RUTX14 Routing

The information in this page is updated in accordance with firmware version **RUTX_R_00.07.04.5**.

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Summary

The **Routing** page is used to set up static and dynamic routes, routing tables and rules.

This manual page provides an overview of the Routing windows in RUTX14 devices.

If you're having trouble finding this page or some of the parameters described here on your device's WebUI, you should **turn on "Advanced WebUI" mode**. You can do that by clicking the "Basic" button under "Mode", which is located at the top-right corner of the WebUI.

Static Routes

Routes ensure that network traffic finds its path to a specified host or network, both in local and remote network scenarios. Static routes are simply fixed routing entries in the routing table(s).

This section provides the possibility to configure custom static routes.

Static IPv4 Routes

The **Static IPv4 Routes** section displays a list of user defined static IPv4 routes and provides the possibility to add and configure new ones. The list is empty by default.

To add a new route and begin editing, simply click the 'Add' button. Refer to the table below for information on static route configuration fields.

Field	Value	Description
Interface	network interface; default: **lan**	Network interface of the target network.
Target*	ip4; default: **none**	Destination network address.
IPv4-Netmask*	netmask; default: **none**	A netmask is used to divide an IP address into sub-networks (subnets). Combined together, the 'Netmask' and 'Target' values define the exact destination network or IP address to which this route applies.
IPv4-Gateway	ip4; default: **none**	A gateway can be any machine in a network that is capable of serving as an access point to another network. Traffic that matches this route will be directed over the IP address specified in this field.

Metric	integer [0..255]; default: **none**	The metric value acts as a measurement of priority. If a packet about to be routed matches two or more rules, the one with the lower metric is applied.
MTU	integer [64..9000]; default: **1500**	Sets the maximum transmission unit (MTU) size. It is the largest size of a protocol data unit (PDU) that can be transmitted in a single network layer transaction.
Route Type	unicast | local | broadcast | multicast | unreachable | prohibit | backhole | anycast | -- custom -- ; default: **unicast**	Selects route type. Each type specifies a different behavior for the route: • **unicast** - most common type of route, simply describes a path to a destination. • **local** - routes of this type are added to the 'local' routing table and used only for locally hosted IPs. • **broadcast** - routes of this type are added to the 'local' routing table and used by link layer devices that support the broadcast address principle. • **multicast** - used for distribution of multicast traffic. • **unreachable** - sends an ICMP "unreachable" response to the source address when a request for a routing decision returns a "destination with an unreachable route type" message. • **prohibit** - used to prohibit traffic to specified host or network. When a destination is prohibited, the kernel sends a 'Network is unreachable' response the source address. • **blackhole** - packets that match this type of route are discarded without any response. • **anycast** - provides a possibility to route incoming requests to multiple different network locations. • **-- custom --** - does not use any of the predefined route types.

***Additional notes on 'Target' & 'Netmask' fields:**

You can define a rule that applies to a single IP like this:

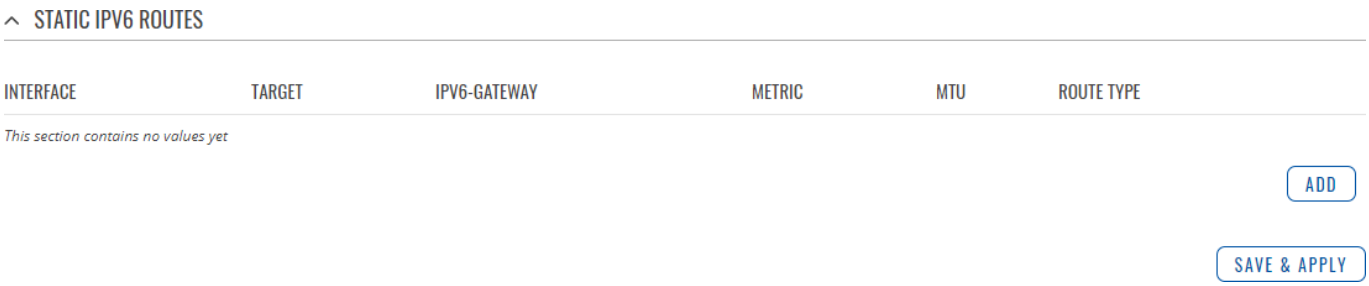
- **Target**: some IP
- **Netmask**: 255.255.255.255

Furthermore, you can create target/netmask combinations that apply to a range of IPs. Refer to the table below for examples.

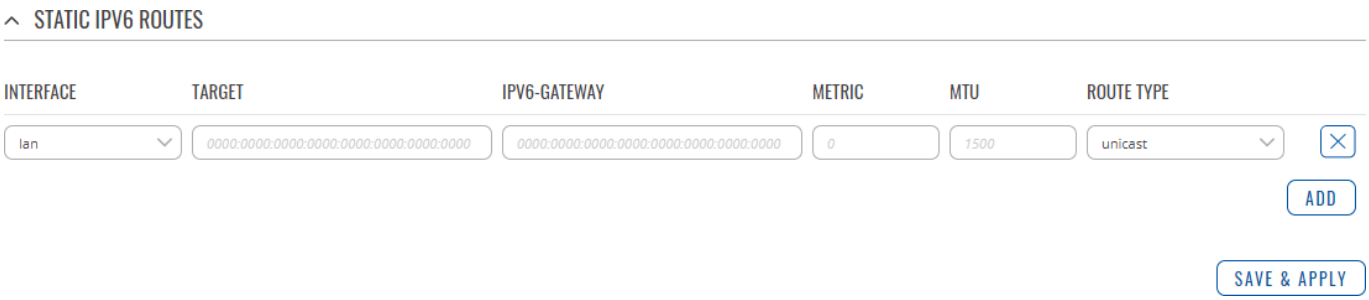
Target	Netmask	Network range
192.168.2.0	255.255.255.240	192.168.2.0 - 192.168.2.15
192.168.2.240	255.255.255.240	192.168.2.240 - 192.168.2.255
192.168.2.161	255.255.255.0	192.168.2.0 - 192.168.55.255
192.168.0.0	255.255.0.0	192.168.0.0 - 192.168.255.255
192.168.2.161	255.255.255.255	192.168.2.161

Static IPv6 Routes

The **Static IPv6 Routes** section displays a list of user defined static IPv6 routes and provides the possibility to add and configure new ones. The list is empty by default.



To add a new route and begin editing, simply click the 'Add' button. Refer to the table below for information on static route configuration fields.



Field	Value	Description
Interface	network interface; default: **lan**	Network interface of the target network.
Target	ip6; default: **none**	Destination network address.
IPv6-Gateway	ip6; default: **none**	A gateway can be any machine in a network that is capable of serving as an access point to another network. Traffic that matches this route will be directed over the IP address specified in this field.
Metric	integer [0..255]; default: **none**	The metric value acts as a measurement of priority. If a packet about to be routed matches two or more rules, the one with the lower metric is applied.
MTU	integer [64..9000]; default: **1500**	Sets the maximum transmission unit (MTU) size. It is the largest size of a protocol data unit (PDU) that can be transmitted in a single network layer transaction.

Route Type	unicast | local | broadcast | multicast | unreachable | prohibit | backhole | anycast | -- custom -- ; default: **unicast**	Selects route type. Each type specifies a different behavior for the route: • **unicast** - most common type of route, simply describes a path to a destination. • **local** - routes of this type are added to the 'local' routing table and used only for locally hosted IPs. • **broadcast** - routes of this type are added to the 'local' routing table and used by link layer devices that support the broadcast address principle. • **multicast** - used for distribution of multicast traffic. • **unreachable** - sends an ICMP "unreachable" response to the source address when a request for a routing decision returns a "destination with an unreachable route type" message. • **prohibit** - used to prohibit traffic to specified host or network. When a destination is prohibited, the kernel sends a 'Network is unreachable' response the source address. • **blackhole** - packets that match this type of route are discarded without any response. • **anycast** - provides a possibility to route incoming requests to multiple different network locations. • **-- custom --** - does not use any of the predefined route types.

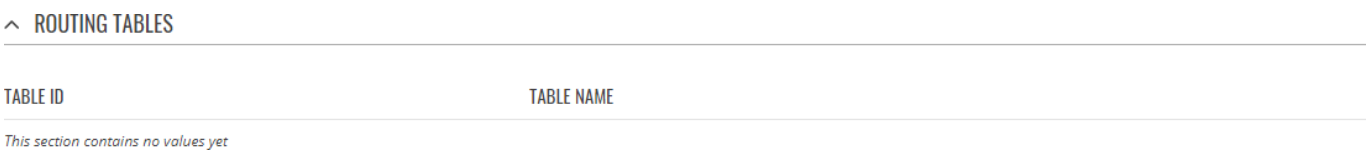
Advanced Static Routes

The **Advanced Static Routes** section is used to configure policy-based routing infrastructures, which are usually used in more complex or specific networking scenarios.

