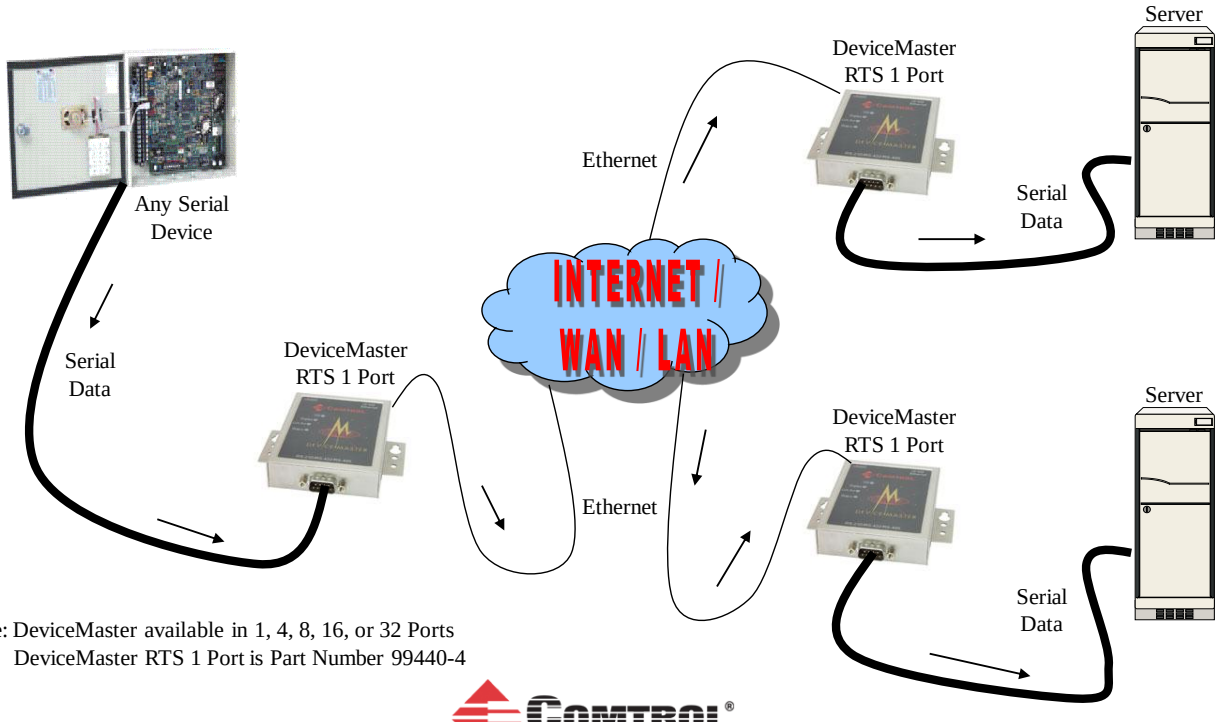
UDP Configuration

One-to-Many, One-Way UDP Data Transfer Configuration

In this example a DeviceMaster RTS 1-port will forward its incoming serial data out Ethernet to two DeviceMaster RTS 1-ports. The two DeviceMaster RTS 1-ports connect to two different Servers.



Note: DeviceMaster available in 1, 4, 8, 16, or 32 Ports
DeviceMaster RTS 1 Port is Part Number 99440-4

Descriptions and Options

One-to-One and Many-to Many are all extrapolations of the examples seen in the following sections:
1 One to Many One-Way
2 One to Many Bi-directional
3 Many to One One-Way
4 Many to One Bi-Directional

Descriptions of Options:

Enable Serial to Ethernet

- When Checked: This will allow data from the Serial side to be forwarded on to the Ethernet side, of the RTS.
- When Unchecked: This prevents data from the Serial side being forwarded on to the Ethernet side, of the RTS.

Enable Ethernet to Serial

- When Checked: This will allow data from the Ethernet side being forwarded on to the Serial side of the RTS
- When Unchecked: This prevents data from the Ethernet side being forwarded on to the Serial side, of the RTS.

