microhard SYSTEMS INC.

Application Note

IP Nano (IPn920F & IPn920T) & Centracs Compatibility

February 2013

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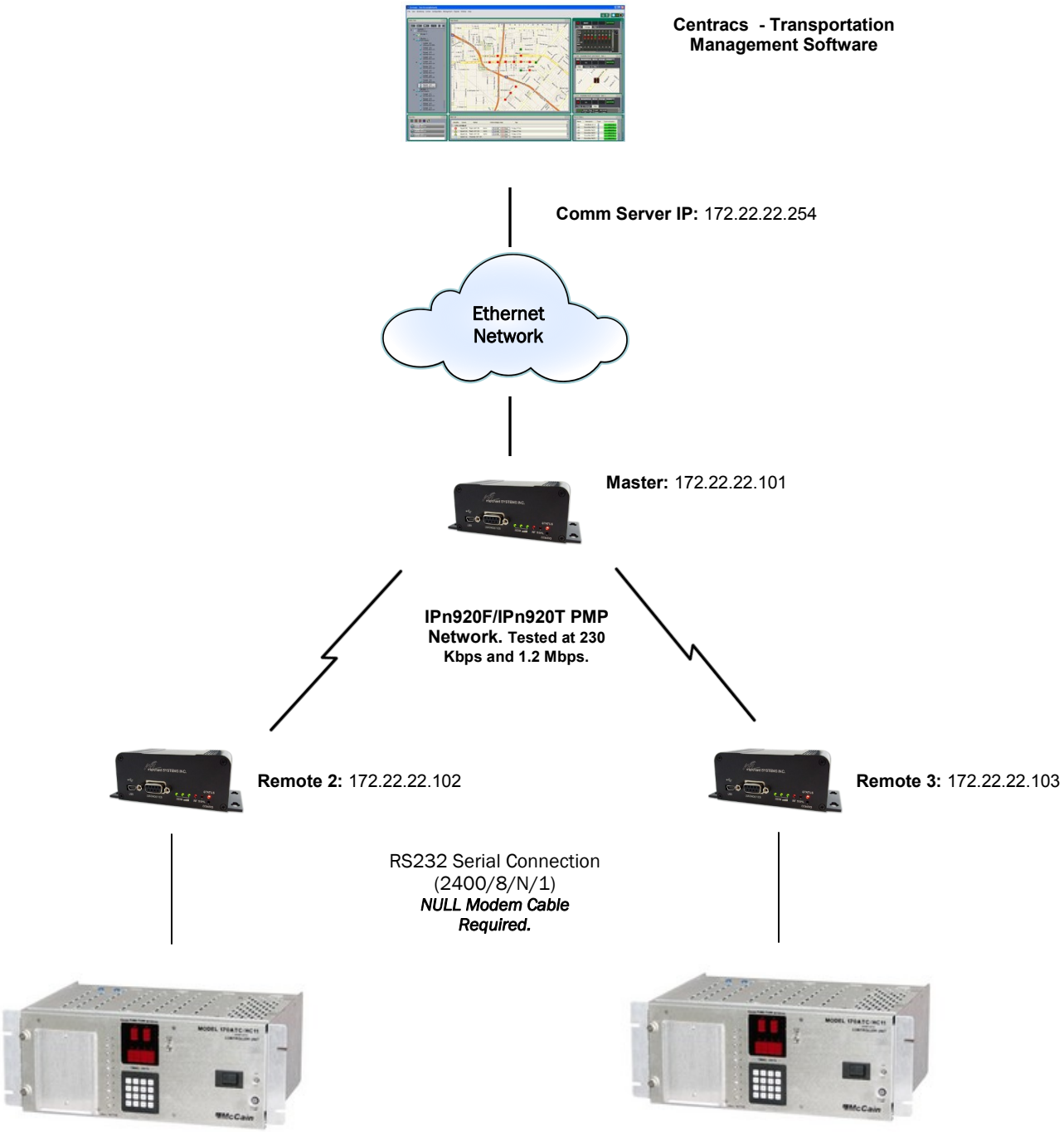
Overview

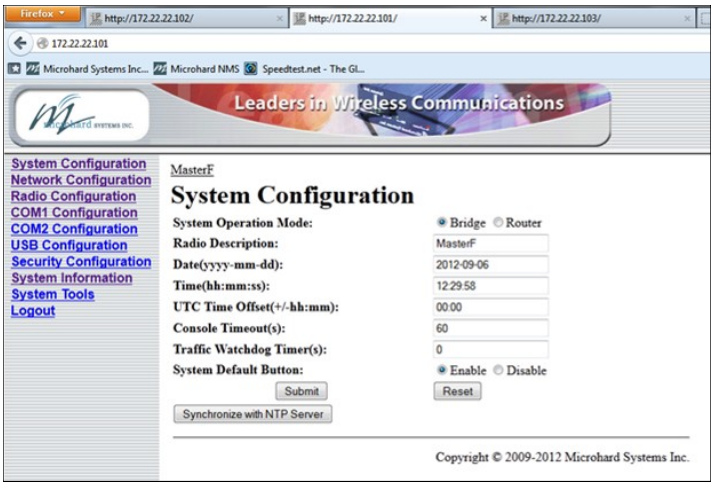
This document describes the setup on the IPn920 Radio's demonstrating successful compatibility between Microhard IP Nano Series radios (IPn920F & IPn920T), Centracs Traffic Management Software & Serial Based Traffic Controllers, as seen in the diagram below.



Radio Setup

This test included a PMP (Point to Multipoint) radio network topology with 1 unit configured as a Master, and 2 units configured as Remotes. The following screen shots describe the setup of each radio.

