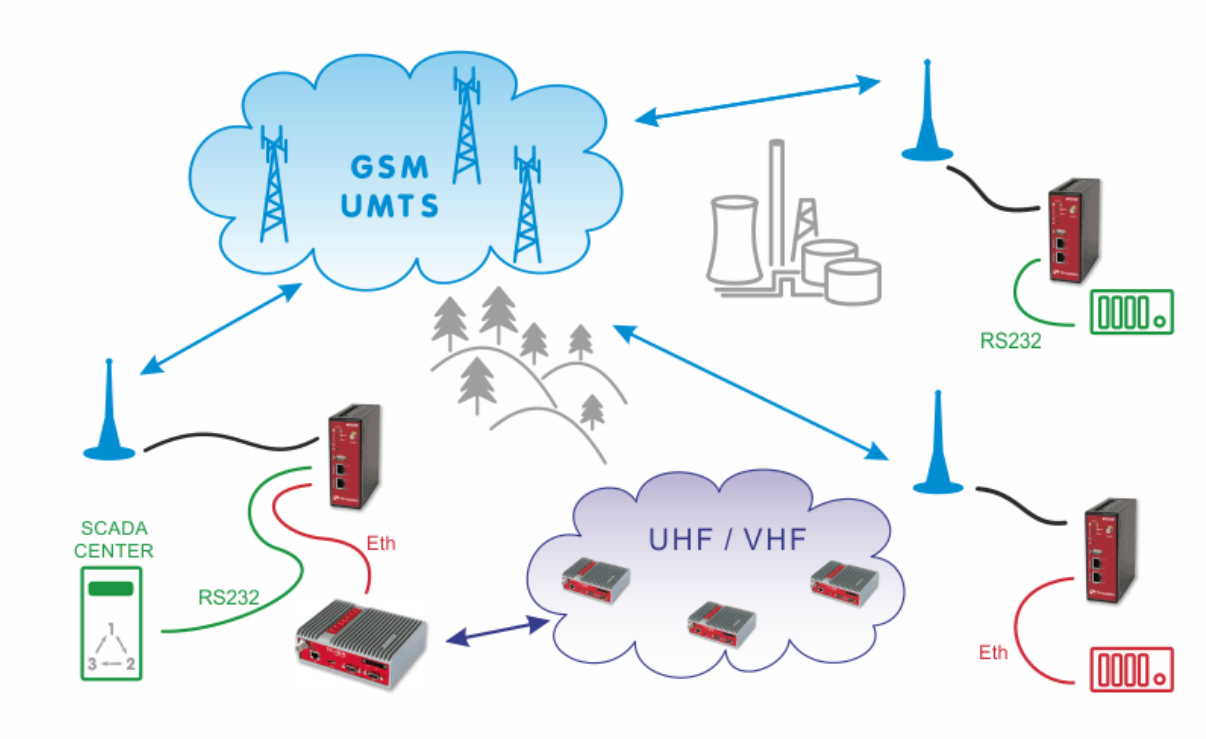
RACOM
RADIO DATA NETWORKS

Application notes



M!DGE/MG102i
Hybrid Network

version 1.0
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RACOM s.r.o. • Mirova 1283 • 592 31 Nove Mesto na Morave • Czech Republic
Tel.: +420 565 659 511 • Fax: +420 565 659 512 • E-mail: racom@racom.eu

