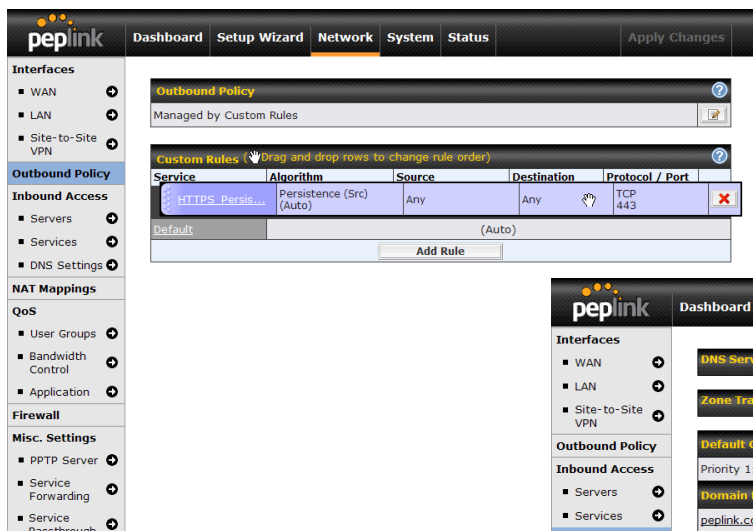


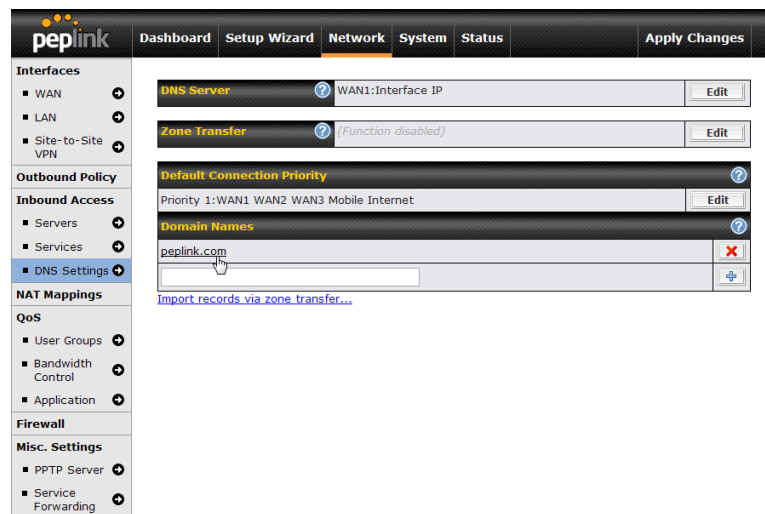
Peplink Balance Internet Load Balancing Solution Guide



The screenshot shows the Peplink web interface with the 'Network' tab selected. The left sidebar contains a navigation menu with categories: Interfaces (WAN, LAN, Site-to-Site VPN), Outbound Policy, Inbound Access (Servers, Services, DNS Settings), NAT Mappings, QoS (User Groups, Bandwidth Control, Application), Firewall, and Misc. Settings (PPTP Server, Service Forwarding, Service Passthrough). The main content area displays the 'Outbound Policy' section, which is managed by Custom Rules. A table of Custom Rules is shown with the following data:

Service	Algorithm	Source	Destination	Protocol / Port
HTTPS_Persis...	Persistence (Src) (Auto)	Any	Any	TCP 443
Default			(Auto)	

An 'Add Rule' button is located below the table.



The screenshot shows the Peplink web interface with the 'Network' tab selected. The left sidebar is the same as in the previous screenshot. The main content area displays the 'DNS Settings' configuration page. The 'DNS Server' field is set to 'WAN1:Interface IP'. The 'Zone Transfer' function is disabled. The 'Default Connection Priority' is set to 'Priority 1:WAN1 WAN2 WAN3 Mobile Internet'. The 'Domain Names' section shows 'peplink.com' entered in the input field. A link 'Import records via zone transfer...' is visible below the domain name input.

Internet Load Balancing

Instant Improvement to Your Network



● Introduction

Understanding Peplink Link Load Balancing Solutions

Overview

The demand for Internet bandwidth is increasing. Internet is needed for communication tools like email, VoIP service, and video conferencing. The increasing popularity of online office suites, online photo management, social networking websites, and other new cloud applications makes Internet an essential part of daily life. Streaming HD videos or transferring large files further consumes more bandwidth. A cost-effective solution to easily add bandwidth to handle all of these applications is necessary.

Break Internet bandwidth limits with Peplink Balance's Load Balancing technology. By load balancing Internet traffic over active links, Peplink Balance gives you the extra bandwidth necessary for new Internet applications.

Access your favorite web apps at lightning speed by connecting new Internet links, aggregating all bandwidths, and load balancing traffic across all links.

The Peplink Professional Internet Link Load Balancing



Optimize Network Traffic by Load Balancing

Peplink Balance gives you the flexibility to customize your network. Easily increase network speed and bandwidth by adding new Internet links from multiple ISPs. Use higher bandwidth connections for critical cloud applications, and other connections for surfing the net to ensure smooth transfer.

Advanced Load Balancing Algorithms

Peplink gives you seven Load Balancing Algorithms to fine-tune your network traffic. Create rules to distribute outbound traffic across all available connections and utilize bandwidth wisely. Using Weighted Balance to put more traffic on faster links, or Priority to keep routing traffic on your favored connection only takes a few clicks.



Link Failover as Backup

If any of your connections fail, failover will take place and traffic will automatically be routed through other connections. With multiple connections through Peplink Balance, you can access the Internet with no interruptions.

Host Servers with Confidence

Peplink's Inbound Load Balancing Algorithm enables visitors to enter your server through different Internet links to enhance the customers experience with faster response times and higher speeds. Hosting Email, e-commerce, VoIP, and other business applications has never been easier, faster, and more reliable.



Better Connection Between Offices with VPN Bonding

With Peplink's Site-to-Site VPN Bonding, you can easily connect office branches. Peplink's VPN Bonding turns all available connections into one big Internet pipe, giving your VPN tunnel the sum of bonded bandwidth. Communicating among your offices has never been faster and easier.

How Can Peplink Balance Give You the Best Link Load Balancing Experience Ever?

Increase Network Speed.

Peplink Balance allows you to increase bandwidth anytime by connecting new low-cost Internet links to existing network. Speed up your network and optimize traffic flow with Peplink's Advanced Load Balancing Algorithms. Your network traffic will be distributed to different Internet links to increase network speed.



Get 100% Internet Uptime.

Combine up to 13 Internet connections with a Peplink Balance. By connecting to multiple ISPs, all links are used actively and automatically back each other up in case of individual service outages. Further guarantee Internet uptime with one of the High Availability options by using two Peplink Balance devices for 1+1 Backup, or using a single device for LAN Bypass.

Save Money.

Reduce your Internet costs 90% by cutting your T1 or any other expensive links. Buy a Peplink Balance Multi-WAN Router, and replace your leased lines using a combination of multiple Internet broadband links. Enjoy the flexibility to scale bandwidth while saving money.



How does Peplink Balance distribute traffic across multiple WAN links?

Peplink Balance distributes both inbound and outbound data traffic across multiple WAN links.

Before learning more about the Load Balancing technologies, you will need to understand some basic ideas about Peplink multi-WAN router.

What is a multi-WAN router?

A multi-WAN router allows you to connect to multiple ISP connections to increase reliability and bandwidth while lowering total cost. Peplink's multi-WAN router even allows you to do this without any ISP's co-ordination.

Is it compatible with my DSL, Cable, EVDO or [insert link type] connection?

Usually you are given a "modem" device from your service provider to terminate and convert whatever type of connection/link into an Ethernet port. DSL modem or Cable modem fall into this space. Therefore, as long as you are given an Ethernet port (either directly or from a modem), you are ready to go with our device.

