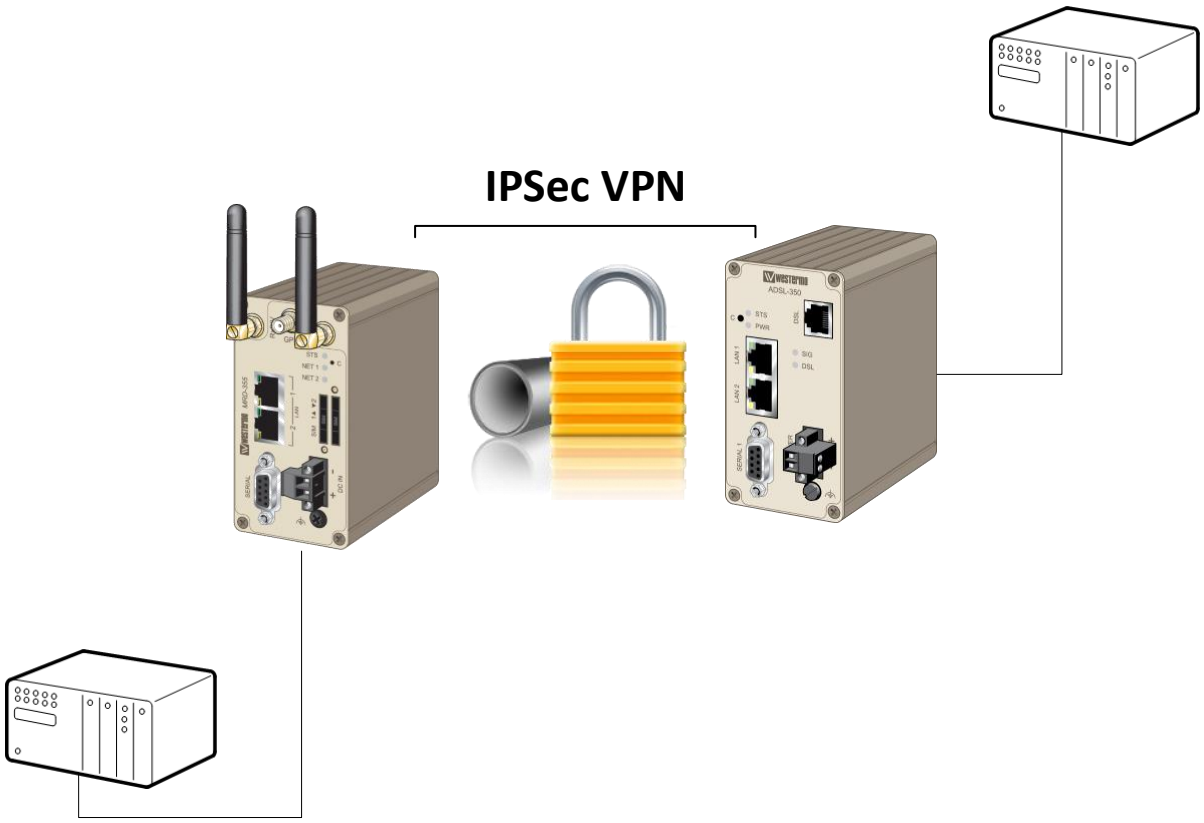
AN-008-WUK

HOW TO SET UP SERIAL OVER IP USING IPsec

Serial over IPSec connection between a MRD-355 3G router and an ADSL-350 broadband router with fixed IP address



Introduction

Overview

The following Pages show how to implement Serial over an IPSec VPN between a pair of Westermo routers. The serial server function will create a transparent pipe between the serial port and a TCP network connection. Example uses of this mode include connecting to a remote PC running serial port redirector software with virtual COM ports or connecting two modems back-to-back to create a serial bridge.

Assumptions

This application note applies to the following wireless routers:
MRD-315, MRD-355 and MRD-455 router with firmware v1.7.2.0 or later

This application note also applies to the ADSL-350 router with firmware v1.6.2.0 or later and the BRD-355 router with firmware v1.7.6.11 or later

Assume that you have already configured an IPSec VPN between the MRD-x55 and ADSL-350. If you have not already set up the IPSec VPN, please refer to:

APPLICATION NOTE AN-0199-ENG VPN between MRD-455 and ADSL-350

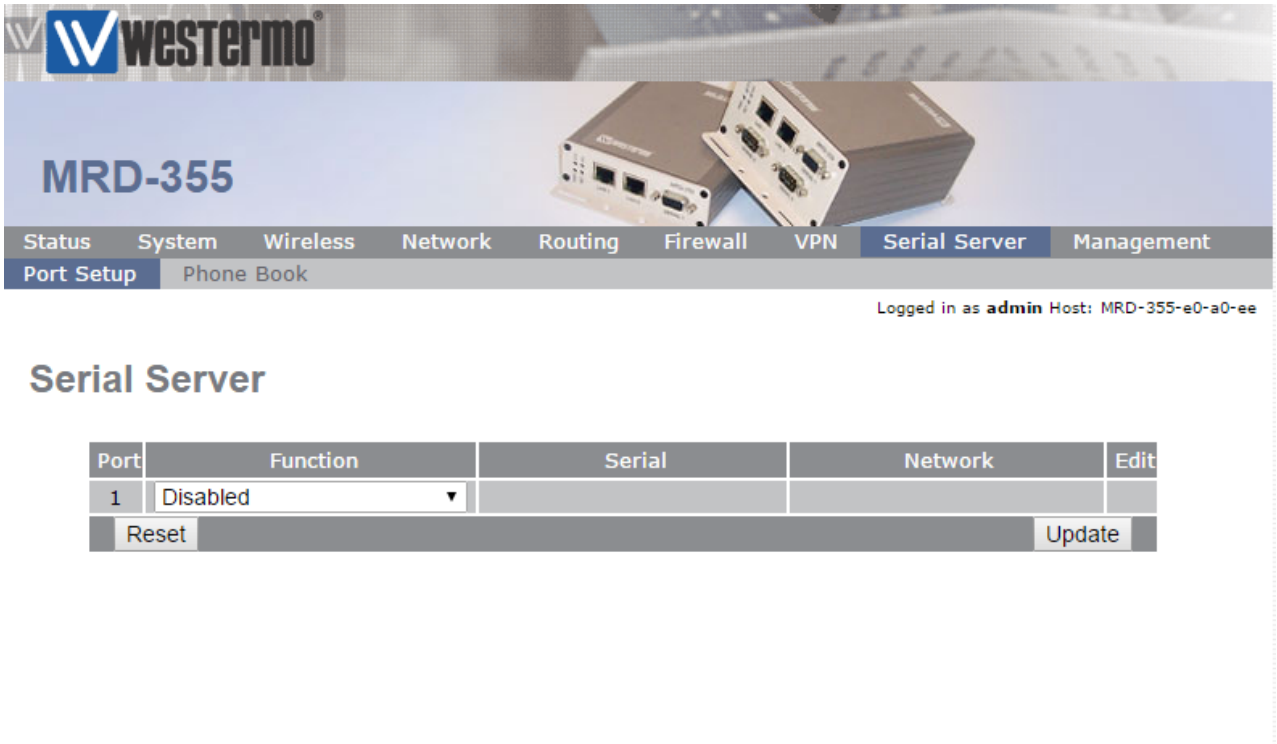
Corrections

Requests for corrections or amendments to this application note are welcome and should be addressed to technical@westermo.co.uk

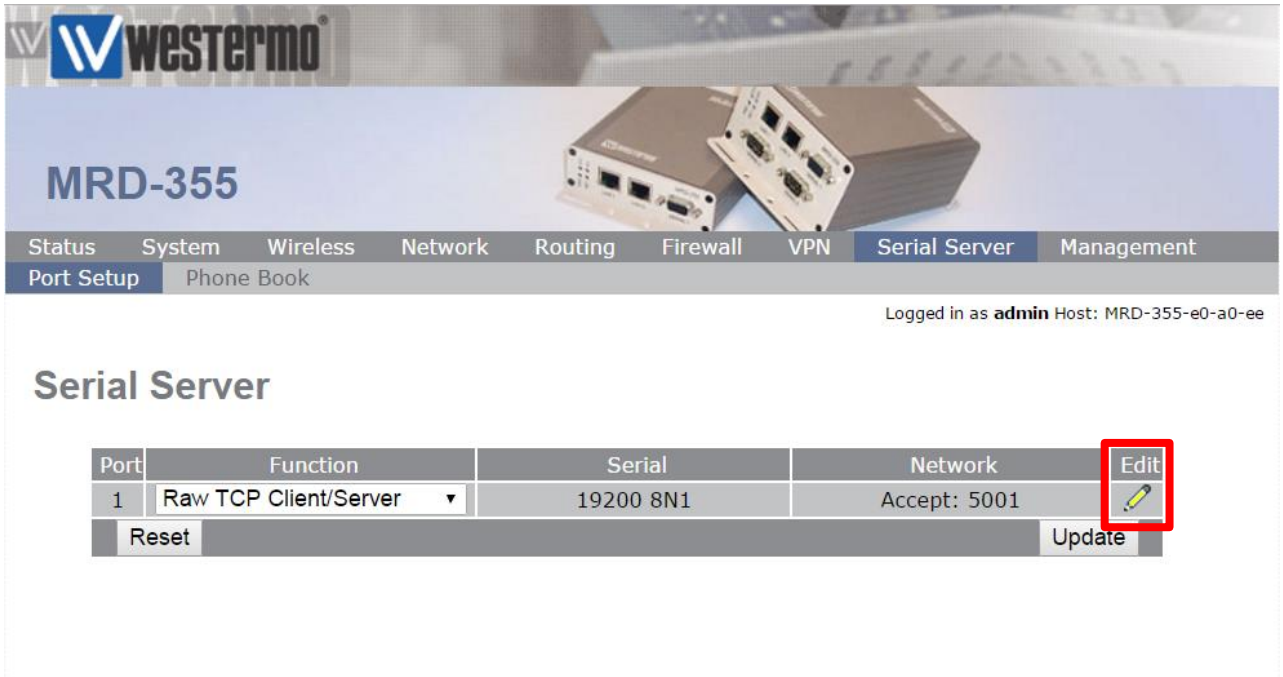
Requests for new application notes can be sent to the same address.

