SATEL

Mission-Critical Connectivity

SATELLAR

Configuration quick steps for IP radio network

21.7.2016 V1.2 TT

SATELLAR

Configuration quick steps for IP radio network

Please do find the example pictures for the radio network at the end of this quide.

Default IP address: 192.168.1.1/24

SATELLAR WEB UI access:

– *Username: satellar*

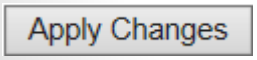
– *Password: Satel123*

Administrator entry:

– *Username: admin*

– *Password: Satel456*

LCD UI default pin code: 0000



Button is used for saving the modified parameter temporarily.
These changes will be listed/shown in the list of Uncommitted changes in the web GUI.

Button is used for making all temporary changes permanent.

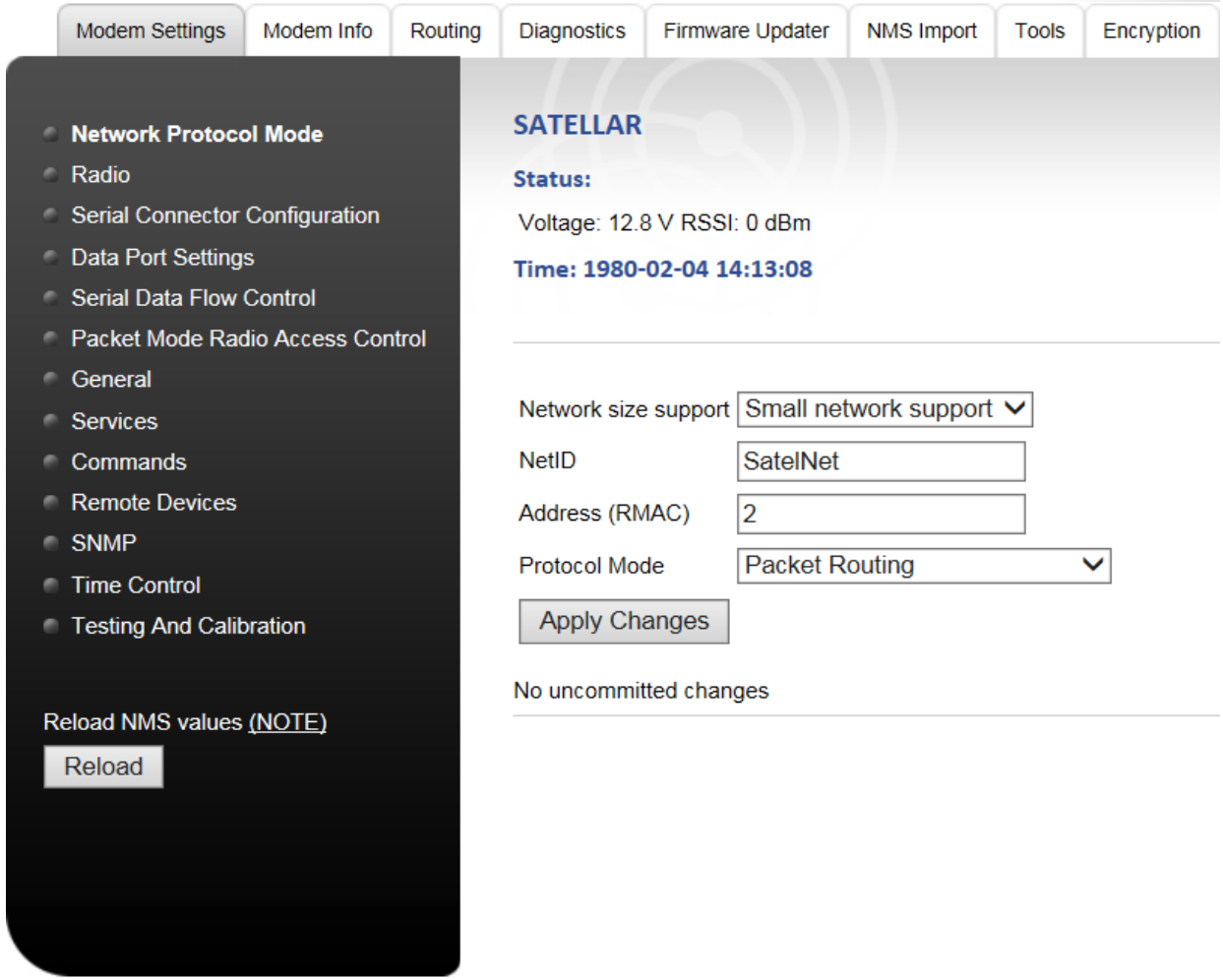
SATELLAR

Configuration quick steps for IP radio network

Adjust the RMAC address according to your network design plan
NOTE1! Each radio in the same radio network shall have unique RMAC address.
*NOTE2! Shall be set similarly to all of the radio modems in the same radio network.

