (ALG) which binds connections for the same SIP



	session to the same WAN connection and translate IP address in the SIP packets correctly in NAT mode. Such passthrough support is always enabled and there are two modes for selection: Standard Mode and Compatibility Mode .
	If your SIP server's signal port number is non-standard, you can check the box Define custom signal ports and input the port numbers to the text boxes.
H.323	With this option enabled, protocols that provide audio-visual communication sessions will be defined on any packet network and passthrough the Balance.
FTP	FTP sessions consist of two TCP connections; one for control and one for data. In a multi-WAN situation, they must be routed to the same WAN connection. Otherwise, problems will arise in transferring files. By default, the Peplink Balance monitors TCP control connections on port 21 for any FTP connections and binds TCP connections of the same FTP session to the same WAN.
	If you have an FTP server listening on a port number other than 21, you can check Define custom control ports and enter the port numbers in the text boxes.
TFTP	The Peplink Balance monitors outgoing TFTP connections and routes any incoming TFTP data packets back to the client. Select Enable if you want to enable TFTP passthrough support.
	This field is for enabling the support of IPsec NAT-T passthrough. UDP ports 500, 4500, and 10000 are monitored by default.
IPsec NAT-T	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.

9.2.5 Grouped Networks

Grouped Networks		
Name	Networks	
	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	4	
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	АР	System	Status
WAN						
LAN	Outboun	d Policy				
Network Settings	Custom					
Port Settings						
VPN	Add a l	New Custom Ru	le			
SpeedFusion						_
IPsec VPN	Service	Name		_		
Outbound Policy	Enable		I Alw	ays or	1 T	
Inbound Access	Source		Groupe	ed Net	wor 🔻 Acc	counting 🔻

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.

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SIM Status			
WAN Connection	Cellular		
SIM Card	1		
IMSI	254287583043004		
Tool	USSD V		
USSD			
USSD Code	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#	Submit	
Receive SMS	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#	Submit	
USSD Status	Request is sent successfully		
Receive SMS	Get		

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

Received SMS		
May 27 20:02	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)	×
Aug 8 , 2013 14:51	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)	×



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	234301100582888
Tool	SMS V

SMS		Refresh
Jun 21, 2017 18:00	Here's processor and processor the Article in the second strategy lifes where you life in the second at Second processor and processor the Article in the second strategy lifes where you life in the second at Second	×
May 06, 2017 12:23	340001 where is from one will is ready to view. So is pour Phyli succession your desimptor or a radial phone with hereining concluse, these concentrates is	×
Mar 15, 2017 10:03	From literative planned mandaturies at the domestic time approximation of star per-constantial, you and per-particular based of the Col.	×
Mar 06, 2017 14:50	(Adopt) -Construit - New year whill in result in view. On he pass Phyli manarither pass desilings or so is realising places which have improvement in the adoption of a place of a place of the place	×
Dec 28, 2016 09:53	From Horns, the approximation to meeting had prove offer that to remark you, this offer applied to your first in take, that meeting charge we remarkly further second point that the take.	×
Dec 06, 2016 13:09	Maker offensis (1) Year new solel is made to reaso, Only your Phy? accounts on your sharings or on a making phone-clock interview of watching from an advantage of an interview of watching from an advantage of an	×
Nov 08, 2016 11:29	Freque Hardet reveal. Preser la plannest maintenance le time European d'ant MAQ amontées samé. Il pase servicerie affected, pas can par optimis monitorie automatice	×
Sep 07, 2016 17:05	From Rent	×

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	?	✓	
Support Remote AP	?		
Sync. Method	?	As soon as possible •	
Permitted AP	•	O Any O Approved List (One serial number per line)	

	AP Controller			
AP Management	The AP controller for managing Pepwave APs can be enabled by checking this box. Wher 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 Pep enabled, the AP controller will wait for management cor APs over the WAN on TCP and UDP port 11753. It will connections on TCP port 443. The DHCP server and/or local DNS server of the remote configured in the DNS Proxy Settings menu under Net follows: Define an extended DHCP option, CAPWAP Acce 138), in the DHCP server, where the values are the addresses; and/or Create a local DNS record for the AP controller with controller's public IP address. DNS Proxy Settings Include Coogle Public DNS Public DNS (Plast Name Wancentroller)	e AP's network should be twork>LAN. The procedure is as controller addresses (field be AP controller's public IP		



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

SSID		Security Policy	CONTRACTOR DE
	No SSID Defined		
	Add		

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 ishows a new SSID window with Advanced Settings enabled (these are available by selecting the question mark in the top right corner).



SSID

SSID Settings

	×
	?
PEPLINK_63E6	
Always on 🔻	
0 (0: Untagged) Use VLAN Pool	

Maximum number of clients 2.4 GHz: 0 5 GHz: 0 (0: Unlimited)		(0: Unlimited)	
Band Steering	Oisable	•	
		SSID Sett	tings
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 thi wireless network. Broadcast SSID is enabled by default.		
Data Rate ^A			epwave router to set the data rate automatically, e a rate from the displayed drop-down menu.

Auto Fixed

•

•

MCS0/6M

Gold

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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	?			
		Hide Characters		



	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 Settings		
Restricted Mode	Deny all except listed •	
MAC Address List		

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	Connection coming from the MAC addresses in this list will be either denied or accepted based on the option selected in the previous field.
List	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				
Secret	✓ Hide Characters		✓ Hide Characters	
Authentication Port	1812	Default	1812	Default
Accounting Port	1813	Default	1813	Default
NAS-Identifier	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		
SSID	 2.4 GHz 5 GHz PEPLINK_63E6 	
Operating Country	United States	
Preferred Frequency	● 2.4 GHz ○ 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	This drop-down menu specifies the national/regional regulations which the Wi-Fi radio should follow.		
	 If a North American region is selected, RF channels 1 to 11 will be available and the maximum transmission power will be 26 dBm (400 mW). 		
	 If European region is selected, RF channels 1 to 13 will be available. The maximum transmission power will be 20 dBm (100 mW). 		
	NOTE: Users are required to choose an option suitable to local laws and regulations.		
Preferred Frequency	Indicate the preferred frequency to use for clients to connect.		

Important Note

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

	2.4 GHz 802.11ng		5 GHz 802.11n/ac		
Protocol					
Channel Width	Auto 🔻		Auto	T	
Channel	Auto 🔻	Edit	Auto	• Edit	
	Channels: 1 2 3 4 5 6 7 8 9 10 11		Channels: 36 40 44 48 149 153 157 161 165		
Auto Channel Update	Daily at 03 ▼ :00		Daily at 03 ▼:00 ✓ Wait until no active client associated		
Output Power	Fixed: Max 🔻 🗆 Boost		Fixed: Max 🔻 💷 Boost		
Client Signal Strength Threshold	0 -95 dBm (0: Unlimited)		0 -95 dB	-95 dBm (0: Unlimited)	
Maximum number of clients	0 (0: Unlimited)		0 (0: Un	limited)	

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 an 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 T
DTIM	1 Default
RTS Threshold	0 Default
Fragmentation Threshold	0 (0: Disable) Default
Distance / Time Converter	4050 m Note: Input distance for recommended values
Slot Time	Auto Custom 9 µs Default
ACK Timeout	48 µs Default
Frame Aggregation	8
Aggregation Length	50000 Default

Advanced AP Settings



Management VLAN ID	This field specifies the VLAN ID to tag to management traffic, such as communication traffic between the AP and the AP Controller. The value is zero by default, which means that no VLAN tagging will be applied. NOTE: Change this value with caution as alterations may result in loss of connection to the AP Controller.
Operating Schedule	Choose from the schedules that you have defined in System>Schedule. Select the schedule for the integrated AP to follow from the drop-down menu.
Beacon Rate ^A	This option is for setting the transmit bit rate for sending a beacon. By default, 1Mbps is selected.
Beacon Interval ^A	This option is for setting the time interval between each beacon. By default, 100ms is selected.
DTIM ^A	This field allows you to set the frequency for the beacon to include delivery traffic indication messages. The interval is measured in milliseconds. The default value is set to 1 ms .
RTS Threshold ^A	The RTS (Request to Clear) threshold determines the level of connection required before the AP starts sending data. The recommended standard of the RTS threshold is around 500.
Fragmentation Threshold ^A	This setting determines the maximum size of a packet before it gets fragmented into multiple pieces.
Distance / Time Convertor	Select the range you wish to cover with your Wi-Fi, and the router will make recommendations for the Slot Time and ACK Timeout.
Slot Time ^A	This field is for specifying the unit wait time before transmitting a packet. By default, this field is set to $9\ \mu s$.
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 $48 \ \mu s$.
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.