MRD-355 Router Configuration

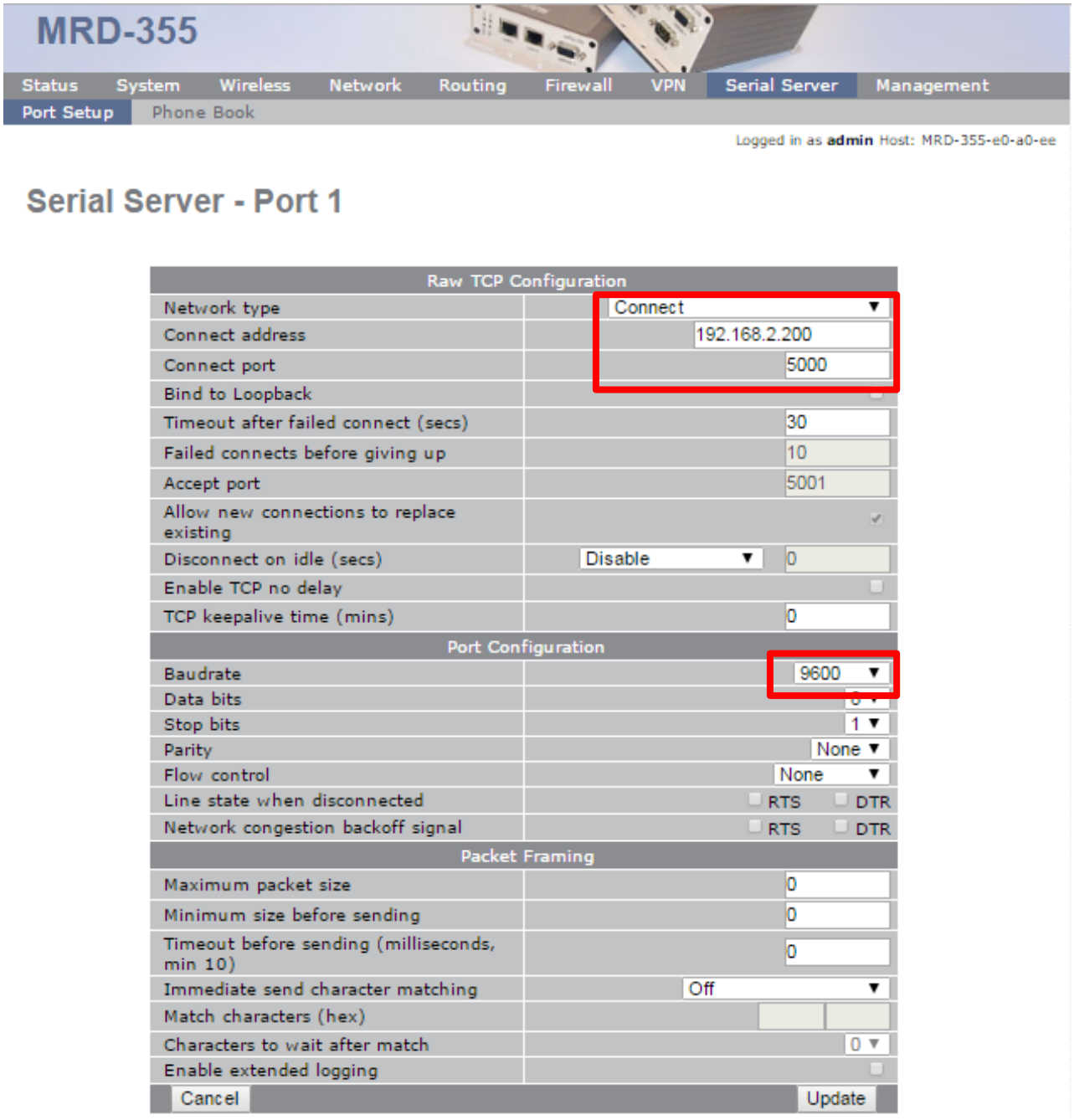
- Browse to Serial Server->Port Setup



- Select the dropdown function -> Raw TCP Client/Server and click update.