www.racom.eu

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Introduction

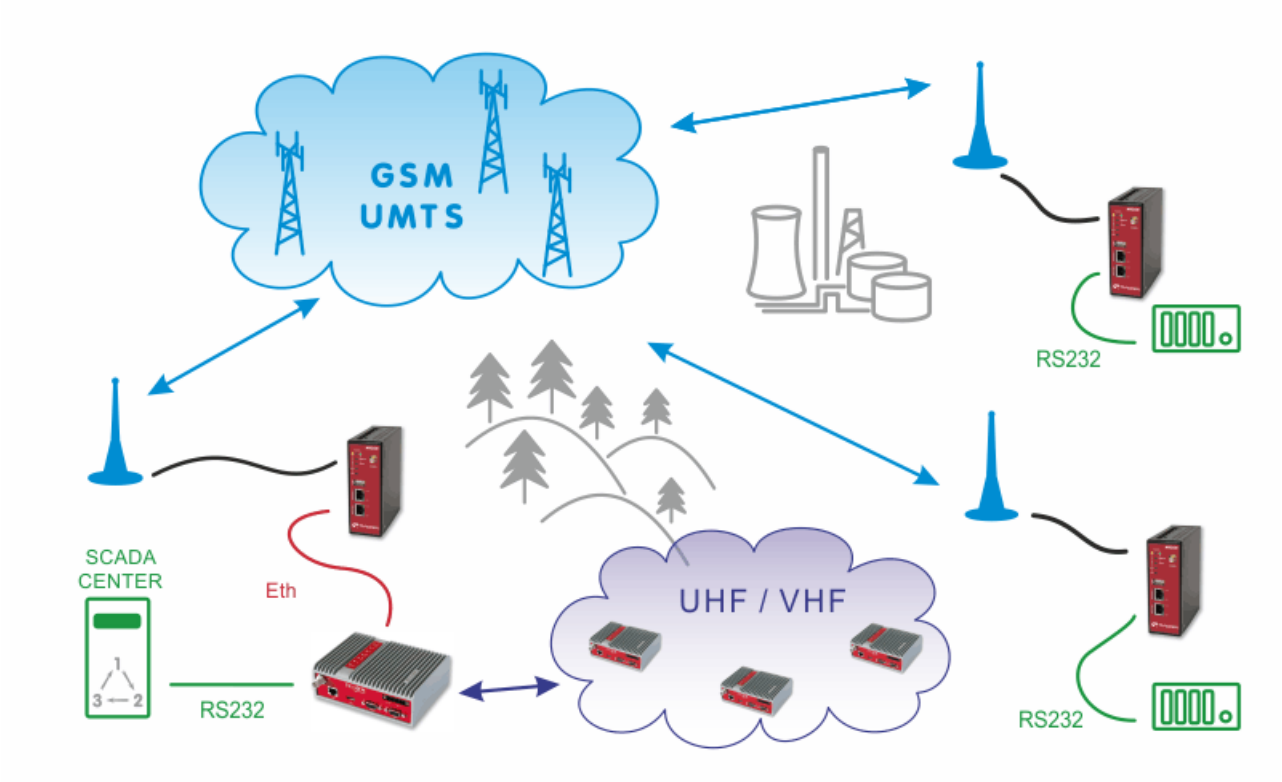

Fig. 1: UHF/VHF and GPRS/UMTS Combination

The picture above describes an arrangement, where part of the remote sites is connected over a private UHF/VHF radio network (e.g. sites requiring 99.9% availability) and the remaining sites are connected over a cellular public network (very remote location, but with a good cellular signal).

The SCADA Center can be connected either to central RipEX or even to M!DGE, both can serve as the Master unit. Please see the following example of one possible settings. M!DGE units use the private APN with static IP addresses.

