Peplink Balance Multi-WAN Bonding Routers

User Manual

For Model 20/30/210/310/305/380/580/710/1350/2500

Peplink Balance Firmware 5.4

December 2013

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1 Introduction and Scope

The Peplink Balance series provides link aggregation and load balancing across up to thirteen WAN connections.

The Peplink Balance 20/30 provides a cost-effective solution suitable for power users and home offices.

The Peplink Balance 210/310 provides advanced features for small business.

The Peplink Balance 380, 580, 710, 1350 and 2500, with a suite of advanced enterprise-class features, make ideal single-box solutions for medium to large-sized business environments, andallow service providers to enable highly available multi-network services.

This manual applies to the following Peplink Balance products:

- Peplink Balance 20/30 (firmware version v5.4.x)
- Peplink Balance 210/310 (firmware version v5.4.x)
- Peplink Balance 380 (firmware version v5.4.x)
- Peplink Balance 580 (firmware version v5.4.x)
- Peplink Balance 710 (firmware version v5.4.x)
- Peplink Balance 1350 (firmware version v5.4.x)
- Peplink Balance 2500 (firmware version v5.4.x)

The manual presents how-to set up Peplink Balance, and provides a collection of case studies involving advanced features of Peplink Balance.

Important Note to Users Upgrading from Firmware 4.7 or below
If your current firmware version is 4.7 or below, please upgrade to Firmware 4.8.2 first before upgrading to Firmware 5.3 or 5.4

Important Note to Users of Peplink Balance 30 (Classic Edition)
Firmware 5.0 or above is NOT applicable to Peplink Balance 30 (Classic Edition). For more information of identifying the generation of your Peplink Balance 30, please visit our knowledge base at <http://www.peplink.com/index.php?view=faq&id=231&path=16>.

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2 Glossary

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

Term	Definition
3G	3rd Generation standards for wireless communications (e.g. HSDPA)
4G	4th Generation standards for wireless communications (e.g. WiMAX, LTE)
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EVDO	Evolution-Data Optimized
HSDPA	High-Speed Downlink Packet Access
HTTP	Hyper-Text Transfer Protocol
ICMP	Internet Control Message Protocol
IP	Internet Protocol
LAN	Local Area Network
MAC Address	Media Access Control Address
MTU	Maximum Transmission Unit
MSS	Maximum Segment Size
NAT	Network Address Translation
PPPoE	Point to Point Protocol over Ethernet
QoS	Quality of Service
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	Wide Area Network
WINS	Windows Internet Name Service
WLAN	Wireless Local Area Network
210+	Refer to Peplink Balance 210/310/380/580/710/1350/2500
380+	Refer to Peplink Balance 380/580/710/1350/2500

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3 Product Comparison Chart

Features	20	30	210	310	380	580	710	1350	2500
Capacity									
WAN Ports (GbE) / Internet	2	3	2	3	3	5	7	13	12
Recommended Users	1-25	1-25	1-50	1-50	50-500	300-1000	500-2000+	1000-5000+	5000-20000+
Router Throughput	100M	100M	100M	100M	200M	400M	800M	1500M	8Gbps
Core Functionality									
Load Balancing & Failover	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Load Balancing Algorithms	5	5	7	7	7	7	7	7	7
• Weighted	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Enforced	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Persistence	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Priority	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Overflow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Least Used	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Lowest Latency	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Drop-In Mode	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inbound Load Balancing	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4G/3G Modem Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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VPN Functionality									
SpeedFusion™	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of SpeedFusion™ Peer	X	X	2	2	20	50	300	800	4000
Bonded VPN Throughput	X	X	30M	30M	60M	80M	150M	350M	2Gbps
PPTP VPN Server	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recommended PPTP VPN	3	3	15	15	50	100	200	500	1000
RADIUS / LDAP support for PPTP	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPsec VPN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of IPsec Tunnel	2	2	2	2	20	50	150	400	800
WLAN Control Functionality									
Manage Pepwave AP One	X	X	X	X	Yes	Yes	Yes	Yes	Yes
Access Point Configuration	X	X	X	X	Yes	Yes	Yes	Yes	Yes
AP Firmware Update	X	X	X	X	Yes	Yes	Yes	Yes	Yes
Number of AP Support	X	X	X	X	50*	100*	250*	500*	Yes
Advanced QoS Functionality									
Bandwidth Usage Monitor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QoS for VoIP and E-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Application Prioritization	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Application Prioritization by	X	X	X	X	Yes	Yes	Yes	Yes	Yes
User Group Bandwidth	X	X	X	X	Yes	Yes	Yes	Yes	Yes
Individual Bandwidth Limit	X	X	X	X	Yes	Yes	Yes	Yes	Yes

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Networking Functionality									
NAT and IP Forwarding	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Static Routes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Port Forwarding	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Many to One, One to One NAT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT Pool	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SIP ALG, H.323 ALG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UPnP, NAT-PMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WINS Server	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dynamic DNS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Web Blocking	X	X	X	X	Yes	Yes	Yes	Yes	Yes
Device									
Web Administrative Interface	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Email Notification	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active Client List	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active Session List	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth Usage Statistics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Web Reporting Services	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Email Notification	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syslog	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP v1, v2c and v3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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Hardware Features									
LAN Ports (GbE)	4	4	4	4	1	1	1	1	8/ 2(10GbE SFP+)
Power Input	9-16V DC	9-16V DC	9-16V AC DC	9-16VDC	100V to 240V AC	100V to 240V AC	100V to 240V AC	100V to 240V AC	100V to 240V AC
Power Consumption	15W	15W	15W	15W	50W	50W	70W	70W	230W
1U Rackmount	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
High Availability	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAN Bypass	X	X	X	X	X	Yes	Yes	Yes	Yes
Dimension (H x W x D)	3.5cm x 26cm x 13.3cm		1U x 15.9cm	1U x 27.8cm		1U x 37.9cm	1U x 39.8cm		1U x 55cm
Weight	1.0kg	1.0kg	1.2kg	1.2kg	3.5kg	5.5kg	5.5kg	6.5kg	12kg

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4 Product Features

Peplink Balance Series products enableall LAN users to sharebroadband Internet connections,and provide advanced features to enhanceInternet access. The following is the list of supported features:

4.1 Supported Network Features

4.1.1 WAN

- Multiple public IP support (DHCP, PPPoE, Static IP Address)
- 10/100/1000Mbps Ethernet connection in Full/Half Duplex
- USB mobile connection**(**Remark: Only one USB modem can be connected at a time.)
- Drop-in Modeon selectable WAN portwith MAC address passthrough**(Available on Peplink Balance 210+)**
- Network Address Translation (NAT) / Port Address Translation (PAT)
- Inbound and Outbound NAT mapping
- Multiple static IP addresses per WAN Connection
- MAC address clone
- Customizable MTU and MSS values
- WAN connection health check
- Dynamic DNS (Supported service providers: changeip.com, dyndns.org, no-ip.org,tzo.com and DNS-O-Matic)
- Ping, DNS Lookup and HTTP based health check

4.1.2 LAN

- DHCP server on LAN
- Static routing rules
- Local DNS proxy server

4.1.3 VPN

- Secure SpeedFusion™**(Available on Peplink Balance 210+)**
- Bandwidth bonding &failover among selected WAN connections
- Ability to route traffic to a remote VPN peer
- Optional pre-shared key setting
- Layer 2 Bridging
- SpeedFusion™ Throughput, Ping and Traceroute Test
- Built-in PPTP VPN Server
- Authenticate PPTP clients by RADIUS and LDAP servers **(Available on Peplink Balance 210+)**
- IPsec VPN for Network-to-Network connection (Works with Cisco, Juniper only)
- PPTP and IPsecpassthrough

4.1.4 Inbound Traffic Management

- TCP/UDP traffic redirection to dedicated LAN server(s)
- Inbound link load balancing by means of DNS**(Available on Peplink Balance 210+)**

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4.1.5 Outbound Policy

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

4.1.6 WLAN Controller

- Configure and manage Pepwave AP devices
- Review the status of connected AP

4.1.7 QoS(Available on Peplink Balance 210+)

- Quality of Service for different applications and custom protocols
- User Group classification for different service levels **(Available on Peplink Balance 380+)**
- Bandwidth usage control and monitoring on group- and user- level **(Available on Peplink Balance 380+)**
- Application Prioritization for custom protocols and DSL optimization

4.1.8 Firewall

- Outbound (LAN to WAN) firewall rules
- Inbound (WAN to LAN) firewall rules per WAN connection
- Intrusion detection and prevention
- Specification of NAT mappings
- Web Blocking **(Available on Peplink Balance 380+)**
- Outbound firewall rules can be defined by destination domain name

4.2 Other Supported Features

- Easy-to-use web administration interface
- HTTP and HTTPS support for Web Administration Interface
- Configurable web administration port and administrator password
- Read-only user for Web Admin
- Authentication and Accounting by RADIUS server for Web Admin**(Available on Peplink Balance 210+)**
- Firmware upgrades, configuration backups, Ping, and Traceroute via Web Administration Interface
- Remote web based configuration (via WAN and LAN interfaces)
- Remote reporting to Peplink Balance reporting server
- Hardware High Availability via VRRP, with automatic configuration synchronization**(Available on Peplink Balance 210+)**
- Real-Time, Hourly, Daily and Monthly Bandwidth Usage reports and charts
- Hardware backup via LAN bypass **(Available on Peplink Balance 580, 710, 1350 and 2500)**
- Built-in WINS server
- Time server synchronization
- SNMP
- Email notification
- Syslog
- SIP passthrough

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- PPTP packet passthrough
- Active Sessions
- Active Client List
- WINS Client List
- UPnP / NAT-PMP
- Improved Active Sessions Page
- Event Log is persistent across reboots
- IPv6 support
- Support USB tethering on Android 2.2+ phones

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5 Package Contents

The contents of Peplink Balance product packages are as follows:

5.1 Peplink Balance 20 / 30

- Peplink Balance 20 / 30
- Power adapter
- Information slip

5.2 Peplink Balance 210 / 310

- Peplink Balance 210 / 310
- Power adapter
- Information slip
- Rackmount kit

5.3 Peplink Balance305 / 380 / 580 / 710 / 1350 / 2500

- Peplink Balance 305/380/580/710/1350/2500
- Power cord
- Information slip
- Rackmount kit

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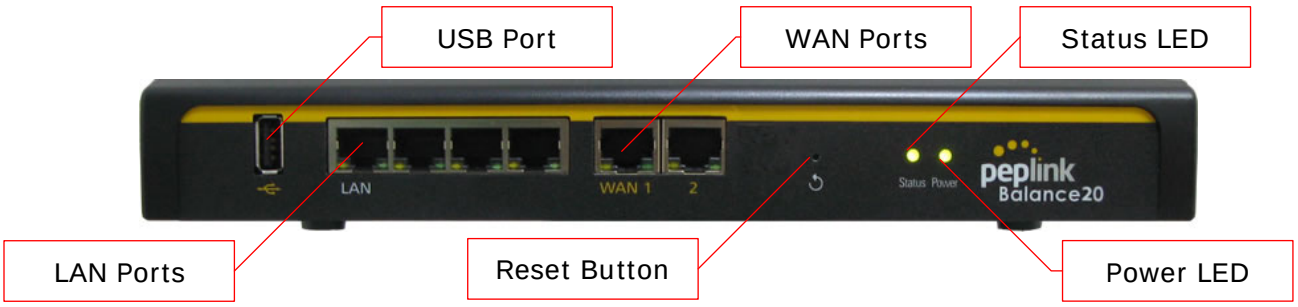
6 Peplink Balance Overview

6.1 Peplink Balance 20

6.1.1 Front Panel Appearance



6.1.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power	OFF – Power off
	Green – Power on
Status	OFF – Upgrading firmware
	Red – Booting up or busy
	Blinking red– Boot up error
	Green – Ready

LAN and WAN Ports	
Green LED	ON – 10 / 100 / 1000 Mbps
Orange LED	Blinking – Data is transferring
	OFF – No data is being transferred or port is not connected
Port Type	Auto MDI/MDI-X ports

USB Port	
USB Ports	For connecting a 4G/3G USB modem.

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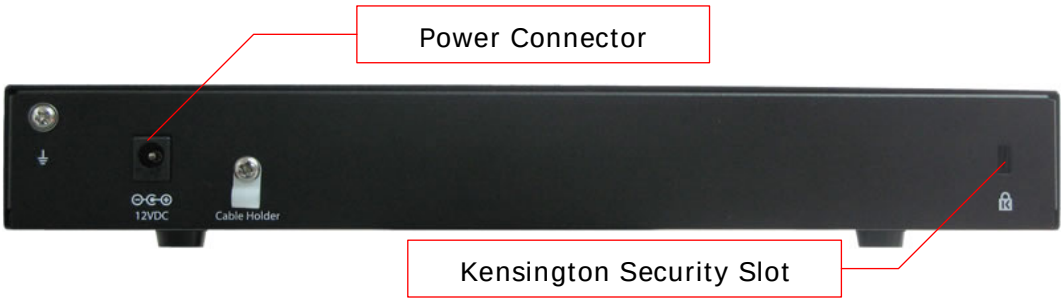
6.1.3 Rear Panel Appearance



6.1.4 Unit Base Appearance

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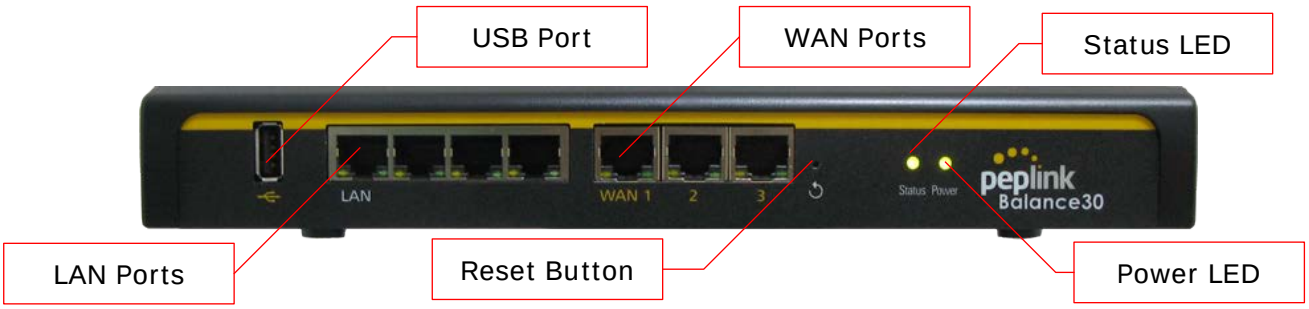
6.2 Peplink Balance 30

6.2.1 Front Panel Appearance



6.2.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power	OFF – Power off
	Green – Power on
Status	OFF – Upgrading firmware
	Red – Booting up or busy
	Blinking red– Boot up error
	Green – Ready

LAN and WAN Ports	
Green LED	ON – 10 / 100 /1000 Mbps
Orange LED	Blinking – Data is transferring
	OFF – No data is being transferred or port is not connected
Port Type	Auto MDI/MDI-X ports

USB Port	
USB Ports	For connecting a 4G/3G USB modem.

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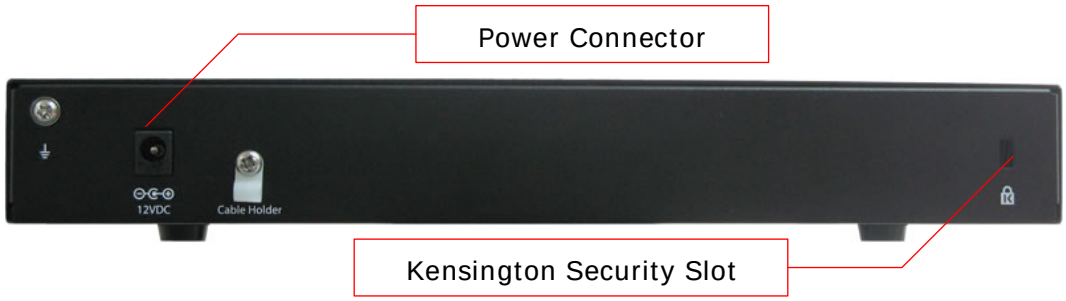
6.2.3 Rear Panel Appearance



6.2.4 Unit Base Appearance

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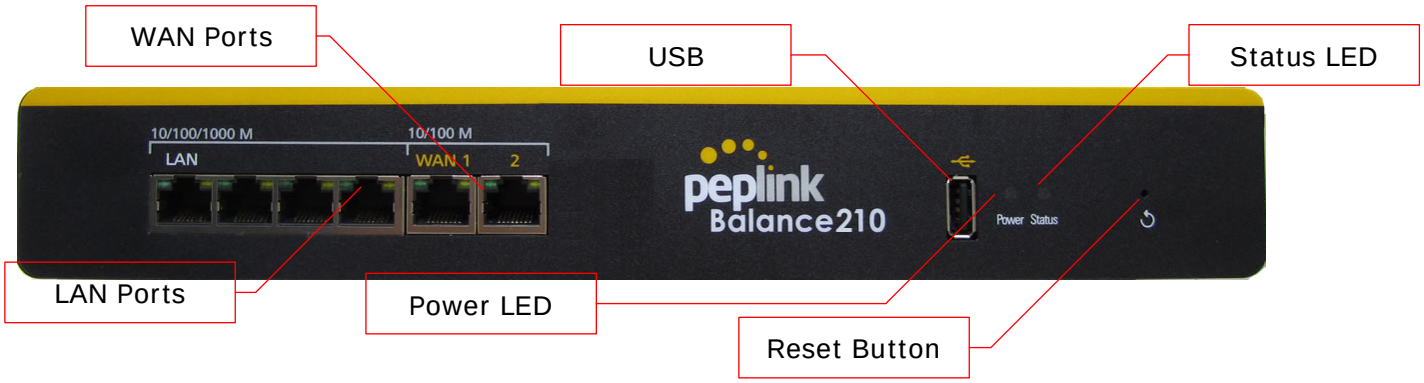
6.3 Peplink Balance 210

6.3.1 Front Panel Appearance



6.3.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power	OFF – Power off
	Green – Power on
Status	OFF – Upgrading firmware
	Red – Booting up or busy
	Blinking red– Boot up error
	Green – Ready

LAN and WAN Ports	
Green LED	ON – 10 / 100 / 1000 Mbps
Orange LED	Blinking – Data is transferring
	OFF – No data is being transferred or port is not connected
Port Type	Auto MDI/MDI-X ports

USB Port	
USB Ports	For connecting a 4G/3G USB modem.

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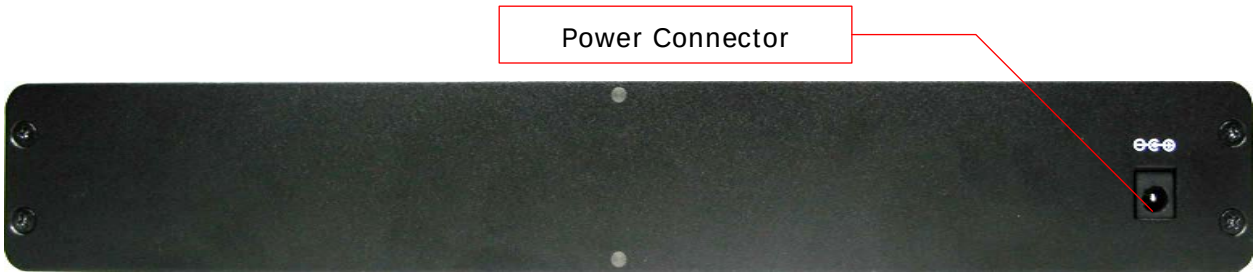
6.3.3 Rear Panel Appearance



6.3.4 Unit Base Appearance

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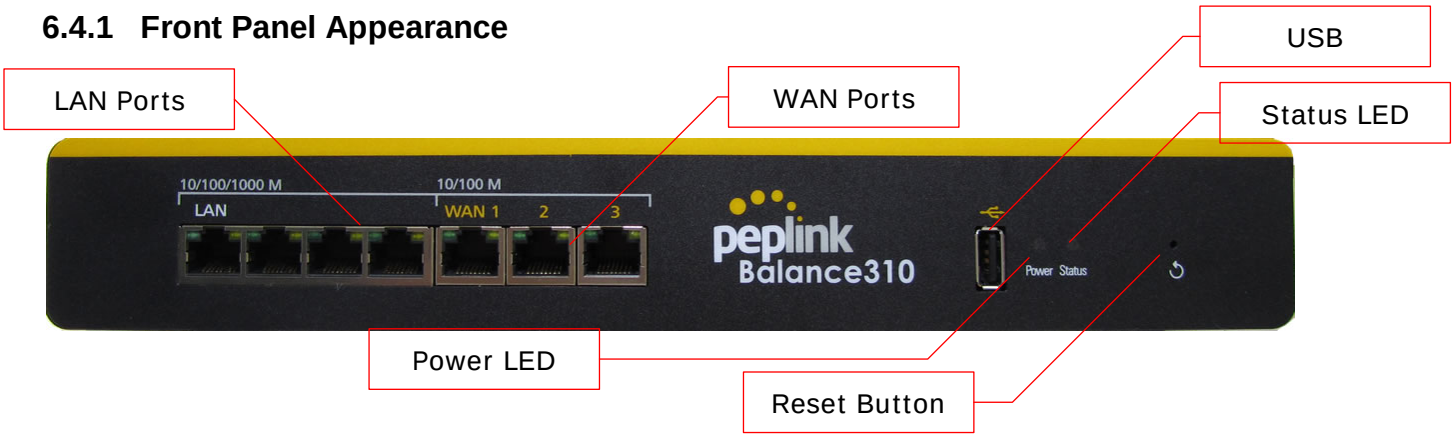
6.4 Peplink Balance 310

6.4.1 Front Panel Appearance



6.4.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power	OFF – Power off
	Green – Power on
Status	OFF – Upgrading firmware
	Red – Booting up or busy
	Blinking red– Boot up error
	Green – Ready

LAN and WAN Ports	
Green LED	ON – 10 / 100 / 1000 Mbps
Orange LED	Blinking – Data is transferring
	OFF – No data is being transferred or port is not connected
Port Type	Auto MDI/MDI-X ports

USB Port	
USB Ports	For connecting a 4G/3G USB modem.

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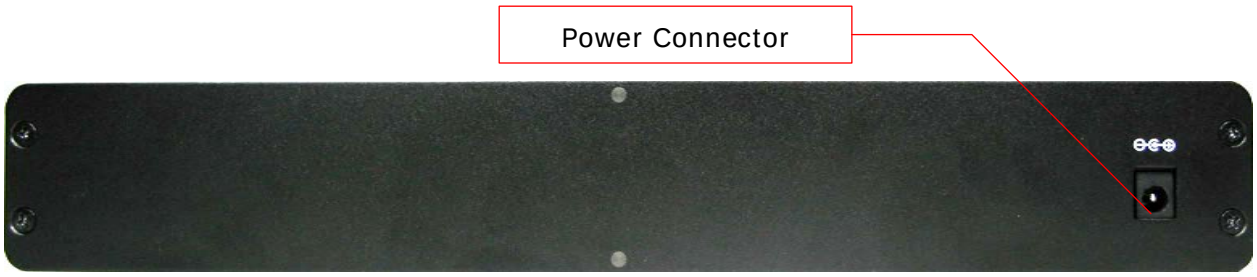
6.4.3 Rear Panel Appearance



6.4.4 Unit Base Appearance

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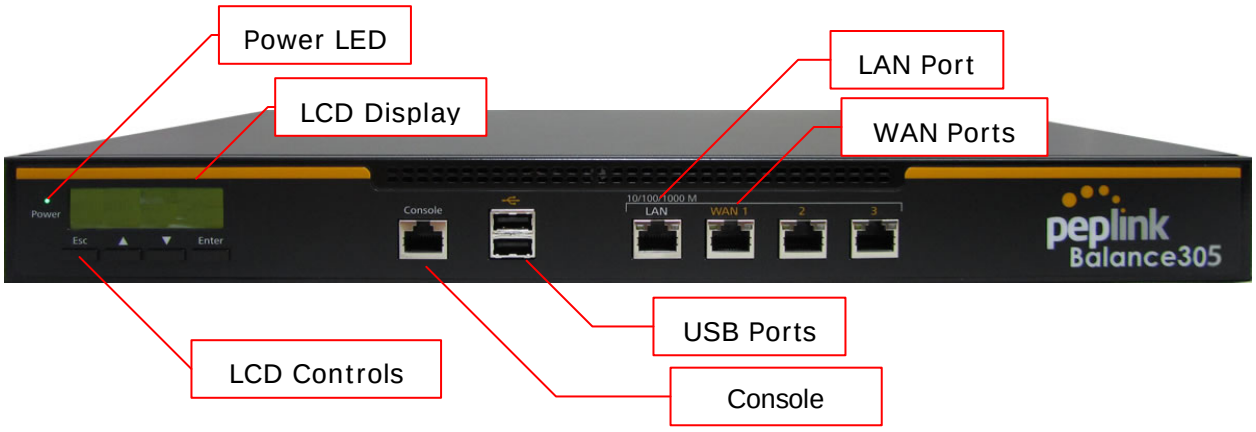
6.5 Peplink Balance 305

6.5.1 Front Panel Appearance



6.5.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power LED	OFF – Power off
	GREEN– Power on

LAN Port, WAN 1 – 3 Ports	
Right LED	ORANGE– 1000 Mbps
	GREEN– 100 Mbps
	OFF – 10 Mbps
Left LED	Solid – Port is connected without traffic
	Blinking – Data is transferring
	OFF – Port is not connected
Port Type	Auto MDI/MDI-X ports

Console and USB Ports	
Console Port	Reserved for engineering use
USB Ports	For connecting a 4G/3G USB modem.

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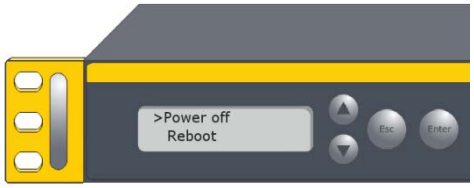
6.5.3 LCD Display Menu



> HA State: Master/Slave
>> > LAN IP
>> > VIP
> System Status
>> > System
>>> > Firmware ver. (showsfirmware version)
>>> > Serial number (shows serial number)
>>> > System time (shows current time)
>>> > System up time (shows system uptime sincelast reboot)
>>> > CPU load (shows current CPU loading, 0-100%)
>>> > LAN
>>>> > Status (shows LAN port physical status)
>>>> > IP address (shows LAN IP address)
>>>> > Subnet mask (shows LAN subnet mask)
>> > Link status (shows Connected/Disconnected, IP address list)
>>> > WAN1
>>> > WAN2
>>> > WAN3
>> > VPN status (shows Connected/Disconnected)
>>> >*VPN Profile 1*
>>> >*VPN Profile 2*
>>> >…
>>> >*VPN Profile n*
>> > Link usage
>>> > Throughput in (shows transfer rate in Kbps)
>>>> > WAN1
>>>> > WAN2
>>>> > WAN3
>>> > Throughput out (shows transfer rate in Kbps)
>>>> > WAN1
>>>> > WAN2
>>>> > WAN3
>> > Data Transfer'd (shows volume transferred since last reboot in MB)
>>> > WAN1
>>> > WAN2
>>> > WAN3
> Maintenance
>> > Reboot > Reboot? (Yes/No) (to reboot the unit)
>> > Factory default > Factory default? (Yes/No) (to restore factory defaults)
> LAN config
>> > Port speed (shows port speed: Auto, 10baseT-FD, 10baseT-HD,
>>> > LAN 100baseTx-FD, 100baseTx-HD, 1000baseTx-FD)
>>> > WAN1
>>> > WAN2
>>> > WAN3

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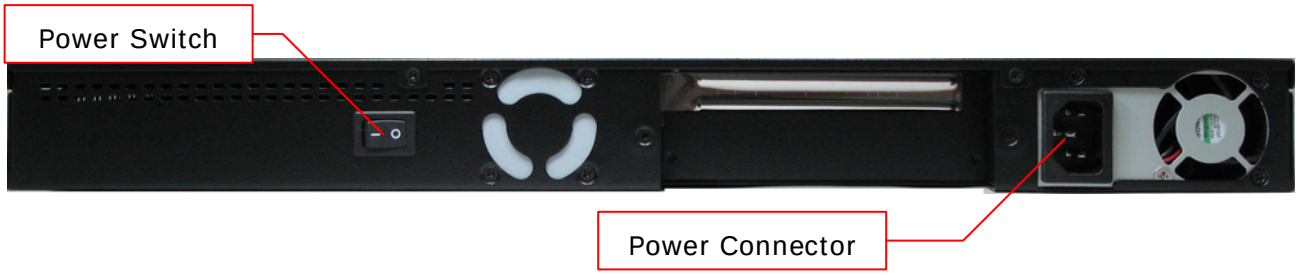
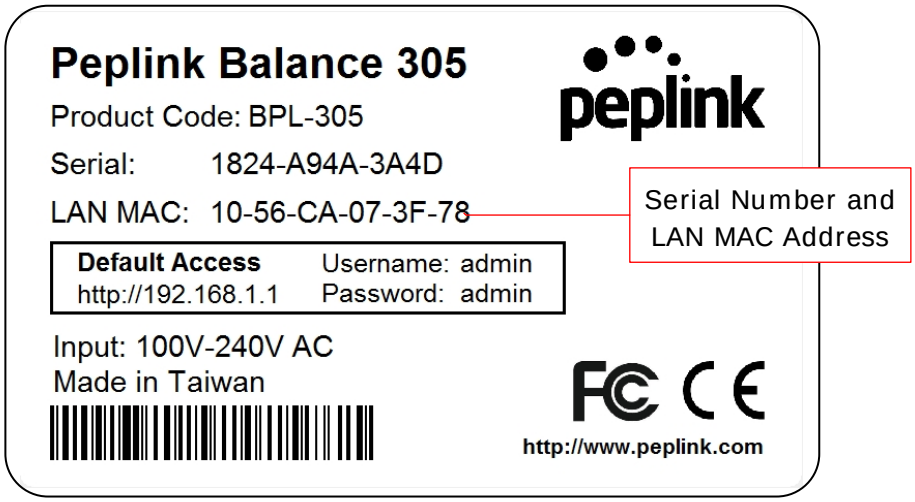
6.5.4 Rear Panel Appearance



Connector Ports	
Power Connector	AC input 110/220V

Switch	
Power Switch	To hold pressing the key for 4 seconds will power down the unit When the unit is powered off, press it will power on the unit

6.5.5 Unit Label Appearance



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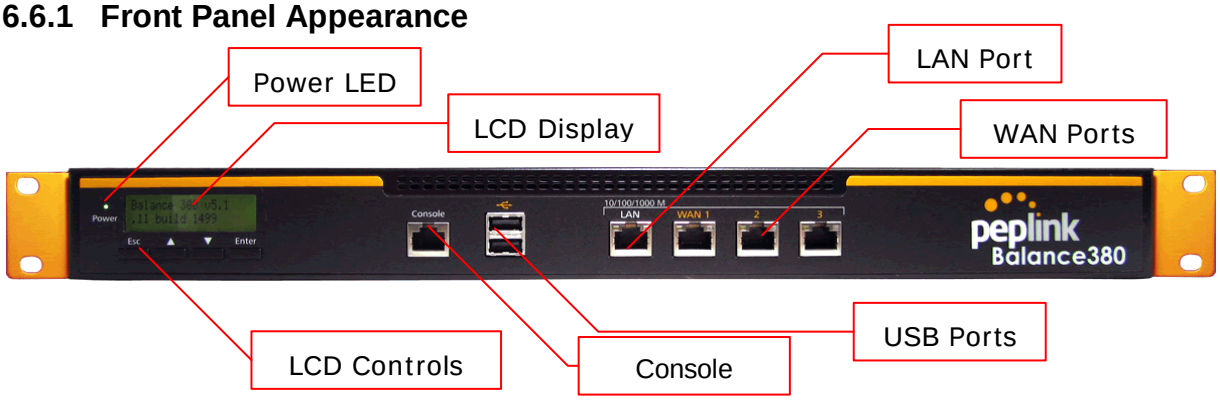
6.6 Peplink Balance 380

6.6.1 Front Panel Appearance



6.6.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power LED	OFF – Power off
	GREEN– Power on

LAN Port, WAN 1 – 3 Ports	
Right LED	ORANGE– 1000 Mbps
	GREEN– 100 Mbps
	OFF – 10 Mbps
Left LED	Solid – Port is connected without traffic
	Blinking – Data is transferring
	OFF – Port is not connected
Port Type	Auto MDI/MDI-X ports

Console and USB Ports	
Console Port	Reserved for engineering use
USB Ports	For connecting a 4G/3G USB modem.

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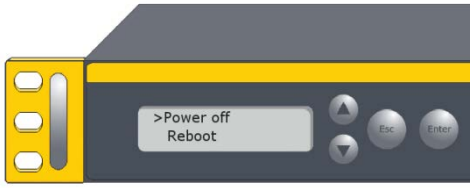
6.6.3 LCD Display Menu



> HA State: Master/Slave
>> LAN IP
>> VIP
> System Status
>> System
>>> Firmware ver. (showsfirmware version)
>>> Serial number (shows serial number)
>>> System time (shows current time)
>>> System up time (shows system uptime sincelast reboot)
>>> CPU load (shows current CPU loading, 0-100%)
>>> LAN
>>>> Status (shows LAN port physical status)
>>>> IP address (shows LAN IP address)
>>>> Subnet mask (shows LAN subnet mask)
>> Link status (shows Connected/Disconnected, IP address list)
>>> WAN1
>>> WAN2
>>> WAN3
>> VPN status (shows Connected/Disconnected)
>>> *>VPN Profile 1*
>>> *>VPN Profile 2*
>>> *>…*
>>> *>VPN Profile n*
>> Link usage
>>> Throughput in (shows transfer rate in Kbps)
>>>> WAN1
>>>> WAN2
>>>> WAN3
>>> Throughput out (shows transfer rate in Kbps)
>>>> WAN1
>>>> WAN2
>>>> WAN3
>> Data Transfer'd (shows volume transferred since last reboot in MB)
>>> WAN1
>>> WAN2
>>> WAN3
> Maintenance
>> Reboot > Reboot? (Yes/No) (to reboot the unit)
>> Factory default > Factory default? (Yes/No) (to restore factory defaults)
> LAN config
>> Port speed (shows port speed: Auto, 10baseT-FD, 10baseT-HD,
>>> LAN 100baseTx-FD, 100baseTx-HD, 1000baseTx-FD)
>>> WAN1
>>> WAN2
>>> WAN3

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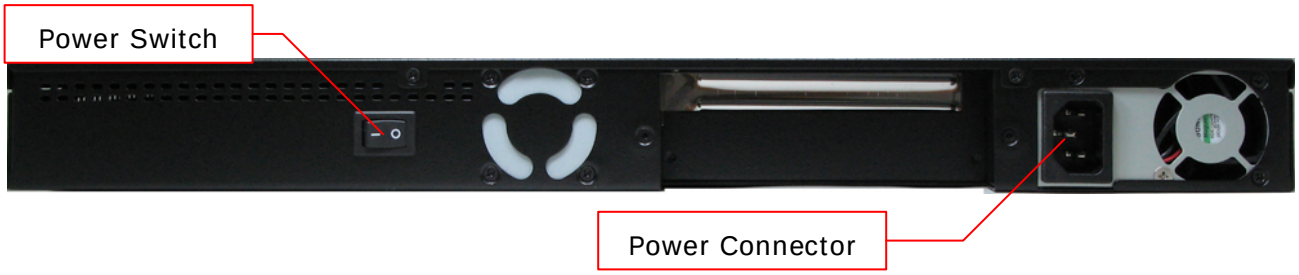
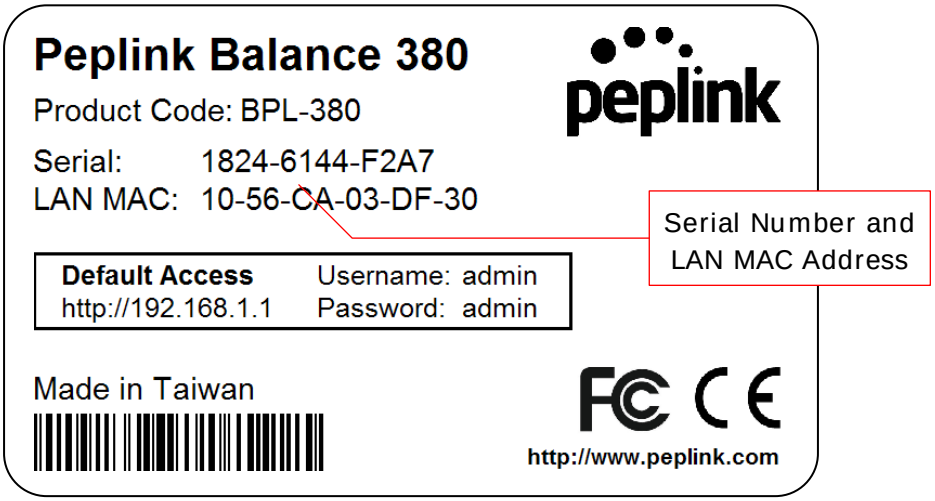
6.6.4 Rear Panel Appearance



Connector Ports	
Power Connector	AC input 110/220V

Switch	
Power Switch	To hold pressing the key for 4 seconds will power down the unit When the unit is powered off, press it will power on the unit

6.6.5 Unit Label Appearance



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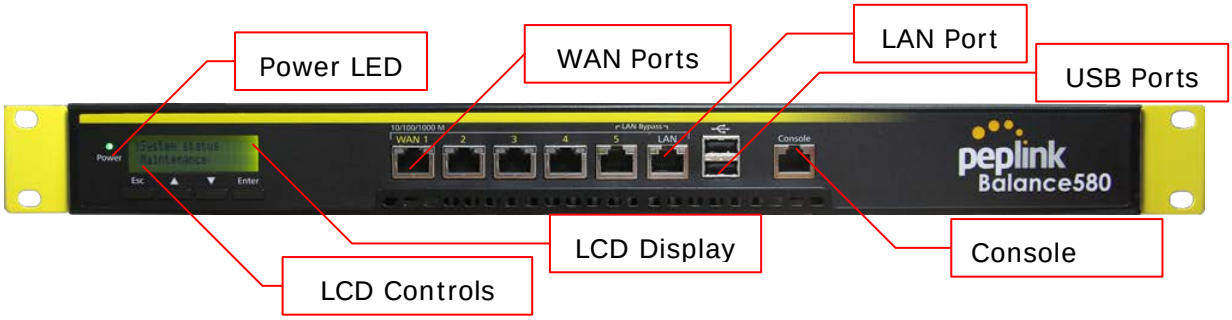
6.7 Peplink Balance 580

6.7.1 Front Panel Appearance



6.7.2 LED Indicators

The statuses indicated by the Front Panel LEDs are as follows:

Power and Status Indicators	
Power LED	OFF – Power off
	GREEN– Power on

LAN Port, WAN 1 – 5 Ports	
Right LED	ORANGE – 1000 Mbps
	GREEN– 100 Mbps
	OFF – 10 Mbps
Left LED	Solid – Port is connected without traffic
	Blinking – Data is transferring
	OFF – Port is not connected
Port Type	Auto MDI/MDI-X ports

Console and USB Ports	
Console Port	Reserved for engineering use
USB Ports	For connecting a 4G/3G USB modem.

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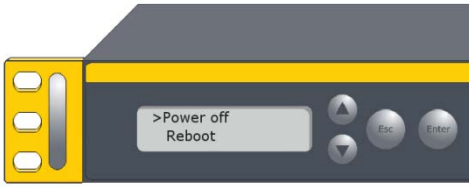
6.7.3 LCD Display Menu



> HA State: Master/Slave
>> LAN IP
>> VIP
> System Status
>> System
>>> Firmware ver. (shows firmware version)
>>> Serial number (shows serial number)
>>> System time (shows current time)
>>> System up time (shows system uptime since last reboot)
>>> CPU load (shows current CPU loading, 0-100%)
>>> LAN
>>>> Status (shows LAN port physical status)
>>>> IP address (shows LAN IP address)
>>>> Subnet mask (shows LAN subnet mask)
>> Link status (shows Connected/Disconnected, IP address list)
>>> WAN1
>>> WAN2
>>> …
>>> WAN5
>> VPN status (shows Connected/Disconnected)
>>> *>VPN Profile 1*
>>> *>VPN Profile 2*
>>> *>…*
>>> *>VPN Profile n*
>> Link usage
>>> Throughput in (shows transfer rate in Kbps)
>>>> WAN1
>>>> WAN2
>>>> …
>>>> WAN5
>>> Throughput out (shows transfer rate in Kbps)
>>>> WAN1
>>>> WAN2
>>>> …
>>>> WAN5
>> Data Transfer'd (shows volume transferred since last reboot in MB)
>>> WAN1
>>> WAN2
>>> …
>>> WAN5
> Maintenance
>> Reboot > Reboot? (Yes/No) (to reboot the unit)
>> Factory default > Factory default? (Yes/No) (to restore factory defaults)
> LAN config
>> Port speed (shows port speed: Auto, 10baseT-FD, 10baseT-HD, 100baseTx-FD, 100baseTx-HD, 1000baseTx-FD)
>>> LAN
>>> WAN1
>>> WAN2
>>> …
>>> WAN5

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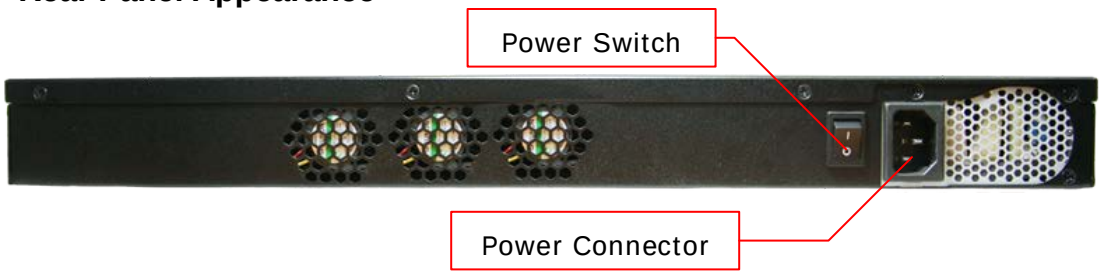
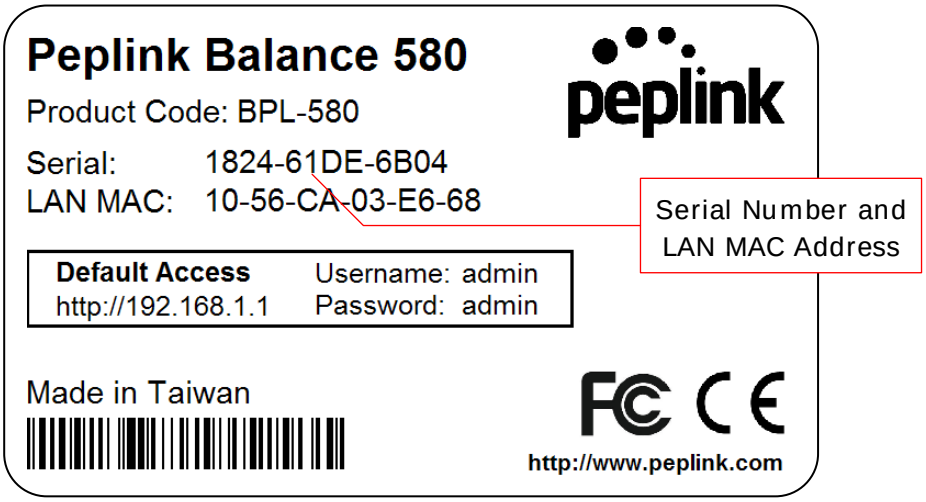
6.7.4 Rear Panel Appearance



Connector Ports	
Power Connector	AC input 110/220V

Switch	
Power Switch	To hold pressing the key for 4 seconds will power down the unit When the unit is powered off, press it will power on the unit

6.7.5 Unit Label Appearance



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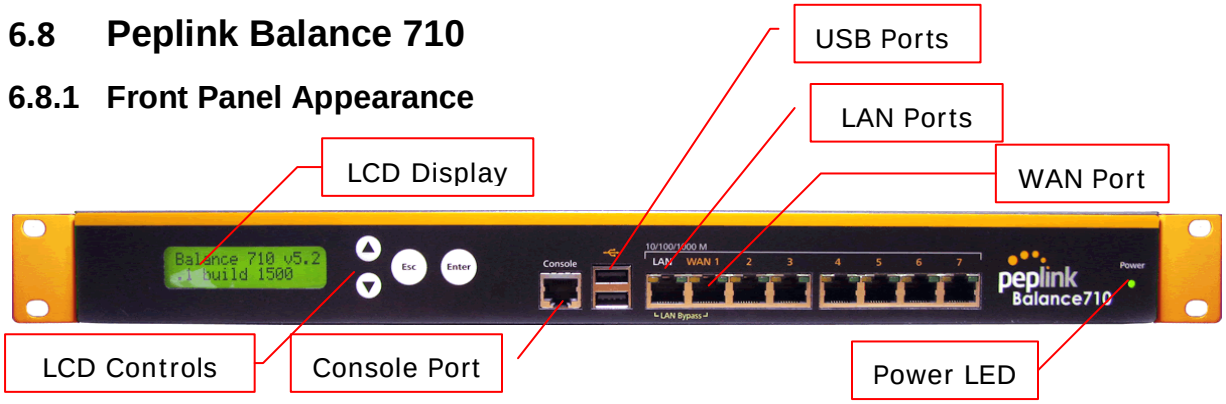
6.8 Peplink Balance 710

6.8.1 Front Panel Appearance



Status indicated in the Front Panel is as follows:

LED Indicator	
Power LED	OFF – Power off
	GREEN – Power on

LAN Port, WAN 1 – 7Ports	
Green LED	ON – 1000 Mbps
	OFF – 100/10 Mbps
Orange LED	Solid – Port is connected without traffic
	Blinking – Data is transferring
	OFF – Port is not connected
Port Type	Auto MDI/MDI-X ports

Console & USB Ports	
Console Port	Reserved for engineering use
USB Ports	For connecting a 4G/3G USB modem.

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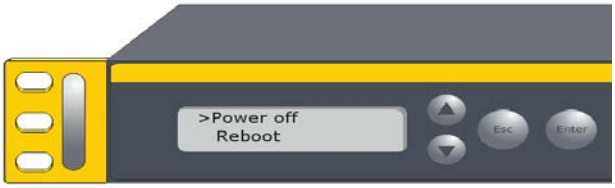
6.8.2 LCD Display Menu



> HA State: Master/Slave
>LAN IP
> VIP
> System Status
> System
> Firmware ver. (shows firmware version)
> Serial number (shows serial number)
> System time (shows current time)
> System up time (shows system uptime since last reboot)
> CPU load (shows current CPU loading, 0-100%)
> LAN
> Status (shows LAN port physical status)
> IP address (shows LAN IP address)
> Subnet mask (shows LAN subnet mask)
> Link status (shows Connected/Disconnected, IP address list)
> WAN1
> WAN2
> …
> WAN7
> VPN status (shows Connected/Disconnected)
>*VPN Profile 1*
>*VPN Profile 2*
>…
>*VPN Profile n*
> Link usage
> Throughput in (shows transfer rate in Kbps)
> WAN1
> WAN2
> …
> WAN7
> Throughput out (shows transfer rate in Kbps)
> WAN1
> WAN2
> …
> WAN7
> Data Transfer'd (shows volume transferred since last reboot in MB)
> WAN1
> WAN2
> …
> WAN7
> Maintenance
> Reboot > Reboot? (Yes/No) (to reboot the unit)
> Factory default > Factory default? (Yes/No) (to restorefactory defaults)
> LAN config
> Port speed (shows port speed: Auto, 10baseT-FD,
> LAN 10baseT-HD, 100baseTx-FD, 100baseTx-HD,
> WAN1 1000baseTx-FD)
> WAN2
> …
> WAN7

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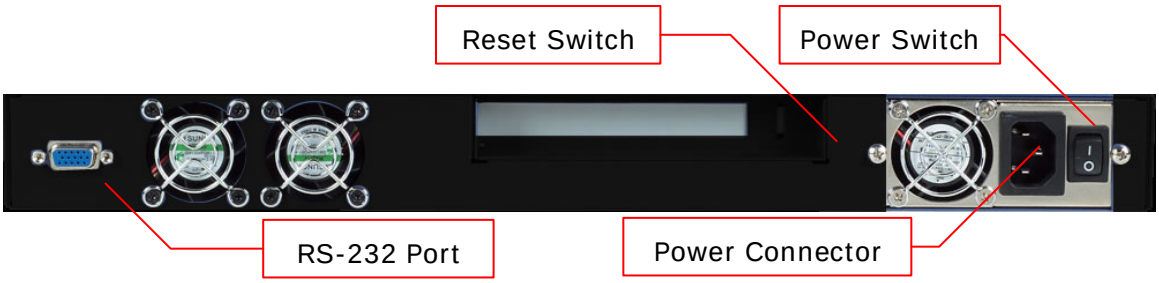
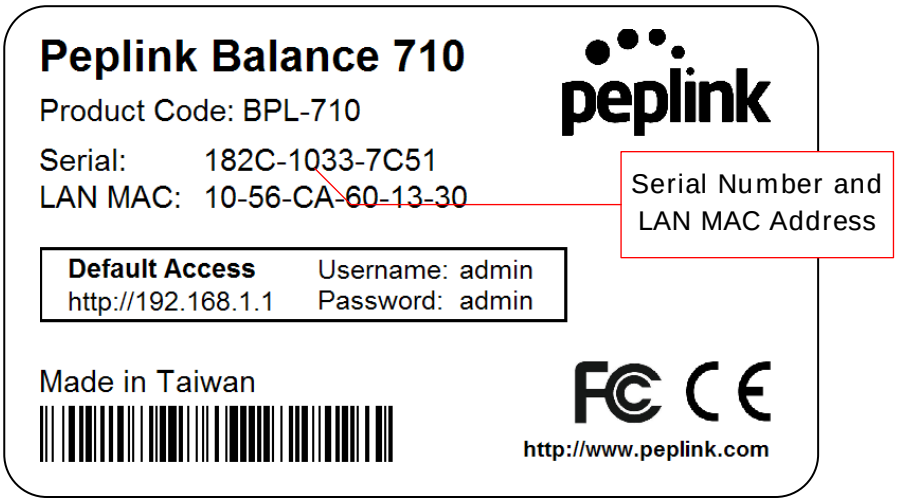
6.8.3 Rear Panel Appearance



Connector Ports	
RS-232 Port	Reserved for engineering use
Power Connector	AC input 110/220V

Switches	
Power Switch	To hold pressing the key for 4 seconds will power down the unit When the unit is powered off, press it will power on the unit
Reset Switch	Press and release once to reset the system

6.8.4 Unit Label Appearance



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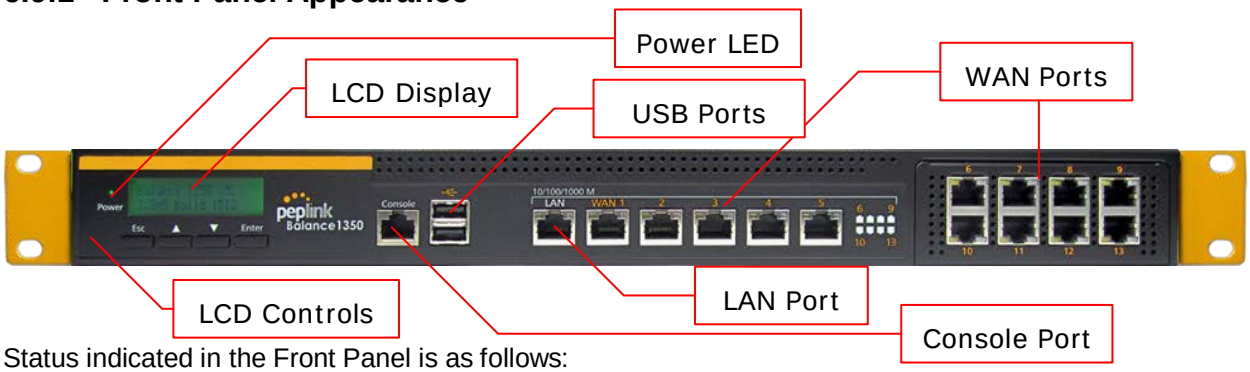
6.9 Peplink Balance 1350

6.9.1 Front Panel Appearance



Status indicated in the Front Panel is as follows:

LED Indicator	
Power LED	OFF – Power off
	GREEN– Power on

LAN Port, WAN 1 – 13 Ports	
Right LED	ORANGE – 1000 Mbps
	GREEN– 100 Mbps
	OFF – 10 Mbps
Left LED	Solid – Port is connected without traffic
	Blinking – Data is transferring
	OFF – Port is not connected
Port Type	Auto MDI/MDI-X ports

Console & USB Ports	
Console Port	Reserved for engineering use
USB Ports	For connecting a 4G/3G USB modem.

