

Elmatic Sparrow NW10

Industrial Cellular VPN Router

Application Note 044

L2TP Between Sparrows

Version: V1.0.0
Date: Oct 2021
Status: Confidential

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1. Introduction

1.1 Overview

This document contains information regarding the configuration and use of L2TP between Sparrows routers.

This guide has been written for use by technically competent personnel with a good understanding of the communications technologies used in the product, and of the requirements for their specific application.

1.2 Compatibility

This application note applies to:

Models Shown: Sparrow NW10 / Sparrow NW20

Firmware Version: V1.0.0 or newer

Other Compatible Models: None

1.3 Version

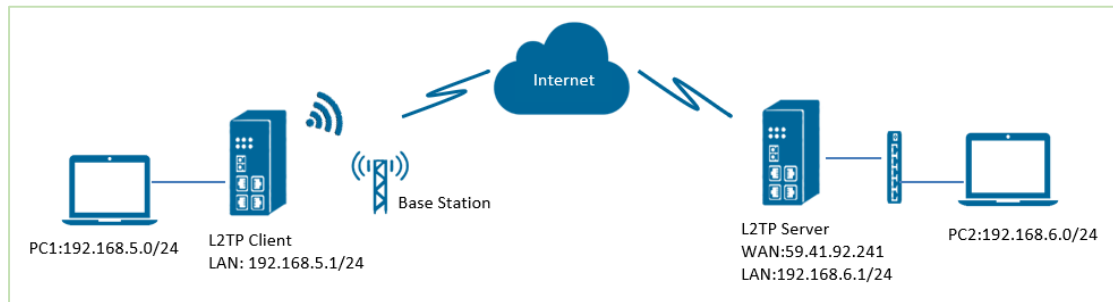
Updates between document versions are cumulative. Therefore, the latest document will include all the content of previous versions.

Release Date	Doc. Version	Firmware Version	Change Description
2021/09/30	V1.0.0	V1.0.0	First released

1.4 Corrections

Appreciate for corrections or rectifications to this application note, and if any request for new application notes please email to: elamark@elmark.com.pl

2. Topology



1. Sparrow run as L2TP server and dial up with a public IP sim card.
2. Sparrow run as L2TP client with any kinds of the SIM card just make sure communicate with Internet.
3. L2TP VPN tunnel is established between two Sparrows and the subnet PCs are able to communicate with each other.

3. Configuration

a) L2TP Server Configuration

1. Go to **Link Management>Ethernet>LAN**, specify the LAN IP address as 192.168.6.0/24, like below:

The screenshot shows the 'LAN Settings' configuration page. The left sidebar contains a navigation menu with categories like Overview, Link Management, Cellular, Ethernet, WiFi, Industrial Interface, Network, Applications, VPN, and Maintenance. The main content area is titled 'LAN Settings' and is divided into 'General Settings' and 'DHCP Settings'. In the 'General Settings' section, the 'Index' is 1, the 'Interface' is LAN0, the 'IP Address' is 192.168.6.1, the 'Netmask' is 255.255.255.0, and the 'MTU' is 1500. The 'DHCP Settings' section has 'Enable' checked, 'Mode' set to Server, 'IP Pool Start' at 192.168.6.2, 'IP Pool End' at 192.168.6.200, 'Netmask' at 255.255.255.0, 'Lease Time' at 120, and empty fields for Gateway, Primary DNS, Secondary DNS, and WINS Server. At the bottom right, there are 'Save' and 'Apply' buttons.