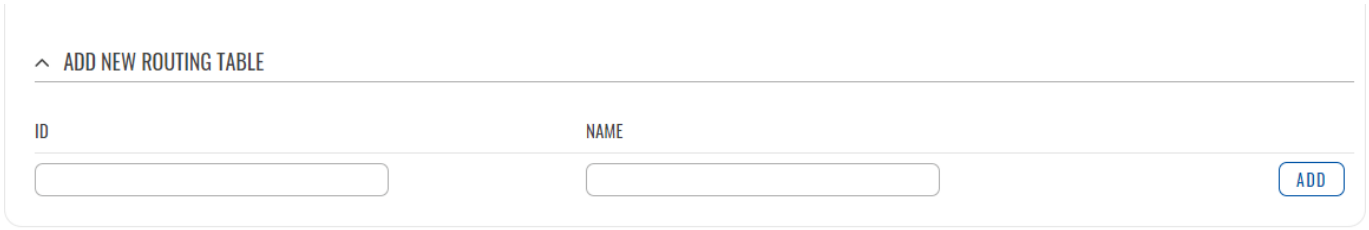
Routing Tables

Routing Tables store network routes. Tables are checked before every routing decision until a matching route is found. Having multiple tables allows the user to set up a policy routing infrastructure. Policy-based routing is a technique where routing decisions are based on policies (rule) set by the user.

The 'Routing Tables' section displays user created routing tables. By default, the list is empty.



To create a new table, look to the 'Add New Routing Table' section below. Enter an ID for the new table in the range of [1..252], enter a custom name and click the 'Add' button. The new table should appear in the 'Routing Tables' list. Click the 'Edit' button next to it to begin editing.

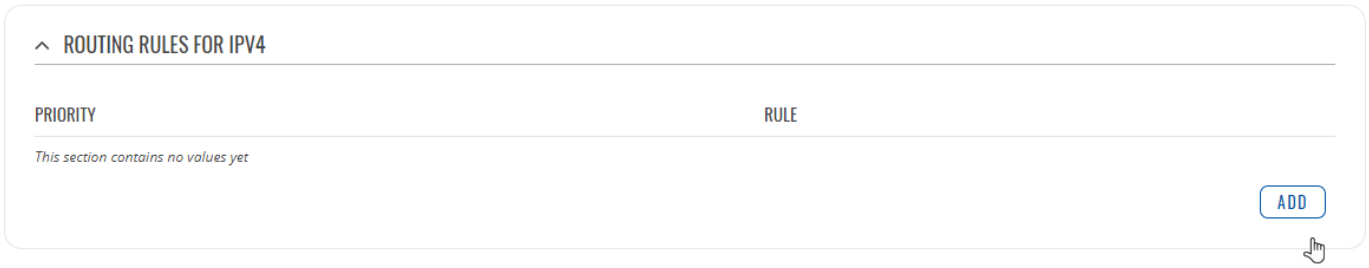


Refer to the table below for information on configuration fields for routing tables.

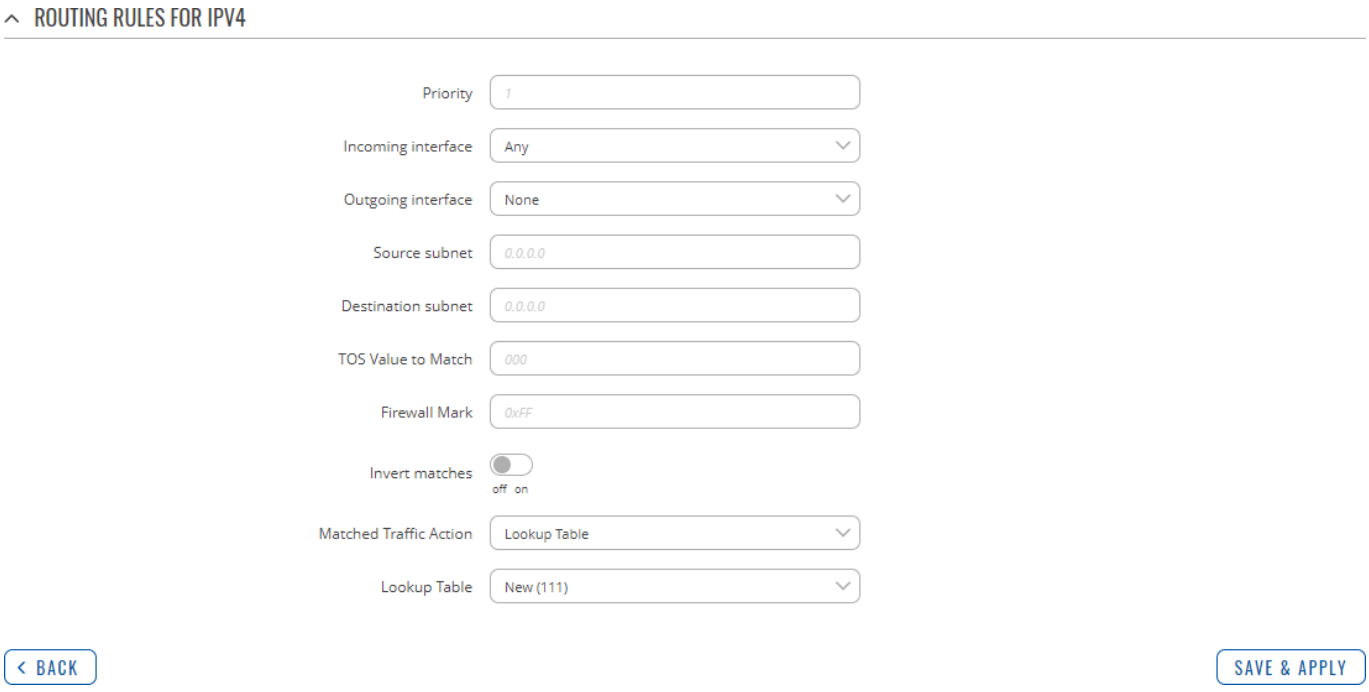
Field	Value	Description
Name of Table	string; default: **none**	A custom name for the table. A table can be invoked by the both its ID or name.
ID of Table	integer [1..252]; default: **none**	Unique numerical identifier for the table. A table can be invoked by the both its ID or name.

Routing Rules For IPv4

Routing Rules provide a way to route certain packets with exceptions, i.e., in accordance to a rule. 'Routing Rules For IPv4' displays user defined routing rules. It is empty by default. To create a new rule, click the 'Add' button and begin editing by clicking the 'Edit' button located to the right of the newly created rule.



Refer to table below for information on each configuration field.



Field	Value	Description
Priority	integer [0..65535]; default: **none**	Controls the order of IP rules. Rules with a lower priority value will be checked first.
Incoming interface	network interface | Any; default: **Any**	Logical interface name for incoming traffic. Select 'Any' to make the rule apply to all network interfaces.
Outgoing interface	network interface | None; default: **None**	Logical interface name for incoming traffic. Select 'None' to ignore outgoing interface.
Source subnet	netmask; default: **none**	Source subnet to match the rule.
Destination subnet	netmask; default: **none**	Destination subnet to match the rule.
TOS Value to Match	integer [0..255]; default: **none**	The type of service (ToS) value to match in IP headers.
Firewall Mark	integer [0..255] | hex [0x00..0xFF]; default: **none**	Specifies the fwmark and optionally its mask to match. For example, 0xFF to match mark 255 or 0x0/0x1 to match any even mark value.
Invert matches	off | on; default: **off**	If enabled, the meaning of the match options (Firewall Mark, TOS Value, Source and Destination subnets) is inverted.
Matched Traffic Action	Lookup Table | Jump to rule | Routing Action; default: **Lookup Table**	When network traffic matches this rule, the device will take an action specified in this field: • **Lookup Table** - routes traffic in accordance with the specified routing table. • **Jump to rule** - specifies another routing rule to follow. • **Routing Action** - executes one of four predefined routing actions.
Lookup Table	routing table; default: **none**	Specifies a table for routing traffic that matches this rule. This field is visible only when 'Matched Traffic Action' is set to *Lookup Table*.
Jump to rule	rule priority number; default: **none**	Specifies a another rule to follow for traffic that matches this rule. This field is visible only when 'Matched Traffic Action' is set to *Jump to rule*.

Routing Action	Prohibit | Unreachable | Blackhole | Throw; default: **Prohibit**	When traffic matches this rule, the action specified in this field will be executed. This field is visible only when 'Matched Traffic Action' is set to *Routing Action*.

Dynamic Routes

Dynamic Routing provides the possibility to route data based on current network or device state instead of relying on static entries in the routing table. The RUTX14 device supports these dynamic routing protocols:

- BGP (Border Gateway Protocol)
- RIP (Routing Information Protocol)
- OSPF (Open Shortest Path First)
- EIGRP (Enhanced Interior Gateway Routing Protocol)
- NHRP (Next Hop Resolution Protocol)

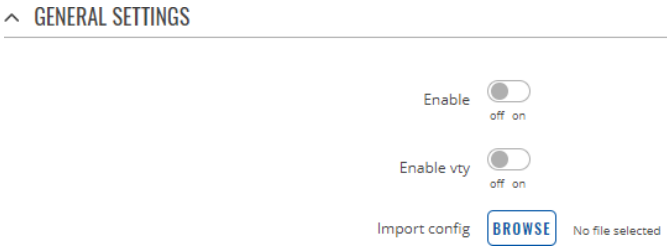
Each protocol is described in the sections below.

