Using TCP to multicast data from one RS-232 device to multiple RS-485 devices

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In this Technical Note, we cover the following topics:

1. Multicasting serial data over Ethernet from RS-232 to RS-485
2. Configuring each remote NPort 5150 server
3. Configuring ports 1 and 2 on the NPort 6250
4. Physical connection of devices and servers

1. Multicasting serial data over Ethernet from RS-232 to RS-485

In a MOXA project involving RS-485 devices, the client needed one RS-232 device to send data to 16 remote RS-485 devices over Ethernet. Since data integrity was critical for the client's application, UDP could not be used for data transmission. The following diagram shows the type of architecture that was used to achieve this:

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The MOXA Group manufactures one of the world's leading brands of device networking solutions. Products include serial boards, USB-to-serial Hubs, media converters, device servers, embedded computers, Ethernet I/O servers, terminal servers, Modbus gateways, industrial switches, and Ethernet-to-fiber converters. Our products are key components of many networking applications, including industrial automation, manufacturing, POS, and medical treatment facilities.

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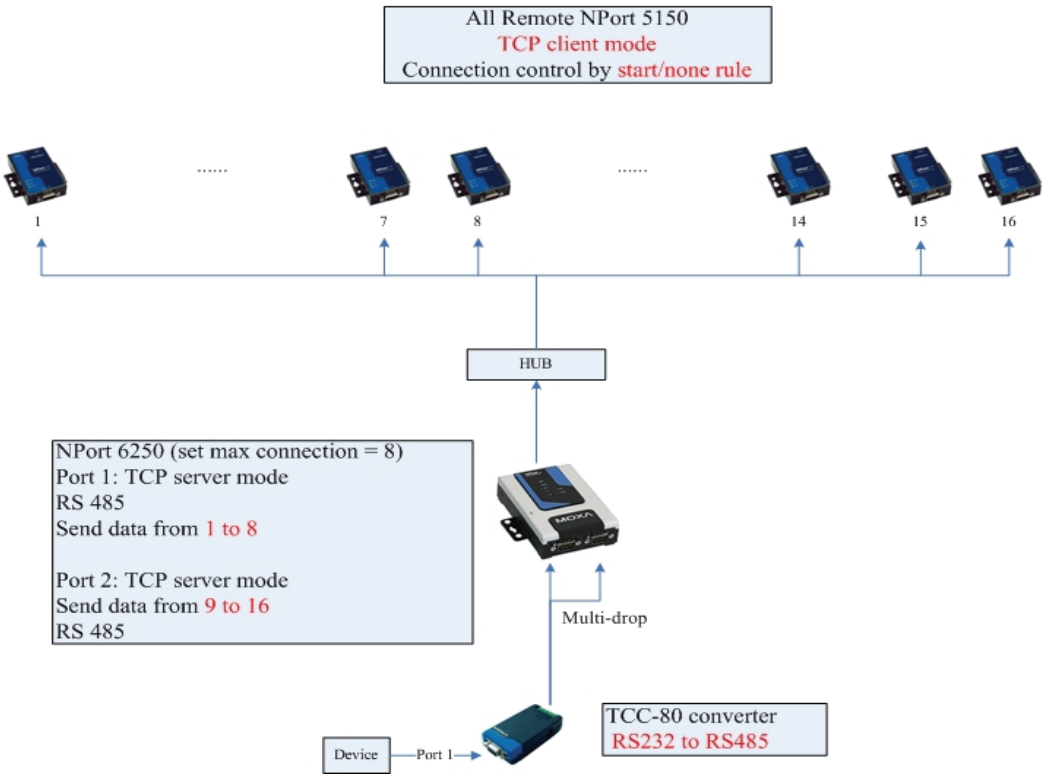

In this paper, we will explain how to set up this system using the NPort 6250, NPort 5150, and TCC-80. This may be used as a starting reference point for other similar systems.

2. *Configuring each remote NPort 5150 server*

Use NPort Administrator to configure each NPort 5150's operation mode to TCP Client Mode, as shown in the following figure. For Connection Control, select "Startup/None". For Destination Host and Destination Port, use the NPort 6250's IP address and Listen port.