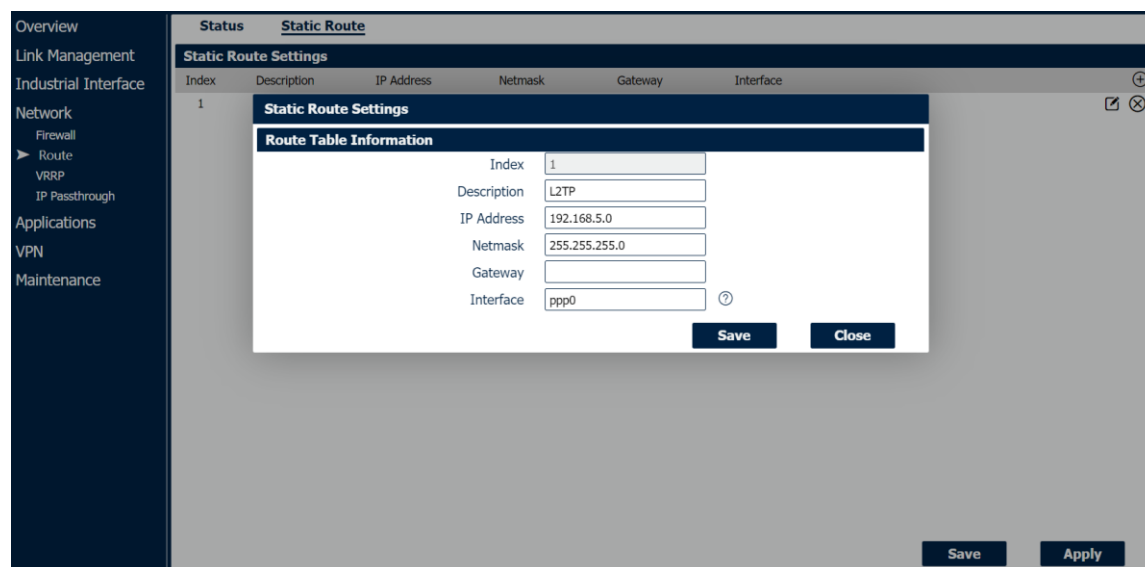
2. Click Save>Apply.

3. Go to **VPN>L2TP>L2TP Server**, enable L2TP server and configuration like below:

The screenshot shows the 'L2TP Server' configuration page. The left sidebar is similar to the previous screenshot, with 'VPN' expanded to show 'L2TP'. The main content area is titled 'L2TP Settings' and is divided into 'L2TP Settings', 'PPP Settings', and 'Advanced Settings'. In the 'L2TP Settings' section, 'Enable' is checked, 'Local Port' is 1701, 'Challenge Secrets' is empty, 'Local IP' is 172.16.1.1, 'Start IP' is 172.16.1.2, and 'End IP' is 172.16.1.254. 'Enable Debug' is checked. The 'PPP Settings' section has 'Authentication' set to CHAP, 'Username' as L2TPTEST, 'Password' as pass, and 'MTU' as 1500. 'Enable Debug' is checked. The 'Advanced Settings' section has 'Binding Interface' empty, 'Enable Over IPsec' unchecked, and 'Enable NAT' checked. At the bottom right, there are 'Save' and 'Apply' buttons.

4. Click Save>Apply.

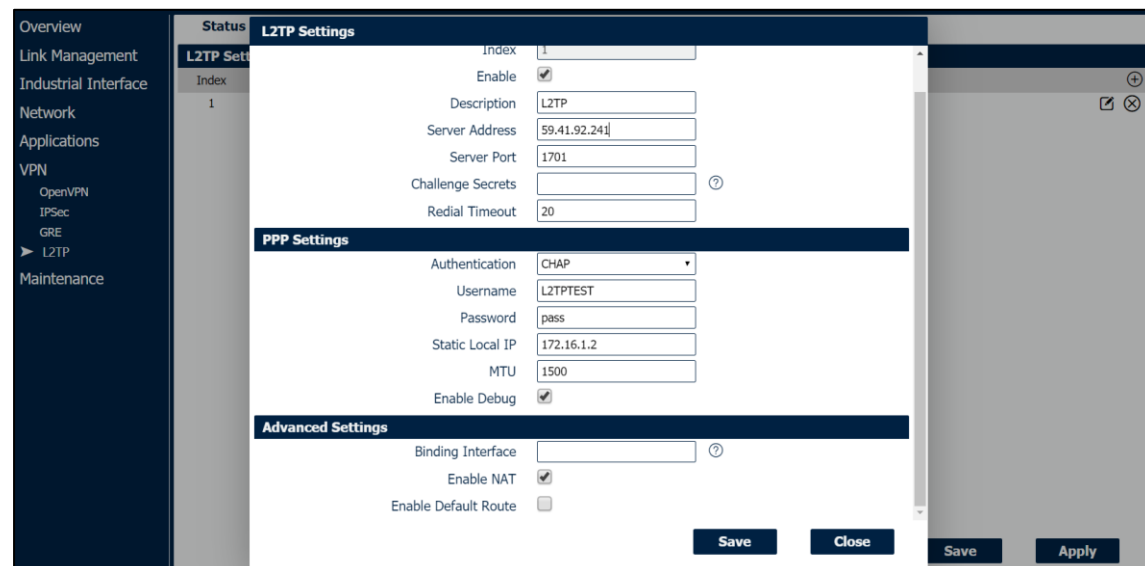
- Go to **Network>Route>Static Route**, specify the static route, so that the subnet behind L2TP Server can reach the subnet behind L2TP Client.