- *NetID
- Address (RMAC)
- *Protocol Mode
  (Packet Routing for IP datatransmission)

Modem Settings →
Network Protocol Mode



SATELLAR

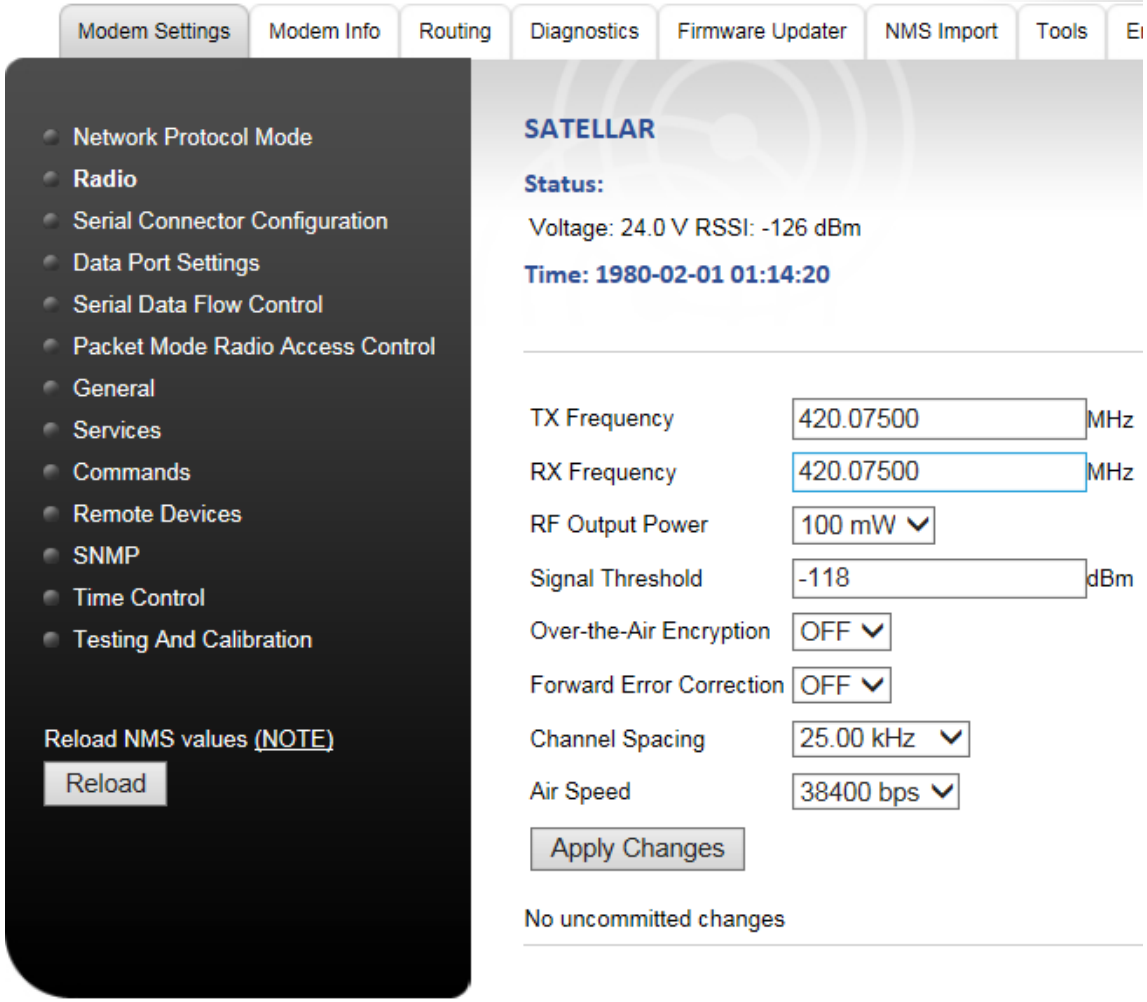
Configuration quick steps for IP radio network

Adjust the radio parameters according to your network design plan.
*NOTE! Shall be set similarly to all of the radio modems in the same radio network.

- TX/RX frequencies
- *Channel Spacing
- *Air Speed

Modem Settings →
Radio

Radio modulation	Air Speed bps @ 12,5kHz	Sensitivity (BER 10E-3)
4- FSK	9600	-119dBm
8- FSK	14400	-112dBm
16- FSK	19200	-104dBm
Radio modulation	Air Speed bps @ 25kHz	Sensitivity (BER 10E-3)
4- FSK	19200	-116dBm
8- FSK	28800	-108dBm
16- FSK	38400	-102dBm
Radio modulation	Air Speed bps @ 150kHz	Sensitivity (BER 10E-3)
4- FSK	115200	-104dBm
8- FSK	172800	-96dBm
16- FSK	230400	-88dBm