Can I subscribe multiple DSL or [insert link type] links from the same ISP?

Yes. The Peplink device will support them just fine. In fact, it will treat them in the way as if they were from different ISPs.

Is Static IP required for all WAN links?

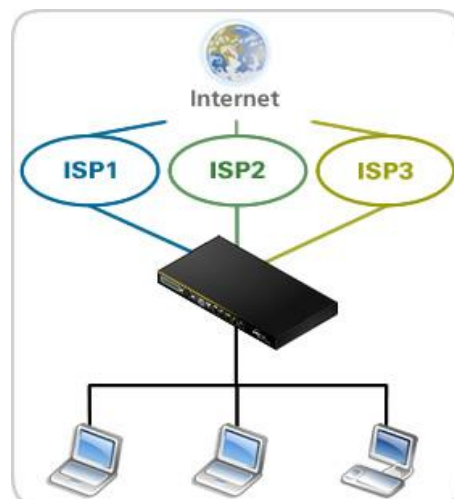
Static IP address is not required for Outbound Load Balancing, but at least two of the WAN links need to have a Static IP for Inbound Load Balancing. Please refer to the following section **Requirement** for more details.

So how traffic can be inbound/outbound load balance across the Peplink device?

The Inbound Load Balancing and Outbound Traffic Management features distribute inbound and outbound traffic requests, respectively.

For details of Outbound and Inbound Load Balancing, please refer the following sections:

- Understanding & Configuring Outbound Load Balancing
- Understanding & Configuring Inbound Load Balancing

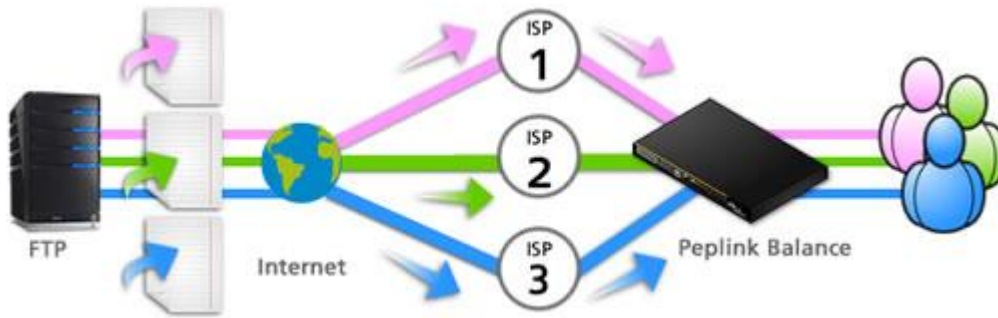


Peplink Balance allows you to connect to multiple ISPs and Load Balance the Traffic.

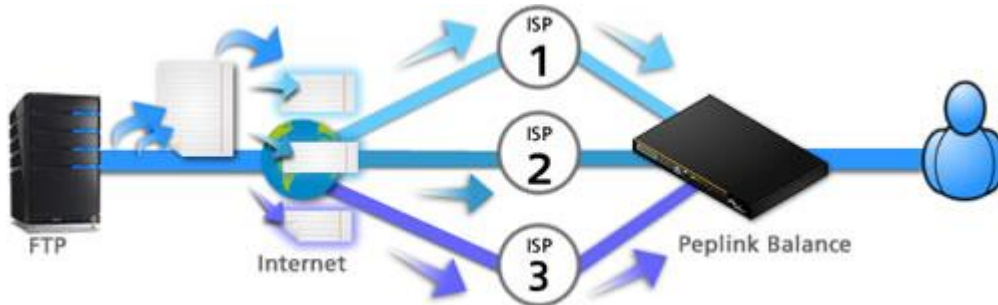
Does it combine the bandwidth of all WAN links?

Traffic will be distributed across all WAN links using load balancing and all bandwidth will be utilized as Peplink Balance distributes the traffic across your Internet links when there are multiple concurrent data transfers.

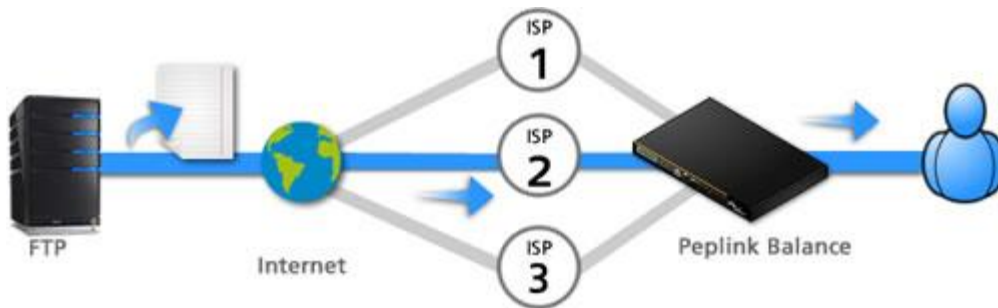
- In a multi-user environment (e.g. office), the Internet activity of different users will generate traffic in multiple sessions. Peplink Balance distributes this traffic across all WAN links to fully utilize the bandwidth.



- Using software like a download manager, a single file transfer will be divided into multiple sessions. Peplink Balance distributes this traffic across all WAN links, taking full advantage of all available bandwidth.



- When there is only a single data transfer (e.g. when downloading a file by a single user), traffic will take place over one WAN link. In this case, the speed of the corresponding WAN link limits the data transfer rate.



Requirement

Health Check Mechanisms against Link Failure should be enabled

Peplink Balance can conduct regular, periodic checks to closely monitor the health status of WAN connections.

There are two types of Health Checks:

- PING
ICMP/PING packets will be issued to test the connectivity with a configurable target IP address or host name
- DNS Lookup (**Highly Recommended**)
DNS tests provide the most reliable results regarding a link status.

By default, **DNS Lookup** is chosen automatically.

Health Check Settings are found under corresponding WAN profiles, located at: **Network > Interfaces > WAN > [WAN Connection Name]**.

Health Check Settings	
Method	<input type="text" value="DNS Lookup"/>
Health Check DNS Servers	Host 1: <input type="text"/> Host 2: <input type="text"/> <input checked="" type="checkbox"/> Use first two DNS servers as Health Check DNS Servers <input type="checkbox"/> Include public DNS servers
Timeout	5 second(s)
Health Check Interval	5 second(s)
Health Retries	3
Recovery Retries	3

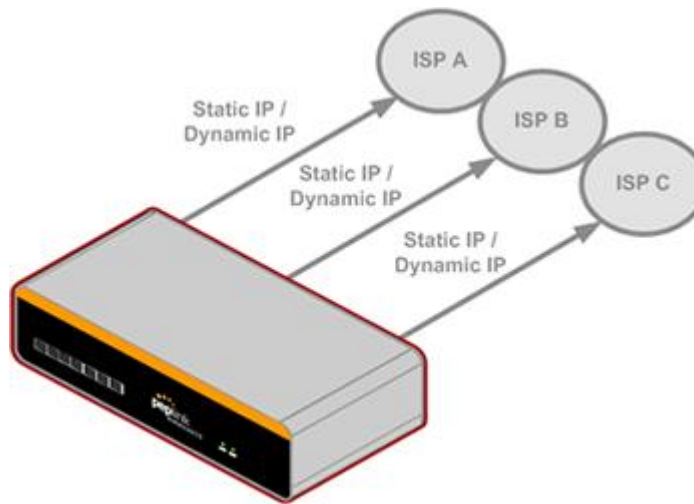
Inbound Load Balancing will require to have static IP on WAN connections

When it comes to requirement for WAN connections, we need to consider whether it is for outbound or inbound load balancing.