1. Practical Example

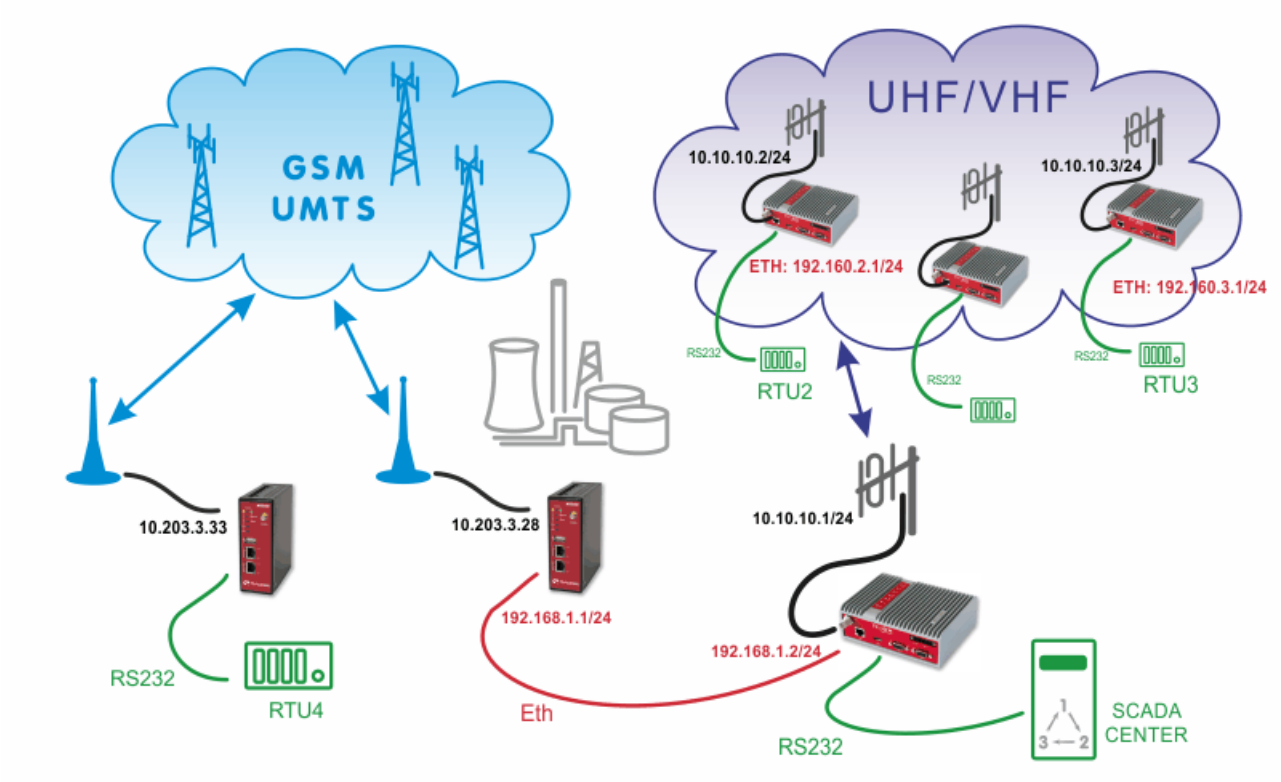

Fig. 1.1: UHF/VHF and GPRS/UMTS/HSPA combination example

In the example, the SCADA Center is connected via RS232 interface to RipEX1 (COM1). The Center is utilized with Modbus RTU Master configuration and polls two RTUs connected