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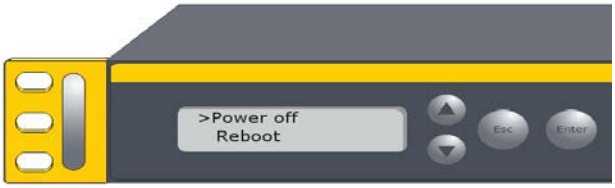
6.9.2 LCD Display Menu



> HA State: Master/Slave
>LAN IP
> VIP
> System Status
> System
> Firmware ver. (shows firmware version)
> Serial number (shows serial number)
> System time (shows current time)
> System up time (shows system uptime since last reboot)
> CPU load (shows current CPU loading, 0-100%)
> LAN
> Status (shows LAN port physical status)
> IP address (shows LAN IP address)
> Subnet mask (shows LAN subnet mask)
> Link status (shows Connected/Disconnected, IP address list)
> WAN1
> WAN2
> …
> WAN13
> VPN status (shows Connected/Disconnected)
>*VPN Profile 1*
>*VPN Profile 2*
>…
>*VPN Profile n*
> Link usage
> Throughput in (shows transfer rate in Kbps)
> WAN1
> WAN2
> …
> WAN13
> Throughput out (shows transfer rate in Kbps)
> WAN1
> WAN2
> …
> WAN13
> Data Transfer'd (shows volume transferred since last reboot in MB)
> WAN1
> WAN2
> …
> WAN13
> Maintenance
> Reboot > Reboot? (Yes/No) (to reboot the unit)
> Factory default > Factory default? (Yes/No) (to restore factory defaults)
> LAN config
> Port speed (shows port speed: Auto, 10baseT-FD, 10baseT-HD, 100baseTx-FD, 100baseTx-HD,1000baseTx-FD)
> LAN
> WAN1
> WAN2
> …
> WAN13

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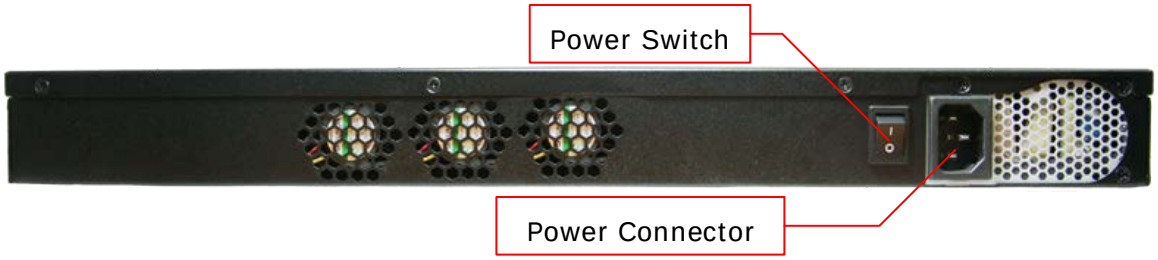
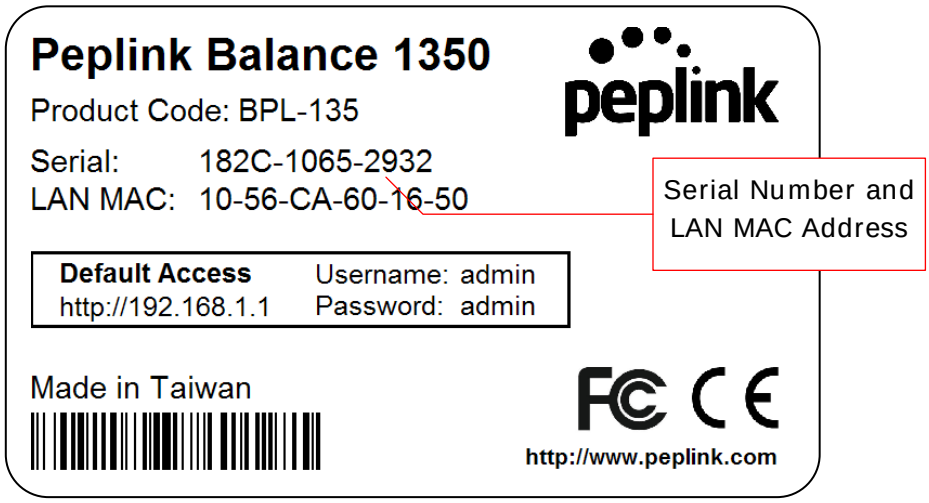
6.9.3 Rear Panel Appearance



Connector Ports	
Power Connector	AC input 110/220V

Switches	
Power Switch	To hold pressing the key for 4 seconds will power down the unit When the unit is powered off, press it will power on the unit

6.9.4 Unit Label Appearance



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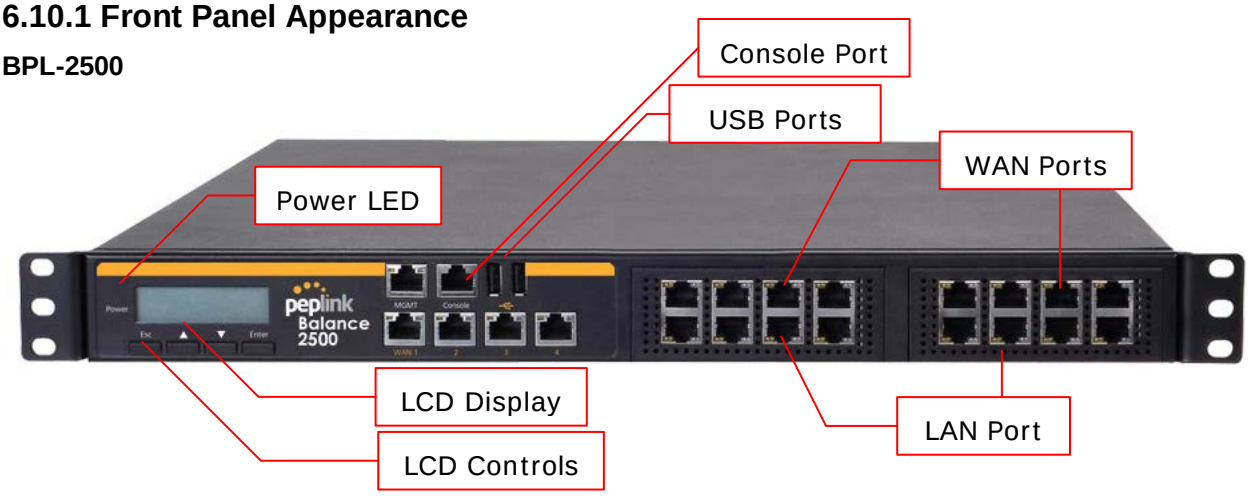
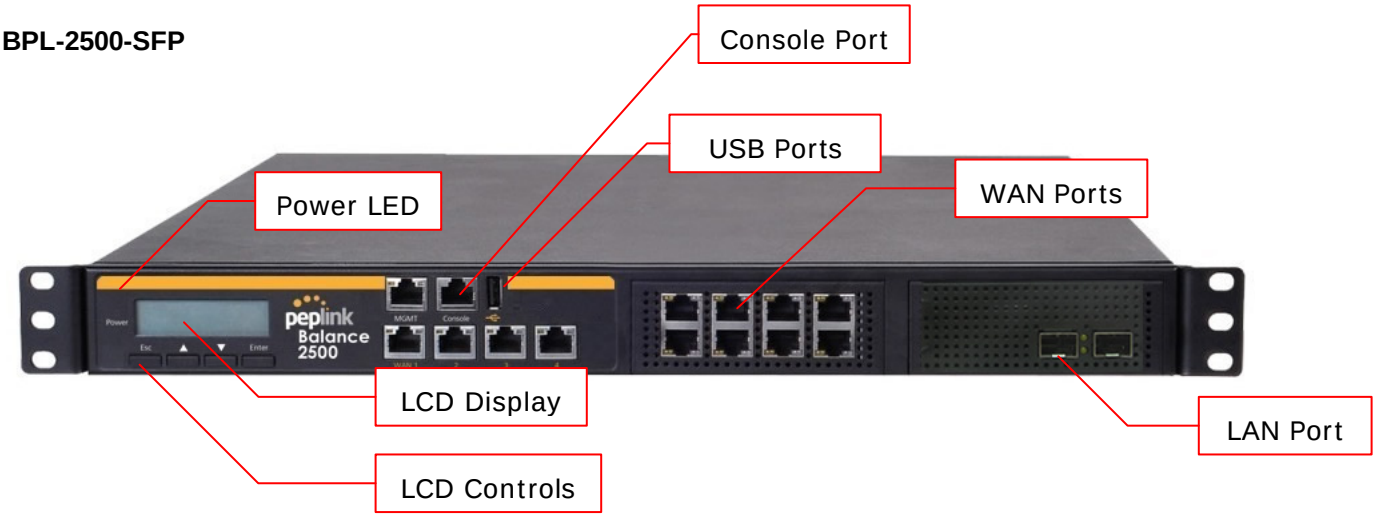
6.10 Peplink Balance 2500

6.10.1 Front Panel Appearance

BPL-2500



BPL-2500-SFP



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Status indicated in the Front Panel is as follows:

LED Indicator	
Power LED	OFF – Power off
	GREEN– Power on

LAN andWAN Ports	
Right LED	ORANGE – 1000 Mbps
	GREEN– 100 Mbps
	OFF – 10 Mbps
Left LED	Solid – Port is connected without traffic
	Blinking – Data is transferring
	OFF – Port is not connected
Port Type	Auto MDI/MDI-X ports

Console & USB Ports	
Console Port	Reserved for engineering use
USB Ports	For connecting a 4G/3G USB modem.

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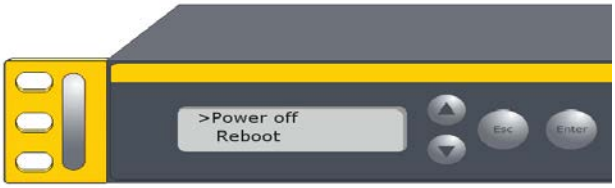
6.10.2 LCD Display Menu



> HA State: Master/Slave
>LAN IP
> VIP
> System Status
> System
> Firmware ver. (shows firmware version)
> Serial number (shows serial number)
> System time (shows current time)
> System up time (shows system uptime since last reboot)
> CPU load (shows current CPU loading, 0-100%)
> LAN
> Status (shows LAN port physical status)
> IP address (shows LAN IP address)
> Subnet mask (shows LAN subnet mask)
> Link status (shows Connected/Disconnected, IP address list)
> WAN1
> WAN2
> …
> WAN13
> VPN status (shows Connected/Disconnected)
>*VPN Profile 1*
>*VPN Profile 2*
>…
>*VPN Profile n*
> Link usage
> Throughput in (shows transfer rate in Kbps)
> WAN1
> WAN2
> …
> WAN13
> Throughput out (shows transfer rate in Kbps)
> WAN1
> WAN2
> …
> WAN13
> Data Transfer'd (shows volume transferred since last reboot in MB)
> WAN1
> WAN2
> …
> WAN13
> Maintenance
> Reboot > Reboot? (Yes/No) (to reboot the unit)
> Factory default > Factory default? (Yes/No) (to restore factory defaults)
> LAN config
> Port speed (shows port speed: Auto, 10baseT-FD, 10baseT-HD, 100baseTx-FD, 100baseTx-HD,1000baseTx-FD)
> LAN
> WAN1
> WAN2
> …
> WAN13

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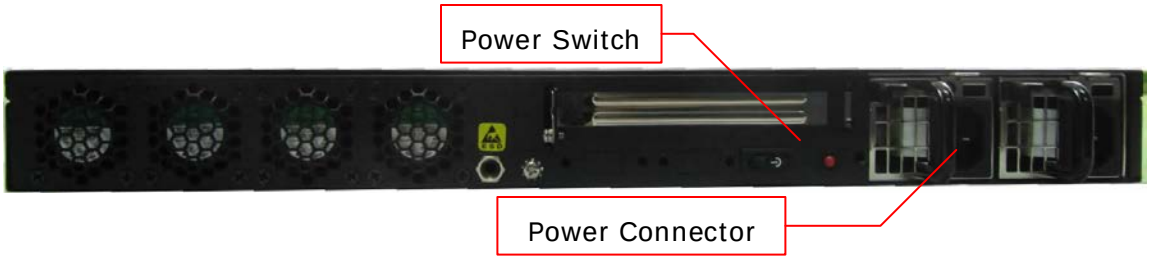
6.10.3 Rear Panel Appearance

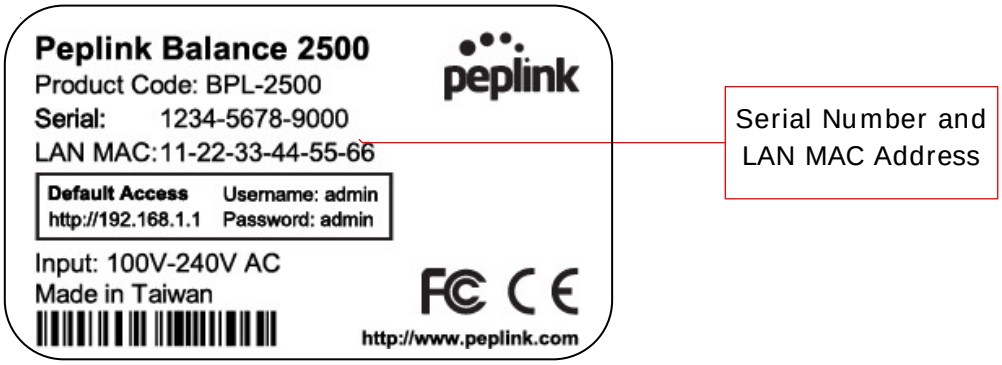


Connector Ports	
Power Connector	AC input 100-240V

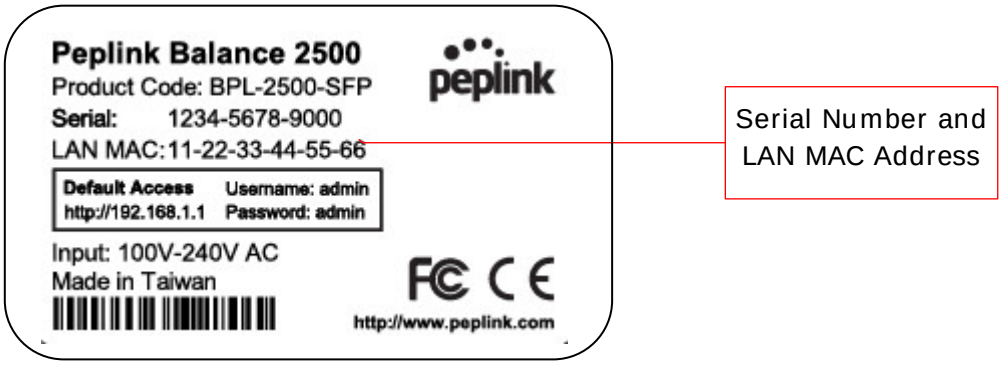
Switches	
Power Switch	To hold pressing the key for 4 seconds will power down the unit When the unit is powered off, press it will power on the unit

6.10.4 Unit Label Appearance

BPL-2500



BPL-2500-SFP



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7 Installation

Connecting the Network with Peplink Balance:

7.1 Preparation

Before installingPeplink Balance, please prepare the following:

- At least one Internet/WAN access account.
- For each network connection, one 10/100BaseT UTP cable with RJ45 connector, or one 1000BaseT Cat5E UTP cable for the Gigabit port on the Balance 580/710/1350/2500, or one USB modem for the USB WAN port on Balance 305/380/580/710/1350/2500
- A computer with TCP/IP network protocol and a web browser installed. Supported browsers include Microsoft Internet Explorer 8.0 or above, MozillaFirefox 10.0 or above, Apple Safari 5.1 or above, and Google Chrome 18 or above.

7.2 Constructing the Network

At the high level, construct the network according to the following steps:

1. With anEthernetcable, connect a computer to one of the LAN ports on the Peplink Balance. For Peplink Balance 20, 30, 210 and 310, repeat with different cables for up to 4computers to be connected.
2. With another Ethernetcable, connect the WAN/broadband modem to one of the WAN ports on the Peplink Balance. Repeat using different cables to connect up to 2, 3, 5, 7, 13 or 12WAN/broadband connections with the Peplink Balance 20, 30, 210, 310, 305,380, 580,710, 1350 and 2500, respectively, or connect a USB modem to the USB WAN port on the Peplink Balance 20/30/380/580/710/1350/2500.
3. For PeplinkBalance 20, 30, 210and 310, connect the provided power adapter to the power connector on the Peplink Balance, and thenplug the power adapter into a power outlet. ForPeplink Balance 305,380, 580, 710, 135
4. 0 and 2500, connect the provided power cord to the AC power connector on the Peplink Balance, and then plug the power cord into a power outlet.

The following figure schematically illustrates the configuration that results:

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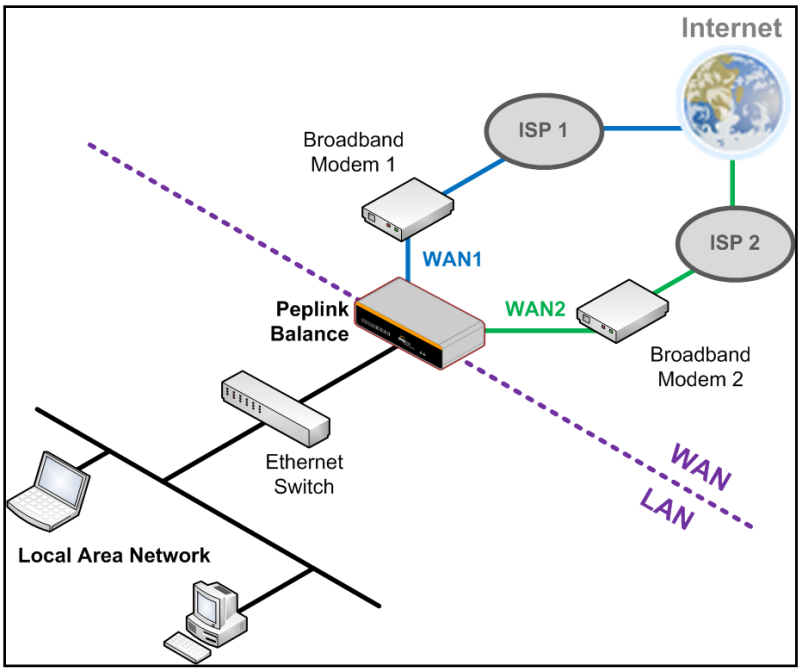

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7.3 Configuring the Network Environment

To ensure that Peplink Balance works properly in the LAN environment and can access the Internet via the WAN connections, please refer to the following setup procedures:

- LAN Configuration
  For basic configuration, refer to Section 8, **Basic Configuration**.
  For advanced configuration, refer to Section 9, **Configuration of LAN Interface**.
- WAN Configuration
  For basic configuration, refer to Section 8, **Basic Configuration**.
  For advanced configuration, refer to Section 11, **Configuration of WAN Interface(s)**.

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8 Basic Configuration

8.1 Connecting to Web Admin Interface

1. Start a web browser on a computer that is connected with Peplink Balance through LAN.
2. To connect to Web Adminof Peplink Balance, enter the following LAN IP address in the address field of the web browser:

   http://192.168.1.1

   (This is the default LAN IP address of Peplink Balance)
3. Enter the following to access the Web Admin Interface.

   User Name: admin
   Password: admin

   (This is the default Admin User login of Peplink Balance. The Admin and Read-only User Password can be changed at***System > Admin Security*** of the Web Admin Interface.)

4. After successful login, the ***Dashboard*** of Web Admin Interfacewill be displayed. It looks similar to the following:

Important Note

The **Save** button causes the changes to be saved. Configuration changes (e.g. WAN, LAN, Admin settings, etc.) take effect after clicking the **Apply Changes** button on each page's top right hand corner.

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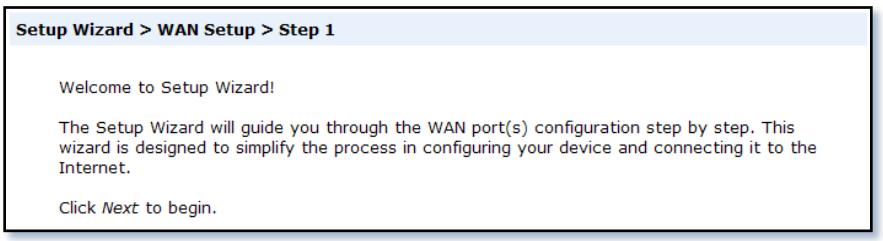
8.2 Configuration with Setup Wizard

The Setup Wizard of Peplink Balance simplifies the task of configuring WAN connection(s) by guiding the configuration process step by step.

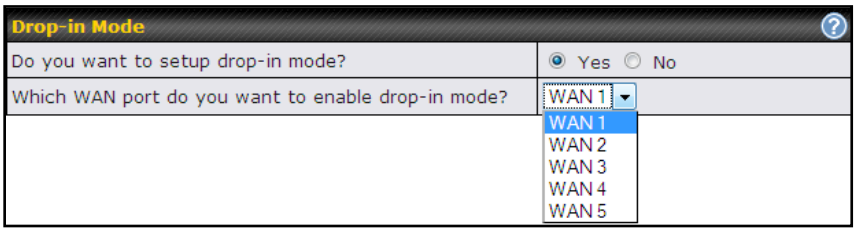
To begin, click ***Setup Wizard*** after connecting to Web Admin Interface.

Click **Next** to begin.

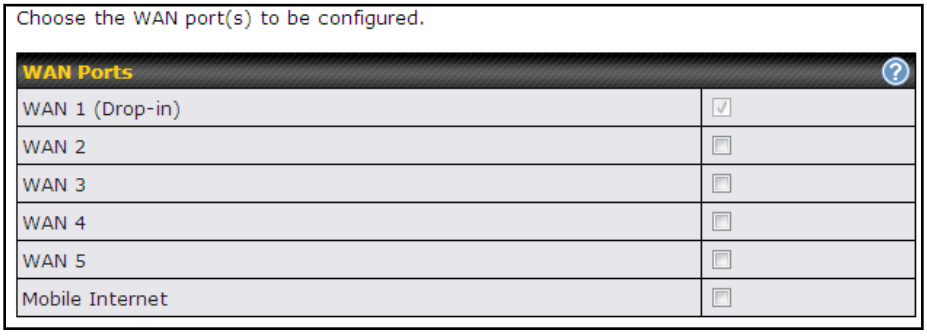


Select **YES** if you want to set up Drop-in mode in Setup Wizard.

(Note: Drop-in mode is available on Peplink Balance 210+.)



Click on the appropriatecheck box(es) to select the WAN connection(s) to be configured. If you have chosen to configure Drop-in mode in Setup Wizard, the box of WAN portthat is to be configured in Drop-in mode will be checked by default.



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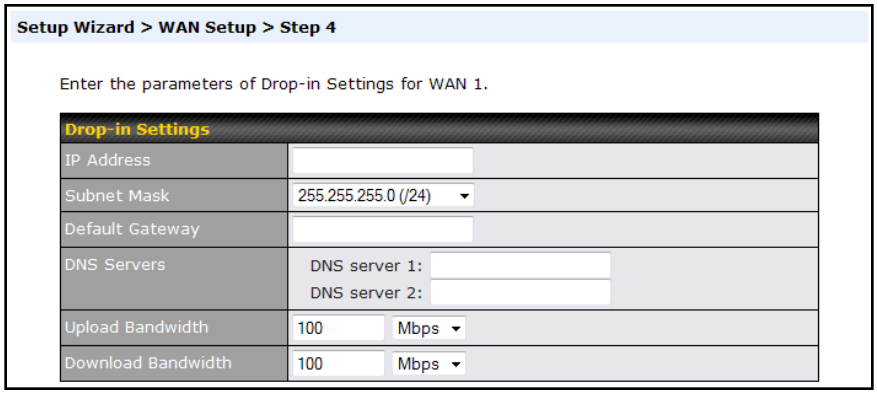
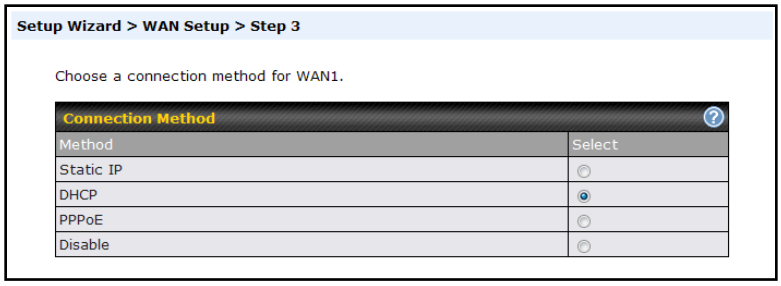
If **Drop-in mode** is going to be configured, Setup Wizard will move on to Drop-in Settings.

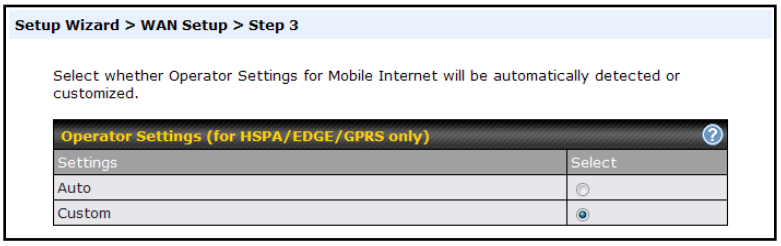


Select the connection type for WAN connection(s) from the following screen:

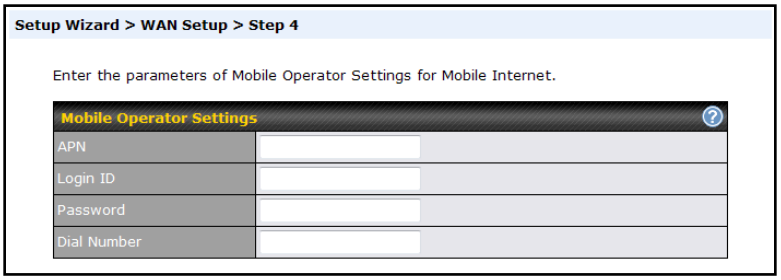


Depending on the selection of connection type, further configuration may be needed.For example,PPPoEand Static IP require additional settingsfor the selected WAN port. Please refer to**Section 11, Configuration of WAN Interface(s)** for details on setting up DHCP, Static IP andPPPoE.

If **Mobile Internet Connection**is checked, Setup Wizard will move on to Operator settings.



If **Custom Mobile Operator Settings**is selected, APN parameters are required to be entered. Some service providers may charge a fee for connecting to a different APN. Please consult the service provider for the correct settings.



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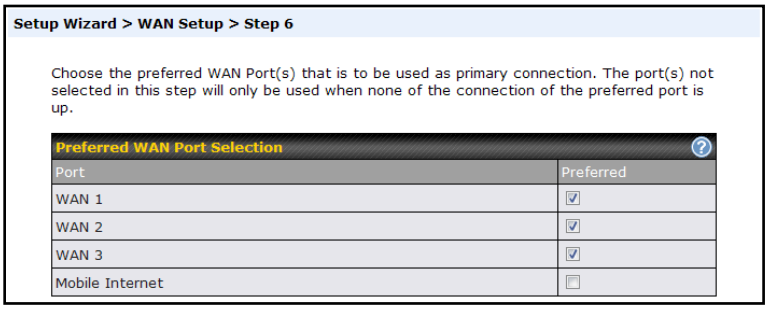
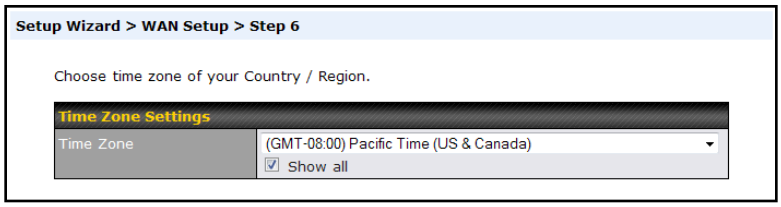
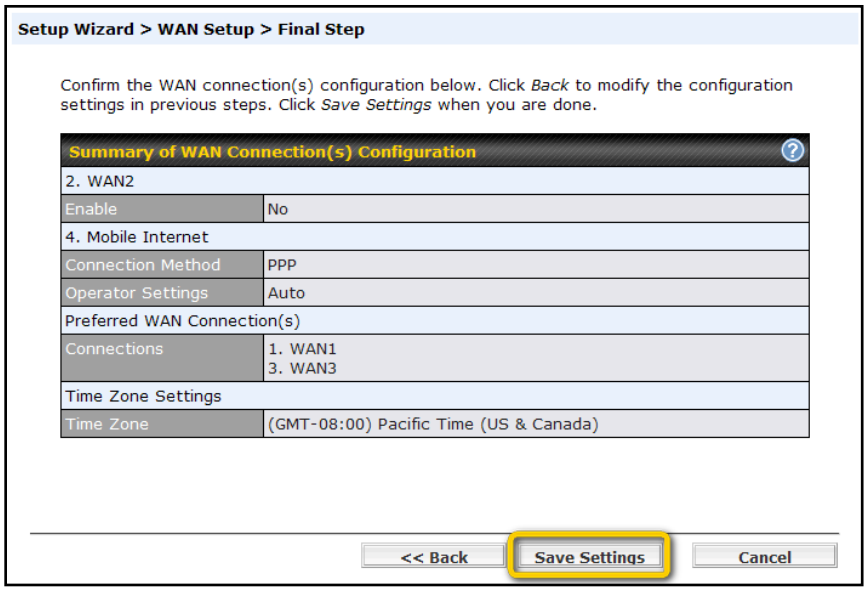
Click on the appropriate check box(es) to select the preferred WAN connection(s). Connection(s) not selected in this step will be used as back up only. Click **Next>>** to continue.



Choose the time zone of your Country/Region. Check the box **Show all**to display all time zone options.



Check in the following screen to make sure all settings have been configured correctly, and then click **Save Settings**to confirm.



After finishing the last step in the Setup Wizard, please click**Apply Changes**on the page header to allowthe configuration changes to take effect.

8.3 Advanced Setup

Advanced settings can be configured from the **Network** menu.

WAN connections can be configured by entering the corresponding WAN connection informationat: ***Network> Interfaces >WAN***

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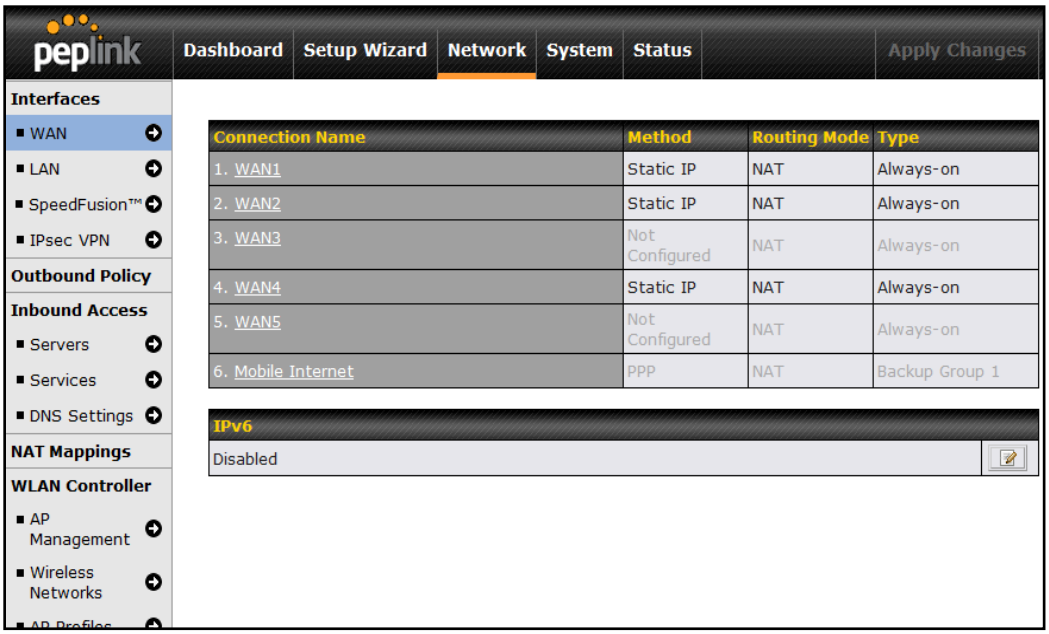

Tip

Please refer to **Section 11,Configuration of WAN Interface(s)**, for details on setting up DHCP, Static IP, PPPoE, and Mobile Internet Connection.

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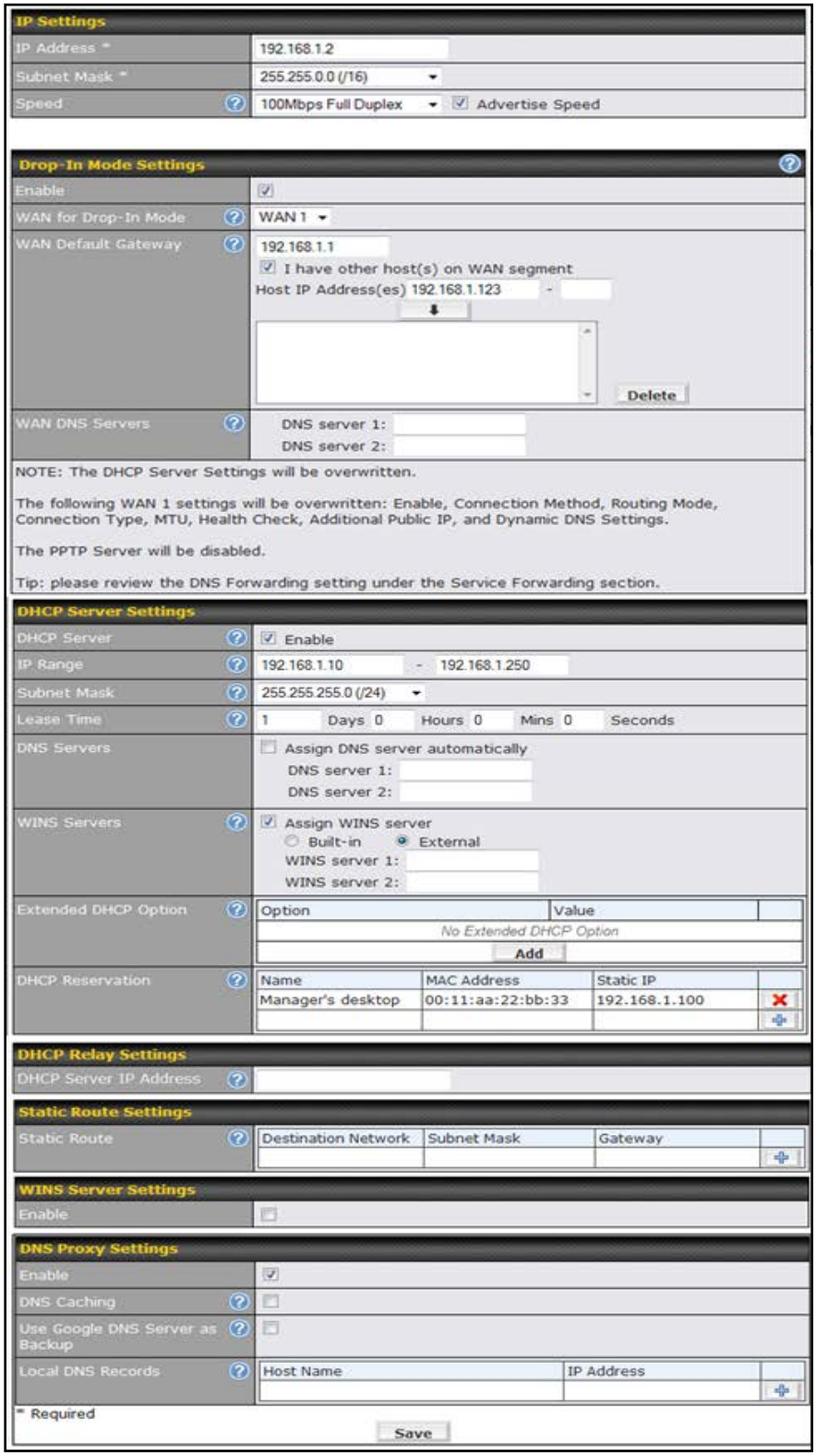
9 Configuration of LAN Interface

The LAN Interface settings are located at:***Network> Interfaces > LAN***



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LAN Settings	
IP Address & Subnet Mask	The IP address of Peplink Balance on LAN
Speed	This setting specifies the speed of the LAN Ethernet Port. By default, Auto is selected and the appropriate data speed is automatically detected by Peplink Balance. In the event of negotiation issues, the port speed can be manually specified to circumvent the issues. You can also choose whether or not to advertise the speed to the peer by selecting the Advertise Speed checkbox.

Drop-in Mode Settings (Available on Peplink Balance 210+)	
Enable	Drop-in Mode eases the installation of Peplink Balance on a live network between the existing Firewall and Router, such that no configuration changes are required on existing equipment. Check the box to enable the Drop-in Mode feature. Please refer to Section10Drop-in Mode for details.
WAN for Drop-In Mode	Select the WAN port to be used for Drop-in mode. If the WAN port for LAN Bypass is selected, High Availability feature will be disabled automatically.
WAN Default Gateway	Enter the WAN router's IP address in this field. If there are more hosts other than the router on the WAN segment, check the box **have other host(s) on WAN segment** and enter the IP address of the hosts that needs to access LAN devices or to be accessed by others.
WAN DNS Servers	Enter the selected WAN's corresponding DNS server IP addresses.

DHCP Server Settings	
DHCP Server	When this setting is enabled, the DHCP server of Peplink Balance automatically assigns an IP address to each computer that is connected via LAN and is configured to obtain an IP address via DHCP. Peplink Balance's DHCP server can prevent IP address collision on LAN.
IP Range & Subnet Mask	This setting allocates a range of IP address that will be assigned to LAN computers by the DHCP server of Peplink Balance.
Lease Time	This setting specifies the length of time throughout which an IP address of a DHCP client remains valid. Upon expiration of the Lease Time, the assigned IP address will no longer be valid and the renewal of the IP address assignment will be required.
DNS Servers	This option allows you to input the DNS server addresses to be offered to the DHCP clients. If **Assign DNS server automatically** is selected, the Peplink Balance's built-in DNS server address (i.e. LAN IP address) will be offered.
WINS Server	This option allows you to specify the Windows Internet Name Service (WINS) server. You may choose to use the built-in WINS server or external WINS servers. When this unit is SpeedFusion™ connected, other VPN peers can share this unit's built-in WINS server by entering this unit's LAN IP address in their DHCP WINS Servers setting.

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	Therefore, all PC clients in the VPN can resolve the NetBIOS names of other clients in remote peers. If you have enabled this option, a list of WINS clients will be displayed at ***Status > WINS Clients***.
Extended DHCP Option	In addition to standard DHCP options (e.g. DNS server address, gateway address, subnet mask), you can specify the value of additional Extended DHCP Options defined in RFC 2132. In this case, you can pass additional configuration information to LAN hosts. To define an Extended DHCP Option, click the **Add** button, choose the option that you want to define and enter its value. For values that are in IP address list format, you can enter one IP address per line in the provided text area input control. Each option is allowed to be defined once only.
DHCP Reservation	This setting reserves the assignment of fixed IP addresses for a list of computers on the LAN. The computers to be assigned fixed IP addresses on the LAN are identified by their MAC addresses. The fixed IP address assignment is displayed as a cross-reference list between the computers' Name, MAC addresses and fixed IP addresses. The field **Name** (an optional field) is for you to define a name to represent the device. MAC addresses should be in the format of **00:AA:BB:CC:DD:EE** Press to create a new record. Press to remove a record. Reserved clients information can be imported from the Client List, located at ***Status > Client List***. For more details, please refer to section **23.3**

Static Route Settings	
Static Route	This table is for defining static routing rules for the LAN segment. A static route consists of the network address, subnet mask, and gateway address. The address and subnet mask values are in the format of **w.x.y.z** The local LAN subnet and subnets behind the LAN will be advertised to the VPN. Remote routes sent over the VPN will also be accepted. Any VPN member will be able to route to the local subnets. Press to create a new route. Press to remove a route.

WINS Server Settings	
Enable	Check the box to enable the WINS Server. A list of WINS clients will be displayed at ***Status > WINS Clients***.

DNS Proxy Settings	
Enable	A check box to enable to DNS Proxy feature. ***Network > LAN > DNS Proxy Settings table*** A DNS proxy server can be enabled to serve DNS requests originating from LAN/PPTP/SpeedFusion™ peers. Requests are forwarded to the **DNS servers/resolvers** defined in each WAN connection.
DNS Caching	This field is to enable DNS caching on the built-in DNS proxy server. When the option is enabled, queried DNS replies will be cached until the records' TTL has been reached. This feature can help improve the DNS lookup time by storing all received DNS results for a faster DNS response time. However, it cannot return the most updated result for those frequently updated DNS records.

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	By default, it is **disabled**.
Include Google Public DNS Servers	When this option is **enabled**, the DNS proxy server will also forward DNSrequests to Google's Public DNS Servers in addition to the DNS servers defined in each WAN. This could increase the DNS service's availability. Default: **disabled**
Local DNS Records	This table is for defining custom local DNS records. A static local DNS record consists of a Host Name and an IP Address. When looking up the Host Name from the LAN to LAN IP of Peplink Balance, the corresponding IP Address will be returned. Press to create a new record. Press to remove a record.

LAN DNS Resolver Settings	
Enable	Check the box to enable the WINS Server. A list of WINS clients will be displayed at ***Network > LAN > DNS Proxy Settings > DNS Resolvers***. This field specifies which DNS resolvers will receive forwarded DNS requests. If no WAN/VPN/LAN DNS resolver is selected, all of the WAN's DNS resolvers will be selected. If a SpeedFusion™ peer is selected, you may enter the VPN peer's DNS resolver IP address(es). Queries will be forwarded to the selected connections' resolvers. If all of the selected connections are down, queries will be forwarded to all resolvers on healthy WAN connections.

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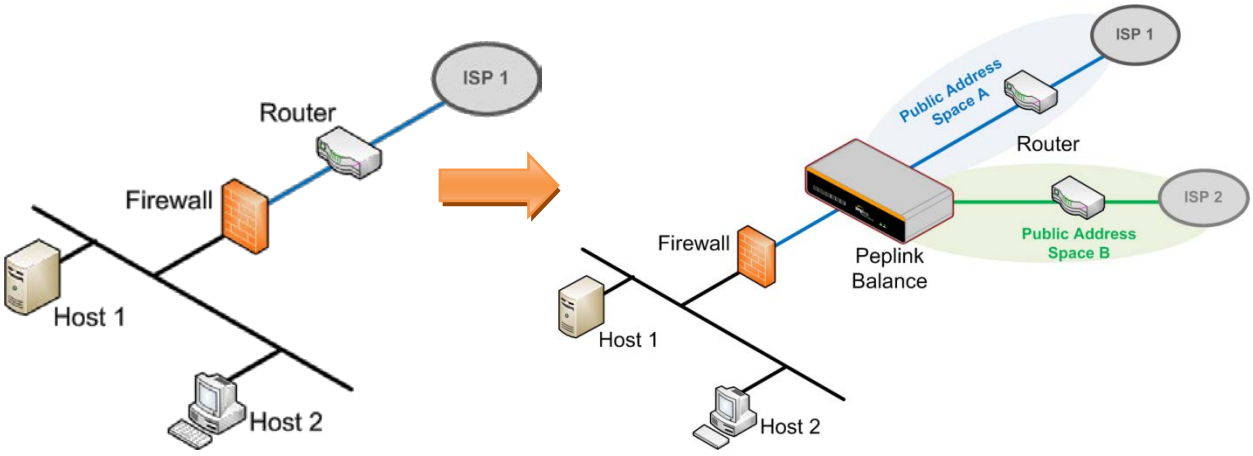
10 Drop-in Mode

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

Drop-in Mode is **NOT** applicable to Balance 20 and 30.

The following diagram illustrates the Drop-in Mode setup:



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

When Drop-in Mode is enabled, the LAN and the WAN for Drop-in Mode ports will be bridged.Traffic going in between the LAN hosts and WAN router will be forwarded to each other. In this case, the hosts on both sides will not notice any IP or MAC address change.

After successfully setting up Peplink Balance as part of the network via Drop-in Mode, a Peplink Balance 210 will accommodate one additional WAN connection; 310, 305 or380will accommodate two, 580 will accommodate four, 710will accommodate six, 1350 will accommodate twelve and 2500 will accommodate eleven additional WAN connections respectively.

IMPORTANT NOTE for customers using Drop-in Mode and going to upgrade from firmware 4.8.2 or below to 5.0+
MAC address passthrough for Drop-in Mode is implemented in firmware 5.0. If Drop-in Mode is enabled when user is upgrading from previous firmware version, the ARP tables on the hosts on LAN and WAN segments have to be flushed once or the hosts have to be rebooted. Otherwise, hosts on one side may not be able to reach hosts on the other side of Peplink Balance until the old ARP records expire. Units without enabling Drop-in Mode are not affected.

NOTE
PPTP server will be disabled under Drop-in Mode.

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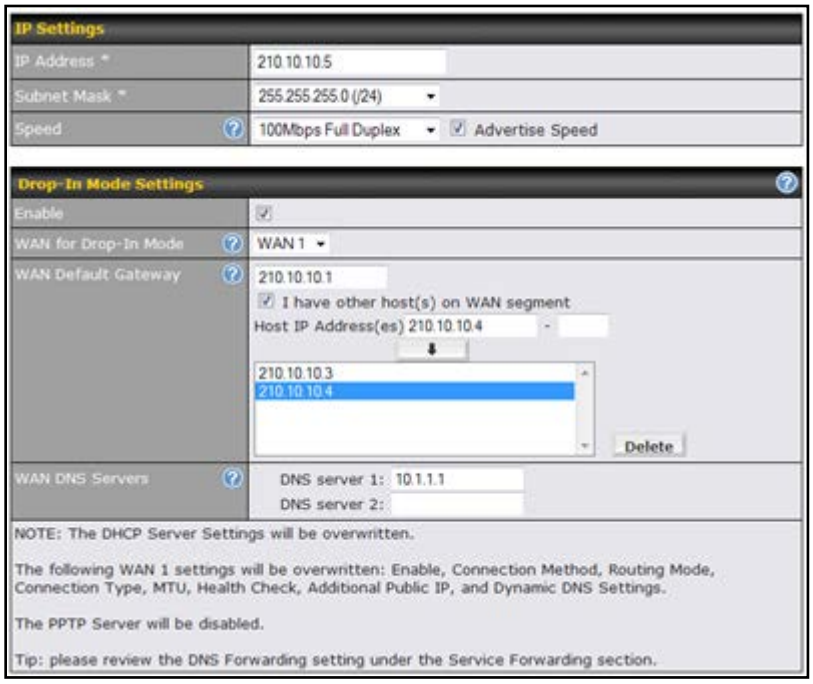
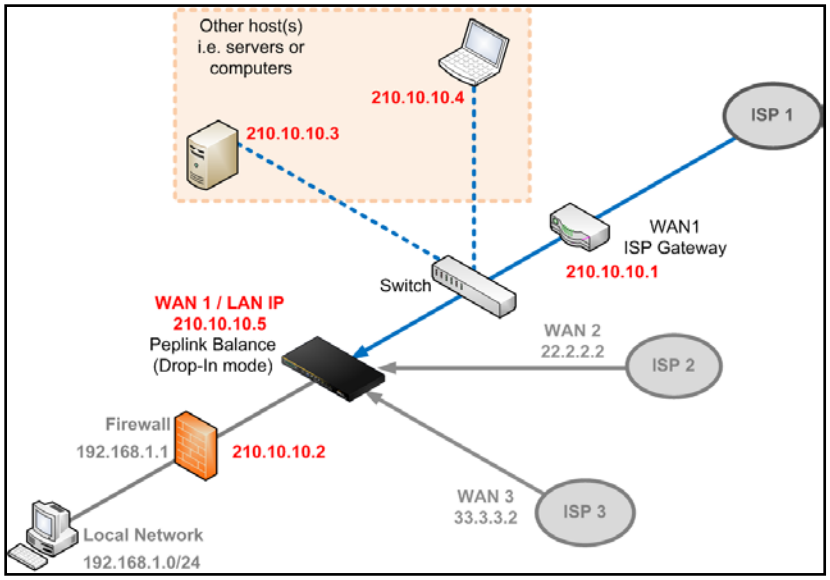
To enable Drop-in Mode, perform the following steps.



1. Check the **Enable** box under Drop-in Mode located at: ***Network > Interfaces > LAN***. (After checking the **Enable** box, most network settings for WAN1 will be hidden from Web Administration Interface.)
2. Put the IP address of the WAN1 router in the **WAN Default Gateway** field. Ensure that the Peplink Balance IP subnet is the same as the Firewall's WAN port and the Router's LAN port.
3. If there are hosts other than the router existing on the WAN segment of Peplink Balance, check the "I **have other host(s) on WAN segment"**box, enter the IP address(es) of the host(s), and then click the down-arrow to add the hosts.

   The following diagram illustrates:



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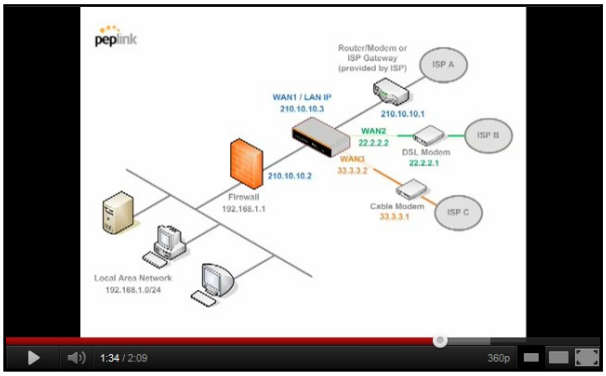
Important Note

Starting from firmware version 5.0, Drop-in mode canbe configuredon any WAN ports. Please be noted that still only one WAN port can be configured in Drop-in mode.

If you have selected the LAN Bypass port (which is currently available on WAN1 of Balance 1350 and WAN5 of Balance 580) as the WAN for Drop-in Mode, High Availability feature will be DISABLED automatically.

Tip

Want to know more about Drop-in mode? Visit our YouTube Channel for video tutorials!



http://youtu.be/IZG2-VPml5w

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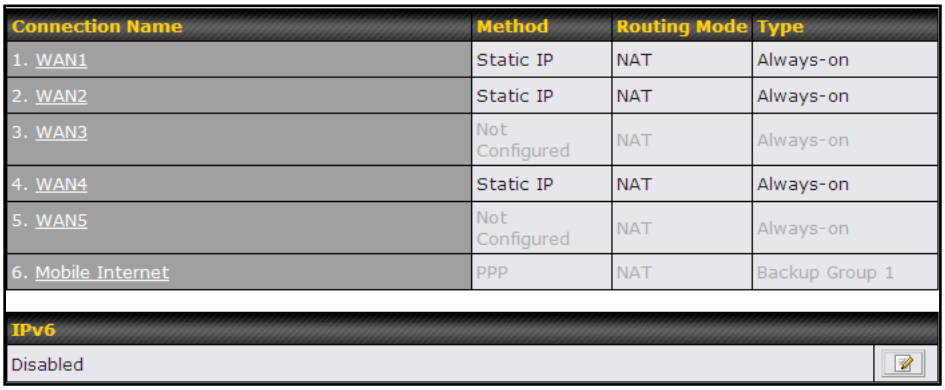
11 Configuration of WAN Interface(s)

The WAN interface settings are located at: ***Network> Interfaces > WAN***

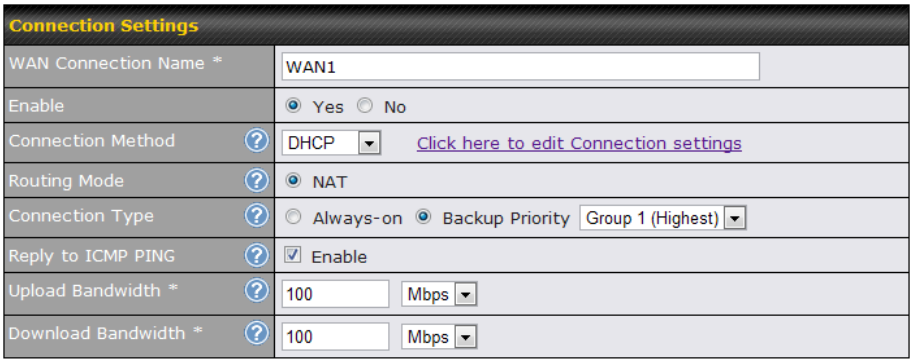


Connection Name	Method	Routing Mode	Type
1. WAN1	Static IP	NAT	Always-on
2. WAN2	Static IP	NAT	Always-on
3. WAN3	Not Configured	NAT	Always-on
4. WAN4	Static IP	NAT	Always-on
5. WAN5	Not Configured	NAT	Always-on
6. Mobile Internet	PPP	NAT	Backup Group 1

IPv6
Disabled

By clicking a **connection name**,connection settings of that WAN can be modified.

The connection method and details are determined by, and can be obtained from, the ISP.



Connection Settings	
WAN Connection Name *	WAN1
Enable	Yes / No
Connection Method	DHCP — Click here to edit Connection settings
Routing Mode	NAT
Connection Type	Always-on / Backup Priority — Group 1 (Highest)
Reply to ICMP PING	Enable
Upload Bandwidth *	100 Mbps
Download Bandwidth *	100 Mbps

Connection Settings	
WAN Connection Name	This field is for defining a name to represent this WAN connection.
Enable	This field is for choosing whether to enable this WAN connection.
Connection Method	This option allows you to select the connection method for this WAN connection. Available options are: 1. DHCP 2. Static IP 3. PPPoE 4. Mobile Internet Connection See Sections **11.1.1, 11.1.2, 11.1.3 and11.1.4** for configuration details of each connection method.
Routing Mode	This field shows that **NAT (Network Address Translation)** will be applied to the traffic routing over this WAN connection. **IP Forwarding** is also available when you click the link in the help text. For further details, please refer to **Appendix B, Routing under DHCP,**

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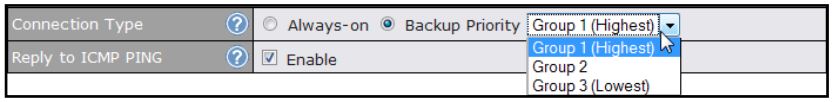
	Static IP, and PPPoE.
Connection Type	This setting specifies the utilization of the WAN connection. The selection of **Always-on** results in the WAN connection to be used whenever it is available. If **Backup Priority** and a priority group are selected, the WAN connection is treated as a backup connection and is used only in the absence of available Always-on WAN connection(s) and higher priority backup connection(s).  The default and recommended Connection Type is **Always-on**.
Reply to ICMP Ping	If this field is disabled, the WAN connection will not respond to ICMP Ping requests. By default, this is **enabled**.
Upload Bandwidth	This setting specifies the data bandwidth in the outbound direction from the LAN through the WAN interface. This value is provided by the ISP and should reflect the actual speed the WAN gets. This value is referenced when default weight is chosen for outbound traffic and traffic prioritization. A correct value can result in effective traffic prioritization and efficient use of upload bandwidth.
Download Bandwidth	This setting specifies the data bandwidth in the inbound direction from the WAN interface to the LAN. This value is provided by the ISP and should reflect the actual speed the WAN gets. This value is referenced as the default weight value when using the algorithm **Least Used**, or the algorithm **Persistence (Auto)** in Outbound Policy with **Managed by Custom Rules** chosen (see **Section** 0).

IPv6	
IPv6	IPv6 support can be enabled on one of the available Ethernet WAN ports. On this screen, you can choose which WAN will support IPv6. To enable IPv6 support on a WAN, the WAN router must respond to Stateless Address Auto configuration advertisements and DHCPv6 requests. IPv6 clients on the LAN will acquire their IPv6, gateway, and DNS server addresses from it. The device will also acquire an IPv6 address for performing ping/traceroute checks and accepting web admin accesses.

