

Interfaces - MPLS support

MPLS (Multi Protocol Label Switching) is an efficient way to connect access points through the cloud and reduce the overhead in packet routing.

This technology performs the forwarding of packets using specific labels instead of IP addresses or layer 3 information, virtual links are used instead of endpoints, avoiding checking the routing table which consequently streamlines the data flow.

MPLS works by assigning labels to all routes in the routing table of appliances connected to the network, after this step the LDP (Label Distribution Protocol) automatically shares this information, which in turn is used to build a routing table based on labels. The packet forwarding uses this table as the basis for forwarding the packets, always prioritizing the shortest route, during the process of sending them, when a network router receives the packet, it replaces the current label with that of the next hop in the network and continues, this process is repeated until the package reaches its destination.

MPLS technologies are applicable to any network layer protocol, being able to bridge between access points through cloud service routers in a private tunnel, the method is applicable regardless of the interface, allows communication from one to many (making it possible to determine specifically within the cloud with whom the communication will be made) and thanks to the application of tags contributes to the network's Quality of Service (QoS).

UTM provides native network encapsulation support based on the MPLS protocol, which allows it to act as a LER (Label Edge Router) by encapsulating and unpacking the labels, eliminating the need to use a physical router at the end and optimizing traffic.

However, it is noteworthy that it does NOT route MPLS network packets.



The UTM does not act as an LSR (Label Switch Router). An LSR is characterized by routing packets on the MPLS network using labels as the basis for locating the most performing route.

UTM allows the encapsulation of several MPLS network segments through a single link, which allows traffic to be routed on the same link to multiple units, allowing the provision of a private dedicated link for long distance networks to connect to multiple organizational units.

In order to use this feature, the system administrator will need to configure static routes as listed below:

- Target network;
- Destination gateway;
- Destination label (only available on interfaces with MPLS support enabled);
- Output interface.

When an MPLS-type interface is identified, the kernel modules are automatically loaded and support is applied to the operating system.

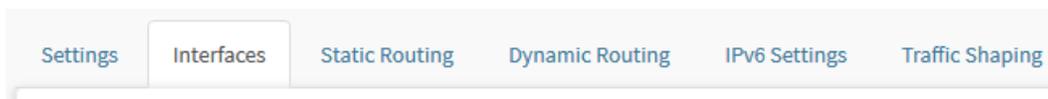


The activation of MPLS is not available in older versions of UTM as their version of the Kernel does not support the protocol.

Configuration of Physical Interfaces

To configure MPLS support, you will need to configure a physical interface, to do so, follow the steps below:

Being in Network, click on the Interfaces tab:



Interfaces tab

The "Interfaces" screen will appear, as shown by the image below:

Network

Settings Interfaces Static Routing Dynamic Routing IPv6 Settings Traffic Shaping

Interface	Address	Gateway	Type	Zone	Action
eth0	172.31.102.220/16	-	Physical	LAN	
eth1	-	-	Physical	-	
eth2	-	-	Physical	-	
eth3	-	-	Physical	-	

Network - Interfaces

Initially access a physical interface and click on **edit** []. The following screen will be displayed:

Network

Settings Interfaces Static Routing Dynamic Routing IPv6 Settings Traffic Shaping

General

Network Zone Name

Description

IPv4 Dynamic IP

IP Address Mask Gateway

IPv6 Dynamic IP

IP Address Prefix Gateway

Advanced

MTU

Interface Ethernet - Edit Interfaces

Configure it according to the specifications of the respective fields, as shown on this [page](#).

In the Advanced panel, pay attention to the following settings:

Advanced

More information about the Advanced panel follows:

Advanced

MTU 1280 - 9000

MPLS 1 - 65535

Interface Ethernet – Advanced

In a Physical interface it is possible to define the MTU (Maximum Transmission Unit), enable and configure the MPLS label:

- **MTU** : To enable this option, check the checkbox. This field defines the MTU of the virtual interface, the possible values are between 1280 to 9000 (JUMBO FRAME);



Attention, to avoid fragmentation, it may be necessary to increase the MTU values. For more information on this, see this [page](#).

- **MPLS** : When you enable this option, support for the MPLS protocol will be enabled, and you can route packets over both IPv4 and IPv6. When the check box is enabled, the text box below will allow the definition of the local label, and the possible value to be entered in this field is from 1 to 65535.



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If you want to delete all the settings made on this interface, click **Erase** .