- Click on the pencil to change serial port configuration



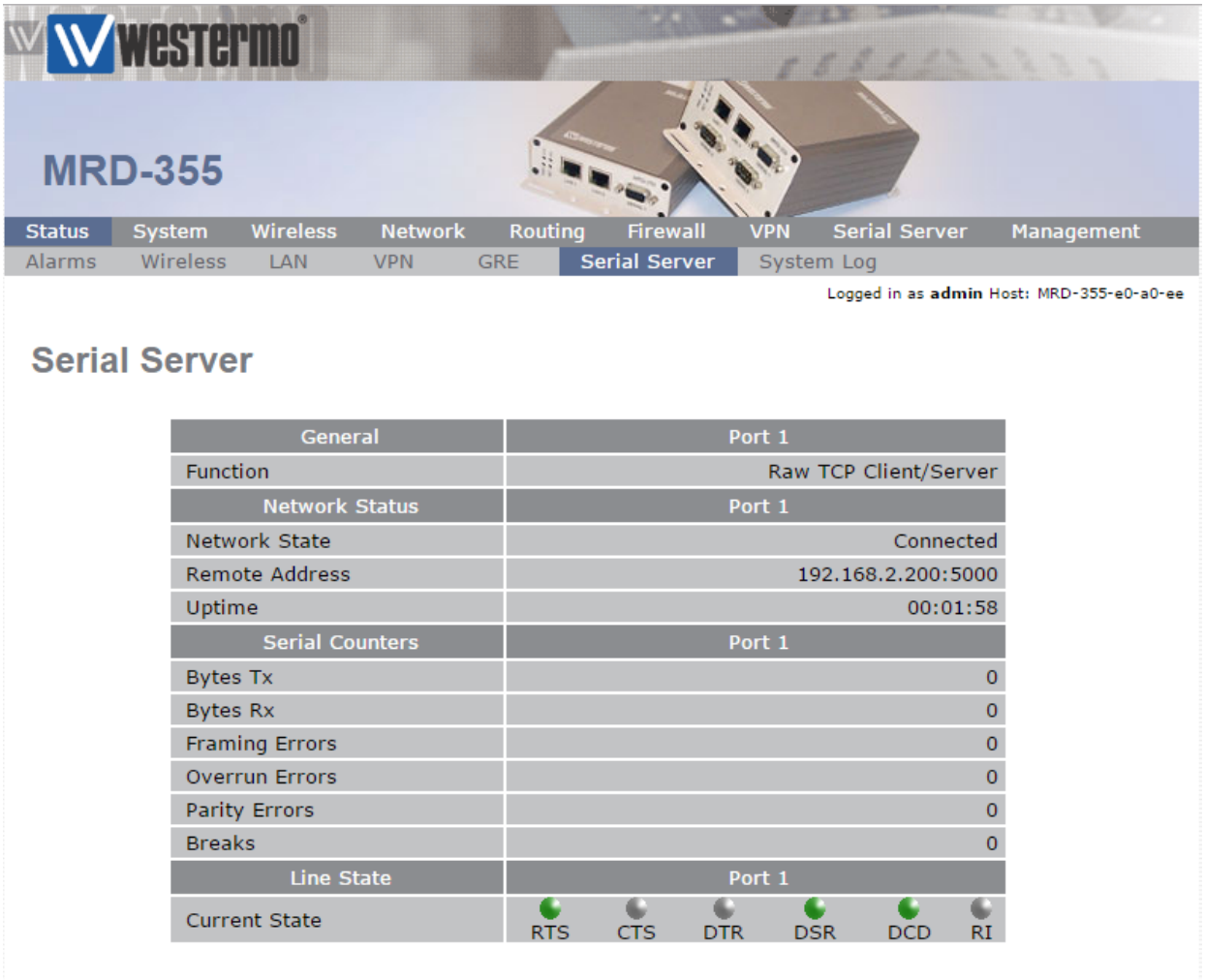
- Network type “Connect”
- Connect address “192.168.2.200” (This is the LAN IP of the remote ADSL-350)
- Connect port “5000”
- Buadrate “9600” (This can be changed to suit serial device)

Please note : The settings above are only used as an example. Please check your Serial equipment and configure accordingly. For more details about port settings please refer to page 14.