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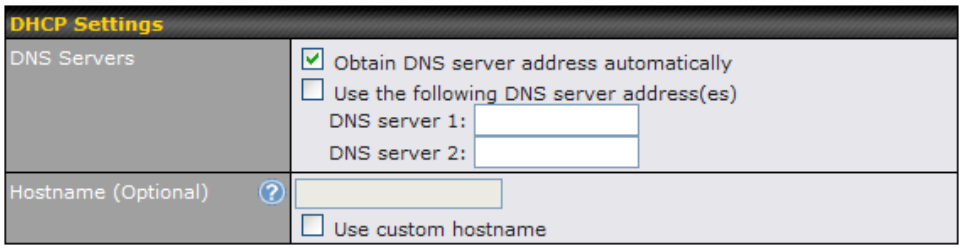
11.1 Connection Method(s)

There are four possible connection methods:

1. DHCP
2. Static IP
3. PPPoE
4. Mobile Internet Connection (for USB WAN)

11.1.1 DHCP Connection

The DHCP connection method is suitable if the ISP provides an IP address automatically by DHCP (e.g. Cable, Metro Ethernet, etc.).



DHCP Settings	
DNS Servers	Each ISP may provide a set of DNS servers for DNS lookups. This setting specifies the DNS (Domain Name System) Servers to be used when a DNS lookup is routed through this connection. Selecting **Obtain DNS server address automatically** results in the DNS Servers to be assigned by the WAN DHCP Server to be used for outbound DNS lookups over the connection. (The DNS Servers are obtained along with the WAN IP address assigned from the DHCP server.) When **Use the following DNS server address(es)** is selected, you may enter custom DNS server addresses for this WAN connection into the **DNS server 1** and **DNS server 2** fields.
Hostname (Optional)	If your service provider's DHCP server requires you to supply a hostname value upon acquiring an IP address, you may enter the value here. If your service provider does not provide you with the value, you can safely bypass this option.

Please refer to Section11.3, 11.4, 11.5, and 11.6 for details about**WAN Health Check,Bandwidth Allowance Monitor, Additional Public IP Settings, and Dynamic DNS Settings** respectively.

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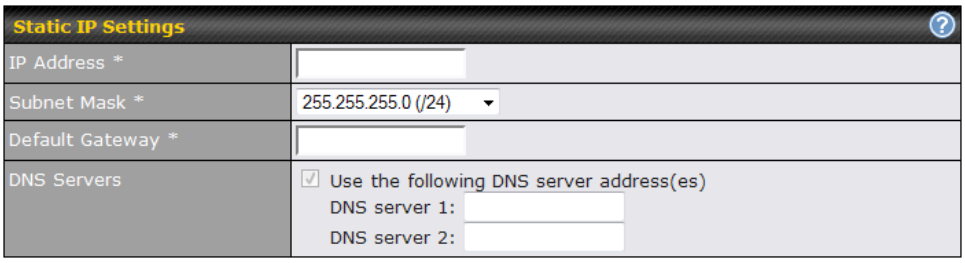
11.1.2 Static IP Connection

The Static IP connection method is suitable if the ISP provides a static IP address to connect directly.



Static IP Settings	
IP Address / Subnet Mask / Default Gateway	These settings specify the information required in order to communicate on the Internet via a fixed Internet IP address. The information is typically determined by and can be obtained from the ISP.
DNS Servers	Each ISP may provide a set of DNS servers for DNS lookups. This field specifies the DNS (Domain Name System) Servers to be used when a DNS lookup is routed through this connection. You can input the ISP provided DNS server addresses into the **DNS server 1** and **DNS server 2** fields. If no address is entered here, this link will not be used for DNS lookups.

Please refer to Section 11.3, 11.4, 11.5, and 11.6 for details about **WAN Health Check, Bandwidth Allowance Monitor, Additional Public IP Settings, and Dynamic DNS Settings** respectively.

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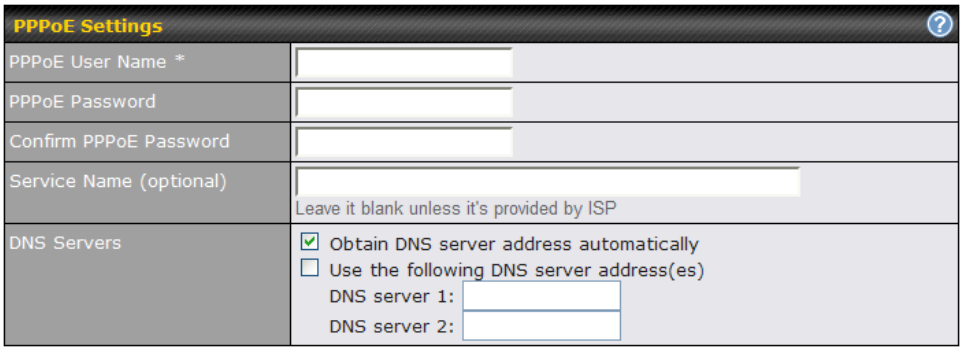
11.1.3 PPPoE Connection

This connection method is suitable if ISP provides login ID/ password to connect via PPPoE.



PPPoE Settings	
PPPoE User Name / Password	Enter the required information in these fields in order to connect via PPPoE to the ISP. The parameter values are determined by and can be obtained from the ISP.
Confirm PPPoE Password	Verify your password by entering it again in this field.
Service Name (Optional)	Service Name is a PPPoE parameter which is provided by the ISP. *Note: Leave this field blank unless it is provided by your ISP.*
DNS Servers	Each ISP may provide a set of DNS servers for DNS lookups. This setting specifies the DNS (Domain Name System) Servers to be used when a DNS lookup is routed through this connection. Selecting **Obtain DNS server address automatically** results in the DNS Servers assigned by the PPPoE server to be used for outbound DNS lookups over the WAN connection. (The DNS Servers are obtained along with the WAN IP address assigned from the PPPoE server.) When **Use the following DNS server address(es)** is selected, you can put custom DNS server addresses for this WAN connection into the **DNS server 1** and **DNS server 2** fields.

Please refer to Section 11.3, 11.4, 11.5, and 11.6 for details about **WAN Health Check, Bandwidth Allowance Monitor, Additional Public IP Settings, and Dynamic DNS Settings** respectively.

Note
PPPoE connection made from a firewall does not work with Drop-in mode.

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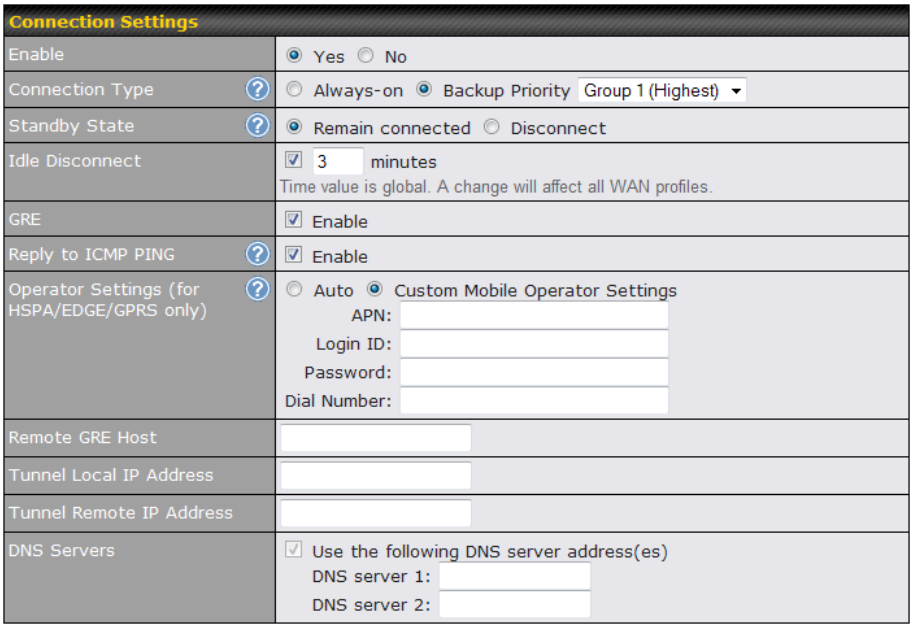
11.1.4 Mobile Internet Connection

The Mobile InternetConnection method is suitable for USB modem mobile connection such as 3G, WiMAX, LTE, EVDO, EDGE, and GPRS, etc. Currently it only applies to USB mobile WAN port. For the list of supported modems, please refer to Peplink Modem Support page: http://www.peplink.com/modem



Connection Settings for Mobile Internet Connection	
Enable	Toggle the radio button to **Yes** to enable the connection.
Connection Type	This setting specifies the utilization of the WAN connection. The selection of **Always-on** results in the WAN connection to be used whenever it is available. If **Backup** is selected, the WAN connection is treated as a backup connection and is used only in the absence of available Always-on WAN. The default and recommended Connection Type is **Always-on**.
Standby State	This option allows you to choose whether to remain the connection connected or disconnect when this WAN connection is no longer in the highest priority and has entered the standby state. When **Remain connected** is chosen, upon bringing up this WAN connection to active, it will be immediately available for use.
Idle Disconnect	With this option enabled, an idle connection will be disconnected after a specified minutes of time. This time value specified is global and will affect all WAN profiles. The mobile connection will re-establish on demand.
Reply to ICMP Ping	If this field is disabled, the WAN connection will not respond to ICMP Ping requests. By default, this is **enabled**.
Operator Settings	This setting applies to 3G / LTE / EDGE / GPRS modem only. It does not apply to EVDO / EVDO Rev. A modem. This allows you to configure the APN settings of your connection. If **Auto** is selected, Peplink Balance will automatically detect the APN, configure the modem, and make connection. You may change the APN settings by selecting **Custom Mobile Operator Settings**.

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	The default and recommended Operator Settings is **Auto**. The correct values can be obtained from your mobile Internet service provider.
SIM PIN (Optional)	This is an optional field which is only needed when there is SIM lock for your SIM card service.
DNS Servers	Each ISP may provide a set of DNS servers for DNS lookups. This field specifies the DNS Servers to be used when a DNS lookup is routed through this connection. You can input the ISP provided DNS server addresses into the **DNS server 1** and **DNS server 2** fields. If no address is entered here, this link will not be used for DNS lookups.

Please refer to Section 11.3, 11.4, 11.5, and 11.6 for details about **WAN Health Check, Bandwidth Allowance Monitor, Additional Public IP Settings, and Dynamic DNS Settings** respectively.

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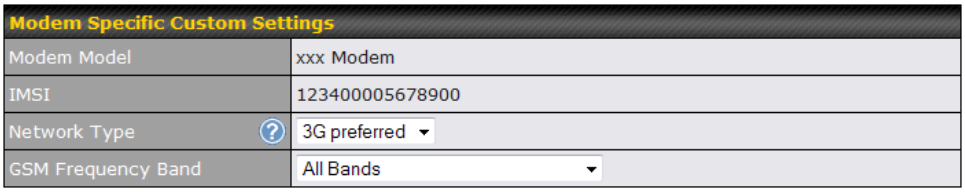
11.1.4.1 Modem Specific Custom Settings

The following settings may be available depending on the modem model. The example below is for a 3G modem.



Modem Specific Custom Settings	
Modem Model	This field displays the Manufacturer name of the connected mobile modem.
IMSI	This field shows the IMSI number associated with the SIM inside the mobile modem.
Network Type	This setting allows you to define your preference of using the 3G and/or 2G networks. 3G networks include HSPA / UMTS; 2G networks include EDGE / GPRS. If **3G only** or **2G only** is chosen, only the HSPA / UMTS or EDGE / GPRS network will be used, respectively. If the chosen network is not available, no other network will be used regardless of its availability. The modem connection will remain offline. If **3G preferred** or **2G preferred** is chosen, the chosen network will be used when it is available. If the chosen network is not available, the other network will be used whenever available. The default Network Type is **3G preferred**.
GSM Frequency Band	This setting allows you to specify which GSM frequency band to be used. GSM1900 is used in United States, Canada, and many other countries in the Americas. GSM900 / GSM1800 / GSM2100 are used in Europe, Middle East, Africa, Asia, Oceania, and Brazil. If All Bands is chosen, the appropriate frequency band will be used automatically. The default GSM Frequency Band is All Bands.

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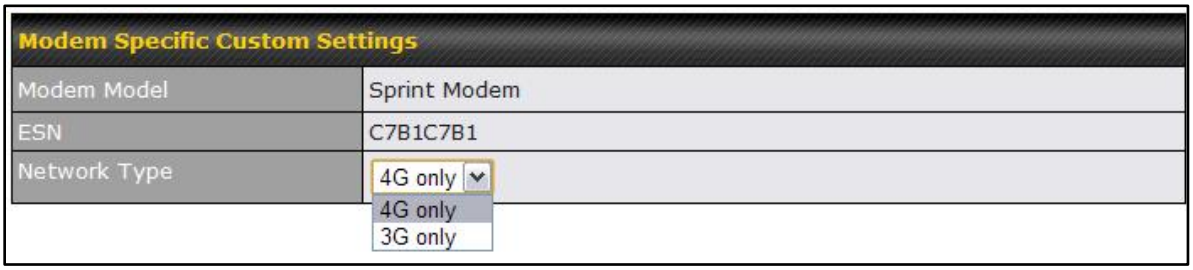
11.1.4.2 WiMAX Settings

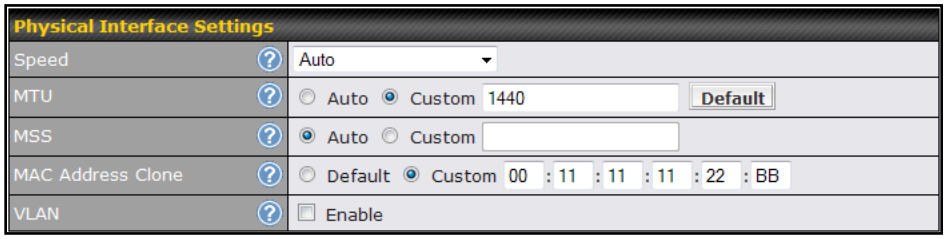
If a WiMAX modem is present in the system, its settings user interface can be accessed at: ***Network > Interfaces > WAN > Mobile Internet***

The example shown here relates to Sprint's WiMAX modems 250U or 600U.



Modem Specific Custom Settings	
Modem Model	The brand of the Modem is automatically detected and appears here.
ESN	The modem's electronic serial number (ESN) is also auto-detected and appears here.
Network Type	This is to specify the Network type e.g. 3G or 4G, to be used with the modem.

11.2 Physical Interface Settings



Physical Interface Settings	
Speed	This setting specifies port speed and duplex configurations of the WAN Port. By default, **Auto** is selected and the appropriate data speed is automatically detected by Peplink Balance. In the event of negotiation issues, the port speed can be manually specified to circumvent the issues. You can also choose whether or not to advertise the speed to the peer by selecting the **Advertise Speed** checkbox.
MTU	This setting specifies the Maximum Transmission Unit. By default, MTU is set to **Custom 1440**. You may adjust the MTU value by editing the text field. Click Default to restore the default MTU value. Select **Auto** and the appropriate MTU value will be automatically detected. The auto-detection will run each time when the WAN connection establishes.

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MSS	This setting should be configured based on the maximum payload size that the local system can handle. The MSS (Maximum Segment Size) is computed from the MTU minus 40 bytes for TCP over IPv4. If MTU is set to Auto, the MSS will also be set automatically. By default, MSS is set to **Auto**.
MAC Address Clone	This setting allows you to configure the MAC address. Some service providers (e.g. cable providers) identify the client's MAC address and require the client to always use the same MAC address to connect to the network. In such cases, change the WAN interface's MAC address to the original client PC's one via this field. The default MAC Address is a unique value assigned at the factory. In most cases, the default value is sufficient. Clicking the **Default** button restores the MAC Address to the default value.
VLAN	Some service providers require the router to enable VLAN tagging for Internet traffic. If it is required by your service provider, you can enable this field and enter the **VLAN ID** that the provider requires. *Note: Leave this field disabled if you are not sure.*

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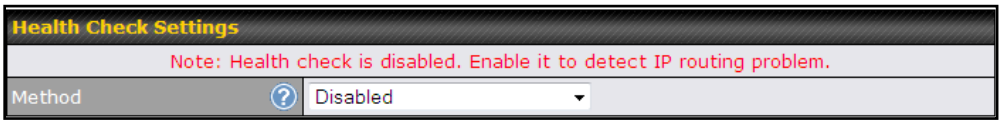
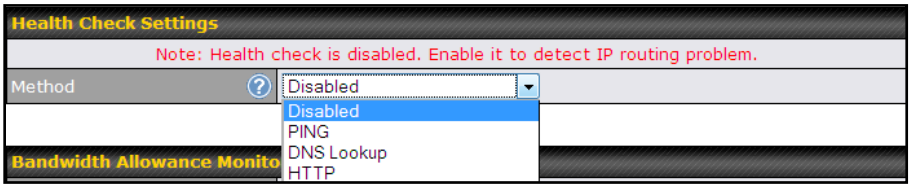
11.3 WAN Health Check

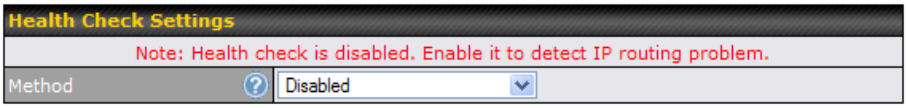
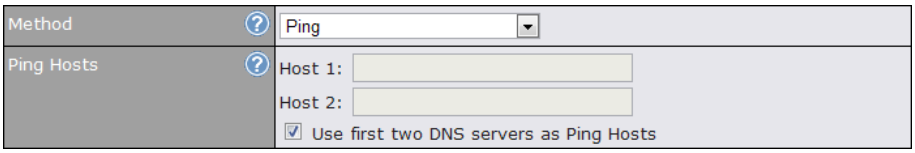
To ensure traffic is routed to healthy WAN connections only, Peplink Balance provides the functionality to periodically check the health of each WAN connection.

The Health Check settings for each WAN connection can be independently configured via ***Network > Interfaces > WAN***>**Health Check Settings**



Enable the Health Check Settings by drop down to PING, DNS Lookup or HTTP



Health Check Settings	
Method	This setting specifies the health check method for the WAN connection. The value of Method can be configured as **Disabled**, **Ping** or **DNS Lookup**. The default method is **DNS Lookup**.For Mobile Internet connection, the value of Method can be configured as **Disabled** or **SmartCheck**.
Health Check Disabled	
 When **Disabled** is chosen in the Method field, the WAN connection will always be considered as up.The connection will **NOT**be treated as down in the event of IP routing errors.	
Health Check Method: Ping	
 The ICMP PING packets will be issued to test the connectivity with a configurable target IP address or host name. A WAN connection is considered as up if PING responses are received from either one or both of the PING Hosts.	
PING Hosts	This setting specifies IP addresses or host names with which connectivity is to be tested via ICMP Ping. If **Use first two DNS servers as Ping Hosts** is checked, the target PING Host will be the first DNS server for the corresponding WAN connection. Reliable PING hosts with a high uptime should be considered. By default, the first two DNS servers of the WAN connection are used as the PING Hosts.
Health Check Method: DNS Lookup	

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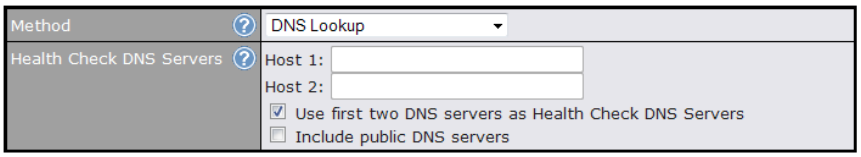
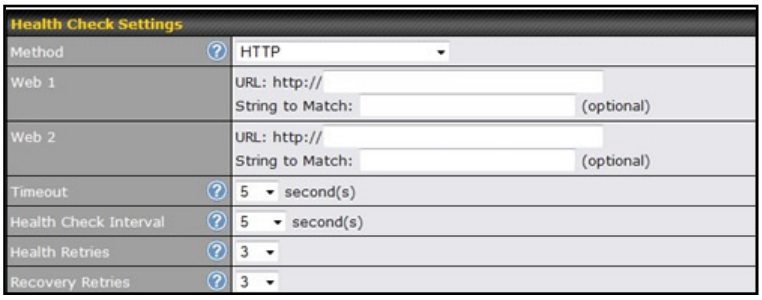


DNS lookups will be issued to test the connectivity with target DNS servers. The connection will be treated as up if DNS responses are received from either one or both of the servers, regardless of whether the result was positive or negative.

Health Check DNS Servers	This field allows you to specify two DNS hosts' IP address with which connectivity is to be tested via DNS Lookup. If **Use first two DNS servers as Health Check DNS Servers** is checked,the first two DNS servers will be the DNS lookup targets for checking a connection's health. If the box is not checked, field Host 1 must be filled and field Host 2 is optional. If the box **Include public DNS servers** is selected and no response is received from all specified DNS servers, DNS lookups will also be issued to some public DNS servers. A WAN connection will be treated as down only if there is also no response received from the public DNS servers. Connections will be considered up if DNS responses are received from any one of the health check DNS servers, regardless of a positive or negative result. By default, the first two DNS servers of the WAN connection are used as the Health Check DNS Servers.

Health Check Method: HTTP



HTTP connections will be issued to test the connectivity with configurable URLs and strings to match.

URL1	**WAN Settings > WAN Edit > Health Check Settings >URL1** The URL will be retrieved when performing an HTTP health check. When String to Match is left blank, a health check will pass if the HTTP return code is between 200 and 299 (Note: HTTP redirection codes 301 or 302 are treated as failures). When String to Match is filled, a health check will pass if the HTTP return code is between 200 and 299 and if the HTTP response content contains the string.
URL 2	**WAN Settings > WAN Edit > Health Check Settings >URL2** If URL2 is also provided, a health check will pass if either one of the tests passed.

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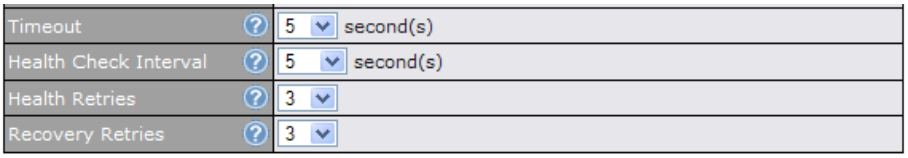
Other Health Check Settings



Timeout	This setting specifies the timeout, in seconds, for ping/DNS lookup requests.Default Timeout is set to **5 seconds**.
Health Check Interval	This setting specifies the time interval, in seconds, between ping or DNS lookup requests. Default Health Check Interval is **5 seconds**.
Health Check Retries	This setting specifies the number of consecutive ping/DNS lookup timeouts after which Peplink Balance is to treat the corresponding WAN connection as down. Default Health Retries is set to **3**. For example, with the default Health Retries setting of 3, after consecutive 3 timeouts, the corresponding WAN connection will be treated as down.
Recovery Retries	This setting specifies the number of consecutive successful ping/DNS lookup responses that must be received before Peplink Balance treats a previously down WAN connection to be up again. By default, Recover Times is set to **3**. For example, a WAN connection that is treated as down will be considered to be up again upon receiving 3 consecutive successful ping/DNS lookup responses.

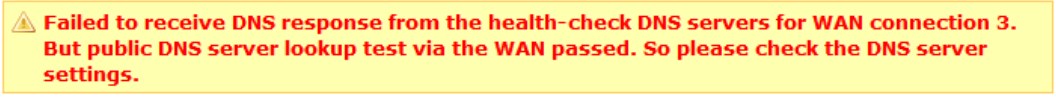
Note

In case a WAN connection goes down, all of the WAN connections with non-Always-on Connection Type will also be brought up until any one of higher priority WAN connections is up and found to be healthy. This design could increase the overall network availability.

For example, if WAN1, WAN2 and WAN3 have the connection types of Always-on, Backup Priority Group 1 and Backup Priority Group 2 respectively, when WAN1 goes down, WAN2 and WAN3 will also try to connect. If WAN3 is connected first, WAN2 will still be kept connecting. If WAN2 is connected, WAN3 will disconnect or abort making connection.

Automatic Public DNS Server Check on DNS Test Failure

In case the health check method is set to DNS Lookup and checks failed, the Balance will automatically perform DNS lookups on some public DNS servers. If the testsare success, it means the WAN may not be down but rather the target DNS server became malfunctioned. You will see the following warning message on the Main page.



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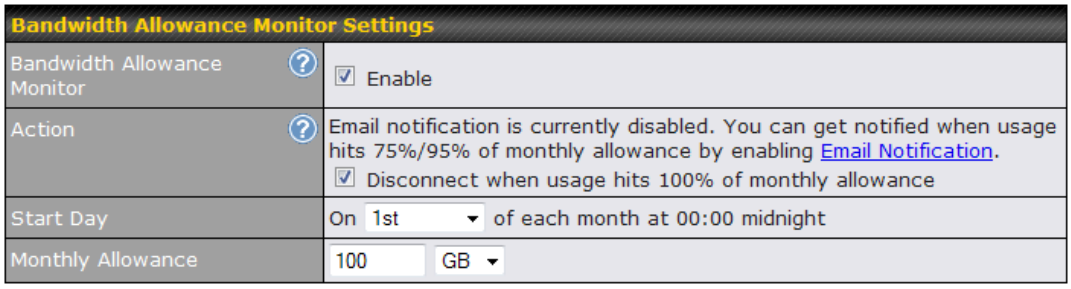
11.4 Bandwidth Allowance Monitor

Bandwidth Allowance Monitor helps keep track of your network usage.Please refer to section 23.8 to view the usage statistics.



Bandwidth Allowance Monitor	
Action	If the feature**Email Notification** is enabled, you will be notified through email when usage hits 75% and 95% of the monthly allowance. If the box **Disconnect when usage hits 100% of monthly allowance** is checked, this WAN connection will be disconnected automatically when the usage hits the monthly allowance. It will not resume connection unless this option has been turned off or the usage has been reset when a new billing cycle starts.
Start Day	This option allows you to define which day in the month each billing cycle begins.
Monthly Allowance	This field is for defining the maximum bandwidth usage allowed for the WAN connection each month.

Disclaimer
Due to different network protocol overheads and conversions, the amount of data as reported by this Peplink device is not representative of actual billable data usage as metered by your network provider. Peplink disclaims any obligation or responsibility for any events arising out of the use of the numbers shown here.

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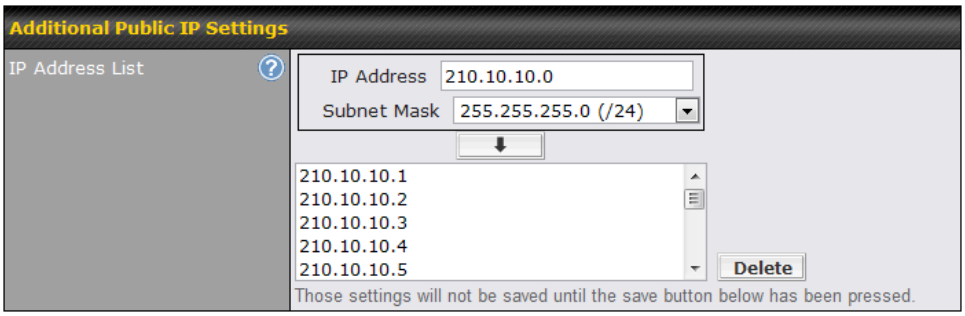
11.5 Additional Public IP Settings



Additional Public IP Settings	
IP Address List	The IP Address List represents the list of fixed Internet IP addresses assigned by the ISP, in the event that more than one Internet IP addresses are assigned to this WAN connection. Enter the fixed Internet IP addresses and the corresponding subnet mask, and then click the **Down Arrow** button to populate IP address entries to the IP Address List.

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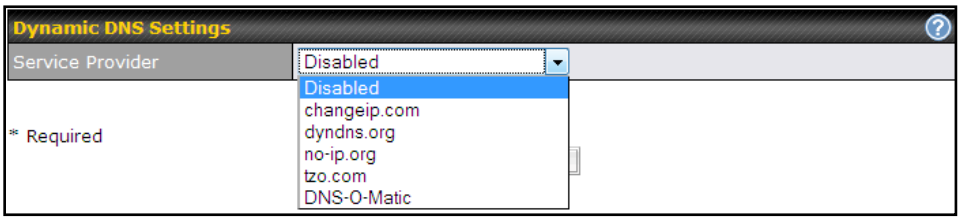
11.6 Dynamic DNS Settings

Peplink Balance provides the functionality to register the domain name relationships to dynamic DNS service providers. Through registration with dynamic DNS service provider(s), the default public Internet IP address of each WAN connection can be associated with a host name. With Dynamic DNS service enabled for a WAN connection, you can connect to your WAN's IP address from the external even if its IP address is dynamic. You have to register for an account from the listed dynamic DNS service providers before enabling this option.

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

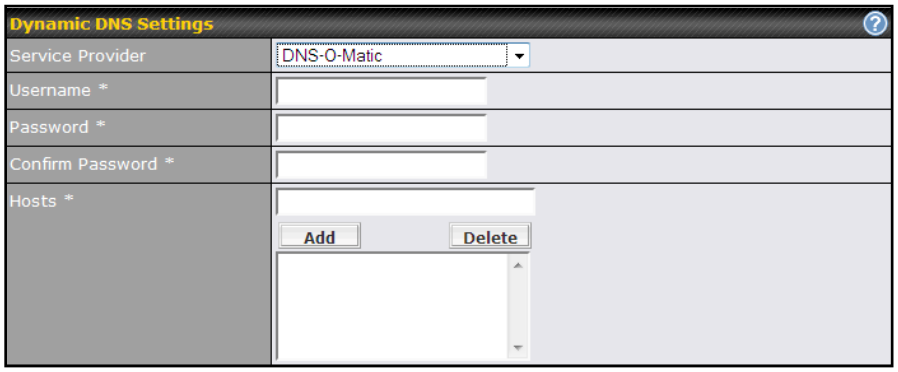
Either upon a change in IP addresses or every 23 days without link reconnection, Peplink Balance will connect to the dynamic DNS service provider to perform an IP address update within the provider's records.

The settings for dynamic DNS service provider(s) and the association of host name(s) are configured via ***Network > Interfaces > WAN Settings > Dynamic DNS Settings***



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

(Note: Peplink is not affiliated with DNS-O-Matic)



Dynamic DNS Settings	
Service Provider	This setting specifies the dynamic DNS service provider to be used for the WAN based on supported dynamic DNS service providers: • changeip.com • dyndns.org • no-ip.org • tzo.com • DNS-O-Matic Select **Disabled** to disable this feature.
User ID / User / Email	This setting specifies the registered user name for the dynamic DNS service.

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Password / Pass / TZO Key	This setting specifies the password for the dynamic DNS service.
Hosts / Domain	This setting specifies a list of hostnames or domains to be associated with the public Internet IP address of the WAN connection.

Important Note

In order to use dynamic DNS services, appropriate hostname registration(s), as well as a valid account with a supported dynamic DNS service provider are required.

A dynamic DNS update is performed whenever a WAN's IP address changed,e.g. IP is changed after a DHCP IP refresh, reconnection, etc.

Due to dynamic DNS service providers' policya dynamic DNS host wouldexpire automatically because the host record was not updated for a long time. ThereforePeplink Balance performs an update every 23 days even if a WAN's IP address did not change.

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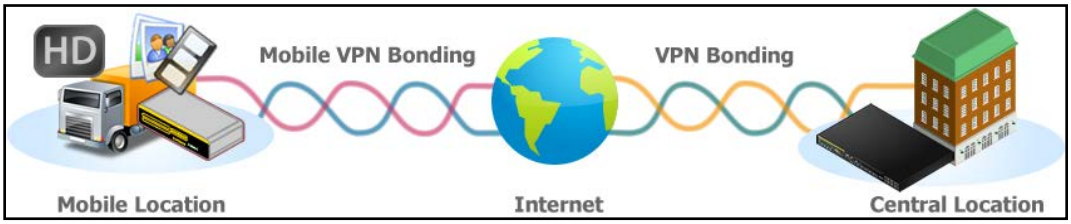
12 Bandwidth Bonding SpeedFusion™

(Available on Peplink Balance 210+)



Peplink BalanceBandwidth Bonding SpeedFusion™functionality securely connectsone or more branch offices to your company's main headquarters or to other branches. The data, voice, or video communications between these locations are kept confidential across the public Internet.

The Bandwidth Bonding SpeedFusion™ of the Peplink Balance is specifically designed for multi-WAN environment. The Peplink Balance canbond all WAN connections' bandwidth for routingSpeedFusion™ traffic. Unless all the WAN connections of one site are down, the Peplink Balance can still maintain VPN up and running.Bandwidth Bonding is enabled by default.

12.1 SpeedFusion™Settings

Peplink Balance 380, 580,710, 1350 and 2500 supportmaking multiple SpeedFusion™connections with a remote Peplink Balance 210, 310, 380, 580, 710, 1350, 2500, or a Pepwave MAX Mobile Router.Peplink Balance 210 and 310 support making two SpeedFusion™connections with a remote Peplink Balance 210, 310, 380, 580, 710, 1350, 2500, or a Pepwave MAX Mobile Router.

Peplink Balance that supports multiple VPN connections can act as a central hub which connects branch offices. For example, branch office A and branch office B make VPN connections to headquarters C, both branch offices' LAN subnet and subnets behind it (i.e. static routes) will also be advertised to the headquarters C and the other branches.So branch office A will be able to access branch office B via headquarters C in this case.

The local LAN subnet and subnets behind the LAN (defined under ***Static Route*** in the LAN settings page) will be advertised to the VPN. All VPN members (branch offices and headquarters) will be able to route to the local subnets.

Note that all LAN subnet and subnets behind it have to be unique. Otherwise, VPN members will not be able to access each other.

All data can be routed over the VPN with 256-bit AES encryption standard.

To configure, navigate to ***Network >SpeedFusion™***

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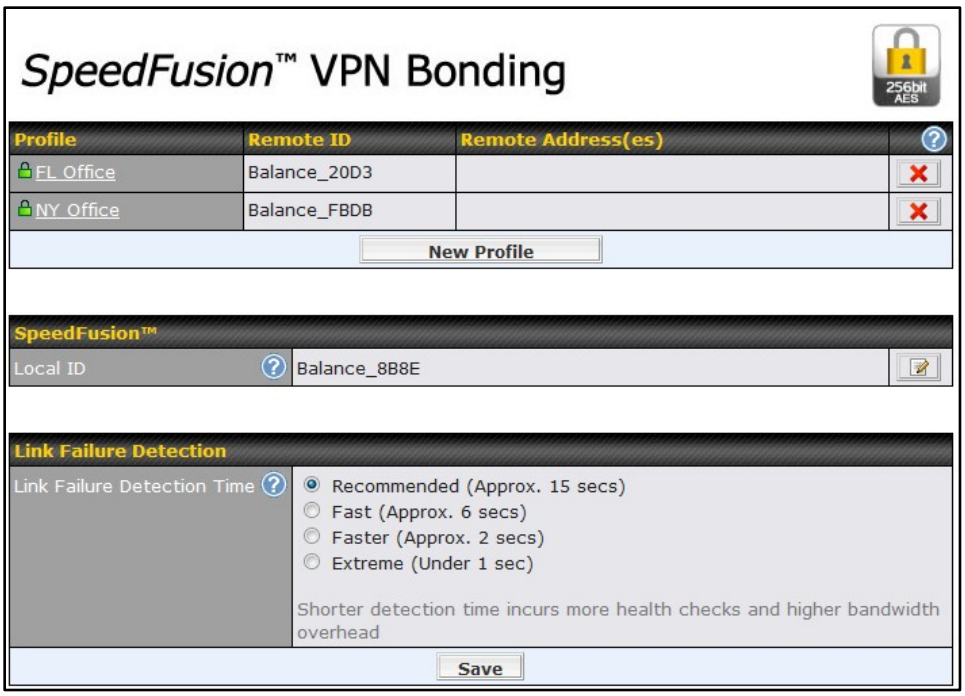
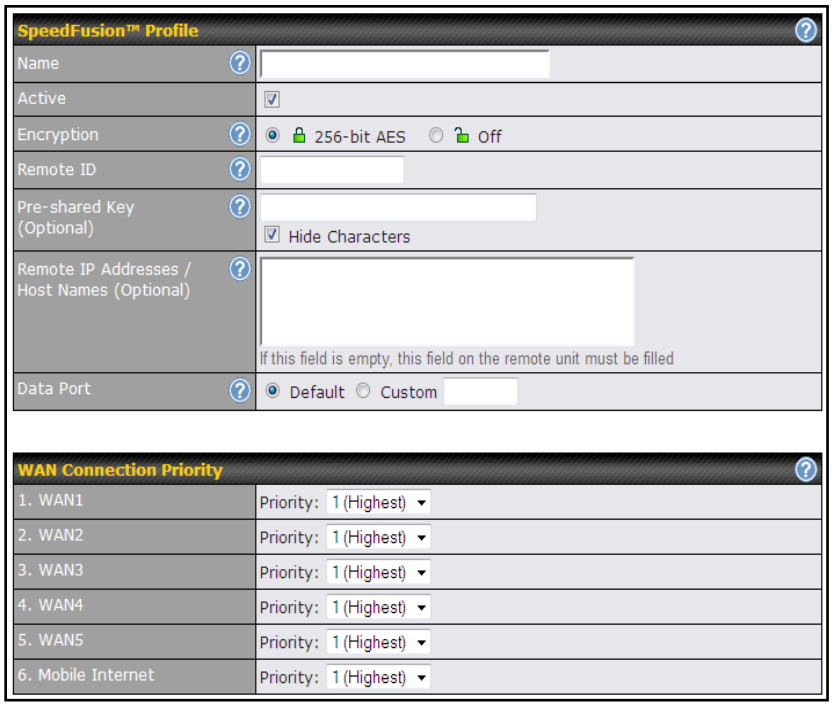


To configure, navigate to ***Network >SpeedFusion™>New Profile***

This will open a page similar to the one as shown below



A list of defined**SpeedFusion™Connection** profiles and **Link Failure Detection Time** option will be shown. Click the **New Profile** button to create a new VPN connection profile for making VPN connection to a remote Peplink Balance via the available WAN connections.Each profile is for making VPN connection with one remote Peplink Balance

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VPN Settings	
VPN Connection Name	This field is for specifying a name to represent this profile. The name can be any combination of alphanumeric characters (0-9, A-Z, a-z), underscore (_), dash (-), and/or non-leading/trailing spaces ( ).
Active	When this box is checked, this VPN connection profilewill be enabled. Otherwise, it will be disabled.
Encryption	By default, VPN traffic is encrypted with **256-bit AES standard**. If the option **Off** is selected on both sides of a VPN connection, no encryption will be applied.
Peer Serial Number	Peplink Balance only establishes VPN connection with a remote peer that has a serial number specified here. If the remote peer is in high availability setup, you can check the box "**Remote client is set up in high availability mode"**and enter the second unit's serial number into the second text box.
Pre-shared Key	This is an optional field which defines the pre-shared key used for this particular VPN connection. The VPN connection's session key will be further protected by the factor of the pre-shared key. The connection will be up only if the pre-shared keys on each side match. When the peer is running firmware 5.0 or 5.1, this setting will be ignored.
Peer IP Addresses / Host Names (Optional)	Enter the remote peer's WAN IP address(es) or host name(s) here. Dynamic-DNS host names are accepted. This field is optional. With this field filled, the Peplink Balance will initiate connection to each of the remote IP addressesuntil success. If the field is empty, the Peplink Balance will wait for connection from the remote peer. Therefore, at least one side of the two VPN peers has to have this field filled. Otherwise, VPN connection cannot be established. Enter one IP address or host name per line.
Layer 2 Bridging	When this check box is unchecked, traffic between local and remote networks will be IP forwarded. To bridge the Ethernet network of an Ethernet port on a local and remote network, select this check box. When this check box is selected, the two networks will become a single LAN, and any broadcast (e.g., ARP requests) or multicast traffic (e.g., Bonjour) will be sent over the VPN.
Bridge Port	This field specifies the port to be bridged to the remote site. If you choose WAN Port that WAN will be disabled for WAN purposes. Instead, the WAN port will be dedicated to bridging with the remote site. The LAN port will remain unchanged.
VLAN Tagging	This field specifies the VLAN ID with which the VPN's traffic should be tagged before sending the traffic to the bridge port. If no VLAN tagging is needed, select No VLAN. To define a new VLAN ID, click New... and input the VLAN ID. VLAN IDs that are not referenced by any VPN profiles will be removed from the list automatically. Default: No VLAN
STP	Checking this box enables Spanning Tree Protocol. Default: Unchecked.

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Preserve LAN Settings Upon Connected	The LAN port is chosen as the bridge port. Selecting this option preserves LAN settings (e.g., LAN port IP address, DHCP server, etc.) when the Layer 2 VPN is connected. Uncheck this option if the LAN IP address and gateway will use remote LAN settings. Check this option if the LAN IP address and local DHCP server should remain unchanged after the VPN is up. If you choose not to preserve LAN settings when the VPN is connected, the device will not act as a router, and most Layer 3 routing functions will cease to work.

WAN Connection Priority	
WAN Connection Priority	You can specify the priority of the WAN connections to be used in making VPN bonding connections. A Wan connection will never be used when OFF is selected. Only available WAN connections with the highest priority will be utilized.

Link Failure Detection	
Link Failure Detection Time	The bonded VPN can detect routing failures on the path between two sites over each WAN connection. Failed WAN connections will not be used to route VPN traffic. Health check packets are sent to the remote unit to detect any failure. The more frequent checks it sends, the shorter detection time, but the higher bandwidth overhead will be consumed. When Recommended is selected, a health check packet is sent out every 5 seconds, and the expected detection time is 15 seconds. When Fast is selected, a health check packet is sent out every 3 seconds, and the expected detection time is 6 seconds. When Faster is selected, a health check packet is sent out every 1 second, and the expected detection time is 2 seconds. When Extreme is selected, a health check packet is sent out every 0.1 second, and the expected detection time is under 1 second. By default, Recommended is selected.

Important Note to Users Upgrading to Firmware 5.4
The Bandwidth Bonding SpeedFusion™ in firmware 5.4recommendsthe same firmware version for all devices in the VPN network. The feature is backwards compatible with firmware version 5.3&5.2.

Important Note
Peplink proprietary SpeedFusion™ used TCP port 32015 and UDP port 4500 for establishing VPN connections. If you have a firewall in front of the Peplink Balance devices, you will need to add firewall rules for these port and protocols which will allow inbound and outbound traffic pass-through the firewall.

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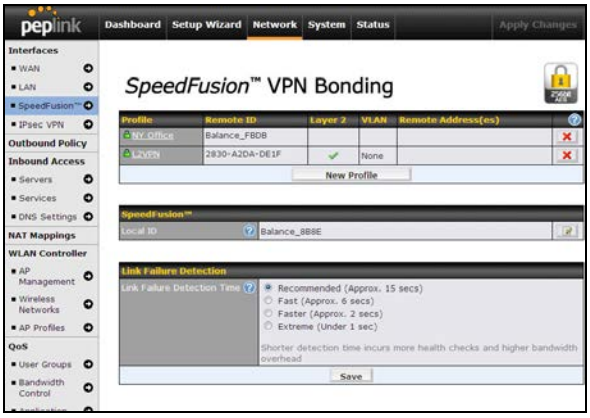
Tip

Watch a video walkthrough of setting up a SpeedFusion™ on our YouTube Channel for a video tutorial!



http://youtu.be/xNaq13FWu_g

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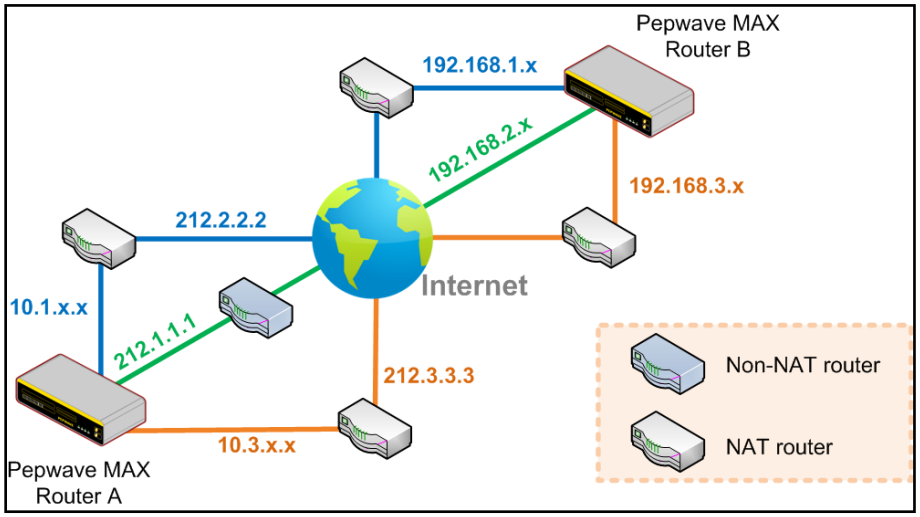
12.2 Peplink Balance Behind NAT Router

The Peplink Balance supports establishing SpeedFusion™ over WAN connections which are behind a NAT (Network Address Translation) router.

To be able for a WAN connection behind a NAT router to accept VPN connections, you can configure the NAT router in front of the WAN connection to inbound port forward TCP port 32015 to the Peplink Balance.

If one or more WAN connections on **Unit A** can accept VPN connections (by means of port forwarding or not) while none of the WAN connections on the peer **Unit B** can do so, you should put all public IP addresses or host names of the **Unit A** to the **Unit B**'s **RemoteIP Addresses / Host Names**field. Leave the field in **Unit A** blank. With such setting, SpeedFusion™connection can be set up and all WAN connections on both sides will be utilized.

For example, see the following diagram:



One of the WANs of Balance A is non-NAT'd (*212.1.1.1*). The rest of the WANs on Balance A and all WANs on Balance B are NAT'd. In such case, the **Peer IP Addresses / Host Names** field in Balance B should be filled with all of the Balance A's host names or public IP addresses (i.e. *212.1.1.1, 212.2.2.2* and *212.3.3.3*), and the field in Balance A can be left blank. The two NAT routers on WAN1 and WAN3 of Balance A should inbound port forward TCP port 32015 to the Balance A so that all WANs would be utilized to establish VPN.

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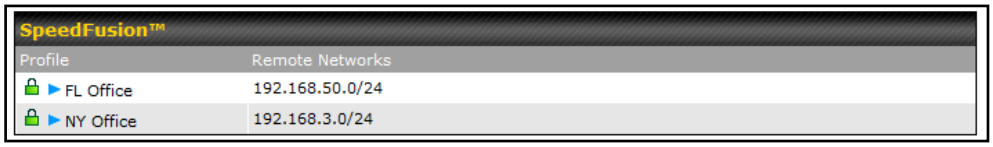
12.3 SpeedFusion™ Status

SpeedFusion™ Status is shown in the ***Dashboard***. The connection status of each connection profile is shownas below.

SpeedFusion™ connection status is also shown on the LCD panel of Peplink Balance 380, 580, 710, 1350 and 2500.

By clicking the **Details** button at the top-right hand corner of SpeedFusion™ table, you will be forwarded to ***Status >SpeedFusion™***. You can view the subnet and WAN connection information of each VPN peer.Please refer to section 23.6for details.



IP subnets must be unique among VPN peers

The entire inter-connected SpeedFusion™ network is one single non-NAT IP network. No two subnets in two sites shall be duplicated. Otherwise, connectivity problems will be experienced in accessing those subnets.

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13 IPsec VPN

Peplink Balance IPsec VPN functionality securely connects one or more branch offices to your company's main headquarters or to other branches. The data, voice, or video communications between these locations are thus kept safe and confidential across the public Internet.

The IPsec VPN of the Peplink Balance is especially designed for a multi-WAN environment. For instance, a user sets up multiple IPsec profiles for his multi- WAN1 ~ WAN3 environment, if WAN1 is connected and its health check turns up good, the IPsec traffic will go through this link. However, should unforeseen problems (e.g. physically unplugged or ISP problems) arise and cause WAN1 to go down, our IPsec implementation will make use of WAN2 and WAN3 accordingly, as failover purposes.

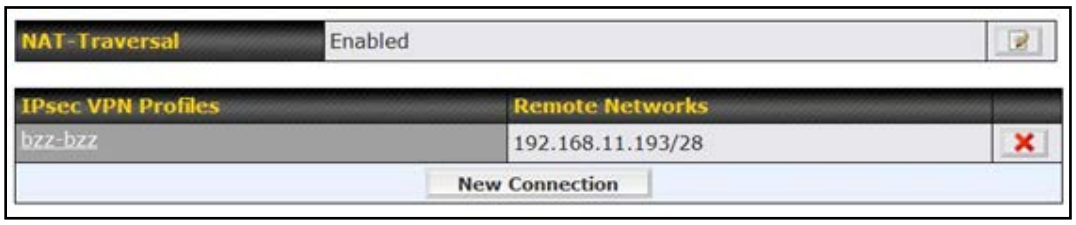
13.1 IPsec VPN Settings

All of our Peplink products can makemultiple IPsec VPN connections with Peplink as well as Cisco or Juniper Routers.

Note that all LAN subnet and subnets behind it have to be unique. Otherwise, VPN members will not be able to access each other.

All data can be routed over the VPN with a selection of encryption standards such as 3DES, AES-128 and AES-256.

To configure, navigate to ***Network >IPsec VPN:***



A **NAT-Traversal** option and list of defined**IPsecVPN**profiles will be shown.

The NAT-Traversal option should be enabled if your system is behind a NAT router.

Click the **NewConnection** button to create new IPsec VPN profiles that make VPN connections to remote Peplink Balance, Cisco or Juniper Routers via the available WAN connections. To edit any of the profiles, click on its associated connection name in the leftmost column.

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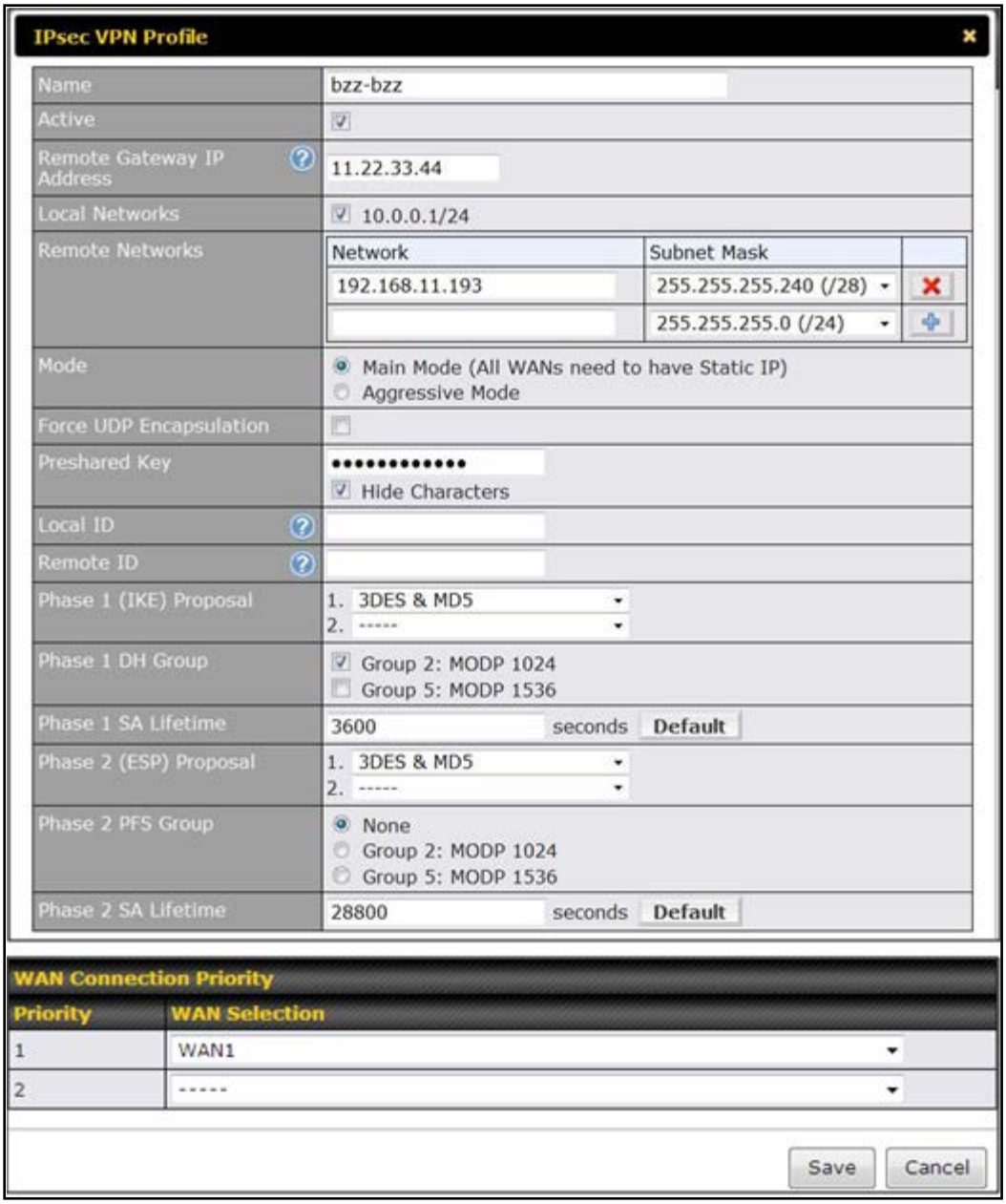

IPsec VPN Settings	
Name	This field is for specifying a local name to represent this connection profile.
Active	When this box is checked, this IPsec VPN connection profile will be enabled. Otherwise, it will be disabled.
Remote Gateway IP Address	Enter the remote peer's public IP address.For Aggressive Mode, this is optional.
Local Networks	Enter the local LAN subnets here. If you have defined "static routes", they will be shown here too.

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Remote Networks	Enter the LAN and subnets that are located at the remote site here.
Main Mode	Choose this Main Mode if both IPsec peers use static IP addresses.
Aggressive Mode	Choose this Aggressive Mode if one of the IPsec peers use dynamic IP addresses.
Force UDP Encapsulation	For UDP encapsulation to be forced regardless of the NAT-Traversal, tick this checkbox.
Pre-shared Key	This defines the peer authentication pre-shared key to be used to authenticate this VPN connection. The connection will be up only if the pre-shared keys on each side match.
Local ID	Under Main Mode, this field can be left blank. Under Aggressive Mode, if Remote Gateway IP Address field is filled on this end and the peer end, this field can be left blank. Otherwise, this field is typically a U-FQDN.
Remote ID	Under Main Mode, this field can be left blank. Under Aggressive Mode, if Remote Gateway IP Address field is filled on this end and the peer end, this field can be left blank. Otherwise, this field is typically a U-FQDN.
Phase 1 (IKE) Proposal	Under Main Mode, this allows the setting of up to 6 encryption standards, in descending order of priority, to be used in the initial connection key negotiations. For Aggressive Mode, only one selection is permitted.
Phase 1 DH Group	This is the Diffie-Hellman group used within IKE. This allows two parties to establish a shared secret over an insecure communications channel. The larger the group number, the higher the security. Group 2 - 1024-bit is the default value. Group 5 - 1536-bit is the alternative option.
Phase 1 SA Lifetime	This setting specifies the lifetime limit of this Phase 1 Security Association. By default, it is set at 3600 seconds.
Phase 2 (ESP) Proposal	Under Main Mode, this allows the setting of up to 6 encryption standards, in descending order of priority, to be used for the IP data that is being transferred. For Aggressive Mode, only one selection is permitted.
Phase 2 PFS Group	The Perfect Forward Secrecy (PFS) ensures that if a key was compromised, the attacker will be able to access only the data protected by that key but not any other data. None - Do not request for PFS when initiating connection. However, since there is no valid reason to refuse PFS, the system will allow the connection to use PFS if requested by the remote peer. This is the default value. Group 2 - 1024-bit Diffie-Hellman group. The larger the group number, the higher the security. Group 5 - 1536-bit is the third option.
Phase 2 SA Lifetime	This setting specifies the lifetime limit of this Phase 2 Security Association. By default, it is set at 28800 seconds.

