1. **Configure the PortServer TS serial ports in Realport, connected behind a Digi Connect Wan 3G with port forwarding acting as an internet gateway.**

   Objective: Step by step instructions to configure the PortServer and the Digi Connect Wan 3G to allow access via Realport to several serial devices from the Internet.

   1.1 Software Requirements

   - Digi Device Discovery Utility
   - PuTTy or any Terminal application

   1.2 Hardware Requirements

   - **Digi Connect WAN 3G** with a Internet enabled APN allowing incoming connections
   - **Digi PortServer TS**
   - Serial device(s) or a laptop computer / loopback adapter for testing purposes.

2. **Theory of Operation**

Communications applications such as SCADA polling, remote printing, or other hots-initiated tarffic can be sent over the cellular network to the remote device or devices via the Digi Connect WAN 3G. The Digi Connect WAN 3G forwards IP traffic, in this case Digi's patented Realport protocol destined for a specific port or port range on the cellular interface, to a private IP address on the ethernet "side" of Digi Connect WAN 3G.

This process uses Network Address Translation (NAT) where only the mobile IP address is visible to the outside and TCP/UDP port forwarding entries direct traffic from the mobile IP address of the Digi Connect WAN 3G to the appropirate device.

For example, an application on the host computer communicates via COM ports. The Realport COM port redirector driver is configured to use the mobile IP address of the rmote Digi Connect WAN 3G. A port forwarding entry on the Digi Connect WAN 3G direct the realport traffic, which uses TCP Port 771, to the Digi serial server.

3. **Diagram and Setup Instructions**
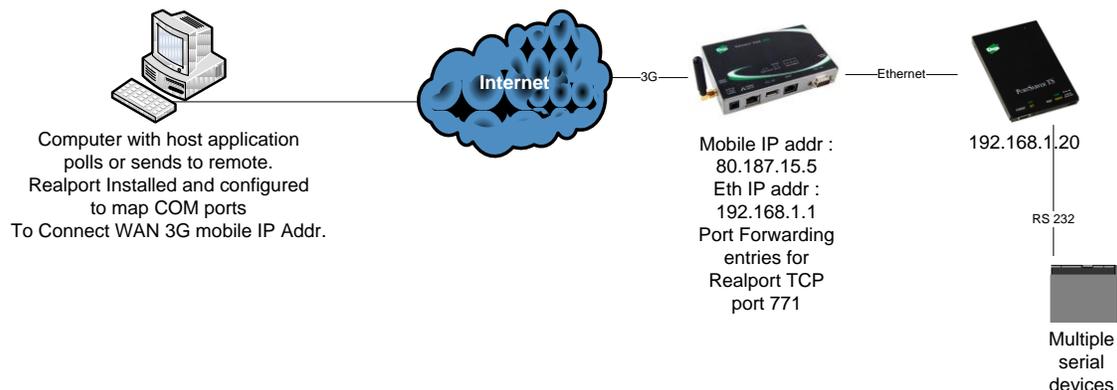
Computer with host application polls or sends to remote. Realport Installed and configured to map COM ports To Connect WAN 3G mobile IP Addr.

Mobile IP addr : 80.187.15.5
Eth IP addr : 192.168.1.1
Port Forwarding entries for Realport TCP port 771

192.168.1.20

RS 232

Multiple serial devices

1) **PortServer TS Configuration :**

   a) Connect the PortServer TS on the same network as the computer to be able to access the web interface, using the Digi Device Discovery locate the device on the network and double click it's IP Address

   b) On the web interface, navigate to **Configuration>Serial Ports**, and change the profile of each ports to "**Realport**" then click Apply.
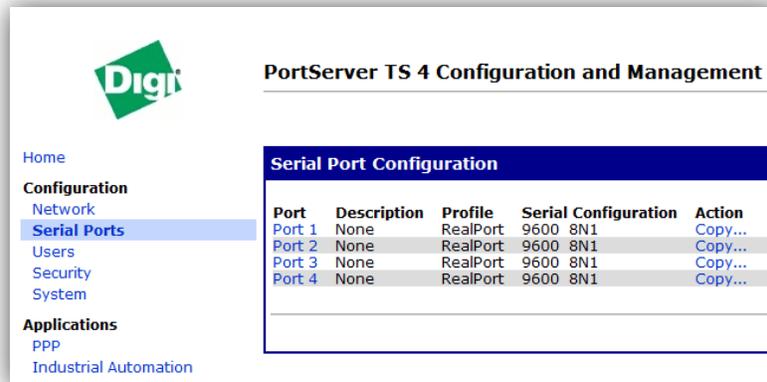
   c) Next, navigate to **Configuration>Network** and select "**Use the Following IP address**" and enter a fixed ip address, in this example :