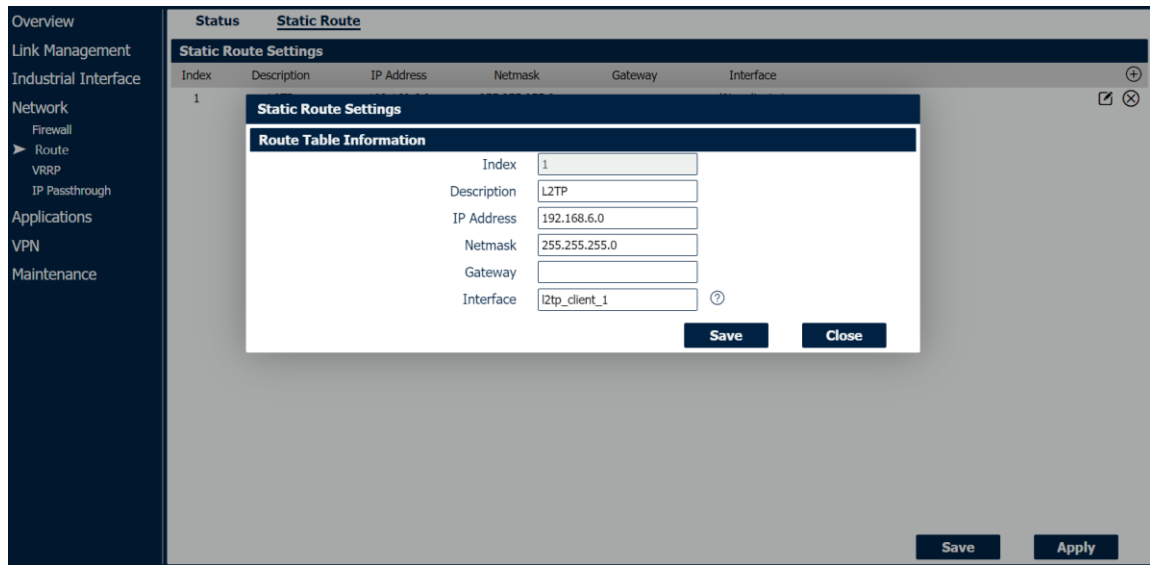
- Click Save>Apply.

b) L2TP Client Configuration

- Go to **VPN>L2TP>L2TP Client**, enable L2TP client and configuration like below:



- Click Save>Apply.
- Go to **Network>Route>Static Route**, specify the static route, so that the subnet behind L2TP Client can reach the subnet behind L2TP Server.



4. Click Save>Apply.

4. Testing

1. Ping from PC1 to PC2 and successful:

```
C:\Users\Administrator>ping 192.168.6.2

Pinging 192.168.6.2 with 32 bytes of data:
Reply from 192.168.6.2: bytes=32 time<1ms TTL=128
Reply from 192.168.6.2: bytes=32 time<1ms TTL=128
Reply from 192.168.6.2: bytes=32 time<1ms TTL=128
Reply from 192.168.6.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.6.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\Administrator>
```

2. Ping from PC2 to PC1 and successful:

```
C:\Users\Administrator>ping 192.168.5.2

Pinging 192.168.5.2 with 32 bytes of data:
Reply from 192.168.5.2: bytes=32 time=75ms TTL=62
Reply from 192.168.5.2: bytes=32 time=83ms TTL=62
Reply from 192.168.5.2: bytes=32 time=64ms TTL=62
Reply from 192.168.5.2: bytes=32 time=87ms TTL=62

Ping statistics for 192.168.5.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 64ms, Maximum = 87ms, Average = 77ms

C:\Users\Administrator>
```