Enable	⊗		
Web Access Protocol	○ HTTP ● HTTPS		
Management Port	443		
HTTP to HTTPS Redirection	✓		
Admin Username	admin		
Admin Password	Generate		
	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.

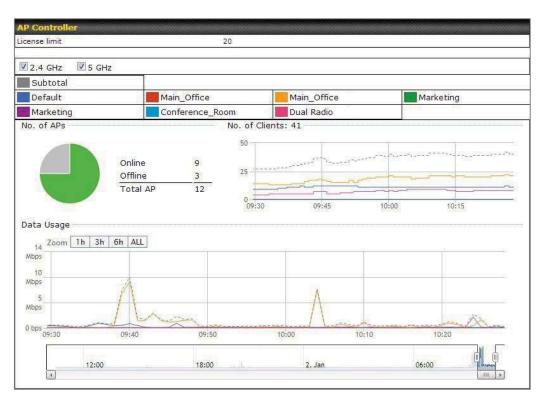
10.2 AP Controller Status

10.2.1 Info

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

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	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.

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10.2.2 Access Points (Usage)

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

Search Filter						1000	m		
AP Name / Serial Num	ber / All								
SSID		Include Offline APs							
Search Result									
Managed APs								Expand	Collapse
Managed APs									Collapse
Managed APs Name 	IP Address	MAC	Location	Firmware	Pack I	D	Config	Expand Juration	96
	IP Address	MAC	Location	Firmware	Pack I	D	Config		

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

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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

Click the 🧉 icon to configure each client

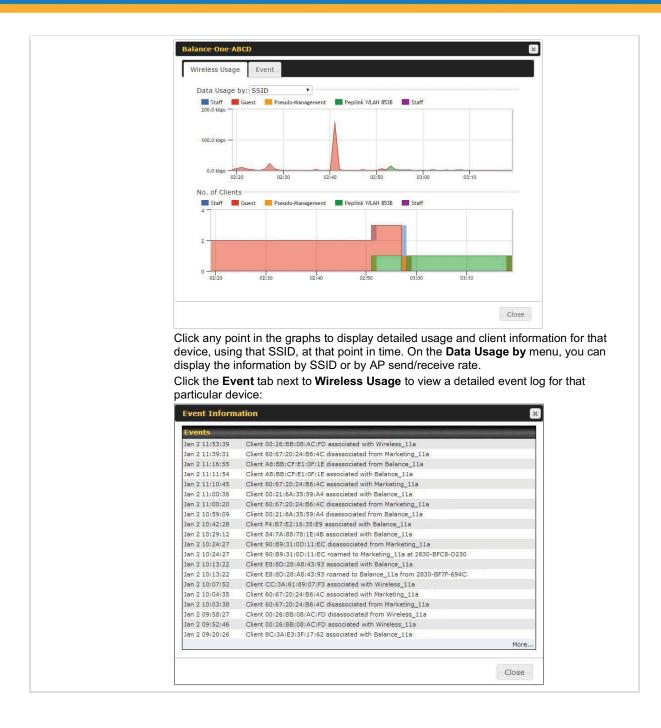
Serial Number	1111-2222-3333					
MAC Address	00:1A:DD:BD:73:E0					
Product Name	Pepwave AP Pro Duo					
Name						
Location						
Firmware Version	3.5.2					
Firmware Pack	Default (None) 🔻					
AP Client Limit	Follow AP Profile Custom					
2.4 GHz SSID List	T4Open					
5 GHz SSID List	T40pen					
Last 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 V 5 GHz: Follow AP Profile V					

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:

Peplink Balance User Manual

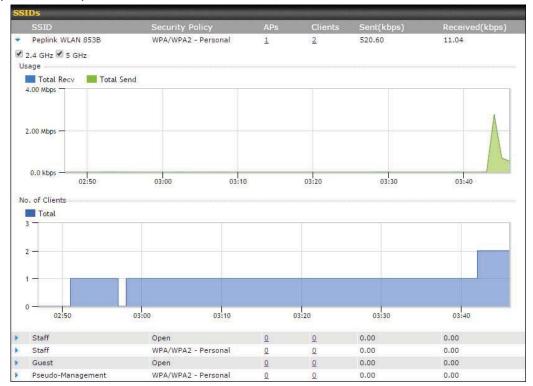
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10.2.3 Wireless SSID

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				
Maximum Result (1-256)	50			
Search Result				
		Search		
		/ 44		
Top 10 Clients of last hour (Up	dated at 03:			
Client MAC Address		Upload	Download	
C0:EE:FB:20:13:36		53.5 KB	101.4 KB	습 🔟

Here, you will be able to see your network's heaviest users as well as search for specific users. Click the $\stackrel{\text{tot}}{\Rightarrow}$ icon to bookmark specific users, and click the $\stackrel{\text{tot}}{=}$ icon for additional details about each user:

nformation							
itatus		Associated					
ccess Point		1111-2222-3333					
SID		Peplink WLAN 853B					
P Address		192.168.1.34					
uration		00:27:31					
sage (Upload / Dow	nload)	141.28 MB/4	.35 MB				
SSI		-48					
ate (Upload / Downl	oad)	150M / 48M					
уре		802.11na					
20.0 kbps							
10.0 kbps —					100		
0.0 kbps	08:00	12:00	16:00	20:00	11-23	X	
0.0 kbps	08:00 AP	12:00	16:00	20:00 To	11-23 Upload	Download	
0.0 kbps 04:00 SID eplink WLAN 853B	АР	12:00 1835-642F	ikarindonse	22032403	Upload 141.28 MB	4.35 MB	
0.0 kbps 04:00	AP 192C- 192C-		From	To	Upload		