SATELLAR

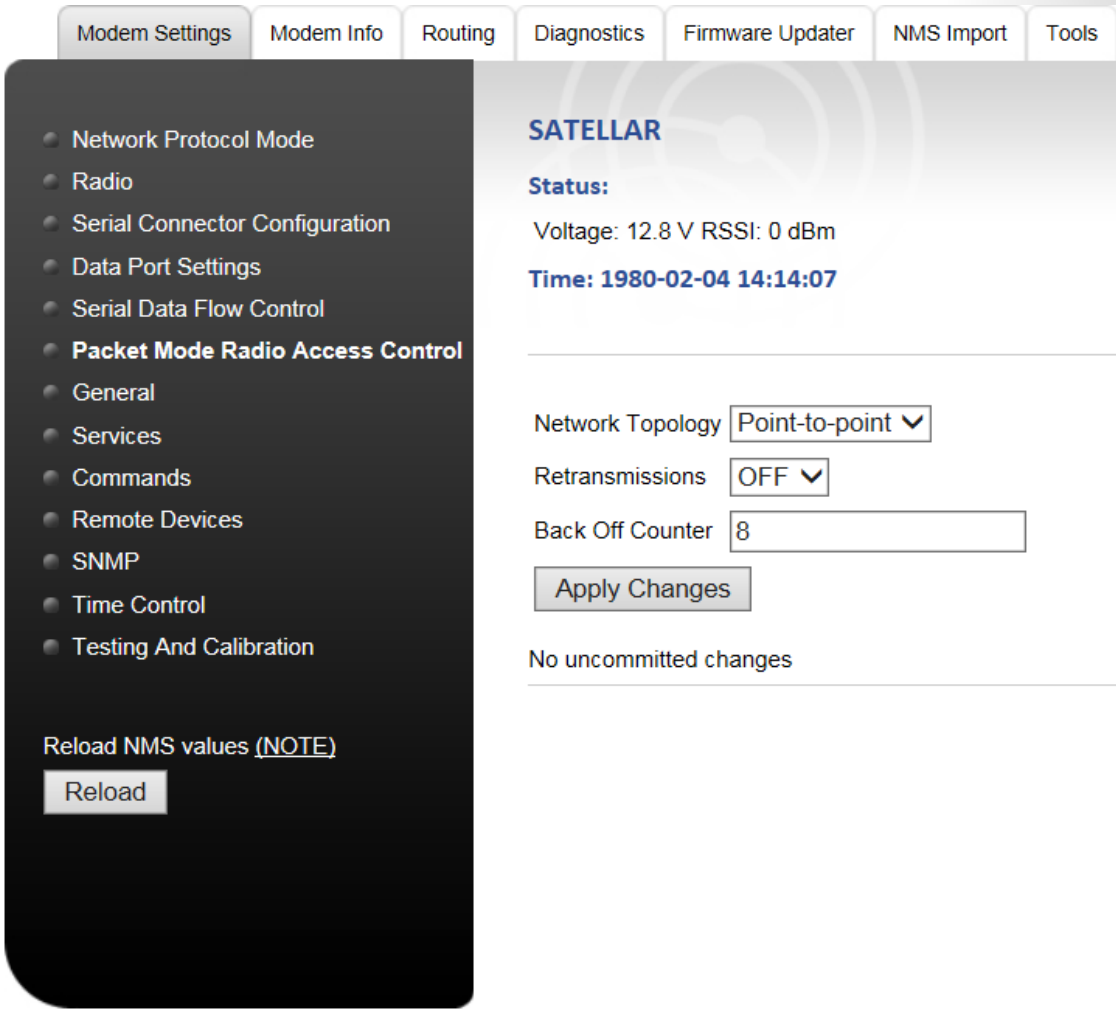
Configuration quick steps for IP radio network

Select the Network Topology according to your network design plan.
*NOTE! Shall be set similarly to all of the radio modems in the same radio network.

- *Network Topology
- *Retransmissions

(recommended to set to ON state if using TCP protocol)

