NetCommWireless

PAD Mode Configuration

How to transfer arbitrary asynchronous serial data over the cellular network using the NetComm NTC-6000 Series M2M Router

28th June 2012

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Introduction

The NetComm NTC-6000 Series M2M Router supports PAD (Packet Assembler and Disassembler allows the transport of arbitrary asynchronous serial data over the packet switched (IP) cellular network to a remote host computer or server. Data received on the router's V.24 interface (serial port) can be encapsulated into TCP or UDP packets and sent to a remote host or server. Likewise, data contained in TCP or UDP packets received from a remote host/server may be forwarded to the router's V.24 interface (serial port).

There are two operation modes in the NTC-6000 PAD mode and they are:

- **The Server Mode**: this is where clients make an inbound connection to the router
- **The Client Mode**: this is where the NTC-6000 cellular router will make a connection to a remote host/server.

The purpose of this whitepaper is to demonstrate how arbitrary asynchronous serial data can be transferred over the packet switched (IP) cellular network using the NetComm NTC-6000 series M2M Cellular Router in a simulated test environment.

NTC-6000 PAD Mode Configuration Example

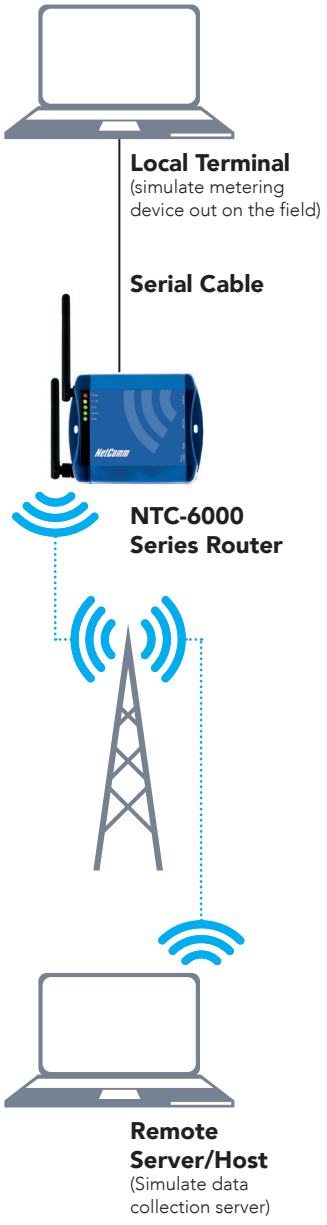

Figure 1: NTC-6000 PAD Mode in Action

Scenario

To transfer a single session of arbitrary serial data from a local terminal that connects to the serial port of NTC-6908T to a remote server via the packet switch cellular network and vice versa using PAD mode.

Equipment and tools

- 1 x NTC-6908T with power adapter (12VDC 1.5A) and 3G antennas
- 1 x DB9 RS232 Serial cable
- 1 x PC with serial port – act as the local terminal that connects to the NTC-6908T serial port
- 2 x Telstra SIM with Telstra.Corp IPWAN Service enabled
- 1 x PC with Internet Connection and has WAN IP address that in the same IP WAN subnet – act as the remote host or server for data collection
- 1 x Ethernet Cable – for initial device configuration

Device Configuration

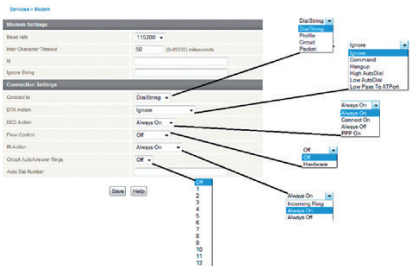

Figure 2: *Configure PAD – Server mode in NTC-6000*

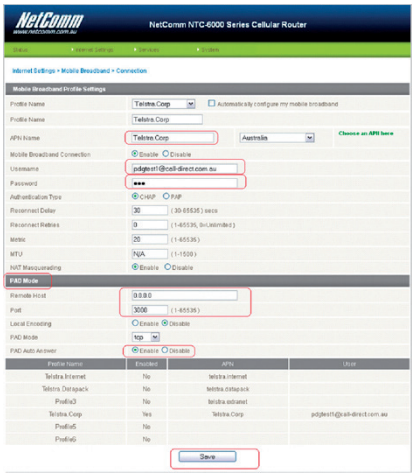

Figure 3: *NTC-6000 configured as a PAD mode Server under a Telsra.Corp APN Profile*

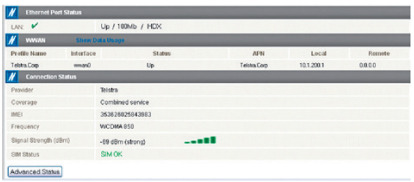

Figure 4: *NTC-6000 WAN IP address for PAD Mode Server Mode Test*

PAD mode on NTC-6000 series M2M router precondition:

Router must have a static accessible WAN IP address.