- Navigate to Status -> Alarms

- Serial Server should be Green with No Faults

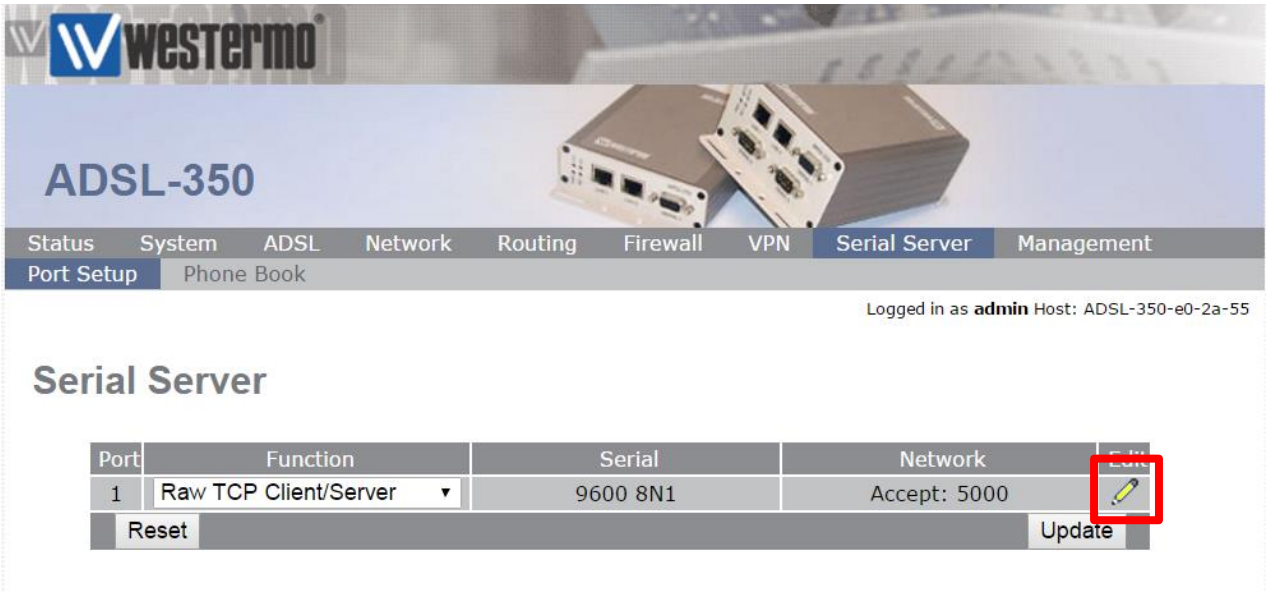
- Navigate to Status -> Serial Server



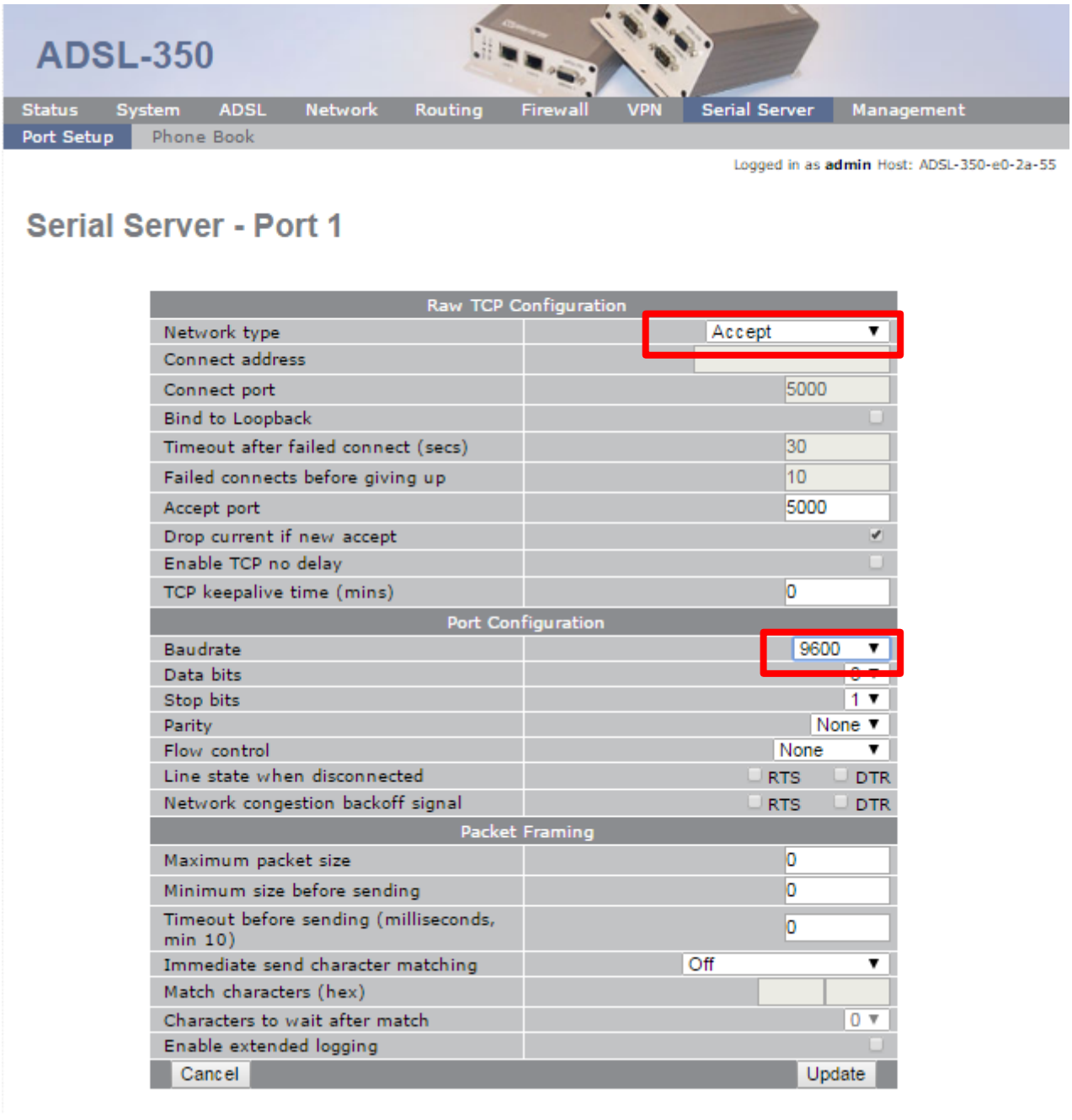
- This page displays the Current status of the Serial Port including the Uptime and data Transmitted/Received.