10.2.5 Nearby Device

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

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BSSID		Channel	Encryption	Last Seen	Mark as
00:1A:DD:EC:25:22	Wireless	11	WPA2	10 hours ago	08
00:1A:DD:EC:25:23	Accounting	11	WPA2	10 hours ago	0 8
00:1A:DD:EC:25:24	Marketing	11	WPA2	11 hours ago	0 0
00:03:7F:00:00:00	MYB1PUSH	1	WPA & WPA2	11 minutes ago	00
00:03:7F:00:00:01	MYB1	1	WPA2	15 minutes ago	08
00:1A:DD:B9:60:88	PEPWAVE_CB7E	1	WPA & WPA2	5 minutes ago	0 3
00:1A:DD:BB:09:C1	Micro_S1_1	6	WPA & WPA2	1 hour ago	08
00:1A:DD:BB:52:A8	MAX HD2 Gobi	11	WPA & WPA2	2 minutes ago	0 3
00:1A:DD:BF:75:81	PEPLINK_05B5	4	WPA & WPA2	1 minute ago	08
00:1A:DD:BF:75:82	LK_05B5	4	WPA2	1 minute ago	08
00:1A:DD:BF:75:83	LK_05B5_VLAN22	4	WPA2	1 minute ago	00
00:1A:DD:C1:ED:E4	dev_captive_portal_test	1	WPA & WPA2	3 minutes ago	00
00:1A:DD:C2:E4:C5	PEPWAVE_7052	11	WPA & WPA2	2 hours ago	00
00:1A:DD:C3:F1:64	dev_captive_portal_test	6	WPA & WPA2	6 minutes ago	08
00:1A:DD:C4:DC:24	ssid_test	8	WPA & WPA2	2 minutes ago	08
00:1A:DD:C4:DC:25	SSID New	8	WPA & WPA2	2 minutes ago	0 3
00:1A:DD:C5:46:04	Guest SSID	9	WPA2	2 minutes ago	08
00:1A:DD:C5:47:04	PEPWAVE_67B8	1	WPA & WPA2	5 minutes ago	0 3
00:1A:DD:C5:4E:24	G BR1 Portal	2	WPA2	2 minutes ago	0 8
00:1A:DD:C6:9A:48	ssid_test	8	WPA & WPA2	2 hours ago	0 🔅

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**.

Search key	Client MAC Ad	dress / Wireless SSID / AP Seria	il Number / AP Profile Name
Time	From	hh:mm to	hh:mm
Alerts only	0		

Events		View Alert
Jan 2 11:01:11	AP One 300M: Client S4: EA: Ad: 20: AD: DS disassociated from Marketing_11a	
Jan 2 11:00:42	AP One 300M: Client \$4:EA:AB:30:AB:05 associated with Marketing_11a	
Jan 2 11:00:38	AP One 300M: Client #4(##:48:20:44:05 disassociated from Marketing_11a	
Jan 2 11:00:36	AP One 300M: Client 00:31:44.35 We All 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 \$4:E#:A5:20:40:05 associated with Marketing_11a	
Jan 2 10:59:09	AP One 300M: Client Con 21 184 135 199 44 disassociated from Balance_11a	
Jan 2 10:59:08	Office Fiber AP: Client 10:00:00:00:00:00:00 associated with Balance	
Jan 2 10:58:53	Michael's Desk: Client 10:00:30:30:40:77 disassociated from Wireless	
Jan 2 10:58:18	AP One 300M: Client #4:E#:48:00:48:05 disassociated from Marketing_11a	
Jan 2 10:58:03	Office InWall: Client 10.8F 48 FM 78 CT associated with Wireless	
Jan 2 10:57:47	AP One 300M: Client #4: ##################################	
Jan 2 10:57:19	AP One 300M: Client #4:E#: Ab: 10:A0:05 disassociated from Marketing_11a	
Jan 2 10:57:09	AP One 300M: Client #4:E#:AB: ID: 4E: DB associated with Marketing_11a	
Jan 2 10:56:48	AP One 300M: Client Ha Ha AR CO AD DE disassociated from Marketing_11a	
Jan 2 10:56:39	AP One 300M: Client S4: EA: Ad: 3D: AD: DS associated with Marketing_11a	
Jan 2 10:56:19	AP One 300M: Client 00:05:05:05:04:44 associated with Marketing_11a	
Jan 2 10:56:09	AP One 300M: Client %C 104 201 101 391 4C associated with Marketing_11a	
Jan 2 10:55:42	AP One 300M: Client 14 EALAR 30 AD DI disassociated from Marketing_11a	
Jan 2 10:55:29	AP One 300M: Client \$4:\$4:\$2:40:20:40:05 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**.

Firmwar	e Packs Auto Power Adj	. Dynamic Channel Assign	ment	
2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ck ID	Release Date		Action
	26 for Updates Manual Upload	2013-08-26 Default No default defined	d.	
		Firmware Packs	5	
information regard to download new (e, you can manage the firm To receive new firmware p Manual Upload to manually	oacks, you can either p	

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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	hostname: Second Second hostname: Second Second hostname: Second
Admin User Name	admin
Admin Password	•••••
Confirm Admin Password	•••••
Read-only User Name	user
User Password	
Confirm User Password	
Front Panel Passcode	
Web Session Timeout	4 Hours 0 Minutes
Authentication by RADIUS	2 🗆 Enable
CLI SSH & Console	2 🗆 Enable
Security	HTTP / HTTPS Redirect HTTP to HTTPS
Web Admin Access	HTTP: LAN Only HTTPS: LAN Only
Web Admin Port	HTTP: 80 HTTPS: 443

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 <i>XXXX</i> refers to the last 4 digits of the unit's serial number.
Admin User Name	Admin User Name is set as admin by default, but can be changed, if desired.
Admin Password	This field allows you to specify a new administrator password.
Confirm Admin Password	This field allows you to verify and confirm the new administrator password.
Read-only User Name	Read-only User Name is set as user by default, but can be changed, if desired.
User Password	This field allows you to specify a new user password. Once the user password is set, the read-only user feature will be enabled.



Confirm User Password	This field allows you to verify and confirm the new user password.
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 $\mbox{MS-CHAP}$ $\mbox{v2}$ and $\mbox{PAP}.$
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	This option is for specifying the protocol(s) through which the web admin interface can be accessed: • HTTP • HTTPS • HTTP/HTTPS HTTP to HTTPS redirection is enabled by default to force HTTPS access to the

https://www.peplink.com

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	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	 This option is for specifying the network interfaces through which the web administerface can be accessed: LAN only LAN/WAN If LAN/WAN is chosen, the WAN Connection Access Settings form will be displayed.

LAN Connection Access Settings		
Allowed LAN Networks	◎ Any Allow this network only	Public (10) V

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

Any Allow access from the followi	ng IP subnets only
Connection / IP Address(es)	All Clear
W WAN 1	
WAN 2	
🗆 WI-FI WAN	
Cellular 1	
Cellular 2	
	Connection / IP Address(es) WAN 1 WAN 2

Allowed Source IP Subnets	 This field allows you to restrict web admin access only from defined IP subnets. 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 area will be displayed beneath:



	 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., 192.168.0.0), and <i>m</i> is the subnet mask in CIDR format, which is between 0 and 32 inclusively (For example, 192.168.0.0/24). To define multiple subnets, separate each IP subnet one in a line. For example: 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**.

Firmware Upgrade		?
Current firmware version: 8.0.0 Firmware check pending		
	Check for Firmware	

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

peplink	Dashboard	Setup Wizard	Network	AP	System	Status	Apply Changes			
System										
Admin Security	Firmware Upgrade 🕜									
Firmware	Current firmware version: 7.1.0									
Time	New Version available: 7.1.2 (<u>Release Note</u>)									
 Schedule 			> Dov	vnloa	d and Upgra	de Check for Firmware	1			

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.

Firmware Upgrade



Firmware Upgrade	
Current firmware version: 7.1.0 New Version available: 7.1.2 (<u>Release Note</u>) Upgrading to firmware 7.1.2	

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.

It may take up to 8 minutes.	
it may take up to o minutes.	
	9%
Validation success	

*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 <u>here</u> Navigate to the relevant product line (ie. Balance, Max, FusionHub, SOHO, etc). Some product lines may have a dropdown that lists all of the products in that product line. Here is a screenshot from the Balance line.

Balance						
Product						
				Search:		
Product	Hardware Revision	Firmware Version	Download Link	Release Notes	User Manual	
Balance 1350	HW2	7.1.2	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 Upgra	de	0
Firmware Image	Choose File No file chosen	
	Manual Upgrade	

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.