BGP

The **Border Gateway Protocol (BGP)** is a standardized exterior gateway protocol designed to exchange routing and reachability information among autonomous systems (AS) on the Internet. The protocol is often classified as a path vector protocol but is sometimes also classed as a distance-vector routing protocol. The Border Gateway Protocol makes routing decisions based on paths, network policies, or rule-sets configured by a network administrator and is involved in making core routing decisions.

General Settings

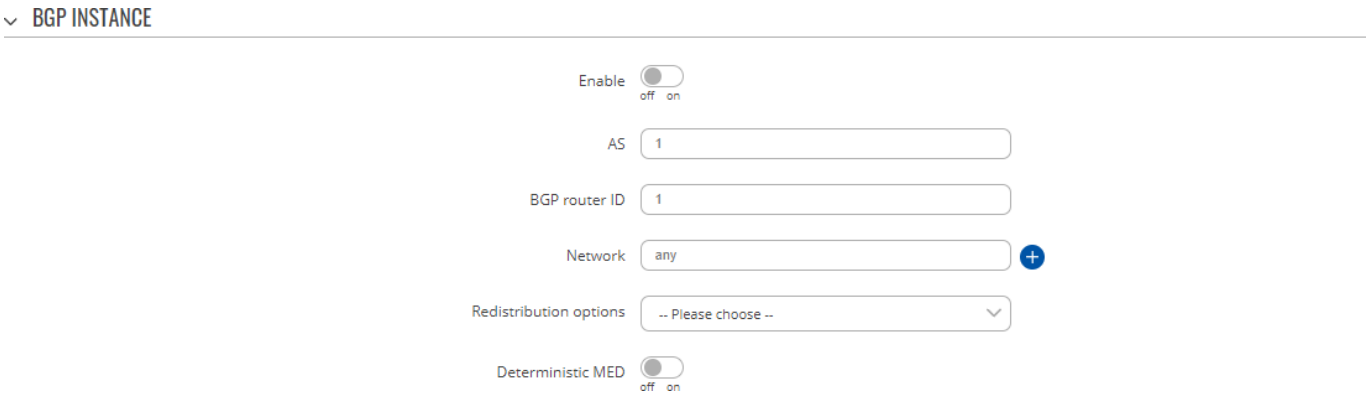
The **General Settings** section is used to turn BGP protocol usage on or off or to upload an external BGP configuration. Below is an example of the BGP General Settings section.



Field	Value	Description
Enable	off | on; default: **off**	Turns BGP protocol usage on or off.
Enable vty	off | on; default: **off**	Turns vty access on or off.
Import config	- (interactive button)	Uploads an external BGP configuration.

BGP Instance

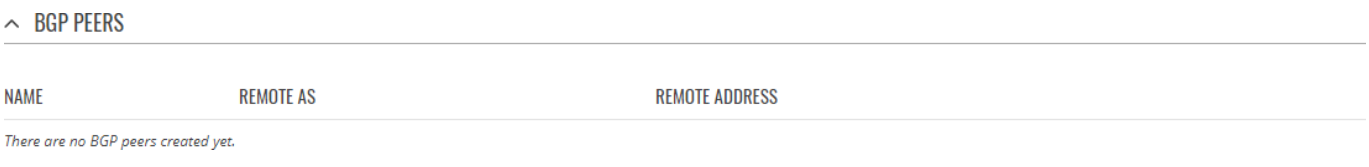
The **BGP Instance** section is used to configure some of the main operating parameters of the BGP protocol. Below is an example of the BGP Instance section.



Field	Value	Description
Enable	off | on; default: **off**	Turns the BGP instance on or off.
AS	integer [1..65535]default: **none**	BGP Autonomous System (AS) number. It is an identifier that represents a routing domain; BGP routers can exchange routes within the same Autonomous System.
BGP router ID	32-bit integer; default: **none**	The router ID is used by BGP to identify the routing device from which a packet originated. Default router ID value is selected as the largest IP Address of the interface.
Network	ip/netmask; default: **none**	Adds an announcement network(s). Routes to these networks will be shared over BGP.
Redistribution options	Connected routes | Kernel added routes | NHRP routes | OSPF routes | Static routes | custom; default: **none**	Distributes selected routes. Route redistribution is a process that allows a network to use a routing protocol to dynamically route traffic based on information learned from a separate routing protocol.
Deterministic MED	off | on; default: **off**	Compares MEDs between same AS, while ignoring their age.

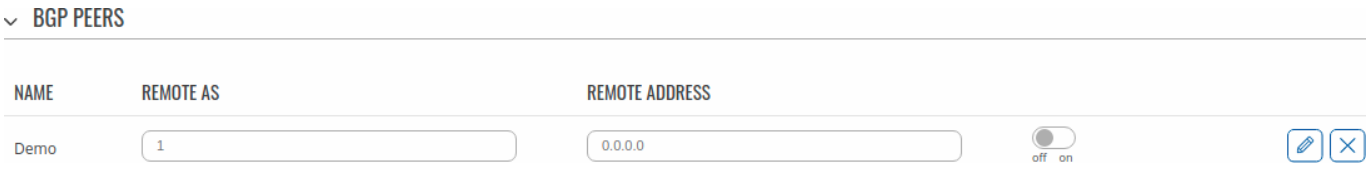
BGP Peers

BGP Peers are routers in the same BGP Peer Group that can redistribute routes among other BGP Peers. Below is an example of the BGP Peers section, which is empty by default.



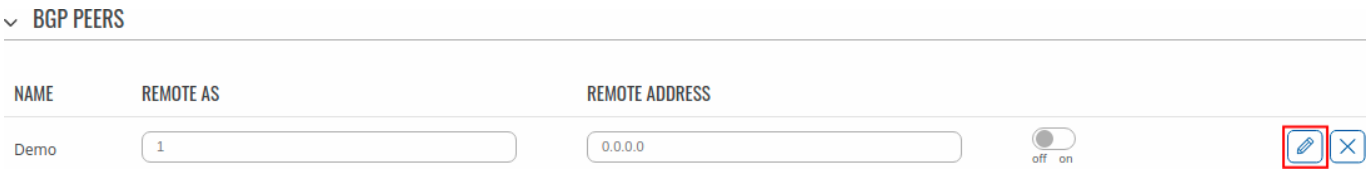
To create a new Peer, look to the Add New Instance section under BGP Peer; type in a custom name for the BGP Peer and click the 'Add' button:

The newly added BGP Peer configuration should look similar to this:

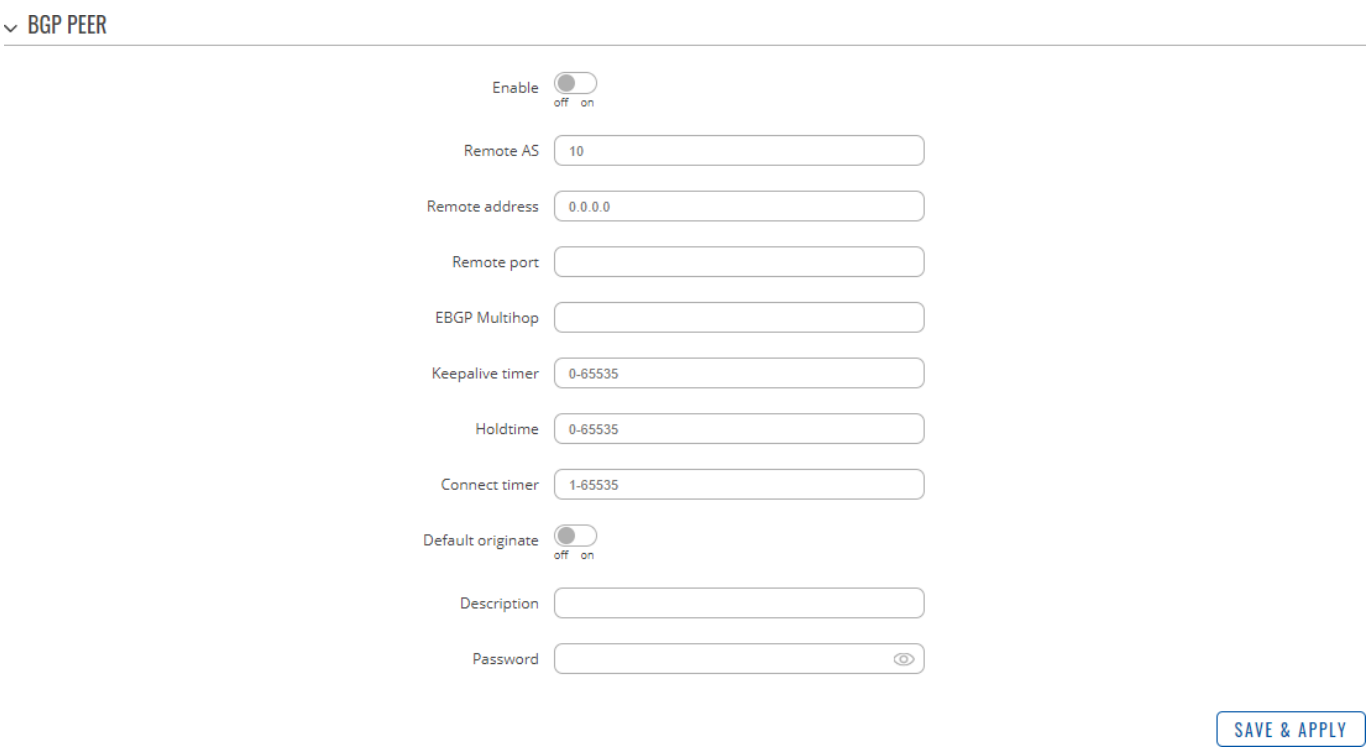


Field	Value	Description
Remote AS	integer [1..65535]; default: **none**	Remote autonomous system number of this remote BGP Neighbor.
Remote address	ip4; default: **none**	IPv4 address of this remote BGP Neighbor.
Enable	off | on; default: **off**	Turns turns this BGP peer on or off.

