SerialOverUDP Device Redundant and SerialOverUDP Line Redundant

Communication line of SerialOverUDP Device Redundant, SerialOverUDP Line Redundant and SerialOverUDP System&Line Redundant categories

SerialOverUDP Device Redundant, SerialOverUDP Line Redundant and *SerialOverUDP System&Line Redundant* communication lines were designed for support of "Serial to Ethernet Device Servers" of NPort series. NPort serial devices are the powerful compact switches of RS232/422/485 interfaces on TCP/IP Ethernet. These devices transmit data, received from serial line, to UDP packets and send them to one or more IP addresses and ports (D2000 KOM process locality). Likewise, NPort serial device sends data, which have been received on specific UDP port, to a serial port.
The transmission parameters of the serial line are set in the configuration of NPort serial device and cannot be changed or set through D2000 System. Data, transmitted in UDP packets between NPort and D2000 KOM, contain only data of the serial communication. They contain neither the control nor the check characters (e.g. handshaking).

SerialOverUDP Device Redundant communication line

This line supports a redundancy of NPort serial devices and also working in D2000 Redundant System when the communication protocols, supporting a redundancy, are used.

Configuration parameters

- ***Local Port***

  It is UDP port, it binds KOM process and receives data from NPort serial devices. *Local Port* must correspond to NPort configuration (the parameter *Port* in the line where IP address with KOM process is set). A local UDP port must be a unique, neither another line nor any application (out of D2000 System) can use it.

- ***Primary Device - Port***

  IP address or hostname of NPort serial device. It is UDP port which receives data to transmit. *Port* value must correspond to NPort configuration (the parameter "*Local Listen Port*").

- ***Use Backup Device***

  Check this option if you use a redundant configuration of NPort device.

- ***Backup Device - Port***

  IP address or hostname of a backup NPort device. It is UDP port which receives data to transmit. *Port* value must correspond to NPort configuration (the parameter "*Local Listen Port*").

NPort Device Redundancy and D2000 System Redundancy

The most simple way to design NPort Device Redundancy is a linking on RS485 interface for the half-duplex protocols. The half-duplex protocols use a request/response principle, which are basically almost all protocols for the asynchronous serial interfaces.

Some of the communication protocols support D2000 System Redundancy in the set of more instances of KOM process (KOM process HS and KOM process SBS). In that case a communication process, connected to SBS server, never send data and cancel the communication of KOM process connected to HS server. Its function is only listening on the receiver from NPort device. If it is possible, it analyzes these data.

If KOM process was started in D2000 System Redundancy and watches HS server (start parameter /RD or /RF), all the communication protocols, supported on the SerialOverUDP Device Redundant communication line, operate in D2000 redundant system.