	9%
Validation success	

*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	(GMT) Greenwich Mean Time : Dubli	in, Edinburgh, Lisbon, Lon 🔻
Time Server	0.pepwave.pool.ntp.org	Default
_	Time Settings	
Time Zone	This specifies the time zone (along with the co in which Peplink Balance operates. The Time event log of the Peplink Balance and e-mail n 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	
Weekdays Only	Weekdays only	-	*
		New Schedule	

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

Schedule S	et	tir	g																																								
Enable										Th		sci	hei	Jub	e fi	un	ctic	on	of	tho	se	as	so	ia	tec	l fe	ati	ires	s w	ill (bel	los	t if	pr	ofi	e is	5 0	lisa	abl	led	i.		
Name										W	ee	eko	da	ys	0	nly	r.																										
Schedule										M	/e	ek	da	ys	0	nly	1							۲																			
Used by										Ye	u	ma	ay :	go	to	su	pp	ort	ed	fea	atu	re	set	ting	js i	pa	ge	and	i s	et t	his	pr	ofi	e	as	sch	ne	dul	er.	2			
					_						_	_			_	_		_			_	_		_	***				_		_		_	_	_				_	_	_		_
Schedule N	laj	p		-	88	ini.		666	6					66	÷.	ė	66	1					-	iei	-	66	6	6		-	1	-	iei	60	-		8	-	60	1	Ú.	66	66
	М	īdı	nig	ht				4aı	n						8	am	į.					N	loc	n					4	рп						T	Bp	m					
Sunday	×	×	×	x x	×	×	×	× >	1 3	×	×	×	×	×	×	×	×	×	×	×	¢ 3	c x	×	×	×	×	×	¢ .×	×	-	×	×	×	×	×	* :	×	ж	×	×	×	×	×
Sunday Monday	×	×	×	× ×	×	* *	×	× >	*	×	*	×	*	×	×	S X	×	×	×	× 3	• •	c ×	×	×	×	*	×	< ×	×	-		* *	×	×	×	×	×	×	××	* *	×	××	×
	××	×SS	-	x x	XXX	××	×	× ×	×	× ×	*	×	×	× × ×	×	X S S	×	×	×	× 1			×	×××	×	* *	×		*	-		* *	×	××	×	× :	×	×	X X X	* * *	× × ×	XXX	×
Monday	××××	X S S S	-		XXXXX	x x x	×			X	×	×	×	×	XXXX	S S S X	×××××	×	× • •	× 1			x x x x	XXX	× > >	×	X		×	-		* * * *	× × × ×	XXXX	×	× :	×	× Y Y Y	X X X X	× × × ×	K K K X	X X X X	× × ×
Monday Tuesday	×××××	x x x x x	-		X X X X X	××××	×				×	XXXXX	XXXXX	x > > > > >	x x x x x	× 5 5 5 ×	×	* * * *	× • • • •	× × ×			x 5 5 5 5	XXXX	x > > > > > >	×	x y y y y		XXXXX	-		* * * *	×	× × × ×	× × × ×	× × × ×	X Y Y Y	× Y Y Y Y	X X X X X	K X X X X	K K K K	XXXXX	1 1 1 X X
Monday Tuesday Wednesday	* * * * * *	× 5 5 5 5 5	-		XXXXXX	× × × × ×	× ×						1 1 X X X X	2 2 2 3 3	3 3 3 3 3	S S S S S	x x x x x x	3 3 3 3 3	1 1 1 1				X S S S S	(4) (4) (4) (4) (4)		* * * *	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		3 3 X 3 3	× × × × × ×	(4) (4) (4) (4) (4)	* * * * *	× × × ×	× × × × ×	× × × × ×	XXXXXXX	× × × ×	× Y Y Y Y	X X X X X	K K K K K X	* * * * * *	XXXXXX	x



	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	2
Email Notification	Enable
SMTP Server	smtp.mycompany.com Require authentication
SSL Encryption	☑ (Note: any server certificate will be accepted)
SMTP Port	465 Default
SMTP User Name	smtpuser
SMTP Password	•••••
Confirm SMTP Password	•••••
Sender's Email Address	ıdmin@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 finsihed setting up email notifications, you can click the **Test Email Notification** button to test the settings before saving. After **Test Email Notification** is clicked, you will see this screen to confirm the settings:

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	

Send Test Notification Cancel

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</pre>

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	2
Remote Syslog		
Remote Syslog Host		
Push Events to Mobile D	evices	0
Push Events		

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.
peplink PEPWAVE	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. SN	IMP configuration is loc	ated at System>SN	MP.
SNMP Settings				
SNMP Device Na	me Balance_0D84			
SNMP Port	161	Default		
SNMPv1	🖾 Enable			
SNMPv2c	🖾 Enable			
SNMPv3	🖾 Enable			
541		Save		
Community Nat	me	Allowed Source Netwo	rk Access Mode	
MyCompany		192.168.1.20/24	Read Only	
	Ad	dd SNMP Community		
SNMPv3 User N	ame	Authentication / Priva SHA / DES	cy Access Mode Read Only	X
Shimposei		Add SNMP User	Inead Only	
<u></u>		Add Shirir OSCI		
	SN	IMP Settings		
SNMP Device Name	This field shows the router	name defined at System	>Admin Security.	
SNMP Port	This option specifies the po	ort which SNMP will use.	The default port is 161 .	
SNMPv1	This option allows you to e	nable SNMP version 1.		
SNMPv2	This option allows you to e	nable SNMP version 2.		
SNMPv3	This option allows you to e	nable SNMP version 3.		

information about the Peplink Balance unit. SNMP configuration is located at System>SNMP.



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

SNMP Co	ommunity	
Communit	y Name	MyCompany
Allowed N	etwork	192.168.1.25 / 255.255.0 (/24) 🔹
		Save Cancel
		SNMP Community Settings
Community Name	This setting	g specifies the SNMP community name.
llowed Source Subnet Address	This setting	g specifies a subnet from which access to the SNMP server is allowed. Ente ress here (e.g., <i>192.168.1.0</i>) 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:

User Name	SNMPUser	
Authentication	SHA 🔻 password	
Privacy	DES 🝷 privacypassword	

	SNMPv3 User Settings
User Name	This setting specifies a user name to be used in SNMPv3.
Authentication Protocol	 This setting specifies via a drop-down menu one of the following valid authentication protocols: NONE MD5



	• SHA When MD5 or SHA is selected, an entry field will appear for the password.
	This setting specifies via a drop-down menu one of the following valid privacy protocols:
Privacy Protocol	 NONE DES When DES is selected, an entry field will appear for the password.

11.1.8 InControl

InControl Management	
InControl Management	Allow InControl Management
Privately Host InControl	
InControl Host	
72-	

Save

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

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

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

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

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**.

Restore Configuration to	Factory Settings		?
	Restore	Factory Settings	
Download Active Configu	rations		\bigcirc
		Download	
Upload Configurations			?
Configuration File	Choose File No file	e chosen	
		Upload	
Upload Configurations fro	m High Availability Pair		?
Configuration File	Choose File No file	chosen	
		Upload	

	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

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**.

Feature Activation	
Activation Key	

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.

Reboot System	0
Select the firmware you want Firmware 1: 8.0.0b03 build Firmware 2: 7.1.1 build 24	2593 (Running)
	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
Results	Start Stop
PING 8.8.8.8 (8.8.8.8) from 10.	
64 bytes from 8.8.8.8: icmp_re 64 bytes from 8.8.8.8: icmp_re	
64 bytes from 8.8.8.8: icmp_re	
64 bytes from 8.8.8.8: icmp_re	
64 bytes from 8.8.8.8: icmp_re	=5 ttl=121 time=11.4 ms
8.8.8.8 ping statistics	
5 packets transmitted, 5 receive	, 0% packet loss, time 4006ms
rtt min/avg/max/mdev = 11.42	/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**.