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13.2 IPsec Status

IPsec Status shows the current connection status ofeach connection profile and is displayed in ***Status > IPsec.***

14 Management of Outbound Traffic to WAN

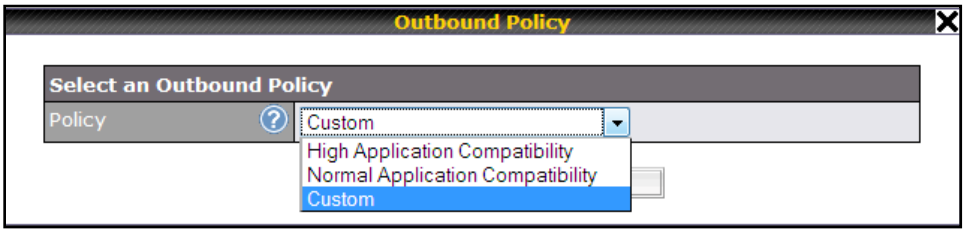
Peplink Balance provides the functionality to flexibly manage and load balance outbound traffic among the WAN connections.

1. Important Note
Outbound Policy is applied only when more than one WAN connection is active.

The settings for managing and load balancing outbound traffic are located in ***Network> Outbound Policy***:

The outbound policy for managing and load balancing outbound traffic policy are located at

Network > Outbound Policy>Click on



14.1 Outbound Policy

There are three main selections for the Outbound Traffic Policy of Peplink Balance:

- High Application Compatibility
- Normal Application Compatibility
- Custom

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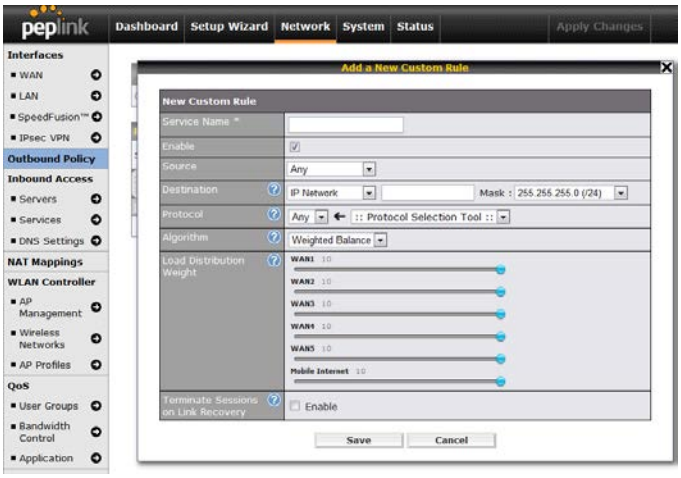
The selections are explained as follows:

Outbound Policy Settings	
High Application Compatibility	With the selection of this policy, outbound traffic from a source LAN device is routed through the same WAN connection regardless of the destination Internet IP address and protocol. This provides the highest application compatibility.
Normal Application Compatibility	With the selection of this policy, outbound traffic from a source LAN device to the same destination Internet IP address will persistently be routed through the same WAN connection regardless of protocol. This provides high compatibility to most applications, and users still benefit from WAN link load balancing when multiple Internet servers are accessed.
Custom	With the selection of this policy, outbound traffic behavior can be managed by defining custom rules. Rules can be defined in a custom rule table. A default rule can be defined for connections that cannot be matched with any one of the rules.

The default policy is **Normal Application Compatibility**.

Tip

Want to know more about how-to create outbound rules? Visit our YouTube Channel for a video tutorial!



http://youtu.be/rKH4AS_bQnE

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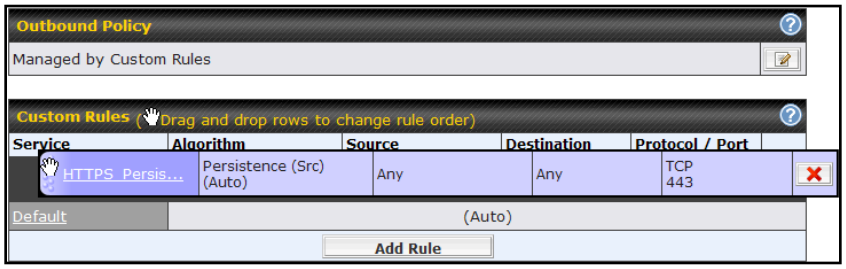
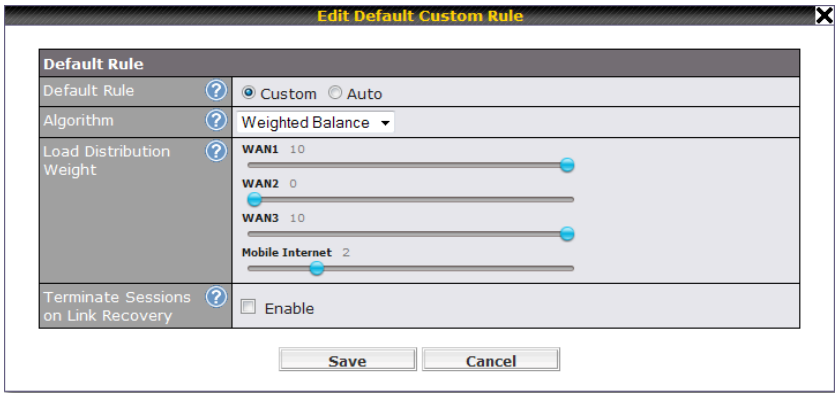
14.2 Custom Rules for Outbound Policy

Click in the Outbound Policy form.Choose **Custom** and press the **Save**button.The followingscreen will then be displayed.



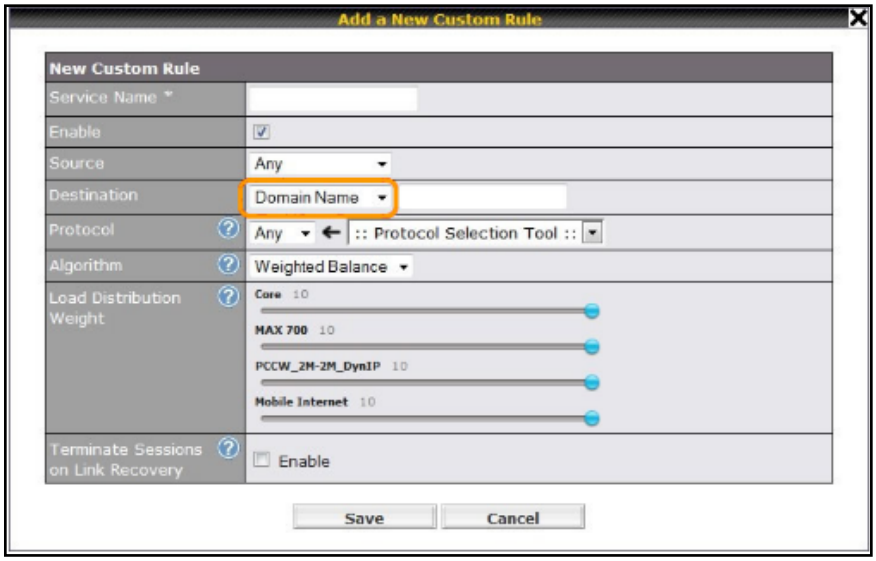
The bottom-most rule is **Default**. Edit this rule to change the device's default way to control outbound traffic for all connections that does not match any rules above it. Click on the service name **Default**to change its settings.

You may drag and drop a row to rearrange the priority of outbound rules.



By default, **Auto** is selected for the option **Default Rule**. You can select **Custom** in order to change the Algorithm to be used. Please refer to the upcoming sections for the details of the available algorithms.

To create a custom rule, click **Add Rule** at the bottom of the table, and the following window will be displayed:



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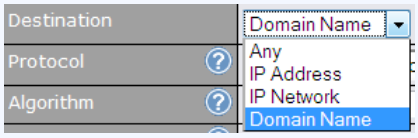
New Custom Rule Settings	
Service Name	This setting specifies the name of the outbound traffic rule.
Enable	This setting specifies whether the outbound traffic rule takes effect. With an Enable value of **Yes**, the rule takes effect: traffic is matched, and actions are taken,by Peplink Balance based on the other parameters of the rule. With an Enable value of **No**, the rule does not take effect: PeplinkBalance disregards the other parameters of the rule.
Source	This setting specifies the source IP Address, IP Network or MAC Address for traffic that matches the rule.
Destination	This setting specifies the destination IP Address or IP Network or Domain Name for traffic that matches the rule.  If Domain Name is chosen and a domain name, such as foobar.com, is entered, any outgoing accesses to *foobar.com* and **.foobar.com* will match this criterion. You may enter a wildcard (.*) at the end of a domain name to match any host with a name having the domain name in the middle. If you enter *foobar.*,* for example, then *www.foobar.com*, *www.foobar.co.jp*, or foobar.co.uk will also match. Placing wildcards in any other position is not supported. NOTE: if a server has one Internet IP address and multiple server names, and if one of the names is defined here, then accesses to any one of the server names will also match this rule.
Protocol and Port	This setting specifies the IP Protocol and Port of traffic that matches this rule. You may select some common protocol from the Protocol Selection Tool drop-down menu.
Algorithm	This setting specifies the behavior of Peplink Balance for the custom rule. One of the following values can be selected: • Weighted Balance • Persistence • Enforced • Priority • Overflow • Least Used (not applicable to Balance 20/30) • Lowest Latency (not applicable to Balance 20/30) The upcoming sections present the details of the listed algorithms.
Terminate Sessions on Link Recovery	This setting specifies whether to terminate existing IP sessions on a less preferred WAN connection in the event that a more preferred WAN connection is recovered. This setting is applicable to the Algorithms: **Weighted,Persistence** and **Priority**. By default, this is disabled. In this case, all existing IP sessions will not be terminated or affected when any other WAN connection is recovered. If it is set to enabled, existing IP sessions may be terminated when another WAN connection is recovered such that only the preferred healthy WAN connection(s) are used at any point in time.

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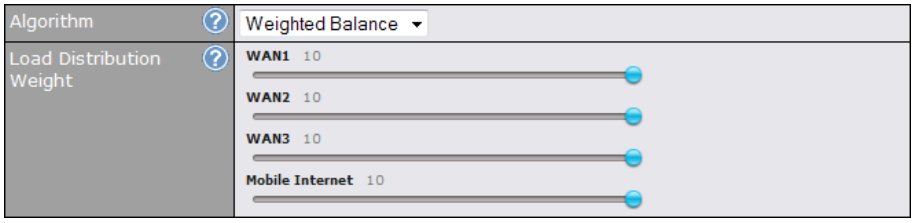
14.2.1 Algorithm: Weighted Balance

This setting specifies the ratio of WAN connection usage to be applied on the specified IP Protocol & Port, and is applicable only when Algorithm is set to **Weighted Balance**.



The amount of matching traffic that is distributed to a WAN connection is proportional to the weight of WAN connection relative to the total weight. Use the sliders to change each WAN's weight.

Example:With the following weight settings on a Peplink Balance 310:

- WAN1: 10
- WAN2: 10
- WAN3: 5

Total weight is 25 = (10 + 10 + 5)

Matching traffic distributed to WAN1 is 40% = (10 / 25) x 100%

Matching traffic distributed to WAN2 is 40% = (10 / 25) x 100%

Matching traffic distributed to WAN3 is 20% = (5 / 25) x 100%

14.2.2 Algorithm: Persistence

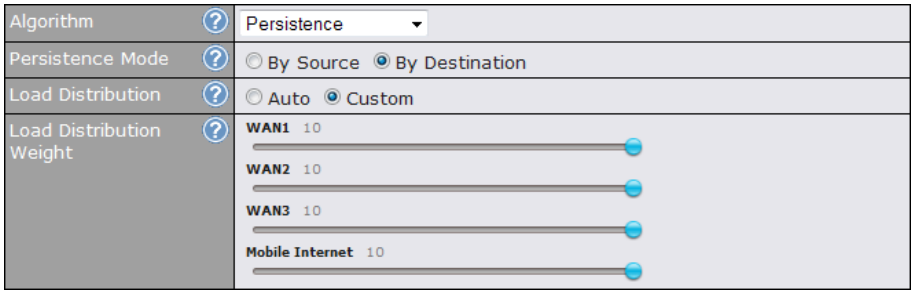
The configuration of Persistent Services is the solution to the few situations where link load distribution for Internet services is undesirable.

For example, many e-banking and other secure websites, for security reasons, terminate the session when the client computer's Internet IP address changes mid-session.

In general, different Internet IP addresses represent different computers. The security concern is that an IP address change during a session may be the result of an unauthorized intrusion attempt. Therefore, to prevent damages from the potential intrusion, the session is terminated upon the detection of an IP address change.

Peplink Balance can be configured to distribute data traffic across multiple WAN connections. Also, the Internet IP depends on the WAN connections over which communication actually takes place. As a result, a LAN client computer behind Peplink Balance may communicate using multiple Internet IP addresses. For example, a LAN client computer behind a Peplink Balance 310 with three WAN connections may communicate on the Internet using three different IP addresses.

With the Persistency feature of PeplinkBalance, rules can be configured to enable client computers to persistently utilize the same WAN connections for e-banking and other secure websites. As a result, a client computer will communicate using one IP address and eliminate the issues.



There are two Persistent Modes. One is**by source** and the other **by destination**.

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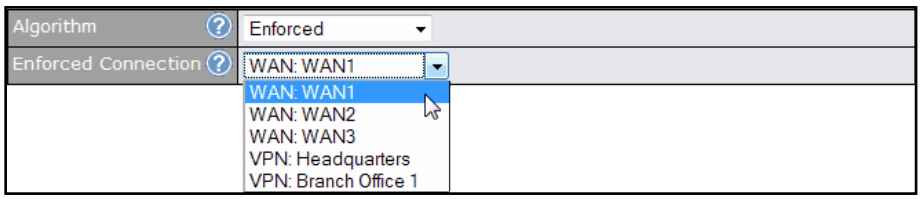
By Source:	The same WAN connection will be used for traffic matching the rule and originating from the same machine regardless of its destination. This option will provide the highest level of application compatibility.
By Destination:	The same WAN connection will be used for traffic matching the rule, originating from the same machine, and going to the same destination. This option can better distribute load to WAN connections when there are only a few client machines.

The default Mode is **By Source**.

When there are multiple client requests, they can be distributed (persistently) to WAN connections with a weight. If you choose **Auto**in **Load Distribution**, the weights will be automatically adjusted according to each WAN's **DownloadBandwidth** which is specified in the WAN settings page (see Section11Configuration of WAN Interface(s)). If you choose**Custom**, you can customize the weight of each WAN manually by using the sliders.

14.2.3 Algorithm: Enforced

This setting specifies the WAN connection usage to be applied on the specified IP Protocol & Port, and is applicable only when theAlgorithm is set to**Enforced**.

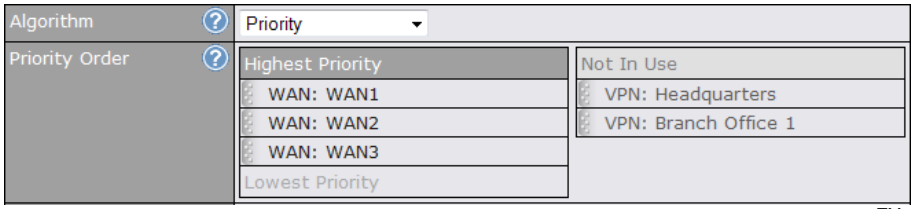


Matching traffic will be routed through the specified WAN connection regardless of health check status of the WAN connection.

Starting from firmware 5.2, outbound traffic can be enforced to go through a specifiedSpeedFusion™ connection. **(Available on Peplink Balance 210+)**

14.2.4 Algorithm: Priority

This setting specifies the priority of the WAN connections to be utilized to route the specified network service. The highest priority WAN connection available will always be used for routing the specified type of traffic. A lower priority WAN connection will be used only when all higher priority connections have become unavailable.



Starting from firmware 5.2, outbound traffic can be prioritized to go through SpeedFusion™connection(s). By default, VPN connections are not included in the priority list. **(Available on Peplink Balance 210+)**

Tip
Configure multiple distribution rules to accommodate different kinds of services.

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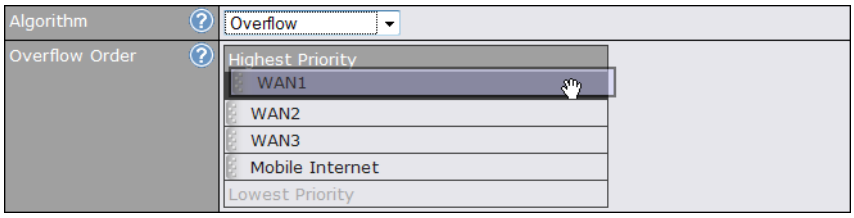
14.2.5 Algorithm: Overflow

The traffic matching this rule will be routed through the healthy WAN connection that has the highest priority and is not in full load. When this connection gets saturated, new sessions will be routed to the next healthy WAN connection that is not in full load.



Drag and drop to specify the order of WAN connections to be used for routing traffic. Only the highest priority healthy connection that is not in full load will be utilized.

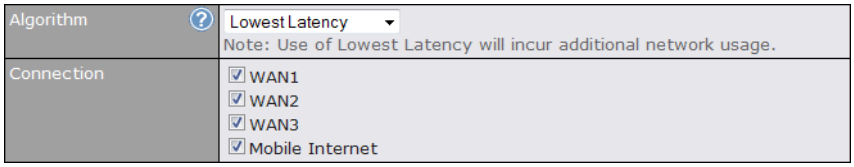
14.2.6 Algorithm: Least Used

(Available on Peplink Balance 210+)

The traffic matching this rule will be routed through the healthy WAN connection that is selected in the field **Connection**and has the most available download bandwidth. The available download bandwidth of a WAN connection is calculated from the total download bandwidth specified in the WAN settings page and the current download usage. The available bandwidth and WAN selection is determined every time when an IP session is made.

14.2.7 Algorithm: Lowest Latency

(Available on Peplink Balance 210+)



The traffic matching this rule will be routed through the healthy WAN connection that is selected in the field *Connection* and has the lowest latency. Latency checking packets are issued periodically to a nearby router of each WAN connection to determine its latency value. The latency of a WAN is the packet round trip time of the WAN connection. Additional network usage may be incurred as a result.

Tip

The round trip time of a “6M down /640k up”linkcan be higher than that of a “2M down /2M up” link. It isbecause the overall round trip time is lengthened by its slowerupload bandwidth despite of its higher downlink speed. Therefore this algorithm isgood for two scenarios:

- All WAN connections are symmetric; or
- A latency sensitive application requires to be routed through the lowestlatency WANregardless the WAN’s available bandwidth.

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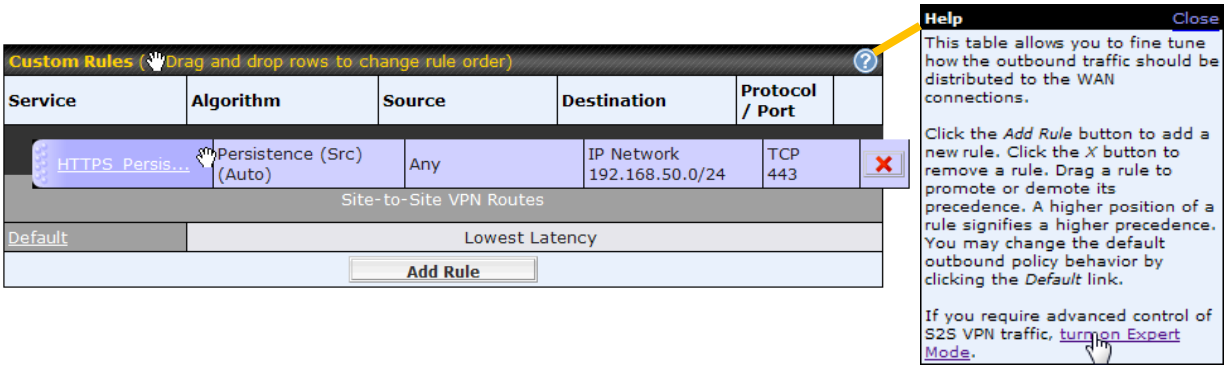
14.2.8 Expert Mode

Expert Mode is available for advance users.To enable the feature, click on the help test balloon and click the link **turn on Expert Mode**.

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

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



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15 Inbound Access

Inbound Access is also known as inbound port address translation. On NAT WAN connection, all inbound traffic to the server behind Peplink unit requires Inbound Access rules.

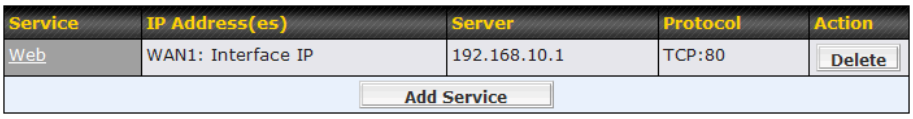
By the custom definition of servers and services for inbound access,Internet users can access the servers behind PeplinkBalance. Advanced configurations allow inbound access to be distributed among multiple servers on the LAN.

Important Note
Inbound Access applies only to WAN connections that operate under NAT mode. For WAN connections that operate under drop-in mode or IP forwarding, inbound traffic is forwarded to the LAN by default.

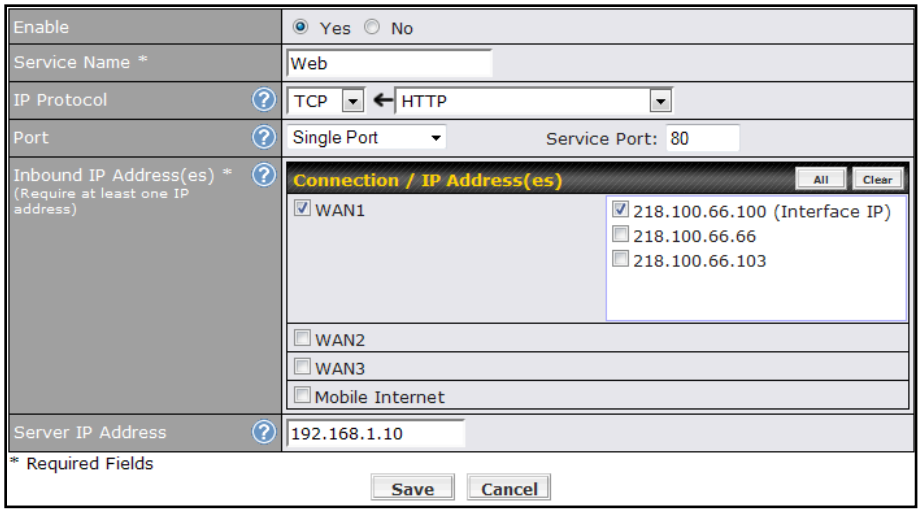
15.1 Definition of Port Forwarding

(Available on Peplink Balance 20/30)

Inbound Port Forwarding rules are defined at: ***Network > Inbound Access >Port Forwarding***



To define a new service, click the **Add Service** button upon which the following appears:



Port Forwarding Settings	
Enable	This setting specifies whether the Inbound Service takes effect. With an Enable value of **Yes**, the inbound service takes effect: traffic is matched, and actions are taken by Peplink Balance based on the other parameters of the rule. With an Enable value of **No**, the inbound service does not take effect: Peplink Balance disregards the other parameters of the rule.
Service Name	This setting identifies the service to the System Administrator. Valid values for this setting consist only of alphanumeric and the underscore "_" characters.

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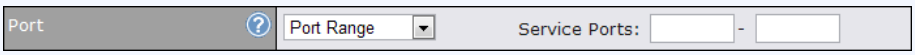
IP Protocol	The IP Protocol setting, along with the Port setting, specifies the protocol of the service as TCP, UDP, ICMP or IP. Traffic that is received by Peplink Balance via the specified protocol at the specified port(s) is forwarded to the LAN hosts specified by the Servers setting. (Please refer below for details on the Port and Servers settings.) Alternatively, the **Protocol Selection Tool** drop-down menu can be used to automatically fill in the Protocol and a single Port number of common Internet services (e.g. HTTP, HTTPS, etc.) After selecting an item from the **Protocol Selection Tool** drop-down menu, the Protocol and Port number remains manually modifiable.
Port	The Port setting specifies the port(s) that correspond to the service, and can be configured to behave in one of the following manners: **Any Port, Single Port, Port Range, Port Map and Range Mapping** **Any Port**: all traffic that is received by Peplink Balance via the specified protocol is forwarded to the servers specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Any Port**, all TCP traffic is forwarded to the configured servers. **Single Port**: traffic that is received by Peplink Balance via the specified protocol at the specified port is forwarded via the same port to the servers specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Single Port** and **Service Port** 80, TCP traffic received on Port 80 is forwarded to the configured servers via Port 80.  **Port Range**: traffic that is received by Peplink Balance via the specified protocol at the specified port range is forwarded via the same respective ports to the LAN hosts specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Port Range** and **Service Port** 80-88, TCP traffic received on ports 80 through 88 is forwarded to the configured servers via the respective ports. **Port Mapping**: traffic that is received by Peplink Balance via the specified protocol at the specified port is forwarded via a different port to the servers specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Port Mapping**, **Service Port** 80, and **Map to Port** 88, TCP traffic on Port 80 is forwarded to the configured servers via Port 88. (Please see below for details on the Servers setting.) **Range Mapping**: traffic that is received by Peplink Balance via the specified protocol at the specified port range is forwarded via a different port to the servers specified by the Servers setting.
Inbound IP Address(es)	This setting specifies the WAN connections and Internet IP address(es) from which the service can be accessed.
Server IP Address	This setting specifies the LAN IP address of the server that handles the requests for the service.

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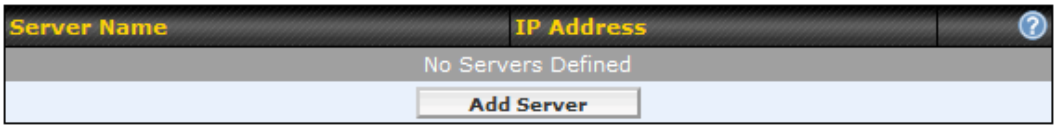
15.2 Definition of Servers on LAN

(Available on Peplink Balance 210+)

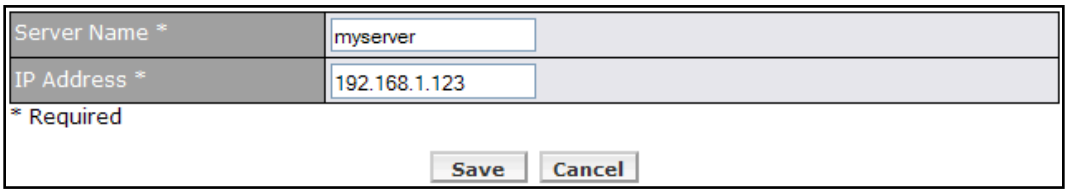
The settings to configure servers on the LAN are located at the following location: ***Network> Inbound Access > Servers***

Inbound connections from the Internet will be forwarded to the specified Inbound IP Address(es) base on the protocol and port number .

When more than one server is defined, requests will be distributed to the servers in the weight ratio specified for each server.



To define a new server, click **Add Server**, upon which the following screen appears:



Enter a valid server name, and its corresponding LAN IP address.

Upon clicking**Save**after entering required information, the following screen appears.

To define additional servers, click **Add Server**and repeat the above steps.

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15.3 Inbound Access Services

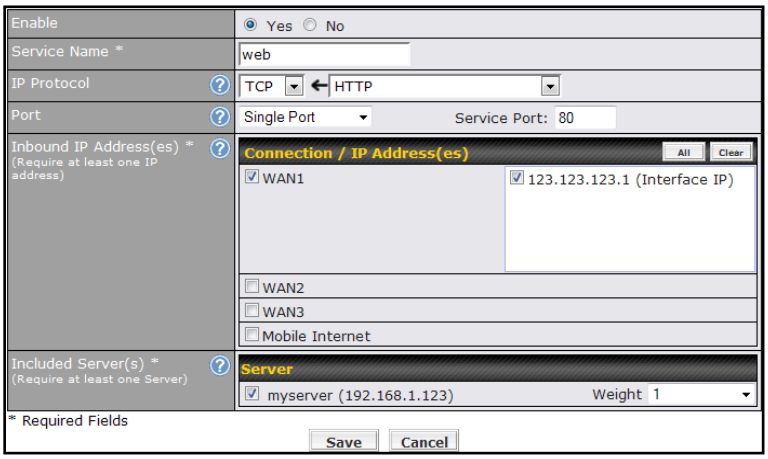
15.3.1 Definition of Services

Services are defined at:***Network> Inbound Access > Services***

Tip

At least one server must be definedbefore services can be added.

To define a new service, click the **Add Service**button, upon which the following appears:



Services Settings	
Enable	This setting specifies whether the inbound service rule takes effect. When **Yes** is selected, the inbound service rule takes effect. If the inbound traffic matches the specified IP Protocol and Port, action will be taken by Peplink Balance based on the other parameters of the rule. When **No** is selected, the inbound service rule does not take effect. Peplink Balance will disregard the other parameters of the rule.
Service Name	This setting identifies the service to the System Administrator. Valid values for this setting consist only of alphanumeric and the underscore "_" characters.
IP Protocol	The IP Protocol setting, along with the Port setting, specifies the protocol of the service as TCP, UDP, ICMP or IP. Traffic that is received by Peplink Balance via the specified protocol at the specified port(s) is forwarded to the LAN hosts specified by the Servers setting. (Please see below for details on the Port and Servers settings.) Alternatively, the **Protocol Selection Tool** drop-down menu can be used to automatically fill in the Protocol and a single Port number of common Internet services (e.g. HTTP, HTTPS, etc.).

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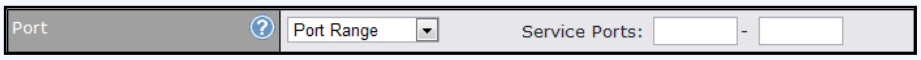
	After selecting an item from the **Protocol Selection Tool** drop-down menu, the Protocol and Port number remains manually modifiable.
Port	The Port setting specifies the port(s) that correspond to the service, and can be configured to behave in one of the following manners: **Any Port, Single Port, Port Range, Port Map and Range Mapping** **Any Port**: all traffic that is received by Peplink Balance via the specified protocol is forwarded to the servers specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Any Port**, all TCP traffic is forwarded to the configured servers. **Single Port**: traffic that is received by Peplink Balance via the specified protocol at the specified port is forwarded via the same port to the servers specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Single Port** and **Service Port** 80, TCP traffic received on Port 80 is forwarded to the configured servers via Port 80.  **Port Range**: traffic that is received by Peplink Balance via the specified protocol at the specified port range is forwarded via the same respective ports to the LAN hosts specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Port Range** and **Service Port** 80-88, TCP traffic received on ports 80 through 88 is forwarded to the configured servers via the respective ports. **Port Mapping**: traffic that is received by Peplink Balance via the specified protocol at the specified port is forwarded via a different port to the servers specified by the Servers setting. For example, with IP Protocol set to **TCP**, and Port set to **Port Map**, **Service Port** 80, and **Mapping to Port** 88, TCP traffic on Port 80 is forwarded to the configured servers via Port 88. (Please see below for details on the Servers setting.) **Range Mapping**: traffic that is received by Peplink Balance via the specified protocol at the specified port range is forwarded via a different port to the servers specified by the Servers setting.
Inbound IP Address(es)	This setting specifies the WAN connections and Internet IP address(es) from which the service can be accessed.
Included Server(s)	This setting specifies the LAN servers that handle requests for the service, and the relative weight values. The amount of traffic that is distributed to a server is proportional to the weight value assigned to the server relative to the total weight. Example: With the following weight settings on a Peplink Balance: • demo_server_1: 10 • demo_server_2: 5 The total weight is 15 = (10 + 5)

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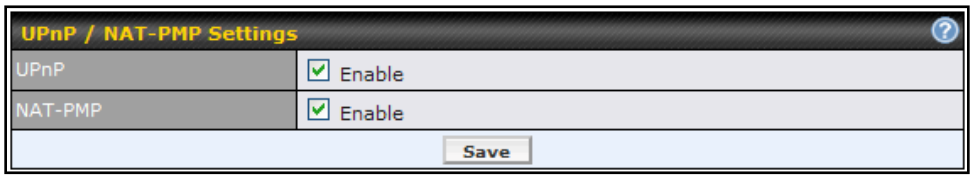
Matching traffic distributed to demo_server_1:67% = (10 / 15) x 100%
Matching traffic distributed to demo_server_2:33% = (5 / 15) x 100%

15.3.2 UPnP / NAT-PMP Settings

UPnP and NAT-PMP are network protocols which allow a computer on the LAN to automatically configure the router to allow parties on the WAN to connect to itself. In this way, the process of inbound port forwarding is automated.

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

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



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

15.3.3 Definition of DNS Records

(Available on Peplink Balance 210+)

The built-in DNS Server functionality of Peplink Balance facilitates inbound load balancing. With the presence of the functionality, NS/SOA DNS records for a domain name can be delegated to Internet IP address(es) of Peplink Balance. Upon receiving a DNS query, Peplink Balance supports returning, as an "A" record, the corresponding IP address for the domain name on the most appropriate healthy WAN connection.It also supports acting as a generic DNS server for hosting "A", "CNAME", "MX", "TXT" and "NS" records.

For example:

(This example is for illustration only; the actual resolution that takes place in implementation will likely be different.)

The DNS resolution of the domain namewww.mycompany.comis delegated to the WAN2 Internet IP addresses of Peplink Balance.

Upon receiving the DNS query, Peplink Balance returns, as an "A" record, theIP address for www.mycompany.com on WAN1 because WAN1 is the most appropriatehealthy link.

The settings for definingthe DNS records to be hosted by Peplink Balance are located at:***Network> Inbound Access > DNS Settings***

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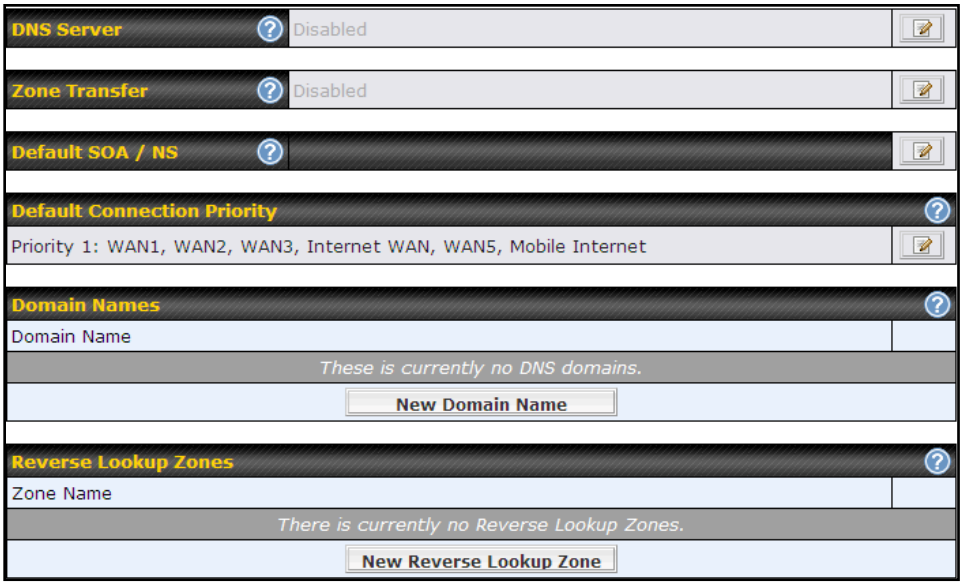


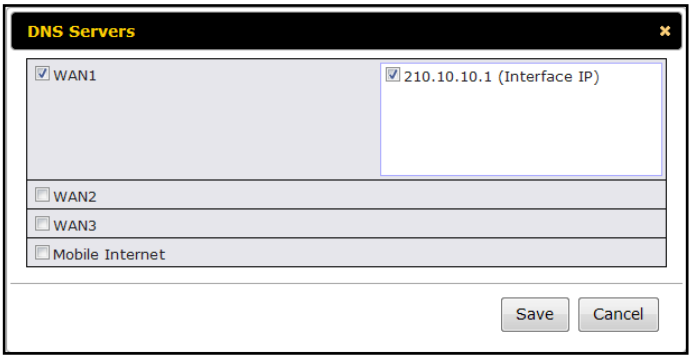
DNS Settings

DNS Server

This setting specifies the WAN IP addresses on which the DNS server of Peplink Balance should listen.

If no addressesare selected, the Inbound Link Load Balancing feature will be disabled;Peplink Balance will not respond to DNS requests.

To specify and/or modify the IP addresses on which the DNS Server should listen, click the **Edit** button that corresponds to **DNS Server Listens on**, and the following screen is displayed:



To specify the Internet IP addresses on which the DNS Server should listen, select the WAN connection by checking the appropriate boxes and the IP addresses associated with the WAN connections by highlighting the appropriate items in the list. (Multiple items in the list can be selected by holding CTRL and clicking on the items.)

Click **Save** to save the settings when configuration is complete.

Zone Transfer

This setting specifies the IP address(es) of secondary DNS server(s)that are to be allowed to retrieve zone records from the DNS server of Peplink Balance.

The zone transfer server of Peplink Balance listens on TCP Port 53.

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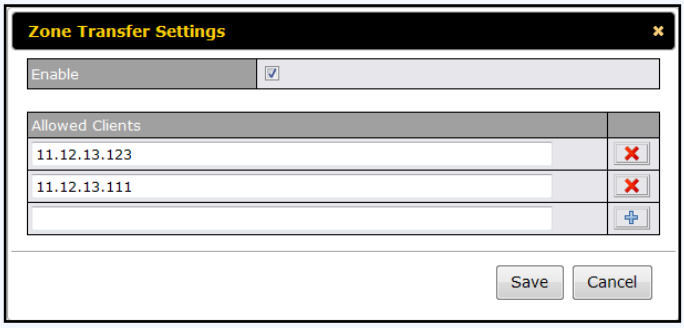


Peplink Balance serves both the clients that are accessing from the specified IP addresses, and the clients that are accessing from the LAN Interface (of the Peplink Balance unit).

Default SOA / NS

Click the button to define a default SOA / NS record for all Domain Names.For Configuration details please refer to section15.3.5.

For defining a default SOA record, the field Name Server IP Address is optional. If left blank, the Address (A) record for the same server should be defined manually in each domain.

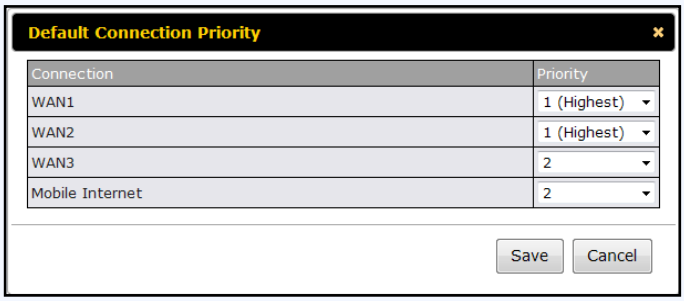
For defining default NS records, the host *[domain]* indicates that this record is for the domain name itself without a sub-domain prefix. To add a secondary NS server, just create a second NS record with the Host field empty. When the entered Name Server is a FQDN, the IP Address field will be disabled.

Default Connection Priority

Default Connection Priority defines the default priority group of each WAN connection in resolving A records. It applies to Address (A) records which have the Connection Priority set to **Default**. Please refer to Section15.3.9 for the details.

The WAN connection(s) with the highest priority (smallest number) will be chosen. Those with lower priorities will not be chosen in resolving A records unless the higher priority ones become unavailable.

To specify the Primary and Backup connections, click the button that corresponds to **Default Connection Priority**.The screen should assemble the one below.



Each WAN connection is associated with a priority number. Click **Save** to save the settings when configuration is complete.

Domain name

This section shows a list of domain names to be hosted by the Peplink Balance. Each domain can have its “NS”, “MX” and “TXT” records, andits sub-domains’ “A” and “CNAME”records.Add a new record by clicking the **New Domain Name** button. Click on a domain name to edit. Press to remove a domain name.

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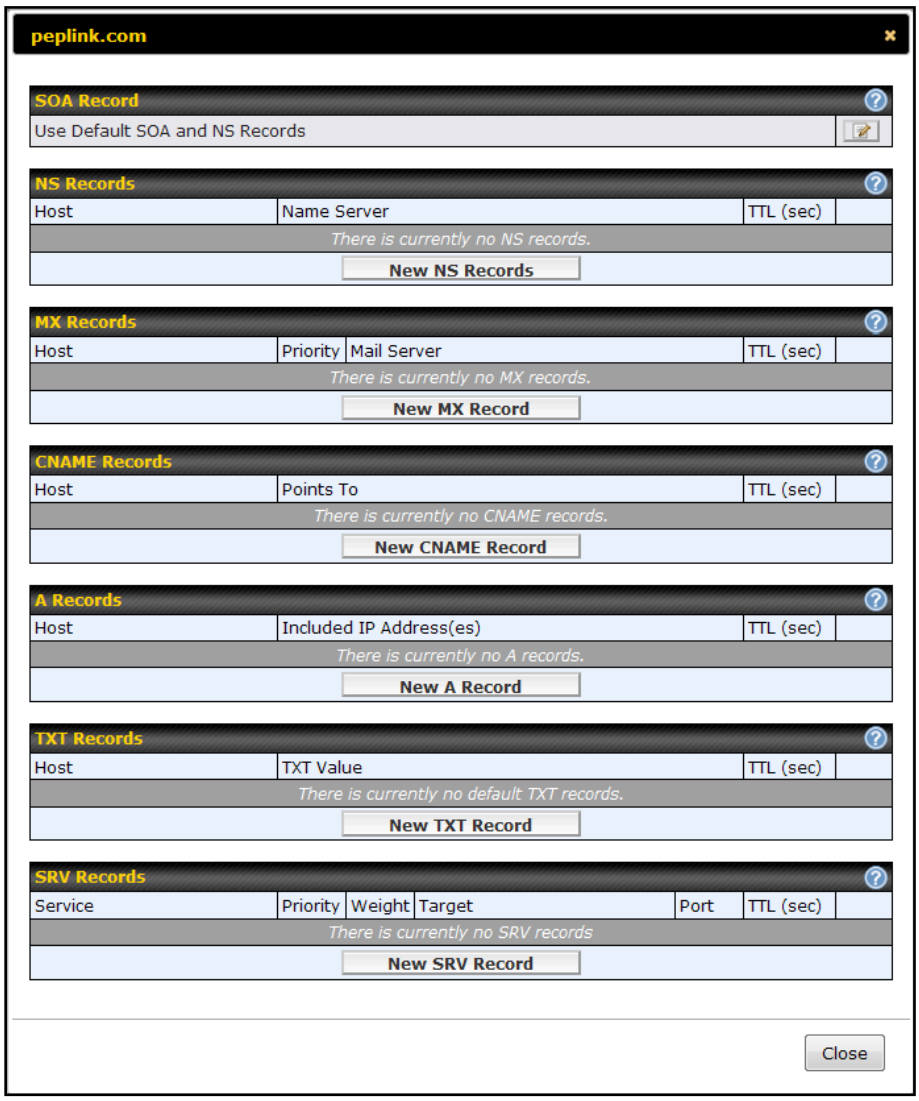
15.3.4 Creating DNS Records

To create new DNS records for a domain, perform the following steps:

From ***Network> Inbound Access > DNS Settings***, create a domain name in the **Domain Name** field. Then click on the newly created domain name and the following screen will be displayed:



This page is for defining the domain's SOA, NS, MX, CNAME, A, TXT and SRV records. Seven tables are presented in this page for defining the five types of records.

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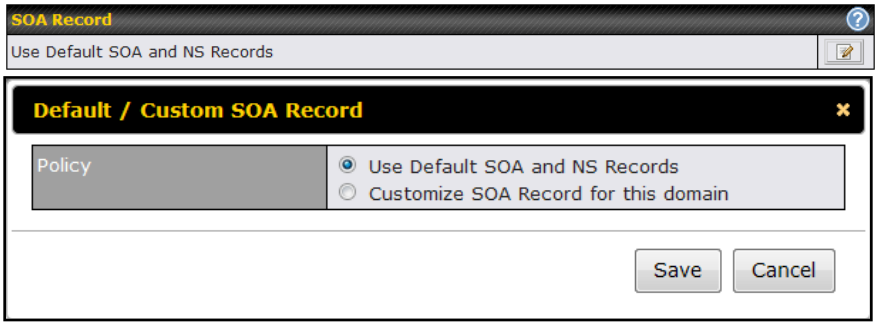
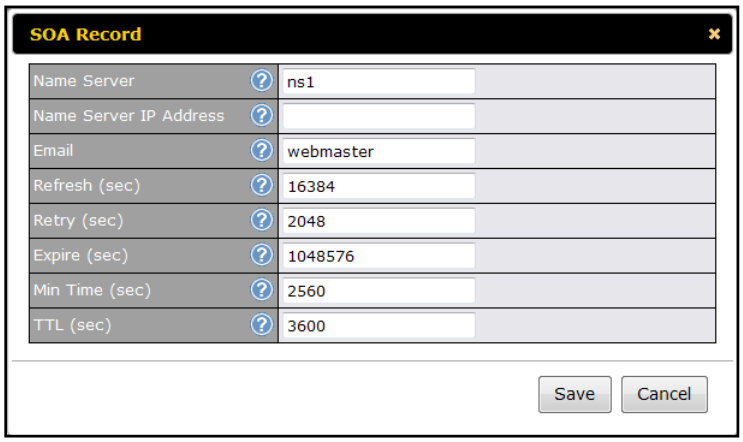
15.3.5 SOARecords



Click on the icon to choose whether to use the pre-defined Default SOA Record and NS Records. If the option **Use Default SOA and NS Records** is selected, any changes made in the Default SOA/NS Records will be applied to this domain automatically. Otherwise, select the option **Customize SOA Record** for this domain and you can customize this domain's SOA and NS records.



This table displays the current SOA record. When the option **Customize SOA Record for this domain** is selected, you can click the link **Click here to define SOA record** to create or click on the **Name Server** field to edit the SOA record.

In the SOA record, you have to fill out the fields *Name Server, Name Server IP Address (optional), Email, Refresh, Retry, Expire, Min Time, and TTL*.

Default values are set for SOA and NS records,

- ***Name Server IP Address (optional):***This is the IP address of the authoritative name server. If the Balance is the authoritative name server of the domain, this field's value should be the WAN connection's name server IP address that is registered in the DNS registrar. If this field is entered, a corresponding A record for the name server will be created automatically. If it is left blank, the A record for the name server must be created manually.
- ***E-mail***: Defines the E-mail address of the person responsible for this zone. Note: Format should be mailbox-name.domain.com, e.g. hostmaster.example.com
- ***Refresh***: Indicates the length of time (in seconds) when the slave will try to refresh the zone from the master.
- ***Retry***: Defines the duration (in seconds)between retries if the slave (secondary) fails to contact the master when *refresh* (above) has expired.
- ***Expire***: Indicates the time (in seconds) when the zone data is no longer authoritative. This option applies to Slaves DNS servers only.

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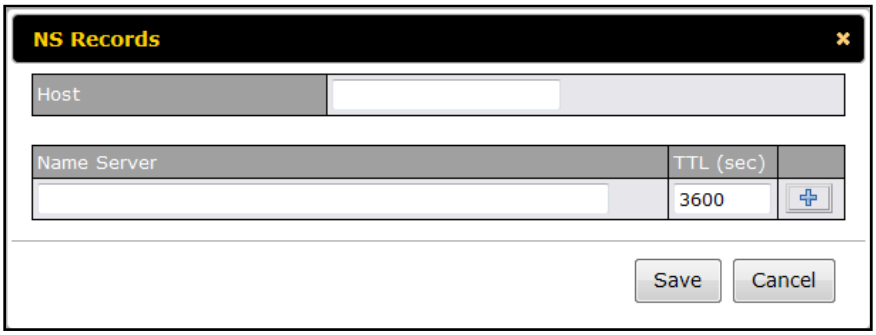
- ***Min Time***: Is the negative caching time which defines the time (in seconds) after an error record is cached
- ***TTL (Time-to-Live)***: Defines the duration (in seconds) that the record may be cached

15.3.6 NS Records

The NS Record table shows the NS servers and TTL that correspond to the domain.

The NS record of the name server defined in the SOA record is automatically added here.

To add a new NS record, click the New **NS Records**button in the **NS Records** box.Then the table will expand to look like the following:

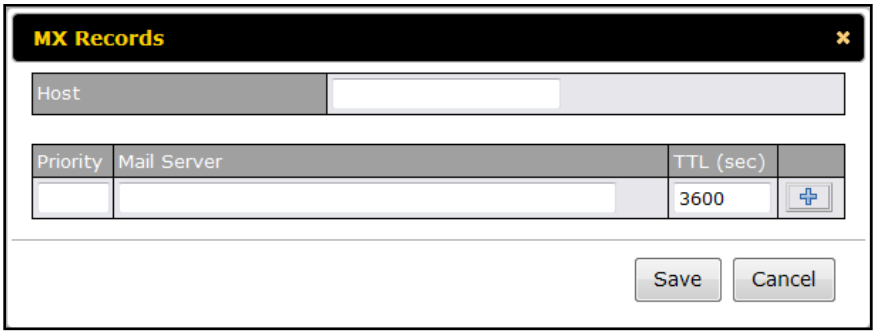


When creating an NS record for the domain itself (not a sub-domain), the **Host** field should be left blank.

Enter a name server host name and its IP address into the corresponding boxes. The host name can be a non-FQDN (fully qualified domain name) (please be sure that a corresponding A record is created). Click the button on the right to finish and to add the other Name Server.After finishing adding NS records, click the **Save** button, (Before clicking the **Save**button, all NS record changes are not yet saved to the Peplink Balance.)

15.3.7 MX Records

The MX Record table shows the domain's MX records.To add a newMX record, click the**New MX Records**button in the **MX Records** box. Then the table will expand to look like the following:



When creating an MX record for the domain itself (not a sub-domain), the **Host** field should be left blank.

For each record, ***Priority****and****Mail Server*** name must be entered.***Priority*** typically ranges from 10 to 100. Smaller numbers have a higher a priority.

After finishing adding MX records, click the ***Save*** button.

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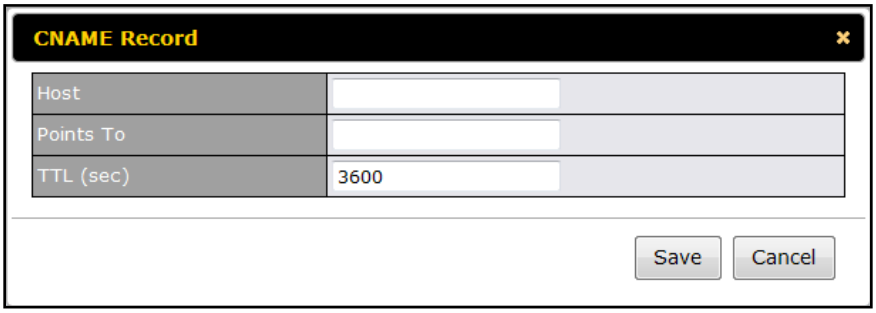
15.3.8 CNAME Records

The CNAME Record table shows the domain's CNAME records. To add a newCNAME record, click the**New CNAME Records**button in the **CNAME Record** box. Then the table will expand to look like the following:



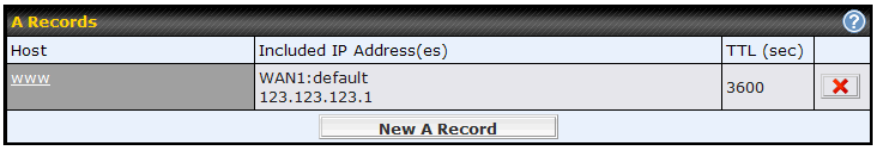
When creating a CNAME record for the domain itself (not a sub-domain), the Hostfield should be left blank.

The wildcard character "*"is supported in the ***Host*** field. The Reference of ".*domain.name*" will be returned for every name ending with ".*domain.name*" except names that have their own records.

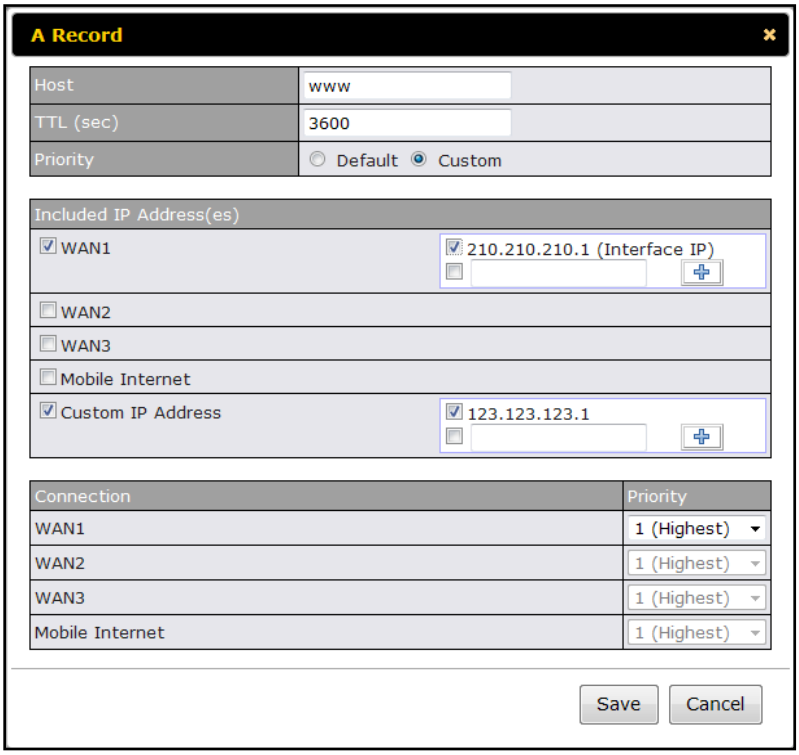
The ***TTL*** field tells the time to live of the record in external DNS caches.