Enable Ethernet Receive From Any IP Address

- This option is used in conjunction with the Target IP Address Port (serial- >eth)
- When Checked: This will accept incoming data from a 'Sending' unit where the 'Sending' unit has entered the IP address of this unit. There still must be an IP address installed in the list for data to be returned to the originating point. Another example: If using these ports in a One-Way mode, and this is the unit receiving the data, instead of entering in the IP addresses of all of the sending units, check this option.
- When Unchecked: Leaving this disabled requires us to enter the IP address of the 'Sending' unit, in my examples, the IP of the RTS4 Port that the data is expected from. The IP address is now serving double duty. It is indicating both the device that data is to be set to and received from when both "Enable Serial to Ethernet" and "Enable Ethernet to Serial" are enabled. In the event that some incoming data from specific units may not need an acknowledgement (while other sending units do need acknowledgement) where the IP address of that sending unit is not included in the list, but the incoming data is needed, then this would be the time to enable this option. Remember that to send data back to the originating unit, that the Port number must also be used in addition to the IP address.

Target IP Address Port (serial- >eth)

- IP address and Port number. When there has been no IP address indicated, there will be no data sent. This address can also indicate that data is allowed to be received from the Network when it has originated at the IP address specified in this list.

UDP Listen Port

- This is the port number assigned to this particular port. This is used in the same manner as the TCP Port number assignments.

One-to-Many One-Way UDP data transfer configuration
(1 serial port out to 4 serial ports)

In this example an RTS 1 port will forward its incoming serial data out Ethernet to an RTS4 port to all 4 serial ports. Those 4 serial ports may connect to 4 different PC's, etc.
Example Application: A scale connected to the RTS 1 Port sends it data to multiple monitoring PC's. Each PC receives the data at the same time and has no need to acknowledge the receipt of the data from the scale.

Configure RTS1 port as follows.
IP Address 192.168.2.11 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do Enable Serial to Ethernet
  - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do not Enable Ethernet to Serial
  - This will prevent data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address
  - This will prevent any data from being accepted from any undesired UDP origination point.
- Enter in Target IP Addresses and Port numbers of RTS4 Port destination ports.
  - 192.168.2.41 7000
  - 192.168.2.41 7001
  - 192.168.2.41 7002
  - 192.168.2.41 7003

Configure RTS4 port as follows.
IP Address 192.168.2.41 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration.
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do not Enable Serial to Ethernet
  - This prevents data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
  - This will ALLOW data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address
  - Leaving this disabled requires us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS1 Port in the Target IP Address field.
- Enter IP address of 192.168.2.11 the RTS1 port in the Target IP Address field.
  - Note: It is not necessary to enter the port value, but it may be a handy reminder of the sending port when a multiport units are used for trouble shooting and tracking purposes.

Open Edit Port 2 Configuration.
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do not Enable Serial to Ethernet
  - This will prevent data from the Serial side, being forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
  - This will ALLOW data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do Enable Ethernet Receive From Any IP Address
  - With this Enabled it prevents the requirement for us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS1 Port in the Target IP Address field. If this option is Enabled, any UDP packets will be accepted regardless of the origination point as long as the origination point includes this address as a destination. This does create possible security issues and is not recommend as a general course.
  - Since the previous option is selected, it is NOT necessary to enter the IP of the RTS in the Target IP field.
  - Keep in mind the security issues associated with this option.

Repeat the options from either Port 1 or Port 2 as desired for remaining ports

To test this Configuration.
Attach null-modem cable from com 2 on PC#1 to RTS1 Port RS232 port.
Install a multiport serial adapter into PC and connect each port of the RTS4 Port to a port on the multiport serial adapter. This test has used a DeviceMaster RTS 8 Port to create additional ports in the same PC that com2 is being used in.

(Another method:
Attach null-modem cable from com 2 on PC#2 to RTS4 Port RS232 port port#1.
Attach null-modem cable from com 2 on PC#3 to RTS4 Port RS232 port port#2.
Attach null-modem cable from com 2 on PC#4 to RTS4 Port RS232 port port#3.
Attach null-modem cable from com 2 on PC#5 to RTS4 Port RS232 port port#4.)

Open Test Terminal and Open Com2, setting the port parameters to agree with RTS1 Port.
Open 2nd copy of Test Terminal and open 4 ports (in this example com3,4,5,6) setting port parameters to agree with RTS4 Port.
Attach null-modem cables from port 1 of the RTS4 Port to port 1 of the RTS8 Port (com3).
Attach null-modem cables from port 2 of the RTS4 Port to port 2 of the RTS8 Port (com4).
Attach null-modem cables from port 3 of the RTS4 Port to port 3 of the RTS8 Port (com4).
Attach null-modem cables from port 4 of the RTS4 Port to port 4 of the RTS8 Port (com5).