To see more settings for a BGP Peer, click the 'Edit' button next to it:



The full BGP Peer configuration page should look similar to this:

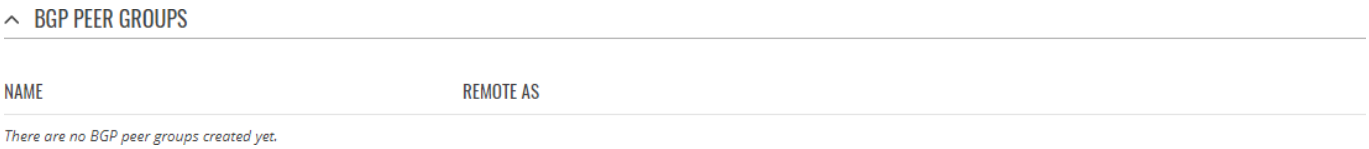


Field	Value	Description
Enable	off | on; default: **off**	Turns this BGP peer on or off.
Remote AS	integer [1..65535]; default: **none**	Remote autonomous system number of this remote BGP Neighbor.
Remote address	ip4; default: **none**	IPv4 address of this remote BGP Neighbor.
Remote port	integer [0..65535]; default: **none**	Listening port number of the BGP Neighbor.

EBGP Multihop	integer; default: **none**	Time to Live value for packets associated with this remote BGP Neighbor.
Keepalive timer	integer [0..65535]; default: **none**	Frequency (in seconds) of keep alive messages.
Holdtime	integer [0..65535]; default: **none**	Max wait time (in seconds) for a response from this neighbor before considering the peer unreachable.
Connect timer	integer [1..65535]; default: **none**	Max time (in seconds) to make a connection to this peer. If a connection cannot be made in this time, connection to this peer is considered unsuccessful.
Default originate	off | on; default: **off**	Announces default routes to this peer.
Description	string; default: **none**	A custom description for this BGP peer. Used for easier management purposes only.
Password	string; default: **none**	Password for this BGP Neighbor.

BGP Peer Groups

A **BGP Peer Group** is a collection of routers that use the BGP protocol to dynamically redistribute routes among peers (other routers). The figure below is an example of the BGP Peer Groups section, which is empty by default.

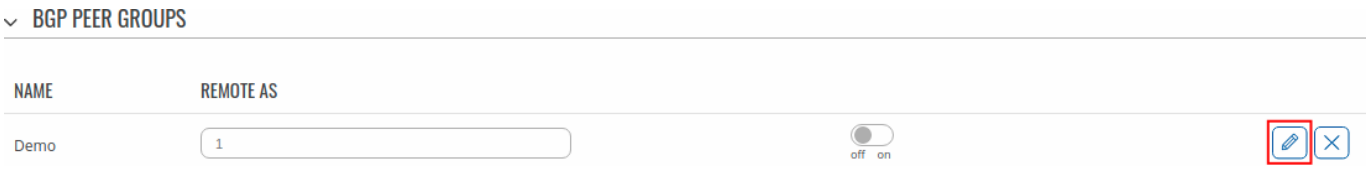


To create a new Peer Group, look to the Add New Instance section under BGP Peer Groups; type in a custom name for the BGP Peer Group and click the 'Add' button:

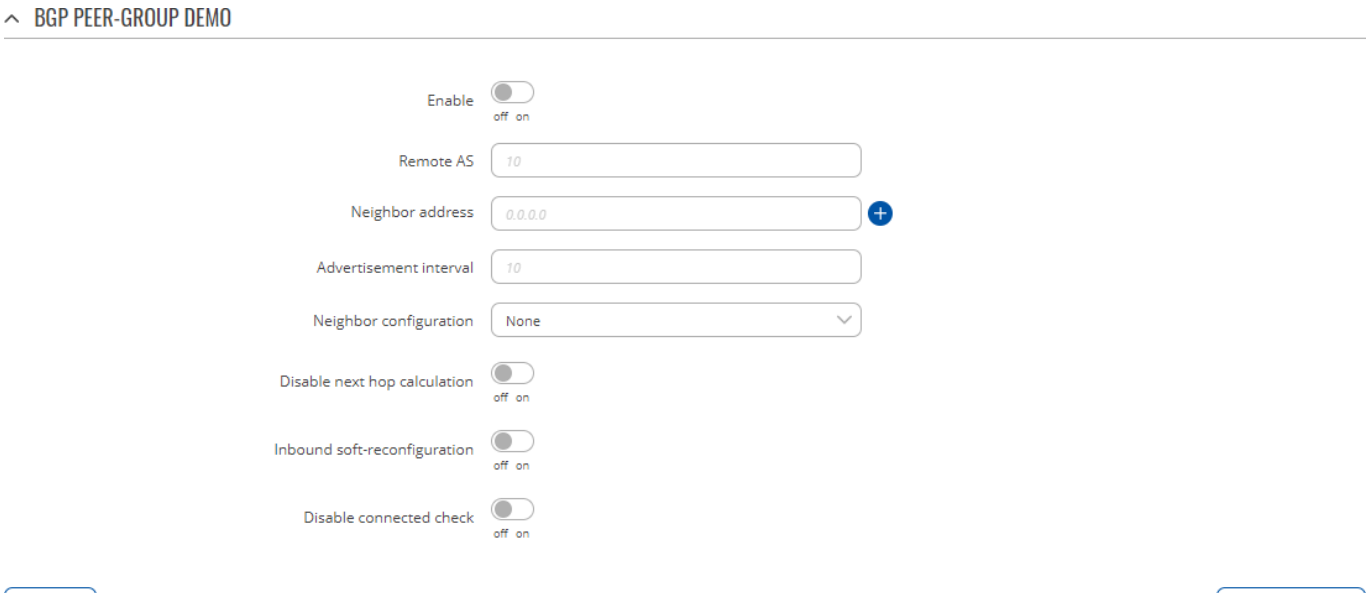
The newly added BGP Peer Group configuration should look similar to this:

Field	Value	Description
Remote AS	integer [1..65535]; default: **none**	Remote autonomous system number.

To see more settings for a BGP Peer Group, click the 'Edit' button next to it:



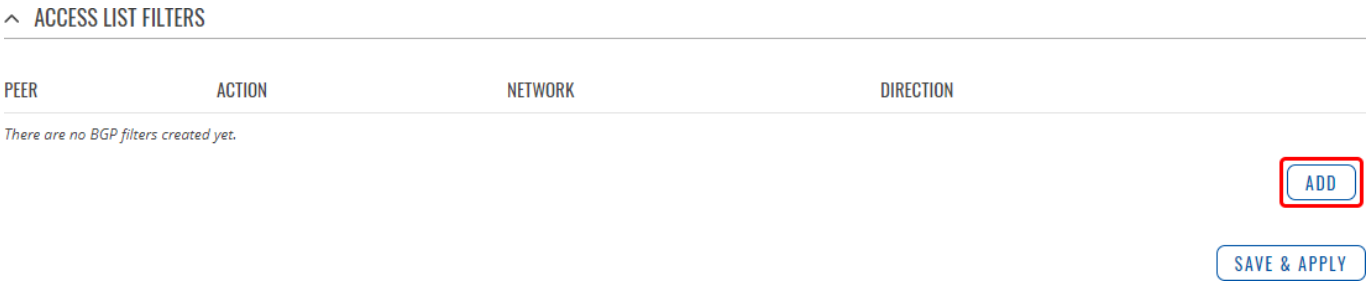
The full BGP Peer Group configuration page should look similar to this:



