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RUT850 WAN

Contents

Summary

A wide area network (WAN) is a telecommunications network or computer network that extends over a large geographical distance. This chapter is an overview of RUT routers' WAN section.

Operation Modes

The Operation Modes window lets you determine how the router will be connecting to the internet. You can chose between two types of WAN – Mobile and Wi-Fi. You can also setup backup WAN options in case your main connection goes down.

You can choose one main WAN and one (or none) backup WAN option. To choose your main WAN just check the desired option (mobile or Wi-Fi) in the **Main WAN** column (first from the left), to choose a backup WAN, check the desired option in the Backup WAN column (second from the left). Above is an example of a configuration that uses mobile as Main WAN and Wi-Fi as Backup WAN. The Operation Modes tab also displays each interfaces name, WAN IP address and Protocol in use. To configure a WAN interface more in depth, click the **Edit** button located to the right of the desired interface. Each interface configures separately, to avoid redundancy this chapter will only overview the configuration of the WiFi WAN interface, since mobile contains less information and other configurations are the same.

Common Configuration

The Common Configuration section is used to configure different protocols for WAN interfaces.

None

The None (Static) protocol is used when the source of your internet doesn’t have a DHCP server enabled. Therefore, in order to connect to the internet, you have to make configurations in accordance to that source.

General

field name	value	description
Protocol	Static | DHCP | PPPoE; Default: **DHCP**	The protocol used by the WAN interface
IPv4 address	ip; Default: " "	Your router’s address on the WAN network
IPv4 netmask	ip; Default: **255.255.255.0**	Netmask defines how "large" a network is
IPv4 gateway	ip; Default: " "	The address where the router will send all the outgoing traffic
IPv4 broadcast	ip; Default: " "	IP broadcasts are used by BOOTP and DHCP clients to find and send requests to their respective servers
Use custom DNS servers	ip; Default: " "	When the router needs to resolve a hostname (“www.google.com”, “www.cnn.com”, etc.) to an IP address, it will forward all the DNS requests to the gateway. By entering custom DNS servers the router will take care of the host name resolution. You can enter multiple DNS servers to provide redundancy in case one of the servers fails

Advanced

The Advanced Settings tab will change in accordance to which network protocol is selected. For the Static protocol you can turn NAT on or off, override the router’s MAC address, MTU and define the gateway's metric.

field name	value	description
Disable NAT	yes | no; Default: **no**	Toggles Network Address Translation (NAT) on or off for the selected network interface

Override MAC address	mac; Default: **router's mac**	Override MAC address of the WAN interface. For example, your ISP (Internet Service Provider) gives you a static IP address and it might also bind it to your computers MAC address (i.e., that IP will only work with your computer but not with your router). In this field you can enter your computer's MAC address and fool the gateway in to thinking that it is communicating with your computer
Override MTU	integer [0..1500]; Default: **1500**	Maximum Transmission Unit (MTU) – specifies the largest possible size of a data packet
Use gateway metric	integer; Default: **0**	The WAN configuration by default generates a routing table entry. In this field you can alter the metric of that entry. Higher metric means higher priority

DHCP

The DHCP protocol should be used when the source of your internet has a DHCP server enabled. If that is the case, when you select the DHCP protocol you can use it as is, because most networks will not require any additional advanced configuration.

General

field name	value	description
Protocol	Static | DHCP | PPPoE; Default: **DHCP**	The protocol used by the WAN interface
Hostname to send when requesting DHCP	ip | hostname; Default: **router's hostname**	Host name to which the DHCP request will be sent to

Advanced

For the DHCP protocol you can turn NAT on or off, specify custom DNS servers, define the gateway metric, override the router's MAC address, set MTU and more.

field name	value	description
Disable NAT	yes | no; Default: **no**	Toggles Network Address Translation (NAT) on or off for the selected network interface
Use broadcast flag	yes | no; Default: **no**	Required for certain ISPs (Internet Service Providers), e.g. Charter with DOCSIS 3
Use default gateway	yes | no; Default: **yes**	Uses the default gateway obtained through DHCP. If left unchecked, no default route is configured
Use DNS servers advertised by peer	yes | no; Default: **no**	Uses DNS servers obtained from DHCP. If left unchecked, the advertised DNS server addresses are ignored

