

Using Digi Connect® WAN Remote Gateway with Bristol RTUs

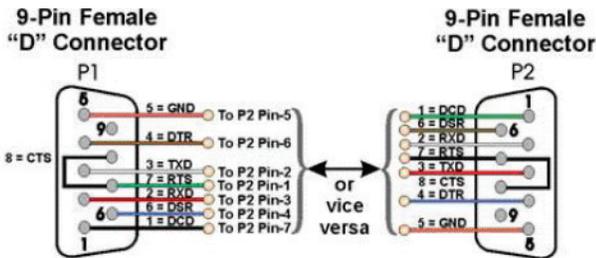
Digi Connect® WAN Remote Gateway RG

The Digi Connect WAN Remote Gateway RG is a serial-to-cellular gateway, available for use on either GSM or CDMA networks. The Digi Connect WAN products provide high performance wireless communications via GSM (GPRS/EDGE) or CDMA (1xRTT) networks for primary and backup connectivity to remote locations. The Digi Connect RG uses the Digi RealPort® technology to provide a virtual connection to serial devices over a TCP/IP network.

Bristol, Inc. has recently tested the Digi Connect WAN RG with the **ControlWave®** products. **Configuring Bristol ControlWave to work with a Digi Connect WAN RG**

The Digi Connect WAN RG will connect directly to a Bristol **ControlWave** or DPC via one of the RS-232 ports.

When connecting the Digi Connect WAN to a **ControlWave** RS-232 port, use the following cable:



Configuring Bristol ControlWave or DPC software to work with a Digi Connect WAN RG

Bristol, Inc. tested the Digi Connect RG to provide communications directly from the PC to the **ControlWave**. In this test, the serial port connected to the Digi Connect RG was configured as a BSAP Slave at 115,200 baud. The baud rate of the Bristol **ControlWave** port needs to be set to match the baud rate of the port as configured in OpenBSI. All other port settings on the **ControlWave** should be set appropriately.

Configuring the Digi RealPort software to work with the Digi Connect WAN RG

The following are the instructions from Digi on setting up the RealPort software.

Install RealPort for the first time

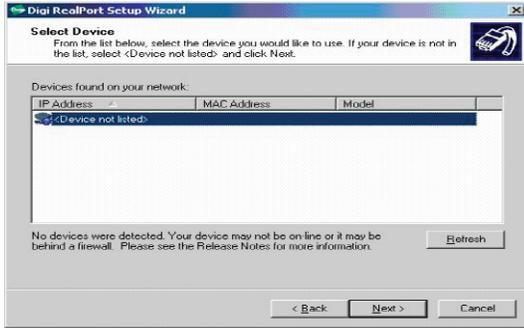
If you have installed a previous version of RealPort, go to the Windows Device Manager and uninstall it. You should use the latest version downloadable from the Digi support web site at www.digi.com/support (navigate to firmware upgrades for RG).

When you run Setup.exe for the first time, the Welcome screen for the Digi RealPort Setup Wizard is displayed. Click **Next**.

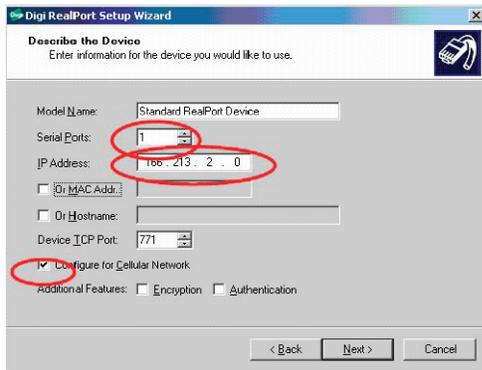


By default, RealPort probes your local subnet and finds attached Digi devices. Since the Digi Connect WAN RG or Digi Connect WAN VPN is remote, it will not be detected.

Select **<Device not listed>** and click **Next**.

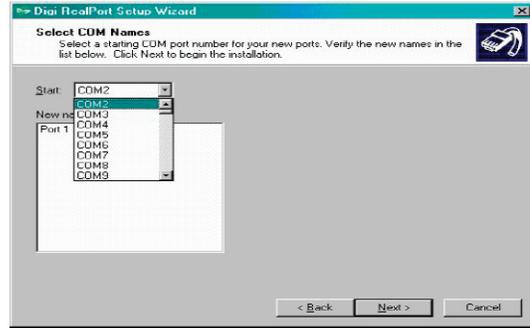


Set the **Serial Ports** to one (1) and enter the **IP Address** assigned to the Digi device. Currently, a DNS name cannot be used. Leave the **TCP Port** set at 771. Select to **Configure for Cellular the Networks**.



Associate this RealPort connection to any available COM port name, such as COM2 or COM31. The rest of this document assumes that you select COM2. You will only see available names reported by Windows. RealPort cannot “replace” an existing COM port; so, for example, COM1 will only be shown if you remove or disable the computer’s built-in serial port. Newer versions of RSLinx support up to 32 serial ports. Click **Next** to continue.

The RealPort drivers are now installed. Since Real-



Port will be connecting via the Public Internet to the Digi device, the actual installation may take several minutes. When installation completes, the following wizard screen is displayed.