For Outbound Load Balancing:

No Static IP address is required. All WAN connections can have Dynamic IP only.

Example:

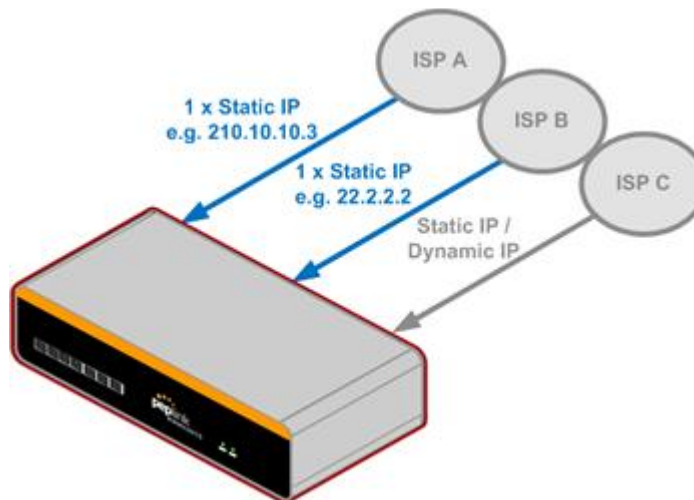


For Inbound Load Balancing:

At least two Static IP addresses, each on a separate WAN connection, are required.

As Peplink Balance will act as an authoritative DNS server of the domain name, at least two WAN connections are needed, and a Static IP is required on two of these WAN connections.

Example:



Outbound Load Balancing

Understanding Outbound Load Balancing

Peplink's load balancing algorithms help you easily fine-tune how traffic is distributed across connections. Each deployment has a unique setup, and Peplink's enterprise grade load balancing features can fulfill all of your special requirements. Create your own rule with the following algorithms and you can sit back and enjoy the high performance routing that Peplink brings to you.



A flexible rule-based configuration design enables the fine-tuning of outbound traffic at a per-service level by allowing multiple rules to be configured.

The following types of Outbound Traffic Rules are available:

- Weighted Balance
- Persistence
- Enforced
- Priority
- Overflow
- Least Used
- Lowest Latency

Weighted Balance

Assign more traffic to a faster link or less traffic to a connection with a bandwidth cap.

Set a weight on the scale for each connection and outgoing traffic will be proportionally distributed according to the specified ratio.

Algorithm	Weighted Balance
Load Distribution Weight	DSL 2Mbps : 7 T1 1.5Mbps : 5 Cable 6Mbps : 10 Mobile Internet : 1

Priority

Route traffic to your preferred link as long as it's available.

Arrange the connection priority order, and traffic will be routed through the healthy link that has the highest priority in the list. Lower priority links will only be used if the current connection fails.

Algorithm	?	Priority						
Priority Order	?	<table border="1"><tr><td>Highest Priority</td></tr><tr><td>T1 1.5Mbps</td></tr><tr><td>Cable 6Mbps</td></tr><tr><td>DSL 2Mbps</td></tr><tr><td>Mobile Internet</td></tr><tr><td>Lowest Priority</td></tr></table>	Highest Priority	T1 1.5Mbps	Cable 6Mbps	DSL 2Mbps	Mobile Internet	Lowest Priority
Highest Priority								
T1 1.5Mbps								
Cable 6Mbps								
DSL 2Mbps								
Mobile Internet								
Lowest Priority								

Overflow

Prevent traffic flow from slowing down when the connection runs out of available bandwidth.

Drag and drop to arrange the connection overflow order and the highest priority link will route traffic as long as it has not been congested. Once it saturates, the lower priority links will start routing traffic.

Algorithm	?	Overflow						
Overflow Order		<table border="1"><tr><td>Highest Priority</td></tr><tr><td>Cable 6Mbps</td></tr><tr><td>DSL 2Mbps</td></tr><tr><td>T1 1.5Mbps</td></tr><tr><td>Mobile Internet</td></tr><tr><td>Lowest Priority</td></tr></table>	Highest Priority	Cable 6Mbps	DSL 2Mbps	T1 1.5Mbps	Mobile Internet	Lowest Priority
Highest Priority								
Cable 6Mbps								
DSL 2Mbps								
T1 1.5Mbps								
Mobile Internet								
Lowest Priority								

Persistence

Eliminate session termination issue for HTTPS, E-banking, and other secure websites.

Specify a traffic type and it will be routed through the same connection persistently based on its source and/or destination IP addresses. Traffic will keep routing on the same connection until the session ends.

Source	Any
Destination	Any
Protocol	TCP ← HTTPS
Port *	Single Port Port: 443
Algorithm	Persistence
Persistence Mode	<input checked="" type="radio"/> By Source <input type="radio"/> By Destination

Least Used

Help you choose the better connection with more free bandwidth.

Traffic will be directed to the link with the most available bandwidth among the selected connections.

Algorithm	<input type="button" value="?"/> Least Used
Connection	<input checked="" type="checkbox"/> DSL 2Mbps <input checked="" type="checkbox"/> T1 1.5Mbps <input checked="" type="checkbox"/> Cable 6Mbps <input checked="" type="checkbox"/> Mobile Internet

Lowest Latency

Give you the fastest response time when using applications like online gaming.

Traffic will be assigned to the link with the lowest latency time among the selected connections.

Algorithm	<input type="button" value="?"/> Lowest Latency Note: Use of Lowest Latency will incur additional network usage.
Connection	<input checked="" type="checkbox"/> DSL 2Mbps <input checked="" type="checkbox"/> T1 1.5Mbps <input checked="" type="checkbox"/> Cable 6Mbps <input checked="" type="checkbox"/> Mobile Internet

Enforced

Restrict outbound traffic to a particular connection.

Select a connection and the specified traffic type will be routed through it at all times, whether the link is up or down.

For scenarios like accessing a server that only allows users from a specific IP.

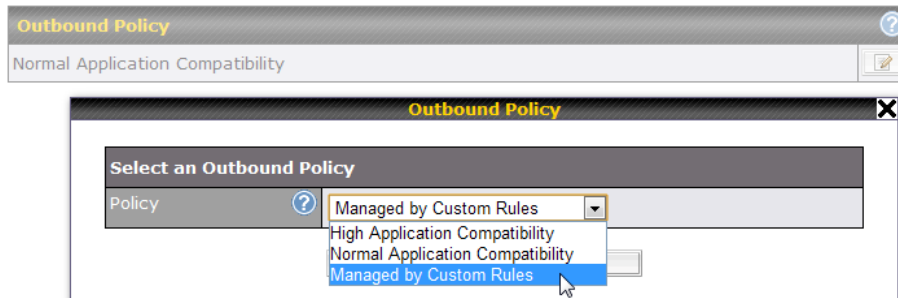
Source	Any
Destination	IP Address 202.123.45.1
Protocol	TCP <input type="button" value="←"/> :: Protocol Selection Tool ::
Port *	Single Port Port: 80
Algorithm	Enforced
Enforced Connection	T1 1.5Mbps

Configuration

Outbound Traffic Management Interface

The option to manage and customize outbound traffic is located at **Network > Outbound Policy**.