via RipEX network. There is one distant RTU4 location which is reachable over the cellular network.

1.1. RipEX Center Configuration

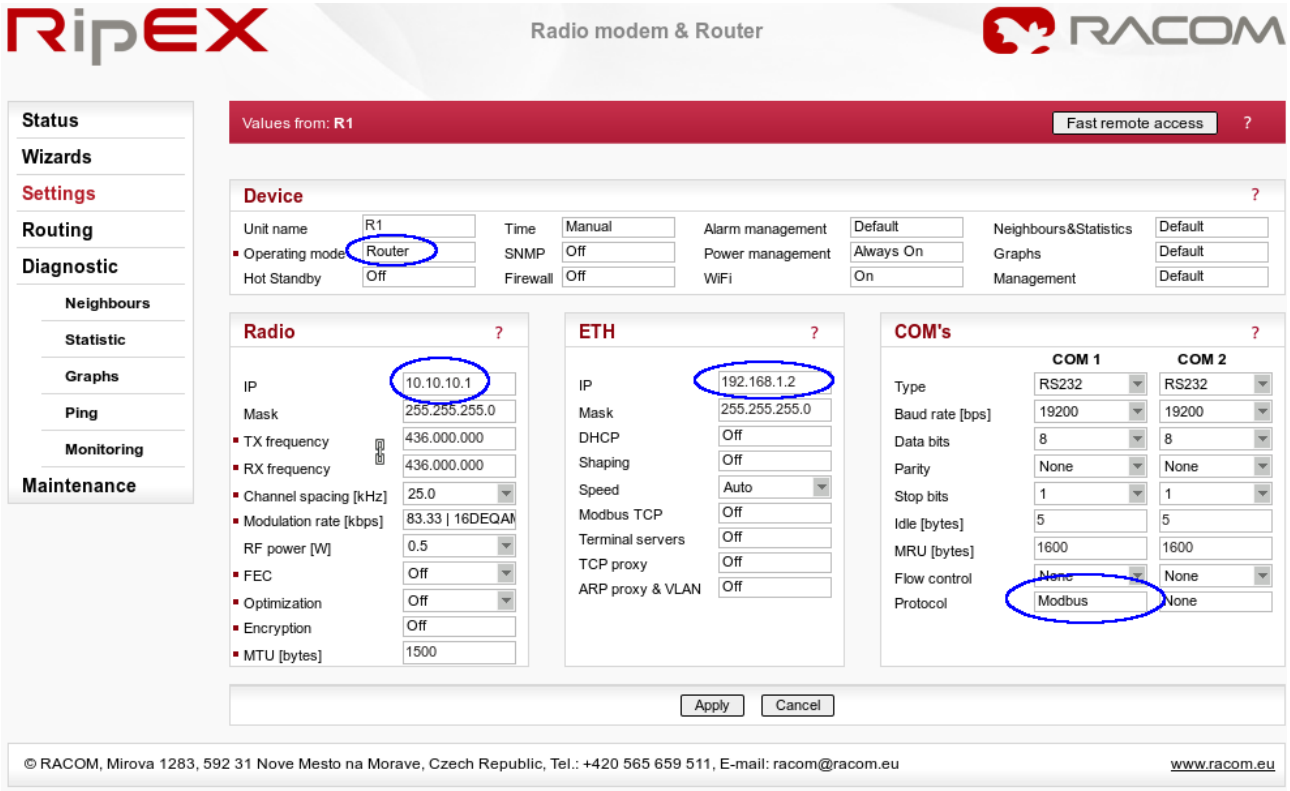

Fig. 1.2: RipEX Center Settings

Apply the correct IP addresses within the Router mode and set the COM1 protocol.