15.3.9 A Records

This table shows the A records of the domain name.



To add an A record, click the **NewA Record** button. The screen resembles the one below:



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A record may be automatically added for the SOA records with a Name Server IP Address provided.

A Record Editing	
Host Name	This field specifies the A record of this sub-domain to be served by the Peplink Balance. The wildcard character "*" is supported. The IP addresses of**.domain.name"* will be returned for every name ending with *".domain.name"* except names that have their own records.
TTL	This setting specifies the time to live of this record in external DNS caches. In order to reflect any dynamic changes on the IP addresses in case of link failure and recovery, this value should be set to a smaller value. E.g. 5 secs, 60 secs, etc.
Priority	This option specifies the priority of different connections. Select the **Default** option to apply the **Default Connection Priority** (refer to the table shown on the main DNS Settings page) to an A record. To customize priorities, choose the **Custom** option and a priority selection table will be shown at the bottom.
Included IP Address (es)	This setting specifies lists of WAN-specific Internet IP addresses that are candidates to be returned when Peplink Balance responds to DNS queries for the domain name specified by Host Name. The IP addresses listed in each box as**default** are the Internet IP addresses associated with each of the WAN connections. Static IP addresses that are not associated with any WAN can be entered into the Custom IP list. A PTR record is also created for each Custom IP's. For WAN connections that operate under Drop-in mode, there may be other routable IP addresses in addition to the **default** IP address.Therefore, Peplink Balance allows custom Internet IP addresses to be added manually via filling the text box on the right-hand side and clicking the button. Only the checked IP addresses in the listsare candidates to be returned when responding to a DNS query. In case of a WAN connection is down, the corresponding set of IP addresses will not be returned. However, the IP addresses in the Custom IP field will always be returned. If the Connection Priority field is set to **Custom**, you can also specify the priority of the use of each WAN connection. Only selected IP address(es) of available connection(s) with the highest priority, and also Custom IP addresses will be returned. By default, the Connection Priority is set to **Default**.

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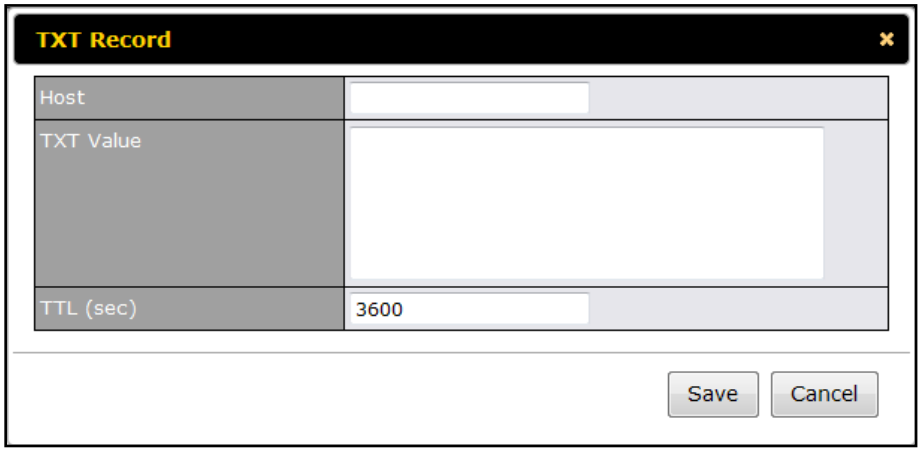
15.3.10 PTR Records

PTR records are created along with A records pointing to Custom IPs. Please refer to **Section 15.3.9** for details. For example, if you created an A record *www.mydomain.com* pointing to *11.22.33.44*, then a PTR record *44.33.22.11.in-addr.arpa* pointing to *www.mydomain.com* will also be created.

When there are multiple host names pointing to the same IP address, only one PTR record for the IP address will be created.

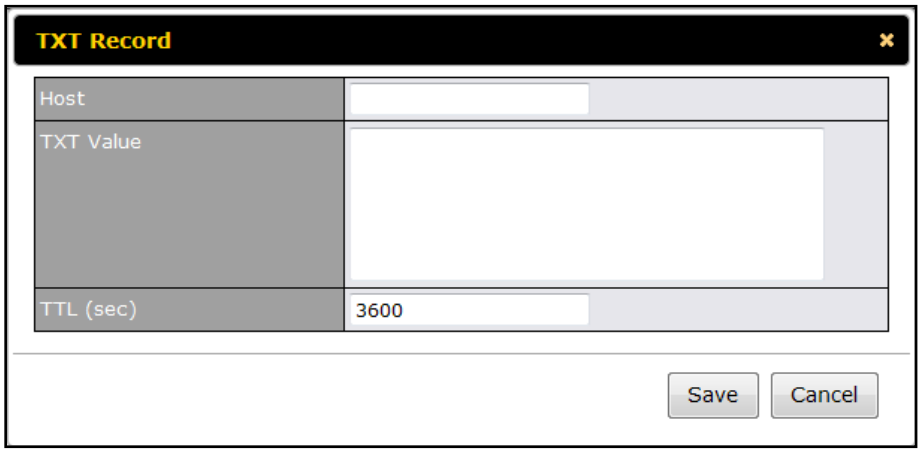
In order to have the PTR records working, you will also have to create NS records for the PTR records. For example, if the IP address range *11.22.33.0* to *11.22.33.255*is delegated to the DNS server on the Peplink Balance, you will also have to create a domain *33.22.11.in-addr.arpa* and have its NS records pointing to your DNS server's (the Peplink Balance) public IP addresses.



With the above records created, the PTR record creation is complete.

15.3.11 TXT Records

This table shows the TXT record of the domain name.



To add a newTXT record, click the**New TXT Record**button in the **TXT Records** box.Click the **Edit**button to edit the record. The time-to-live value and the TXT record's value can be entered. Click the **Save** button to finish.

When creating a TXT record for the domain itself (not a sub-domain), the Host field should be left blank.

The maximum size of the TXT Value is 255 bytes.

After completed editing the five types of record, you can simply leave the page by going to another section of the Web Admin Interface.

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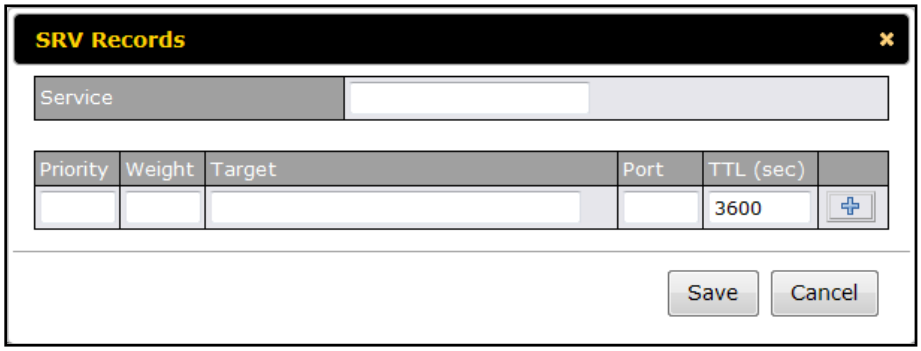
15.3.12 SRV Records

To add a newSRV record, click the**New SRV Record**button in the **SRV Records** box.



- ***Service*:** The symbolic name of the desired service.
- ***Priority***: Indicates the priority of the Target; the smaller the value, the higher the priority.
- ***Weight***: A relative weight for records with the same priority.
- ***Target***: The canonical hostname of the machine providing the service.
- ***Port***: Enter the TCP or UDP port number on which the service is to be found.

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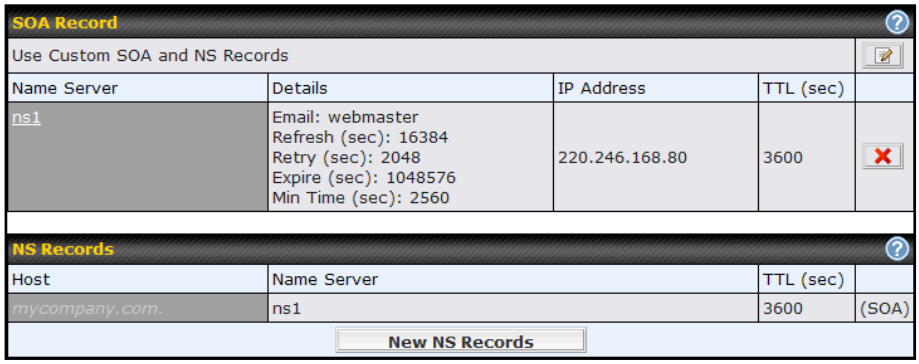
Domain Delegation

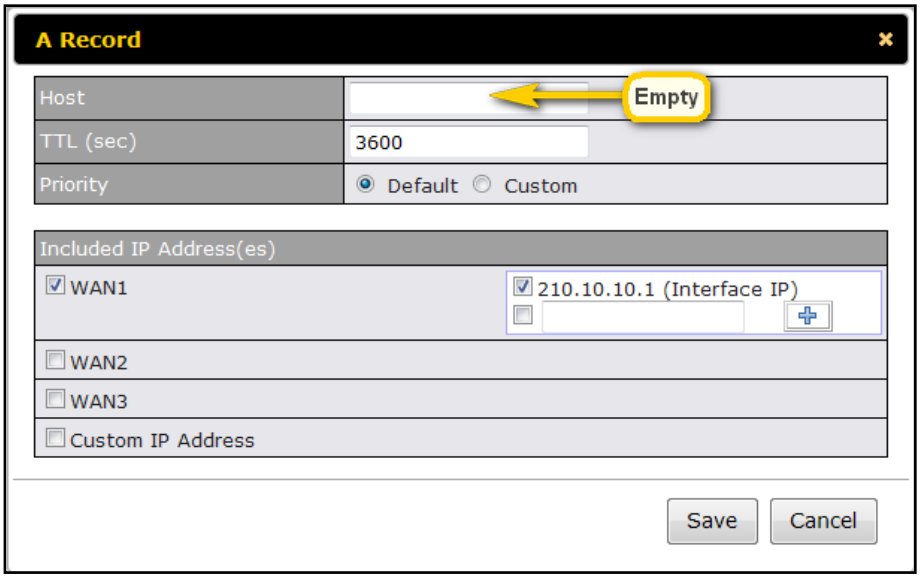
These are the steps to be used when you host your domain at your ISP or a domain registrar and want to delegate a sub-domain to be resolved and managed at Peplink Balance.

- Click **New Domain Name** button to add a domain name.e.g.*www.mycompany.com*. Click the corresponding domain name to view and edit record details.

- Create SOA/NS records named *ns1, ns2, etc.* The IP addresses are the Balance's DNS server addresses.



- Then create an A record with an empty host name



If ISC BIND 8 or 9 is being utilized in the zone file mycompany.com, then the addition of the following lines suffice:

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www	*IN*	*NS*	*balancewan1*
www	*IN*	*NS*	*balancewan2*
balancewan1	*IN*	*A*	*202.153.122.108*
balancewan2	*IN*	*A*	*67.38.212.18*

202.153.122.108 and 67.38.212.18 represent the WAN1 and WAN2 Internet IP addresses of Peplink Balance, respectively. The values of the IP addresses are fictitious and for illustration only; the actual IP addresses in implementation will likely be different.

Hosting the complete domain at Peplink Balance

To host your own DNS server, contact the DNS registrar to have the NS records of the domain (e.g. mycompany.com) point to your Balance's WAN IP addresses. Then follow these instructions:

1. Under **Network> Inbound Access > DNS Settings**, create a new domain, for example mycompany.com.
2. Create NS records named ns1, ns2, etc. The IP addresses are the Balance's DNS server addresses (same as above).
3. Create the corresponding A, CNAME, MX and TXT records as you wish. The A record resembles the one below:

Testing the DNS Configuration

The following steps can be used to test the DNS configuration:

From a host on the Internet, use an IP address of Peplink Balance and nslookupto lookup the corresponding hostname.

Check the information that is returned for the expected results.

An example with nslookupin Windows follows:

C:\Documents and Settings\User Name>nslookup

Default Server: ns1.myisp.com

Address: 147.22.11.2

>server 202.153.122.108 ***(This is PeplinkBalance's WAN IP address.)***

Default Server: balance.mycompany.com

Address: 202.153.122.108

>www.mycompany.com ***(This is the hostname to be looked up.)***

Default Server: balance.mycompany.com

Address: 202.153.122.108

Name: www.mycompany.com

Address: 202.153.122.109, 67.38.212.19

The values of the IP addresses are fictitious and for illustration onlythe actual IP addresses in implementation will likely be different.

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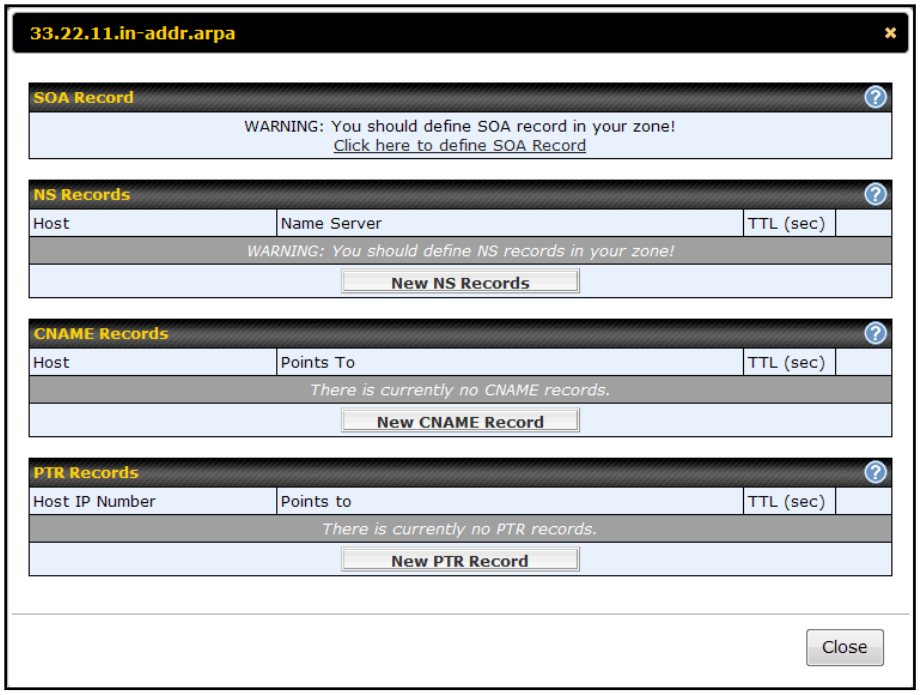
15.4 Reverse Lookup Zones

Reverse lookup refers to performing a DNS query to find one or more DNS names associated with a given IP address.

The DNS stores IP addresses in the form of specially formatted names as pointer (PTR) records using special domains/zones. The zone is in-addr.arpa.

To enable DNS clients to perform a reverse lookup for a host, perform two steps:

- Create a Reverse Lookup Zone that corresponds to the subnet network address of the host. In the Reverse Lookup Zone, add a pointer (PTR) resource record that maps the host IP address to the host name.
- Click the **New Reverse Lookup Zone** button and enter a Reverse Lookup Zone Name. If you are delegated the subnet 11.22.33.0/24, the Zone Name should be 33.22.11.in-arpa.addr.PTR records for 11.22.33.1, 11.22.33.2, ... 11.22.33.254 should be defined in this zone where the Host IP Numbers are 1, 2, ... 254 respectively.



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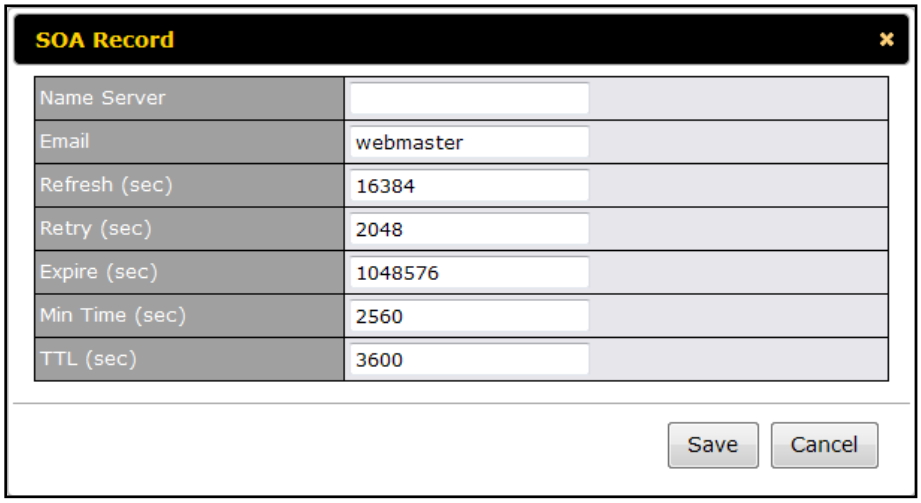
15.4.1 SOA Record

You can click the link **Click here to define SOA record** to create or click on the Name Server field to edit the SOA record.

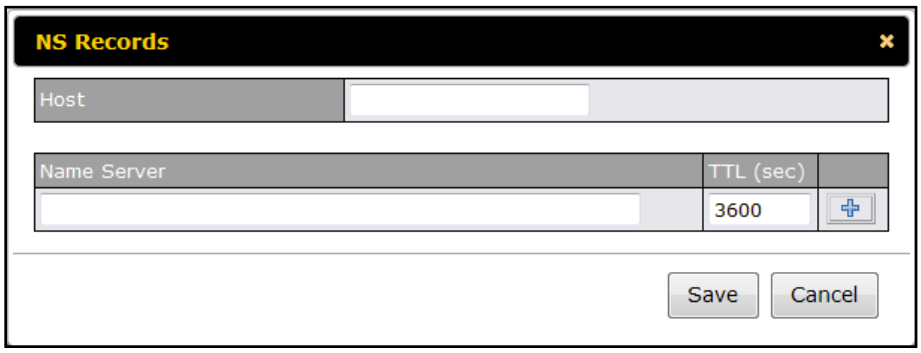


In the SOA record, you must fill out the field's *Name Server, Name Server IP Address (optional), Email, Refresh, Retry, Expire, Min Time, and TTL*.

Name Server: Enter the NS record's FQDN server name here.
For example:
"ns1.mydomain.com" (equivalent to "www.1stdomain.com.")
"ns2.mydomain.com."

Email, Refresh, Retry, Expire, Min Time, and TTLare the same as that in the forward zone. Please refer to section 15.3.5 for details.

15.4.2 NS Records



The NS record of the name server defined in the SOA record is automatically added here.To create a new NS record, click the **New NS Records** button.
When creating an NS record for the *Reverse Lookup Zone* itself (not a sub-domain or dedicated zone), the **Host** field should be left blank.
Name Server field must be an FQDN.

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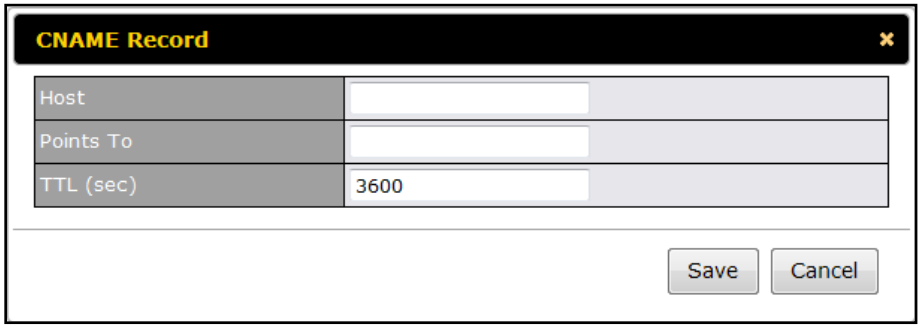
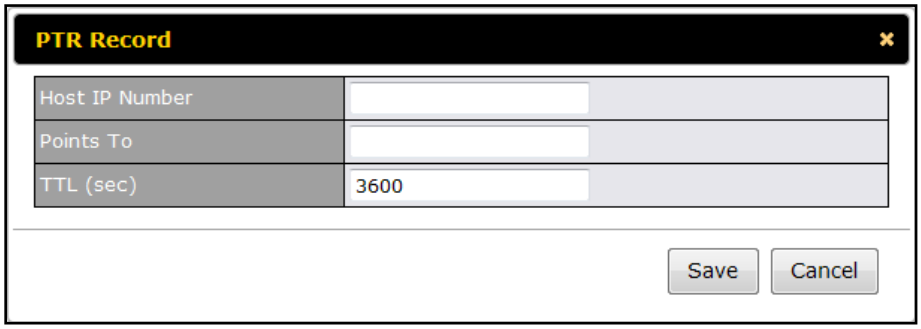
15.4.3 CNAME Records



To create a new CNAME record, click the **New CNAME Record** button.

CNAME records are typically used for defining classless reverse lookup zones. Subnetted reverse lookup zones are further described in RFC 2317, "Classless IN-ADDR.ARPA delegation."

15.4.4 PTR Records



To create a new PTR record, click the **New PTR Record** button.

Host IP Number field is the last integer in the IP address of a PTR record. E.g. for the IP address *11.22.33.44*, where the Reverse Lookup Zone is *33.22.11.in-arpa.addr*, the Host IP Number should be *44*.

Points To field defines the host name which the PTR record should be pointed to. It must be an FQDN.

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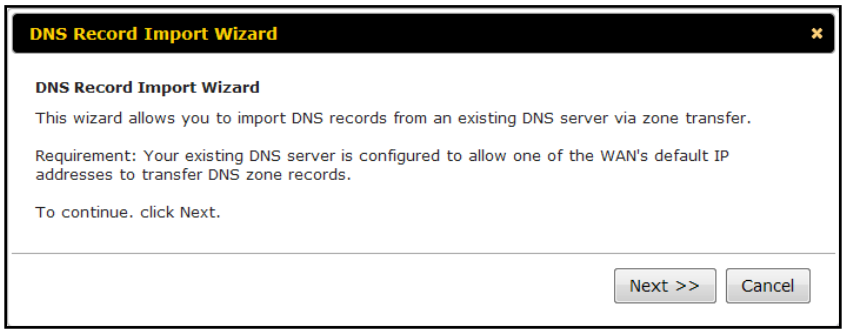
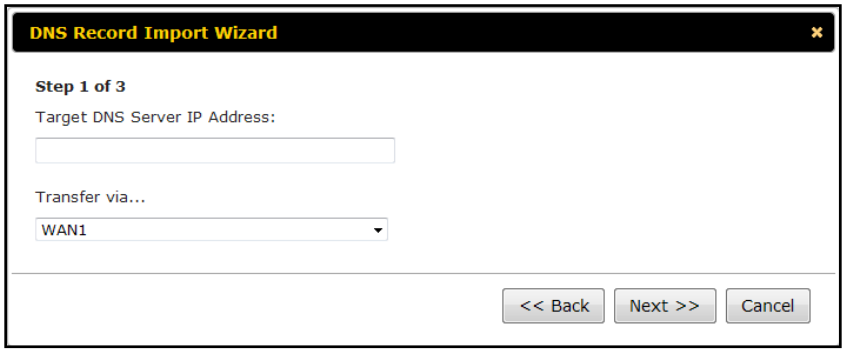
15.5 DNS Record Import Wizard

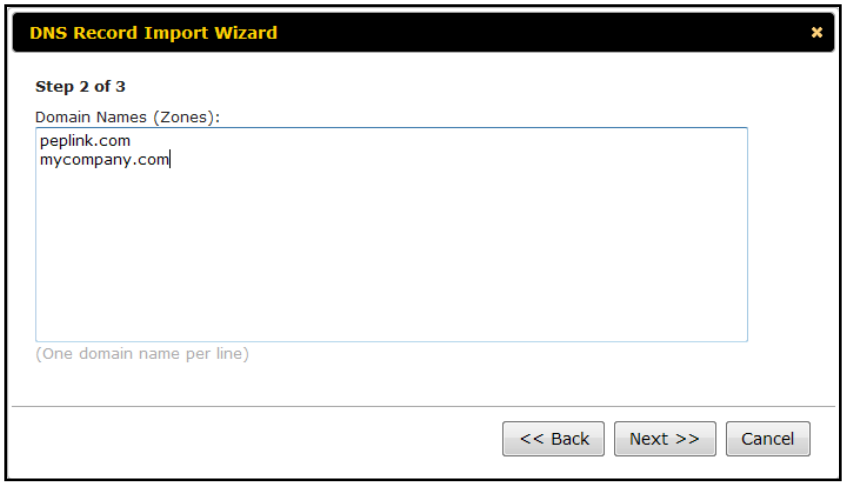
At the bottom of the page of DNS Settings, there is a link of***Import records via zone transfer…***which is used to import DNS record using Import Wizard.



- Select **Next>>** to continue.



- In the **Target DNS Server IP Address**field, enter the IP address of the DNS server.
- In the **Transfer via…**field, choose which connection you would like to transfer through.
- Select **Next>>**to continue.



- In the blank space, enter the **Domain Names (Zones)** which you would like to assign with the IP address entered in the previous step. Enter one domain name per line.
- Select **Next>>**to continue.

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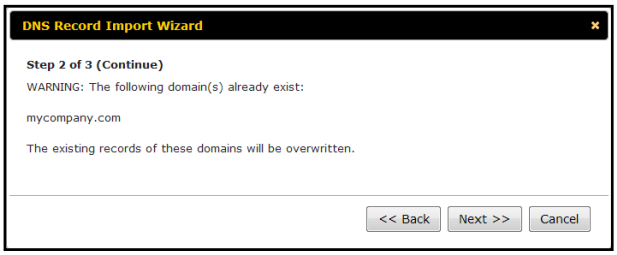
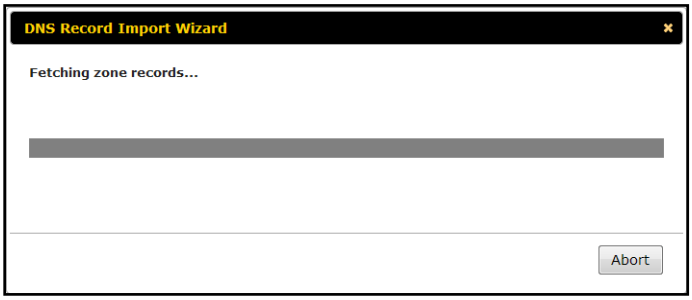
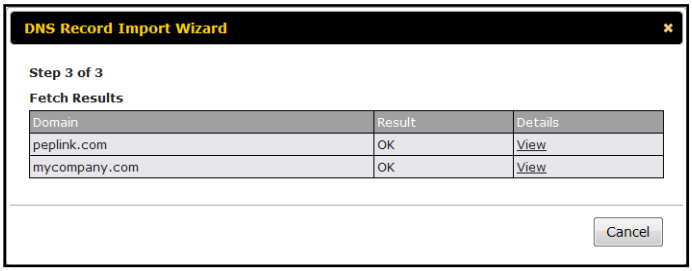
Important Note

If you have entered domain(s) which already exist in your settings, a warning message like the following would be shown. Select **Next>>**to overwrite the existing record, or **<<Back**to go back to the previous step.







After the Fetching zone records process has completed, the fetch results would be shown as above. You can view import details by clicking the corresponding hyperlink on the right hand size.

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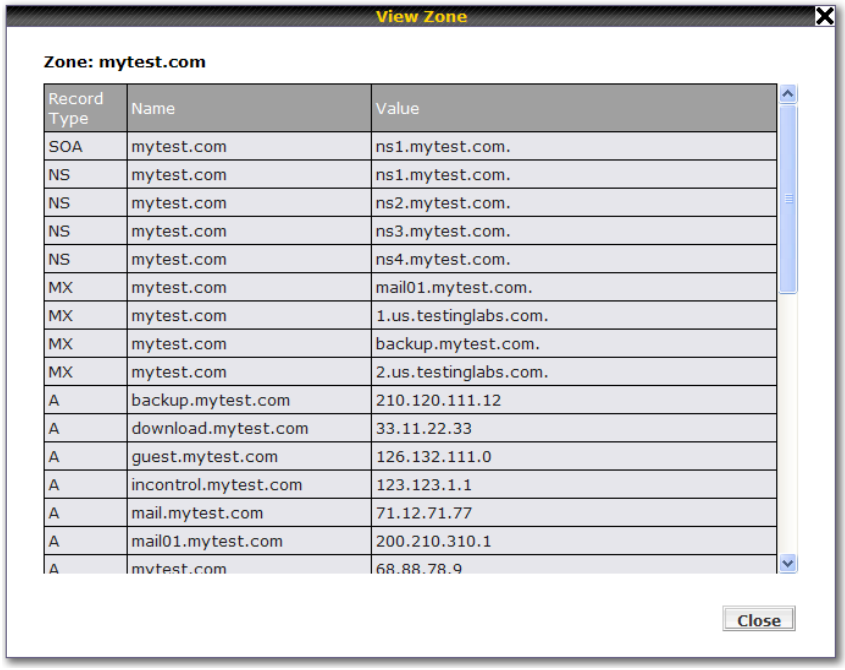

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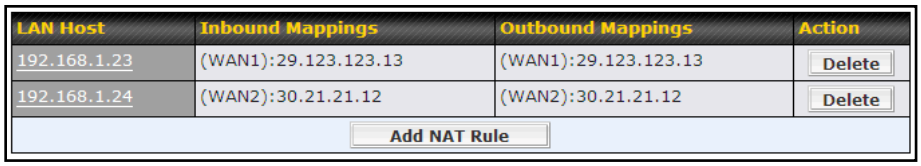
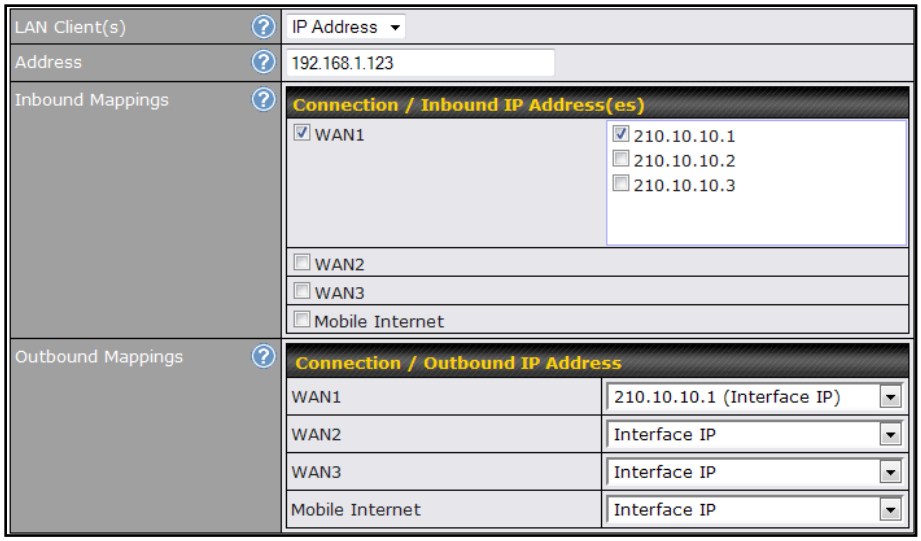
16 NAT Mappings

The configuration of NAT Mappings allows the IP address mapping of all inbound and outbound NAT'edtraffic to and from an internal client IP address.

The settings to configure NAT Mappings are located at:***Network>NAT Mappings***



To add a rule for NAT Mappings, click**Add NAT Rule**, upon which the following screen will be displayed:



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

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Inbound Mappings	This setting specifies the WAN connections and corresponding WAN-specific Internet IP addresses on which the system should bind on. Any access to the specified WAN connection(s) and IP address(es) will be forwarded to the LAN Host. This option is only available when **IP Address** is selected in LAN Client(s) field. Note 1: Inbound Mapping is not needed for WAN connections in drop-in or IP forwarding mode. Note 2: Each WAN IP address can be associated to one NAT Mapping only.
Outbound Mappings	This setting specifies the WAN IP addresses should be used whenanIP connection is made from a LAN host to the Internet. Each LAN host in an IP range or IP network will be evenly mapped to one of each selected WAN's IP addresses (for better IP address utilization) in a persistent manner (for better application compatibility). Note 1: If you do not want to use a specific WAN for outgoing accesses, you should still choose default here, then customize the outbound access rule in the Outbound Policy section. Note 2: WAN connections in drop-in or IP forwarding mode are not shown here.

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

Important Note
Inbound firewall rules override Inbound Mapping settings.

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17 WLAN Controller

(Available on Peplink Balance 305 and 380+)

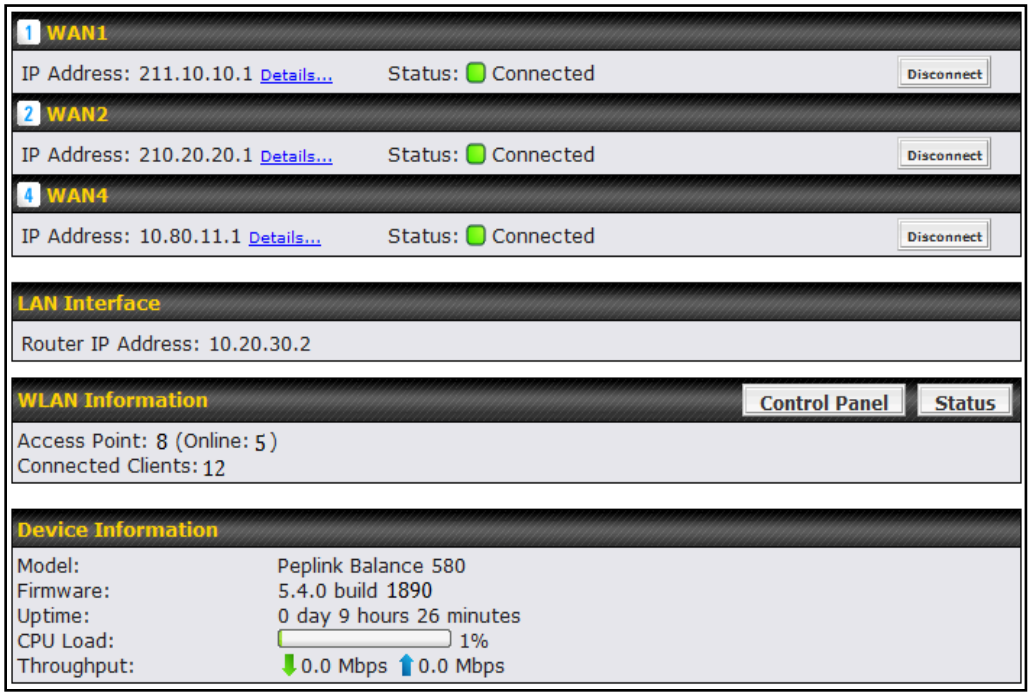
WLAN Controller is a feature available since firmware 5.3, which acts as a centralized controller of Pepwave AP One and AP One Minidevices. With this feature, users will be able to customize and manage multiple Pepwave AP devices in the same Peplink Balance Interface.

To configure, navigate to ***Network >WLAN Controller*** and the following options will be shown.

Special Note
10 and 20Pepwave AP One / AP One Mini devices can be controlled by a Peplink Balance305/380/580 and 710/1350/2500 respectively without extra costs.To manage more, a Full Edition license is required. Please contact our Authorized Reseller or Peplink Sales Team to obtain more information and price details.

17.1 WLAN Information

On the ***Dashboard*** of Web Admin Interface, the real-time WLAN information would be shown as below.



Three pieces of information will be shown: **number of managed Pepwave AP devices**, **number of online devices** and **number of current connected clients**.

Click **Control Panel** to configure the connected Pepwave AP devices and apply AP profiles or to manage your AP firmware. For details, please refer to section 17.1.1

Click **Status** to view Access Point details. For details, please refer to section 23.4.

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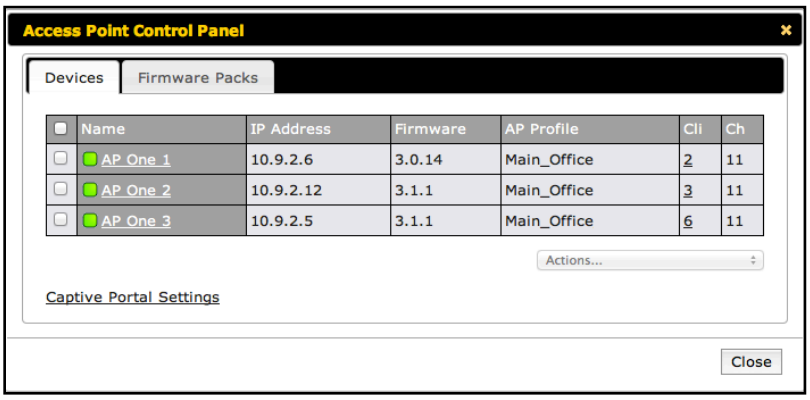
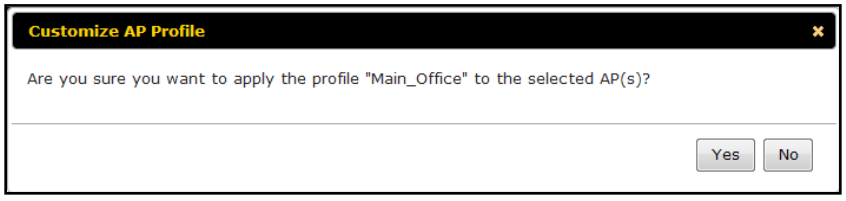
17.1.1 Access Point Information

Access Point can be assigned with different AP Profiles created in section 17.5. Click **Control Panel** on the ***Dashboard*** and the following will be shown.



If there is a "*" next to the channel information, that means the AP One is configured to select a channel automatically.

To apply an AP Profile, check the box(es) to choose the desired Pepwave AP device(s), and then choose a desired AP Profile in the dropdown list under the devices list. Press **Yes** to confirm the change.



Once the change is confirmed, the new AP Profile will be applied to the selected device(s). Changes will be activated immediately.

To view the device detail, click the corresponding device's name and you will see the following screen.

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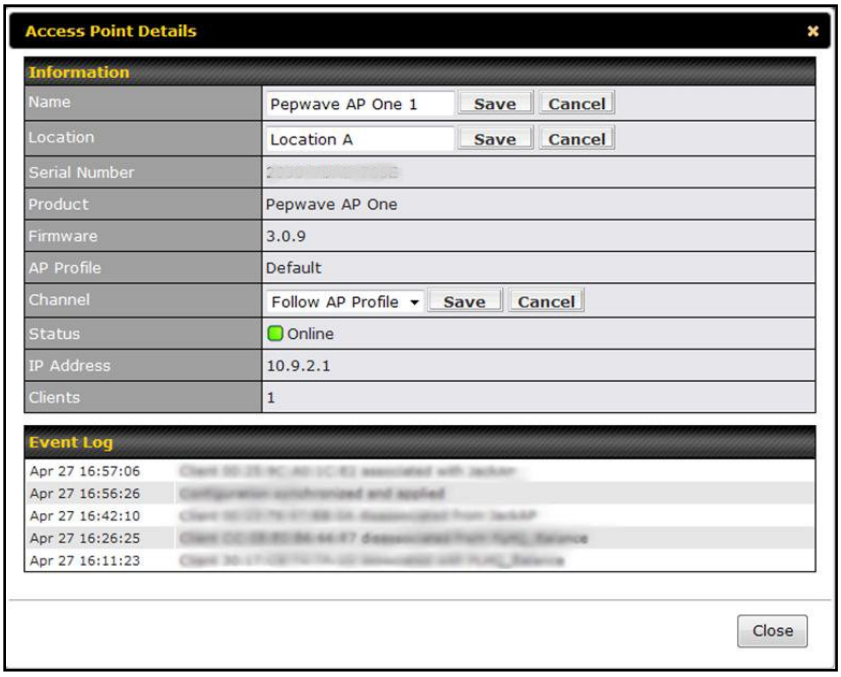
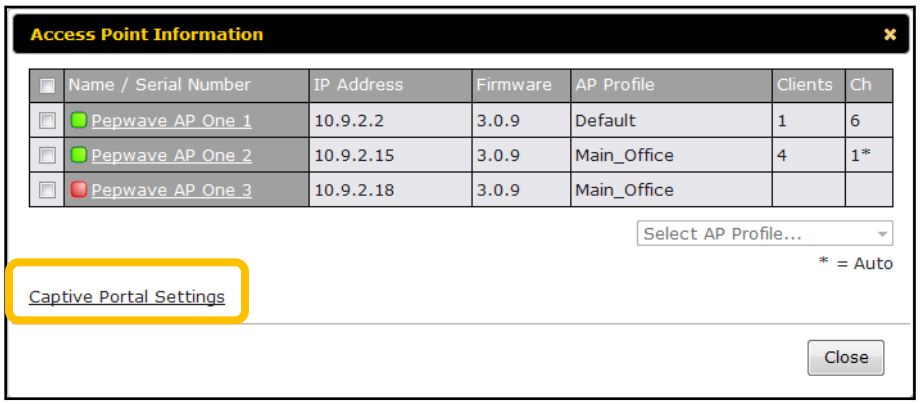


Device's **Name**, **Location** and **Channel** can be changed here.



A customized Captive Portal page can be configured for each Peplink Balance device. Tostart, click the link **Captive Portal Settings**and you will be forwarded to the configuration page.For details, please refer to section 17.4.

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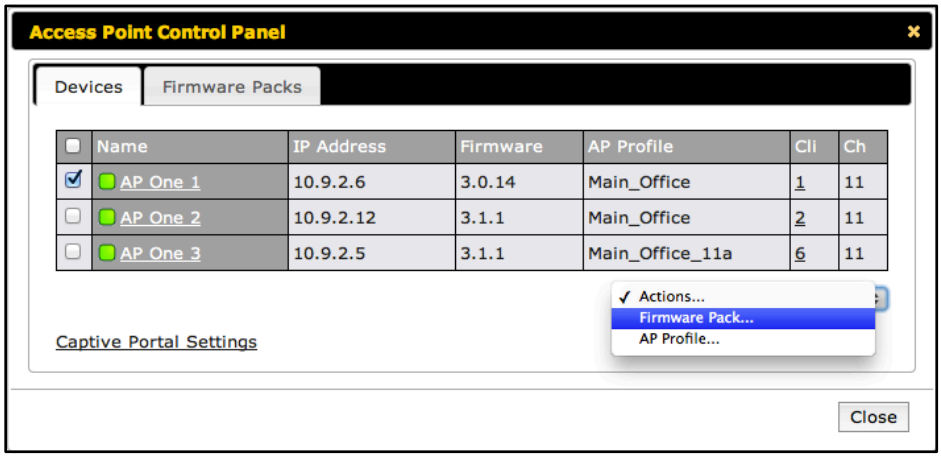
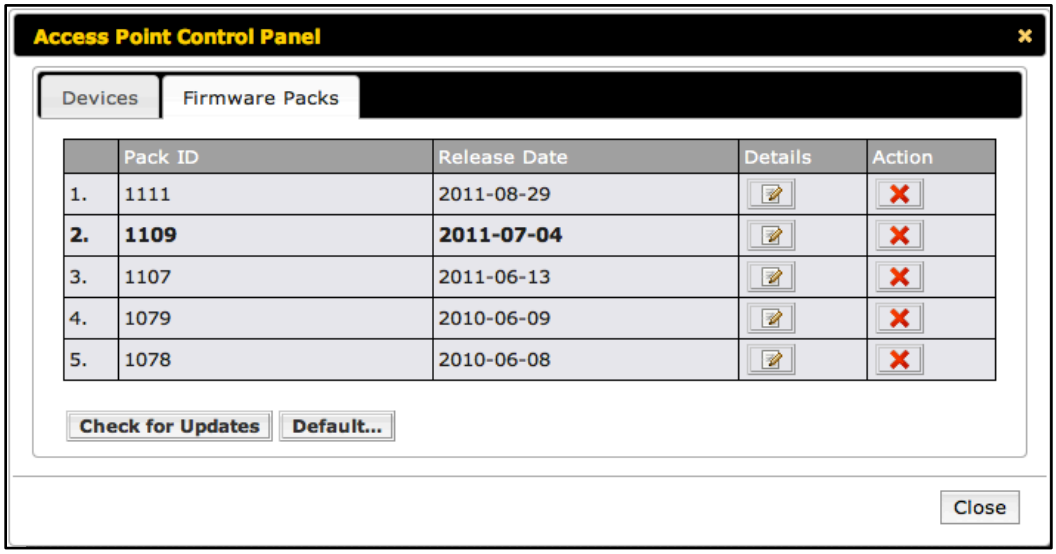
17.1.2 Access Point Firmware Packs

Within the Access Point Control Panel, is a second tab that allows you to manage the firmware files of multiple products. For instance, you can select different models of AP's in the Devices tab and apply a firmware pack to it. You can have a maximum of up to five firmware packs.



Additional features available in the firmware pack screen include the **Check for Updates**button which will check and download (the latest firmware pack updates) from our server.



Click the **Details** button to view the firmware image(s) included and their release notes.

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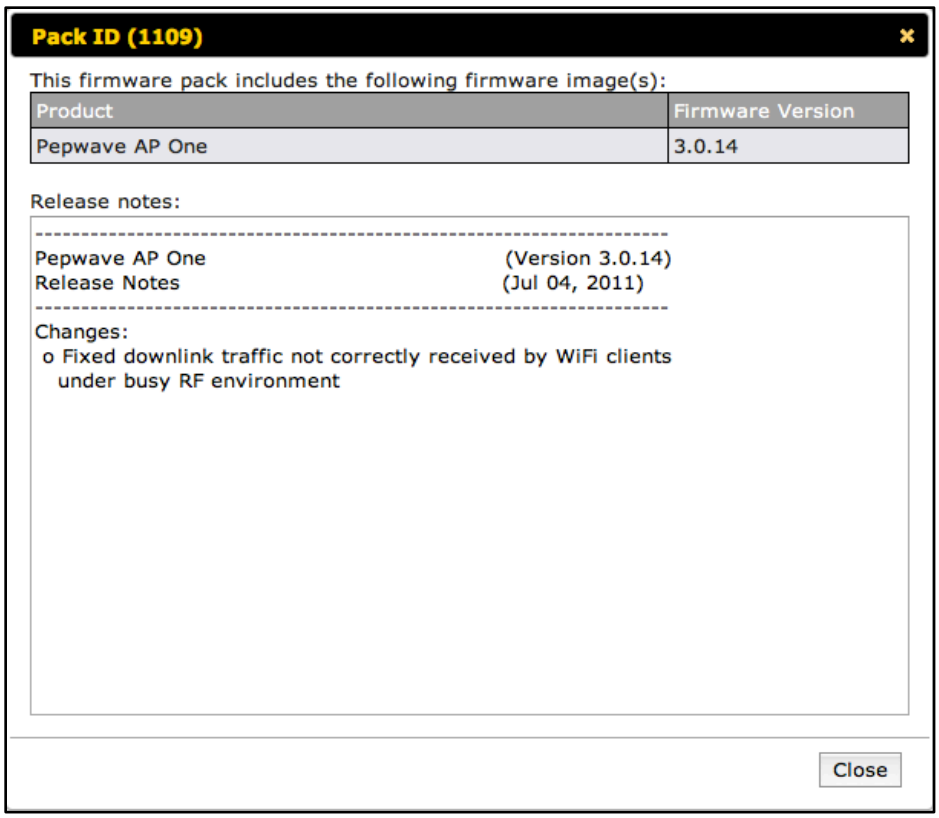
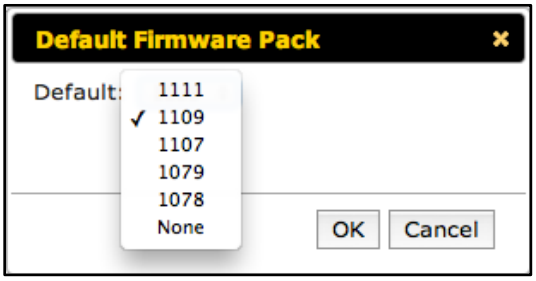


The **Default** button allows you to designate which of the packs will be the default. When a new device is added, the Default firmware will be assigned to the device. If theoperational firmware is an older version than the assigned one, the AP will automatically download the firmware and perform an upgrade.



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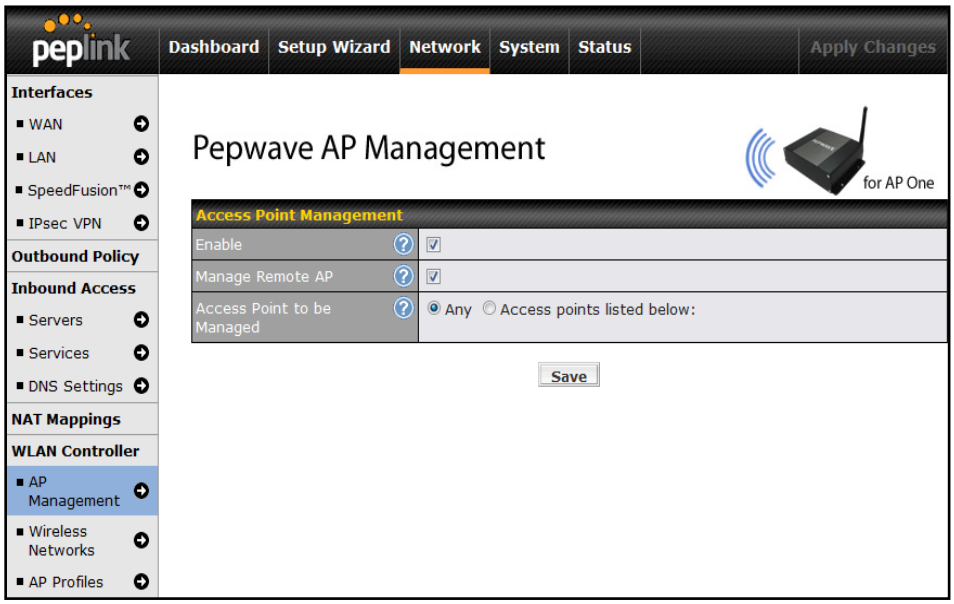
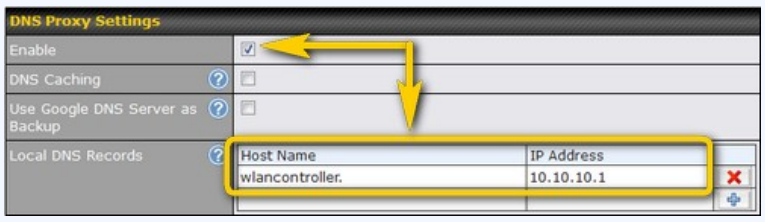
17.2 AP Management



Access Point Management	
Enable	The WLAN Controller for managing Pepwave APs can be enabled by this option. When this option is enabled, the WLAN 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 "WLANController" will add to the local DNS proxy.
Manage Remote AP	The WLAN controller supports remote management of Pepwave APs. When this option is enabled, the WLAN controller will wait for management connections originating from remote APs over the WAN on TCP and UDP port 11753. It will also wait for captive portal connections on TCP port 443. The DHCP server and/or local DNS server of the remote AP's network should be configured as follows: 1. Define an extended DHCP option "CAPWAP Access Controller addresses" (field 138) in the DHCP server, where the values are the WLAN controller's public IP addresses; and/or 2. Create a local DNS record for "WLANController." with a value corresponding to the WLAN controller's public IP address. 
Access Point to be Managed	Access Point devices managed will be defined in this option. If Any is selected, the WLAN controller will manage any AP that reports to it. If Access points listed below is selected, only APs with a serial number listed in the text box will be managed.

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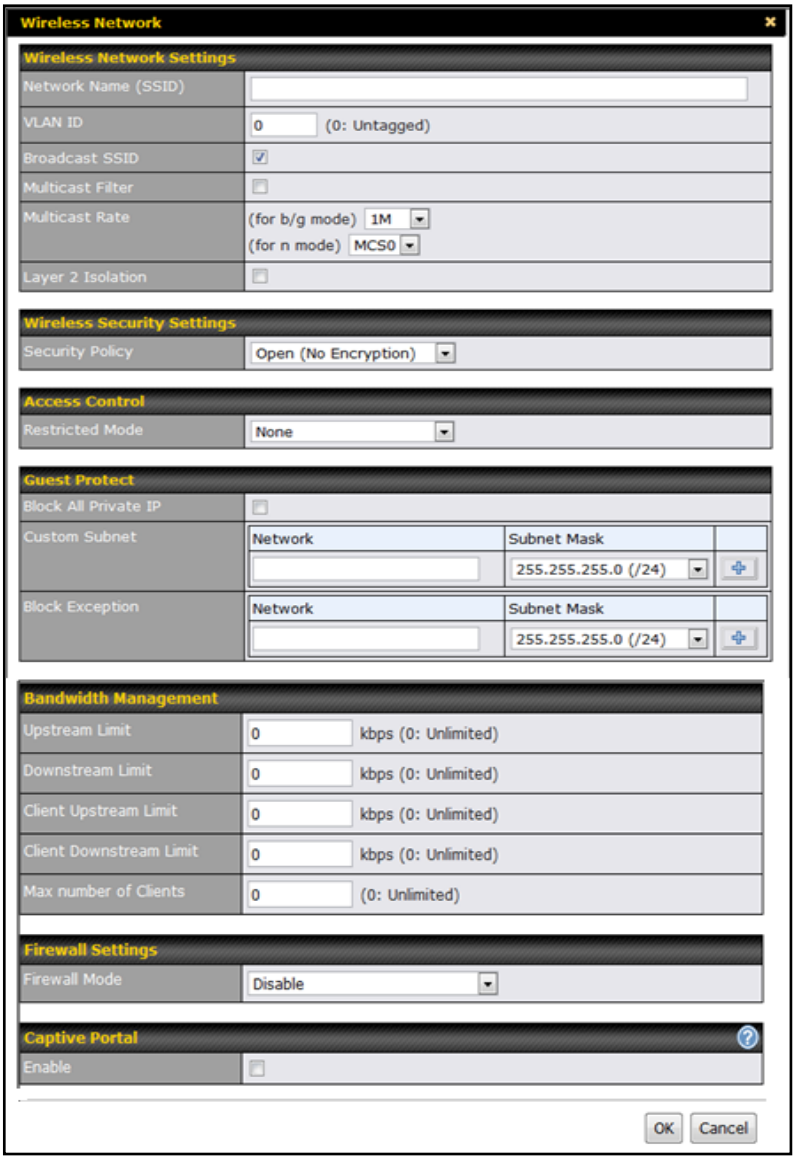
17.3 Wireless Networks

Wireless Network settings, including the name of network (SSID) and security policy, can be defined and managed in this section. After defining a wireless network, users can choose the network in AP Profiles.

