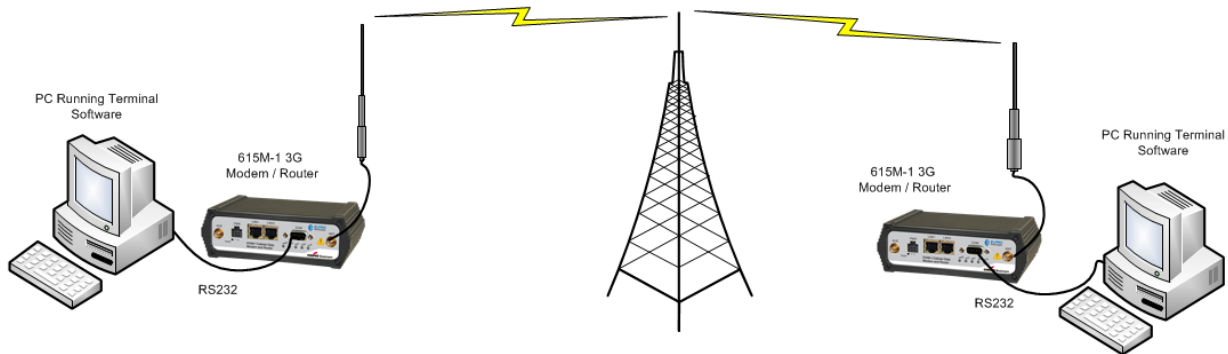


615M-1 Serial Client & Serial Server

The following application note demonstrates the configuration of the ELPRO 615M-1 modem utilizing the **Serial Client and Serial Server** for a point to point RS232 connection. The 615M-1 supports RS232 Serial Client and Serial Server for point to point communications and also with the use of the 605M-R1 Cellular Serial Router it will allow for Point to Multipoint serial communications for up to 50 devices. This application note only covers the point to point connection without the use of a 605M-R1 Cellular serial router. It does not show how to provision the Cellular PPP Connection; details on this can be found in the quick start guide for the 615M-1.

Network Example - Overview

The diagram below depicts a typical connection for a Serial Client and Serial Server connection between 2 x 615M-1 Cellular Modems. All Cellular connections must be Fixed Cellular (PPP) IP Addresses and can be either Public or Private. This application note will explain the use of Private Fixed Cellular IP addresses.



When looking at the configuration of the modems a Serial Client will establish a connection to the Serial Server on a defined port. A Serial Server will never establish a connection, it will only ever accept a connection. With this in mind typically the Serial Server will be located at a central location in the event the configuration requires more than 1 serial client device.

Configuration Overview

The ELPRO 615M-1 **Serial configuration** is located under the *Serial* webpage link. At the central location (Serial Server) navigate to the serial page.

Serial	
Show Version on Boot	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Electrical Interface	<input checked="" type="radio"/> RS-232 <input type="radio"/> RS-485
Baud rate	9600
Data bits	<input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input checked="" type="radio"/> 8
Stop bits	<input checked="" type="radio"/> 1 <input type="radio"/> 2
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Inter Character Timeout	50 (1-65535) ms
DTR	AT&D0
Flow Control	None
DSR	Always Off
DCD	Connect On
External PAD Settings	
PAD Mode	<input checked="" type="radio"/> Server <input type="radio"/> Client
Pad Protocol	tcp
Incoming Friendly IP Address	10 . 100 . 1 . 70
Server Session Closed On	New Client
Server Inactivity Timeout	0 TCP-min/UDP-sec (0=disabled)
Server Hard Timeout	0 TCP-min/UDP-sec (0=disabled)
Incoming Port	5002 (1-65535)
Outgoing Port	0 (1-65535)
Remote Host IP Address	0 . 0 . 0 . 0
TCP Client Keep Alive	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
TCP Client Keep Alive Time	7200 (60-65535 seconds)
TCP Client Keep Alive Probes	9 (1-10)
TCP Client Keep Alive Intvl	75 (10-100 seconds)
PAD Log	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
<input type="button" value="Cancel"/> <input type="button" value="Save"/>	

Select RS232 for Electrical Interface

Set Baud Rate, Data/Stop Bits and parity to suit application, in this example we used 9600,8,1,N

DTR Control was left at AT&D0 which ignores the DTR, The DTR control is used by the Client to establish a connection to the server. Since this modem is selected as Server it can be left at Default of Ignore DTR.