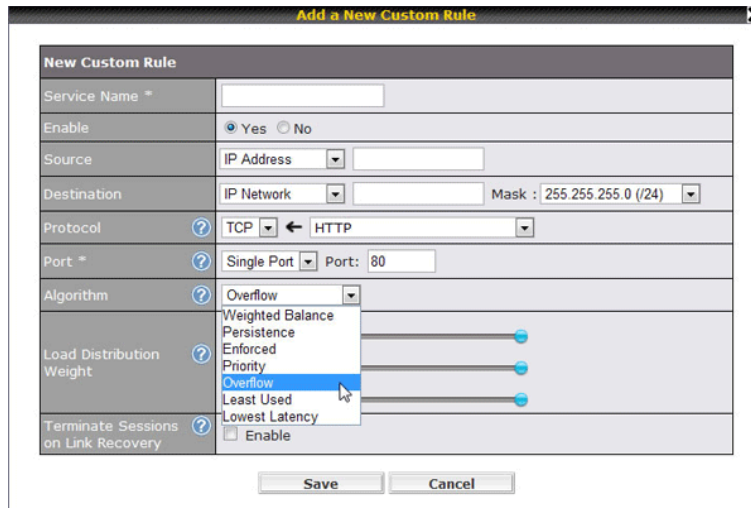
To customize the rules for outbound traffic, please click  and then select **Managed by Custom Rules** in Outbound Policy.



Click **Save** to save the setting, **Custom Rules** will then be shown as below.



Click **Add Rules** and New Custom Rule can be set manually like the following illustration.



The top-down order of the list denotes the order of decreasing precedence. Drag and Drop an appropriate row to change the rule order.

Configuration Examples

Example 1 – Setting up Weighted Balance Rules

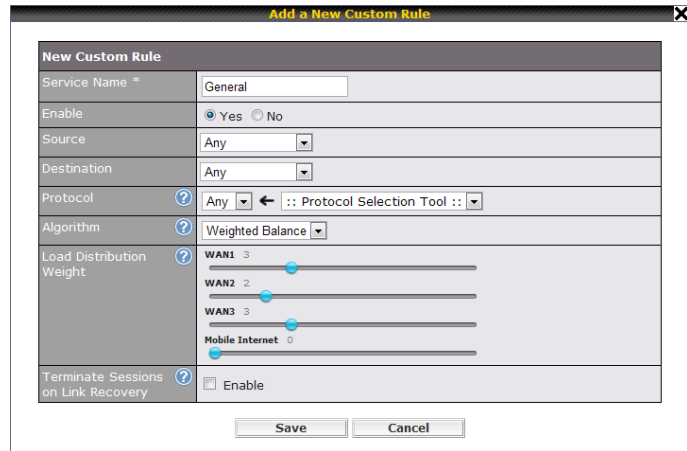
The basic idea behind Weighted Balance rules is to govern how Peplink Balance distributes outgoing traffic requests across multiple WAN links.

To illustrate, with the following link configuration:

- WAN1: 3M (DSL)
- WAN2: 2M (E1)
- WAN3: 3M (DSL)

The Weighted Balance rule should be set as follows:

- Service: General
- Source & Destination IP: Any
- Protocol & Port: Any
- Algorithm: Weighted Balance
- Load Distribution Weight: 3 : 2 : 3 (Derived from 3M : 2M : 3M)



This distributes a larger proportion of traffic to WAN1 and WAN3 to take advantage of the faster links, and a smaller proportion of traffic to WAN2 to prevent over-saturation of the slower link.

Example 2 – Setting up Per-service Weight Balance Rules

Some types of WAN links have different upstream and downstream speeds (e.g. ADSL with 3M upstream and 512K downstream). In such cases, upload-intensive services may require special fine-tuning.

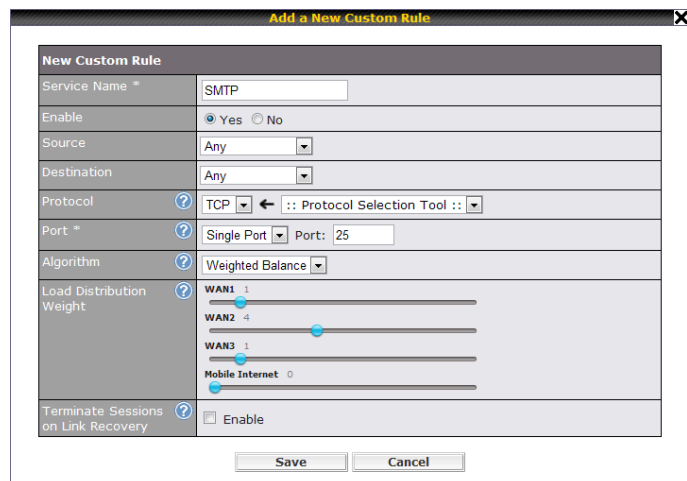
A common example is outgoing email (SMTP), where traffic is mostly upstream.

Building upon the previous link configuration:

- WAN1: 3M Downstream, 512K Upstream (DSL)
- WAN2: 2M Downstream, 2M Upstream (E1)
- WAN3: 3M Downstream, 512K Upstream (DSL)

A per-service Weighted Balance rule should be added for SMTP as follows:

- Service: SMTP
- Source & Destination IP: Any
- Protocol & Port: TCP 25
- Algorithm: Weighted Balance
- Load Distribution Weight: 1 : 4 : 1 (Derived from 512K : 2M : 512K)

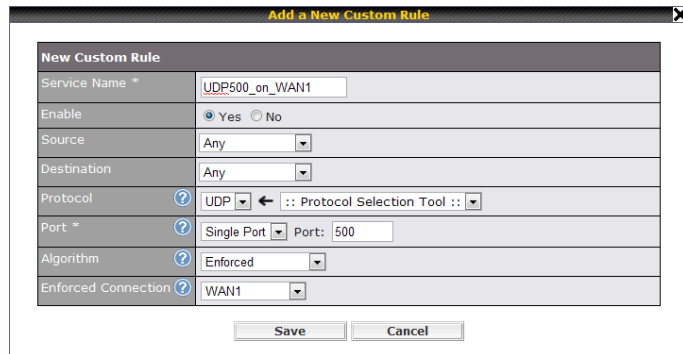


Example 3 – Restricting IPSec VPN Traffic to the WAN1 Link

To configure Peplink Balance to restrict IPSec VPN traffic to WAN1, add the following per-service Enforced rules:

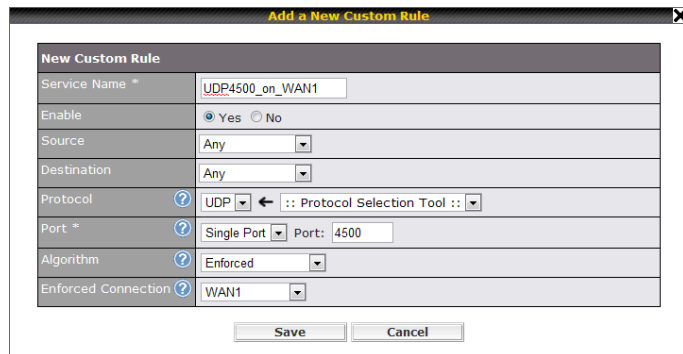
Rule to specify UDP Port 500 traffic:

- Service Name: UDP500_on_WAN1
- Source & Destination IP: Any
- Protocol & Port: UDP 500
- Algorithm: Enforced
- Enforced Connection: WAN1



Rule to specify UDP Port 4500 traffic:

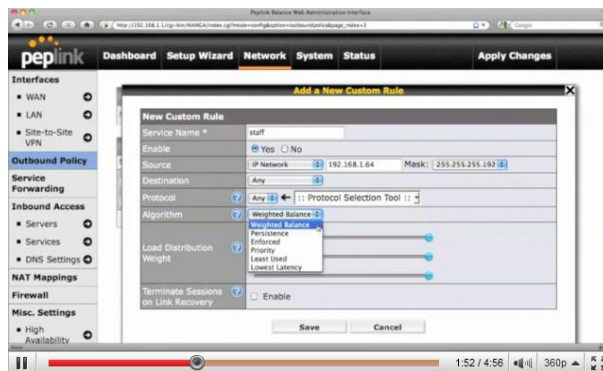
- Service: UDP4500_on_WAN1
- Source & Destination IP: Any
- Protocol & Port: UDP 4500
- Algorithm: Enforced
- Enforced Connection: WAN1



With these rules enabled, Peplink Balance will route IPSec VPN traffic with NAT-T (that require UDP ports 500 and 4500) to WAN1 regardless of its up/down status. In the event the WAN1 is down, by design, the specified traffic will simply be dropped rather than routed via the other WAN links.