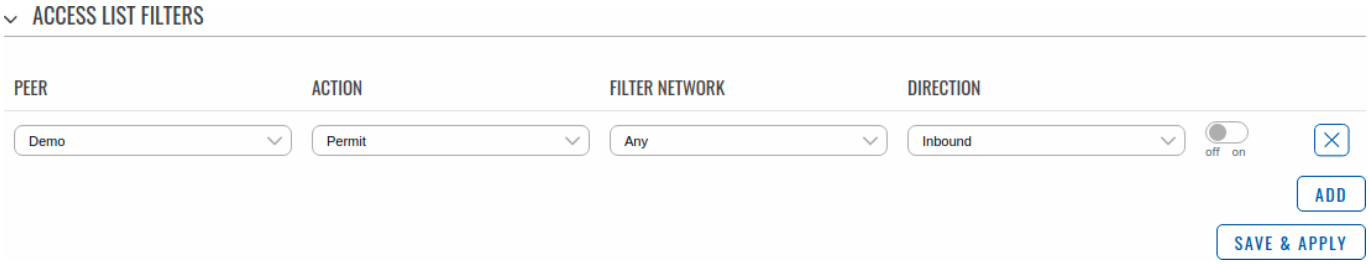
Field	Value	Description
Enable	off | on; default: **off**	Turns the BGP Peer Group configuration on or off.
Remote AS	integer [1..65535]; default: **none**	Remote autonomous system number.
Neighbor address	ip4; default: **none**	IPv4 address(es) of a remote BGP Neighbor.
Advertisement interval	integer; default: **none**	BGP advertisement frequency (in seconds).
Neighbor configuration	None | Route Reflector client | Route Server client; default: **None**	Defines the role of a BGP Neighbor. • **Route Reflector client** - redistributes received routes. • **Route Server client** - distributes routes.
Disable next hop calculation	off | **on**; default: **off**	Turns next hop calculation for this BGP Peer Group on or off.
Disable next hop calculation: Apply also to ibgp-learned routes	off | on; default: **off**	When acting as a route reflector, applies to ibgp-learned routes as well. This field becomes visible when 'Disable next hop calculation' is turned on.
Inbound soft-reconfiguration	off | on; default: **off**	Turns inbound soft-reconfiguration for this Neighbor on or off.
Disable connected check	off | on; default: **off**	When turned on, Disable connected check enables a directly connected eBGP Neighbor to peer using a loopback address without adjusting the default TTL of 1.

Access List Filters

The **Access List Filters** section is used to configure special filters that restrict or allow access to specified networks for BGP Peers. Below is an example of the Access List Filters section which is empty by default. You can add a new filter by clicking the 'Add' button



An Access List Filter configuration for BGP should look similar to this:



Field	Value	Description
Peer	bgp peer; default: **none**	Applies the filter rule for the specified peer.
Action	Permit | Deny; default: **Permit**	When BGP traffic matches this rule, the device will take the action specified in this field, which is to either allow or block traffic.
Network	ip/netmask | Any; default: **Any**	Matches traffic destined or originating from (depends on 'Direction' selection) to the network specified in this field.
Direction	Inbound | Outbound; default: **Inbound**	Matches network traffic direction, which can either be traffic destined to this device (Inbound) or traffic originating from this device (Outbound).
Enable	off | on; default: **off**	Turns an Access filter on or off.

RIP

The **Routing Information Protocol (RIP)** is one of the oldest distance-vector routing protocols which employ the hop count as a routing metric. RIP prevents routing loops by implementing a limit on the number of hops allowed in a path from source to destination. The maximum number of hops allowed for RIP is 15, which limits the size of networks that RIP can support. A hop count of 16 is considered an infinite distance and the route is considered unreachable. RIP implements the split horizon, route poisoning and holddown mechanisms to prevent incorrect routing information from being propagated.

General Settings

The **General Settings** section is used to configure some of the main operating parameters of the RIP protocol. Below is an example of the RIP General Settings section.

GENERAL SETTINGS

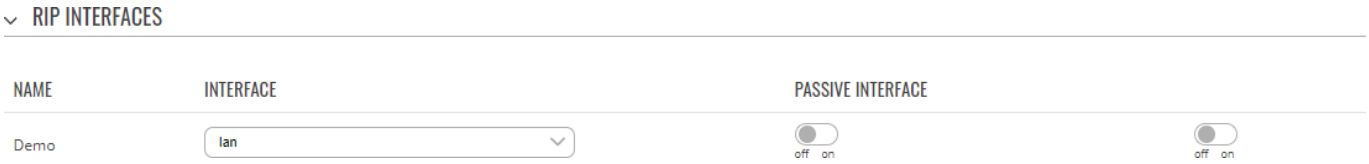
Field	Value	Description
Enable	off | on; default: **off**	Turns RIP Protocol usage on or off.
Enable vty	off | on; default: **off**	Turns vty access on or off.
Import config	- (interactive button)	Upload a external RIP configuration.
Version	2 | 1; default: **2**	Specifies the used version of the RIP protocol.
Neighbor	rip neighbor; default: **none**	Defines a RIP Neighbor(s).

RIP Interfaces

The **RIP Interfaces** section is used to define which existing network interfaces can participate in RIP communication. Below is an example of the RIP Interfaces section which is empty by default.

To create a new RIP Interface, look to the Add New Interface section; enter a custom name and click the 'Add' button:

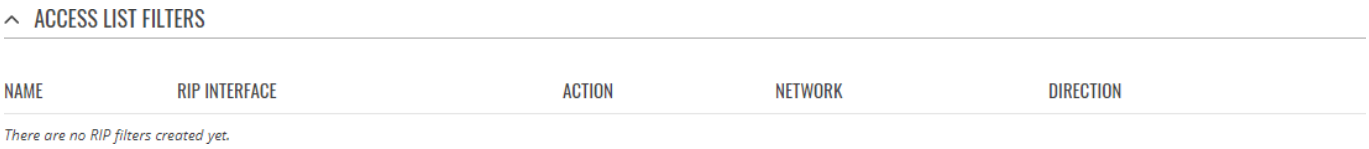
RIP Interface configuration should look similar to this:



Field	Value	Description
Enable	off | on; default: **off**	Turns a RIP Interface on or off.
Interface	network interface; default: **loopback**	Network interface that will be used with the RIP protocol.
Passive interface	off | on; default: **off**	Sets the specified interface to passive mode. On passive mode interface, all receiving packets are processed as normal and **ripd** does not send either multicast or unicast RIP packets.

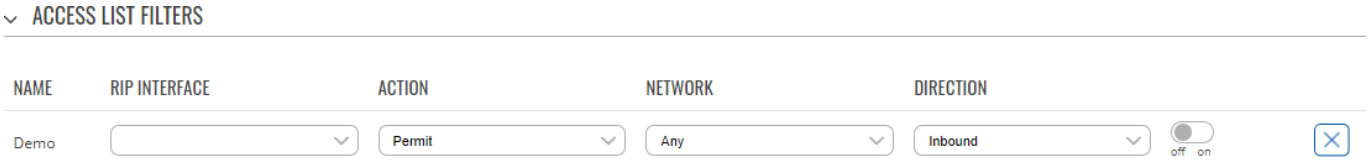
Access list filters

The **Access List Filters** section is used to configure special filters that restrict or allow access to specified networks for RIP Neighbors. Below is an example of the Access List Filters section which is empty by default.



To add a new filter, look to the Add New Filter section; enter a custom name and click the 'Add' button:

An Access List Filter configuration for RIP should look similar to this:



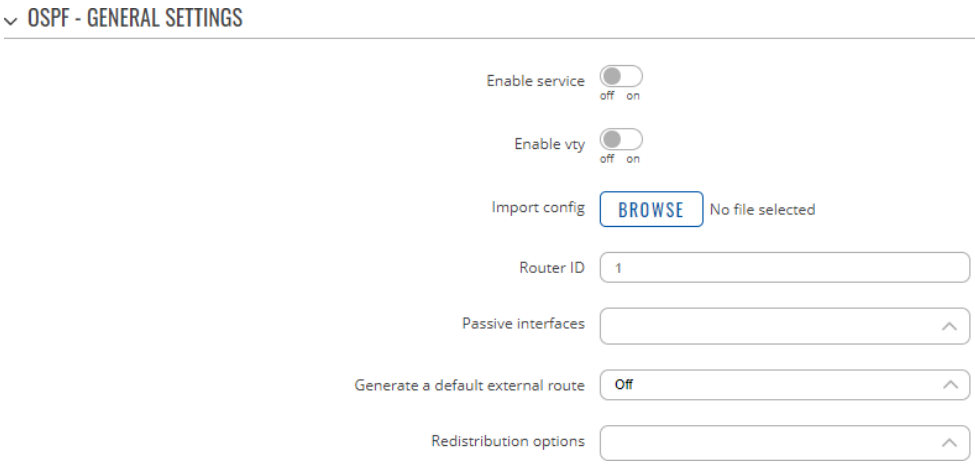
Field	Value	Description
Name	string on; default: **none**	A custom name for a filter. Used for easier management purposes only.
Enable	off | on; default: **off**	Turns an Access filter on or off.
RIP interface	rip interface; default: **none**	Specifies the RIP interface to which the filter will apply to.
Action	Permit | Deny; default: **Permit**	When RIP traffic matches this rule, the device will take the action specified in this field, which is to either allow or block traffic.
Network	ip/netmask | Any; default: **Any**	Matches traffic destined or originating from (depends on 'Direction' selection) to the network specified in this field.
Direction	Inbound | Outbound; default: **Inbound**	Matches network traffic direction, which can either be traffic destined to this device (Inbound) or traffic originating from this device (Outbound).