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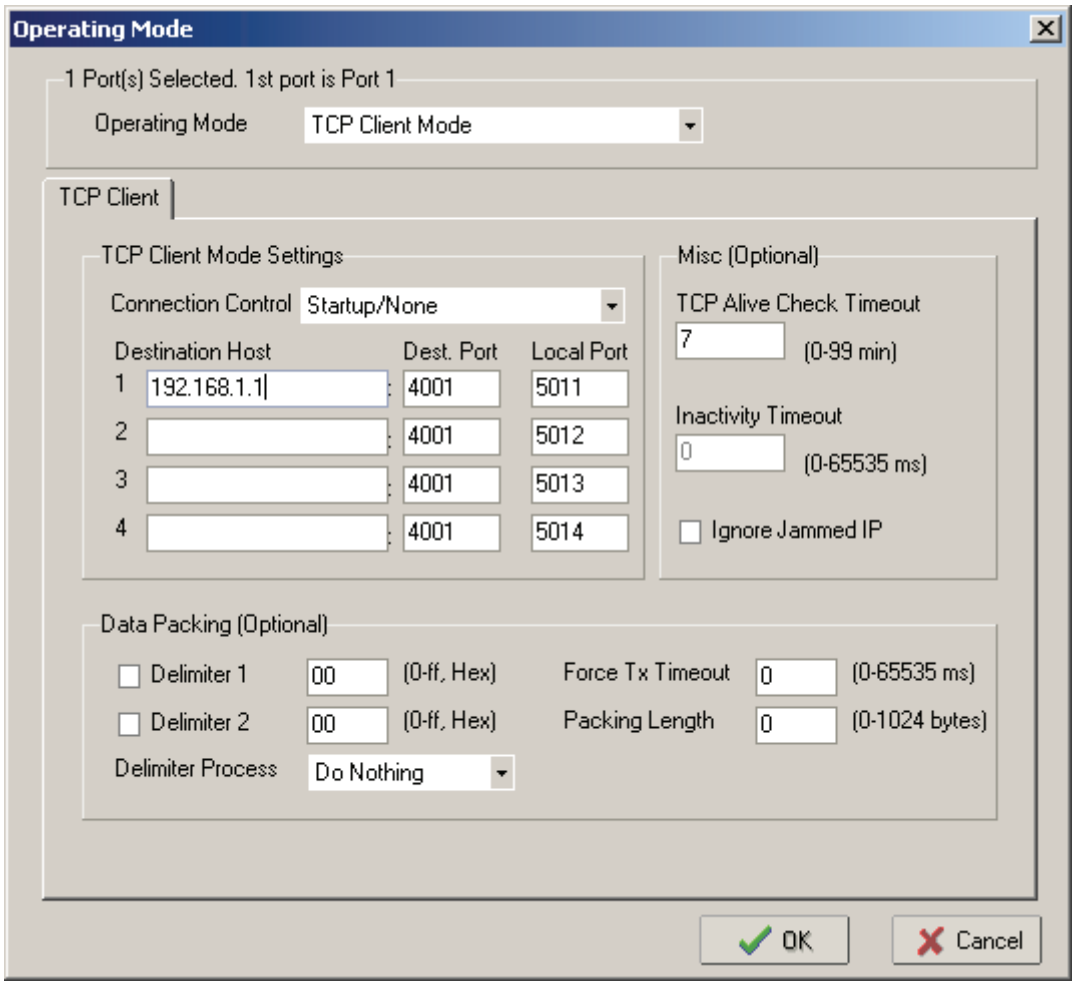

3. *Configuring ports 1 and 2 on the NPort 6250*

3.1 Port 1 on the NPort 6250 will be configured to accept TCP connections 1 through 8. In the NPort 6250's web console, set Port 1 to "TCP Server Mode" under Main Menu -> Serial Port Settings -> Port 1 -> Operation Modes. For Max. connection, select 8.