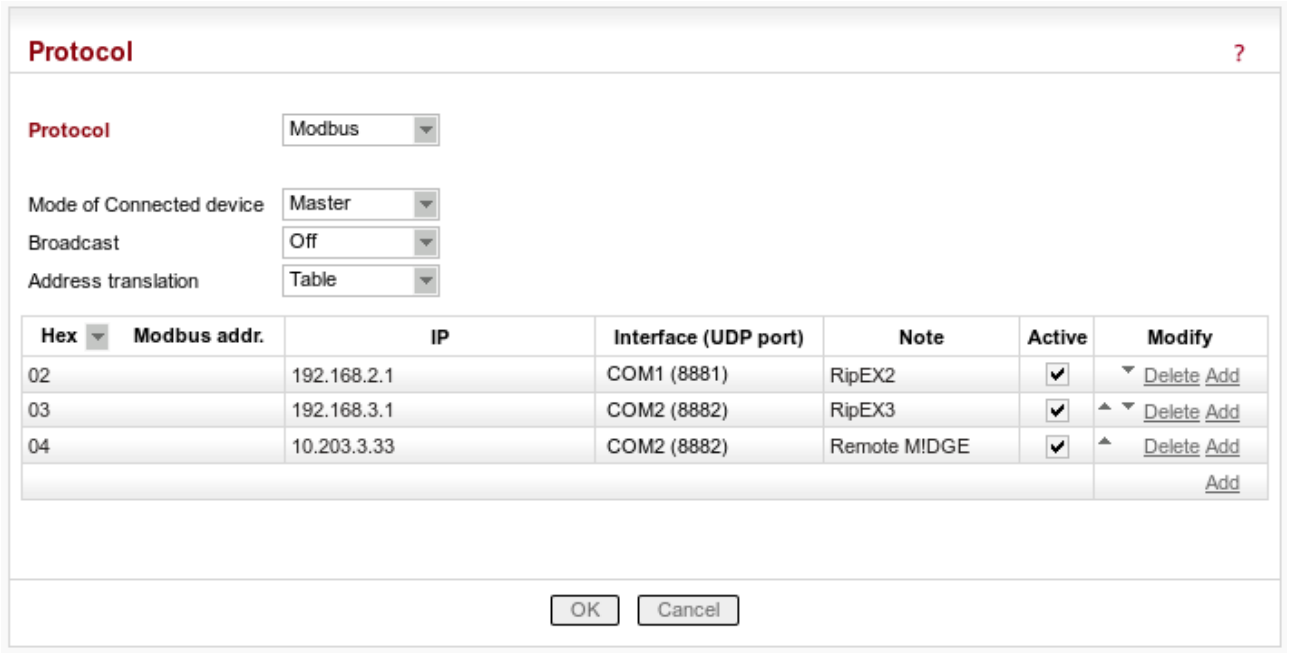

Fig. 1.3: Modbus Master configuration

In the example, hexadecimal Modbus addresses 02 and 03 are transferred to the RipEX network on the Ethernet IP addresses. The Slave 04 is transferred via the cellular network and the destination IP address is the mobile IP address of the remote M!DGE unit. The COM port must be COM2 with UDP port 8882, otherwise the remote M!DGE would not handle the traffic correctly.

Fig. 1.4: Central RipEX routing menu

In the Routing menu, three routes have to be added. First two are the LAN subnets of RipEX units and the third line defines the APN subnet (the gateway is the local M!DGE Ethernet IP address).

1.2. Remote RipEX Configuration

Both remote RipEX units have almost the same configuration so only R2 unit is described. Configure the correct IP addresses (together with RF frequency, …) and set the COM1 port as the Modbus Slave as in the following screenshot.

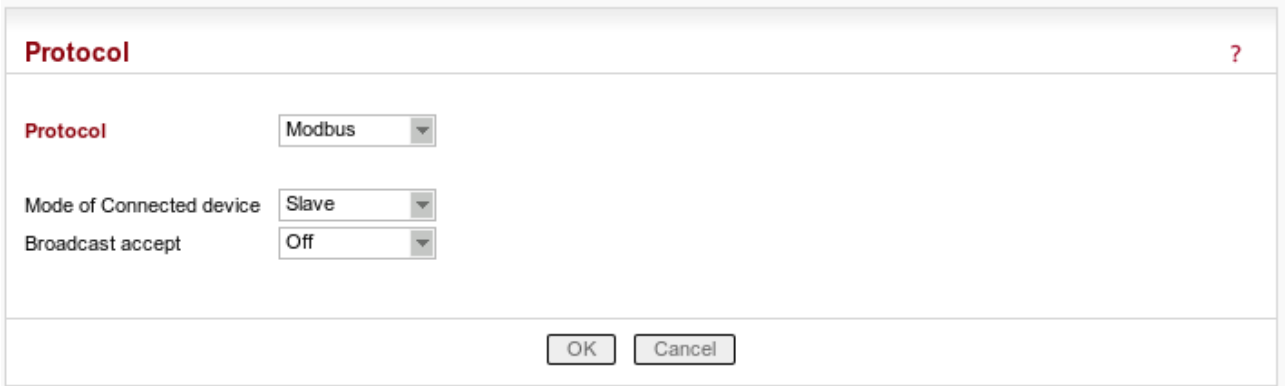

Fig. 1.5: Remote RipEX Modbus Slave configuration

The only missing configuration is the Routing rule to the central RipEX subnet (192.168.1.1/24).