OSPF

Open Shortest Path First (**OSPF**) is a routing protocol for Internet Protocol (IP) networks. It uses a link state routing (LSR) algorithm and falls into the group of interior gateway protocols (IGPs), operating within a single autonomous system (AS). It is defined as OSPF Version 2 in RFC 2328 for IPv4.

General Settings

The **General Settings** section is used to configure some of the main operating parameters of the OSPF protocol. Below is an example of the OSPF General Settings section.

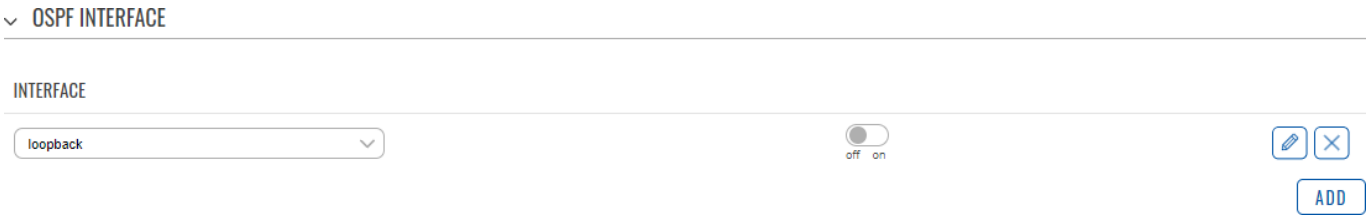


Field	Value	Description
Enable	off | on; default: **off**	Turns OSPF Protocol usage on or off.
Enable vty	off | on; default: **off**	Turns vty access on or off.
Import	- (interactive)	Uploads a external OSPF configuration.
Router ID	32-bit integer; default: **none**	Sets the router-ID in the OSPF network.
Passive interfaces	network interface(s); default: **none**	Network interfaces that should be considered as passive. OSPF hello packets are not sent on these interfaces.
Generate a default external route	off | default | always; default: **off**	Defines the behavior for advertising a default route over OSPF. Possible values are: • **off** - does not advertise a default route. • **default** - advertises the default route if the route is in the routing table. • **always** - specifies to always advertise the default route regardless of whether the routing table has a default route.
Redistribution options	Connected routes | Kernel | NHRP | BGP | OSPF | RIP | EIGRP | Static; default: **none**	Distributes selected routes. Route redistribution is a process that allows a network to use a routing protocol to dynamically route traffic based on information learned from a separate routing protocol.

OSPF Interface

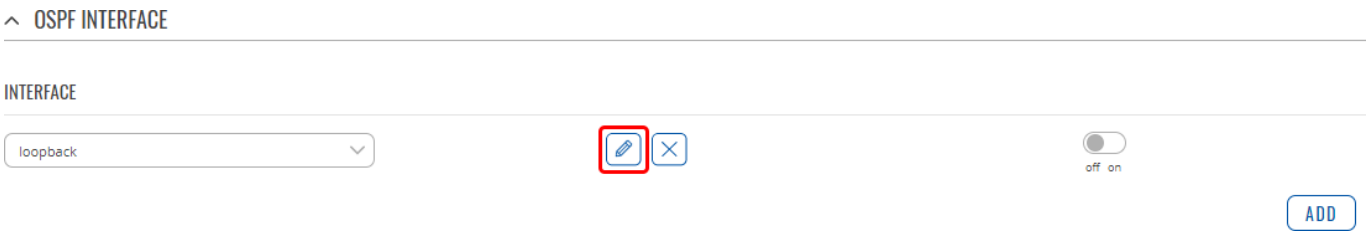
The **OSPF Interfaces** section is used to define which existing network interfaces can participate in OSPF communication. Below is an example of the OSPF Interfaces section which is empty by default. To create a new OSPF Interface, simply click the 'Add' button:

OSPF Interface configuration should look similar to this:

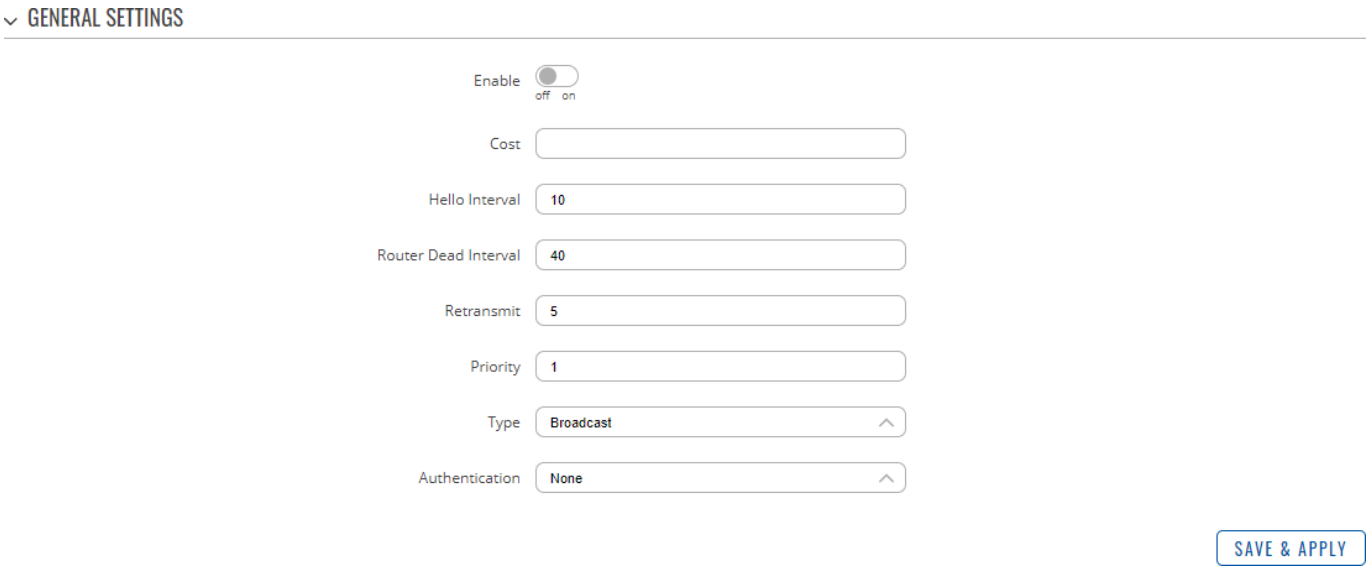


Field	Value	Description
Interface	network interface; default: **loopback**	Network interface that will be used with the OSPF protocol.
Enable	off | on; default: **off**	Turns an OSPF Interface on or off.

To see more settings for an OSPF interface, click the 'Edit' button next to it:



You should directed to a window such as this:

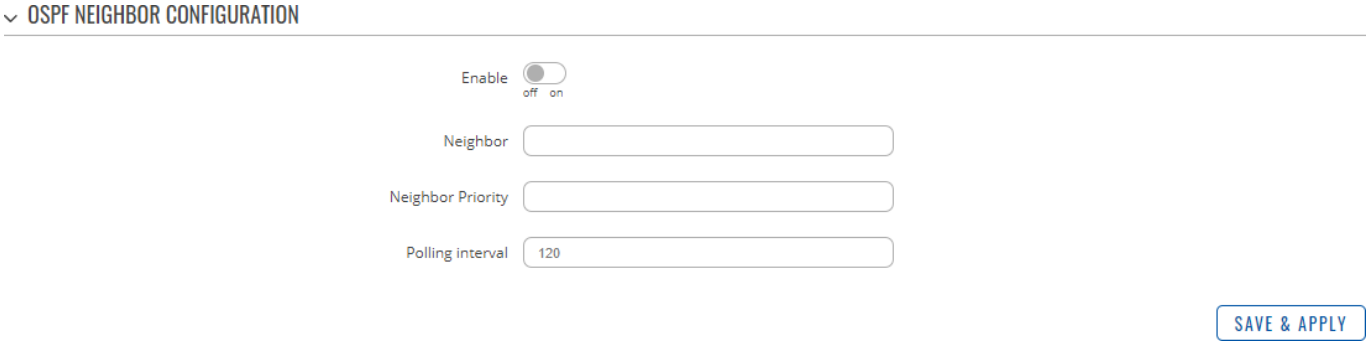


Field	Value	Description
Enable	off | on; default: **off**	Turns the OSPF area on or off.
Cost	integer [1..65535]; default: **none**	The cost value is set to router-LSA's metric field and used for SPF calculation.
Hello Interval	integer [1..65535]; default: **10**	Frequency (in seconds) at which a "Hello" packet is sent out on the specified interface.
Router Dead Interval	integer [1..65535]; default: **40**	This value must be the same for all routers attached to a common OSPF network.
Retransmit	integer [0..65535]; default: **5**	Used in Database Description and Link State Request packet re-transmission.

Priority	integer [0..255]; default: **1**	OSPF router priority. The router with the highest priority will be more eligible to become the "Designated Router". Setting the value to 0, makes the router ineligible to become a "Designated Router."
Type	Broadcast | Non-Broadcast | Point-to-point | Point-to-Multipoint; default: **Broadcast**	OSPF interface configuration type.
Authentication	None | Password | MD5 HMAC; default: **None**	Specifies the Authentication method.