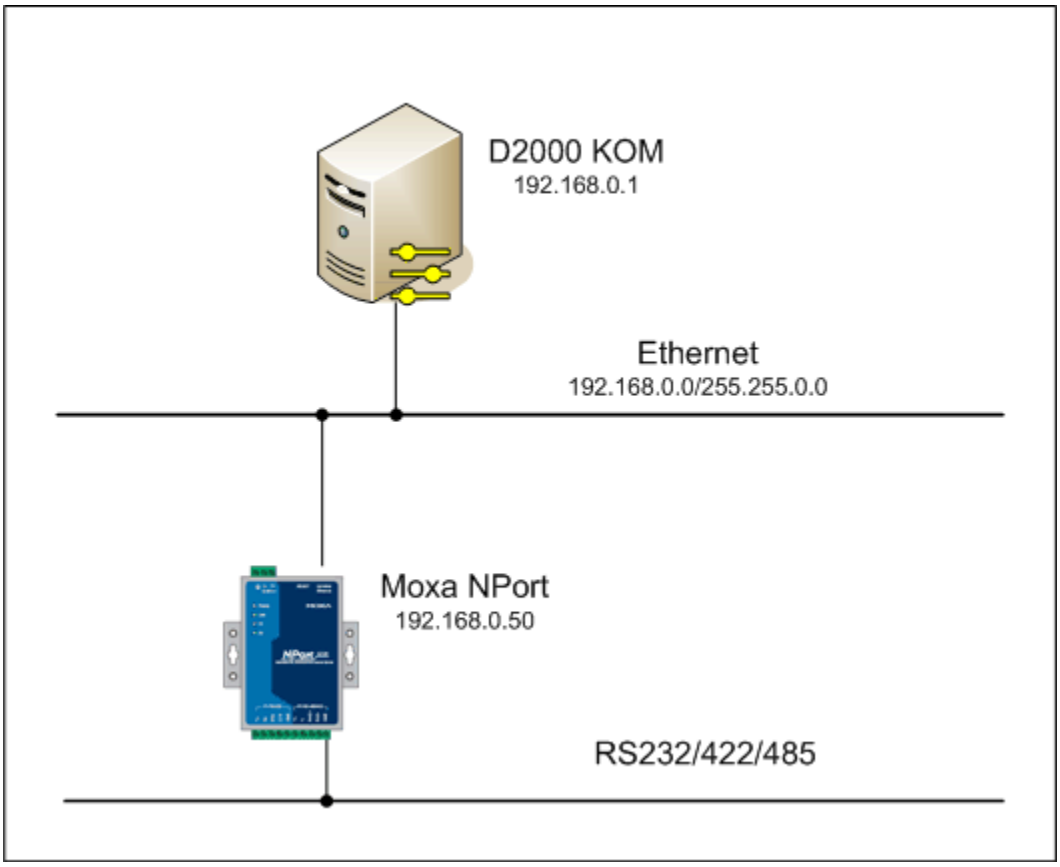
Switching between primary and backup device

A primary device is used after starting KOM process in case of NPort device redundant configuration. A backup device starts to work when any message with data has not been detected from the primary device up to timeout (a default value is 15 seconds, but you can change it for some of the protocols in the protocol parameters). All data polls are sending to the backup device. If the communication works good, the primary device is not tested. If the communication fails, it will be switched to the primary device. Basically, the devices always switch after a detection of the communication error on the working device.

Examples of configuration

Example 1

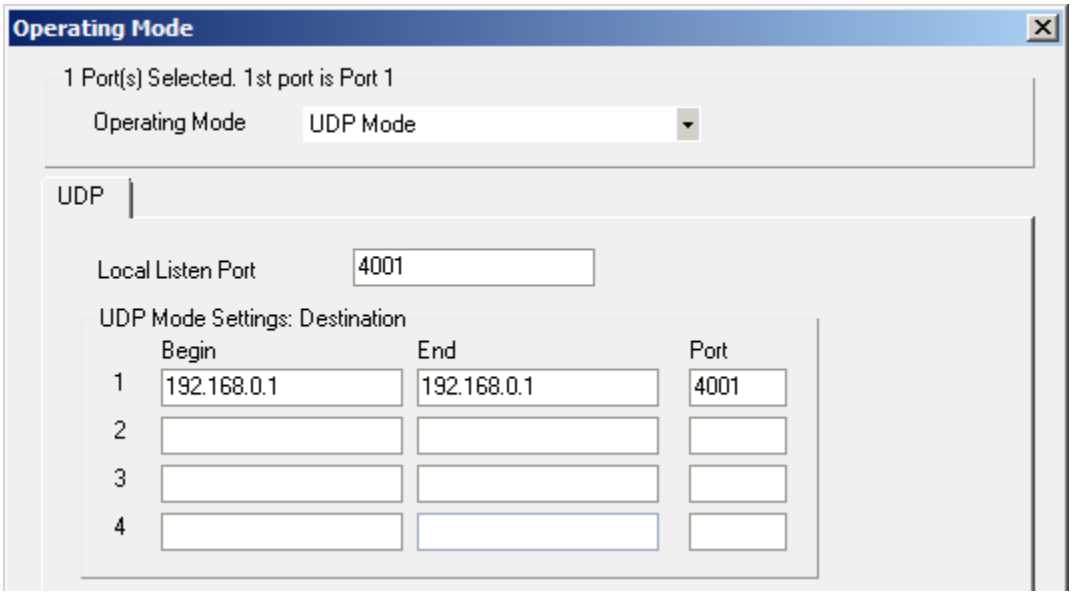
This is a simple connection of the NPort device which replaces the asynchronous serial port directly in PC. No redundancy is used including NPort devices, D2000 System and the network interfaces.



