Routing

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Contents

Summary

This chapter is an overview of the Routing section in RUT devices.

Static Routes

Static routes specify over which interface and gateway a certain host or network can be reached. In this page you can configure your own custom routes.

field name	value	description
Routing table	Main | WAN | WAN2 | WAN3; Default: **WAN**	Defines which table will be used for the route in question
Interface	LAN | WAN(wired) | WAN2(Mobile) | WAN3(WiFi) | VPN instances; Default: **WAN(wired)**	The zone where the target network resides
Destination address*	ip; Default: **0.0.0.0**	The address of the destination network

Netmask*	ip; Default: **0.0.0.0**	A Mask that is applied to the Target to determine to what actual IP addresses the routing rule applies
Gateway	ip; Default: " "	Defines where the router should send all the traffic that applies to the rule
Metric	integer; Default: **0**	The **Metric** value is used as a sorting measure. If a packet about to be routed fits two rules, the one with the higher metric is applied

*Additional notes on Destination & Netmask:

You can define a rule that applies to a single IP like this: Destination - some IP; Netmask - 255.255.255.255. Furthermore, you can define a rule that applies to a segment of IPs like this: Destination – some IP that STARTS some segment; Netmask – Netmask that defines how large the segment is. e.g.:

field name	value	description
192.168.55.161	255.255.255.255	Only applies to 192.168.55.161
192.168.55.0	255.255.255.240	Applies to IPs in the 192.168.55.0 - 192.168.55.255
192.168.55.240	255.255.255.240	192.168.55.240 - 192.168.55.255
192.168.55.161	255.255.255.0	192.168.55.0 - 192.168.55.255
192.168.0.0	255.255.0.0	192.168.0.0 - 192.168.255.255

Static ARP entries

Static ARP entries are used to bind a MAC address to a specific IP address. For example, if you want a device to get the same IP every time it connects to the router, you can create a Static ARP entry by binding that device's MAC address to the desired IP address. The router will then create an entry in the ARP table, which in turn will make sure that that device will get the specified IP address every time.

Dynamic Routes

BGP Protocol

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

field name	value	description
Enable	yes | no; Default: **no**	Toggles the BGP protocol ON or OFF
Enable vty	yes | no; Default: **no**	Toggles vty access from LAN ON or OFF
Import config	-	Uploads an external BGP configuration

BGP Instance

field name	value	description
Enable	yes | no; Default: **no**	Toggles the BGP instance ON or OFF
AS	integer: " "	AS number is an identification of an autonomous system. BGP protocol uses the AS number for detecting whether the BGP connection is an internal one or external one. **[Required]**
BGP router ID	string; Default: " "	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	string; Default: " "	Add an announcement network(s)

BGP Peers

field name	value	description
Enable	yes | no; Default: **no**	Toggles the BGP peer ON or OFF
Remote AS	integer: " "	Neighbour's remote AS
Remote address	ip; Default: " "	Neighbour's remote IPv4 address

Access List Filters

field name	value	description
Enable	yes | no; Default: **no**	Toggles the Access filter ON or OFF
Peer	bgp peer; Default: **first peer on list**	Applies the rule for the specified peer
Action	Permit | Deny; Default: **Permit**	Denies or permits matched entry
Network	Any | ip; Default: **Any**	Applies filter rule for this source network

Direction	Inbound | Outbound; Default: **Inbound**	If direction is **Inbound**, the access list is applied to input routes. If direction is **Outbound** the access list is applied to advertised routes

RIP Protocol

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

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field name	value	description
Enable	yes | no; Default: **no**	Toggles RIP Protocol ON or OFF
Enable vty	yes | no; Default: **no**	Toggles vty access from LAN ON or OFF
Import config	-	Uses imported RIP configurations
Version	2 | 1; Default: **2**	Specifies the version of RIP
Neighbor	ip; Default: " "	Neighbour IP addres

RIP Interfaces

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field name	value	description
Enable	yes | no; Default: **no**	Toggles RIP Interface ON or OFF
Interface	network interface; Default: **no**	Network interface to be used with the RIP interface
Passive interface	yes | no; Default: **no**	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

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field name	value	description

Enable	yes | no; Default: **no**	Toggles the Access filter ON or OFF
Peer	bgp peer; Default: **first peer on list**	Applies the rule for the specified peer
Action	Permit | Deny; Default: **Permit**	Denies or permits matched entry
Network	Any | ip; Default: **Any**	Applies filter rule for this source network
Direction	Inbound | Outbound; Default: **Inbound**	If direction is **Inbound**, the access list is applied to input routes. If direction is **Outbound** the access list is applied to advertised routes

OSPF Protocol

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

field name	value	description
Enable	yes | no; Default: **no**	Toggles OSPF Protocol ON or OFF
Enable vty	yes | no; Default: **no**	Toggles vty access from LAN ON or OFF
Import	-	Uses imported OSPF configurations
Router ID	ip; Default: " "	Sets the router-ID of the OSPF process. The router-ID may be an IP address of the router, but need not be - it can be any arbitrary 32bit number

OSPF Interface

field name	value	description
Enable	yes | no; Default: **no**	Toggles OSPF interface ON or OFF
Cost	integer [1..65535]; Default: **10**	The cost value is set to router-LSA's metric field and used for SPF calculation
Hello interval	integer [1..65535]; Default: **10**	Hello packets will be sent at the frequency specified in this field (in seconds)
Router dead interval	integer [1..65535]; Default: **40**	This value must be the same for all routers attached to a common network
Retransmit	integer [1..65535]; Default: **5**	This value is used when re-transmitting Database Description and Link State Request packets

Priority	integer [0..255]; Default: **1**	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 the Designated Router
Type	Broadcast | Nonbroadcast | Point-to-point | Point-to-multipoint; Default: " "	Set explicit network type for the specified interface
Authentication	None | Password | MD5 HMAC; Default: " "	Specifies the authentication mode that should be used for the interface

OSPF Area

field name	value	description
Enable	yes | no; Default: **no**	Toggles OSPF area ON or OFF
Cost	[a.b.c.d]; Default: " "	Specifies OSPF area

OSPF Networks

field name	value	description
Enable	yes | no; Default: **no**	Toggles OSPF network ON or OFF
Network	[a.b.c.d/m]; Default: " "	This command specifies the OSPF enabled interface. If the interface has an address from the range **a.b.c.d/m** then enables OSPF on this interface so the router can provide network information to the other OSPF routers via this interface
Area	ospf area; Default: " "	Specifies OSPF area