Modem Settings →
Packet Mode Radio Access Control

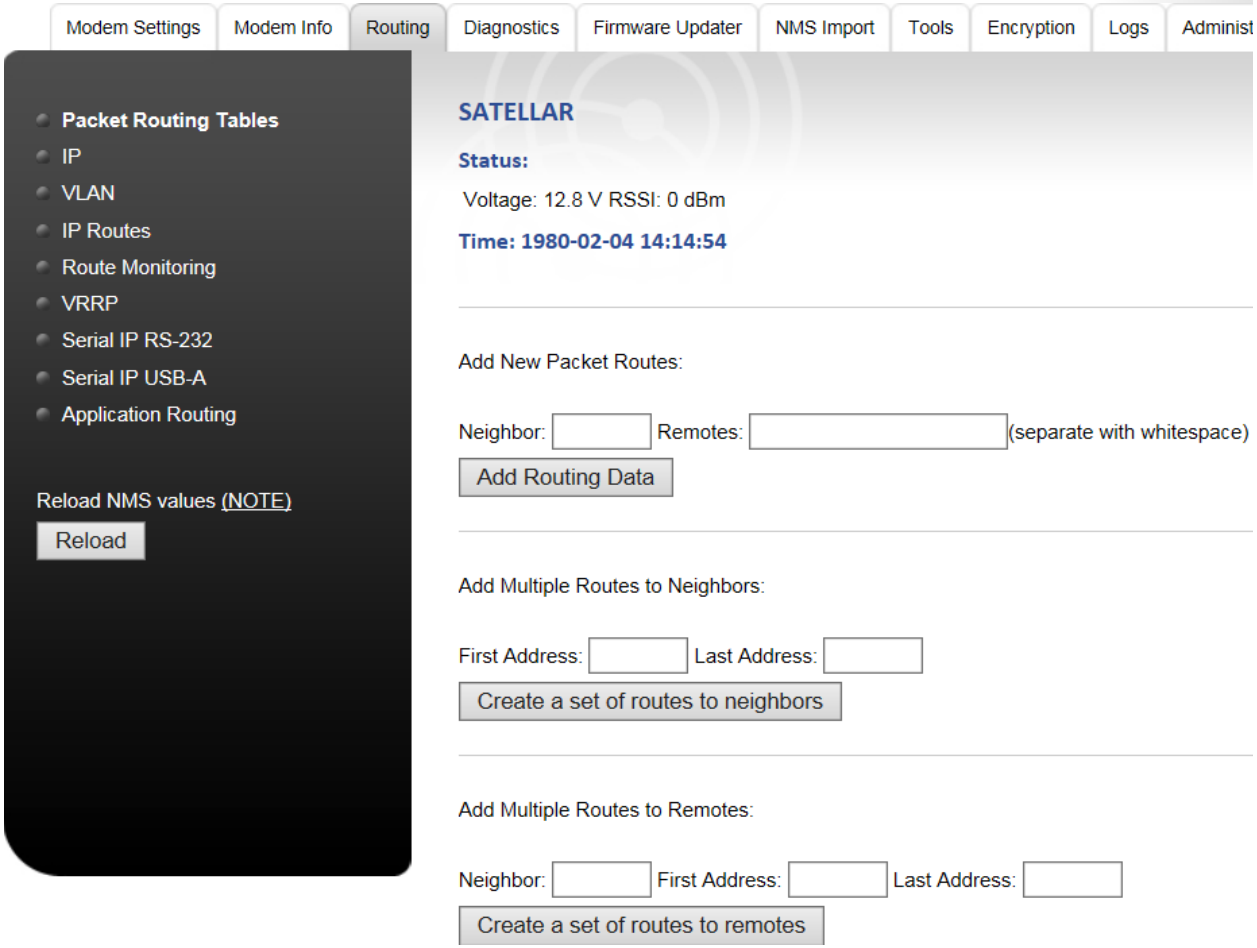


SATELLAR

Configuration quick steps for IP radio network

Set the Packet Routing Tables according to your network design plan.
Neighbor: the RMAC address of a direct neighbor
Remotes: RMAC that can be reached behind this RMAC
NOTE! Each radio in the radio network has an unique RMAC address, thus the Packet Routing Tables vary.

Routing →
Packet routing Tables



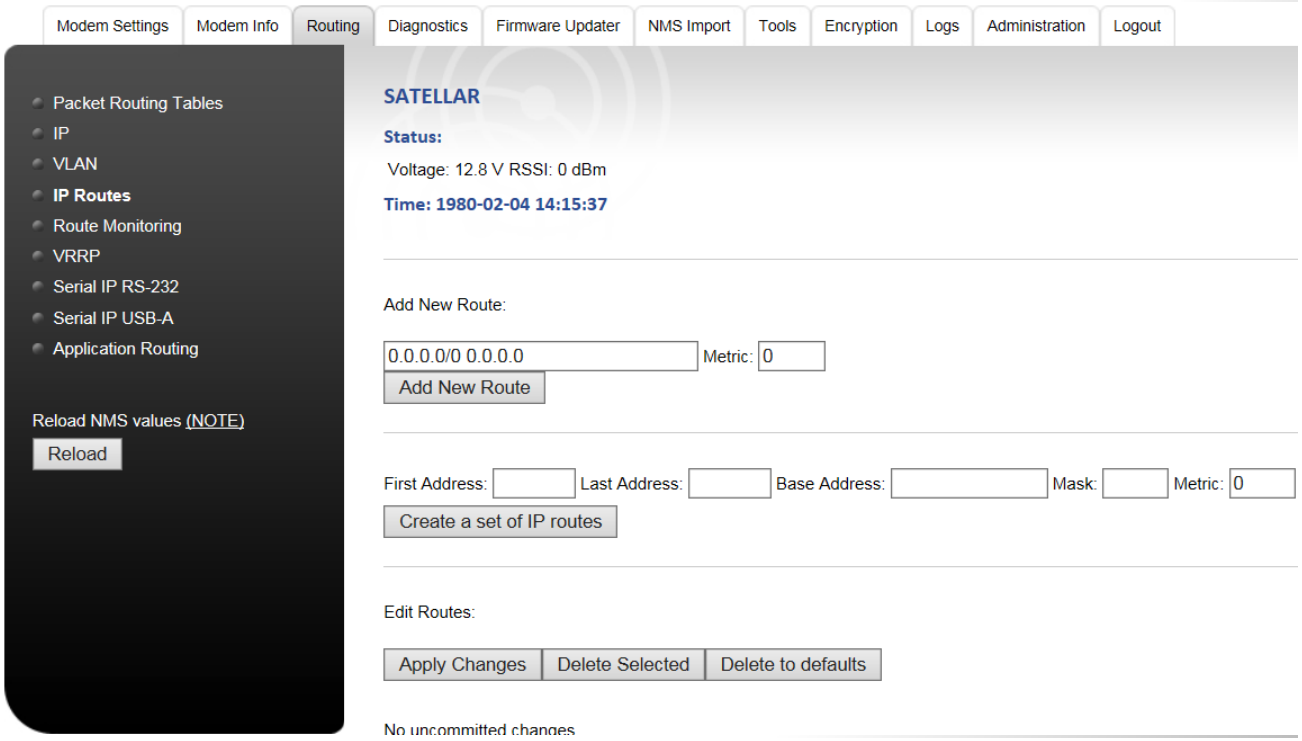
SATELLAR

Configuration quick steps for IP radio network

Set the IP routes according to your network design plan.

- If all the traffic is controlled only by the “Master” modem, only this modem really requires all the IP routes to whole network. In this case all the “substations” shall have the minimum information of how to get to the subnet behind the “Master” radio and the radio gateway (as in e.g. 10.10.32.1).
- Setting all the radio networks IP routes to all of the radio modems in the radio network, allows the connection to be established from any radio to every radio (i.e. from any subnet to every subnet).