ADSL-350 Router Configuration

- Navigate to Serial Server -> Port Setup



- Select the function Raw TCP/Client/Server
- Click on the pencil to change serial port configuration



- Network type “Accept”
- Buadrate “9600”

Please note : The settings above are only used as an example. Please check your Serial equipment and configure accordingly.

- Navigate to Status -> Alarms

- Serial Server should be Green with No Fault

- Navigate to Status -> Serial Server

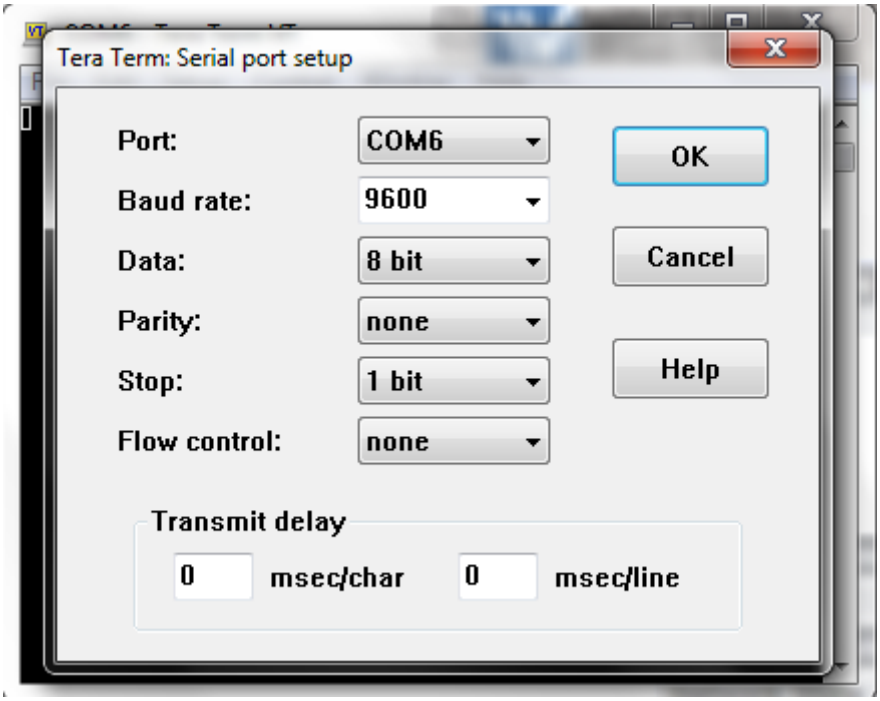
Serial Server

General	Port 1
Function	Raw TCP Client/Server
Network Status	**Port 1**
Network State	Connected
Remote Address	172.30.1.2:36663
Uptime	00:02:09
Serial Counters	**Port 1**
Bytes Tx	0
Bytes Rx	0
Framing Errors	0
Overrun Errors	0
Parity Errors	0
Breaks	0
Line State	**Port 1**
Current State	RTS CTS DTR DSR DCD RI