Step 1: Physical connection

Insert the Telstra SIM into the SIM tray of the NTC-6908T; connect the power, console cable and the Ethernet cable to the NTC-6908T, power on the NTC-6908T Cellular Router.

Step 2: Restore the device to factory default settings

Connect the Ethernet cable to the local terminal PC and open a web browser (IE or Firefox), log into the NTC-6908T web configuration page.

- http://192.168.20.1
- Default user name: **root**
- Default password: **admin**

Navigate to **System > Load/Save > Setting**: Click **Restore** to restore the device to factory default settings before configuring the following PAD mode settings.

Step 3: Verify and record the default "Modem" setting of the NTC-6908T

Navigate to **Services > Modem**, the default modem settings are shown in Figure 2.

Step 4: Configure PAD mode setting NTC-6908T

In the following example, the NTC-6000 is configured as a PAD mode server with TCP port number 3000 where it will accept client connection from any host IP address. The PAD mode settings is configured under a APN profile, you will need to disable the APN profile first, configure the PAD mode setting in that APN profile, then enable the profile to apply your PAD mode configurations.

Step 5: Record the NTC-6000 IP WAN address

Navigate to the system "status" page and record the NTC-6000 WAN IP address. In this case, the WAN IP address of the router is: 10.1.200.1

At this point, the NTC-6000 with WAN IP address: 10.1.200.1 is configured as a PAD mode server listening to inbound traffic on TCP port number 3000; it will accept client connection from any host IP address. (If you have a specific IP address entered in the remote host field, it will accept client connection from the designated IP address only.)

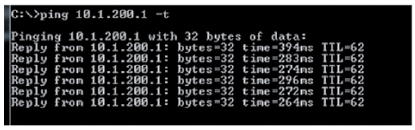

Figure 5: *Verify ping connectivity*

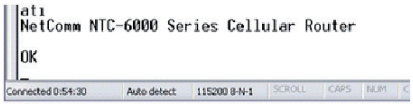

Figure 6: *NTC-6000 Local Console Connection*

Figure 7: *Telnet to NTC-6000*

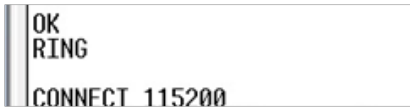

Figure 8: *PAD mode session is up in NTC-6000*

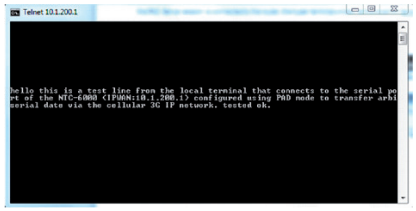

Figure 9: *the remote server collection serial data from the local terminal*

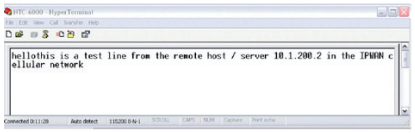

Figure 10: *The local terminal receiving data stream from the remote server/host computer*

Step 6: Verify NTC-6000 PAD Mode Server Connection

a. Verify ping connectivity with the remote host IP: 10.1.200.2 before testing PAD mode.

b. Open a Hyper Terminal on the local terminal computer with the following baud rate settings:

115200bps, 8, None, 1, None.

And verify its serial connection by typing in the following AT commands:

ati (see Figure 6)

Open a telnet session from the remote host computer and telnet to the WAN IP address of the NTC-6000 Cellular Router: telnet 10.1.200.1: 3000. (see Figure 7) Once the PAD Server session is connected to the router, the hyper terminal window at the local PC terminal will show “Connect 115200”. (see Figure 8)

Once the connection is up, this means anything that you type in the telnet session will be outputted in the NTC-6000 local hyper terminal session and vice versa. This action simulates a data logger /metering device connected to the NTC-6000 Cellular Router.

The NTC-6000 is now behaving like a transport vehicle providing a transparent connection to the serial interface of the NTC-6000 cellular router, where any data passing though will be forwarded to the serial port (See Figure 9), and any data from the serial port of the NTC-6908T will pass through the router via the cellular network to the remote host/server terminal. (See Figure 10)

Conclusion

The NTC-6000 PAD Mode - Server Mode session is now up and running. This completes the demonstration of sending and receiving arbitrary asynchronous serial data over the cellular network using the NetComm NTC-6000 Series M2M Router.

About NetComm Wireless

NetComm Wireless Limited (ASX: NTC) is a leading developer of innovative broadband products sold globally to major telecommunications carriers, core network providers and system integrators. For 30 years NetComm has developed a portfolio of world first data communication products, and is a respected global provider of 3G and 4G wireless devices servicing the major telecommunications carrier, Machine-to-Machine (M2M) and Rural Broadband markets. NetComm's products are designed to meet the growing needs of today's data-intensive home, business and industrial broadband applications and customized to optimize performance in line with global network advancements. Headquartered in Sydney, Australia, NetComm has offices in New Zealand, North America and the Middle East.

For more information about NetComm visit:
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