•••	
peplink	PEPWAVE

Connection	WAN 1 👻
Destination	64.233.189.99
	Start Stop
Results	Clear
Parameters to 84.222.089.08	(34.233.588.985, 32 Yopa max, 67 Yufa pachato
1 10-91 107-204 (10-91 107	204) 3.708 ma 6.471 ma 9.207 ma
1 10.00.00.00.004 (10.00.00.0	54) 0.309 Http: 1.130 Http: 1.448 Http:
10.00.00.00.1	275 mai 1.525 mai 1.868 mai
10.00.3.2 (10.00.3.2) 0.0	E ma 3.202 ma 3.296 ma
108.063.88.254 (108.063	48-2041 3-304 mg 138-178-248-22 (138-178-248-22) 5-707 mg 138-263-88-204 (138-363-88-204) 3-672 mg
1 1982 75 46 129 (1982 Ft at	1200 5.688 mg 188 85.228.46 (148.85.225.40) 5.293 mg 5.293 mg
	(38) 4.30) on 7.688 on 7.488 on
# 128.275.88.284 (128.275)	\$8,1841 4.411 Htt 228,128,8.1 (228,128,8.1) 4.475 Htt (82,71,188,118,7146,71,188,118) 4.241 Htt
	1000 3.300 cm 72 14.104 (48 (72 14 (84 300) 4.40) cm 205 138 5.200 (235 138 5.200) 4.479 cm
	201 A 642 Htt 74 125 48 126 (74 125 48 126) A 677 Ht 72 14 255 10 (75 14 255 20) A 588 Ht 4
	101 8.584 mg 108.85.101.101 (208.85.101) 7.315 mg 108.65.341.01 (208.65.341.00) 4.684 mg
	2012 2110 4.475 mg 208 88 242 243 (208 88 242 242 242) 4 26 4 808 mg 4 508 mg
	2012 2010 1 2010 1 2010 2010 2010 2010
the state water of the local lines	

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 speedtest between 2 Peplink devices .

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Youcan 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. T

peplink	Dashboard	Setup Wizard	Network	AP	System	Status
System						
 Admin Security 	WAN	Perforn	nance	A	halvsi	S
Firmware		point-to-point WAN p				
Time						
 Schedule 		As a server				
Email Notification		For the peer wh	to has public IF	addre	esses to acce	pt connectior
Event Log						
SNMP	>>>	As a client For the peer to	initiate connec	tion		
 InControl 		Por the peer to	initiate connec	011.		
 Configuration 						
Feature Add-ons						
 Reboot 						
Tools						
Ping						
 Traceroute 						
Wake-on-LAN						
 WAN Analysis 						

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.



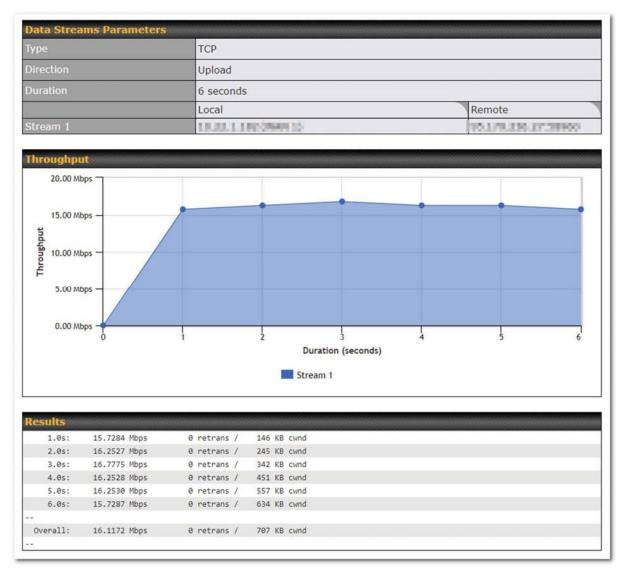
peplink	Dashboard	Setup Wizard	Network	AP	System	Status	Apply Changes
System							
Admin Security	WAN	Perforn	nance	Ar	alvs	is	
Firmware		oint-to-point WAN p				10	
Time							
Schedule	Server Set	tings					
Email Notification	Status			Listenii	ng (Control	Port: 6000)	
Event Log	Control Port		600	00			
SNMP					Appl	y Stop	
InControl							
 Configuration 	WAN Conn	ection Status	<u>nininininini</u>				
Feature Add-ons	1 WAN 1			10.22.1	1.182		
Reboot	2 WAN 2			Disable	d		
Tools	3 WAN 3			Disable	d		
Ping	WAN 4			Disable	d		
Traceroute	5 WAN 5			Disable	d		
Wake-on-LAN	TOTAL CONTRACTOR	sharmat					
WAN Analysis	🔮 Mobile Ir	itemet		Disable	u		

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.

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peplink	Dashboard Setup Wizard	Network AP System Status	Apply Changes
System			
Admin Security	WAN Perform	ance Analysis	
 Firmware 	Check your point-to-point WAN per		
Time		· · · · ·	
 Schedule 	Client Settings		
Email Notification	Control Port	6000	
Event Log	Data Port	57280 - 57287	
SNMP	Туре	• TCP UDP	
 InControl 	Direction	Upload Download	
 Configuration 	Duration	20 seconds (5 - 600)	
Feature Add-ons			
 Reboot 	Data Streams		
Tools	Local WAN Connection		Remote IP Address
Ping	1 Not Used		•
 Traceroute 	2 Not Used	,	•
Wake-on-LAN	3 Not Used		7
 WAN Analysis 	4 Not Used		•
 Storage Manager 	5 Not Used	,	•
 Package Manager 	6 Not Used		-
	7 Not Used		-
	8 Not Used		
	L	Start Test	

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



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.

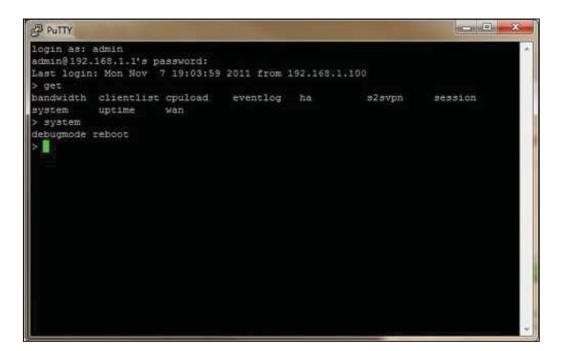
11.7 CLI (Command Line) Support

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*.



12 Status Tab

12.1 Status

12.1.1 Device

System information is located at Status>Device.

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System Information	
Router Name	Mediafast
Model	Peplink MediaFast 500
Product Code	MFA-500-B
Hardware Revision	2
Serial Number	1839-2001-6306
Firmware	8.0.0b03 build 2593
PepVPN Version	8.0.0
Modem Support Version	1022 (<u>Modem Support List</u>)
Host Name	mediafasta san
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	10:56:00:00:00	
WAN 2	10:56:	
WAN 3	10:56:00.00	
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. In Firmware 5.1 or before, the diagnostic report file can be obtained at **System>Reboot**.

12.1.2 Active Sessions

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

1	Search		
ession data	a captured within one minu	ite. <u>Refresh</u>	
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
STATES AND INCOME.	and the second se	0	2
Balain Planta	1	0	0

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**.