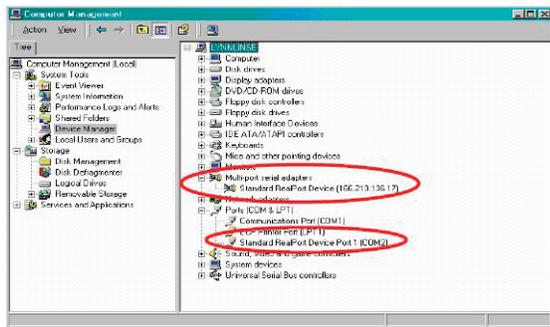


After the wizard completes, you need to configure RealPort to tolerate the wide-area network conditions of a cellular data link. Without these special settings, OpenBSI can likely detect the Bristol RTU, but it will frequently go offline.

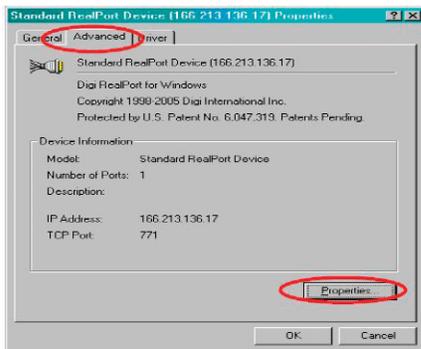
Configuring RealPort for Wide-Area Network conditions

Run the Windows **Device Manager** by right-clicking the **My Computer** icon on your desktop and selecting **Manage**. In the Device Manager display, you will notice two new pieces of “hardware:”

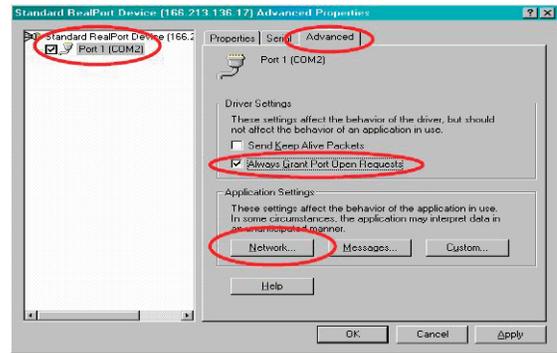
- Each device RealPort connects has an entry under **Multi-port serial adapters**; you adjust RealPort settings here.
- In addition, each RealPort “COM port” has an entry under **Ports (COM & LPT)**. OpenBSI treats the RealPort (COM2 in this case) as any other RS-232 port.



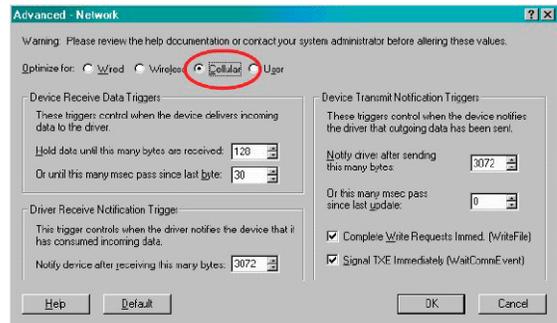
Right-click **Standard RealPort Device (166.213.136.17)** and select **Properties** in the drop-down menu. On the **Advanced** tab, click **Properties**.



Select **Port 1** and the **Advanced** tab once more. Enable **Always Grant Port Open Requests**; this allows RSLinx to always open the RealPort COM2 regardless of the actually availability of cellular access to the Digi Connect WAN RG or Digi Connect WAN VPN. Click **Network**.



On this final dialog screen, enable **Optimize for Cellular**. Click **OK** on all dialog boxes to return to the Windows **Device Manager**.



When you return to Windows Device Manager, it **may appear to “hang”**. Just be patient, and in a few minutes, it will refresh its screen and can be closed. This delay occurs because RealPort needs to close the old cellular connection, reconfigure, and reopen the connection.

Configuring OpenBSI

The example below assumes Digi RealPort has been configured to connect to the Digi Connect WAN RG or Digi Connect WAN VPN by COM2. If you had to use a different port number, then substitute that name into the examples below. The **ControlWave** Micro used in this example is configured for 115,200 baud.

Adding a new Line to OpenBSI

From NetView, right click on the NHP and select **Add > Line**, add a new BSAP Line named COM2, with the appropriate low and high slave addresses and baud rate. Set the **Polling rate** at 10 seconds. In the Advanced Parameters dialog box, set the **Link Level Timeout Period** to 9 seconds. The Polling Rate and Link Level Timeout settings made here are initial settings. These settings will be adjusted after communications has been established and tuned.

Tuning the Line

Because of the data latency inherent in cellular networks, it is necessary to have the Poll Period and the Link Timeout of the port set to much longer period than with a direct connection. In order to select these periods, some tuning will be required.

If statistics are available on the response time of Digi Connect RG over the cellular

network, use these statistics to choose these settings (to gather these statistics, a program such as PortMon can be used. PortMon is a free software package that performs the function of a data line monitor).

If statistics are not available, then start at a conservative number for the Poll Period (10 seconds is a reasonable number) and Link Timeout (9 seconds).

Confirm that communications are established by viewing the Primary Status information for the RTU in the OpenBSI information window.

Right click on the RTU and select **RTU -> DataView**.

Try retrieving a large list or a large number of signals from the RTU.

If the collection of this data is successful, reduce the Link Timeout setting by 1 second. Continue to reduce the Link Timeout in 1 second increments, until data collection via DataView fails. Increase the Link Timeout by 0.5 second increments until data collection is restored. With the Link Timeout established, adjust the Poll Period accordingly.

The Digi Connect WAN RG devices provide economical cellular connectivity with a minimum amount of configuration required. For more information, please contact your local Bristol sales office.

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