Network Name (SSID)	Security Policy	Used by	
Peplink WLAN FF03	Open (No Encryption)	Default	✖
Manager	WPA/WPA2 - Personal	(None)	✖
Staff	WPA/WPA2 - Personal	(None)	✖
Customer	Open (No Encryption)	Coffee Shop	✖

New Network

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



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Wireless Network Settings	
Network Name (SSID)	This setting specifies the SSID of the virtual AP to be scanned by Wi-Fi clients.
VLAN ID	This setting specifies the VLAN ID to be tagged on all outgoing packets generated from this wireless network (i.e. packets that travel from the Wi-Fi segment, through the Pepwave AP One unit to Ethernet segment via the LAN port). The default value of this setting is **0**. That means VLAN tagging is disabled (instead of tagged with zero).
Broadcast SSID	This setting specifies whether or not Wi-Fi clients can scan the SSID of this wireless network. Broadcast SSID is **enabled** by default.
Multicast Filter	This setting enables the filtering of multicast network traffic to the wireless SSID.
Multicast Rate	This setting specifies the transmit rate to used for sending multicast network traffic. Selected Protocol and Channel Bonding will affect the rate options and values.
Layer 2 Communication	**Layer 2** is in reference 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 allowed to communicate directly via the Layer 2 Protocol(s). Traffic is passed to upper communication layer(s). By default, the setting is **enabled**.

Wireless Security Settings	
Security Policy	This setting configures the wireless authentication and encryption methods. **Available options are**: Open - No Encryption, Static WEP, 802.1X, WPA/WPA2 - Personal and WPA/WPA2 - Enterprise. Selecting **Open - No Encryption** disables encryption. For details on the other options, please refer to the following sections. 17.3.1 - Static WEP 17.3.2 - 802.1X Parameters 17.3.3 - WPA parameters 17.3.4 - RADIUS Server Settings

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Access Control	
Restricted Mode	The settings allow administrator to control the access through Mac address filtering. Available options are: None, Deny all except listed, Accept all except listed.
MAC Address List	Connection coming from the MAC Addresses in this list will be either deny or accept based the option selected in the previous field.

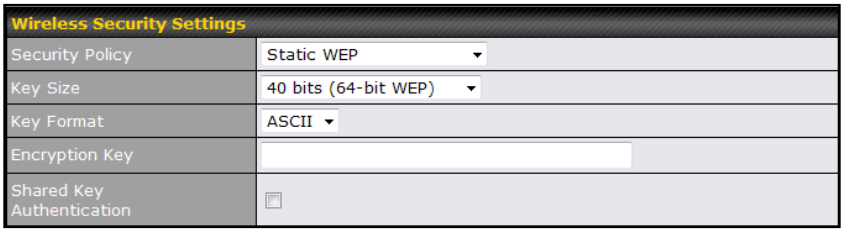
Captive Portal	
Enable	When this option is enabled, web redirection will be applied to all unauthenticated Wi-Fi clients associated with this wireless network. Requests by unauthenticated Wi-Fi clients will be redirected to this Peplink Balance's built-in captive portal site. To configure the captive portal site, click the link "configure your Captive Portal" below. For details, please refer tosection 17.4. **NOTE: All changes made in the Captive Portal Management page are effective immediately**

17.3.1 Static WEP

The configuration of Static WEP parameters enables pre-shared WEP key encryption. Authentication is not supported by this method.

The security level of this method is known to be weak.

Static WEPparameters are entered via the following screen upon selection:



Static WEP Parameters	
Key Size	The setting can be configured as either **40 bits (64-bit WEP)** or **104 bits (128-bit WEP)**.
Key Format	The setting can be configured as either **ASCII** or **HEX**. ASCII will be applied to encryption keys that are manually entered only. HEX will be applied to encryption keys that are either manually entered or automatically generated.
Encryption Key	This setting specifies a user-specified encryption key value. For **ASCII** format, key length is either **5 or 13**. For **HEX** format, key length is either **10 or 26**.

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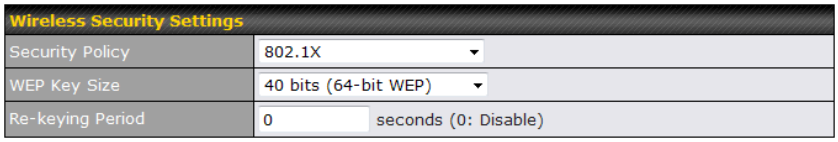
Shared Key Authentication	This setting enables the use of shared key authentication. Open authentication is the default authentication.

17.3.2 802.1X Parameters

The configuration of 802.1X parameters enables RADIUS-based 802.1X authentication with a dynamic WEP key. Once selected, RADIUS Server Setting will be available.

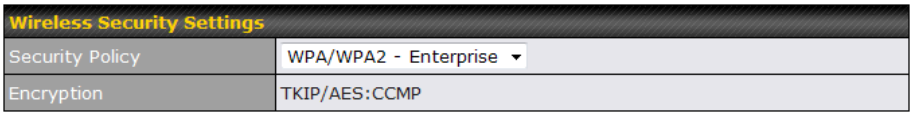
The configuration screen is as follows:



802.1x Parameters	
WEP Key Size	The setting can be configured as either **40 bits** or **104 bits**.
Re-keying Period	This setting specifies the length of time throughout which the broadcast key remains valid. Upon expiration of Re-keying Period, the broadcast key will no longer be valid and the renewal of the broadcast key will be required. The default is 14400 seconds (i.e. 4 hours). A value of **0** disables re-keying.

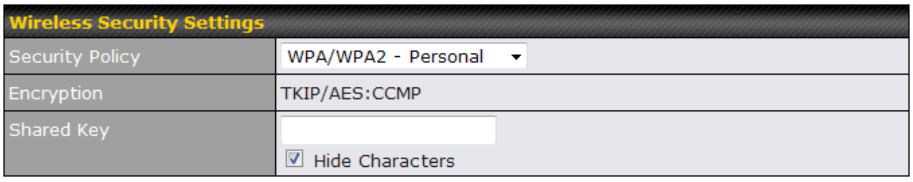
17.3.3 WPA parameters

The configuration of WPA parameters enables **WPA/WPA2 – Personal** and**WPA/WPA2- Enterprise**.



When **WPA/WPA2 - Enterprise** is configured, RADIUS-based 802.1 x authentications is enabled.Under this configuration, the **Shared Key** option should be disabled.

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. Under this configuration, the **Shared Key** option should be enabled. Key length must be between 8 and 63 characters (inclusive).

The security level of this method is known to be high.

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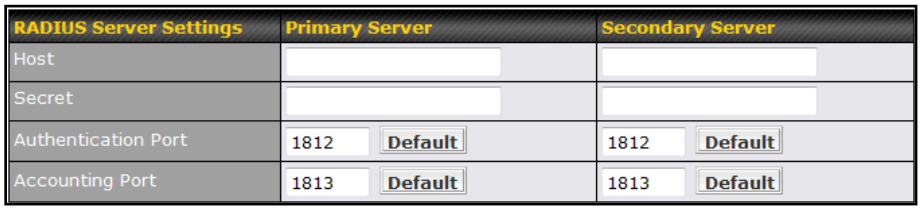
17.3.4 RADIUS Server Settings

When **802.1X** or **WPA/WPA2 – Enterprise** is selected as the wireless security protocol, RADIUS Server settings will be available as shown below.



RADIUS Server Settings	
Host	RADIUS server specified by this setting will be used for authentication and accounting.
Secret	This is the secret for accessing the RADIUS server.
Authentication Port	This specifies the UDP port number for the Authentication port of the RADIUS server.By default, it is set as **1812**.
Accounting Port	This specifies the UDP port number for the Accounting port of the RADIUSserver.By default, it is set as **1813**.

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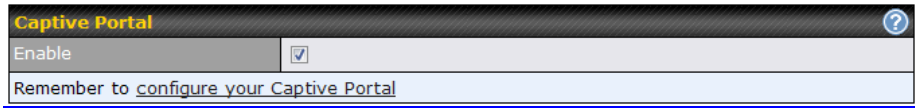
17.4 Captive Portal Management

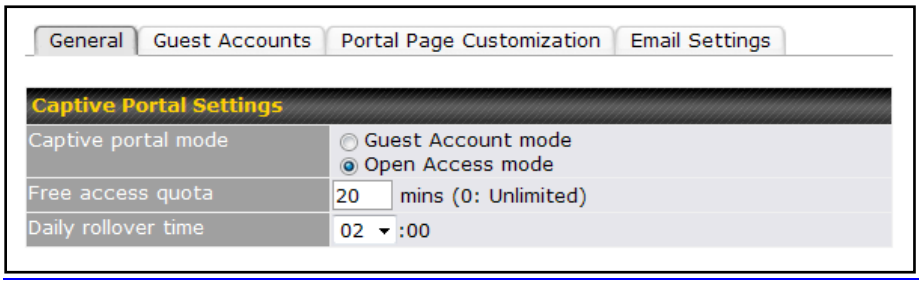
A customized Captive Portal page can be configured and applied to wireless networks. To configure,check the box at the bottom to enable the feature. Once enabled, a link for configuring Captive Portal will be available as shown below.



Click the link **configure your Captive Portal** to start configuration. Once the configuration is complete, click the button **Save** to save settings.

Important Note
Only one portal page customization is available for each Peplink Balance device, multiple wireless networks with captive portal enabled will be redirected to the same portal page.

17.4.1 General



Captive Portal Settings	
Captive Portal Mode	This is to specify the wireless network can be accessed by the general public or an access account is required. If Guess Account mode is selected, an access account is required. If Open Access mode is selected, users can associated with this network to gain access to the Internet without account information, a splash screen will be shown.
Free Access Quota	This option is only available if Open Access mode is selected, which specify the length of the free access to the general public users without access accounts. The number “0” mean the access is unlimited. The unit used is mins.
Daily Rollover Time	This option is only available if Open Access mode is selected, which specify the daily rollover time of the free access period. All access quota will be reset at this time specified.

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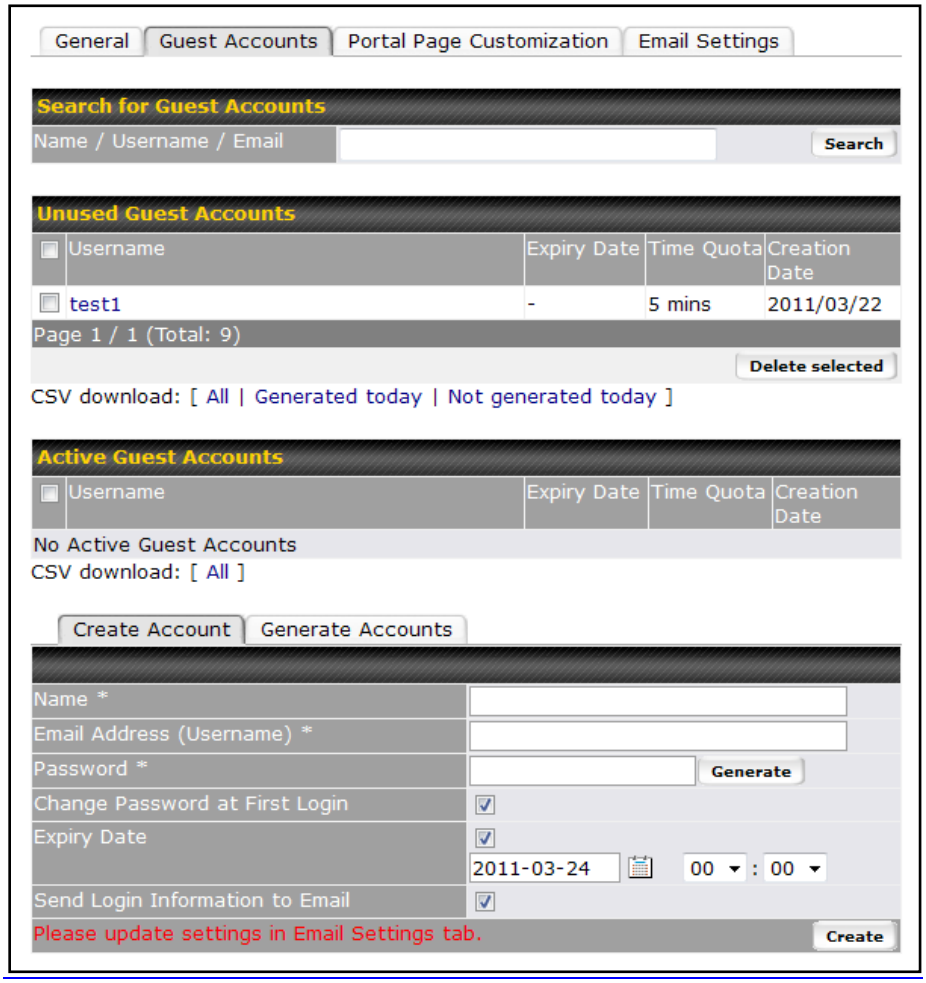
17.4.2 Guest Accounts

To manage and set up guest accounts for Guest Account mode, click the **Guest Accounts** tab and the following will be shown.



All unused Guest Accountsand Active Guest Accountsare shown. Check the corresponding checkbox and press delete to remove account from the system.

Unused / Active Guest Accounts	
Username	This shows the user name of the unused guest account.
Expiry Date	This shows the expiry date of the corresponding guest account.
Time Quota	This shows the time quota of the connection of the corresponding guest account.
Creation Date	This shows the date of creation of the corresponding guest account.

There are two different methods to create new guest account: **Create Account** and **Generate Accounts**

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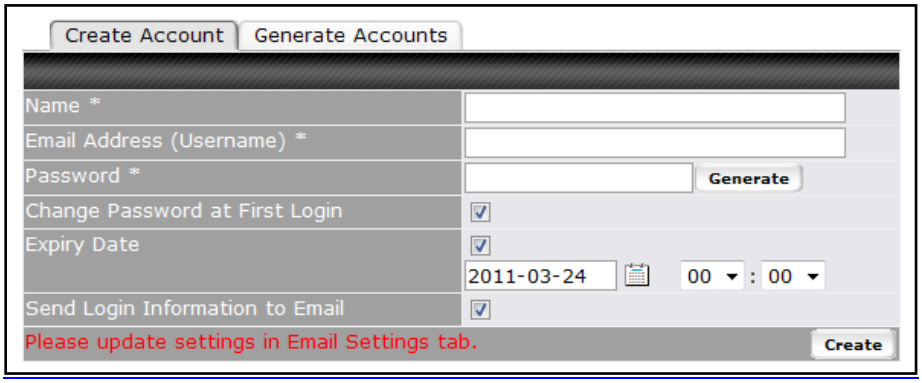
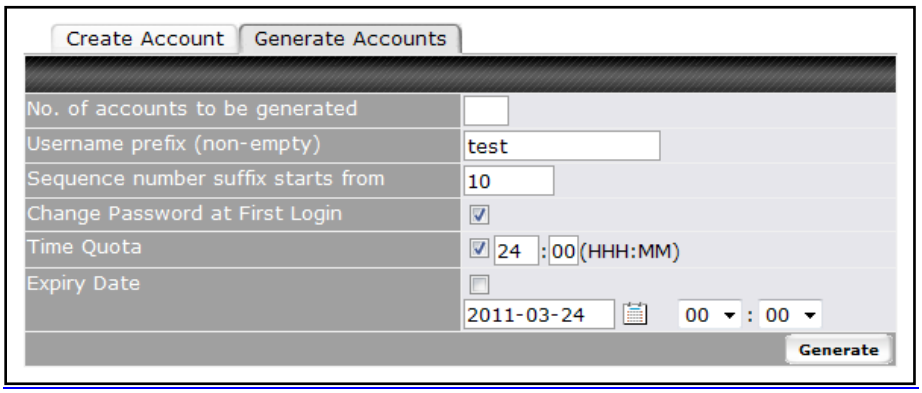
17.4.2.1 Create Account



With this method, only one account will be created each time.

Create Account	
Name	This is to specify a name for the created account for management use.
Email Address (Username)	This is to specify the username of the guest account.
Password	This is to specify the password of the guest account.
Change Password at First Login	With the box checked, user who uses this account to access will need to change the password at first login.
Expiry Date	With the box checked, an expiry date can be specified.This guest account will expire when time reach.
Send Login Information to Email	This is to enable the feature of sending an email regarding the login information. Email must be set to use with this feature. For details please refer to section 17.4.4

17.4.2.2 Generate Accounts



With this method, multiple accounts will be created in batch with the same settings.

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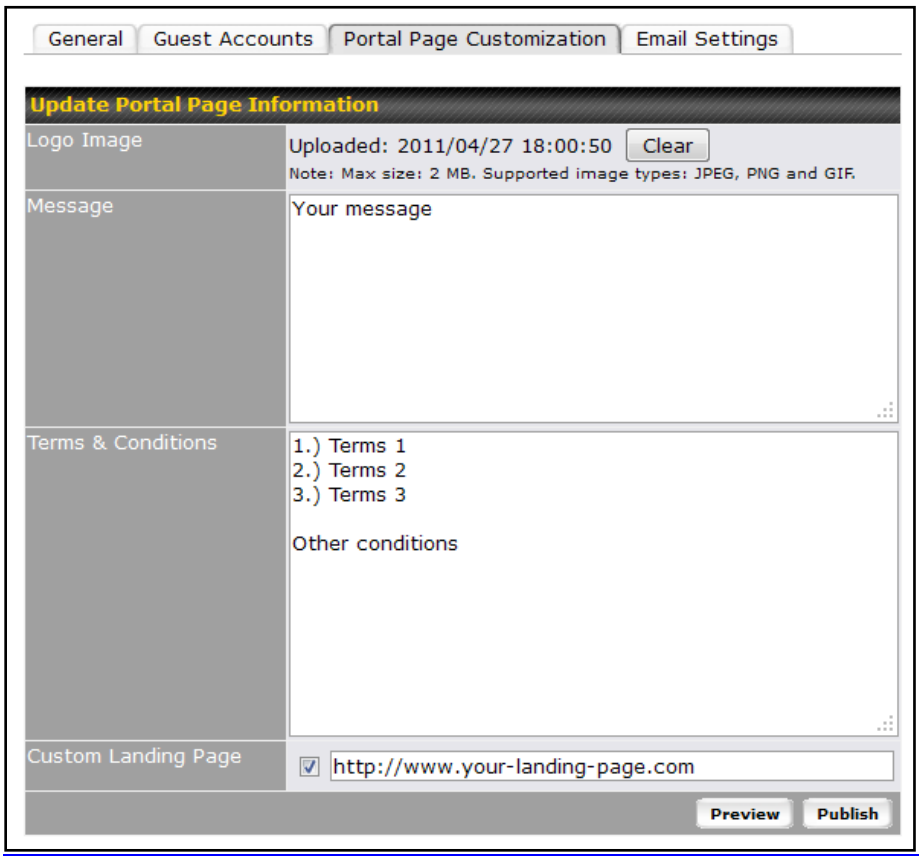
Generate Accounts	
No. of accounts to be generated	This is to specify the number of accounts will be generated with the same settings.
Username prefix (non-empty)	This is to specify the prefix of the username of the guest accounts. This field should not leave blank.
Sequence number suffix starts from	This is to specify the sequence number suffix which the username will start from. The specified value should be a number.
Change Password at First Login	With the box checked, user who uses this account to access will need to change the password at first login.
Time Quota	If this option is enabled, time quota of access will be set. If this option is disabled, users will have unlimited Internet access with this wireless network.
Expiry Date	With the box checked, an expiry date can be specified. This guest account will expire when time reach.

17.4.3 Portal Page Customization

A customized portal page will be shown each time a user access the wireless network that has captive portal enabled. The portal page can be customized under the Portal Page customization tab.



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Update Portal Page Information	
Logo Image	Click and choose a logo image and Upload for the portal page. The image file should be in the format of **JPEG**, **PNG** or **GIF**, with maximum size of **2MB**.
Message	Custom message can be specified here.
Terms & Conditions	Custom Terms & Conditions messages can be specified here.
Custom Landing Page	To specify the custom landing page opened once the clients login as a user.

Click **Preview** to preview the custom portal page, and click **Publish** to save settings.
An example of custom portal page is shown as below.

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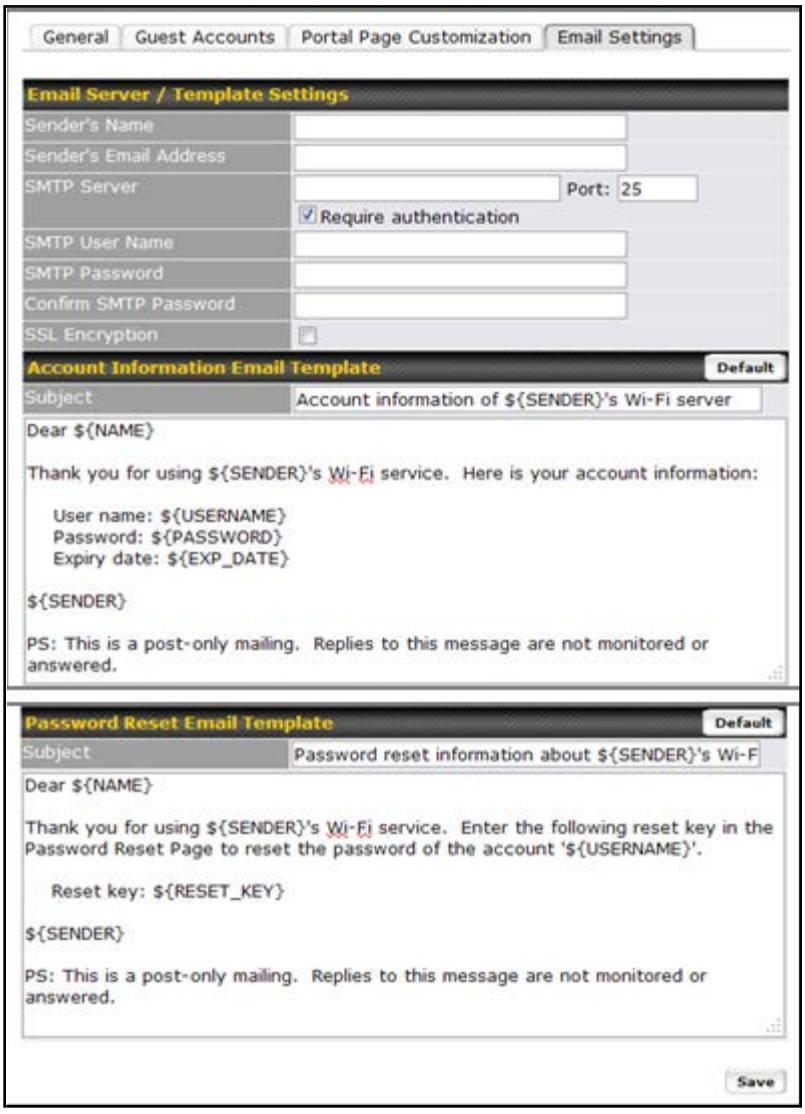
17.4.4 Email Settings



Once you have selected for Guest Account mode as the Captive portal modem in section 17.4.1, the **Email Settings** tab will be available. Under this page, email server and templates can be set. Automatic emails will be sent with the specified information.

Email Server / Template Settings	
Sender's Name	This is to specify the sender's name of the email.
Sender's Email Address	This is to specify the sender's email address of the email.
SMTP Server	This is to specify the SMTP server which will be used to send email. If the Server requires authentication, check the box **Require authentication**.
SMTP User Name / Password	This setting specifies the SMTP username and password while sending email. These options are shown only if **Require authentication** check box is checked in SMTP Server setting.

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Confirm SMTP Password	This field allows you to verify and confirm the new administrator password.
SSL Encryption	Check the box to enable SMTPS. When the box is checked, the next field **SMTP Port** will be changed to **465** automatically.

Two different emails templates can be set and customize.

- **Account Information Email** will be sent when the user login at the first time with a guest account.
- **Password Reset Email** will be sent when the user is requesting a password reset on the portal page.

Different dynamic information is available for the email template.

Dynamic Information for Captive Portal Email Template	
${NAME}	This is to specify the name of account user.
${SENDER}	This is to specify the sender's name.
${RESET_KEY}	This is to specify the reset password of the specified account.
${USERNAME}	This is to specify the account user name.
${PASSWORD}	This is to specify the password of the account.
${EXP_DATE}	This is to specify the expiry date of the account.

Once the settings are complete, press the **Save** button to save and activate settings.

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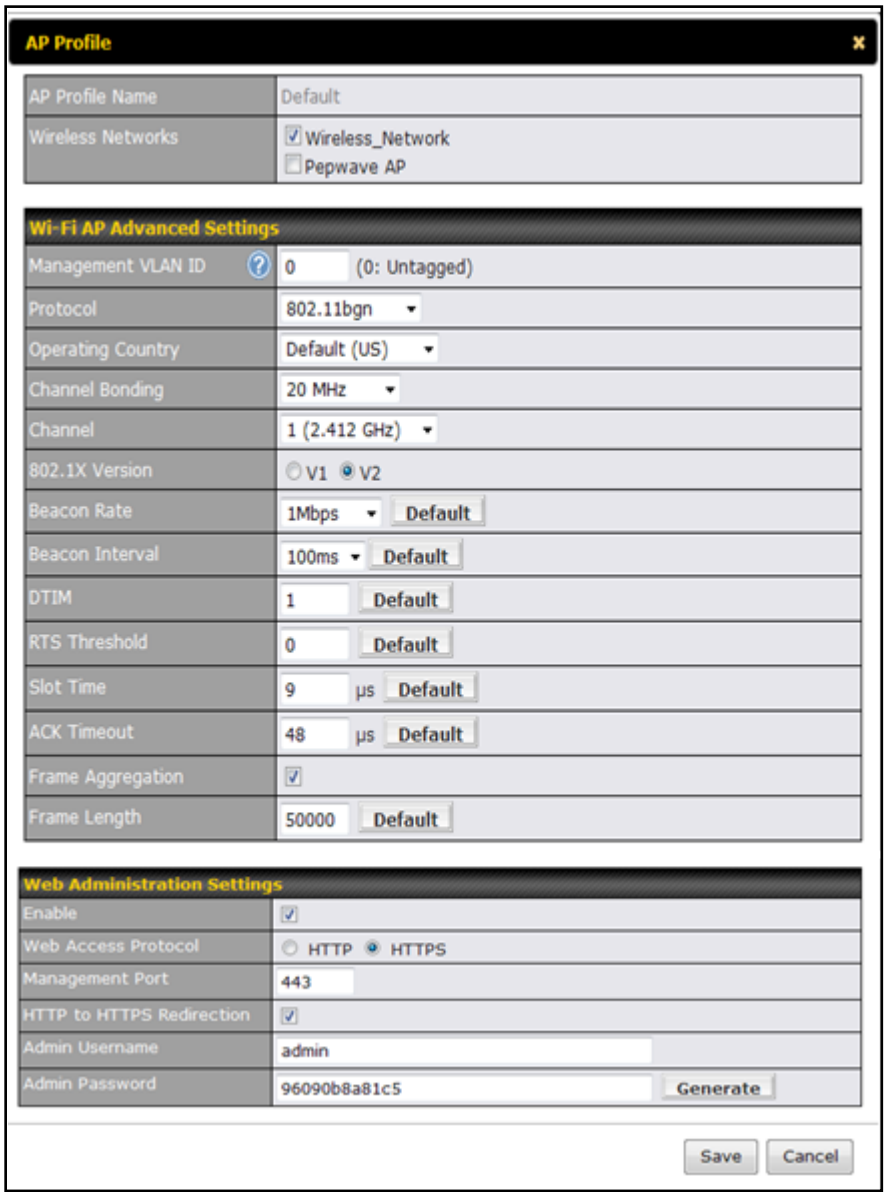
17.5 AP Profile

AP profiles assigned to each Pepwave AP device can be configured at ***Network > WLAN Controller > AP Profiles***.

Each AP is associated with one AP Profile. By default, all devices are associated with the first (Default) profile. The Default profile cannot be removed.

You can define an AP profile by clicking the **New AP Profile** button. Click the **Clone** button of an existing profile to create a new profile based on it.To change the settings of an existing profile, click the profile name and the following screen will be shown.



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AP Profile	
AP Profile Name	It specifies the name of this AP Profile.
Wireless Networks	It specifies which Wireless Networks would be chosen and used this AP Profile.

Wi-Fi AP Advanced Settings	
Management VLAN ID	This field specifies the VLAN ID to tag to management traffic, such as inter-AP-WLAN-controller communication traffic. 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 WLAN controller.
Protocol	There are five options are available: • 802.11bgn: Pepwave AP devices accept 802.11b, 802.11g and 802.11n client association requests. • 802.11b/g: Pepwave AP devices accept both 802.11b and 802.11g client association requests. • 802.11b Only: Pepwave AP devices accept only 802.11b client association requests. • 802.11g Only: Pepwave AP devices accept only 802.11g client association requests. • 802.11n Only: Pepwave AP devices accept only 802.11n client association requests.
Operating Country	This setting specifies the country / region regulations which Pepwave AP One unit should follow. • If North America region is selected, RF channels 1 to 11 are available. Maximum transmission power is 26 dBm (400 mW). • If Europe region is selected, RF channels 1 to 13 are available. Maximum transmission power is 20 dBm (100 mW). NOTE: Users are required to choose the suitable option based on local laws and regulations.
Channel Bonding	This setting is only available when the protocol is selected as 802.11bgn or 802.11n Only. There are three options: 20 MHz, 20/40 MHz and 40 MHz With this feature enabled, it allows the Wi-Fi system to use two channels at once. Using two channels improves the performance of the Wi-Fi connection
Channel	• This option selects the 802.11 channel to be utilized. Available options are from 1 to 11, and from 1 to 13 for the country setting of North America region and Europe region, respectively. (Channel 14 is only available when the country is selected as Japan with protocol 802.11b.) • If Auto is set, the system would perform channel scanning based on the scheduled time set and choose the most suitable channel automatically.
802.1X Version	This setting selects between v1or v2 of the 802.1x EAPOL. When v1 is selected, both v1 and v2 clients can associate with the access point. However, when v2 is selected, only v2 clients can associate with the access point. Most modern wireless clients support v2. In the event that there are stations that do not support v2, select the option v1. By default, the value of the setting is v2.

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Beacon Rate	This setting provides the option to send beacon in different transmit bit rate and the bit rates are: 1Mbps, 2Mbps, 5.5Mbps, 6Mbps, 11Mbps.
Beacon Interval	This setting provides the option to set the time between each beacon send. Available options are: 100ms, 250ms and 500ms.
DTIM	This setting provides the option to set the frequency for beacon to include Delivery Traffic Indication Message, DTIM. The interval unit is in millisecond.
RTS Threshold	This setting provides the option to set the minimum packet size for the unit to send an RTS using the RTS/CTS handshake. Setting zero would disable this feature.
Slot Time	This setting provides the option to modify the unit wait time before it transmits. The default value is 9µs.
ACK Timeout	This setting provides the option to set the wait time to receive acknowledgement packet before doing retransmission. The default value is 48µs.
Frame Aggregation	With this feature enabled, throughput will be increased by sending two or more data frames in a single transmission.
Frame Length	This option is only available when Frame Aggregation is enabled. It specifies the frame length for frame aggregation. By default, it is set as 50000.

Web Administration Settings	
Enable	Check the box to allow Peplink Balance to manage the web admin access information of the Pepwave AP One.
Web Access Protocol	This option specifies the web access protocol used for accessing the web admin of Pepwave AP One. The two available options are HTTP and HTTPS.
Management Port	This is to specify the management port used for accessing the device.
HTTP to HTTPS Redirection	This option will be available if you have chosen HTTPS as the Web Access Protocol. With this enabled, any HTTP access to the web admin will be redirect to HTTPS automatically.
Admin User Name	This specifies the administrator username of the web admin. It is set as admin by default.
Admin Password	This field allows you to specify a new administrator password. You may also click the Generate button and let the system generate a random password automatically.

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18 QoS

18.1 User Groups

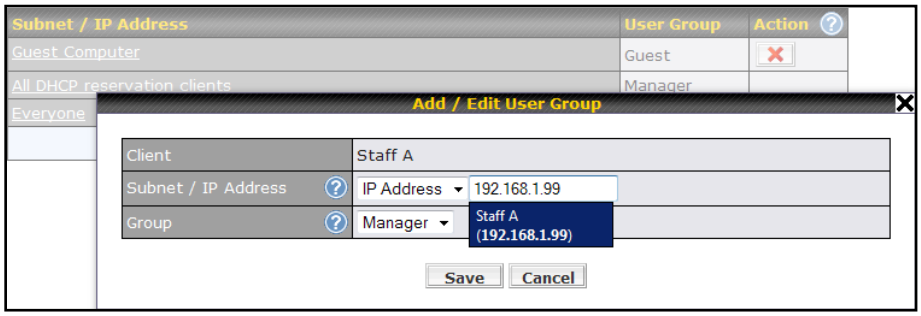
(Available on Peplink Balance 305 and380+)

LAN and PPTP clients can be categorized into three user groups - **Manager, Staff, and Guest**.This table allows you to define rules and assign client IP addresses or subnets to a user group. You can apply different bandwidth and traffic prioritization policies on each user group in the Bandwidth Control and Application sections.

The table is automatically sorted, and the table order signifies the rules' precedence.The smaller and more specific subnets are put towards the top of the table and have higher precedence; larger and less specific subnets are placed towards the bottom.

Click the **Add** button to define clients and their user group. Click the button to remove the defined rule.

Two default rules are pre-defined and put at the bottommost.They are **All DHCP reservation clients** and **Everyone**, and they cannot be removed. The **All DHCP reservation client represents**the LAN clients defined in the DHCP Reservation table in the LAN settings page. **Everyone** represents all clients that are not defined in any rule above. Click on a rule to change its group.



Add / Edit User Group	
Subnet / IP Address	From the drop-down menu, choose whether you are going to define the client(s) by an **IP Address** or a **Subnet**. If IP Address is selected, enter a name defined in DHCP Reservation table or a LAN client's IP address. If Subnet is selected, enter a subnet address and specify its subnet mask.
Group	This field is to define which **User Group** the specified Subnet / IP Address belongs to.

Once users have been assigned to a user group, their internet traffic will be restricted by rules defined for that particular group. Please refer to the following two sections for details.

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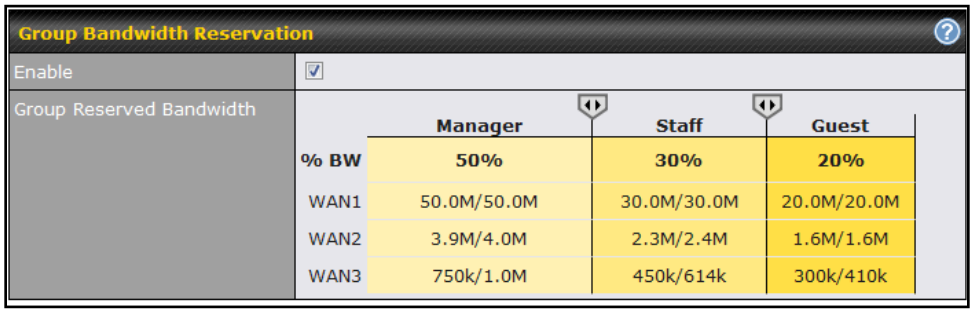
18.2 Bandwidth Control

(Available on Peplink Balance 305 and380+)

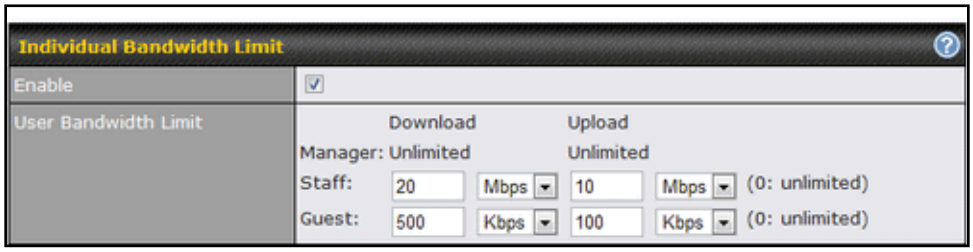
This section is to define how much minimum bandwidth will be reserved to each user group when a WAN connection is **in full load**.When this feature is enabled, a slider with two indicators will be shown. You can move the indicators to adjust each group's weighting. The lower part of the table shows the corresponding reserved download and uploads bandwidth value of each connection.

By default, **50%** of bandwidth has been reserved for Manager, **30%** for Staff, and **20%** for Guest.



You can define a maximum download speed (over all WAN connections) and upload speed (for each WAN connection) that each individual Staff and Guest member can consume. No limit can be imposed on individual Manager members.

By default, Download and Upload Bandwidth Limits are set to unlimited (set as **0).**



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18.3 Application

18.3.1 Application Prioritization

For Peplink Balance 20, 30, 210 and 310:

Three priority levels can be set for application prioritization: ↑ **High**,— **Normal**, and ↓ **Low**.

Peplink Balance can detectvarious application traffics by inspecting the packets' content. Select an application by choosing a supported application, or by defining a custom application manually. The priority preference of supported applications is placed at the top of the table. Custom applications are at the bottom.

Application	Priority	Action
PPTP	— Normal	✖
IPsec	↑ High	✖
SIP	↑ High	✖
Skype	↑ High	✖
RTP	↑ High	✖
RealMedia	↓ Low	✖
Windowsmedia	↓ Low	✖
MMS	— Normal	✖
RTSP	— Normal	✖
SSL	— Normal	✖
Add		

For Peplink Balance 305,380, 580, 710, 1350 and 2500:

You can choose whether to apply the same Prioritization settings to all user groups or customize the settings for each group.

Application Prioritization

○ Apply same settings to all users
◉ Customize

Three priority levels can be set for application prioritization: ↑ **High**,— **Normal**, and ↓ **Low**.

Peplink Balancesupports detectvarious application traffics by inspecting the packets' content. Select an application by choosing a supported application, or by defining a custom application manually. The priority preference of supported applications is placed at the top of the table. Custom applications are at the bottom.

Application	Priority			Action
	Manager	Staff	Guest	
PPTP	↑ High	— Normal	— Normal	✖
IPsec	↑ High	— Normal	— Normal	✖
SIP	↑ High	↑ High	↑ High	✖
Skype	— Normal	— Normal	↓ Low	✖
RTP	— Normal	— Normal	↓ Low	✖
RealMedia	— Normal	— Normal	↓ Low	✖
Windowsmedia	— Normal	— Normal	↓ Low	✖
MMS	— Normal	— Normal	↓ Low	✖
RTSP	— Normal	— Normal	↓ Low	✖
video_conf	↑ High	↑ High	↑ High	✖
Add				

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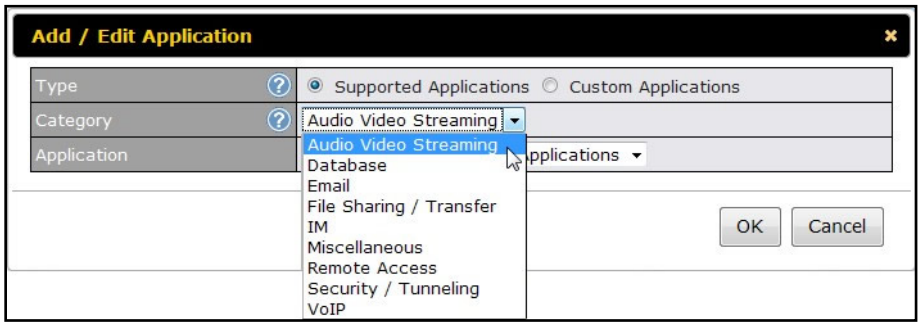
18.3.2 Prioritization for Custom Application

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

When**Supported Applications** is selected, the Peplink Balance will inspect network traffic and prioritize the selected application. Alternatively, select **Custom Applications**and define the application by providingthe protocol, scope, port number, and DSCP value.



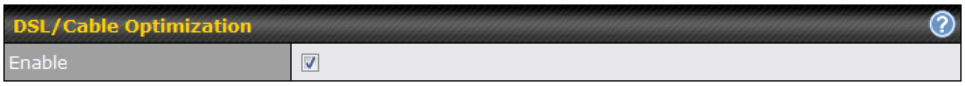
Categoryand **Application**availability will be different across different models of Peplink Balance.

18.3.3 DSL/Cable Optimization

DSL/cable-based WAN connection has its upload bandwidth lower than the download bandwidth. When this option is enabled, the download bandwidth of the WAN can be fully utilized in any situation.

When a DSL/cable circuit's uplink is congested, the download bandwidth will be affected. Users will not be able to download data in full speed until the uplink becomes less congested.The DSL/Cable Optimization can relieve such issue. When it is enabled, the download speed will become less affected by the upload traffic.

By default, this feature is enabled.



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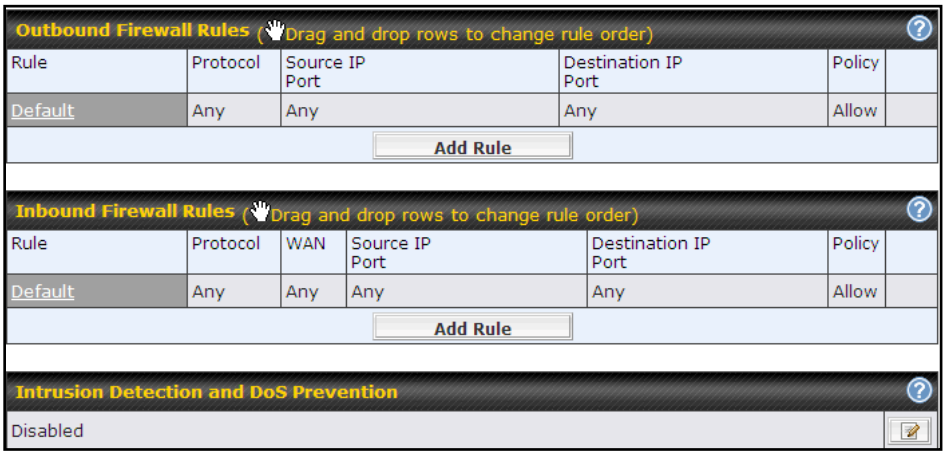
19 Firewall

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

The firewall functionality of Peplink Balance supports the selective filtering of data traffic in both directions:

- Outbound (LAN to WAN)
- Inbound (WAN to LAN)
- Intrusion Detection and DoS Prevention
- Web Blocking

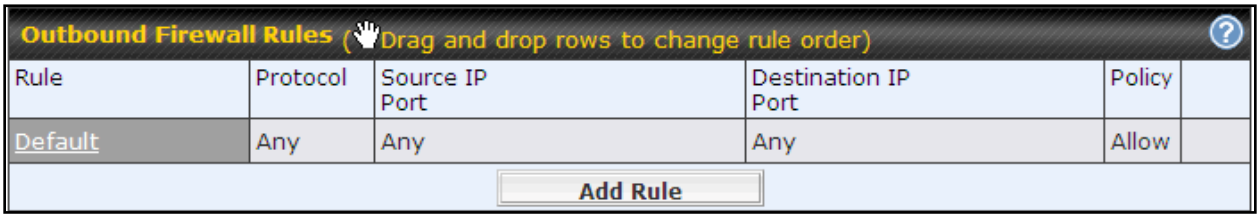
With SpeedFusion™ enabled (see **Section 0**), the firewall rules also apply to VPN tunneled traffic.



19.1 Outbound and Inbound Firewall Rules

19.1.1 Access Rules

The outbound firewall settings are located at:***Network > Firewall>Outbound Firewall Rule.***



Upon clicking**Add Rule**

, the following screen appears:

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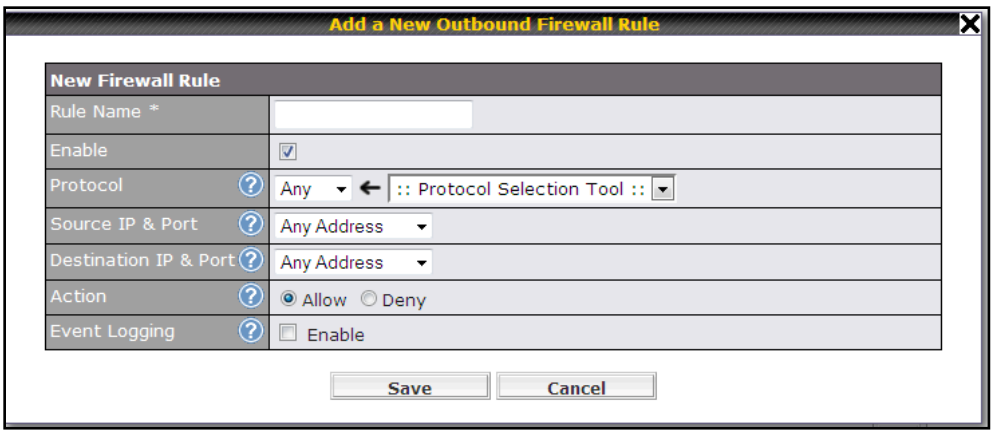
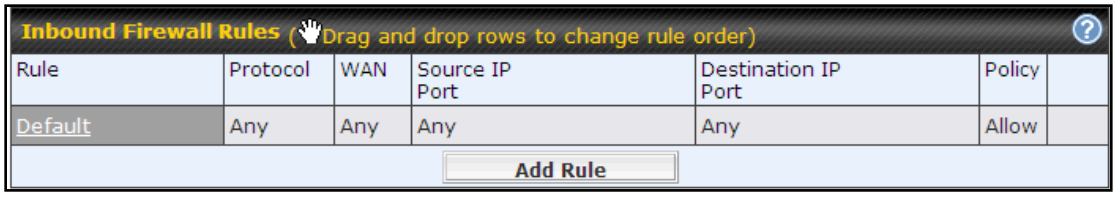
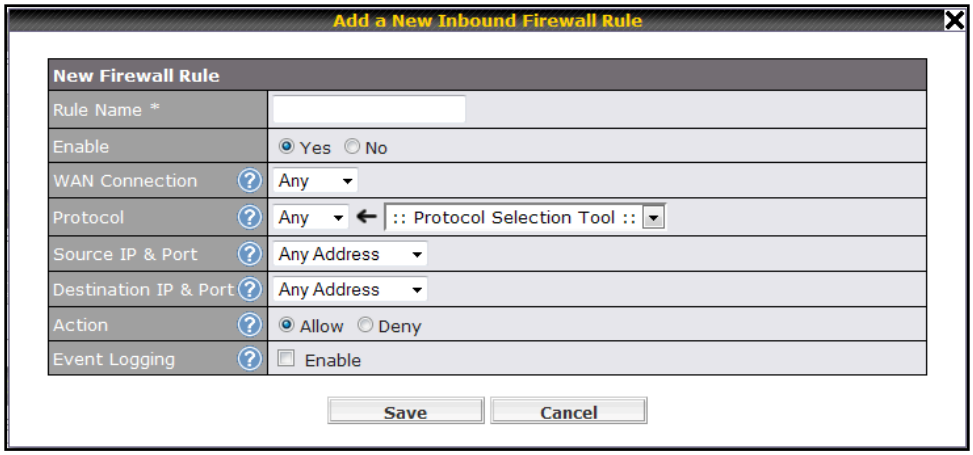


The Inbound firewall settings are located at:***Network > Firewall> Inbound Firewall Rule.***



Once you click on **Add Rule** the following window will appear.



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Inbound / Outbound Firewall Settings	
Rule Name	This setting specifies a name for the firewall rule.
Enable	This setting specifies whether the firewall rule should take effect. When **Yes** is selected, the firewall rule takes effect. If the traffic matches the specified Protocol/IP/Port, actions will be taken by Peplink Balance based on the other parameters of the rule. When **No** is selected, the firewall rule does not take effect. Peplink Balance will disregard the other parameters of the rule.
WAN Connection	This setting is applicable to Inbound Firewall Rules only. This setting specifies the WAN connection(s) on which the rule applies: 1. **Any** 2. **WAN1** 3. **WAN2** 4. **WAN3** (applicable only to Peplink Balance 30, 310, 305, 380, 580, 710, 1350 and 2500) 5. **WAN4 to WAN5** (applicable only to Peplink Balance 580, 710, 1350 and 2500) 6. **WAN6 to WAN7**(applicable only to Peplink Balance 710, 1350and 2500) 7. **WAN8 to WAN12** (applicable only to Peplink Balance 1350, 2500) 8. **WAN 13** (applicable only to Peplink Balance 1350) 9. **Mobile Internet** (applicable only to Peplink Balance 20, 30, 305,380, 580, 710, 1350and 2500) A value of ***Any, WAN1, WAN2, … and Mobile Internet***specifies that the rule applies to all WAN connections, WAN1, WAN2, … and Mobile Internet, respectively.
Protocol	This setting specifies the protocol to be matched. Via a drop-down menu, the following protocols can be specified: • **TCP** • **UDP** • **ICMP** • **IP** Alternatively, the **Protocol Selection Tool** drop-down menu can be used to automatically fill in the Protocol and Port number of common Internet services (e.g. HTTP, HTTPS, etc.) After selecting an item from the **Protocol Selection Tool** drop-down menu, the Protocol and Port number remains manually modifiable.
Source IP & Port	This specifies the source IP address(es) and port number(s) to be matched for a firewall rule. A single address, or a network, can be specified as the Source IP & Port setting, as indicated with the following screenshots:

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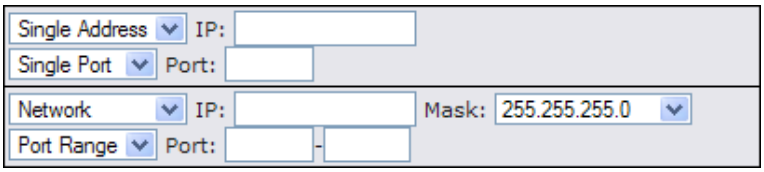
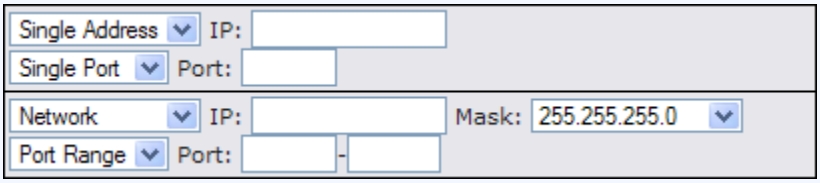


In addition, a single port, or a range of ports, can be specified for the Source IP & Portsetting.

Destination IP & Port

This specifies the destination IP address(es) and port number(s) to be matched for a firewall rule.

A single address, or a network, can be specified as the Source IP & Port setting, as indicated with the following screenshots:



In addition, a single port, or a range of ports, can be specified for the Source IP & Portsetting.

Action

This setting specifies the action to be taken by Peplink Balance upon encountering traffic that matches the both of the following:

- Source IP & Port
- Destination IP & Port

With the value of **Allow** for the Action setting, the matching traffic passes through Peplink Balance (to be routed to the destination).

If the value of the Action setting is set to **Deny**, the matching traffic does not pass through Peplink Balance (and is discarded).

Event Logging

This setting specifies whether or not to log matched firewall events.

The logged messages are shown on the page **Status > Event Log**.

A sample message is as follows:

```
Aug 13 23:47:44 Denied CONN=Ethernet WAN SRC=20.3.2.1
DST=192.168.1.20 LEN=48 PROTO=TCP SPT=2260 DPT=80
```

- **CONN:** The connection where the log entry refers to
- **SRC:** Source IP address
- **DST:** Destination IP address
- **LEN:** Packet length
- **PROTO:** Protocol
- **SPT:** Source port
- **DPT:** Destination port

Upon clicking **Save**after entering required information, the following screen appears.

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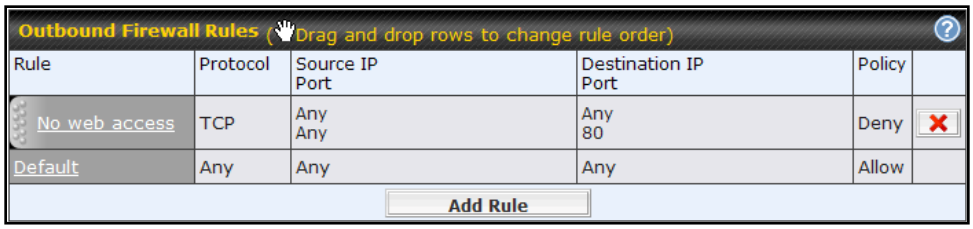

To create an additional firewall rule, click **Add Rule** and repeat the above steps.

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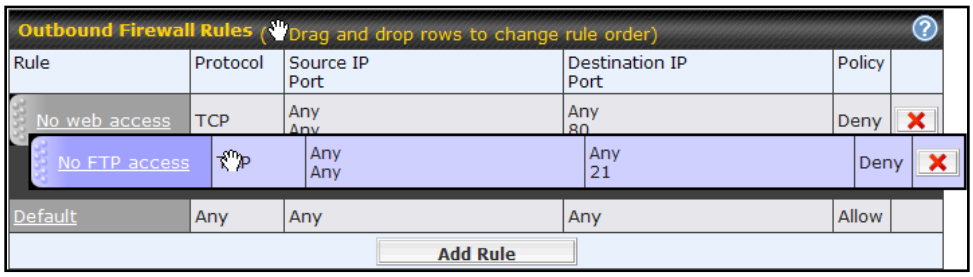
To reorder a rule's position, just drag on the rule by holding the left mouse button, move it to the desired position and drop it by releasing the mouse button.



To remove a rule, click .

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

By default, the **Default** rule is **Allow** for both outbound and inbound accesses.

Tip

If the default inbound rule is set as **Allow** for NAT enabled WANs, no inbound Allow firewall rules will be required for inbound Port Forwarding and inbound NAT Mapping rules. However, if the default inbound rule is set as **Deny**, a corresponding Allow firewall rules will be required.

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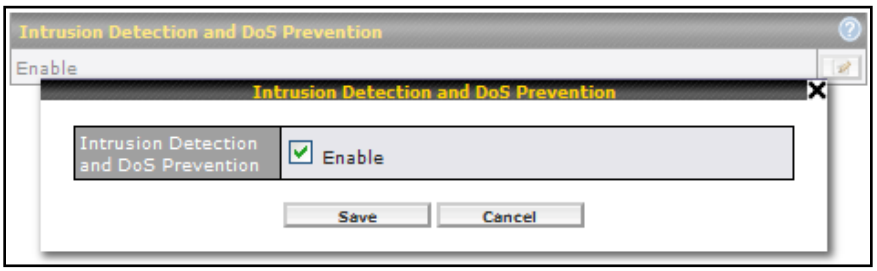
19.1.2 Intrusion Detection and DoS Prevention



The Balance supports detecting and preventing intrusions and Denial-of-Service (DoS) attacks from the Internet. To turn on this feature, click , check the **Enable**check box for the **Intrusion Detection and DoS Prevention**and press the **Save**button.

When this feature is enabled, the Balance will detect and protect from the following kinds of intrusions and denial-of-service attacks.