In the Com2 window, type any character. This character will appear in Com3,4,5,and 6 in the second copy of Test Terminal.

There will be NO DATA RETURN to com2 in this example.

One-to-Many Bi-Directional UDP data transfer configuration (1 serial port out to 4 serial ports with data reply)

In this example an RTS 1 port will forward its incoming serial data out Ethernet to an RTS4 port to all 4 serial ports. Those 4 serial ports may connect to 4 different PC's, etc. Data will be returned from the 4 ports to the 1 port.
Example Application: A milling machine connected to the RTS 1 Port sends it data to multiple monitoring PC's. Each PC receives the data at the same time. One PC needs to acknowledge the receipt of the data and all PC's need the capability to send new instruction sets to the milling machine. In the situation of all PC's responding at the same time, all of the data will be intermingled. There is NO means to differentiate the data to indicate the sending party. It is IMPERITIVE that only one PC at a time send data.

Configure RTS1 port as follows.
IP Address 192.168.2.11 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do Enable Serial to Ethernet
  - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
  - This will ALLOW data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address
  - Leaving this disabled requires us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS4 Port that the reply is expected from. The IP address is now serving double duty. It is indicating both the device that data is to be set to AND RECEIVED from.
- Enter in Target IP Addresses and Port numbers
  - 192.168.2.41 7000
  - 192.168.2.41 7001
  - 192.168.2.41 7002
  - 192.168.2.41 7003

Here we are setting the IP addresses and individual port addresses to enable the data to be sent to all four ports. The port value is required only for outbound data. Since this is two way data transferring, the port value is required. Inbound data only would only require the IP address added once.

Configure RTS4 port as follows.
IP Address 192.168.2.41 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration.
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do Enable Serial to Ethernet
  - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.

- Do Enable Ethernet to Serial
    - This will ALLOW data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address
    - Leaving this disabled requires us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS1 Port in the Target IP Address field.
- Enter IP address of 192.168.2.11 and port 7000 for the RTS 1 port in the Target IP Address field.
    - Note: for bi-directional communications, it IS required to enter the port value of the RTS 1 port. In this case, 7000.

Open Edit Port 2 Configuration.
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.
- Enable is NOT checked and all other options at default

UDP Connection Configuration.
- Do Enable Serial to Ethernet
    - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
    - This will ALLOW data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do Enable Ethernet Receive From Any IP Address
    - When Enabled, this prevents the requirement for us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS1 Port in the Target IP Address field. If this option is Enabled, any UDP packets will be accepted regardless of the origination point. This does create possible security issues and is not recommend as a general course.
    - Since the previous option is selected, it is NOT necessary to enter the IP of the RTS in the Target IP field.
    - Keep in mind the security issues associated with this option.
    - Now that bi-directional communication is desired, it is required that the IP address and port value of the RTS 1 port be entered in the Target IP Address options so that the returning data know its destination.

Repeat the options from either Port 1 or Port 2 as desired for remaining ports

To test this Configuration.
Attach null-modem cable from com 2 on PC#1 to RTS1 Port RS232 port.
Install a multiport serial adapter into PC and connect each port of the RTS4 Port to a port on the multiport serial adapter. This test has used a DeviceMaster RTS 8 Port to create additional ports in the same PC that com2 is being used in.

(Another method:
Attach null-modem cable from com 2 on PC#2 to RTS4 Port RS232 port port#1.
Attach null-modem cable from com 2 on PC#3 to RTS4 Port RS232 port port#2.
Attach null-modem cable from com 2 on PC#4 to RTS4 Port RS232 port port#3.
Attach null-modem cable from com 2 on PC#5 to RTS4 Port RS232 port port#4.)

Open Test Terminal and Open Com2, setting the port parameters to agree with RTS1 Port.
Open 2nd copy of Test Terminal and open 4 ports (in this example com3,4,5,6) setting port parameters to agree with RTS4 Port.
Attach null-modem cables from port 1 of the RTS4 Port to port 1 of the RTS8 Port (com3).
Attach null-modem cables from port 2 of the RTS4 Port to port 2 of the RTS8 Port (com4).
Attach null-modem cables from port 3 of the RTS4 Port to port 3 of the RTS8 Port (com4).

Attach null-modem cables from port 4 of the RTS4 Port to port 4 of the RTS8 Port (com5).

In the Com2 window, type any character. This character will appear in Com3,4,5,and 6 in the second copy of Test Terminal.