Tip

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



http://www.youtube.com/PeplinkChannel#p/u/2/m977ePdM_sl

Inbound Load Balancing

Understanding Inbound Load Balancing

Inbound Load Balancing distributes inbound data traffic over multiple WAN links to computers behind Peplink Balance. Peplink Balance 210, 310, 380, 390, 580, 710, and 1350 have a built-in DNS server that enables this functionality.

Authoritative DNS functionality is not available on Peplink Balance 20 and 30.

Inbound Load Balancing is configured via both of the following:

- DNS records configured within Peplink Balance
- External DNS records at an Authoritative DNS Server

The following is a simplified example of an Inbound Load Balancing scenario when Peplink Balance is acting as an authoritative DNS server, further details subsequently follow:

1. Peplink Balance is being an authoritative DNS server of domain foobar.com
2. The web server that serves www.foobar.com is housed behind Peplink Balance, where Peplink Balance distributes the web server's data traffic across two WAN links (i.e. WAN1 and WAN2).



Both WANs are available and traffic are load balanced.

In further detail, with the aforementioned DNS records, the following steps take place when resolving the hostname www.foobar.com:

1. A client computer requires resolution for www.foobar.com, and queries the build-in DNS server of Peplink Balance for foobar.com
2. The client computer queries, via WAN1, the DNS of Peplink Balance for the resolution of www.foobar.com. In the event that the WAN1 connection is down, the DNS query would not succeed. However, as a built-in mechanism of the DNS protocol, the client computer then queries via WAN2 to resolve the hostname www.foobar.com
3. Peplink Balance, upon receiving the DNS query, returns to the client computer the IP addresses of www.foobar.com that correspond to available WAN links. For example:
 - If both WAN1 and WAN2 are available, then both the IP address that corresponds to WAN1 and that of WAN2 are returned.
 - If WAN1 is available but WAN2 is down, then the IP address that corresponds to WAN1 is returned, but that of WAN2 is not returned.



WAN1 is down and incoming traffic goes through WAN2.

Setting up Inbound Load Balance with a Delegated Sub-domain

Inbound Load Balancing distributes inbound data traffic over multiple WAN links to computers behind Peplink Balance. Peplink Balance 210, 310, 380, 390, 580, 710, and 1350 have a built-in DNS server that enables this functionality.

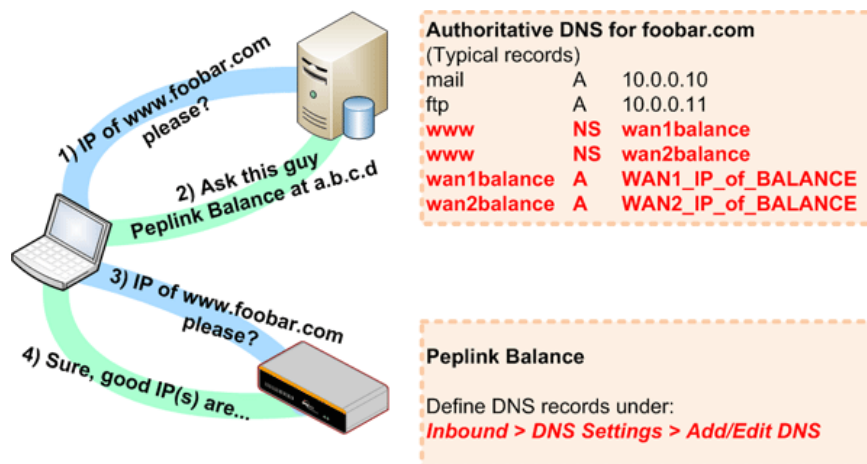
Authoritative DNS functionality is not available on Peplink Balance 20 and 30.

Inbound Load Balancing is configured via both of the following:

- DNS records configured within Peplink Balance
- External DNS records at an Authoritative DNS Server

The following is a simplified typical example of an Inbound Load Balancing scenario, further details subsequently follow:

1. The domain foobar.com is resolved by an authoritative DNS external to Peplink Balance.
2. The web server that serves www.foobar.com is housed behind Peplink Balance, where Peplink Balance distributes the web server's data traffic across two WAN links (i.e. WAN1 and WAN2).
3. The authoritative DNS delegates to Peplink Balance the resolution of hostname www.foobar.com. For the purpose of this example, other hosts (e.g. mail, ftp, etc.) in the foobar.com domain are resolved by the authoritative DNS.
4. Authoritative DNS records that enable Inbound Load Balancing to www.foobar.com are shown in blue in the following diagram.



In further detail, with the aforementioned DNS records, the following steps take place when resolving the hostname www.foobar.com:

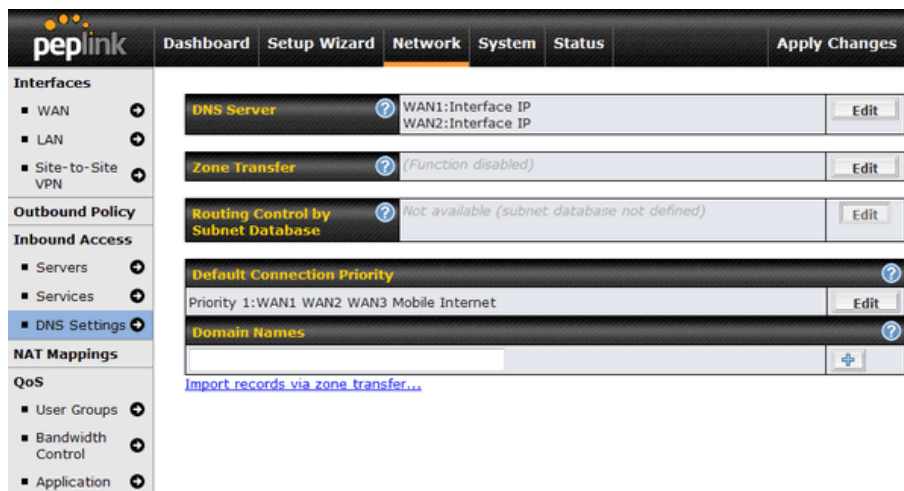
1. A client computer requires resolution for www.foobar.com, and queries the Authoritative DNS Server for foobar.com.
2. The Authoritative DNS Server for foobar.com checks its DNS records:
 - The DNS records of type "NS" delegate the resolution of hostname www.foobar.com to two places: wan1balance, and wan2balance
 - wan1balance represents the hostname at which Peplink Balance can be reached via its WAN1 connection.
 - wan2balance represents the hostname at which Peplink Balance can be reached via its WAN2 connection.
 - Both wan1balance and wan2balance are returned as the result of the DNS query.
3. The client computer queries, via wan1balance, the DNS of Peplink Balance for the resolution of www.foobar.com. In the event that the WAN1 connection is down, the DNS query would not succeed. However, as a built-in mechanism of the DNS protocol, the client computer then queries via wan2balance to resolve the hostname www.foobar.com.
4. Peplink Balance, upon receiving the DNS query, returns to the client computer the IP addresses of www.foobar.com that correspond to available WAN links. For example:
 - If both WAN1 and WAN2 are available, then both the IP address that corresponds to WAN1 and that of WAN2 are returned.
 - If WAN1 is available but WAN2 is down, then the IP address that corresponds to WAN1 is returned, but that of WAN2 is not returned.

