

Elmatic Sparrow NW10 Industrial Cellular VPN Router

Application Note 024

VRRP Between Sparrow Series Routers

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1. Introduction

1.1 Overview

This document contains information regarding the configuration and use of VRRP between Sparrow series 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 (930.3) or newer

Other Compatible Models: None

1.3 Version

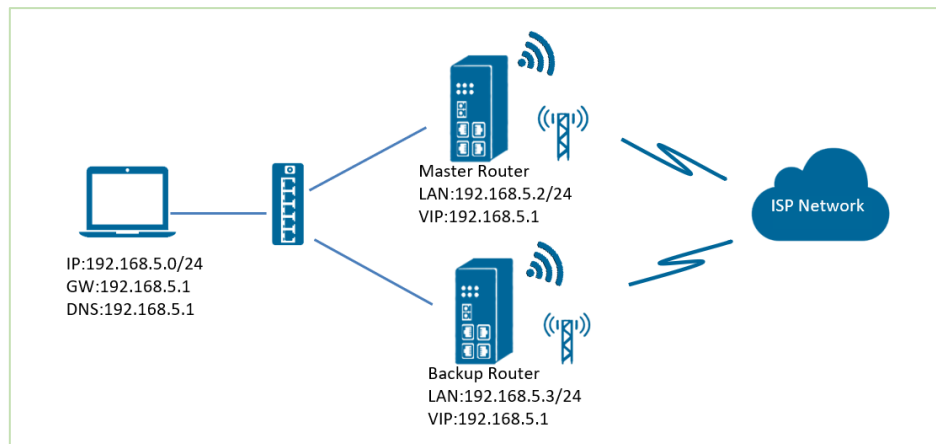
Updates between document versions are cumulative. Therefore, the latest document will include all the content of previous versions.

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: elmark@elmark.com.pl

2. Topology



1. Sparrow runs as VRRP Master router and Backup router and connect to Internet with SIM card.
2. PC communicate with Internet via Master router in normal case. If Master router is down, PC will switchover to Backup router to Internet. If Master router up again, then PC will switch back to Master router to Internet.

3. Configuration

3.1 Master Router Configuration

1. Go to Link **Management>Ethernet>LAN**, to specify the LAN information like below.

LAN Settings

General Settings

Index	1
Interface	LAN0
IP Address	192.168.5.2
Netmask	255.255.255.0
MTU	1500

DHCP Settings

Enable	<input checked="" type="checkbox"/>
Mode	Server
IP Pool Start	192.168.5.4
IP Pool End	192.168.5.10
Netmask	255.255.255.0
Lease Time	120
Gateway	192.168.5.1
Primary DNS	192.168.5.1
Secondary DNS	
WINS Server	

Save **Close**

2. Go to **Network>VRRP>VRRP**, Click the Edit button of VRRP, like below:

NavigateWorx Login: admin **Reboot** **Logout**

VRRP

VRRP Network Settings

Index	Enable	Interface	Virtual Router ID	Priority	Interval	Virtual IP Address
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3. Configure VRRP like below picture:

VRRP

VRRP Network Settings

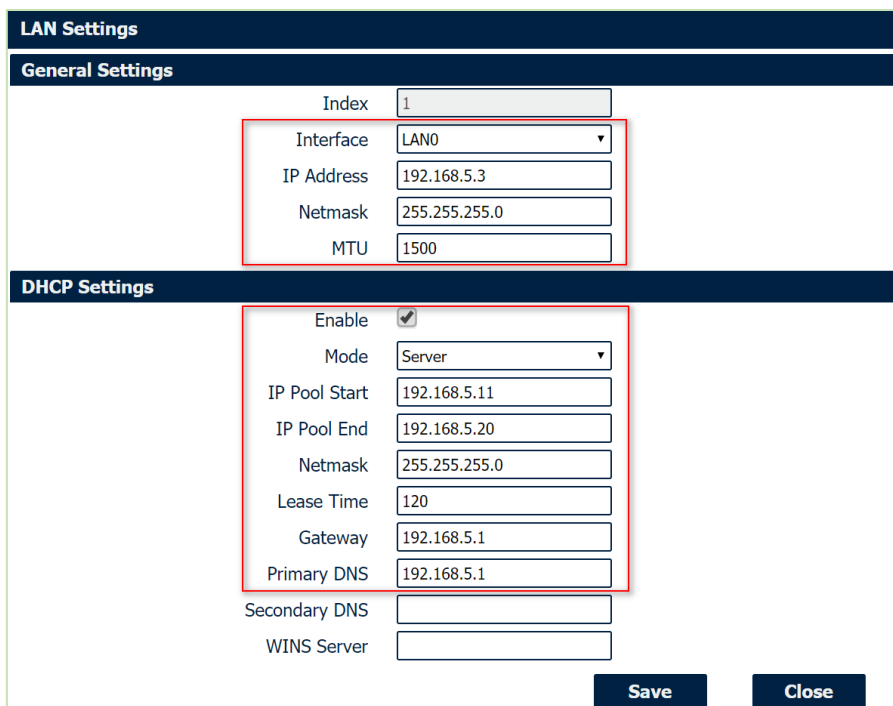
Index	1
Enable	<input checked="" type="checkbox"/>
Interface	LAN0
Virtual Router ID	1
Authentication Type	None
Priority	120
Interval	1
Virtual IP Address	192.168.5.1

Save **Close**

3. Click Save>Apply.

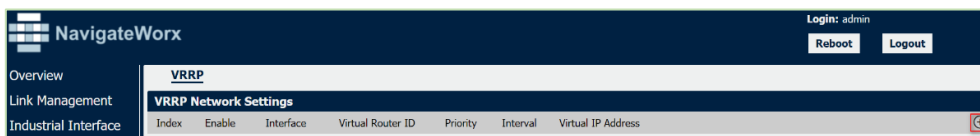
3.2 Backup Router Configuration

1. Go to Link **Management>Ethernet>LAN**, to specify the LAN information like below.



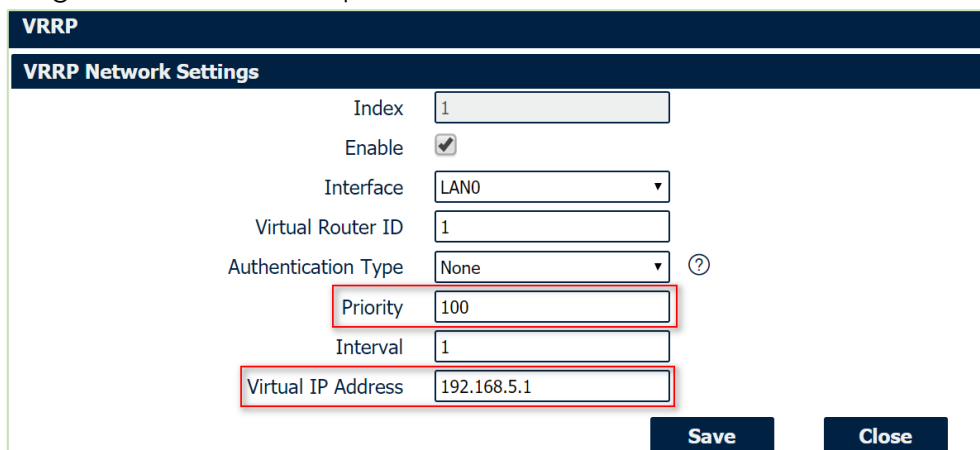
The screenshot shows the 'LAN Settings' configuration page. It is divided into two sections: 'General Settings' and 'DHCP Settings'. In the 'General Settings' section, the 'Interface' is set to 'LAN0', 'IP Address' is '192.168.5.3', 'Netmask' is '255.255.255.0', and 'MTU' is '1500'. In the 'DHCP Settings' section, 'Enable' is checked, 'Mode' is 'Server', 'IP Pool Start' is '192.168.5.11', 'IP Pool End' is '192.168.5.20', 'Netmask' is '255.255.255.0', 'Lease Time' is '120', 'Gateway' is '192.168.5.1', and 'Primary DNS' is '192.168.5.1'. There are 'Save' and 'Close' buttons at the bottom right.