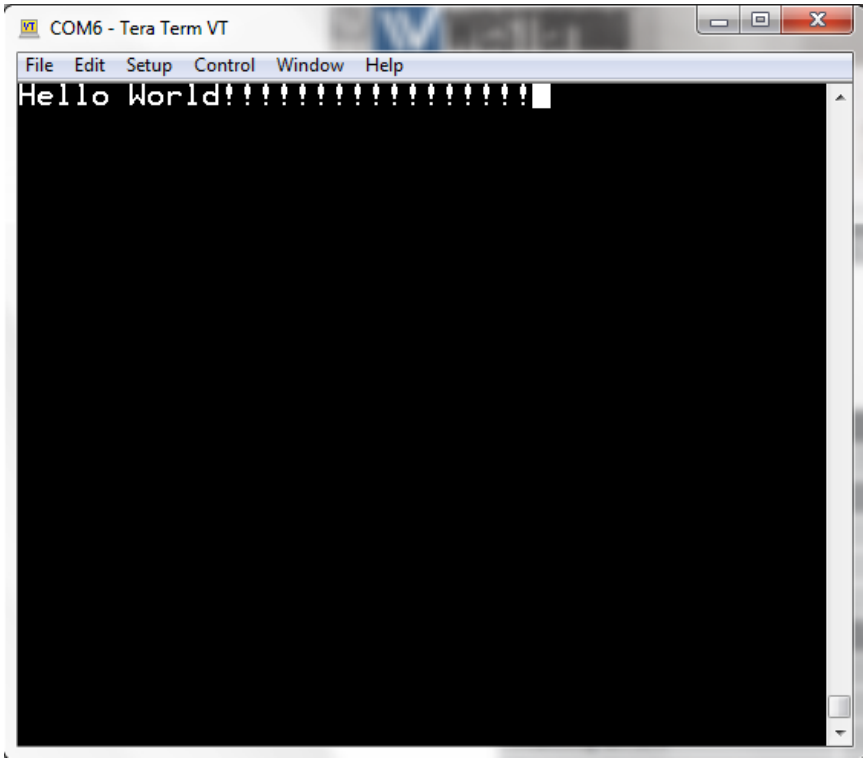
- This page displays the Current status of the Serial Port including the Uptime and data Transmitted/Received.