Configuration

How to set up the Integrated DNS Server for Inbound Load Balancing

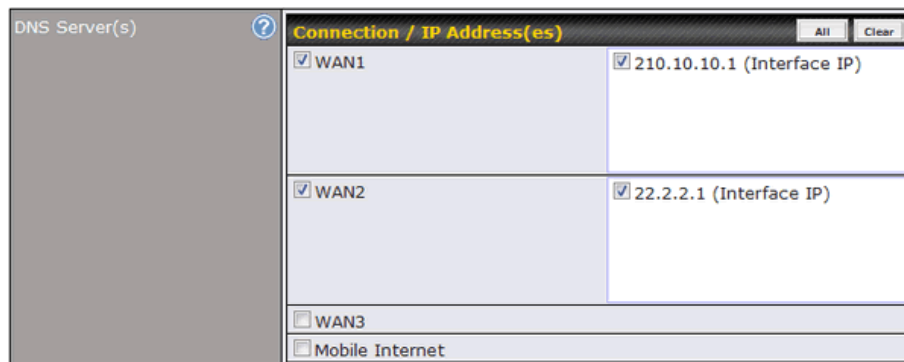
Peplink Balance has a built-in DNS server for inbound link load balancing. You can delegate a domain's NS/SOA records, e.g. "www.mycompany.com", to the Peplink Balance's WAN IP address(es). Peplink Balance will return healthy WAN IP addresses as an "A" record when a DNS query for the host name is received. It also supports acting as a generic DNS server for hosting "A", "CNAME", "MX", "TXT" and "NS" records.

To define the DNS records to be hosted in Peplink Balance, go to the setup page located at: **Network > Inbound Access > DNS Settings**. You will see the following screen:



Step 1: Configure "DNS Server"

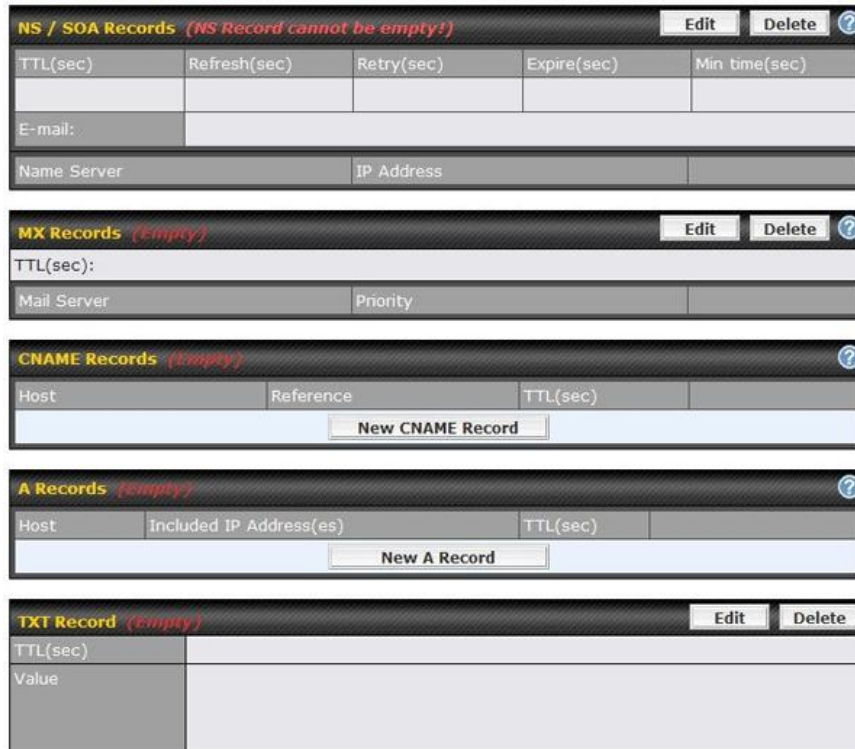
Click the Edit button for choosing the IP addresses that the DNS server should be listening on. You will see the following screen:



Select the desired WAN link(s) and respective IP addresses. Multiple addresses in the list can be selected by holding the CTRL key while clicking on the addresses. Click Save to continue.

Step 2: Creating DNS Records

From Network > Inbound Access > DNS Settings, enter a domain name in the Domain Name field and click the Add New button. Click on the newly created domain name and you will see the following screen:



The screenshot displays five distinct sections for configuring DNS records, each with its own set of input fields and controls:

- NS / SOA Records (NS Record cannot be empty!)**: Includes fields for TTL(sec), Refresh(sec), Retry(sec), Expire(sec), Min time(sec), E-mail, and Name Server (with an associated IP Address field). It features Edit, Delete, and help icons.
- MX Records (Empty)**: Includes fields for TTL(sec), Mail Server, and Priority. It features Edit, Delete, and help icons.
- CNAME Records (Empty)**: Includes fields for Host, Reference, and TTL(sec). It features a 'New CNAME Record' button and a help icon.
- A Records (Empty)**: Includes fields for Host, Included IP Address(es), and TTL(sec). It features a 'New A Record' button and a help icon.
- TXT Record (Empty)**: Includes fields for TTL(sec) and Value. It features Edit and Delete icons.

You can define the domain's NS, MX, CNAME, A and TXT records from this page.

NS/SOA Records

To edit the NS record, click on the Edit button in the NS Record table. The table will show new text boxes:



The screenshot shows a configuration window titled "NS / SOA Records (NS Record cannot be empty!)". It contains several input fields and buttons. The fields are: TTL(sec) with value 3600, Refresh(sec) with value 16384, Retry(sec) with value 2048, Expire(sec) with value 1048576, and Min time(sec) with value 2560. Below these is an "E-mail:" field with the value "hostmaster". At the bottom, there are two empty text boxes labeled "Name Server" and "IP Address", followed by an "Add" button. "Save" and "Cancel" buttons are in the top right corner.

Enter the name and IP address you wish to add into the text boxes. The host name can be a non-FQDN (fully qualified domain name). Click the Add button to the right of the text boxes. Once added, click the Save button to save the changes you made (Changes are not saved until you click the Save button).

MX Record

To edit the MX record, click on the Edit button in the MX Record table. The table will allow you to add new records or delete existing records:



The screenshot shows a configuration window titled "MX Records". It has a "TTL(sec):" field with value 3600. Below is a table with columns "Mail Server" and "Priority". The table contains two rows: "mx1" with priority 10 and "mx2" with priority 20. Each row has a "Delete" button to its right. At the bottom, there are two empty text boxes for "Mail Server" and "Priority", followed by an "Add" button. "Save" and "Cancel" buttons are in the top right corner.

To add a new record, enter a value for priority and enter the mail exchange server host name. Click the Add button to add the record. Click on the Delete button to delete the corresponding record. After all changes have been made, click the Save button for the changes to take place.

CNAME Record

To add a new CNAME record, click on the Add New button in the CNAME Record table. The table will allow you to add new CNAME records:

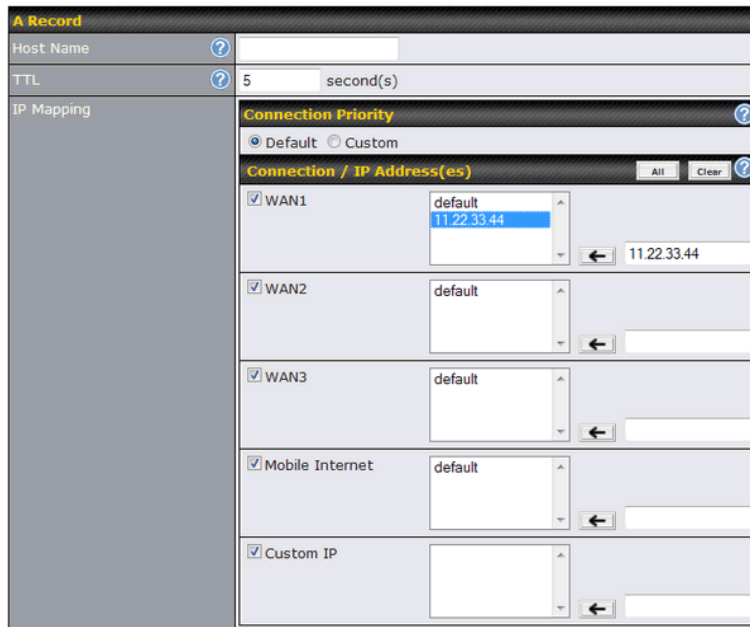


The screenshot shows a configuration window titled "CNAME Records (Empty)". It has three input fields: "Host", "Reference", and "TTL(sec)" with value 3600. Below these fields are "Save" and "Cancel" buttons. At the bottom, there is a "New CNAME Record" button.