The parameters:

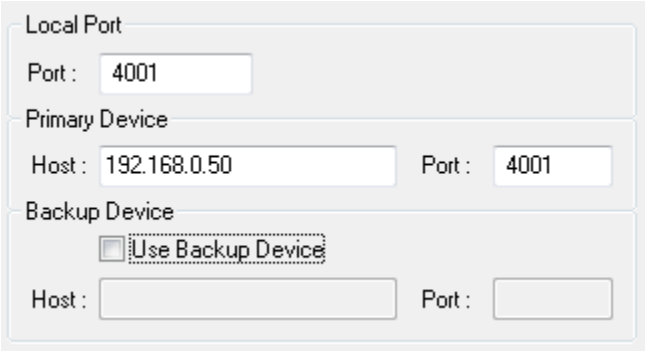
- TCP/IP network: 192.168.0.0/16
- IP address of NPort serial device: 192.168.0.50
- IP address of D2000 server with KOM process: 192.168.0.1.

Operating Mode dialog box - the configuration of the NPort serial device:



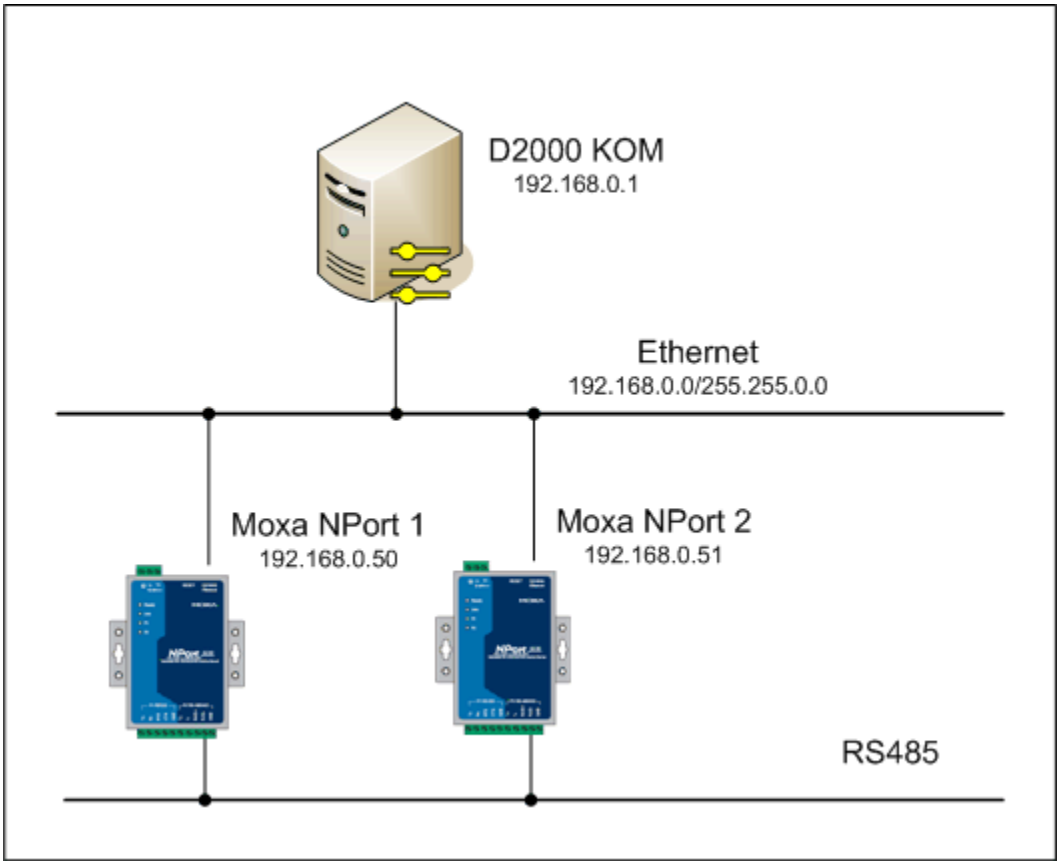
The port 4001 is set for *Local Listen Port*. Data are sent to D2000 KOM process 192.168.0.1, which uses also the local port 4001. We recommend to use the same port number within the configuration of one communication line.