Under the External PAD Settings select Server and TCP for the PAD Protocol

Incoming Friendly IP address will be the remote Modem (Serial Client) Cellular IP address. Which can be found on the remote modems *Unit Status* Page.

Incoming Port. Both the Serial Server and Serial Client must utilize the same TCP port. Port 5002 is used for this example.

Once this configuration is complete press Save button at bottom of the serial webpage.

At the Remote location this modem will be configured as the Serial Client which will establish the connection to the Serial Server.

Select RS232 for Electrical Interface

Set Baud Rate, Data/Stop Bits and parity to suit application, in this example we used 9600,8,1,N

This application note is demonstrating 2 PC's connecting their terminal sessions together, When looking at serial communication devices there are two types of devices DTE and DCE. PC's are DTE devices which by default the DTR line (Pin 4) is ON. For DTE devices change the DTR drop down menu to be AT&D9 which will connect to the server when DTR is ON. When DTR is OFF a connection will not be made or will close connection if in session. For DCE Devices such as other Modems or ELPRO 115S modules, DTR is OFF by default so the setting would need to be AT&D8 which will connect when DTR is ON.

Further details can be found via the help link on the serial page.

Under the External PAD Settings select Client and TCP for PAD Protocol.

Outgoing Port must match that of the Serial Server. Both the Serial Server and Serial Client must utilize the same TCP port. Port 5002 is used for this example.

Serial	
Show Version on Boot	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Electrical Interface	<input checked="" type="radio"/> RS-232 <input type="radio"/> RS-485
Baud rate	9600
Data bits	<input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input checked="" type="radio"/> 8
Stop bits	<input checked="" type="radio"/> 1 <input type="radio"/> 2
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Inter Character Timeout	50 (1-65535) ms
DTR	AT&D9
Flow Control	None
DSR	Always Off
DCD	Connect On
External PAD Settings	
PAD Mode	<input type="radio"/> Server <input checked="" type="radio"/> Client
Pad Protocol	tcp
Incoming Friendly IP Address	0 . 0 . 0 . 0
Server Session Closed On	New Client
Server Inactivity Timeout	0 TCP-min/UDP-sec (0=disabled)
Server Hard Timeout	0 TCP-min/UDP-sec (0=disabled)
Incoming Port	0 (1-65535)
Outgoing Port	5002 (1-65535)
Remote Host IP Address	10 . 100 . 1 . 72
TCP Client Keep Alive	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
TCP Client Keep Alive Time	60 (60-65535 seconds)
TCP Client Keep Alive Probes	9 (1-10)
TCP Client Keep Alive Intvl	75 (10-100 seconds)
PAD Log	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
<input type="button" value="Cancel"/> <input type="button" value="Save"/>	

Configure the Remote Host IP address with the Serial Servers Cellular IP address, which can be found on the *Unit Status* page.

Enable the TCP Client Keep Alive, which will send an Alive Packet from the Client to the Server periodically in order to detect a broken connection. The modem will automatically try to re-establish the connection if necessary.

When the configuration is completed press the save button at the bottom of serial webpage.