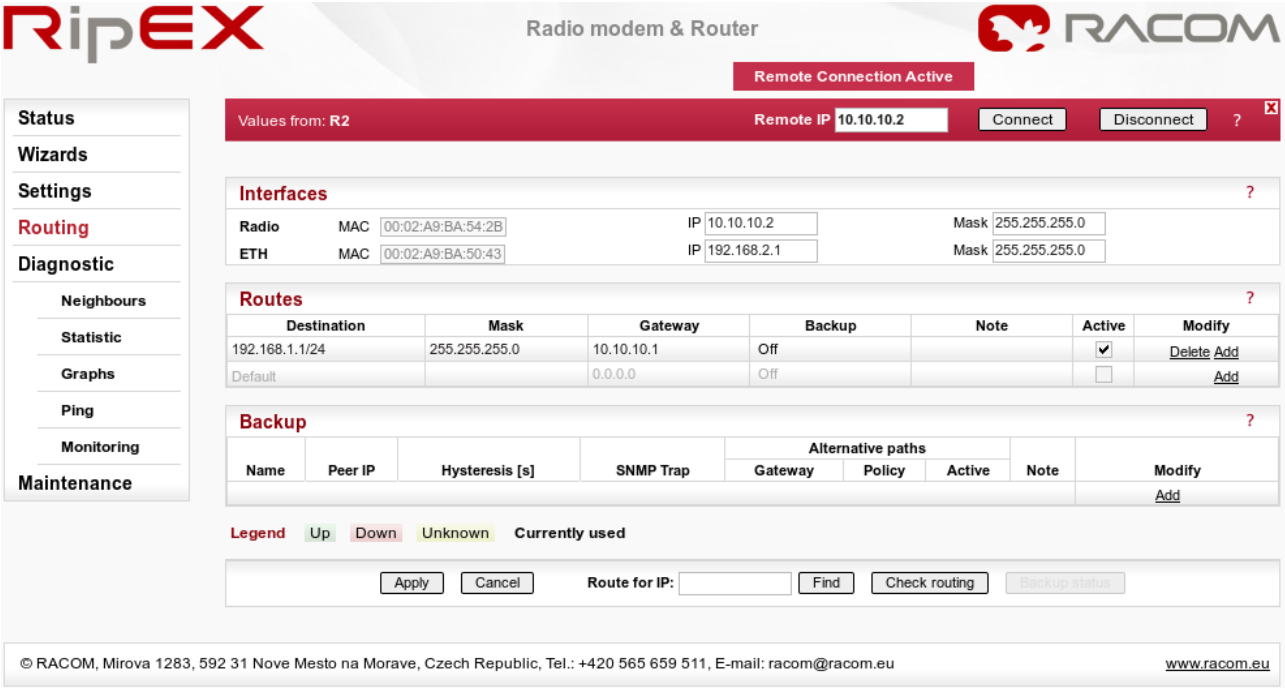

Fig. 1.6: Remote RipEX Routing menu

1.3. Central M!DGE Configuration

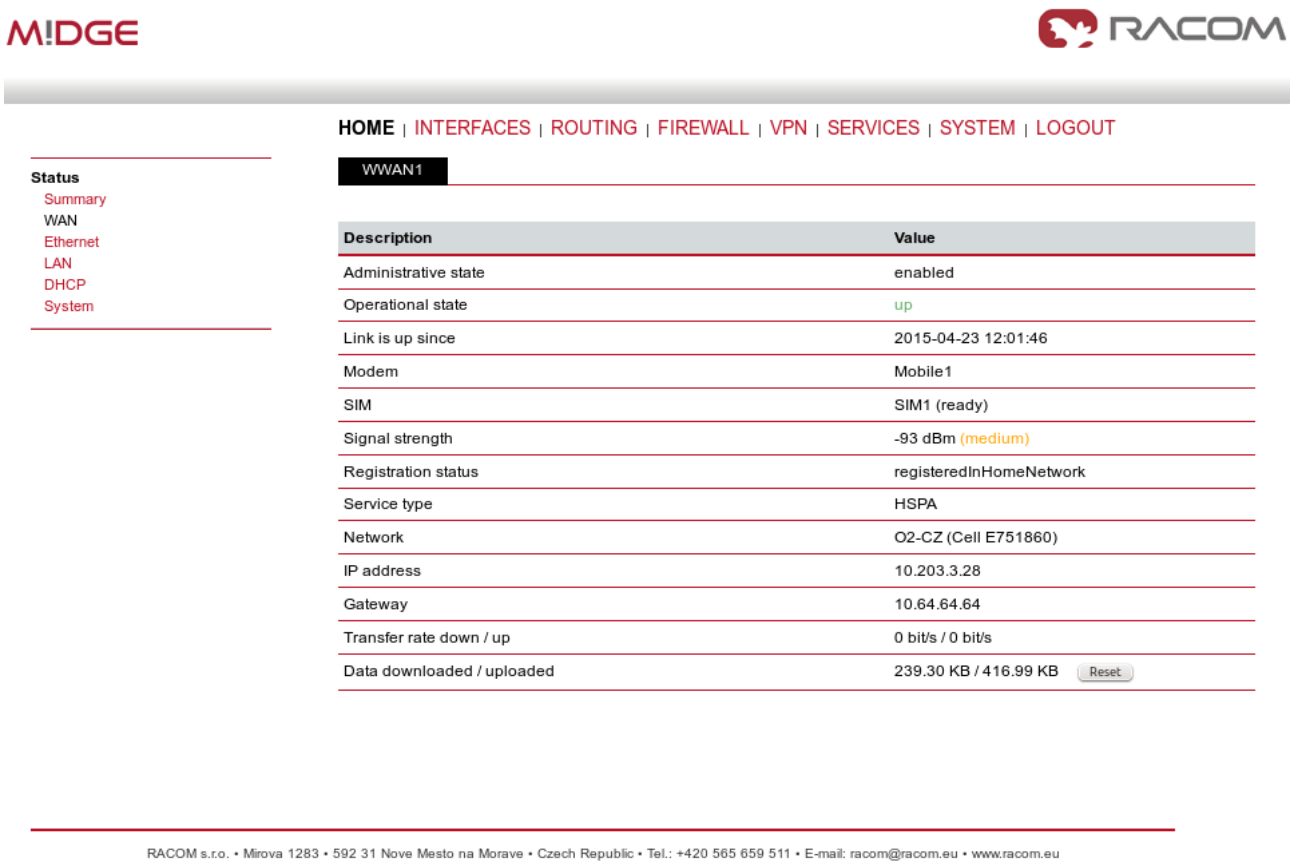

Fig. 1.7: Central M!DGE Status menu

The central M!DGE just needs to be configured so it is connected via the private APN, no other special configuration is needed.