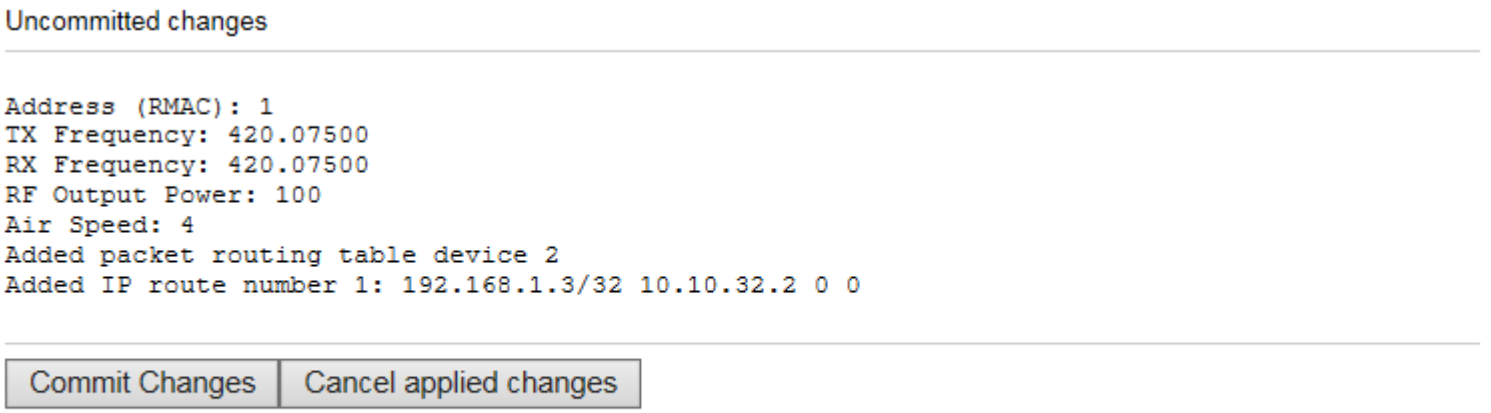
Routing → IP Routes



SATELLAR

Configuration quick steps for IP radio network

Before changing the IP address of the connected radio, it is advisable to commit the changes made to the SATELLAR. After the IP address is changed, the connection between the SATELLAR and PC is lost due to the IP change.



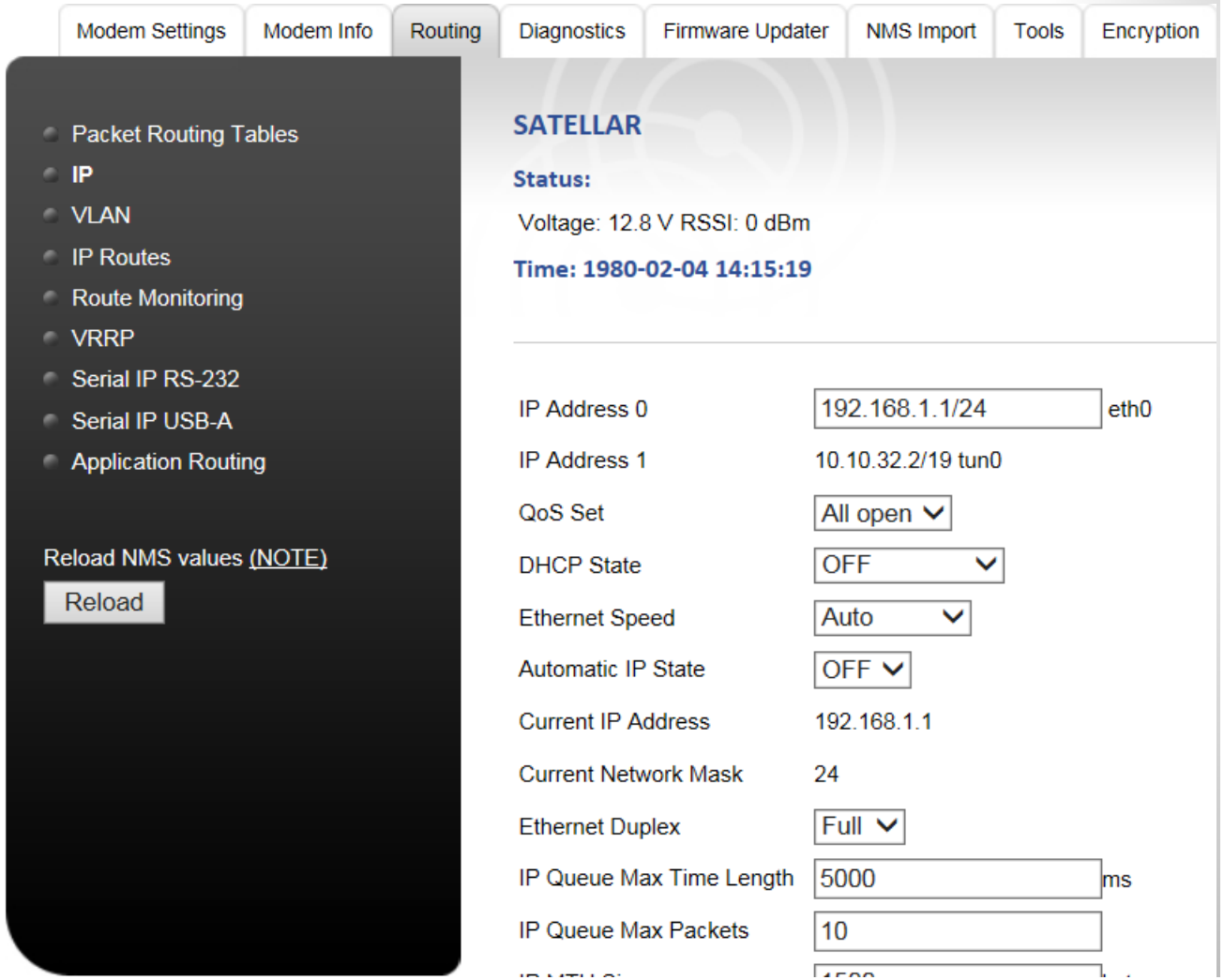
SATEL Oy, Meriniitynkatu 17, P.O.Box 142, FI-24101 SALO, FINLAND, Tel +358 2 777 7800, Fax +358 2 777 7810, E-mail info@satel.com
SATEL Oy.