The configuration of D2000 communication line is the same as NPort device configuration:



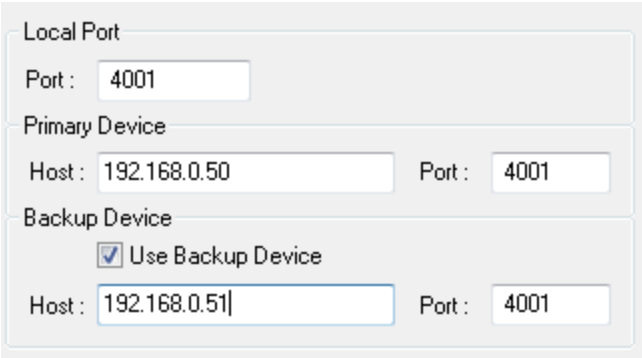
Example 2

This is a dual redundant connection of NPort devices without D2000 System Redundancy and Ethernet network infrastructure.



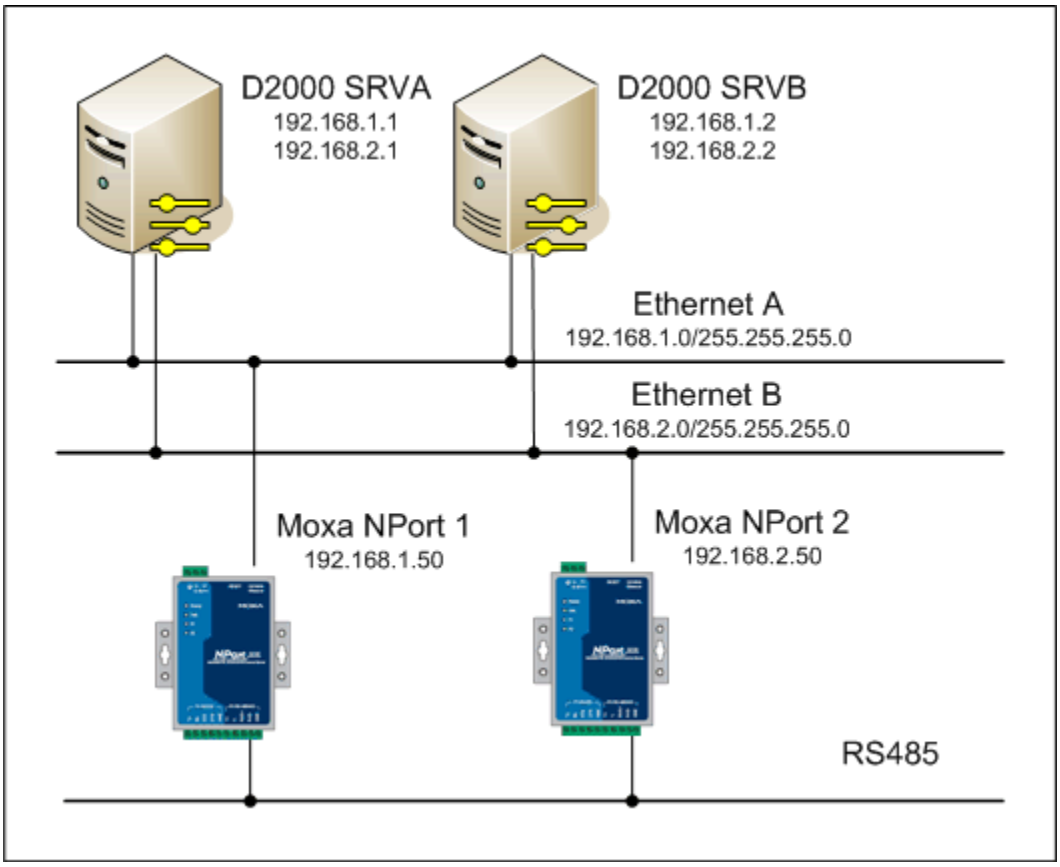
The configuration of NPort 1 and NPort 2 must be the same as it is mentioned in the Example 1.