OSPF Neighbors

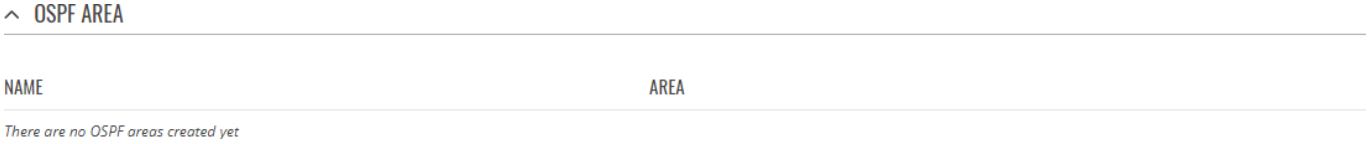
The **OSPF Neighbors** section can be used to configure other users ("neighbors") of the same OSPF network statically.



Field	Value	Description
Enable	off | on; default: **off**	Turns this OSPF neighbor configuration on or off.
Neighbor	ip4; default: **none**	IP address of the OSPF neighbor.
Neighbor Priority	integer [1..255]; default: **none**	Priority of this neighbor
Polling interval	integer [1..65535]; default: **none**	Check for dead neighbor interval (in seconds).

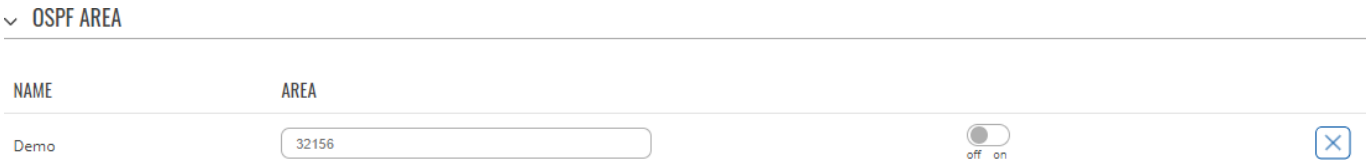
OSPF Area

An **OSPF Area** is a collection of OSPF Networks that can serve each other. Below is an example of the OSPF Area section which is empty by default.



To add a new OSPF Area, look to the Add New Area section; enter a custom name and click the 'Add' button.

The newly added new Area will appear in the OSPF Area list.

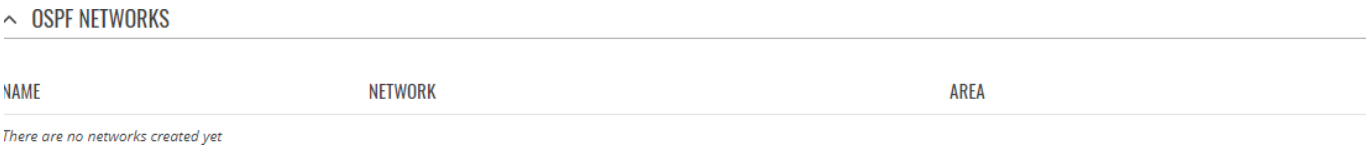


Field	Value	Description
Name	string on; default: **none**	A custom name for an OSPF Area. Used for easier management purposes only.
Area	32-bit integer; default: **none**	OSPF Area ID. OSPF Networks that are meant to communicate with each other should belong to the same Area (have the Area ID).
Enable	off | on; default: **off**	Turns an OSPF Area on or off.

OSPF Networks

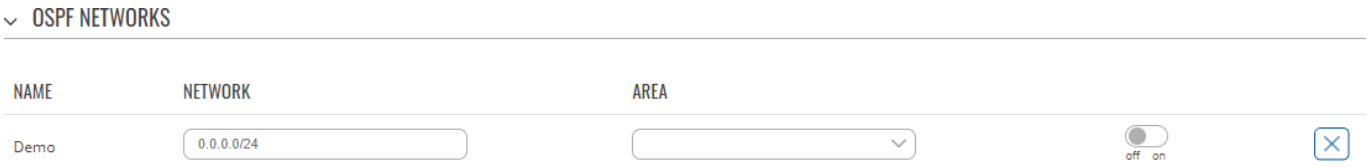
The **OSPF Network** section is used to add networks to OSPF areas that can later be shared (provide access to) with other OSPF routers.

Below is an example of the OSPF Area section which is empty by default.



To add a new OSPF Network, look to the Add New Network section; enter a custom name and click the 'Add' button.

Your new network will appear in the OSPF Networks list



Field	Value	Description
Name	string on; default: **none**	A custom name for an OSPF Area. Used for easier management purposes only.
Network	ip/netmask; default: **none**	IP address/netmask of a network. OSPF Network locations are shared with other OSPF routers.
Area	OSPF area; default: **none**	ID of an OSPF Area (to which this network should belong to).
Enable	off | on; default: **off**	Turns the usage of this network (in OSPF) on or off.

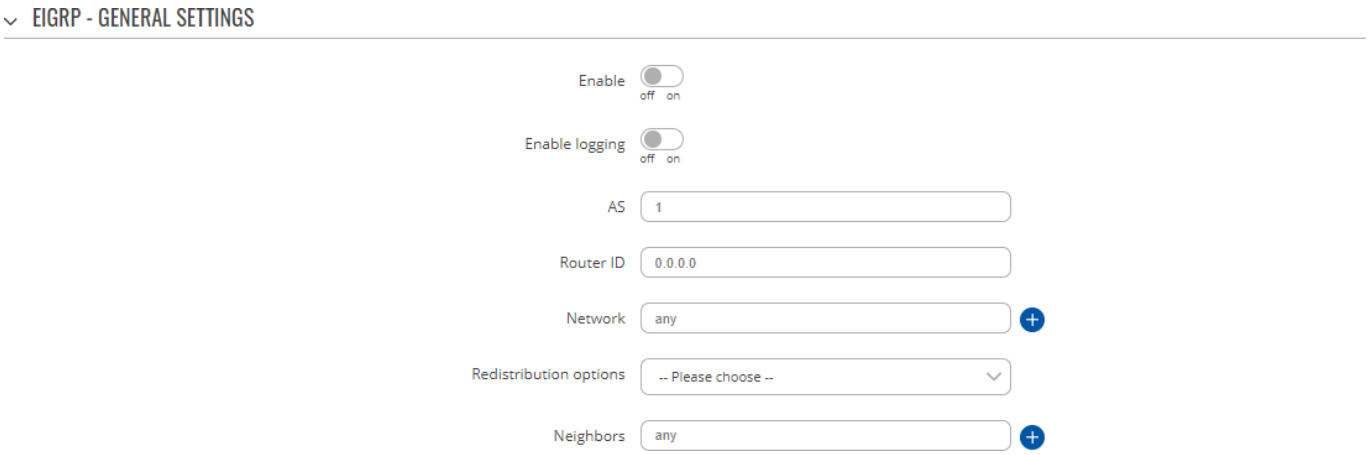
EIGRP

Enhanced Interior Gateway Routing Protocol (EIGRP) is an advanced distance-vector routing

protocol that is used on a computer network for automating routing decisions and configuration.

General

The **General Settings** section is used to configure some of the main operating parameters of the EIGRP protocol. Below is an example of the EIGRP General Settings section.



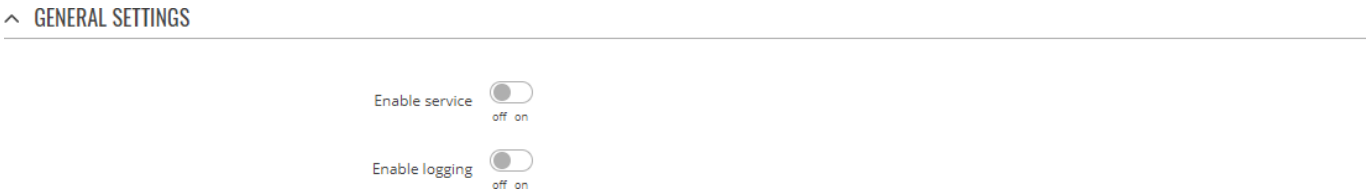
Field	Value	Description
Enable	off | on; default: **off**	Turns EIGRP protocol usage on or off.
Enable logging	off | on; default: **off**	Turns logging of EIGRP traffic on or off.
AS	integer [1..65535]; default: **none**	EIGRP Autonomous System (AS) number. It is an identifier that represents a routing domain; EIGRP routers can exchange routes within the same Autonomous System.
Router ID	ip4; default: **none**	The router ID is used by EIGRP to identify the routing device from which a packet originated. Default router ID value is selected as the largest IP Address of the interface.
Network	ip/netmask; default: **none**	Adds an announcement network(s). Routes to these networks will be shared over EIGRP.
Redistribution options	Connected routes | Kernel added routes | NHRP routes | OSPF routes | Static routes | custom; default: **none**	Distributes selected routes. Route redistribution is a process that allows a network to use a routing protocol to dynamically route traffic based on information learned from a separate routing protocol.
Neighbors	ip4; default: **none**	Defines the EIGRP Neighbors (based on their IP addresses) that this device is meant to associate with.