SATELLAR

Configuration quick steps for IP radio network

Set the IP Address 0 for your SATELLAR radio modem. After Applying and Committing the changes, IP address is renewed, WEB UI attempts to connect to the new IP address.

Routing → IP



SATELLAR

Configuration examples

Example no.:1

IP route 192.168.2.0/24 10.10.32.2 “you can get to 192.168.2.0 subnet, consisting of host address range 192.168.2.1 – 192.168.2.254, by using the route 10.10.32.2(=RMAC address 2)”.

Example no.:2(see pictures 1 and 2)

R1= IP address 192.168.1.1/24
Tun0=10.10.32.1/19 (=RMAC 1)

R3= IP address 192.168.3.1/24
Tun0=10.10.32.3/19 (=RMAC 3)

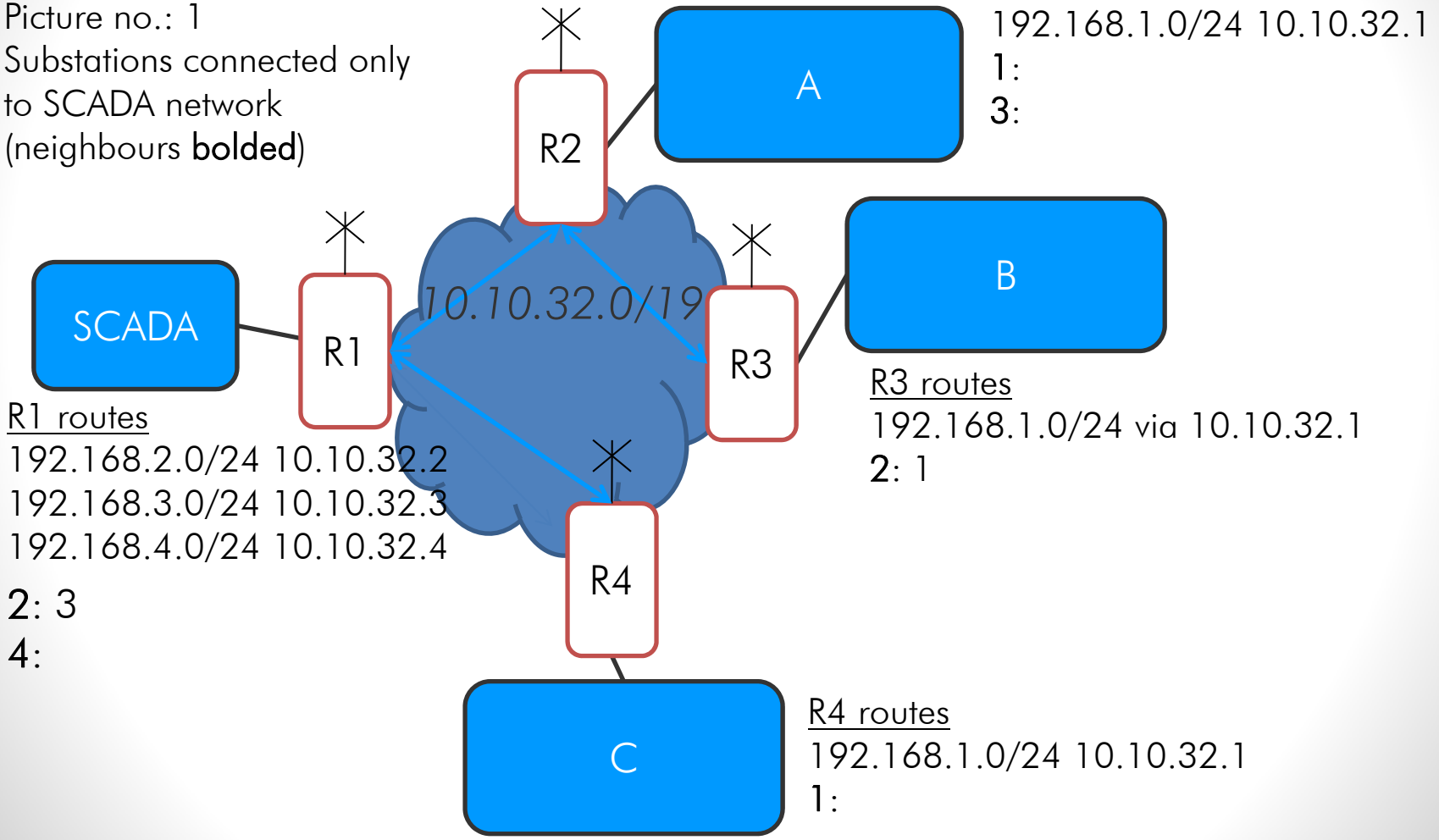
R2= IP address 192.168.2.1/24
Tun0=10.10.32.2/19 (=RMAC 2)