      a. IP Address : **192.168.1.20**

      b. Subnet Mask : **255.255.255.0**

      c. Default Gateway : **192.168.1.1** (This is the IP address of the Digi Connect WAN 3G)

   d) Click **Apply.** The Configuration of the PortServer TS is done and connection to it will be lost due to the new network settings.
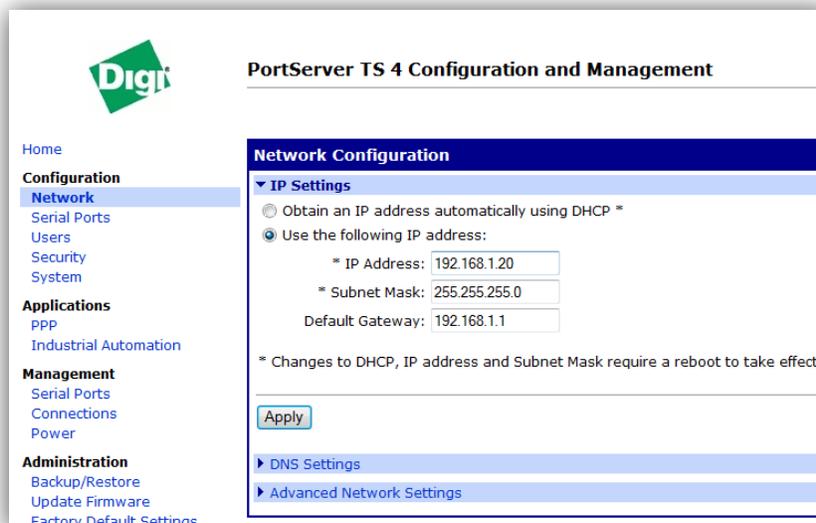
2) Connect WAN 3G Configuration:

a) Connect the Digi Connect Wan 3G on the same network as the computer to be able to access the web interface, , using the Digi Device Discovery locate the device on the network and double click it's IP Address

b) On the web interface, make sure the mobile settings are configured properly, 3G connection is established and the device obtained an IP address (**Administration > System Information > Mobile > Mobile Statistics**) if not, go to **Configuration > Mobile** and enter the settings matching the SIM cards, click apply and reboot.

Mobile Statistics	
IP Address:	80.187.15.5
Primary DNS Address:	10.74.210.210
Secondary DNS Address:	10.74.210.211
Data Received:	2329 bytes
Data Sent:	1687 bytes
Idle Resets:	0
Inactivity Timer:	3600 seconds (receiving)
	0 seconds (sending)

c) **! Warning ! Make sure to note down the mobile IP address of the device as it will be needed at the end of this process and access to the unit via Ethernet will not be possible as it will be connected to the PortServer device**

d) Navigate to **Configuration>Network Services Settings** and uncheck the "**Enable Realport**" box (This will disable the Connect Wan 3G listening on the Realport TCP port) and click **Apply**.

Network Configuration

▸ Ethernet IP Settings
▸ DHCP Server Settings
▾ **Network Services Settings**

☑ Enable Device Discovery (ADDP)		
☑ Enable Encrypted RealPort	TCP Port: 1027	☐ Enable TCP Keep-Alive
☐ Enable RealPort	TCP Port: 771	☐ Enable TCP Keep-Alive
☑ Enable Network Management Protocol (SNMP)	UDP Port: 161	
☑ Enable Secure Shell Server (SSH)	TCP Port: 22	☑ Enable TCP Keep-Alive
☑ Enable Telnet Server	TCP Port: 23	☑ Enable TCP Keep-Alive
☑ Enable Web Server (HTTP)	TCP Port: 80	
☑ Enable Secure Web Server (HTTPS)	TCP Port: 443	