If you want a sub-domain "secure" to have the same A record value(s) as "www", you can create a CNAME record for "secure" and reference it to "www". Enter the names of the Host and Reference in the text boxes. You may also change the TTL (time-to-live) value of the record in external DNS caches. Click the Save button to save the new CNAME record.

A Record

To add or edit an A record, click on the Add New button or the Edit button in the A Record table. You will see the following form:



The Host Name specifies the sub-domain for the A record. The TTL specifies the time-to-live of this record in external DNS caches. The IP Mapping 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 links. For WAN links that operate under IP Forwarding 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 highlighted IP addresses in the lists are candidates to be returned when responding to a DNS query. (Multiple items in a list can be selected by holding CTRL and clicking on the items.) In case of a WAN link 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.

TXT Record

To edit the TXT Record, click on the Edit button in the TXT Record table. You may edit the time-to-live value and the TXT record's value. Click the Save button to finish.

DNS Registration and Hosting

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. In order for Internet users to look up the host name, say, "www.mycompany.com", using Peplink Balance, you have to point NS records of it in the domain, "mycompany.com", to the Peplink Balance's WAN IP addresses. If you are using ISC BIND 8 or 9, add these lines in the zone file of "mycompany.com":

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

where 202.153.122.108 and 67.38.212.18 are the WAN IP addresses of the Peplink Balance in this example. The IP values here are for illustration only and would likely be different for you. 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 (eg. "mycompany.com") point to your Balance's WAN IP addresses.

Under Advanced **Setup > Inbound Access > DNS Settings**, create a new domain, for example "mycompany.com", and create an NS record under it. NS server names are typically "ns1" and "ns2" and the IP addresses are the same as that submitted to the registrar. Create the corresponding MX, CNAME, A and TXT records as you wish.

Testing

From a host on the Internet, use an IP address of Peplink Balance and nslookup to lookup the corresponding hostname. Check if the returned IP addresses are the desired addresses for the host name. The following is a sample Windows nslookup:

```
C:\Documents and Settings\User Name>nslookup
Default Server: ns1.myisp.com
Address: 147.22.11.2

> server 202.153.122.108      <-- Peplink Balance's WAN IP address
Default Server: balance.mycompany.com
Address: 202.153.122.108

> www.mycompany.com         <-- Host name to look up
Default Server: balance.mycompany.com
Address: 202.153.122.108

Name: www.mycompany.com
Address: 202.153.122.109, 67.38.212.19
```

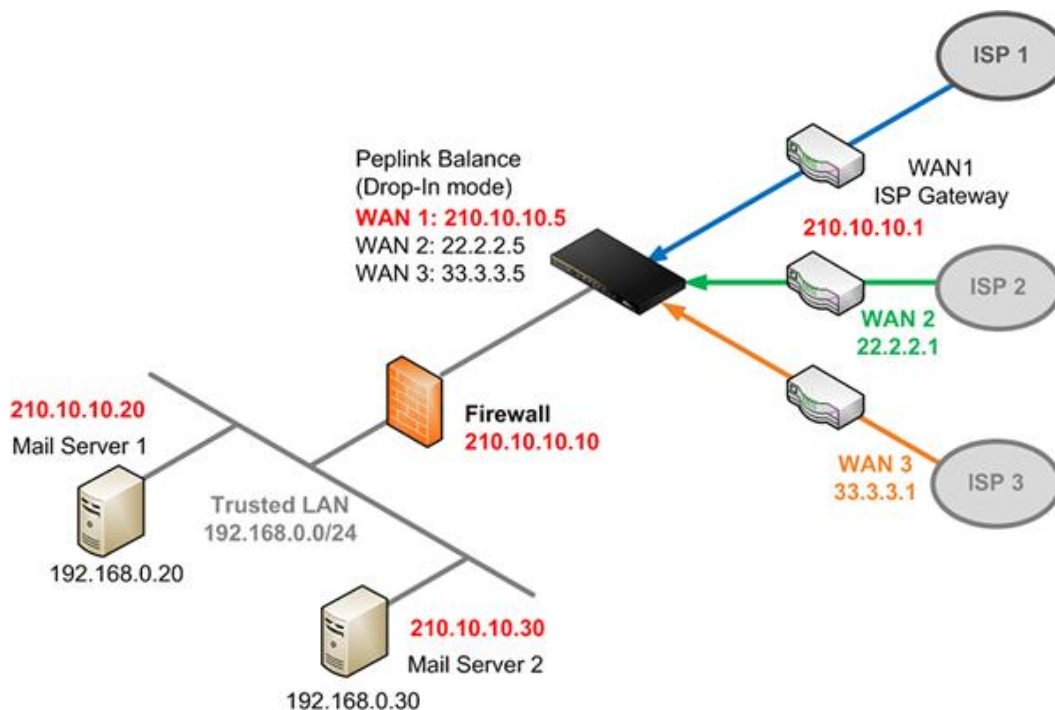
The IP values here are for illustration only and would likely be different for you.

How to set up Inbound Load Balance under Drop-in Mode

Customers often wonder whether Drop-in Mode and Inbound Load Balance can co-exist. The good news is yes they can. The purpose of this how-to is to guide you through a typical setup of such environment so that you can plan your installation easily.

We will use an example throughout this FAQ for illustrating the idea. Suppose you currently have a network similar to the following:

- Peplink Balance installed and connected to three ISPs, using Drop-in Mode
- Static IP address ranges (subnets) from the ISPs
- A firewall protecting your trusted LAN
- Hosts and servers on the trusted LAN are using private IP addresses
- NAT Mappings (at Firewall)
 - 210.10.10.20:SMTP -> 192.168.0.20:SMTP
 - 210.10.10.30:SMTP -> 192.168.0.30:SMTP



To map IP addresses from ISP 2 and ISP 3 to "logically" point to the mail servers, you can follow the steps below:

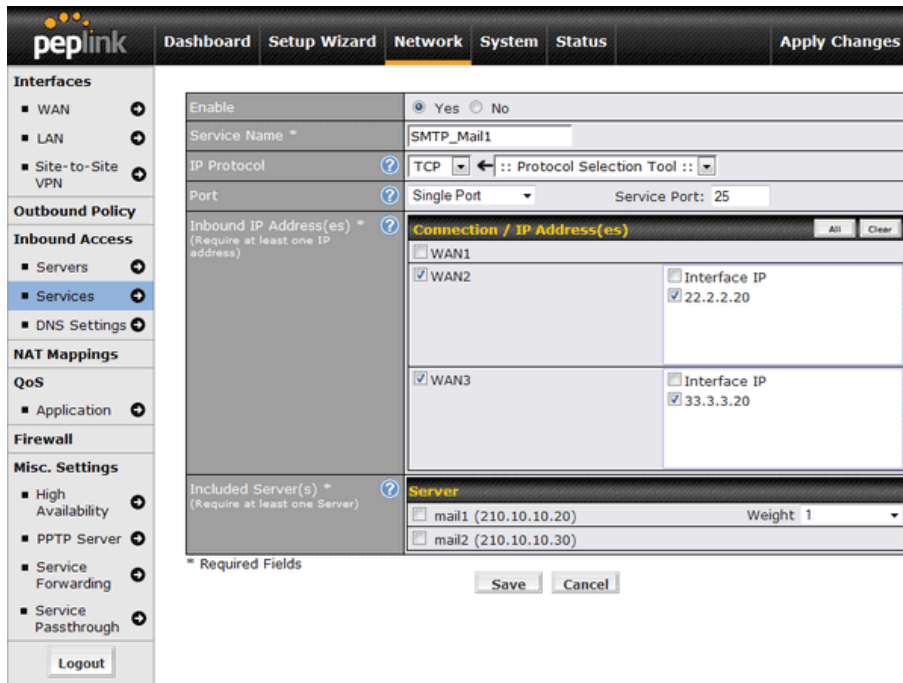
- 1) Configure and enable drop-in mode, please refer to related FAQ for more details.
- 2) Define Additional Public IP addresses of ISP 2 and ISP 3. You may refer to this FAQ for how-to setup.
- 3) Define Inbound Servers
 1. Go to **Advanced Network -> Inbound Access -> Servers**
 2. Click Add Server and add the two mail servers
 3. Notice the use of IP addresses from ISP A here. To Peplink Balance, it only "sees" IP addresses on its LAN interface.

Server Name	IP Address	
mail1	210.10.10.20	Delete
mail2	210.10.10.30	Delete

Add Server

4) Define Inbound Services

1. Go to **Network-> Inbound Access -> Services**
2. Click Add Service to add a new service rule, tying up IP addresses of ISP 2 and ISP 3 to existing server(s).



The screenshot shows the Peplink web interface with the 'Network' tab selected. The left sidebar shows 'Inbound Access' > 'Services' selected. The main content area shows the configuration for a service rule named 'SMTP_Mail1'. The 'Enable' checkbox is checked. The 'Service Name' is 'SMTP_Mail1'. The 'IP Protocol' is 'TCP'. The 'Port' is 'Single Port' with a 'Service Port' of '25'. The 'Inbound IP Address(es)' section shows three entries: WAN1 (unchecked), WAN2 (checked) with 'Interface IP' 22.2.2.20, and WAN3 (checked) with 'Interface IP' 33.3.3.20. The 'Included Server(s)' section shows two entries: 'mail1 (210.10.10.20)' and 'mail2 (210.10.10.30)', both with a 'Weight' of '1'. The 'Save' and 'Cancel' buttons are visible at the bottom.

3. The above screenshot essentially says:

- Map 22.2.2.20:SMTP -> 210.10.10.20:SMTP
- Map 33.3.3.20:SMTP -> 210.10.10.20:SMTP

4. Notice that no mapping is required for ISP A. (Uncheck it)

5. Repeat the same step for other service(s).

6. Finally you get something like this:



The screenshot shows the Peplink web interface with a green message: 'Saved! Changes will be effective after clicking the 'Apply Changes' button.' Below the message is a table showing the configured services:

Service	IP Address(es)	Server	Protocol	Action
SMTP_Mail1	WAN2: 22.2.2.20 WAN3: 33.3.3.30	mail1 (210.10.10.20)	TCP:25	Delete
SMTP_Mail2	WAN2: 22.2.2.20 WAN3: 33.3.3.30	mail2 (210.10.10.30)	TCP:25	Delete

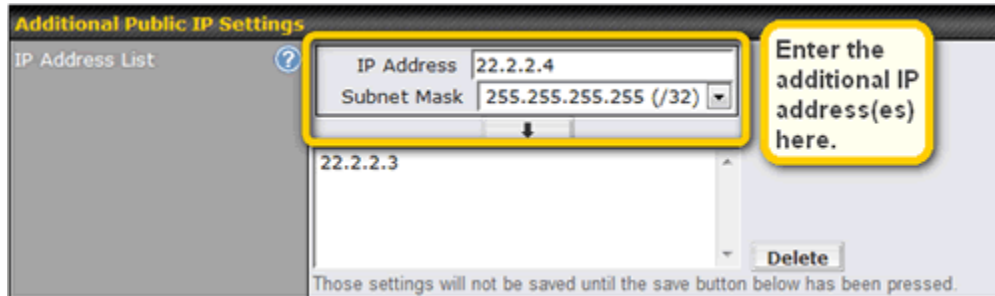
Add Service

7. Save and apply changes.

Additional Information

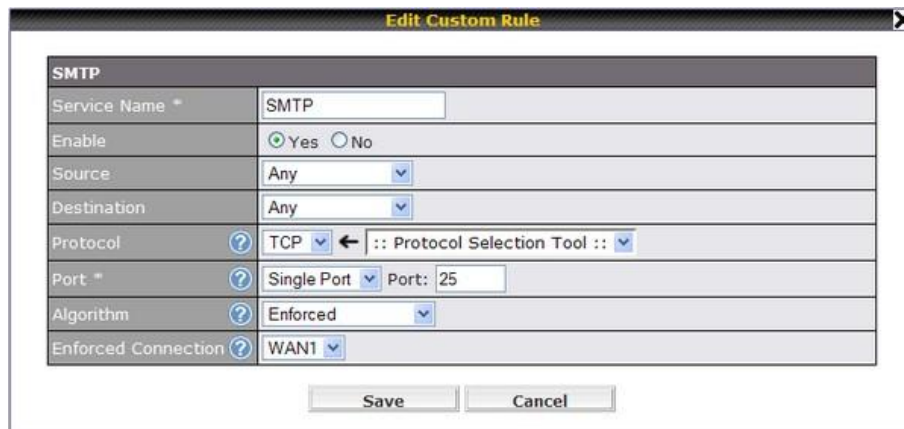
Does Peplink Balance support multiple IP address on WAN interfaces?

Peplink supports multiple IP address on WAN interface. To bind the IP addresses into the WAN interface, go to **Network > Interfaces > WAN > WAN Connection** and scroll to near bottom of the page.



Hot to restrict outbound traffic to one specific WAN link?

By using the powerful Outbound Traffic Manager, this can be done easily. Create a new policy rule, located at **Network > Outbound Policy**, as shown in the following illustration.



The rule says:

- For any outbound SMTP traffic (TCP Port 25), use the Enforced algorithm.
- Send matching traffic only to WAN1.

* This is a common requirement when your SMTP requests are accepted by a specific ISP.

Frequently Asked Questions

Additional FAQs can be found in the Peplink Knowledge Base. Please visit the knowledge base for other frequently asked questions.

<http://www.peplink.com/knowledgebase/>

How to Direct Dynamic VoIP or Peer-to-peer Traffic over a Specific WAN link?

<http://www.peplink.com/index.php?view=faq&id=103>

How to utilize SSL Persistence with E-banking and Other Secure Websites?

<http://www.peplink.com/index.php?view=faq&id=104>

Is there a Speed Test Tool for Testing the Combined Download Speed in Multi-WAN Environment?

<http://www.peplink.com/index.php?view=faq&id=173>

You are not able to refer a DNS Record to a Foreign Domain?

<http://www.peplink.com/index.php?view=faq&id=87>

How many DNS Records are Supported by the Built-in DNS Server on Peplink Balance?

<http://www.peplink.com/index.php?view=faq&id=119>



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About Peplink

Peplink is the proven market leader in delivering Internet link load balancing solutions. Peplink's products have been deployed by service providers, public safety agencies, city governments and enterprise customers around the world. As an innovative creator of technology solutions, Peplink operates globally with offices in North America and Asia in cooperation with distributors, system integrators and strategic alliance partners.

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