WARNING: The **Erase**  button will erase all interface settings. Under no circumstances apply the settings in the **command queue** 

 without first configuring the interface without first, configure the interface. If it is not displayed on this panel, access the "Settings" tab and click

the **Update Software Information**  button to view the interface again and be able to edit it.

To save changes, click **Save** , otherwise click **Back**  to return to the previous screen.

After saving, you will need to access the **command queue**  and apply the changes made. For more information about the command queue visit the page: [UTM - Command queue](#).



If a static route using the interface has been configured, when disabling this interface a confirmation message will be displayed. For more information on how to set up static routes, [see the next step](#).

After performing these procedures the interface will have been successfully configured.

Next, we'll look at how to set up static routes:

Configuration of static routes



The example below shows in a basic way how to configure a static route with MPLS. Consult this [page](#) if you need more detailed information.

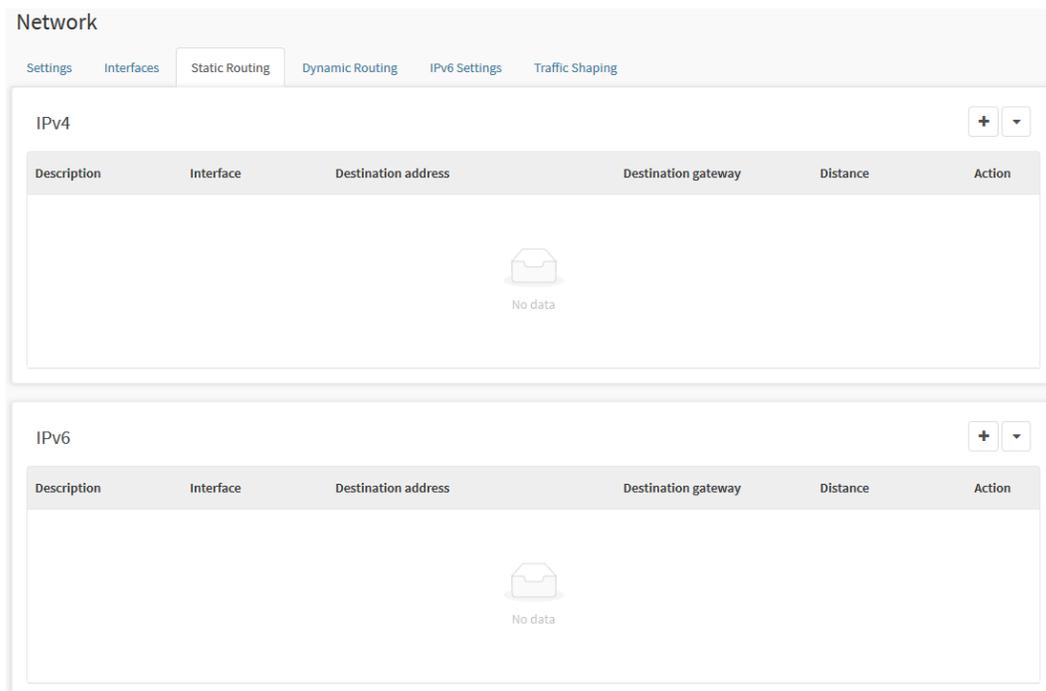
To view the detailed walkthrough of a static route configuration with MPLS, see the example located on this [page](#).

Configure the static routes for MPLS, for that, being in Network, click on the Static Routing tab.



Static Routing tab

The "Static Routing" screen will appear, as shown in the image below:



Static Routing

To add a route, click **Add Route**  in **[IPv4]** and / or **[IPv6]** respectively.

Add Route ✕

Description

Interface

IP/Destination network

Destination gateway

Distance

Static Routing - Add Route

Configure all fields as described on the page, after completing the settings, pay attention to the Destination Label field, as shown below:

Add Route ✕

Description

Interface

IP/Destination network

Destination gateway

Distance

Destination Label

Static Routing - Add route

- **Destination Label:** This field will appear ONLY if the selected interface already has MPLS enabled. To configure it on the physical interfaces, just follow the instructions [above](#). Enter the MPLS destination label. The default value accepted in this field is 1, the minimum value is 1 and the maximum value is 65535.

To save the changes, click **Save** , otherwise, click the  at the top of the window or click outside it to cancel the procedure.

After saving, you will need to access the **command queue**  and apply the changes made. For more information about the command queue visit the page: [UTM - Command queue](#).

This finalizes the configuration of the MPLS protocol.

For more information on how to configure a physical interface, visit this [page](#).

If you want to see how the interface panel is structured, see this [page](#).