ID / Cul-									
IP / Subnet Source or Destination		or Destination 🔻	/ 255.255.255 (/32) *						
Port		Source	or Destination 🔻						
Protocol	/ Service	Spotify		•					
Interface		□ 1 B	т	🗆 🙎 Virgin I	Media	3 WAN 3			
			VAN 4		HK Net		ternet		
Search									
	_								
Outbour	nd								
Protocol	Source IP		Destination IP	Service	Interface		Idle Time		
ТСР	10.	58827	104.199.64.136:443	SSL/Spotify	BT		00:00:09		
TCP	10.		104.199.64.136:443	SSL/Spotify	BT		00:00:09		
TCP	10.		35.186.224.47:443	SSL/Spotify	BT		00:00:10		
TCP	10.	65369	35.186.224.53:443	SSL/Spotify	BT		00:00:29		
	arched resu	ults: 4							
Total sea									
		******			and a state of the				
Inbound	Source IP		Destination IP	Service	Interface		Idle Time		
Inbound Protocol	Source IP			Service No sessions	Interface		Idle Time		
Inbound Protocol		ilts: 0			Interface		Idle Time		
Inbound Protocol	Source IP	ults: 0			Interface		Idle Time		
Inbound Protocol Total sea	Source IP	ults: 0			Interface		Idle Time		
Inbound Protocol	Source IP	ults: O			Interface		Idle Time		

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),

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current download and upload rate, and MAC address.

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

Filt	er		Online Clients Only DHCP Clients Only			
10000	e nt List IP Address 🔺	Name		Download Upload (kbps) (kbps)	MAC Address	Import
ø	192.168.167.10			0	0 10:56:56:56:58:58	
#	192.168.167.11	U64-2-1		0	0 00:50:56:99:49:14	
#	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.

Name 🔺	IP Address
UserA	10.9.2.1
UserB	10.9.30.1
UserC	10.9.2.4

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

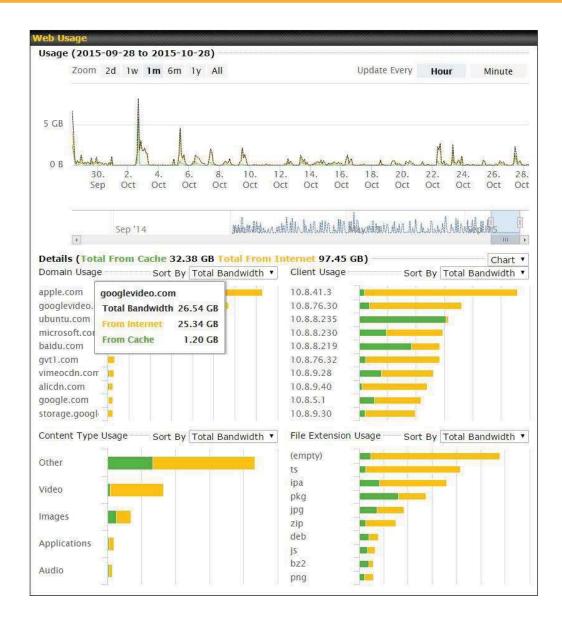
Information on OSPF and RIPv2 routing setup can be found at **Status>OSPF & RIPv2**.

12.1.6 MediaFast

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

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12.1.7 SpeedFusion Status

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

Sea	arch			
	Remote Peer 🔺	Profile	Information	
0	MAX-BR1-	Maria	PERFORMANCE PERFOR	<u> 111</u> >
•	MAX-BR1-	jamen past (first base it	POLIMATION DE LA COMPANY	

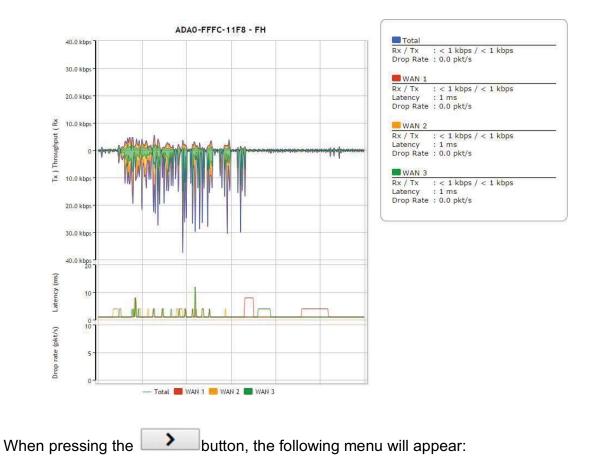
Click on the corresponding peer name to explore the WAN connection(s) status and subnet information of each VPN peer.

	Remote Peer 🔺								
8	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		
۵	▼ 3ED2-3ED2- 3ED2	380-5 -	NO NAT		192.168.3.0	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 droprate information for each WAN connection.

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Profile	More inform	
Remote ID	3433-2480-4048	
Router Name	Har- 88 - 1214	
Serial Number	3413-2480-4048	
Encapsulation Protocol	UDP	
Latency Difference Cutoff	500 ms	
WAN Statistics		ad
Remote Connections	Show remote connections	
WAN Label	WAN Name O IP Address and Port	
BT Virgin Media WAN 3 WAN 4	Rx: < 1 kbps Tx: < 1 kbps Loss rate: 0.0 pkt/s Latency: 14 Not available - WAN disabled Not available - WAN disabled Not available - Iink failure, no data received	8 ms
Region of Industry	Not available - link failure, no data received Not available - WAN down	
Total PepVPN Test Configuration	Rx: < 1 kbps Tx: < 1 kbps Loss rate: 0.0 pkt/s	6
Гуре	• TCP O UDP	
Streams	4 •	
Direction	Upload Download	art
Duration	20 seconds (5 - 600)	
PepVPN Test Results	No information	

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

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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					111				
Remote Connections	Show remote connections								
WAN Label	WAN Name O IP Address and Port								
BT									
C NAN	Rx:	< 1 kbps Tx:	< 1 kbps Loss rate:	0.0 pkt/s Latency:	17 ms				
Virgin Media			Not available - WAN disa	bled					

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 Config	uration	(
Туре	• TCP O UDP	
Streams	4 •	
Direction	Upload Download	Start
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.



	est Results						
1.0s:	14.6724 Mbps	0 retrans /	323	KB	cwnd		
2.0s:	15.1620 Mbps	0 retrans /	416	КΒ	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	КΒ	cwnd		
6.0s:	15.2058 Mbps	0 retrans /	804	KB	cwnd		
7.0s:	15.7294 Mbps	0 retrans /	935	КВ	cwnd		
8.0s:	15.2053 Mbps	0 retrans /	1024	КВ	cwnd		
9.0s:	15.6881 Mbps	0 retrans /	1045	KB	cwnd		
10.0s:	14.7147 Mbps	0 retrans /	1045	КВ	cwnd		
15							
Stream 1:	4.0414 Mbps	0 retrans /	254	КВ	cwnd		
Stream 2:	4.2783 Mbps	0 retrans /	253	KB	cwnd		
Stream 3:	2.8789 Mbps	0 retrans /	285	КВ	cwnd		
Stream 4:	4.1534 Mbps	0 retrans /	253	КВ	cwnd		
Overall:	15.3520 Mbps	0 retrans /	1045	КВ	cwnd		
TEST DONE							