Testing

- Open up Terminal Software program with laptop/PC connected at either end

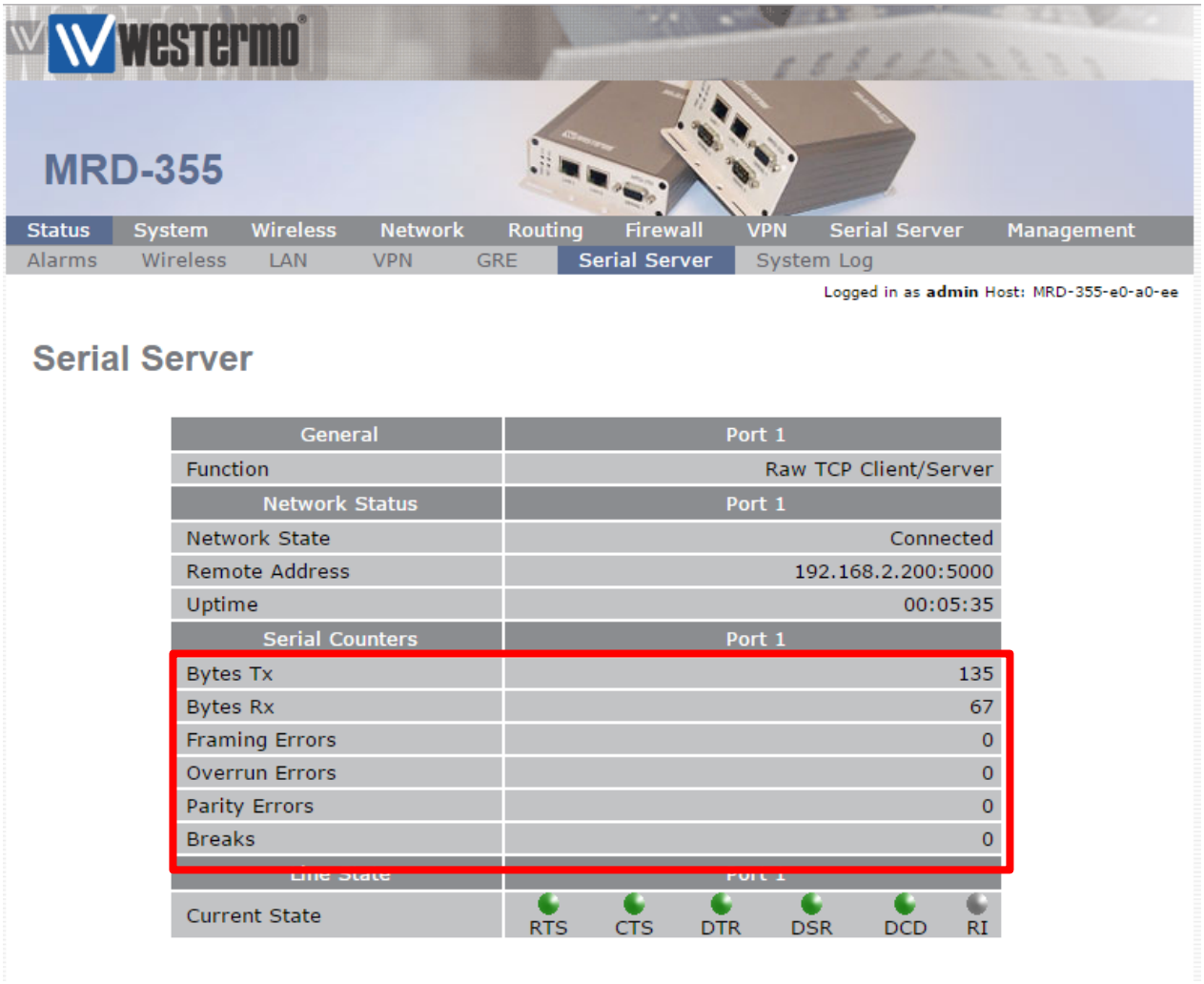


- Ensure that the correct port is selected along with the Serial configuration settings
- Then type something in the terminal window. You should see this being displayed on the other end device terminal software screen.



- On the Status->Serial server you can now see that data is being transmitted and received on both MRD and ADSL-350

MRD-355 Router



- This page displays any errors or breaks in data, as well as Bytes Transmitted and Received.

ADSL-350 Router

Serial Server

General	Port 1
Function	Raw TCP Client/Server
Network Status	**Port 1**
Network State	Connected
Remote Address	172.30.1.2:41422
Uptime	00:06:07
Serial Counters	**Port 1**
Bytes Tx	67
Bytes Rx	135
Framing Errors	0
Overrun Errors	0
Parity Errors	0
Breaks	0
Line State	**Port 1**
Current State	RTS CTS DTR DSR DCD RI

- This page displays any errors or breaks in data, as well as Bytes Transmitted and Received.

Configuring the port function

The following options can be set for the Raw TCP Client/Server:

Network type The Raw TCP serial server can be configured for three different network modes:

> **Accept** The serial server will listen for TCP connections on the specified port number.
> **Connect** The serial server will establish a TCP connection to the specified address and port number.
> **Accept and Connect** The serial server will normally listen for TCP connections on the specified port number, however, it data is received at the serial port and no connection exists, it will attempt to establish a connection to the specified address and port number.

Connect address For **Connect** or **Accept and Connect** network modes, this is the address the server will attempt to connect to. The address entered should be in IPv4 decimal dotted notation.

Connect port For **Connect** or **Accept and Connect** network modes, this is the TCP port number the server will attempt to connect to. The value entered should be a valid TCP port number.

Bind to Loopback Check to bind the service to the loopback port. Refer to section 8.3 for details on configuring the loopback interface.

Timeout after failed connect For **Connect or Accept and Connect** network modes, if a connection request has failed, the server will wait the amount of time (in seconds) specified in this field before attempting another connection request. While a short time-out may cause the connection to be established more quickly, it may also cause greater network traffic if the remote host is unavailable and repeated attempts fail.

Failed connects before giving up For **Accept and Connect** network modes, the serial server will attempt to establish a connection for the number of times specified in this field be giving up and waiting for a connection to be accepted.

Accept port For **Accept** or **Accept and Connect** network modes, this is the TCP port number on which the server will listen for connections.

Drop current if new accept For **Accept** or **Accept and Connect** network modes, if a TCP connection is currently active on the serial server, and a new connection request is accepted, this field determines the action that will be taken. If set, the new connection will become the active connection and the existing connection will be closed. If not set, the existing connection will remain active and the newly received connection will be closed.

Enable TCP no delay Check to enable TCP no delay. TCP normally uses Nagle's algorithm to combine a number of small outgoing messages, to be sent all at once. Specifically, as long as there is a sent packet for which the sender has not received an acknowledgement, the sender should keep buffering its output until it has a full packet's worth of output, so that output can be sent all at once. For serial communications this can introduce delays which can interfere with the operation of serial protocols. Enabling this option will decrease the efficiency of the TCP communications as the number of packets transmitted will increase. It is for these reason that it is recommended not to enable this option unless the application requires it to be enabled. It could also be that the Raw UDP option may be more suitable.

TCP keepalive time When set to a value greater than 0, TCP keep-alives will be enabled for connections, with probes sent at the frequency specified (minutes). This may assist in detecting failed connections.

Revision history for version 1.0

Revision	Rev by	Revision note	Date
00			
01			
02			
03			
04			
05			
06			
07			

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