1.4. Remote M!DGE Configuration

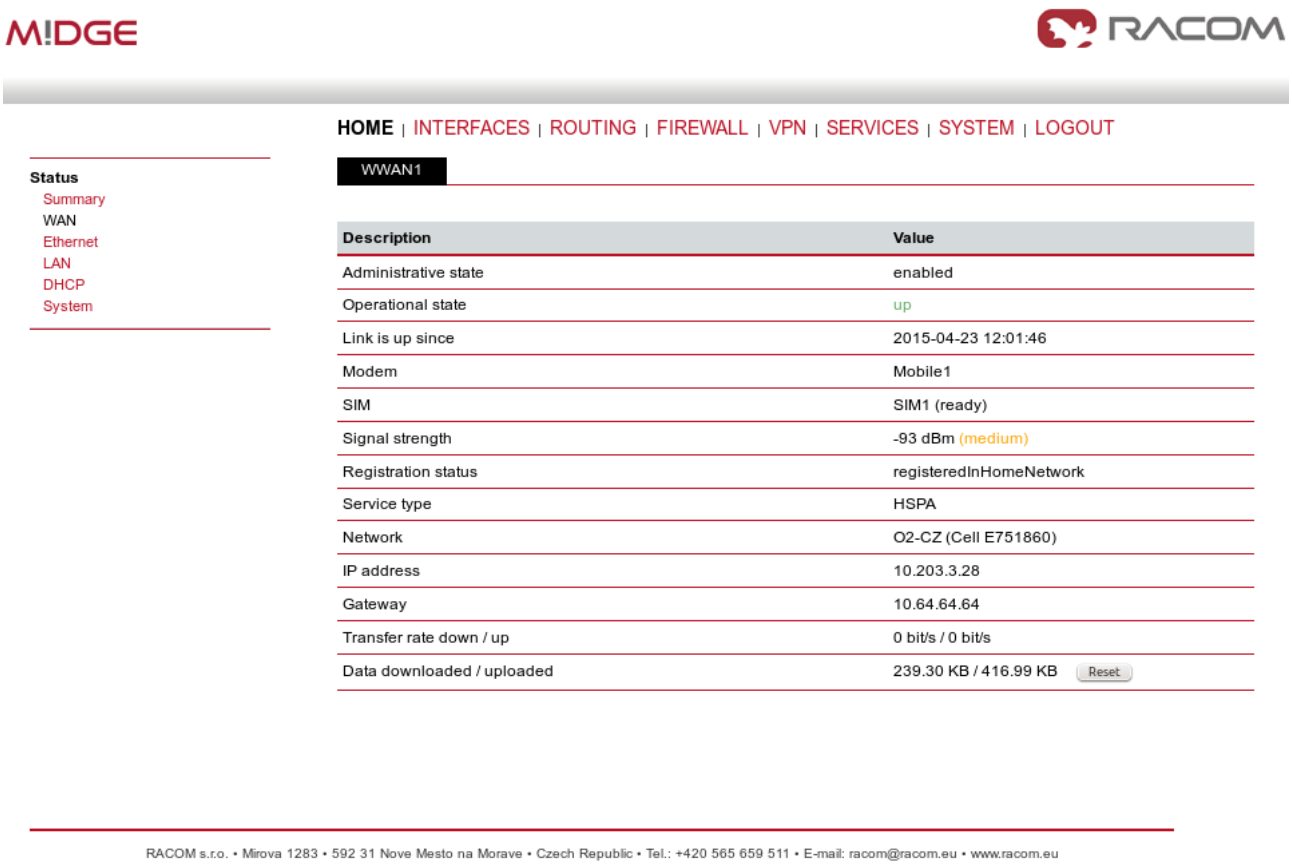

Fig. 1.8: The remote M!DGE Status menu

After connecting to the private APN, only the Protocol server needs to be configured. In the INTERFACES – Serial Port, choose the Protocol server.

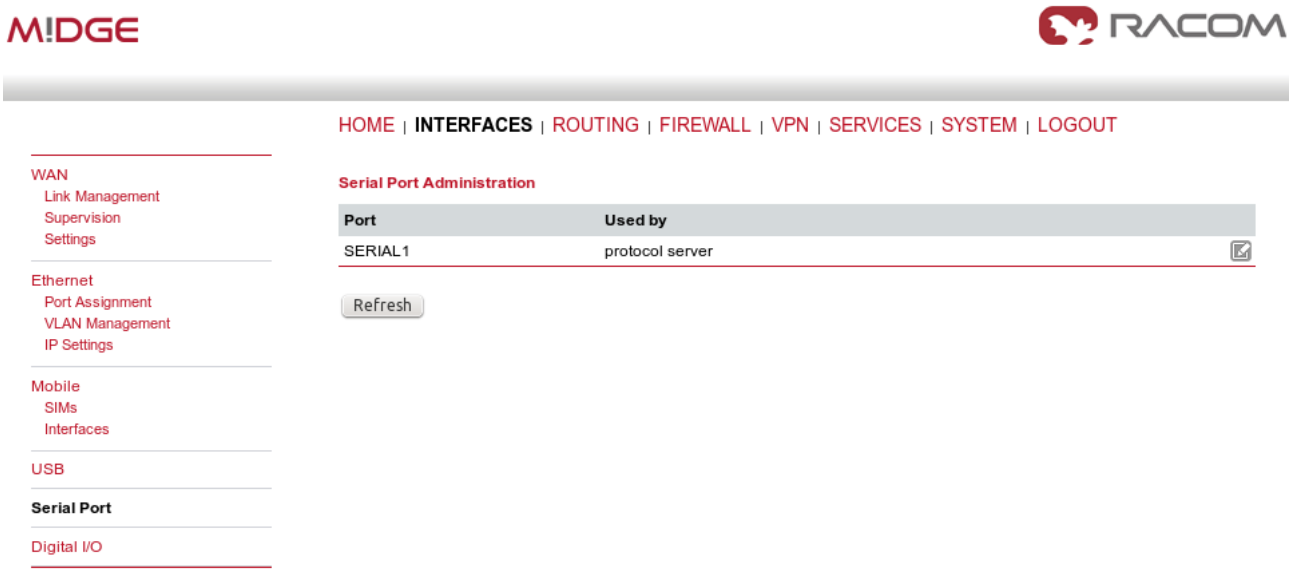

Fig. 1.9: Serial Port configuration

Set the desired port settings.