12.1.8 Event Log

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



Device Event Log

Device Event L	og 🖉 Auto Refre
Apr 17 14:54:52	Specificatory, M. wan-for-want (converting to Math. 683, 4034 (co.) 3333-7800-40343 (co.) 5-or 60043
Apr 17 14:39:44	 New Process and Annual States and Annual State Annual States and Annual Stat Annual States and Annual Stat Annual States and Annual States and
Apr 17 09:12:42	Nythern: Intergen applicat
Apr 17 09:07:33	shaheter, Hannador ande anderine textitational frame. De Caretined 32 day over-time. De la particular part
Apr 16 10:01:13	Specification: anticipation (Inter-Inte
Apr 16 10:00:23	Territorito: Effectives approxit
Apr 16 09:59:04	System: Damps. system
Apr 16 09:58:57	Hold, steps bade deconected (Control)
Apr 16 09:57:10	Spanificante aplateational (Mar. 2010, 2010), as 2010, at 20. 2012). Reconstraint for participant (With Inner 4 (Inner) 2010 Inter-Articled).
Apr 16 09:57:04	Nyatara aharipa ayanat
Apr 16 09:56:16	Hale beachings. An equilater for "Web folgothing Dill in monitolist.
Apr 16 09:56:15	Specification LAB #21498 (LAB #21498, pt 2003) edited (Astr) despirated from the CAB (2 - 107) disk induce detected)
Apr 16 09:56:15	Specification (Add Aphilds (Add Aphilds, and Shids Add), March March March 2010 (1994), Add (1), 1 (2011) (2010) Indicate defendent)
Apr 16 09:56:13	Sectors: the period
Apr 16 09:54:41	alabelen anderen (al.a.23.a. add) (oper anarenalis)
Apr 16 09:50:28	Telescologiese: 148-487-694 (148-487-694, exc001)-4894-64922 (244-6561) 188-648 (1-1894)
Apr 16 09:50:28	SpaceDisates aplateational (Marchine, 2016), as exists or 20.7976() relevanted to parase paid (Prin Security (Security))

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



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**.

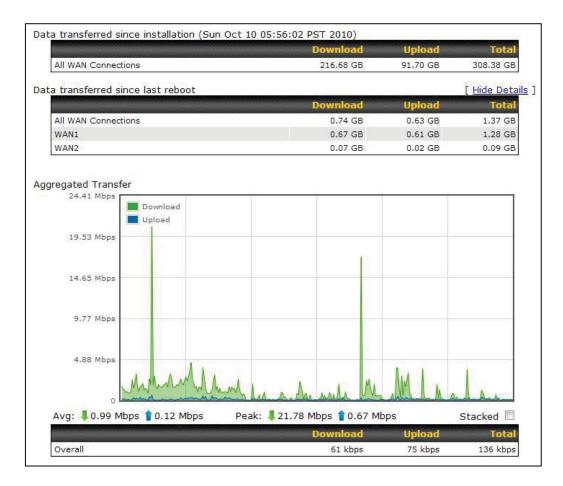


12.2 Bandwidth

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.

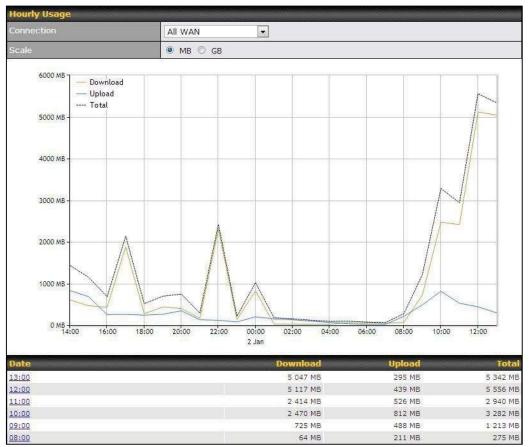
12.2.1 Real-Time

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

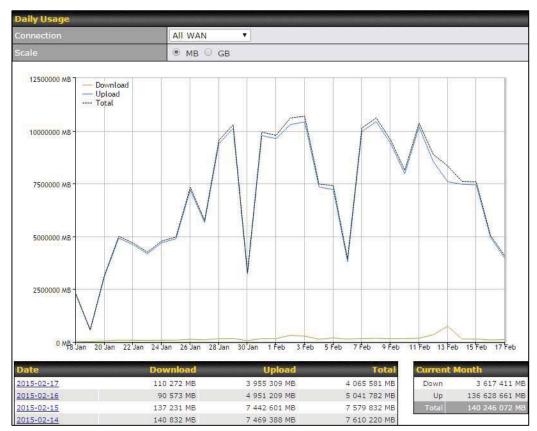


(**GB**).



Status

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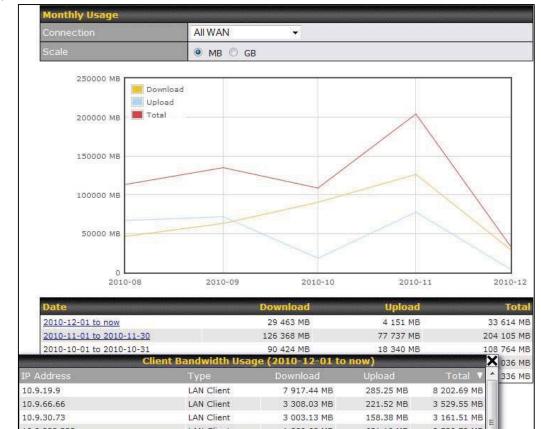
Click on a specific date to receive a breakdown of all client usage for that date.

IP Address	Туре	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 ME
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 ME
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 ME
192.168.167.13	LAN Client	4.73 MB	8.35 MB	13.08 ME
192.168.168.19	LAN Client	0.02 MB	0.02 MB	0.03 ME
192.168.168.20	LAN Client	0.00 MB	0.00 MB	0.00 ME
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 approximately 20 seconds for factory reset (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.

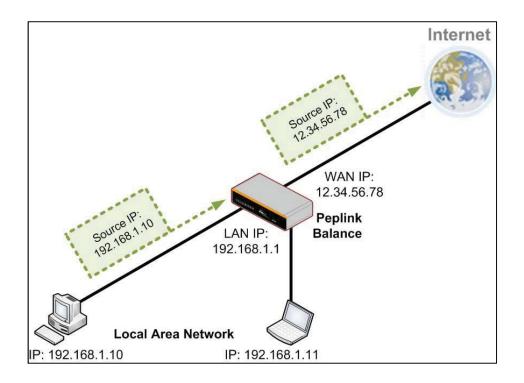
B.1 Routing Via Network Address Translation (NAT)

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:

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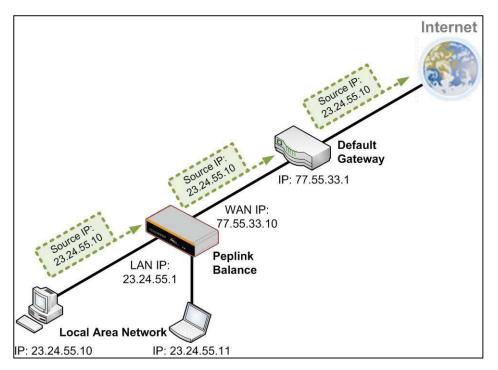


B.2 Routing Via IP Forwarding

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:

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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.

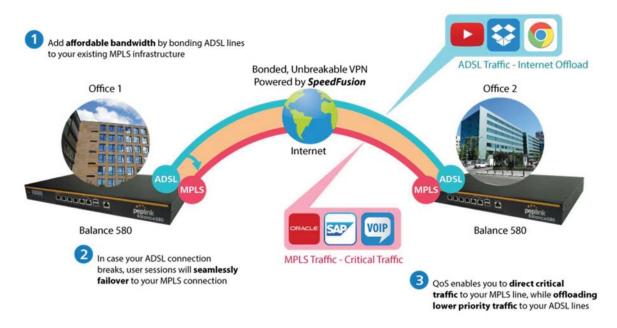
Our MediaFast series routers have been helping students at many education institutions to enjoy uninterrupted learning

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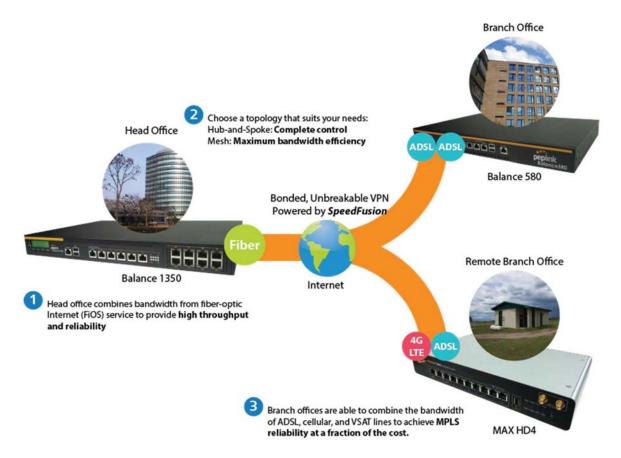
Option 1: MPLS Supplement



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.