In the Com3 (or Com4,5,6) type any character. This character will appear in Com2 in the first copy of Test Terminal.

To test that the data is not differentiated place loopback plugs on the RTS 4 port unit.

- Open Com2 and enter a character this character will be repeated 4 times (once for each port) with no indication of which port sent which character.
- A visually fun, but useless procedure, is to place loopback plugs on the RTS 4 port and from com2 select Send Test Data.

There will be DATA RETURN to com2 in this example.

Many-to-One One-Way UDP data transfer configuration (4 serial ports out to 1 serial port).

In this example an RTS4 port, using all 4 serial ports, will forward its incoming serial data from all 4 ports out by Ethernet to an RTS1 port connected to the PC Com2 by means of a null modem cable. The 4 serial ports may connect to 4 different PC's, scales, etc.
Example Application: A scale connected to each the RTS4 Ports sends it data to a single monitoring PC (Com2). Each scale sends its data in sequence and no two scales send data at the same time. This is critical as there is no means by which data can be identified as to the sending port, and the data will be intermingled. Ex: port 1 sends ABCD and port 2 sends 1234, both at the same time. The data seen in com2 may be A1B2CD34.

Configure RTS1 port as follows.
IP Address 192.168.2.11 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do not Enable Serial to Ethernet
  - This prevents data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
  - This will allow data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address
  - Leaving this disabled requires us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS4 Port in the Target IP Address field.
- Enter the IP address of 192.168.2.41 as the RTS4 port in the Target IP Address field. Since all four ports are in the same RTS, all on the same IP address, it is not necessary to enter the IP address more than once. The Receiving side does not know the sending port nor does it need to know the sending port value (7000, 7001, etc).
  - Note: It is not necessary to enter the port value, but it may be a handy reminder of the sending port when several multiport units are used, for trouble shooting and tracking purposes.

Configure RTS4 port as follows.
IP Address 192.168.2.41 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration.
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do Enable Serial to Ethernet
  - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do not Enable Ethernet to Serial
  - This will prevent data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address

    - This will prevent any data from being accepted from any UDP origination point. We will not be setting this unit up to accept any data.
- Enter the IP address of 192.168.2.11 Port 7000 as the RTS1 port in the Target IP Address field.
    - This will be the destination of the data.

Repeat the Port Configuration options for the remaining ports

To test this Configuration.
Attach null-modem cable from com 2 on PC#1 to RTS1 Port RS232 port.
Install a multiport serial adapter into PC and connect each port of the RTS4 Port to a port on the multiport serial adapter. This test has used a DeviceMaster RTS 8 Port to create additional ports in the same PC that com2 is being used in.

(Another method:
Attach null-modem cable from com 2 on PC#2 to RTS4 Port RS232 port port#1.
Attach null-modem cable from com 2 on PC#3 to RTS4 Port RS232 port port#2.
Attach null-modem cable from com 2 on PC#4 to RTS4 Port RS232 port port#3.
Attach null-modem cable from com 2 on PC#5 to RTS4 Port RS232 port port#4.)

Open Test Terminal and Open Com2, setting the port parameters to agree with RTS1 Port.
Open 2nd copy of Test Terminal and open 4 ports (in this example com3,4,5,6) setting port parameters to agree with RTS4 Port.
Attach null-modem cables from port 1 of the RTS4 Port to port 1 of the RTS8 Port (com3).
Attach null-modem cables from port 2 of the RTS4 Port to port 2 of the RTS8 Port (com4).
Attach null-modem cables from port 3 of the RTS4 Port to port 3 of the RTS8 Port (com4).
Attach null-modem cables from port 4 of the RTS4 Port to port 4 of the RTS8 Port (com5).

In the Com3,4,5 and 6 windows, type any character. This character will appear in Com2 in Test Terminal. If two or more of Com3,4,5 or 6 send data at the same time, the data will be merged in com 2 with no way to tell which device sent which information. Coms3,4,5 and 6 must use a round-robin approach so that the data may be properly evaluated.

There will be NO DATA RETURN to Com3,4,5 or 6 in this example. Entering of any data into com 2 will not be transmitted back to Com3,4,5 or 6.

Many-to-One Bi-Directional UDP data transfer configuration (4 serial ports out to 1 serial port with data reply).