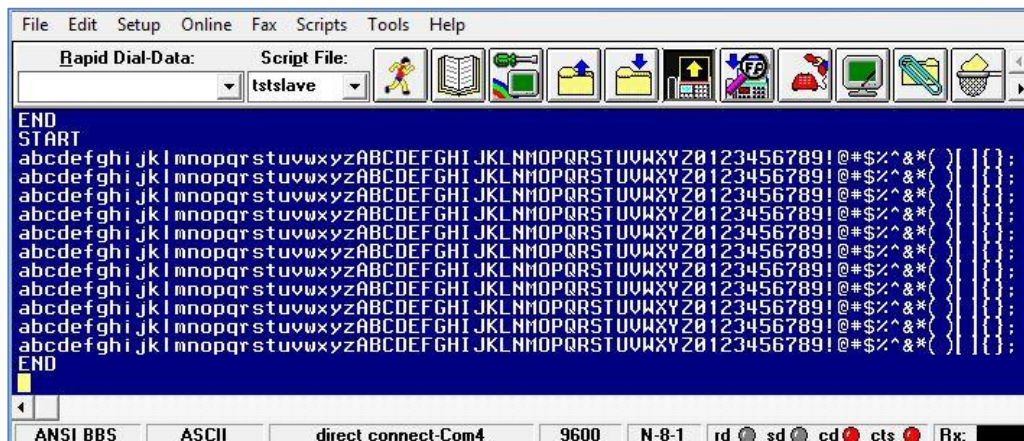
Serial Communication tests:

PPP	
PPP Status	UP
PPP IP Address	10.100.1.72
PPP Subnet Mask	255.255.255.255
PPP P-t-P	10.100.1.73
Primary DNS	139.130.4.4
Secondary DNS	203.50.2.71

When both modems have been programmed confirm under the Unit Status page of the modems that the PPP status is **UP**. This indicates that there is a Cellular connection. The PPP IP Address is the Cellular IP Address provided from the Carrier and is the IP address used in the Serial Page Configuration for the Incoming Friendly IP Address and the Remote Host IP Address.

At both Serial Server and Serial Client Modems connect a straight through serial cable with minimum Pins 2,3,4 & 5 connected. Pin 4 is the DTR Line which is required in the Client modem to establish a connection.

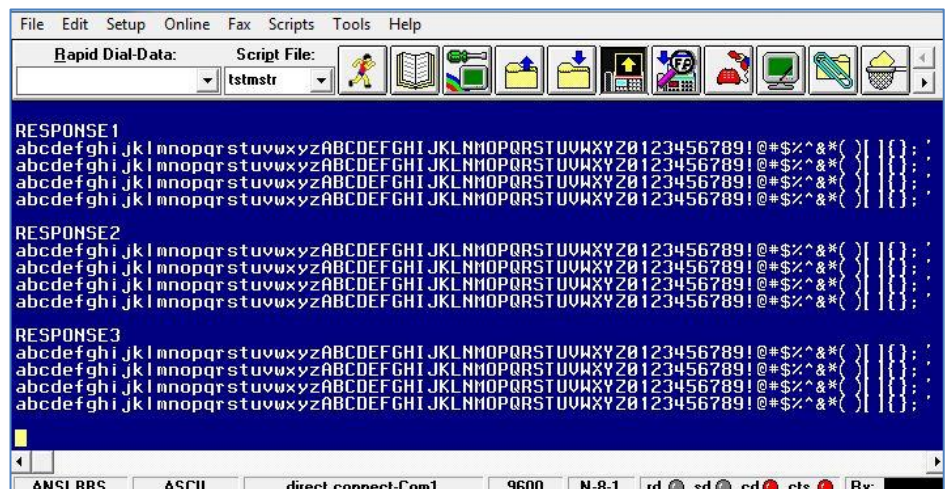
When serial cables have been connected, open up a Terminal session on both PC's, connect to the modems and serial data should be able to be passed from one end to the other.



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File Edit Setup Online Fax Scripts Tools Help
Rapid Dial-Data: Script File:
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
END
START
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
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abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
END
ANSI BBS ASCII direct connect-Com4 9600 N-8-1 rd sd cd cts Rx:

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File Edit Setup Online Fax Scripts Tools Help
Rapid Dial-Data: Script File:
RESPONSE 1
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
RESPONSE 2
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
RESPONSE 3
abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*(){}|:;
ANSI BBS ASCII direct connect-Com1 9600 N-8-1 rd sd cd cts Rx:

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