Apply

e) Navigate to **Configuration>Ip Forwarding Settings**, in the "**Current Settings for Nat Instance 1:**" check the "**Enable Network Address Translation (NAT)**" box and chose NAT Public Interface **mobile0**

f) Scroll down to the "**Forward TCP/UDP/FTP connections from external networks to the following internal devices (you may configure up to 64 forwarding rules):**" section and configure the following :

    a. **Enable**
    b. Protocol : **TCP**
    c. External Port : **771**
    d. Forward to Internal IP Address : **192.168.1.20** (*PortServer TS IP address*)
    e. Forward to Internal Port : **771**
    f. Range Port Count : **1**

g) Click **Add**

h) Click **Apply**

Current Settings for NAT Instance 1:

☑ Enable Network Address Translation (NAT)
NAT Public Interface: mobile0 ▾

NAT Table Size Maximum: 256   entries (64-1024)

☐ Enable Loose Outbound IP Fragment Translation/Forwarding

☐ Enable DMZ Forwarding to this IP address: 0.0.0.0

Forward protocol connections from external networks to the following internal devices:

Enable	Forward This Protocol	Forward To Internal IP Address
☐	GRE	0.0.0.0
☐	ESP	0.0.0.0

Forward TCP/UDP/FTP connections from external networks to the following internal devices
(you may configure up to 64 forwarding rules):

Enable	Protocol	External Port	Forward To Internal IP Address	Forward To Internal Port	Range Port Count	
☑	TCP	771	192.168.1.20	771	1	Remove
☐	FTP ▾	0	0.0.0.0	0	1	Add

Apply

i) Navigate to **Configuration>Network,** select "**Use the following IP address :**" and enter a fixe ip address matching the "Default Gateway" used on the PortServer TS, like in this example :

    a. IP Address : **192.168.1.1**
    b. Subnet Mask : **255.255.255.0**
    c. Default Gateway : **0.0.0.0**

j) Click **Apply**

Network Configuration

▾ **Ethernet IP Settings**

◯ Obtain an IP address automatically using DHCP *

◉ Use the following IP address:

    * IP Address: 192.168.1.1
    * Subnet Mask: 255.255.255.0
    Default Gateway: 0.0.0.0

☑ Enable AutoIP address assignment

* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.

Apply

<u>Now connect the Ethernet cable between the Digi Connect Wan 3G and the PortServer TS</u>

3) Realport Installation :

a) Launch the Realport installation from the computer (Realport drivers can be downloaded from Digi's ftp at : http://ftp1.digi.com/support/driver/40002549_E.zip)