- Port Scan:
- NMAP FIN/URG/PSH
- Xmas Tree
- Another Xmas Tree
- Null Scan
- SYN/RST
- SYN/FIN
- SYN Flood Prevention
- Ping Flood Attack Prevention

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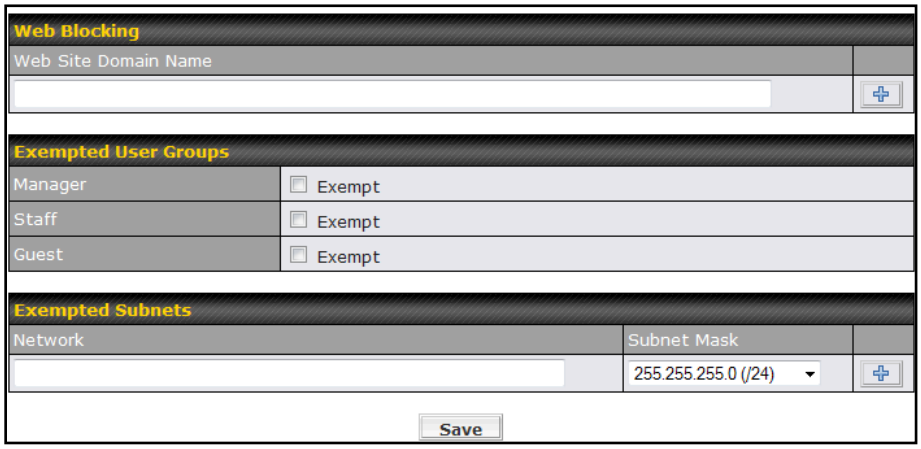
19.2 Web Blocking

(Available on Peplink Balance 305 and 380+)



19.2.1 Web Blocking

Enter an appropriate website address and Peplink Balance will block and disallow LAN/PPTP/SpeedFusion™ peer clients to access these websites. Exception can be added in the following sections - **19.2.2** and **19.2.3.**

You may enter the wild card ".*" at the end of a domain name to block any web site with a host name having the domain name in the middle.

For example, If you enter "foobar.*," then "www.foobar.com," "www.foobar.co.jp," or "foobar.co.uk" will be blocked.

Placing the wild card in any other position is not supported.

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

19.2.2 Exempted User Group

Check and select pre-defined user group(s) who can exempt from the access blocking rules. User groups can be defined at ***QoS> User Group*** section. Please refer to section **18.1** for details.

19.2.3 Exempted Subnets

With the subnet defined in the field, clients on the particular subnet(s) can exempt from the access blocking rules.

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20 Miscellaneous Settings

The miscellaneous settings include configuration for High Availability, PPTP Server, Service Forwarding, and Service Passthrough.

20.1 High Availability

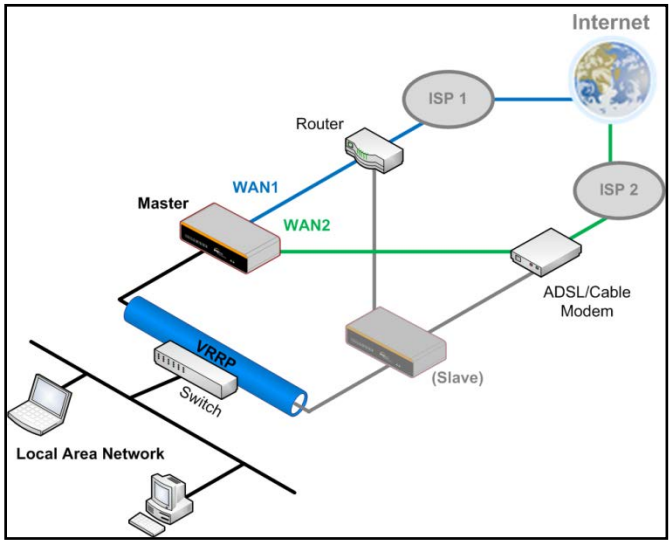
(Available on Peplink Balance 210+)

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 (e.g. a pair of Peplink Balance 210 units, or a pair of Peplink Balance 710 units) provide redundancy and failover in a master-slave arrangement. From a high level, 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 twoPeplink Balance 210 units, and two Internet connections:



In the diagram, the WAN ports on each Peplink Balance unit connect to the router and modem;and Peplink Balance unit connects to the same LAN switch via a LAN port.

An elaboration on the technical details of the implementation, by Peplink Balance, of Virtual Router Redundancy Protocol (VRRP, RFC 3768) 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.

The settings to configure High Availability are located at the following location:***Network>Misc. Settings > High Availability***:

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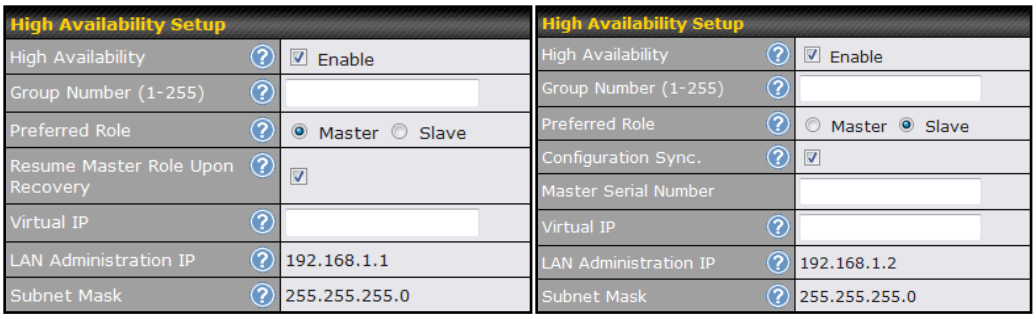

High Availability Settings	
High Availability	Checking this box specifies that the Peplink Balance unit is part of a High Availability configuration.
Group Number	This setting specifies a number that identifies a pair of Peplink Balance units that operate in a High Availability configuration. The two 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 is recovered from 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 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 the box **Configuration Sync.** is checked, serial number of the Master unit is required to be entered here.
Virtual IP	The setting specifies the LAN IP address on which the active Peplink Balance listens. The value of Virtual IP represents a LAN IP address that is shared among the Master and Slave units; however, at any time, only one of the two units will listen on the IP address. If the WAN is configured in NAT mode, Default Gateway of the clients on the LAN should be set to the virtual IP. These configurations are not required when the WAN is configured in Drop-in mode.
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.

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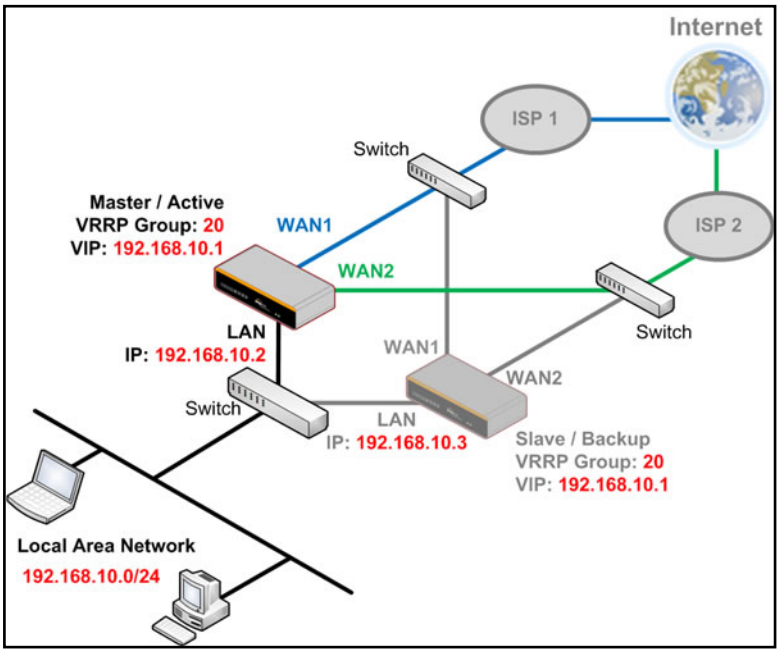
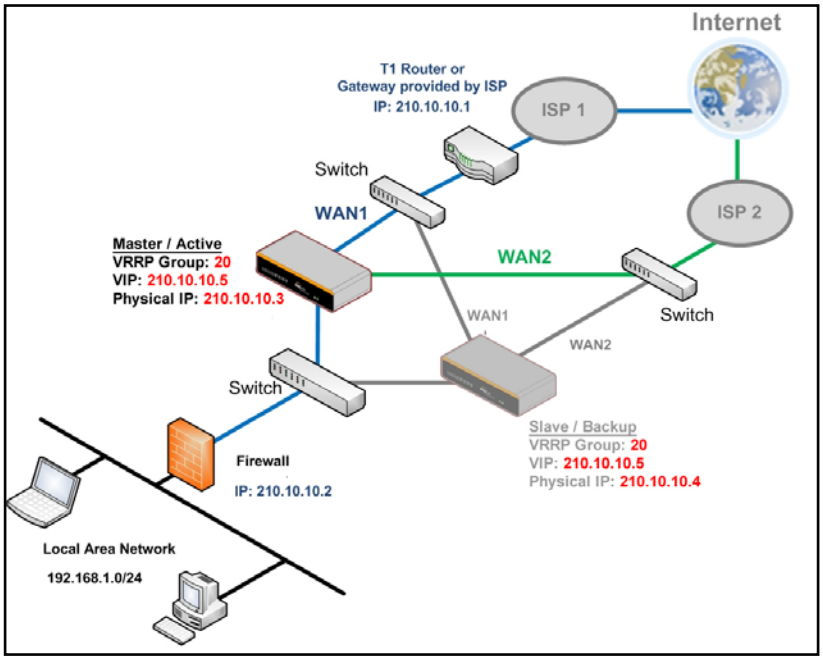
Important Note

For Balance in NAT mode, the 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 VIP instead of the IP of Master Balance.



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



Please be noted that Drop-in WAN cannot be configured in LAN Bypass port when it is configuring High Availability.

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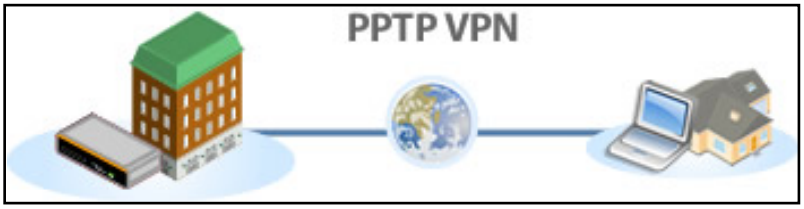
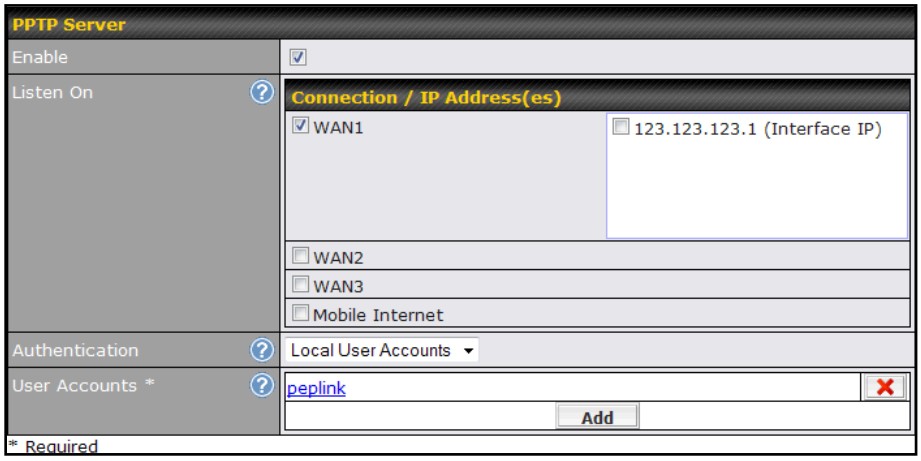
20.2 PPTP Server



Peplink Balance has a built-in PPTP Server, which enables remote computers to conveniently and securely access the local network.

PPTP server setting is located at: ***Network> Misc. Settings > PPTP Server***

Simply check the box to enable the PPTP server function. All connected PPTP sessions are displayed on the Client List at ***Status > Client List***.Please refer to section 23.3 for details.



PPTP Server Setting	
Listen On	This setting is for specifying the WAN connection(s) and IP address(es) where the PPTP server should listen on.
Authentication	**(This option is only applicable on Peplink Balance 305 and 380+.)** This setting is for specifying the source of user database for PPTP authentication. There are three sources can be selected: **Local User Accounts, LDAP Server, RADIUS Server**. **Local User Accounts** - User accounts are stored in the Peplink Balance locally. You can add/modify/delete the accounts in the User Accounts table below. **LDAP Server** - Authenticate with an external LDAP server. Tested with OpenLDAP server where passwords are NTLM hashed. Active Directory is not supported. (You can choose to use RADIUS to authenticate with a Windows Server.) **RADIUS Server** - Authenticate with an external RADIUS server. Tested with Microsoft Windows Internet Authentication Service, and FreeRADIUS servers where passwords are NTLM hashed or in plain text.
User Accounts	This setting allows you to define the PPTP User Accounts. Click Add to input username and password to create an account. After adding the user accounts, you can click on a username to edit the account password. Click the button to delete the account in its corresponding row.

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Important Note
PPTP server will be disabled automatically if the Balance is deployed in Drop-in mode.

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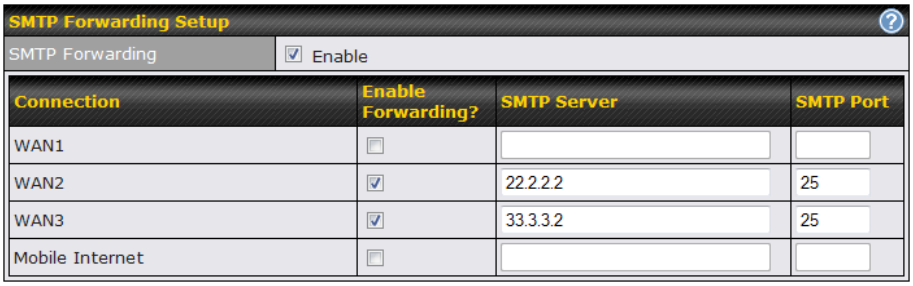
20.3 Service Forwarding

Service Forwarding settings are located at:***Network> Service Forwarding***

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 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.

20.3.1 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 to intercept and redirect all outgoing SMTP connections (destined for TCP port 25) via a WAN connection to the WAN's corresponding SMTP server.



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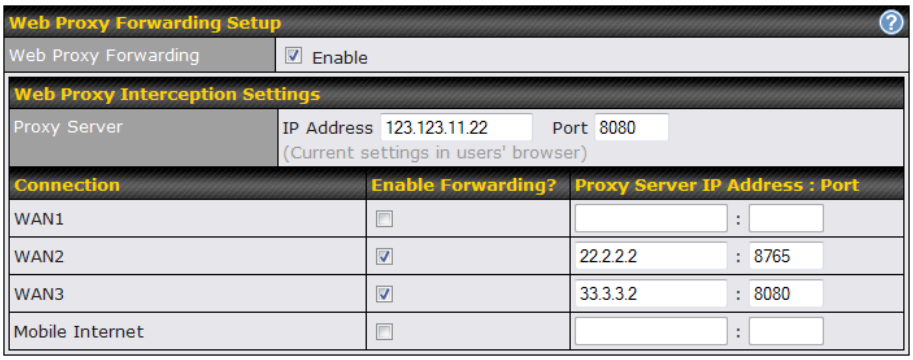
To enable the feature, select the ***Enable*** check box under *SMTP Forwarding Setup*. Check the box ***Enable Forwarding*** for the WAN connection(s) that needs such forwarding. Enter the ISP's e-mail server host name or IP address and TCP port number for each WAN.

The Peplink Balance will intercept SMTP connections, choose a WAN with reference to the Outbound Policy, and then forward the connection to the forwarded 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 forwarded to the connection's original destination.

Note

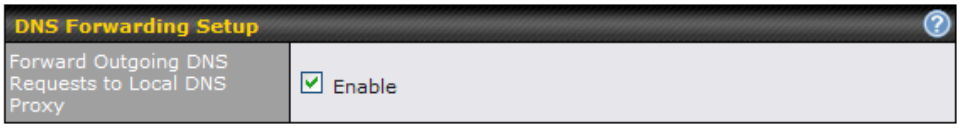
If you want to route all SMTP connections only to particular WAN connection(s), you should create a custom rule in Outbound Policy (see Section 14.1).

20.3.2 Web Proxy Forwarding



When this feature is enabled, the Peplink Balance will intercept all outgoing connections destined for the proxy server specified in "Web Proxy Server Interception Settings", choose a WAN connection with reference of Outbound Policy, and then forward them to the specified web proxy server and port number. Redirected server settings for each WAN can be set here. If Forwarding is disabled for a WAN, web proxy connections for the WAN will be simply forwarded to the connection's original destination.

20.3.3 DNS Forwarding



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

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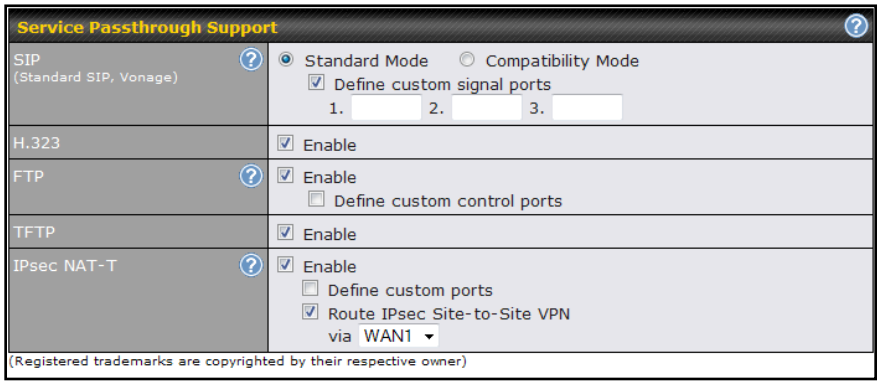
20.4 Service Passthrough

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



Some Internet services required to be specially handled in a multi-WAN environment.The Peplink Balance supports handling such services correctly 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. 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 multi-WAN situation, they have to be routedto 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 the box **Define custom control ports** and enter the port numbers to 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 the TFTP Passthrough support.
IPsec NAT-T	This field is for enabling the support of IPsec NAT-T Passthrough. UDP ports 500, 4500 and 10000 are monitored by default. You may add more custom data ports that your IPsec system usesby checking the box **Define custom ports**. If the VPN contains IPsec Site-to-Site VPN traffic, you have to check the box Route IPsecSite-to-Site VPN and choose the WAN connection to route the traffic to. If you have IPsecSite-to-Site VPNtraffic routed, check the **Route IPsecSite-to-Site VPN** option and select a WAN to force routing such traffic to the specified WAN.

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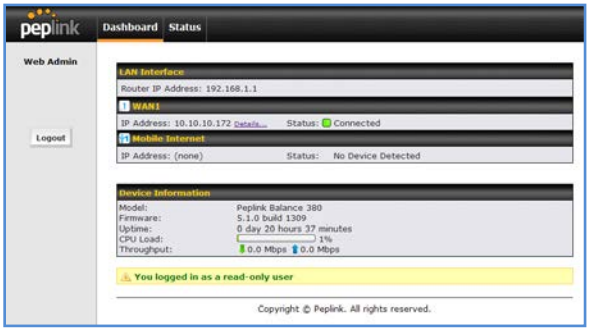
21 System Settings

21.1 Admin Security

There are two user accounts available for accessing the Web Admin.Usernames are **admin** and **user**.They represent two user levels- **admin** has full administration access, while **user** is a read-only account.The read-only account can only access the device's status information and cannot make any change on the device.

Admin Account UI



User Account UI

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 specialsituations, as it will lower the system security level if users do not logout before closing the browser.

Default: 4 hours 0 minutes.

For security reason, 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***

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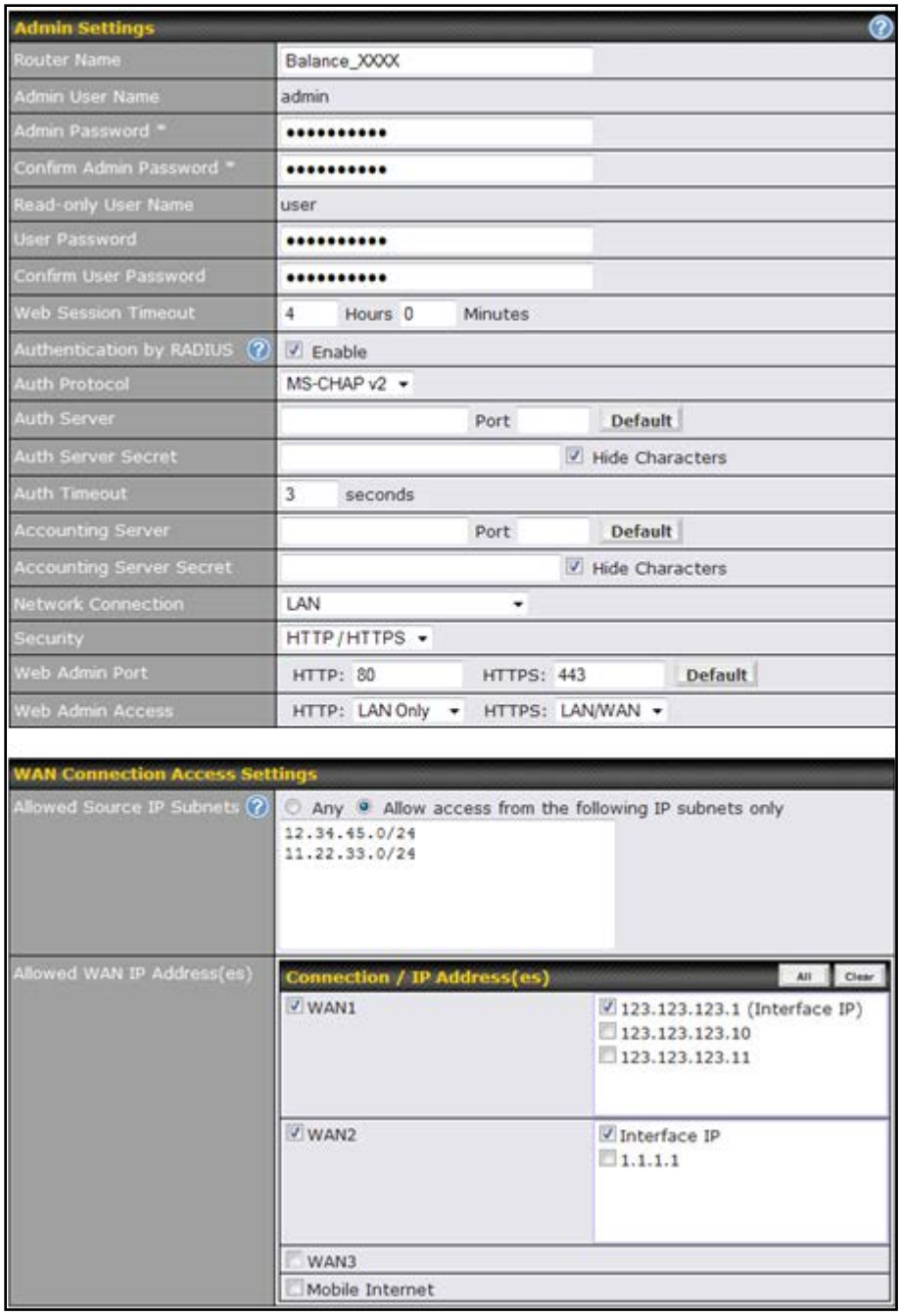

Admin Settings	
Router Name	This field allows you to define a name for this Peplink Balance unit. By default, Router Name is set as **Balance_XXXX**, where XXXX refers to the last 4 digits of the serial number of that balance unit.
Admin User Name	It is set as **admin** by default and is not customizable.
Admin Password	This field allows you to specify a new administrator password.

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Confirm Admin Password	This field allows you to verify and confirm the new administrator password.
Read-only User Name	It is set as **user** by default and is not customizable.
User Password	This field allows you to specify a new user password. Once the user password is set, the feature of read-only user 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 balance terminatesits access to Web Admin Interface. By default, it is set as **4 hours**.
Authentication by RADIUS	With this box is checked, Web Admin will authenticate using an external RADIUS server. Authenticated users are treated as "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. Authentication options will be available once this box is checked.
Auth Protocol	This specifies the authentication protocol used. Available options are **MS-CHAP v2** and **PAP**.
Auth Server	This specifies the access address of the external RADIUS server.
Auth Server Secret	This is the secret for accessing the RADIUS server.
Auth Timeout	This option specifies the time value for authentication timeout.
Accounting Server	This specifies the access address of the external Accounting server.
Accounting Server Secret	This is the secret for accessing the Accounting server.
Network Connection	This option is for specifying the network connection which will be used for authentication connection. Users can choose from LAN, WAN and VPN connections.
Security	This option is for specifying the protocol(s) through which the Web Admin Interface can be accessible: • HTTP • HTTPS • HTTP/HTTPS
Web Admin Port	These fields are for specifying the port number at which the Web Admin Interface can be accessible.
Web Admin Access	This option is for specifying the network interfaces through which the Web Admin Interface can be accessible: • LAN only

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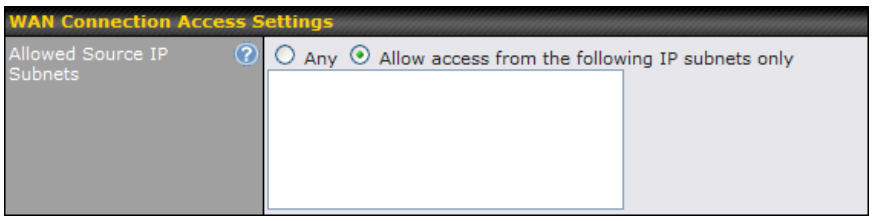
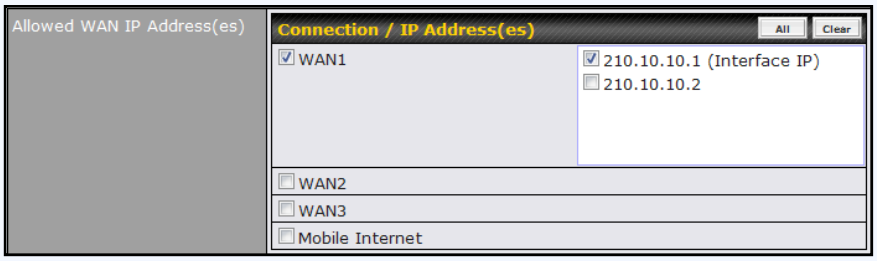
- LAN/WAN

If LAN/WAN is chosen, a WAN Connection Access Settings form will be displayed.

WAN Connection Access Settings	
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 *w.x.y.z/m* Where*w.x.y.z* is an IP address (e.g. 192.168.0.0), and m 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. 

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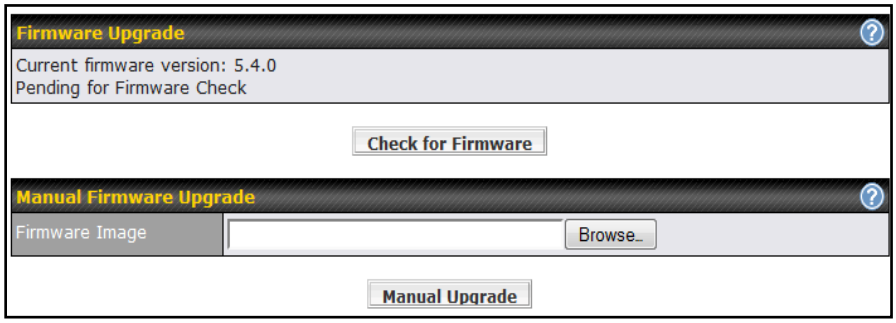
21.2 Firmware Upgrade

The firmware of Peplink Balance is upgradeable through Web Admin Interface.

Firmware upgrade functionality is located at:***System>Firmware***



There are two ways to upgrade the unit.The first method is online firmware upgrade. The system can**Download and Upgrade**over the Internet.The second method is to upload a firmware file manually.

Click on the **Check again** button to use online upgrade.With online upgrade, Peplink Balance checks online for new firmware; if new firmware is available, Peplink Balance will automatically download the firmware.The upgrade process will subsequently be automatically initiated.

You may also download a firmware image from the Peplink website and update the unit manually.Click **Browse…**to select the firmware file from the local computer, and thenclick **Manual Upgrade**to send the firmware to Peplink Balance. Peplink Balance will then automatically initiate the firmware upgrade process.

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

Firmware Upgrade Status for Peplink Balance 20, 30, 210 and 310

Status LED Information during firmware upgrade:

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

Important Note

The firmware upgrade process may not necessarily preserve the previous configuration, and the behavior varies on a case-by-case basis. Consult the Release Notes for the particular firmware version.

Do not disconnect the power during firmware upgrade process.

Do not attempt to upload a non-firmware file, or a firmware file that is not qualified,or not supported, by Peplink.

Upgrading Peplink Balance with an invalid firmware file will damage the unit, and may void the warranty.

Important Note

If the firmware is rolled back from 5.x to 4.x, the configurations will be lost.

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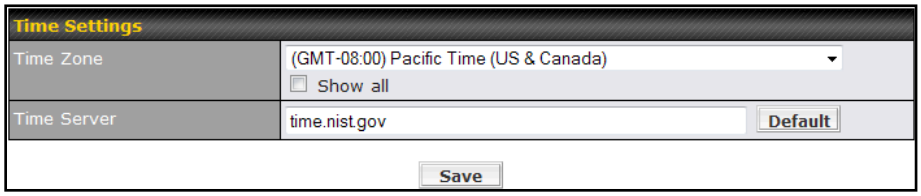
21.3 Time

The Time Server functionality enables the system clock of Peplink Balance to be synchronized with a specified Time Server.

The settings for Time Server configuration are located at:***System > Time***



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

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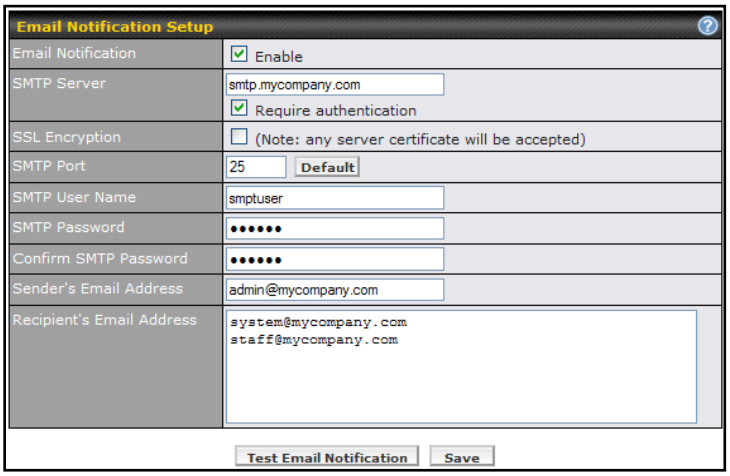
21.4 Email Notification

The Email Notification functionality of Peplink Balance provides a System Administrator with up to date information on network status.

The settings for configuring Email Notification are found at: ***System> Email Notification***



Email Notification Settings	
Email Notification	This setting specifies whether or not to enable Email Notification. If the box **Enable** is checked, Peplink Balance sends email messages to a System Administrator when the WAN status changes, or when new firmware is available. If the box **Enable** is not checked, Email Notification is disabled and 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 the box **Require authentication**.
SSL Encryption	Check the box to enable SMTPS. When the box is checked, the next field **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 the **SSL Encryption** box is checked, the default port number will be set to **465**. You may customize the port number by editing this field. Click the button **Default** to restore to default.
SMTP User Name / Password	This setting specifies the SMTP username and password while sending email. These options are shown only if **Require authentication** check box is checked in 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 sender email address reported by the email messages sent by Peplink Balance.
Recipient's Email Address	This setting specifies the email address to which Peplink Balance should send the email messages to.You may enter multiple recipients' email addresses in this field.

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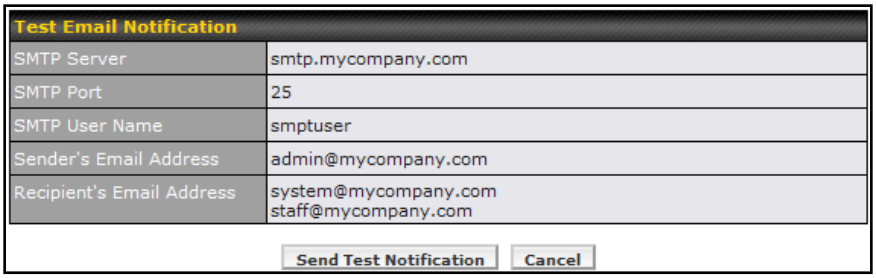
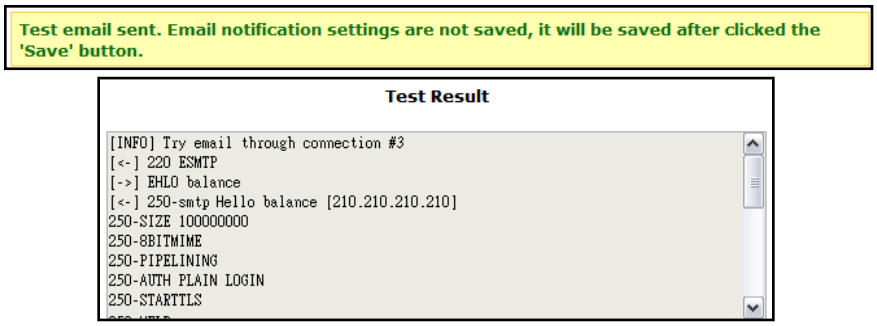
After you have completed the settings, you can click the **Test Email Notification**button to test the settings before saving it. After it is clicked, you will see this screen to confirm the settings:



Click**Yes** to confirm.Wait a few seconds. You will see a returned message and the detailed test result.



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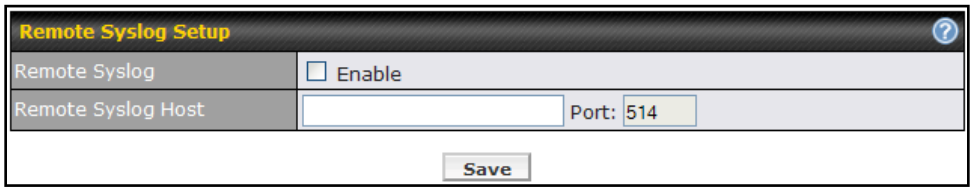
21.5 Remote Syslog

The Remote Syslog functionality ofPeplink Balance enables event logging at a specified remote Syslog server.

The settings for configuring Remote System Log are found at: ***System> Remote Syslog***



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.
Port	This setting specifies the port number of the remote Syslog service. By default, the Port setting value is **514**.

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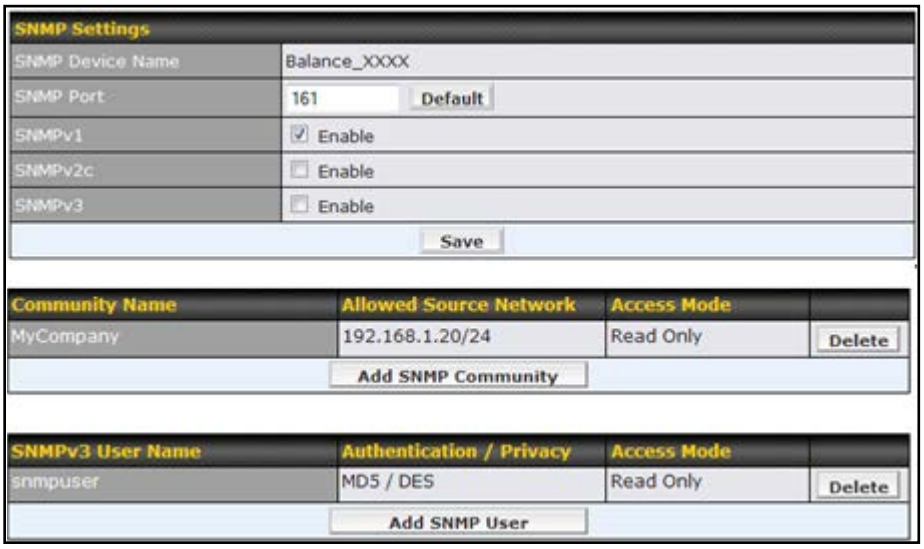
21.6 SNMP

SNMPor Simple Network Management Protocolis an open standard that can be used to collect information about the Peplink Balance unit.

SNMP configuration is located at:***System> SNMP***



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

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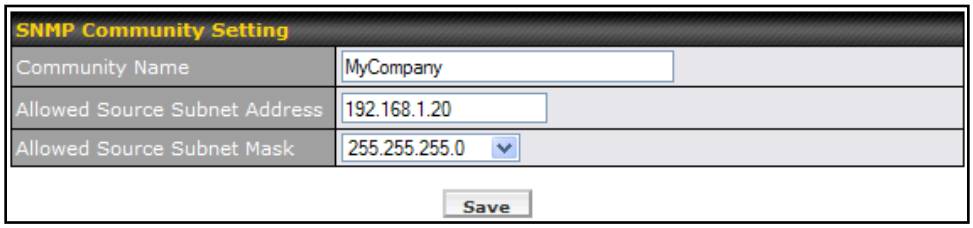
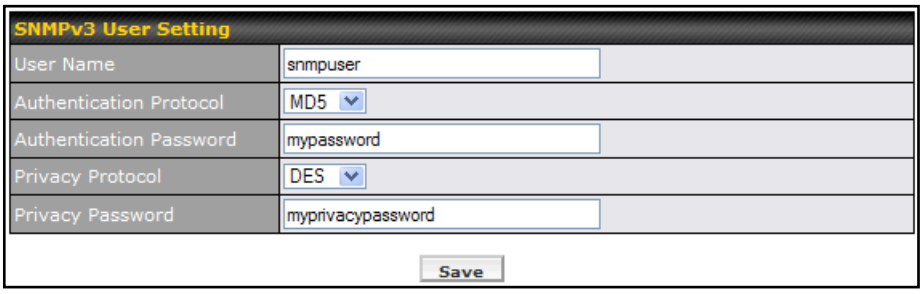
To add a community for either SNMPv1 or SNMPv2, click the**Add SNMP Community**button in the **Community Name**table, upon which the following screen is displayed:



SNMP Community Settings	
Community Name	This setting specifies the SNMP Community Name.
Allowed Source Subnet Address	This setting specifies a subnet from which access to the SNMP server is allowed. Enter subnet address here (e.g. 192.168.1.0).
Allowed Source Subnet Mask	This setting specifies the subnet mask that corresponds to the subnet specified via Allowed Source Subnet Address (e.g. 255.255.255.0).

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



SNMPv3 User Settings	
User Name	This setting specifies a user name to be used in SNMPv3.
Authentication Protocol	This setting specifies via a drop-down menu the one of the following valid authentication protocols: • NONE • MD5 • SHA
Authentication Password	This setting specifies the authentication password, and is applicable only if the MD5 or SHA authentication protocol is selected.
Privacy Protocol	This setting specifies via a drop-down menu the one of the following valid privacy protocols: • NONE • DES
Privacy Password	This setting specifies the privacy password, and is applicable only if the DES privacy protocol is selected.

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21.7 InControl

When this check box is checked, the device's status information, usage data, and configuration will be sent to Peplink's InControl system. You can sign up for an InControl account athttps://incontrol.peplink.com/ . You can register devices under the account, monitor device status and usage reports, and download backed up configuration files.

Default: Disabled

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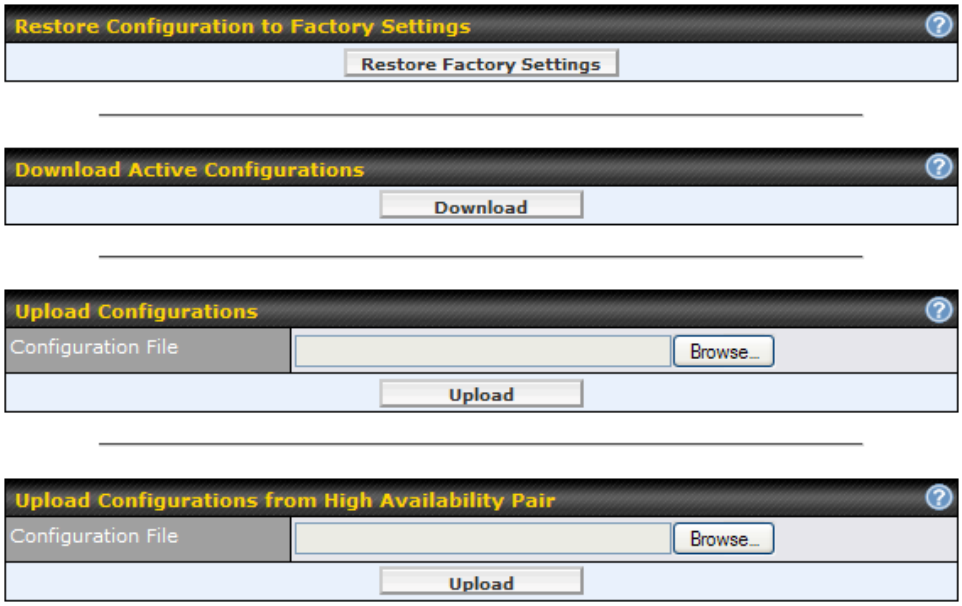
21.8 Configuration

Backing up the Peplink Balance settings immediately after the successful completion of the initial setup is strongly recommended.

The functionality to download and upload Peplink Balance settings is found at:
System> Configuration



21.8.1 Restore Configuration to Factory Settings

The **Restore Factory Settings**button is to reset the configuration to the factory default settings. You have to click the**Apply Changes**button to make the settings effective.

21.8.2 Downloading Active Configurations

The **Download**button is to backup the current active settings.Click**Download**and save the configuration file.

21.8.3 Uploading Configurations

To restore or change settings based on a configuration file, click **Browse**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 discard at the Main page of Web Admin Interface.

21.8.4 Uploading Configuration from High Availability Pair

(Available on Peplink Balance 210+)

In a High Availability (HA) configuration, to quickly load onto the Peplink Balance unit the configuration of its HA counterpart, click the**Upload**button.

After loading the settings, configure the LAN IP address of the Peplink Balance unit to be different from the HA counterpart.

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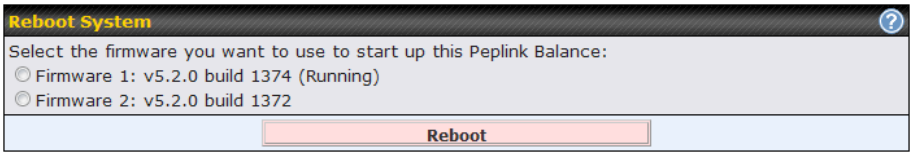
21.9 Reboot

This page provides a Reboot button for restarting the system.

For highest reliability, Peplink Balance series are equipped with two copies of firmware of different version. You can select the firmware version you would like the device to reboot 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.



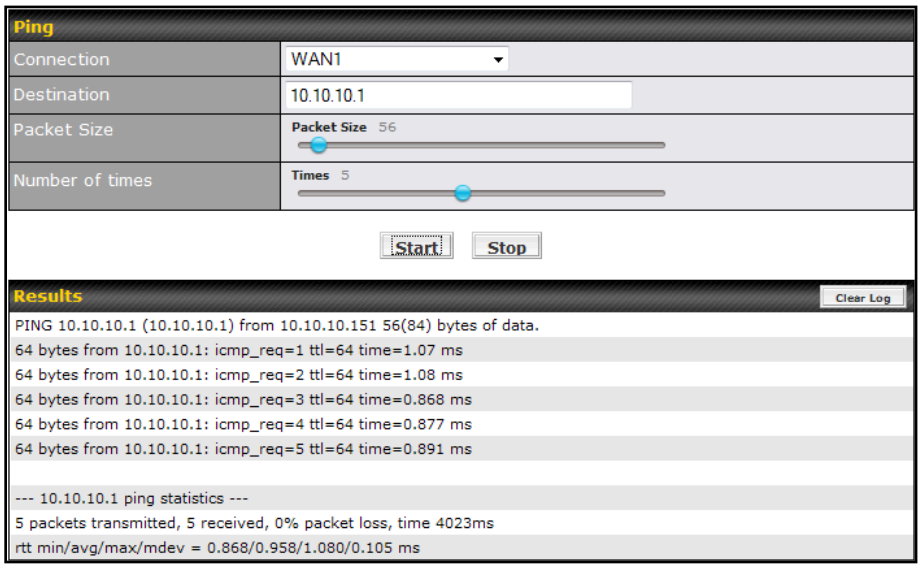
22 Tools

22.1 Ping Test

The Ping Test tool in Peplink Balance performs Pings through a specified Ethernet interface or a SpeedFusion™ VPN connection (VPN connections are only available on Peplink Balance 210 or above).

You can specify the number of pings in the field**Number of times**to a maximum of **10** times, and Packet Size can be specified in the field**Packet Size** to a maximum of **1472** bytes.

The Ping utility is located at ***System> Tools > Ping,*** illustrated as follows:



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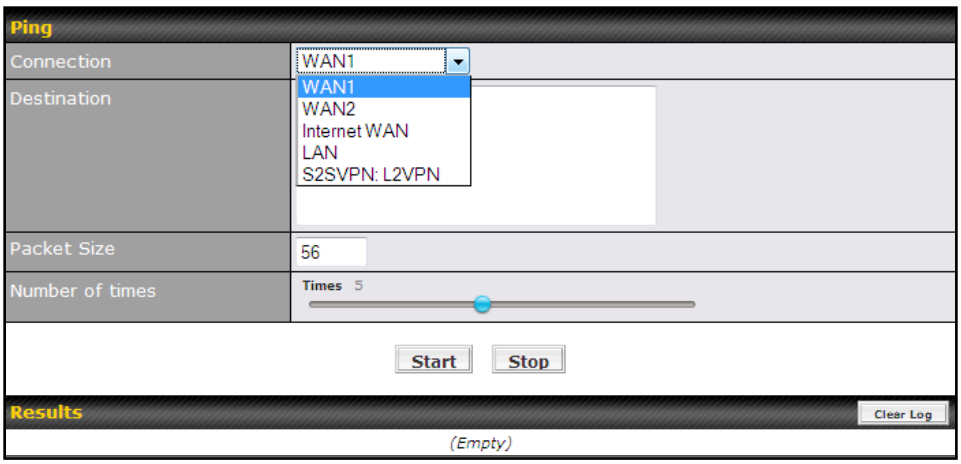

Tip

A System Administrator can use the Ping utility to manually check the connectivity of a particular LAN/WAN connection.

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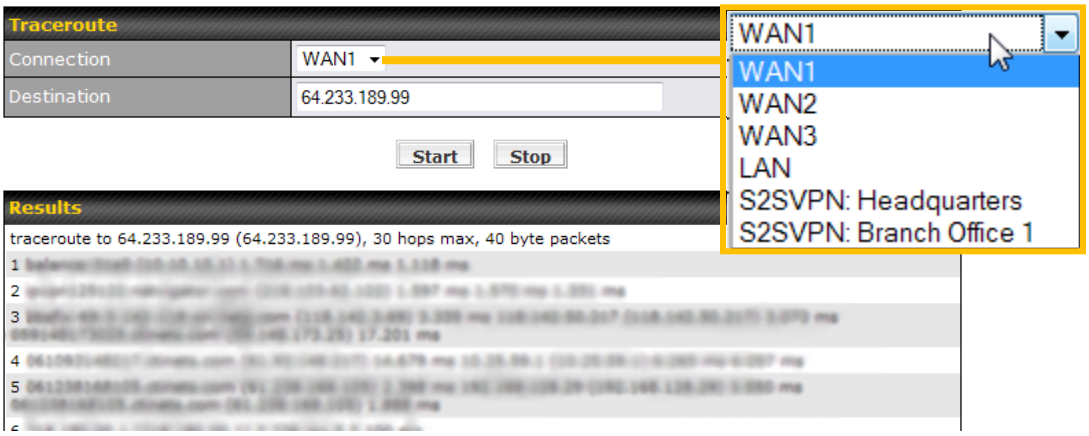
22.2 Traceroute Test

The Traceroute Test tool in Peplink Balance traces the routing path to the destination through a particular Ethernet interface or a SpeedFusion™ connection(VPN connections are available on Peplink Balance 210+).

The Traceroute Test utility is located at ***System> Tools >Traceroute***, illustrated as follows:



Tip

A System Administrator can use the Traceroute utility to analyze the connection path of a LAN/WAN connection.

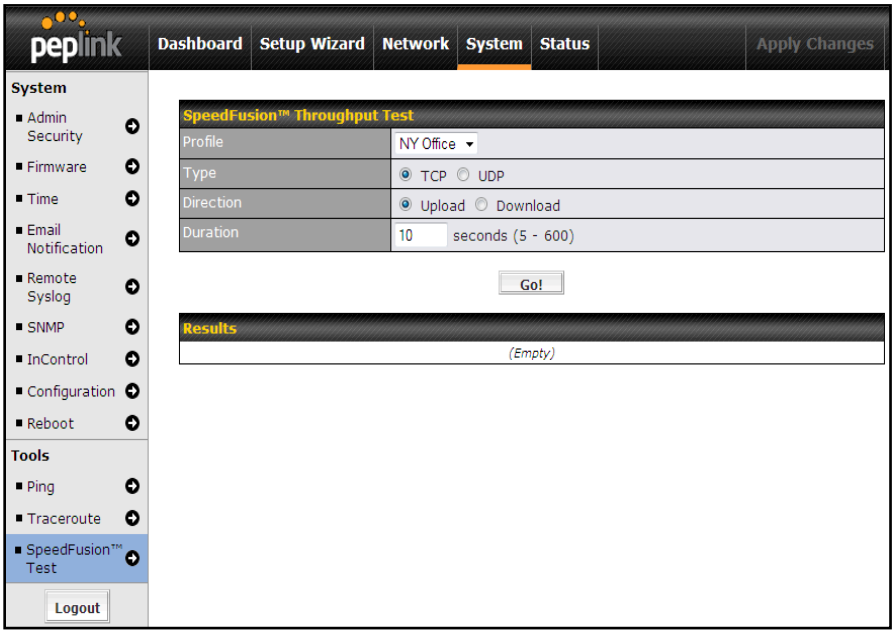
22.3 SpeedFusion™ Test

(Available on Peplink Balance 210+)

The SpeedFusion™ Test tool can help to test the throughput between different VPN peers.

You can define the **Test Type**,**Direction**, and **Duration** of the test, and press **Go!**to perform the throughput test.

The VPN Test utility is located at ***System > Tools >SpeedFusion™ Test*** illustrated as follows:



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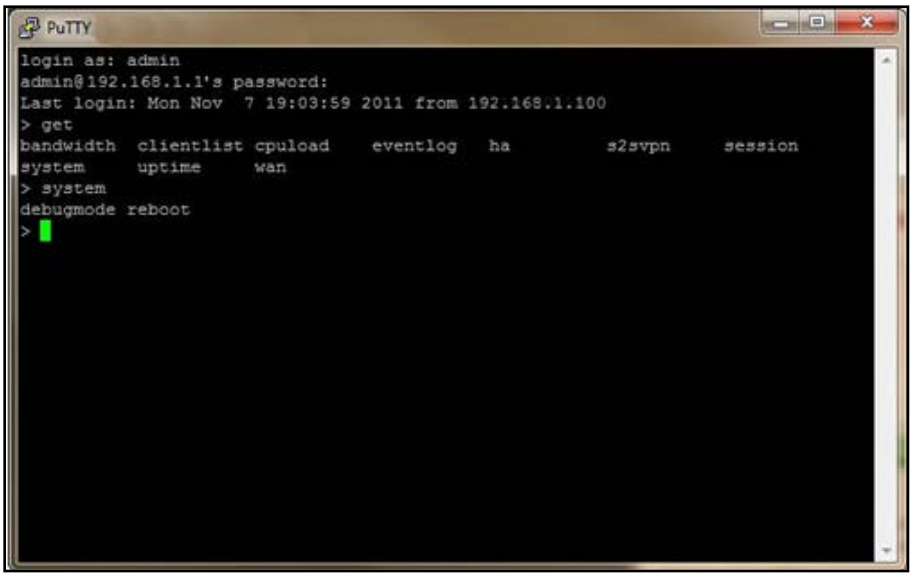
22.4 CLI (Command Line Interface Support)

The CLI (Command Line Interface) can be accessed via SSH. It can also be accessed from the serial console port for Peplink Balance 305, 380, 580, 710, 1350 and 2500. This field enables CLI support.

The below settings specify which TCP port and which interface(s) should accept remote SSH CLI access. The user name and password used for remote SSH CLI access are the same as those used for web admin access.

The serial console connector with the Peplink Balance 305, 380 HW rev 5, Peplink Balance 580, Peplink Balance 710 HW rev 2, Peplink Balance 1350 and Peplink Balance 2500 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 with the Peplink Balance 305, 380 HW rev 1 to 4, Peplink Balance 710 HW rev 1 is 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.



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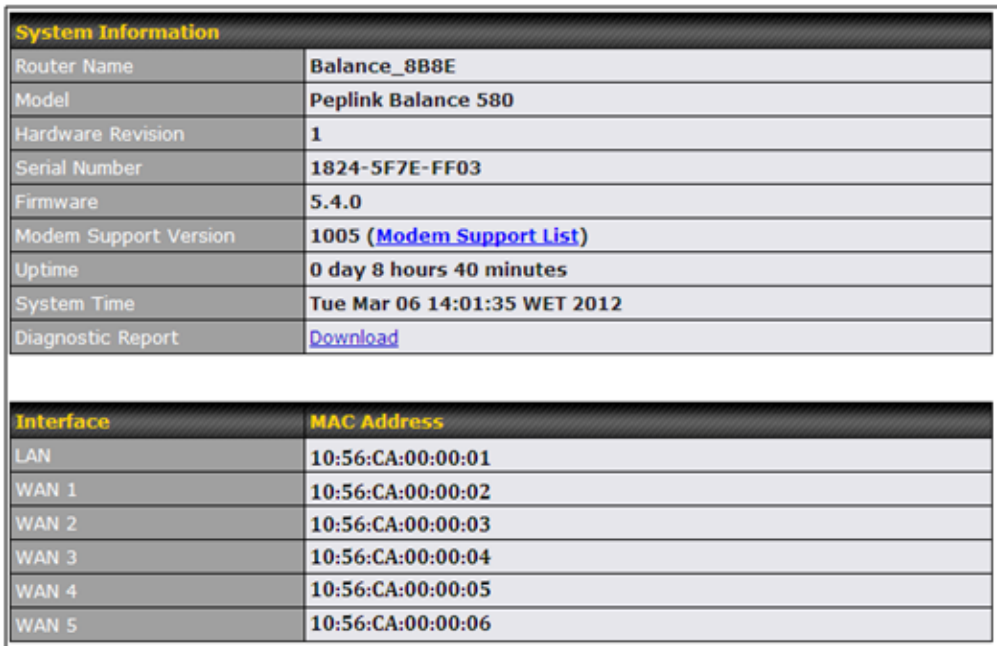
23 Status

23.1 Device

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



System Information	
Router Name	Balance_8B8E
Model	Peplink Balance 580
Hardware Revision	1
Serial Number	1824-5F7E-FF03
Firmware	5.4.0
Modem Support Version	1005 (Modem Support List)
Uptime	0 day 8 hours 40 minutes
System Time	Tue Mar 06 14:01:35 WET 2012
Diagnostic Report	Download

Interface	MAC Address
LAN	10:56:CA:00:00:01
WAN 1	10:56:CA:00:00:02
WAN 2	10:56:CA:00:00:03
WAN 3	10:56:CA:00:00:04
WAN 4	10:56:CA:00:00:05
WAN 5	10:56:CA:00:00:06

System Information	
Router Name	This is the name specified in the field Router Name located in **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 in which this device is currently running.
Uptime	This shows the length of time since the device is rebooted.
System Time	This shows the current system time.
Diagnostic Report	Download button is for exporting a diagnostic report file required for system investigation.