D2000 communication line uses the backup device NPort 2:



Example 3

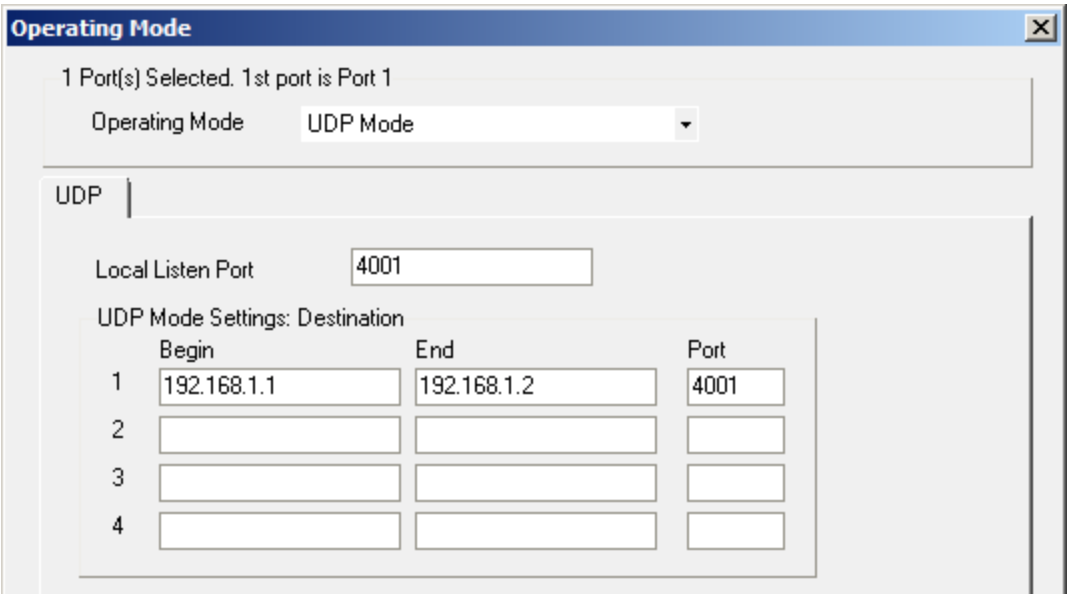
This is the complete redundant system consisting of NPort device redundancy, D2000 System Redundancy and dual network infrastructure.