b) Select **Add a New Device** and click **Next**
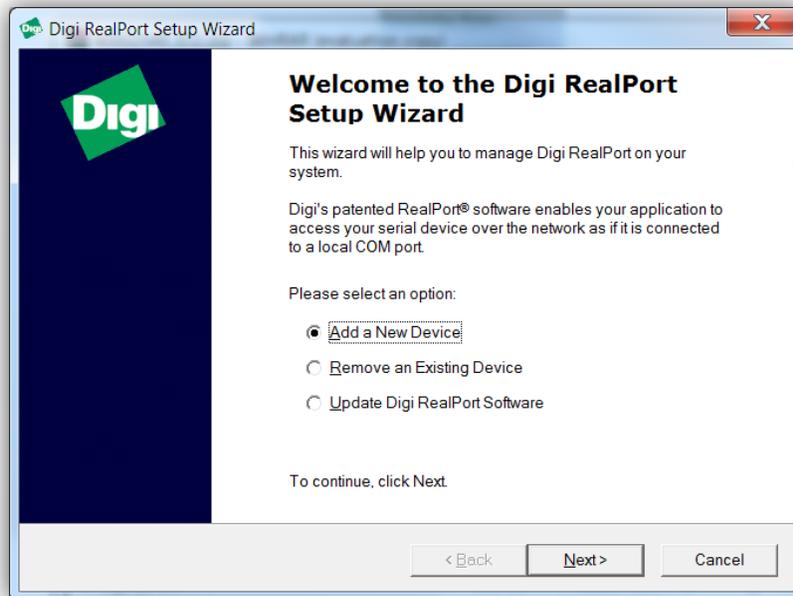
c) Wait for the scan to finish and chose "**Device not listed**", click **Next**
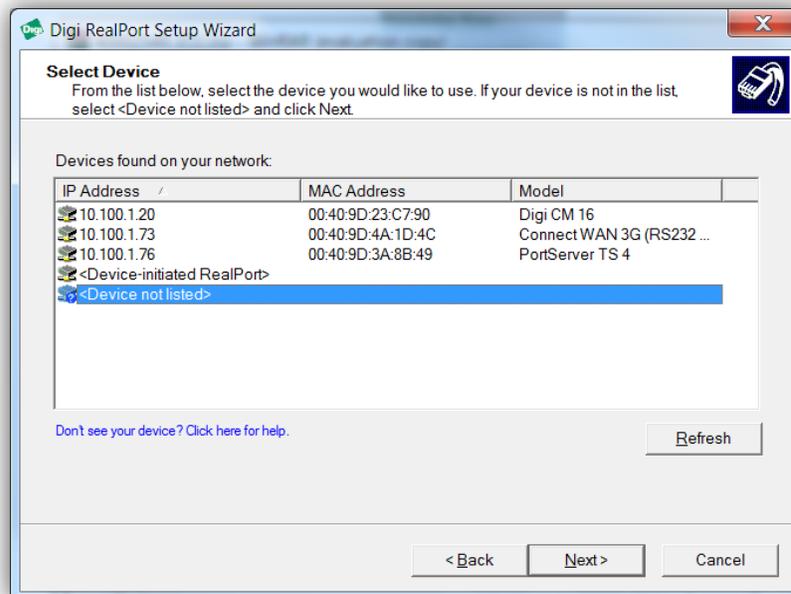
d) In the **Network Settings** section, select **IP** and enter the Mobile IP Address of the Digi Connect Wan 3G.

e) In the **COM Port Settings**, set the number of Ports to the PortServer's port numbers (Example, 4 for a TS4)

f) Click **Finish**
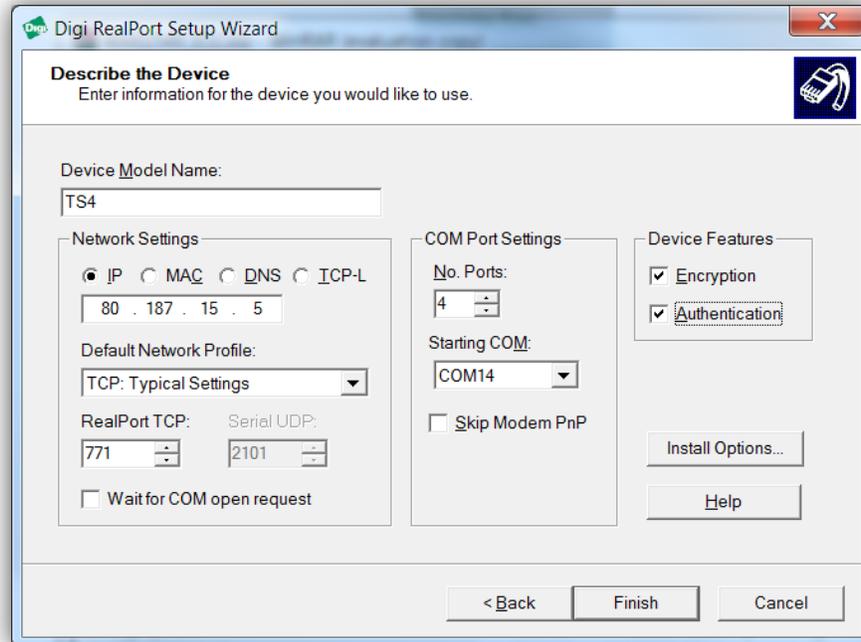
e) New serial ports will be installed, the first Realport COM (Starting COM) being Port 1 of the PortServer TS.

f) Connect the serial device, a loopback connector or another computer to any of the serial ports of the PortServer TS

g) Open the application for the serial device or any terminal application to the matching Realport COM port of PortServer TS, Data should be displayed.