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

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

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23.2 Active Sessions

Information on Active Sessions is at: ***Status > Active Sessions> Overview***

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

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

Top Clients

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

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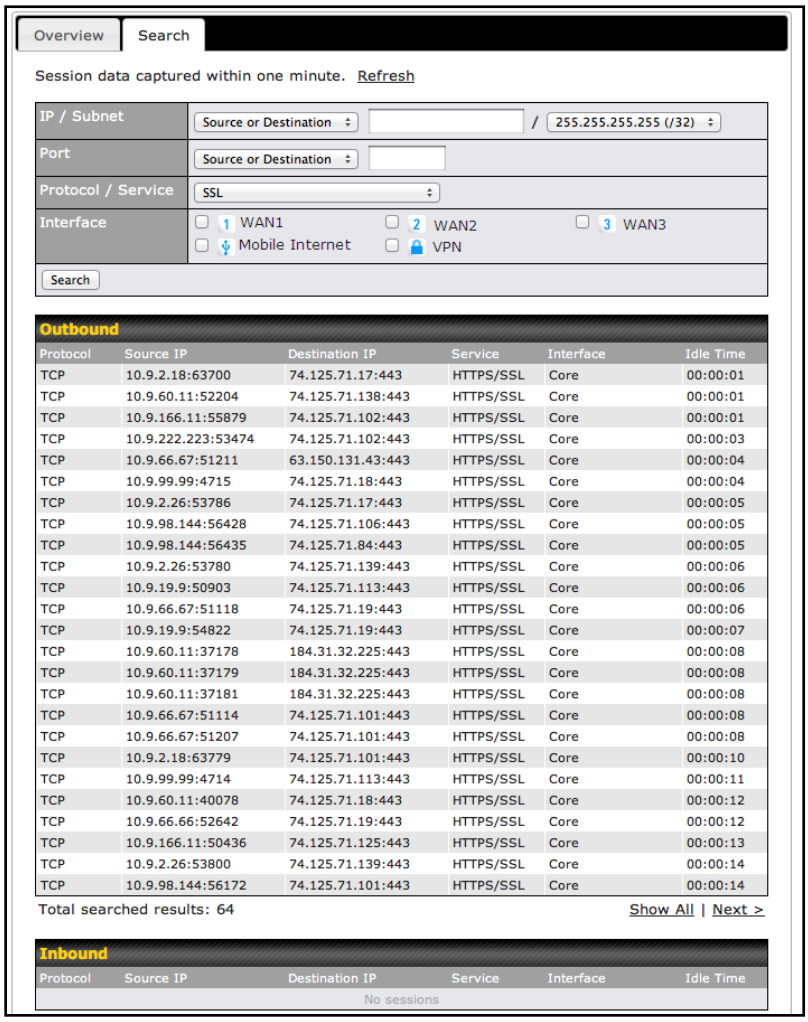
Status > Active Sessions> Search



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

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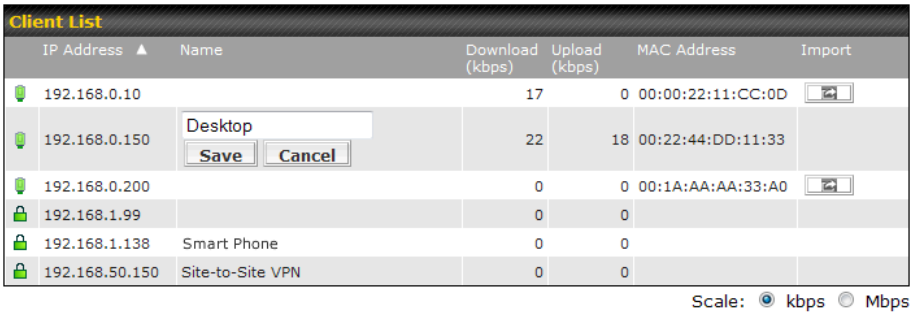
23.3 Client List

The client list table is located at ***Status > Client List***.It lists DHCP client **IP address**, their **Name** (retrieved from DHCP reservation table or defined by users), current **Download and Upload rate** and **MAC address** that the Peplink Balance has offered IP addressesto since it is powered up. Clients can be imported into DHCP Reservation table by clicking the button on the right-most column. Further update the record after the import by going to ***Network > LAN***.



If PPTP Server in section **20.2,**SpeedFusion™ in section 0, or WLAN Controller in section **17**is enabled, you may see the corresponding connection name would be listed in the field of **Name**.

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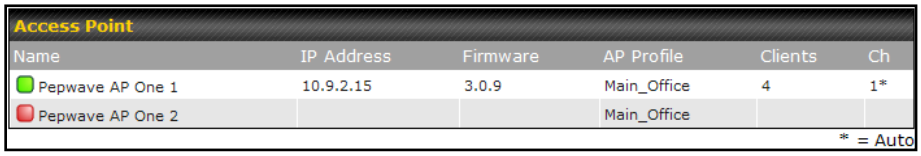
23.4 Access Point

(Available on Peplink Balance 305 and 380+)

The Status of connected access point devices can be found at ***Status > Access Point***.

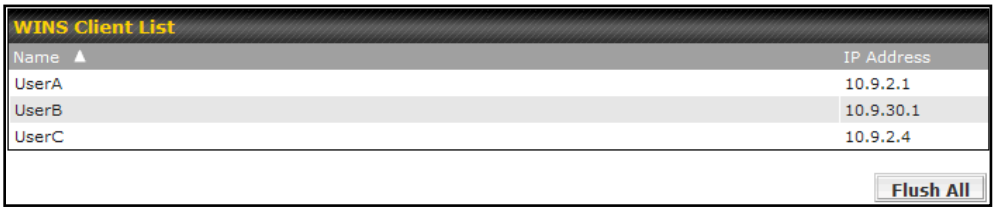


It lists all connected or detected Pepwave access point devices and their IP address, firmware version, assigned AP profile, number of connected clients and broadcasting channel.

The broadcasting channel follows by a "*" means the channel is automatically chosen and selected by the Peplink Balance.

23.5 WINS Client

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



It lists WINS client IP addresses and their Names. This option will only be available when you have enabled the WINS Server in section 9.

Name of clients retrieved will be automatically matched into Client List in the previous section.

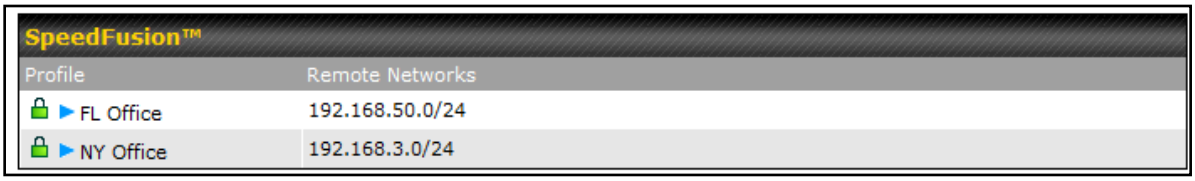
Click the button **Flush All** to flush all WINS client records.

23.6 SpeedFusion™ Status

(Available on Peplink Balance 210+)

This is a page showing the current status of SpeedFusion™, located at: ***Status* >SpeedFusion™**

Details about SpeedFusion™ connection peers would be shown as below.



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

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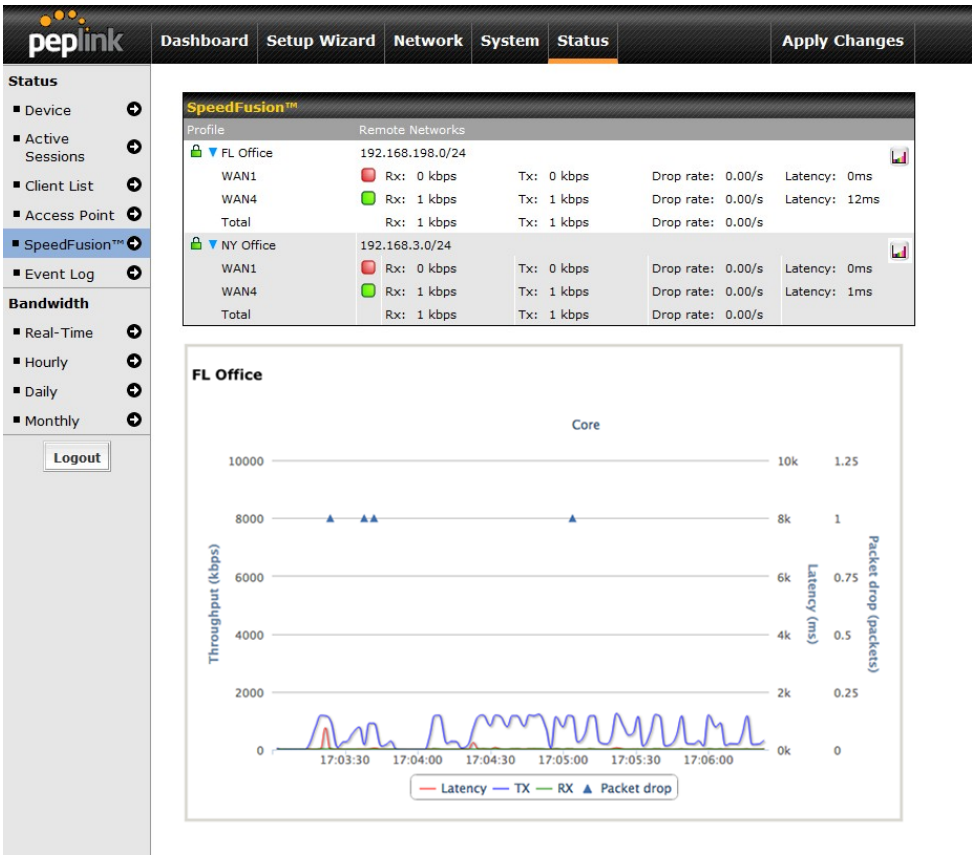
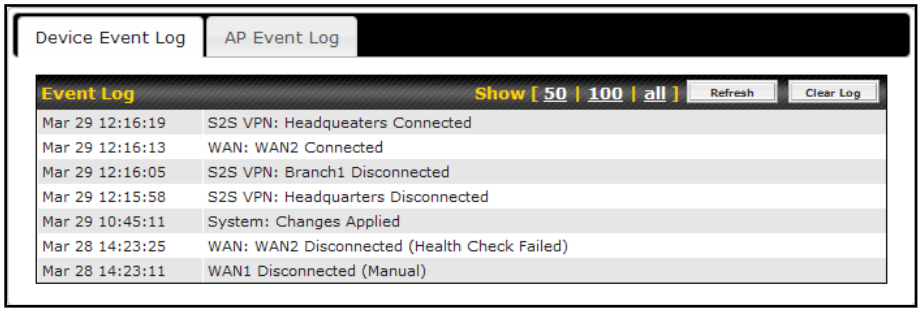


23.7 Event Log

Event Loginformation is located at: ***Status>Event Log***

23.7.1 Device Event Log



The log section displays a list of events that has taken place on the Peplink Balance unit.Click the **Refresh** button to retrieve log entries again. Click the **Clear Log** button to clear the log. Select **50**, **100**, or **all**to show the corresponding number of events in the log.

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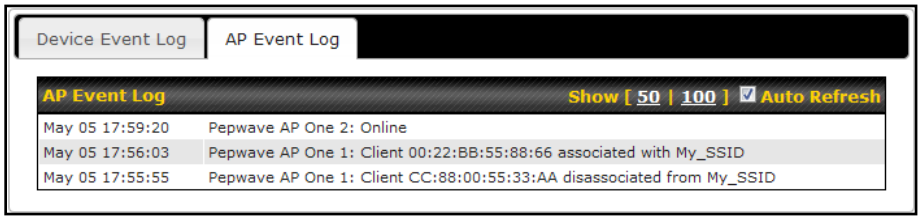
23.7.2 AP Event Log

(Available on Peplink Balance 305,380+)



This section displays a list of events that has taken place on the connected/detected Pepwave AP devices. Select **50** or **100** to show the corresponding number of events in the log. Check the box next to **Auto Refresh** and the log will be refreshed automatically.

23.8 Bandwidth

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

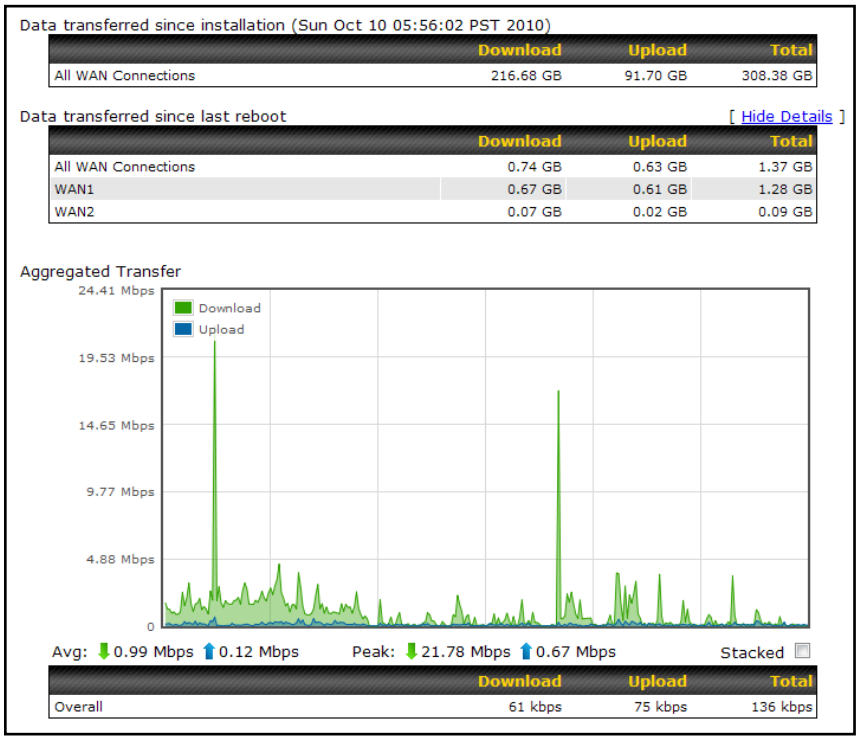
Bandwidth usage at the LAN and when the device is switched off, e.g. LAN Bypass are not recorded and not shown.

23.8.1 Real-Time

The **Data transferred since installation** shows you how many network traffic has been processed by the device since first boot.

Click **Show Details** in the top right hand corner of each table and the details of data transferred will be shown.

The check box **Stacked** below the data transferred graph can be checked to show the aggregated transferred rate of both traffic directions.



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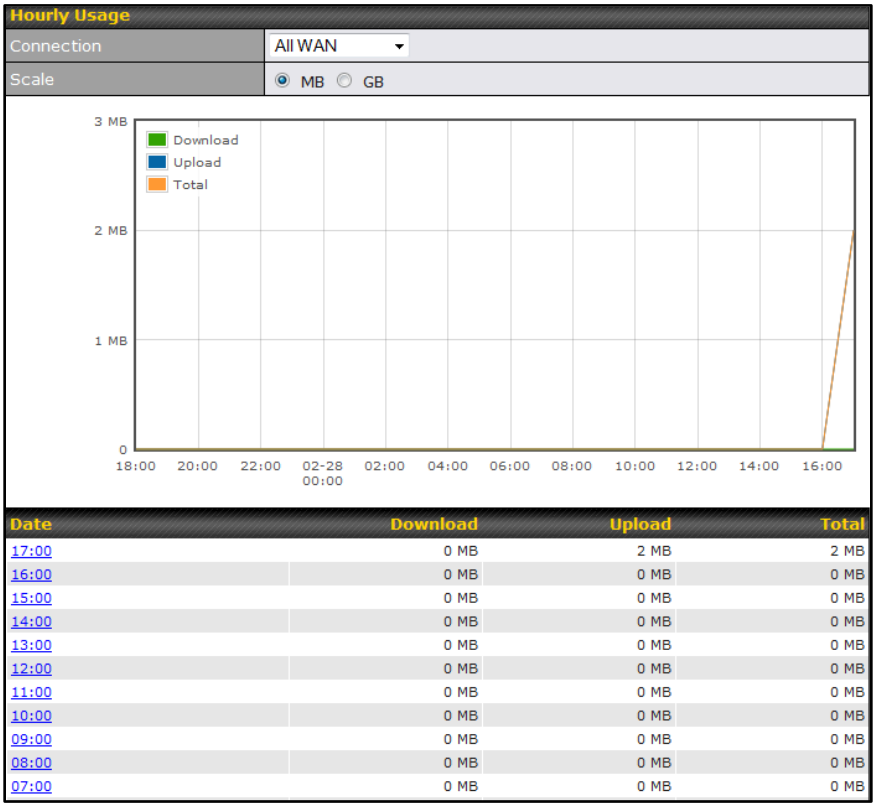
23.8.2 Hourly

This page shows the daily bandwidth usage for all and each WAN connection.

Select the connection in which you want to check its usage from the drop down menu



Date	Download	Upload	Total
17:00	0 MB	2 MB	2 MB
16:00	0 MB	0 MB	0 MB
15:00	0 MB	0 MB	0 MB
14:00	0 MB	0 MB	0 MB
13:00	0 MB	0 MB	0 MB
12:00	0 MB	0 MB	0 MB
11:00	0 MB	0 MB	0 MB
10:00	0 MB	0 MB	0 MB
09:00	0 MB	0 MB	0 MB
08:00	0 MB	0 MB	0 MB
07:00	0 MB	0 MB	0 MB

23.8.3 Daily

This page shows the daily bandwidth usage for all and each WAN connection.

Select the connection in which you want to check its usage from the drop down menu.If you have enabled **Bandwidth Monitoring**feature as shown in section 11.4, the **Current Billing Cycle**table for that WAN connection will be displayed.

Click ona 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 show in **Megabyte (MB)** or **Gigabyte (GB)**.

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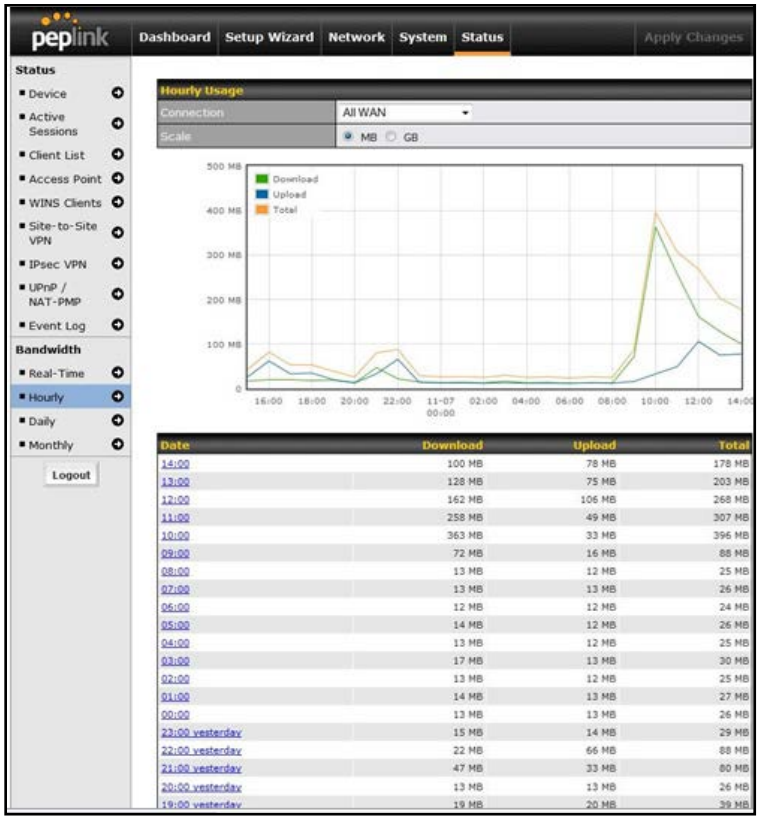
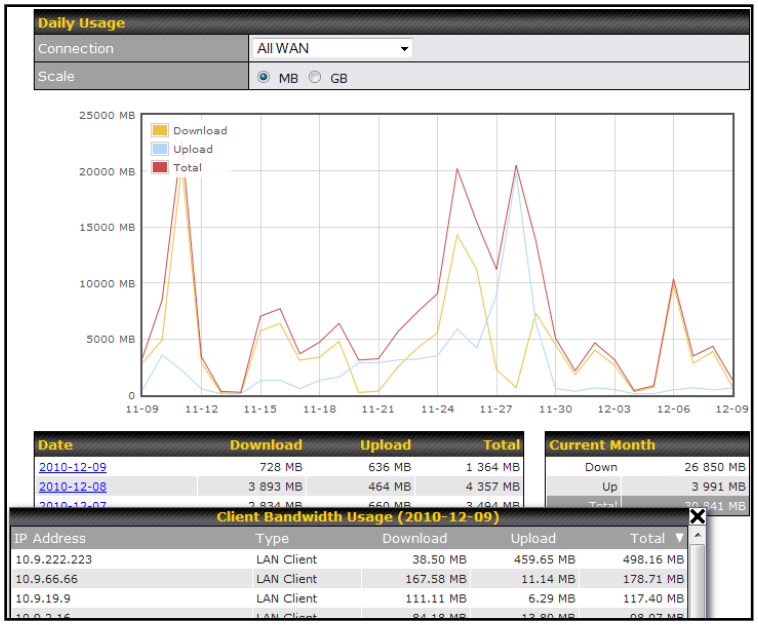
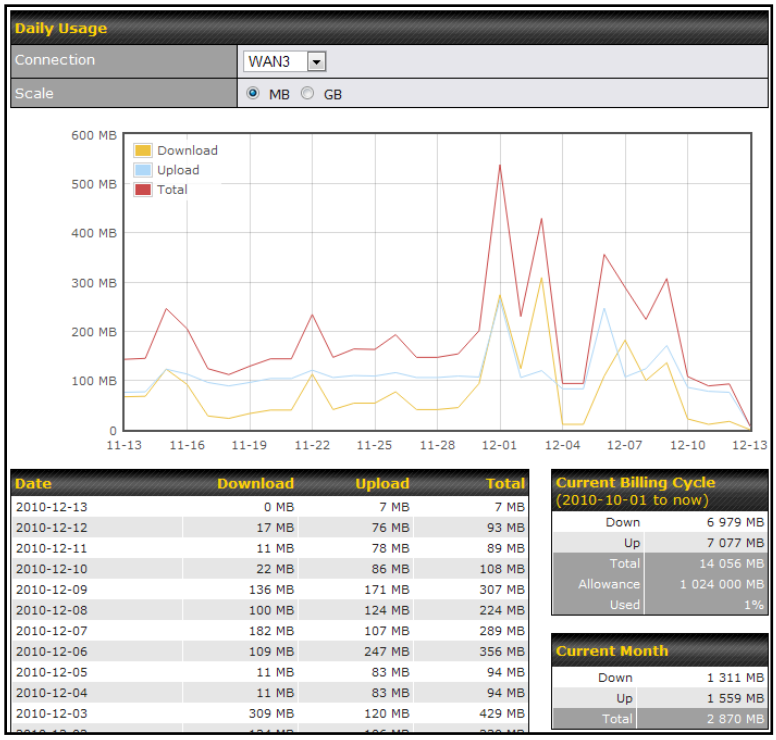


Status



All WAN Daily Bandwidth Usage

 Copyright © 2013 Peplink



Date	Download	Upload	Total
2010-12-13	0 MB	7 MB	7 MB
2010-12-12	17 MB	76 MB	93 MB
2010-12-11	11 MB	78 MB	89 MB
2010-12-10	22 MB	86 MB	108 MB
2010-12-09	136 MB	171 MB	307 MB
2010-12-08	100 MB	124 MB	224 MB
2010-12-07	182 MB	107 MB	289 MB
2010-12-06	109 MB	247 MB	356 MB
2010-12-05	11 MB	83 MB	94 MB
2010-12-04	11 MB	83 MB	94 MB
2010-12-03	309 MB	120 MB	429 MB

Current Billing Cycle (2010-10-01 to now)	
Down	6 979 MB
Up	7 077 MB
Total	14 056 MB
Allowance	1 024 000 MB
Used	1%

Current Month	
Down	1 311 MB
Up	1 559 MB
Total	2 870 MB

WAN3 Daily Bandwidth Usage

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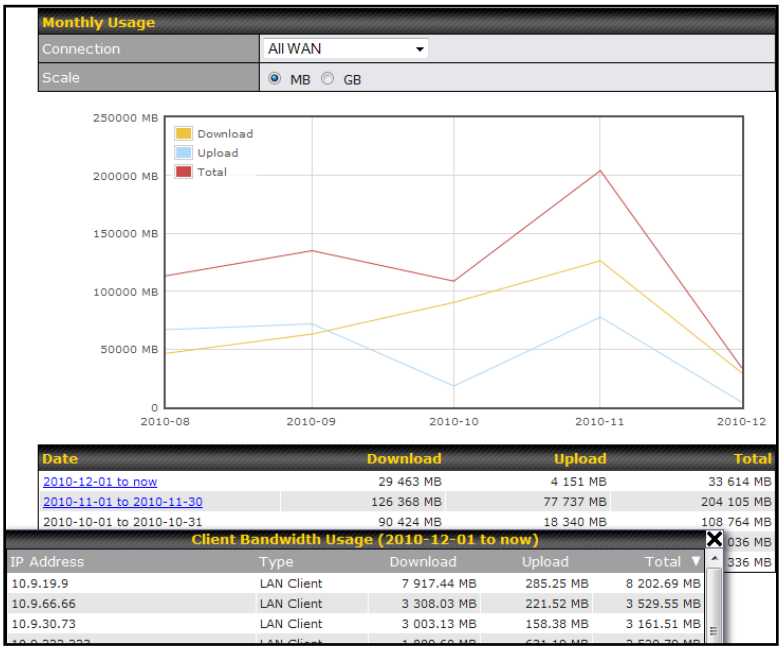
23.8.4 Monthly

This page shows the monthly bandwidth usage for each WAN connection.

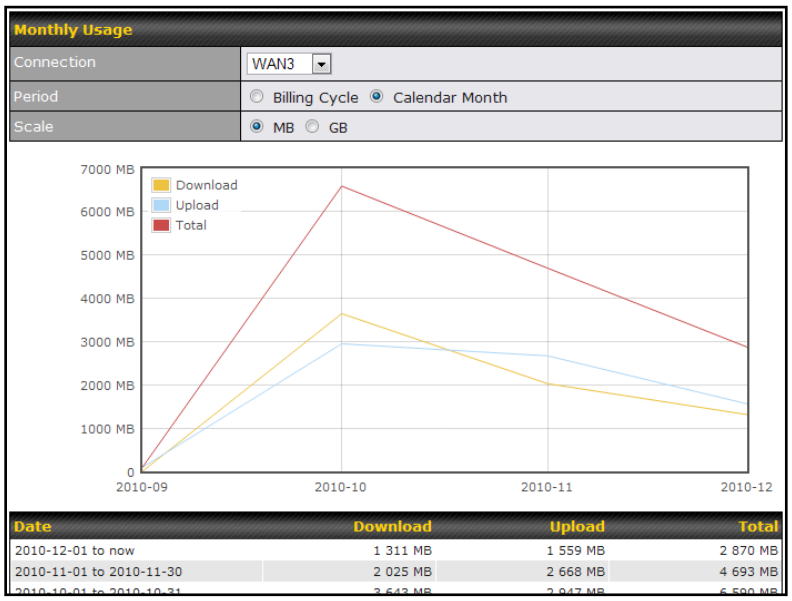
If you have enabled **Bandwidth Monitoring**feature as shown in section11.4, a particular connection can be chosen to check its usage and select to show the monthly usage period in **Billing Cycle** or **Calendar Month**.

Click the first two rows to view the client bandwidth usage of the most recent two months.This feature is not available if you have chosen to view the bandwidth usage of only a particular WAN connection.

The Scale of the graph can be set to show in **Megabyte (MB)** or **Gigabyte(GB)**.



All WAN Monthly Bandwidth Usage



WAN3Monthly Bandwidth Usage

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Appendix A. Restoration of Factory Defaults

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

For Balance 20/30/210/310:

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

For Balance 305/380/580/710/1350/2500:

- 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.

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

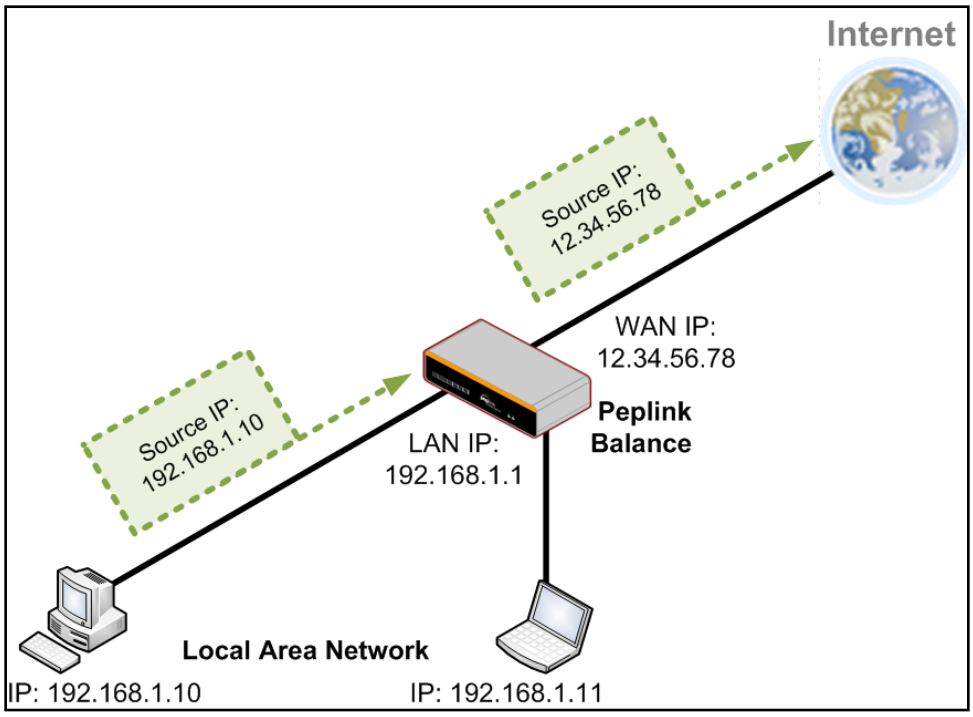
The information in this appendix applies only to situations where Peplink Balance operates with to a WAN connection under DHCP, Static IP, and PPPoE.

B.1 Routing via Network Address Translation (NAT)

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

Operating 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 Peplink Balance, 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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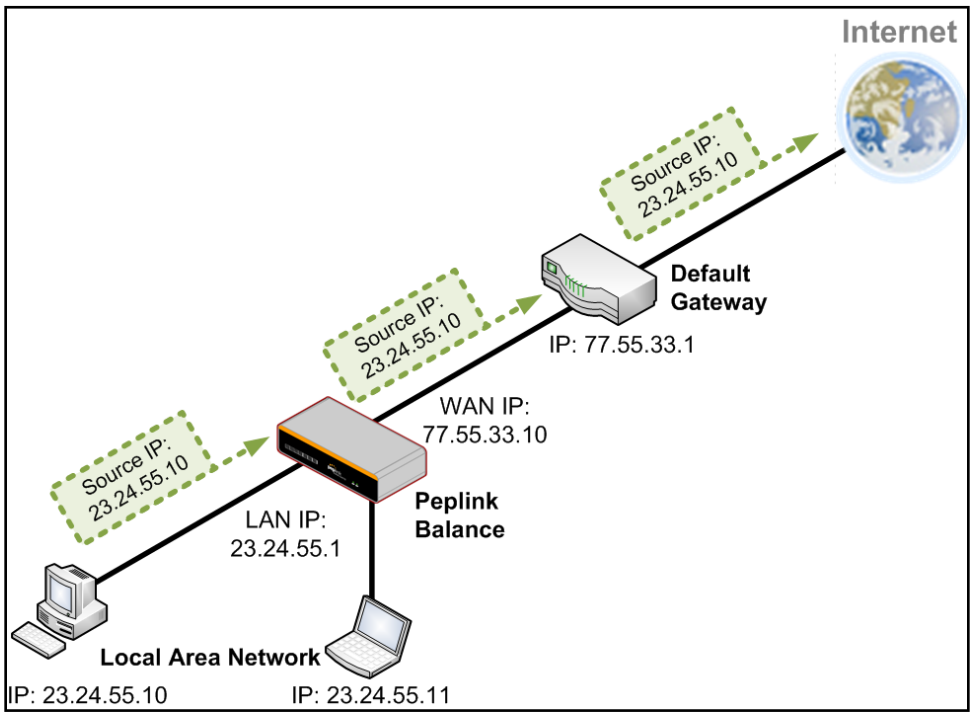
B.2 Routing via IP Forwarding

When Peplink Balance is operating under IP Forwarding mode, the IP addresses of IP packets are unchanged; 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

C.1 Performance Optimization

C.1.1 Scenario

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

The mail server is external to the network.

The connections are ADSL (with slow uplink and fast downlink) and Metro Ethernet (symmetric).

C.1.2 Solution

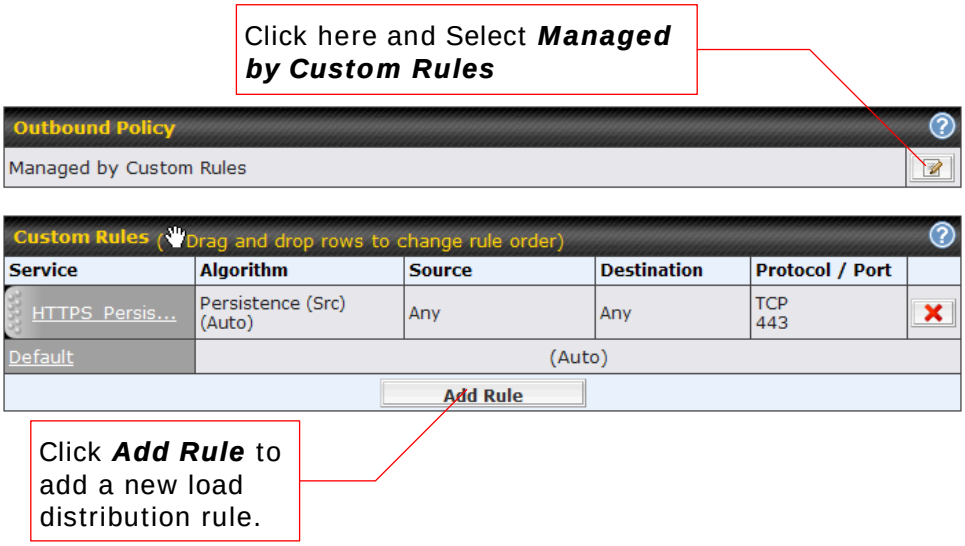
The solution is to individually set the WAN loading balance according to the service.

- Web browsing mainly downloads data; sending e-mails mainly consumes upload bandwidth.
- Both connectionsoffer good download speeds; WAN2 offers good upload speeds.
- Define WAN1 and WAN2's inbound and outbound bandwidths to be 3M/512k and 4M/4M respectively.
- 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.

C.1.3 Settings

1. Add a new outbound traffic rule for HTTP.
2. Add a new outbound traffic rule for SMTP.

In general, to add a new outbound traffic rule:



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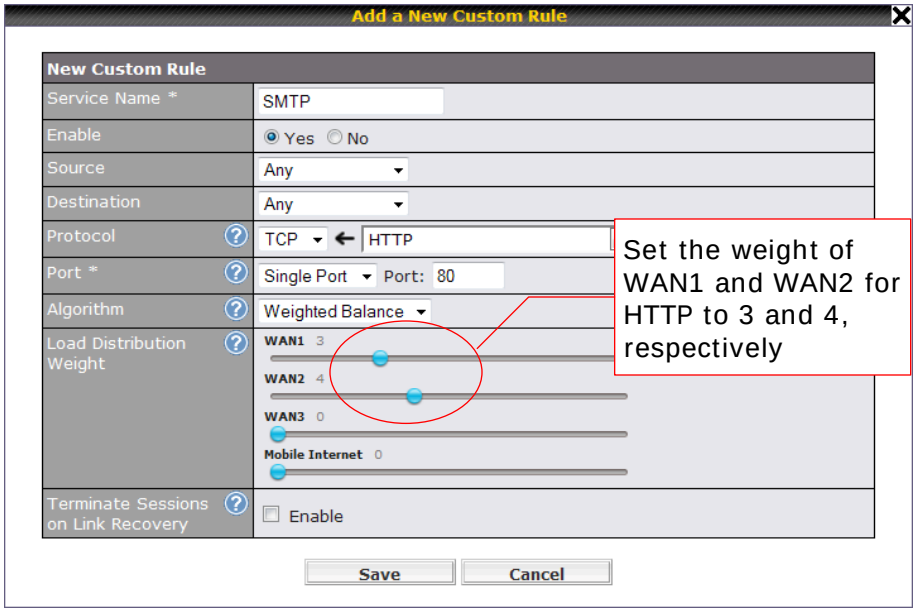
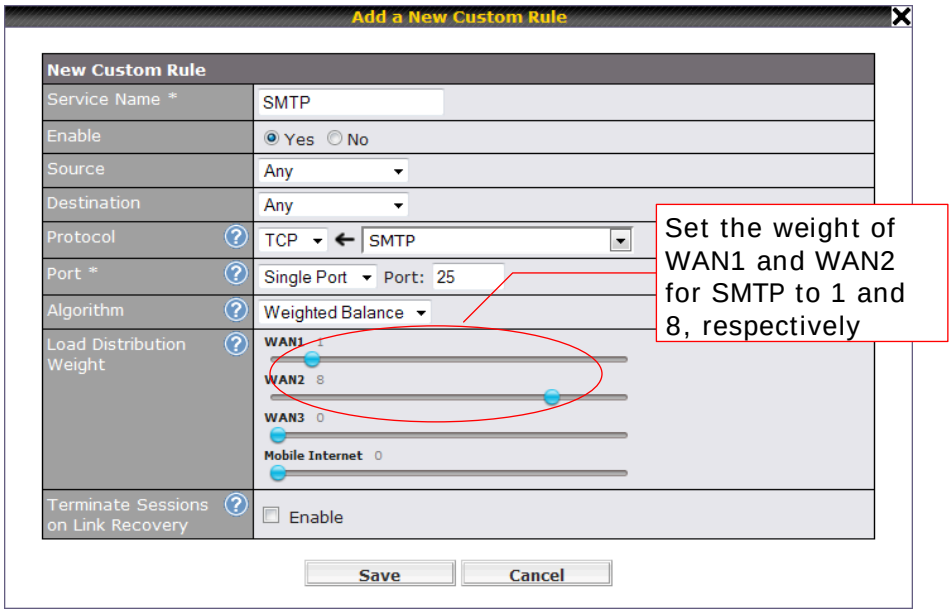
Settings for HTTP:



Settings for SMTP:



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C.2 Maintaining the Same IP Address throughout a Session

C.2.1 Scenario

Some client IP address sensitive web sites (for example, Internet banking) use both client IP address and cookies matching for session identification.Since different IP addressesare used during the load balancing, the session is dropped when a mismatching IP is detected.

C.2.2 Solution

Make use of the Persistency functionality of Peplink Balance.

With Persistence isconfiguredand the option ***ByDestination***is selected, Peplink Balance usesa consistent WAN connection for source-destination pairs of IP addresses,and prevents sessions from being dropped.

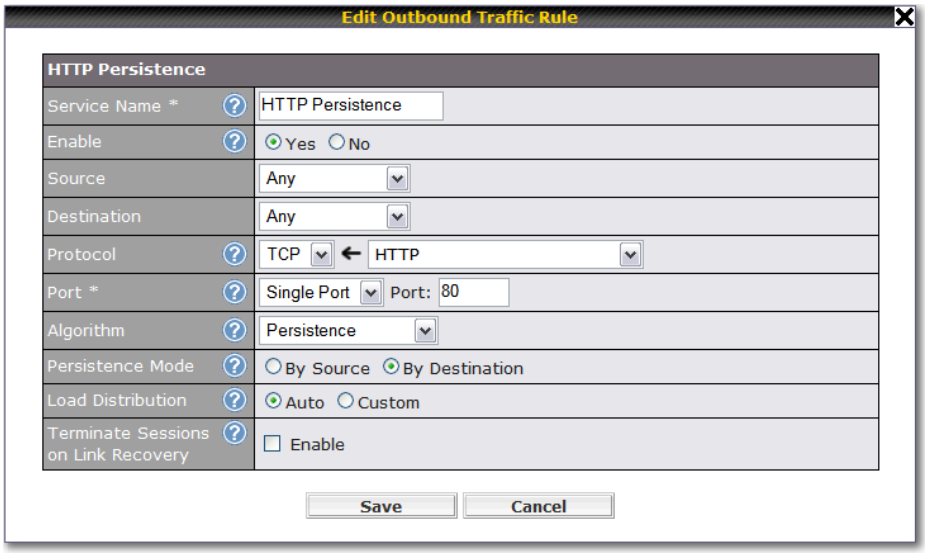
With Persistence is configured and the option ***By Source***is selected, Peplink Balance uses a consistent WAN connection for same source IP addresses. This option offers even higher application compatibility but the outbound traffic load will be distributed more evenly only if more users use the Internet.

C.2.3 Settings

Set persistence in:

Network> Outbound Policy>Managed by Custom Rules

Click ***Add Rule***, select ***HTTP***(TCP port 80) for web service, and select ***Persistence***.



Tip

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

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C.3 Bypassing the Firewall to Access Hosts on LAN

C.3.1 Scenario

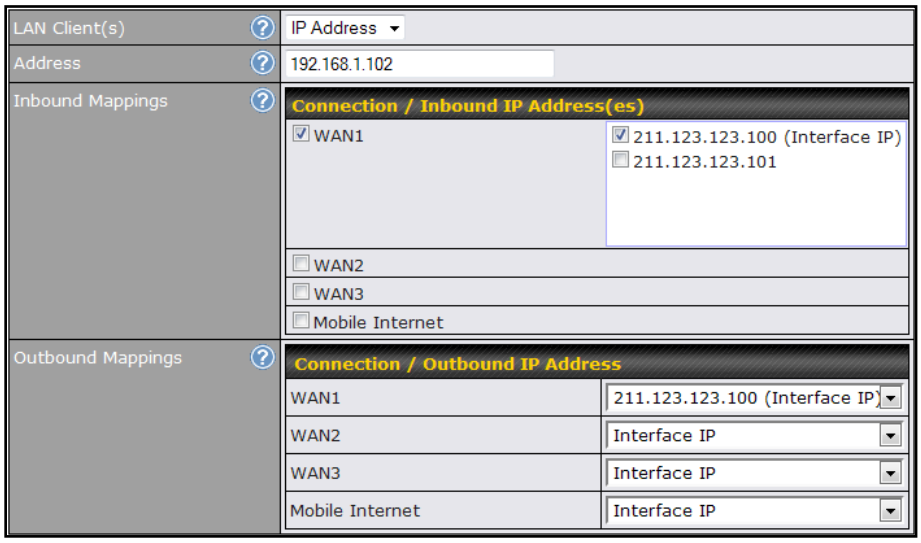
There are times when remote access to computers on the LAN is desirable; for example, when hosting web sites, online businesses and FTP download and upload areas, etc.

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.

C.3.2 Solution

Web Admin Interface can be used for adding an inbound NAT mapping to a host and to bind the host to the WAN connections, via ***Network>NAT Mappings> AddNAT Rule***

For example, the following settingsadd the host, with IP address 192.168.1.102, to an Inbound Mapping and bind the host tothe default IP and 211.123.123.100 of WAN1:



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C.4 Inbound Access Restriction

C.4.1 Scenario

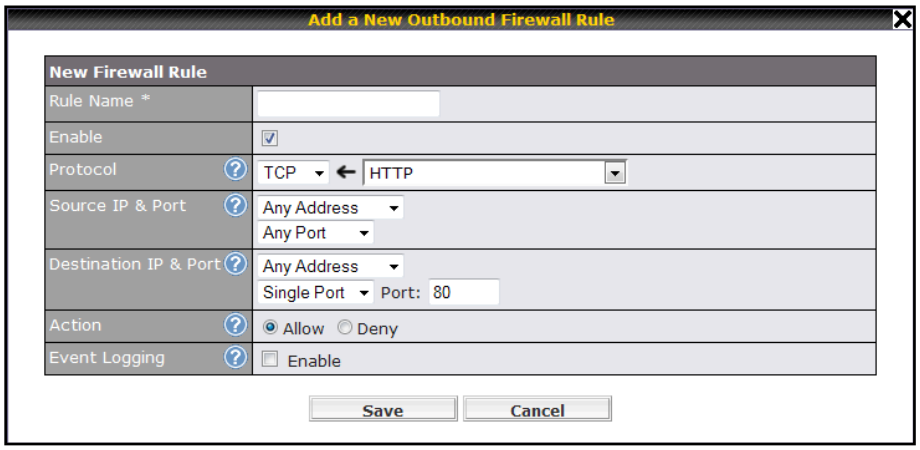
A firewall is required in order to protect the network from potential hacker attacks and other Internet security threats.

C.4.2 Solution

Firewall functionality is builtinto Peplink Balance. By default, inbound access is unrestricted.

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

For example, to set up a firewall rule between the Internet and the private network that monitors Web access from Internet, click the **Add Rule**button in the**Inbound Firewall Rules**table,and then change the settings according to the following screenshot:



After the fields have been entered as in the screenshot, click **Save** to add the rule.

Then change the default inbound rule to**Deny** by clicking the**default**rule in the **Inbound Firewall Rules**table.

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C.5 Outbound Access Restriction

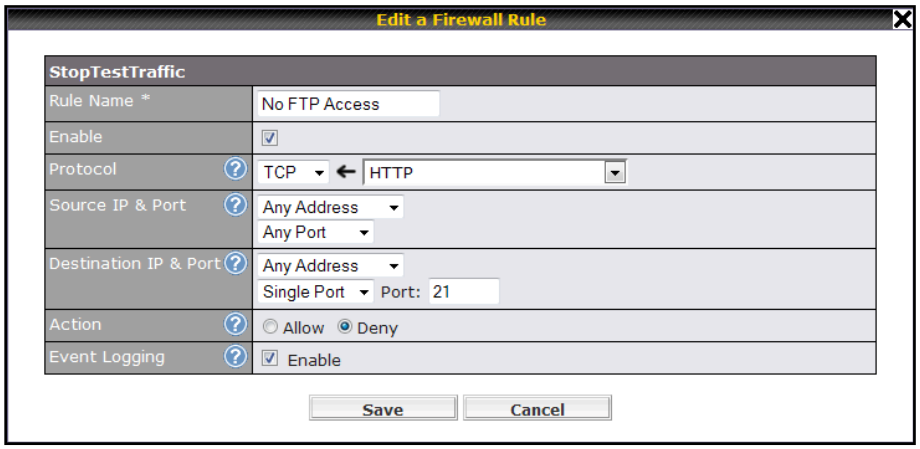
C.5.1 Scenario

For security reasons, it may be appropriate to disallow LAN usersto use ftp to transfer files to and from the Internet, or otherwise restrict outbound access.

This can easily be achieved by setting up an outbound firewall rule with Peplink Balance.

C.5.2 Solution

To setup a firewall between Internet and private network for outbound access, click the **Add Rule**button in the **Outbound Firewall Rules**table, and then make the settings according the following screenshot:



After the fields have been entered as in the screenshot, click **Save** to add the rule.

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Appendix D. Troubleshooting

Problem 1

Outbound load is only distributed over one WAN connection.

Solution

Outbound load can only be distributed evenly to the WAN connection 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 manager applications are recommended.The applications can split a file into pieces and download the pieces simultaneously. For example: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, all WAN connections will be bonded by our SpeedFusion™ technology. In this case, all bandwidth will be utilized and a file will be transferred across all available WAN connections.

For details, please refer to this FAQ: http://www.peplink.com/index.php?view=faq&id=111&path=19

Problem 2

I am using a download manager program (e.g. Download Accelerator Plus,DownThemAll etc.) now. Why is the download speed still in single link's speed?

Solution

First, check whether the 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 lookup my public IP address, e.g. www.whatismyip.com.WhenIkeep pressing the browser's Refresh button, the server almost always returns the same address.The IP address supposed to be changing for every refresh

Solution

The web server has enabled the ***Keep Alive*** function such that you were using the same TCP session to query the server.

Try to test with a web site that does not enable ***Keep Alive***.

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

Problem 4

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

Solution

You can test the LAN connection using ***Ping***.

For example, if you are using DOS/Windows, at the Command Prompt, type:

ping 192.168.1.1

This pingsthe Peplink Balance device (provided that Peplink Balance device's IP is 192.168.1.1) to test whether the connection to Peplink Balance is OK.

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Problem 5

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

Solution

You can test the WAN connection by ***Ping***, which is similar to problem 4.

As we want to isolate the problems from the LAN, ***Ping*** will be performed from Peplink Balance. By using the ***Ping***/***Traceroute***under the tab ***Status*** of the Peplink Balance, you may able to find out 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 it does not solve, you may try the MTU 1492 if a connection is a DSL. If problem still persists, change the size to smaller values until your problem is resolved (e.g. 1462, 1440, 1420, 1400, etc).

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Appendix E. Product Specifications

E.1 Peplink Balance 20 and 30

Routing

- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Outbound Link Load Balance

Device Management

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- IPsec (Network-to-Network)
- Compatible with IPsec and PPTP VPNPassthrough
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Intrusion Detection System

Physical Interface

- Two (Balance 20) / Three (Balance 30) RJ-45 for an IEEE 802.3u 10/100/1000M WAN
- Four RJ-45 for an IEEE 802.3ab 10/100/1000M LAN

Power Specification

- DC Input 9-16V

Operating Environment

- Kensington Lock Interface
- Temperature: 0°C - 55°C
- Humidity: 10% - 90% (non-condensing)

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E.2 Peplink Balance 210 and 310

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

Device Management

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface (Balance 210 Hardware Revision 2)

- Two RJ-45 for an IEEE 802.3u 10/100/1000M WAN
- Four RJ-45 for an IEEE 802.3ab 10/100/1000M LAN

Physical Interface (Balance 310 Hardware Revision 2)

- Three RJ-45 for an IEEE 802.3u 10/100/1000M WAN
- Four RJ-45 for an IEEE 802.3ab 10/100/1000M LAN

Power Specification

- DC Input 9-16V

Operating Environment

- Temperature: 0°C - 65°C
- Humidity: 10% - 90% (non-condensing)

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E.3 Peplink Balance 380

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface (Balance 380 Hardware Revision 5)

- Three RJ-45 for an IEEE 802.3ab 10/100M/1000M WAN
- One RJ-45 for an IEEE 802.3ab 10/100M/1000M LAN
- One RJ-45 Console / Serial Port

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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E.4 Peplink Balance 305

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface

- Three RJ-45 for an IEEE 802.3ab 10/100M/1000M WAN
- One RJ-45 for an IEEE 802.3ab 10/100M/1000M LAN
- One RJ-45 Console / Serial Port

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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E.5 Peplink Balance 380

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface (Balance 380 Hardware Revision 5)

- Three RJ-45 for an IEEE 802.3ab 10/100M/1000M WAN
- One RJ-45 for an IEEE 802.3ab 10/100M/1000M LAN
- One RJ-45 Console / Serial Port

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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E.6 Peplink Balance 580

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface

- FiveRJ-45 for an IEEE 802.3ab 10/100M/1000M WAN
- One RJ-45 for an IEEE 802.3ab 10/100M/1000M LAN
- One RJ-45 Console / Serial (modem / TA) Port
- LAN Bypass from WAN5 to LAN

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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E.7 Peplink Balance 710

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface

- Seven RJ-45 for an IEEE 802.3ab 10/100/1000M WAN
- One RJ-45 for an IEEE 802.3ab 10/100/1000M LAN
- One RJ-45 Console / Serial Port

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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E.8 Peplink Balance 1350

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface

- ThirteenRJ-45 for an IEEE 802.3ab 10/100/1000M WAN
- One RJ-45 for an IEEE 802.3ab 10/100/1000M LAN
- One RJ-45 Console / Serial (modem / TA) Port
- LAN Bypass from WAN1 to LAN

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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E.9 Peplink Balance 2500

Routing

- Drop-in Mode and NAT
- Flexible Custom Outbound Routing Policy

WAN Support

- DHCP, PPPoE and Static IP
- Inbound and Outbound Link Load Balance

DeviceManagement

- Wizard & Menu Driven Web Management Interface over HTTP / HTTPS
- Remote Reporting and Management
- Bandwidth Usage Monitor
- Configurations Upload and Download

Internet Access Sharing

- SUA (Single User Account) / Multi-to-Multi NAT
- NAT supports PAT (Port Address Translation)

Security

- PPTP VPN Server
- IPsec (Network-to-Network)
- Rules-based Stateful Firewall, with IP, Protocol, and Port filtering
- Bandwidth Bonding SpeedFusion™
- VPN Encryption: 256-bit AES
- Intrusion Detection System

Physical Interface

- Twelve RJ-45 for an IEEE 802.3ab 10/100/1000M WAN
- Eight RJ-45 for an IEEE 802.3ab 10/100/1000M LAN /Two SFP+ for an IEEE 802.3ae 10G LAN
- One RJ-45 Console / Serial Port

Power Specification

- AC input 100-240V

Operating Environment

- Temperature: 0°C - 40°C
- Humidity: 10% - 90% (non-condensing)

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Appendix F. Declaration

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

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