In this example an RTS4 port, using all 4 serial ports, will forward its incoming serial data from all 4 ports out by Ethernet to an RTS1 port connected to the PC Com2 by means of a null modem cable. The 4 serial ports may connect to 4 different PC's, scales, etc. Data will be returned from the 1 port to the 4 ports.
Example Application: A scale connected to each the RTS4 Ports sends it data to a single monitoring PC (Com2). Each scale sends its data in sequence and no two scales send data at the same time. This is critical as there is no means by which data can be identified as to the sending port, and the data will be intermingled. Ex: port 1 sends ABCD and port 2 sends 1234, both at the same time. The data seen in com2 may be A1B2CD34. Once data has been received from all four ports the application needs to send an acknowledgment so that the scale can reset in preparation for the next measurement.

Configure RTS1 port as follows.
IP Address 192.168.2.11 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do Enable Serial to Ethernet
  - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
  - This will allow data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address
  - Leaving this disabled requires us to enter the IP address of the 'Sending' unit, in this case the IP of the RTS4 Port in the Target IP Address field.
- Enter the IP address of the RTS4 port and the Port values in the Target IP Address field.
  - Since we want replies to be sent to each of the 4 ports on the RTS4 Port unit, we must enter the IP addresses and port values of each port.
  - 192.168.2.41 7000
  - 192.168.2.41 7001
  - 192.168.2.41 7002
  - 192.168.2.41 7003

Configure RTS4 port as follows.
IP Address 192.168.2.41 Mask 255.255.255.0 Gateway 192.168.2.1
Open Edit Port 1 Configuration.
Serial Configuration = 115200,8,n,1 no flow, DTR=off, EOL=Disabled and Timeout=0

TCP Connection Configuration.

- Enable is NOT checked and all other options at default

UDP Connection Configuration.

- Do Enable Serial to Ethernet
  - This allows data from the Serial side, to be forwarded on to the Ethernet side, of the RTS.
- Do Enable Ethernet to Serial
  - This will allow data from the Ethernet side being forwarded on to the Serial side of the RTS
- Do not Enable Ethernet Receive From Any IP Address

    - This will prevent any data from being accepted from any UDP origination point.
- Enter the IP address of 192.168.2.11 Port 7000 as the RTS1 port in the Target IP Address field.
    - This will be the destination of the data and with it entered in the field and both "Serial to Ethernet" and "Ethernet to Serial" enabled, data will be able to flow both directions.

Repeat the Port Configuration options for the remaining ports

To test this Configuration.
Attach null-modem cable from com 2 on PC#1 to RTS1 Port RS232 port.
Install a multiport serial adapter into PC and connect each port of the RTS4 Port to a port on the multiport serial adapter. This test has used a DeviceMaster RTS 8 Port to create additional ports in the same PC that com2 is being used in.

(Another method:
Attach null-modem cable from com 2 on PC#2 to RTS4 Port RS232 port port#1.
Attach null-modem cable from com 2 on PC#3 to RTS4 Port RS232 port port#2.
Attach null-modem cable from com 2 on PC#4 to RTS4 Port RS232 port port#3.
Attach null-modem cable from com 2 on PC#5 to RTS4 Port RS232 port port#4.)

Open Test Terminal and Open Com2, setting the port parameters to agree with RTS1 Port.
Open 2nd copy of Test Terminal and open 4 ports (in this example com3,4,5,6) setting port parameters to agree with RTS4 Port.
Attach null-modem cables from port 1 of the RTS4 Port to port 1 of the RTS8 Port (com3).
Attach null-modem cables from port 2 of the RTS4 Port to port 2 of the RTS8 Port (com4).
Attach null-modem cables from port 3 of the RTS4 Port to port 3 of the RTS8 Port (com4).
Attach null-modem cables from port 4 of the RTS4 Port to port 4 of the RTS8 Port (com5).

In the Com3,4,5 and 6 windows, type any character. This character will appear in Com2 in Test Terminal. If two or more of Com3,4,5 or 6 send data at the same time, the data will be merged in com 2 with no way to tell which device sent which information. Coms3,4,5 and 6 must use a round-robin approach so that the data may be properly evaluated.

There will be DATA RETURN to Com3,4,5 or 6 in this example. Entering of any data into com 2 will be transmitted back to Com3,4,5 or 6 simultaneously.

Another test that is kind of fun.
Disconnect the null-modem cable from the RTS1 port and replace it with the loopback plug. Now select one of the other com ports such as Com3. If you enter data in Com3, that data should echo to Com3,4,5 and 6.