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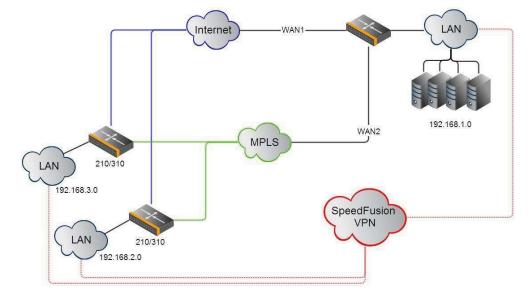
Option 2: MPLS Alternative



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



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



Environment:

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

Requirement:

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

Recommended Solution:

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



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

Devices Deployed: Balance 210, Balance 310, Balance 580

Harrington Industrial Plastics



Overview

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

Requirements

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

Solution

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- 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

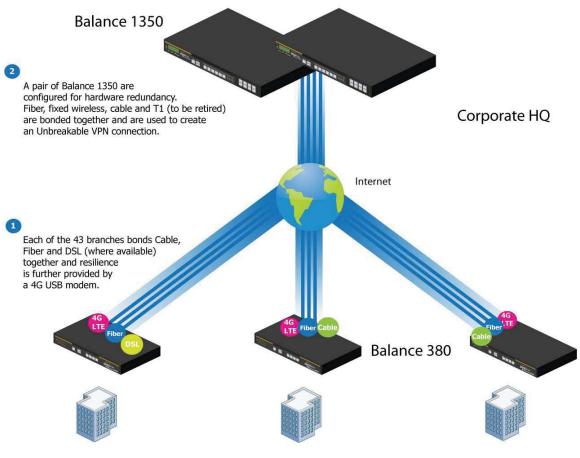
Time For An Upgrade

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.

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43x branches

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

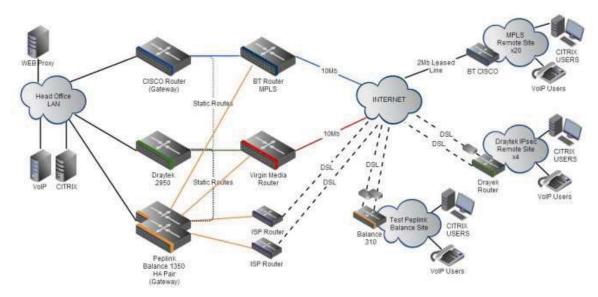


A Peplink customer since 2006, Pluss is a social enterprise that each year makes gainful employment a reality for more than 5000 disabled and disadvantaged UK citizens. With 37 locations and 300+ active users, Pluss makes heavy use of its WAN infrastructure, which until recently was built on managed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

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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



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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 mediarich 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.

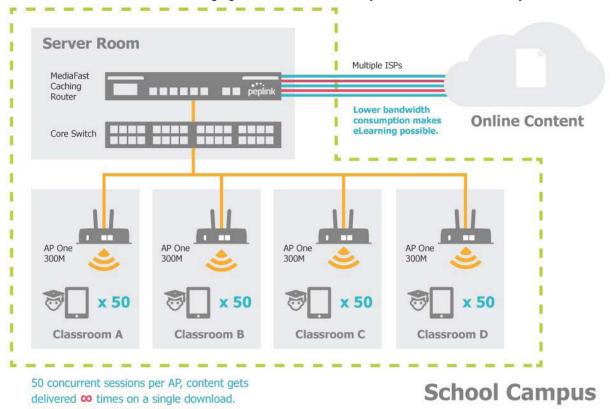
Benefits

- 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

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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.

Enable Image: Constraint of the second s			HTTP Persistence
Destination Any Protocol TCP + HTTP Port * Single Port + Port: 80 Algorithm Persistence Persistence Mode By Source @ By Destination Load Distribution Auto © Custom Terminate Sessions on Link @ Enable	Enable		
Protocol ? TCP • HTTP • • Port * ? Single Port • Port: 80 Algorithm ? Persistence • Persistence Mode ? By Source ® By Destination Load Distribution ? Auto ? Custom Terminate Sessions on Link ? Enable	Source		Any 🔹
Port * ? Algorithm ? Persistence Persistence Mode ? By Source @ By Destination Load Distribution ? Terminate Sessions on Link ?	Destination	?	Any 🔻
Algorithm Persistence Persistence Mode Image: Second S	Protocol	?	TCP • HTTP •
Persistence Mode By Source By Destination Load Distribution Auto Custom Terminate Sessions on Link (?) Enable Enable 		?	Single Port - Port: 80
Load Distribution 🕜 🖲 Auto 🔿 Custom	Algorithm	?	Persistence 🔹
Terminate Sessions on Link ?	Persistence Mode	?	By Source By Destination
	oad Distribution	?	● Auto [©] Custom
		Link 🥐	Enable

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)	0	IP Address •	
Address	0	192.168.1.102	
Inbound Mappings	0	Connection / Inbound IP Ad	dress(es)
		Ø WAN 1	
		WAN 2	
		WAN 3	
		WAN 4	
		WAN 5	
		WAN 6	
		WAN 7	
		Mobile Internet	
Outbound Mappings	3	Connection / Outbound IP	Address
		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 🔻

Save Cancel

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

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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:

New Firewall Rule		
Rule Name		Inbound Firewall Rule Exce
Enable		 Image: A start of the start of
WAN Connection	?	Any 🔻
Protocol	?	TCP •
Source	?	Any Address Any Port
Destination	?	Any Address Single Port Port: 80
Action	?	Allow Deny
Event Logging	?	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

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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:

New Firewall Rule Rule Name	No FTP access	
Enable		
Protocol	? TCP ▼	
Source	Any Address Any Port	
Destination	Any Address Single Port Port: 21	
Action	Allow Deny	
Event Logging	 Enable 	

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-wanenvironment/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

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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 able to find the source of problem.

Problem 6

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

Solution

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

Additional troubleshooting resources:

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

Appendix E. **Declaration**

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

Federal Communication Commission Interference Statement

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

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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

Radiation Exposure Statement :

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

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

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ISED Warning Statement

Industry Canada Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:(1) This device may not cause interference; and(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC Radiation Exposure Statement

This equipment complies with Innovation, Science and Economic Development Canada RF exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated to ensure a minimum of 20 cm spacing to any person at all times.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

EU Declaration of Conformity

This device complies with the essential requirements of the Radio Equipment Directive 2014/53/EU.

The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the Radio Equipment Directive 2014/53/EU.

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

EN 303 413 V1.1.1

EN 301 908-1 V11.1.1

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EN 301 489-1 V2.2.0

EN 301 489-52 V1.1.0

EN 55032: 2015 + AC:2016

EN 61000-3-2: 2014

EN 61000-3-3: 2013

EN 55035: 2017

EN 62311: 2008

EN 62368-1:2014/AC:2015