NHRP

Next Hop Resolution Protocol (**NHRP**) is a protocol or method that can be used so that a computer sending data to another computer can learn the most direct route (the fewest number of hops) to the receiving computer.

General Settings

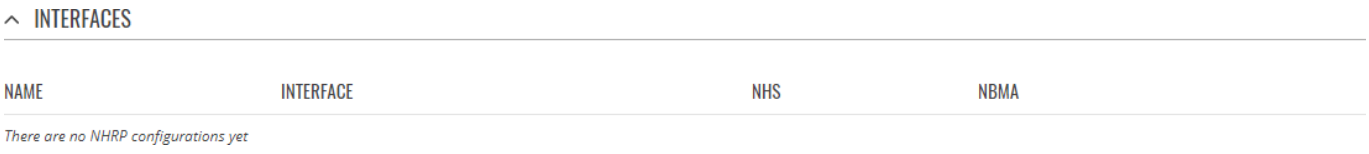
The **General Settings** section is used to turn NHRP protocol usage on or off. Below is an example of the NHRP General Settings section.



Field	Value	Description
Enable service	off | on; default: **off**	Turns NHRP protocol usage on or off.
Enable logging	off | on; default: **off**	Turns NHRP traffic logging on or off.

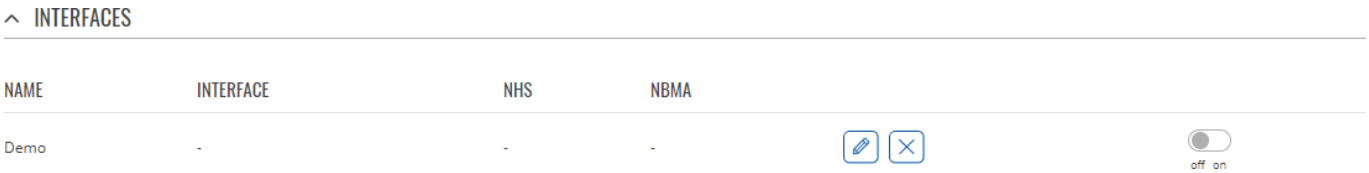
Interfaces

The **Interfaces** section is used to define which existing network interfaces can participate in NHRP communication. Below is an example of the NHRP Interfaces section which is empty by default.



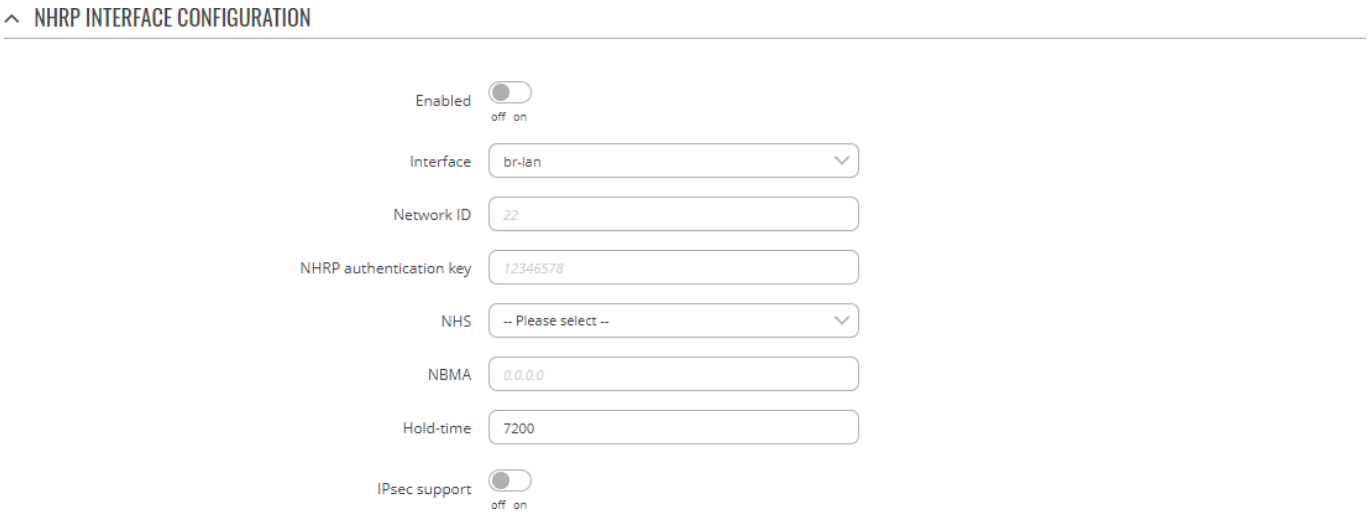
To create a new NHRP Interface, look to the Add New Interface section; enter a custom name and click the 'Add' button.

The newly added NHRP interface will appear in the Interfaces list and should look similar to this:



To see more settings for an NHRP Interface, click the 'Edit' button next to it:

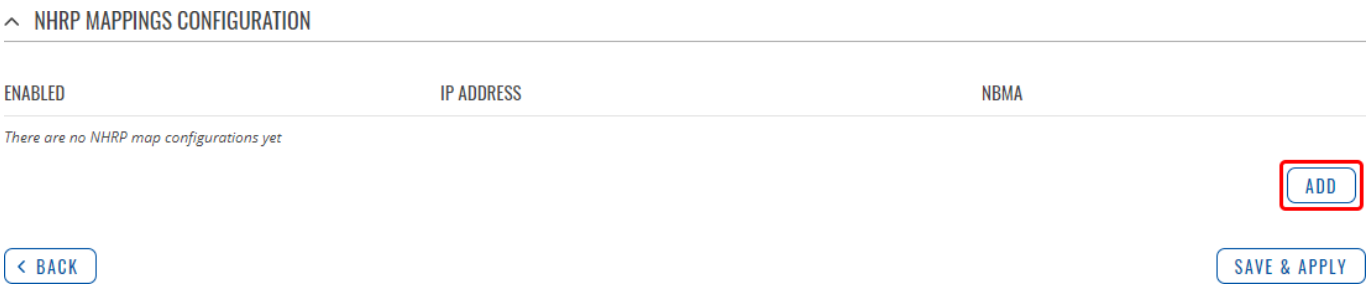
You should redirected to a windows that looks similar to this:



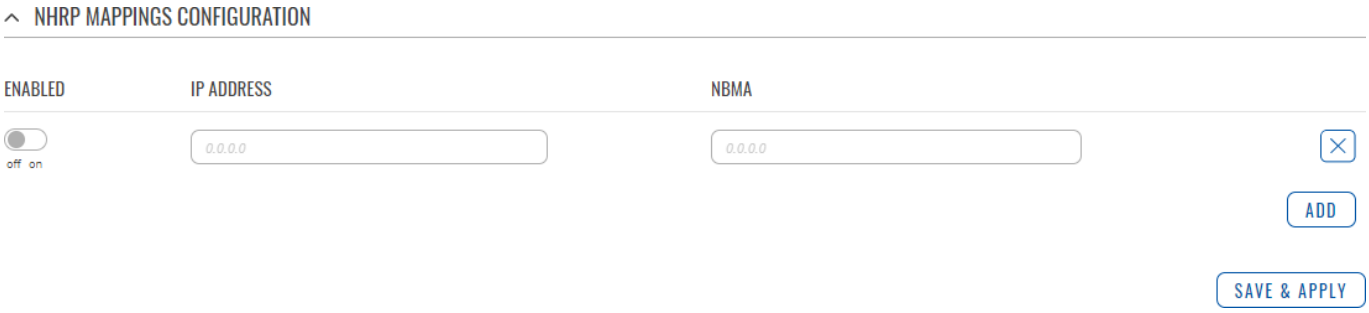
Field	Value	Description
Enabled	off | on; default: **off**	Turns the NHRP Interface on or off.
Interface	network interface; default: **br-lan**	Network interface associated with this NHRP Interface.
Network ID	32-bit integer; default: **none**	A numerical identifier for this NHRP Interface.
NHRP authentication key	string; default: **none**	A password used in NHRP authentication.
NHS	Dynamic | custom(ip4); default: **none**	IP address of a Next-Hop server.
NBMA	ip4; default: **none**	Non-Broadcast Multi-Access (NBMA) network IP address.
Hold-time	integer; default: **7200**	Specifies the holding time (in seconds) for NHRP Registration Requests and Resolution Replies sent from this interface or shortcut-target.
IPsec support	off | on; default: **off**	Turns usage of NHRP over IPsec for this Interface on or off.
IPsec instance	string; default: **none**	Specifies which existing IPsec instance should be associated with this NHRP Interface. This field becomes visible only when IPsec support is set to 'on'.

NHRP Mappings Configuration

The **NHRP Mappings Configuration** section is used to configure (map) associations between NHRP router IP address and NBMAs. Below is an example of the NHRP Mappings Configuration section which is empty by default. To add a new configuration, simply click the 'Add' button:



The newly added configuration should appear in the NHRP Mappings Configuration list and look similar to this:



Field	Value	Description
Enabled	off | on; default: **off**	Turns this mapping configuration on or off.
IP Address	ip4; default: **none**	Network ID of another NHRP router.
NBMA	ip4; default: **none**	IP address of a Next-Hop server.