R4= IP address 192.168.4.1/24
Tun0=10.10.32.4/19 (=RMAC 4)

SATELLAR

Configuration examples

Picture no.: 1
Substations connected only to SCADA network (neighbours **bolded**)



R2 routes
192.168.1.0/24 10.10.32.1
1:
3:

R3 routes
192.168.1.0/24 via 10.10.32.1
2: 1

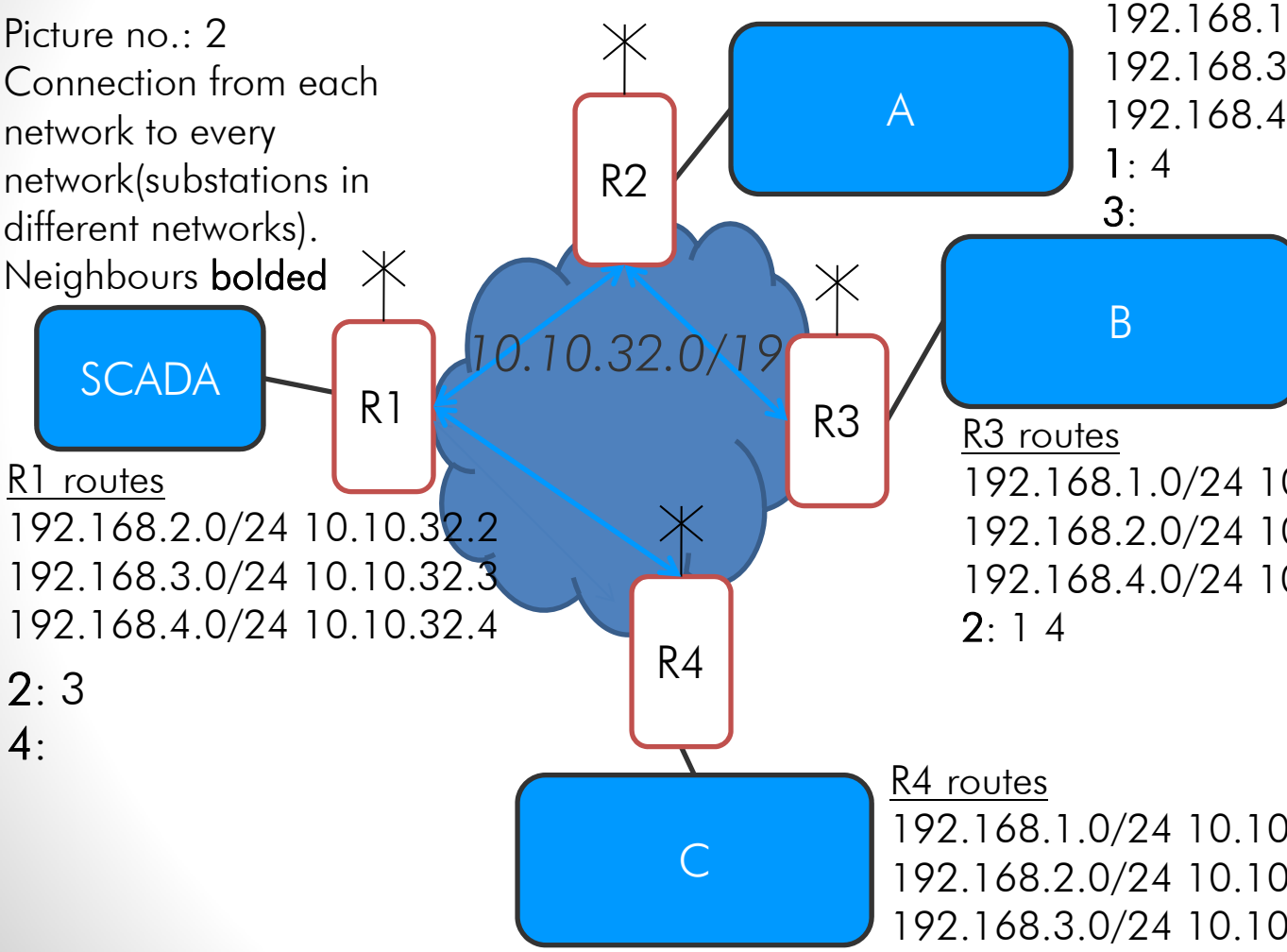
R1 routes
192.168.2.0/24 10.10.32.2
192.168.3.0/24 10.10.32.3
192.168.4.0/24 10.10.32.4
2: 3
4:

R4 routes
192.168.1.0/24 10.10.32.1
1:

SATELLAR

Configuration examples

Picture no.: 2
Connection from each network to every network(substations in different networks).
Neighbours **bolded**



R1 routes
192.168.2.0/24 10.10.32.2
192.168.3.0/24 10.10.32.3
192.168.4.0/24 10.10.32.4
2: 3
4:

R2 routes
192.168.1.0/24 10.10.32.1
192.168.3.0/24 10.10.32.3
192.168.4.0/24 10.10.32.4
1: 4
3:

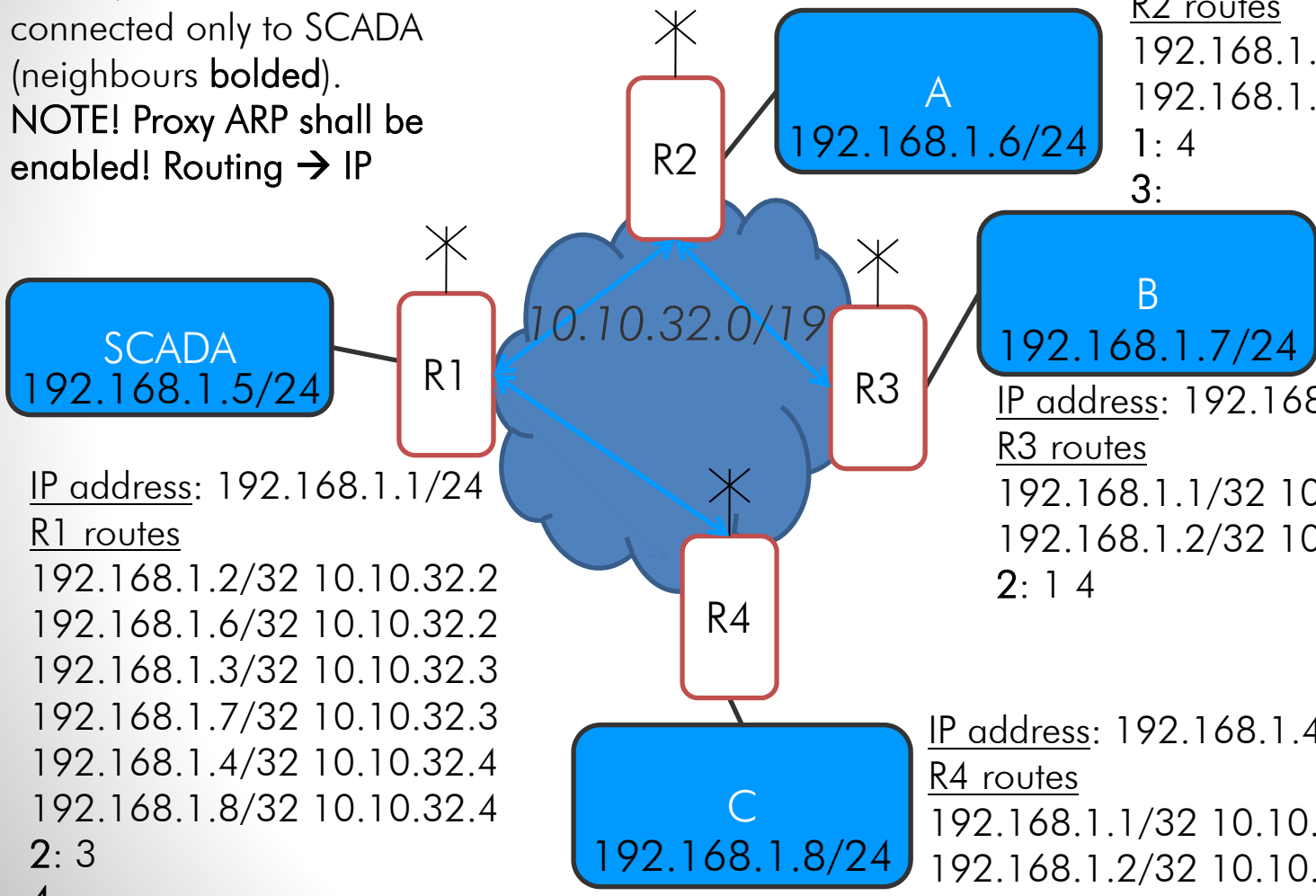
R3 routes
192.168.1.0/24 10.10.32.1
192.168.2.0/24 10.10.32.2
192.168.4.0/24 10.10.32.4
2: 1 4

R4 routes
192.168.1.0/24 10.10.32.1
192.168.2.0/24 10.10.32.2
192.168.3.0/24 10.10.32.3
1: 2 3

SATELLAR

Configuration examples

All stations in same subnet, substations connected only to SCADA (neighbours **bolded**).
NOTE! Proxy ARP shall be enabled! Routing → IP



IP address: 192.168.1.2/24
R2 routes
192.168.1.1/32 10.10.32.1
192.168.1.2/32 10.10.32.1
1: 4
3:

IP address: 192.168.1.3/24
R3 routes
192.168.1.1/32 10.10.32.1
192.168.1.2/32 10.10.32.1
2: 1 4

IP address: 192.168.1.1/24
R1 routes
192.168.1.2/32 10.10.32.2
192.168.1.6/32 10.10.32.2
192.168.1.3/32 10.10.32.3
192.168.1.7/32 10.10.32.3
192.168.1.4/32 10.10.32.4
192.168.1.8/32 10.10.32.4
2: 3
4:

IP address: 192.168.1.4/24
R4 routes
192.168.1.1/32 10.10.32.1
192.168.1.2/32 10.10.32.1
1: 2 3