Use custom DNS servers	ip; Default: " "	Lets you chose your own preferred DNS servers. This field only becomes visible if **Use DNS servers advertised by peer** field is unchecked
Use gateway metric	ip; Default: " "	The WAN configuration by default generates a routing table entry. In this field you can alter the metric of that entry. Higher metric means higher priority
Client ID to send when requesting DHCP	string; Default: " "	Client ID which will be sent when requesting a DHCP lease
Vendor class to send when requesting DHCP	string; Default: " "	Vendor class which will be sent when requesting a DHCP lease
Override MAC address	mac; Default: **router's mac**	Override MAC address of the WAN interface. For example, your ISP (Internet Service Provider) gives you a static IP address and it might also bind it to your computers MAC address (i.e., that IP will only work with your computer but not with your router). In this field you can enter your computer's MAC address and fool the gateway in to thinking that it is communicating with your computer
Override MTU	nteger [0..1500]; Default: **1500**	Maximum Transmission Unit (MTU) – specifies the largest possible size of a data packet

IP Aliases

IP Aliases are a way of defining or reaching a subnet that works in the same space as the regular network. This is useful if you need to reach the router that is located in the same network but in a different subnet. If you have a static IP configuration on your computer and don't want to change it every time you need to reach a router in a different subnet, you can configure an IP alias in order to do so.

General setup

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field name	value	description
IP address	ip; Default: " "	An alternate IP address used to reach the router by a device(s) that resides in the router's LAN but has a different subnet
Netmask	ip; Default: **255.255.255.0**	Netmask defines how "large" a network is
Gateway	ip; Default: " "	A gateway is a network node that connects two networks using different protocols together

As you can see, the configuration is very similar to the static protocol; in the example above an IP address with a 99th subnet is defined. In this case, if some device has an IP in the 99th subnet (e.g., 192.168.99.xxx) and the subnet's gateway metric is "higher" and the device is trying to reach the internet it will reroute it's traffic not to the gateway that is defined in common configurations but through the one that is specified in IP aliases.

Advanced Settings

You may also define a broadcast address and a custom DNS server for your IP Aliases in the Advanced Settings tab.

field name	value	description
IP Broadcast	ip; Default: " "	IP broadcasts are used by BOOTP and DHCP clients to find and send requests to their respective servers
DNS	ip; Default: " "	A separate DNS server to be used by the IP Alias address

Backup Configuration

Backup WAN is a function that allows you to back up your primary connection in case it goes down. There can be up to two backup connections selected at one time. In that case, when the primary connection fails, the router tries to use the backup with the higher priority and if this one is unavailable or fails too, then the router tries the backup with the lower priority.

field name	value	description
Health monitor interval	Disable | 5 sec. | 10 sec. | 20 sec. | 30 sec. | 60 sec. | 120 sec.; Default: **10 sec.**	The interval at which health checks are performed
Health monitor ICMP host(s)	ip | hostname | 8.8.4.4 | Disable | DNS server(s) | WAN gateway | --custom--; Default: **8.8.4.4**	Indicate where to send ping requests for a health check. As there is no definitive way to determine when the connection to internet is down for good, it is best to define a host whose availability is that of the internet as a whole (e.g., 8.8.8.8, 8.8.4.4)
Health monitor ICMP timeout	1 sec. | 2 sec. | 3 sec. | 4 sec. | 5 sec. | 10 sec.; Default: **3 sec.**	The frequency at which ICMP requests are to be sent. It is advised to set a higher value if your connection has high latency or high ji
Attempts before failover	1 | 3 | 5 | 1 | 15 | 20; Default: **3**	The number of failed ping attempts after which the connection is to be declared as “**down**”
Attempts before recovery	1 | 3 | 5 | 1 | 15 | 20; Default: **3**	The number of successful ping attempts after which the connection is to be declared as “**up**”

The majority of the options consist of timing and other important parameters that help determine the health of your primary connection. Regular health checks are constantly performed in the form of ICMP packets (Pings) on your primary connection. When the connections state starts to change (READY->NOT READY and vice versa) a necessary amount of failed or passed health checks has to be reached before the state changes completely. This delay is instituted so as to mitigate “spikes” in connection availability, but it also extends the time before the backup link can be brought up or down.