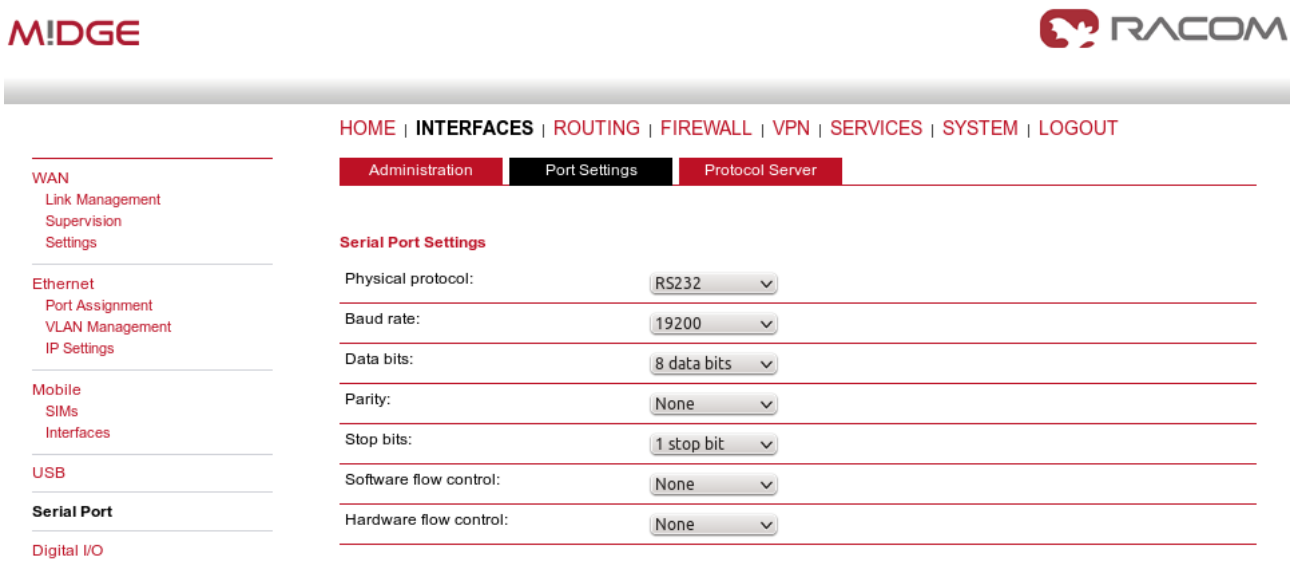

Fig. 1.10: Port settings

And as the last step, configure the Protocol server as the Modbus slave.

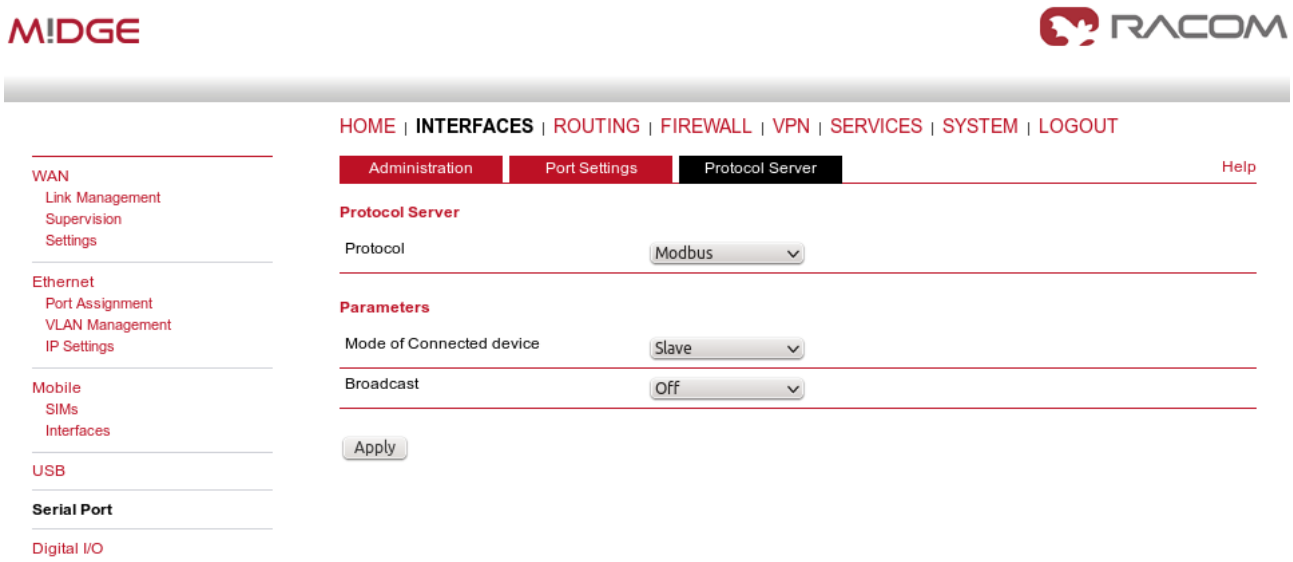

Fig. 1.11: Modbus Slave M!DGE configuration

Now you should be able to poll the required information from all RTUs within the UHF/VHF or cellular network.

Note

If you do not use the private APN, you need to configure the VPN tunnels. See *VPN Configuration*[1] application note and *SCADA Protocols*[2] public APN.

[1] http://www.racom.eu/eng/products/m/midge/app/vpn/index.html
[2] http://www.racom.eu/eng/products/m/midge/app/ser/SCADA_Protocols_public_APN.html

Appendix A. Revision History

Revision 1.0	2017-12-07
First issue	