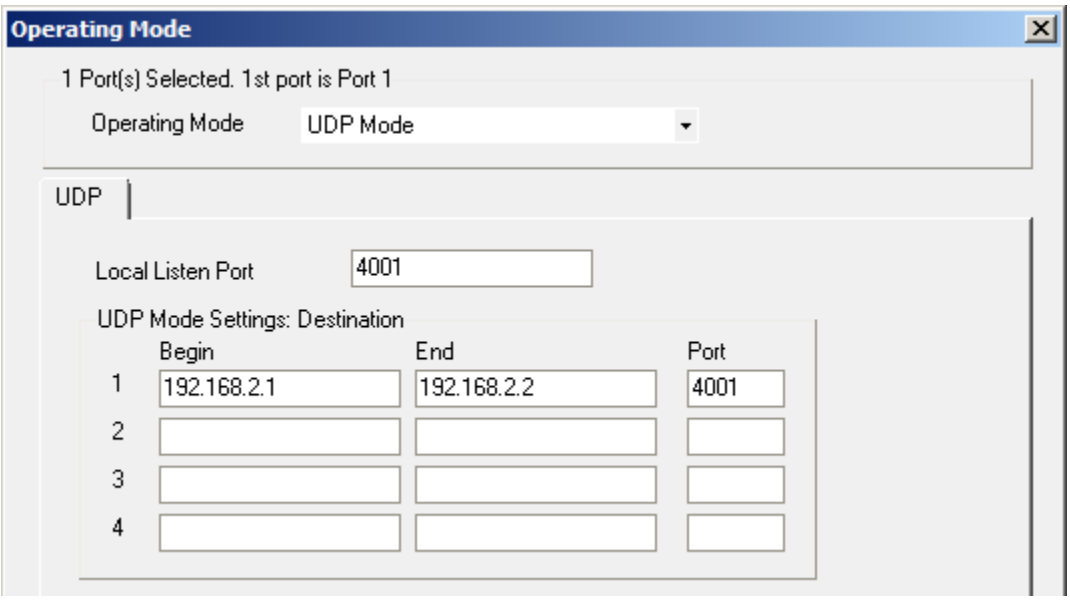
The parameters:

- Two TCP/IP networks: Ethernet A 192.168.1.0/24 and Ethernet B 192.168.2.0/24.
- NPort 1 is connected to Ethernet A with IP address 192.168.1.50.
- NPort 2 is connected to Ethernet B with IP address 192.168.2.50.
- D2000 Redundant System consists of two servers SRVA and SRVB connected to both Ethernet networks with addresses:
    - SRVA: 192.168.1.1 and 192.168.2.1
    - SRVB: 192.168.1.2 and 192.168.2.2

Operating mode dialog box - NPort 1 configuration:

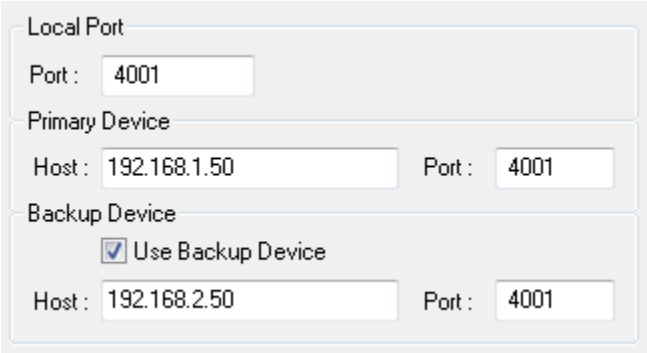


NPort 2 configuration:



The above mentioned settings show that both NPort devices send data to both D2000 servers (i.e. KOM processes), to IP addresses in that network in which it is connected (NPort 1 in Ethernet A and NPort 2 in Ethernet B).

Both NPort devices (primary and secondary one) are set in D2000 communication line configuration:



This configuration is complete redundant and resistant to failure of any dual device.

SerialOverUDP Line Redundant communication line

This line is quasi "dual" SerialOverUDP Device Redundant line. It is intended for those communication protocols with defined transmission on two redundant physical transmission lines. The configuration of this line is the same as the configuration of SerialOverUDP Device Redundant line.

SerialOverUDP System&Line Redundant communication line

This line is like "double line of "SerialOverUDP Line Redundant". It is specially used for the communication protocols with defined transmission towards two remote systems. The communication works with each of them on two redundant physical serial lines. The configuration of this line is the same as for Serial OverUDP Device Redundant category.

Note: The line is supported for communication protocols used in main and backup electro-energy dispatching of SED - SEPS.

Related pages:

Communication lines