2. Go to **Network>VRRP>VRRP**, Click the Edit button of VRRP, like below:



The screenshot shows the 'VRRP Network Settings' configuration page. The page title is 'VRRP' and the sub-title is 'VRRP Network Settings'. The page has a navigation menu on the left with 'Overview', 'Link Management', and 'Industrial Interface'. The main content area has a table with columns: 'Index', 'Enable', 'Interface', 'Virtual Router ID', 'Priority', 'Interval', and 'Virtual IP Address'. The 'Index' column has a value of '1'. There is a 'Reboot' and 'Logout' button in the top right corner.

3. Configure VRRP like below picture:



The screenshot shows the 'VRRP Network Settings' configuration page. The page title is 'VRRP' and the sub-title is 'VRRP Network Settings'. The page has a navigation menu on the left with 'Overview', 'Link Management', and 'Industrial Interface'. The main content area has a table with columns: 'Index', 'Enable', 'Interface', 'Virtual Router ID', 'Priority', 'Interval', and 'Virtual IP Address'. The 'Index' column has a value of '1'. The 'Enable' column has a checked checkbox. The 'Interface' column has a value of 'LAN0'. The 'Virtual Router ID' column has a value of '1'. The 'Authentication Type' column has a value of 'None'. The 'Priority' column has a value of '100'. The 'Interval' column has a value of '1'. The 'Virtual IP Address' column has a value of '192.168.5.1'. There are 'Save' and 'Close' buttons at the bottom right.

3. Click Save>Apply.

3.3 PC Configuration

1. Please enable the DHCP on PC or configure the static IP on PC like below:

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: 192 . 168 . 5 . 20

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 5 . 1

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server: 192 . 168 . 5 . 1

Alternate DNS server: . . .

Validate settings upon exit

Advanced...

OK Cancel

4. Test

1. Now PC communicate with Internet via Master Router,

```
Administrator: Command Prompt - tracet 8.8.8.8
C:\Users\Administrator>ping 8.8.8.8
Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=98ms TTL=40
Reply from 8.8.8.8: bytes=32 time=52ms TTL=40
Reply from 8.8.8.8: bytes=32 time=58ms TTL=40
Reply from 8.8.8.8: bytes=32 time=51ms TTL=40

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 51ms, Maximum = 98ms, Average = 64ms

C:\Users\Administrator>tracert 8.8.8.8
Tracing route to google-public-dns-a.google.com [8.8.8.8]
over a maximum of 30 hops:
  0  1 ms    1 ms    1 ms  navigateworx.router [192.168.5.2]
  1  85 ms   89 ms  130 ms  bogon [172.29.5.17]
  2  *
  3
```

2. Remove the ethernet cable between Master router and Switch, PC will access to Internet via Backup Router.

```
Administrator: Command Prompt - tracet 8.8.8.8
C:\Users\Administrator>ping 8.8.8.8
Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=53ms TTL=40
Reply from 8.8.8.8: bytes=32 time=71ms TTL=40
Reply from 8.8.8.8: bytes=32 time=59ms TTL=40
Reply from 8.8.8.8: bytes=32 time=58ms TTL=40

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 53ms, Maximum = 71ms, Average = 60ms

C:\Users\Administrator>tracert 8.8.8.8
Tracing route to 8.8.8.8 over a maximum of 30 hops
  0  1 ms    *      1 ms  192.168.5.3
  1  220 ms  227 ms  238 ms  10.241.157.57
  2
  3
```

3. Inserted back the ethernet cable, PC will access to Internet again via Master Router.

```
Administrator: Command Prompt - tracet 8.8.8.8
C:\Users\Administrator>ping 8.8.8.8
Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=327ms TTL=41
Reply from 8.8.8.8: bytes=32 time=110ms TTL=41
Reply from 8.8.8.8: bytes=32 time=60ms TTL=41
Reply from 8.8.8.8: bytes=32 time=105ms TTL=41

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 60ms, Maximum = 327ms, Average = 150ms

C:\Users\Administrator>tracert 8.8.8.8
Tracing route to google-public-dns-a.google.com [8.8.8.8]
over a maximum of 30 hops:
  0  1 ms    1 ms    1 ms  navigateworx.router [192.168.5.2]
  1  *      *      *
  2  *      *      *
  3
```

4. Test successfully.