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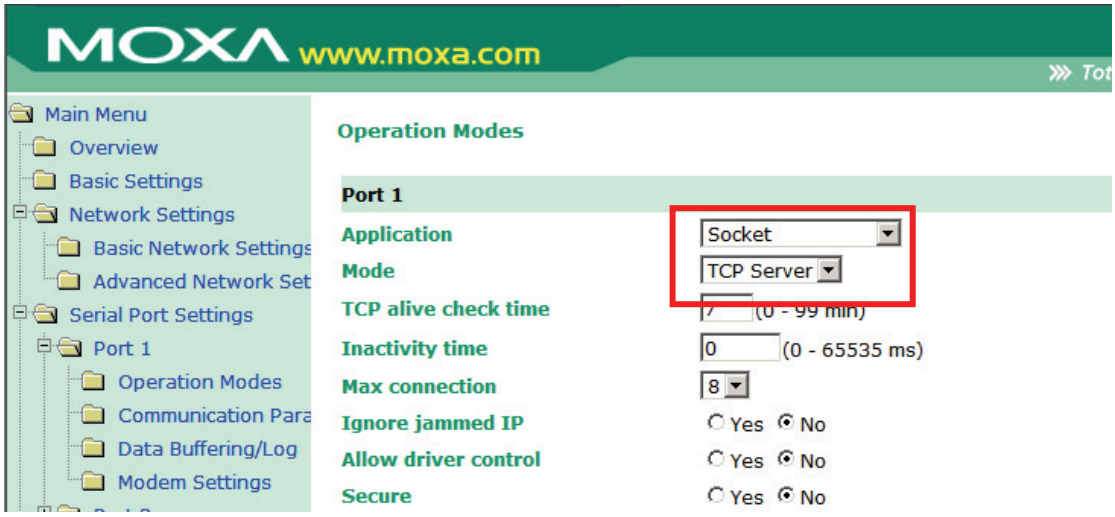
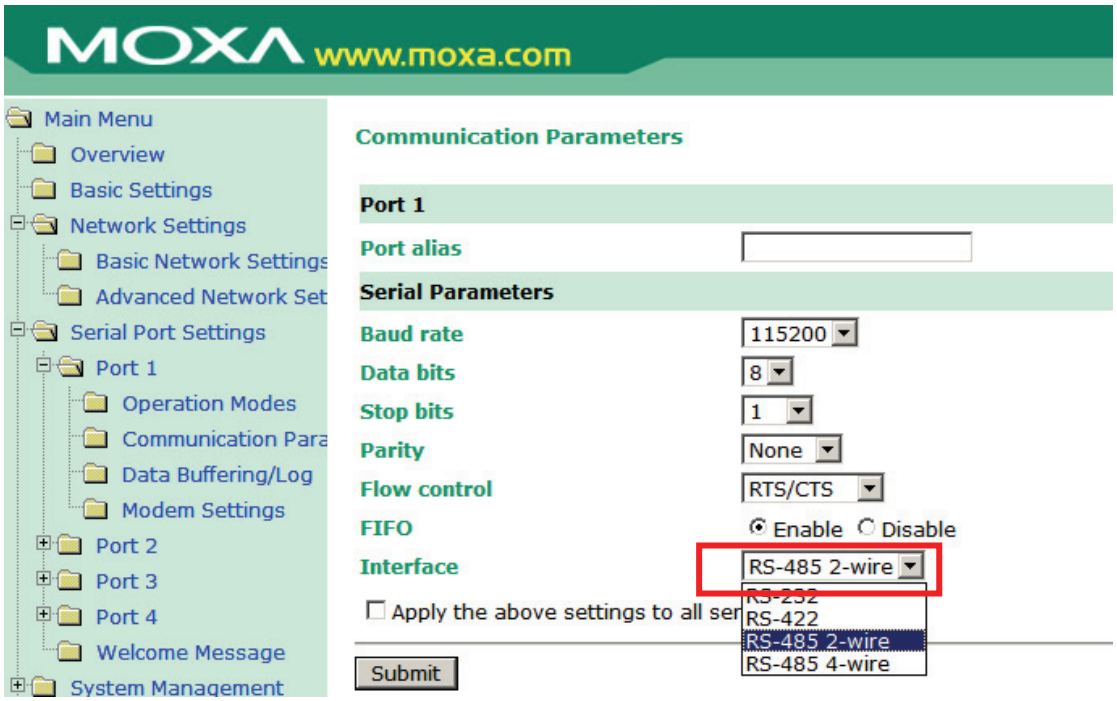


3.2 Under Main Menu -> Serial Port Settings -> Port 1 -> Communication Parameters, select "RS-485 2-wire" for Interface.



3.3 Port 2 on the NPort 6250 will be configured to accept TCP connections 9 through 16. Configure Port 2's operation mode and communication parameters using the same settings as Port 1.

4. *Physical connection of devices and servers*

Use a RS-485 multi-drop connection from the TCC-80 converter to both ports on the NPort 6250. With the NPort 6250 and NPort 5150 servers on an Ethernet network, data broadcasting can be established between an RS-232 device on the TCC-80 and RS-485 devices on each NPort 5150.

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