Master Radio



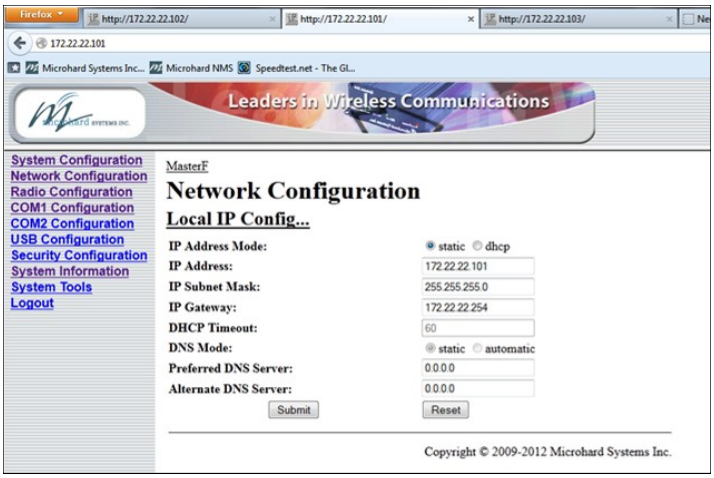
System Configuration

Operating Mode: Bridge

Radio Description: Set as “Master” to differentiate between radios, for reference only, not required. (Can be set to anything…)

Rest as defaults as shown.

Submit



Network Configuration

IP Address Mode: Static

IP Address: 172.22.22.101 (Set as a valid IP address for YOUR network,)

IP Subnet Mask: 255.255.255.0

IP Gateway: 172.22.22.254

Rest as defaults as shown.

Submit

Radio Configuration

Operating Mode: Master

Network Name: Lab_TestF (Each “radio network” must have a unique name)

Link Rate: 230 Kbps (Each unit in a network must have the same link rate) (Tested 1.2Mbps on IPn920T as well)

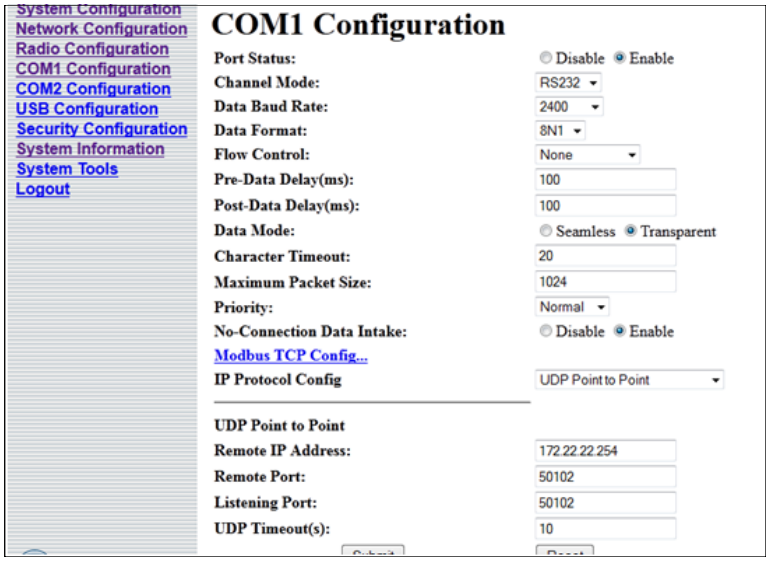
Network Type: Point to Multipoint

Rest as defaults as shown.

Submit

Radio Setup (Continued…)

Master Radio (Continued…)



COM1 Configuration

In this test a controller was not connected to the master, but these are the settings required if there was:

Channel Mode: RS232

Data Baud Rate / Data Format: 2400/8/N/1 (As defined by traffic controller, must match)

Character Timeout: 20 (This was the key field that needed to be changed from the default configuration to get Centracs working, less than 20 did not work)

IP Protocol Config: UDP Point to Point

Remote IP Address: 172.22.22.254 (Address of Centracs comms server)

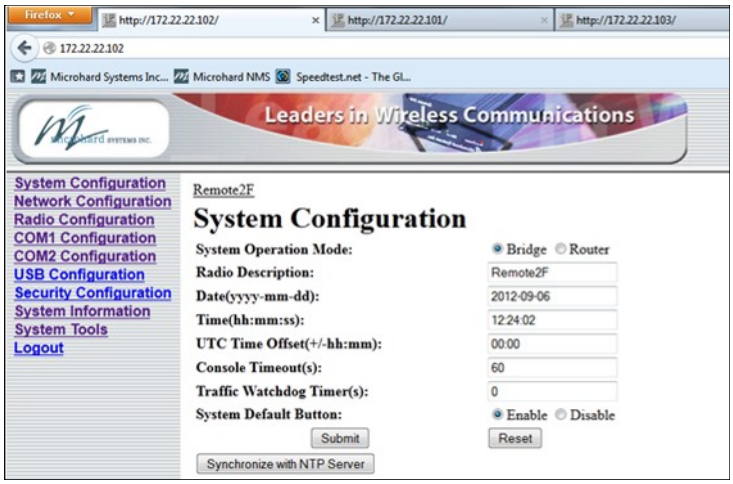
Remote Port: 50102 (Must be specified in Centracs as the “Source” port)
Listening Port: 50102

Rest as defaults as shown.

Submit

Radio Setup (Continued…)

Remote 2



System Configuration

Operating Mode: Bridge

Radio Description: Set as “Remote2F” to differentiate between radios, for reference only, not required. (Can be set to anything…)

Rest as defaults as shown.

Submit

Network Configuration

IP Address Mode: Static

IP Address: 172.22.22.102 (Each Radio has its own IP Address.)

IP Subnet Mask: 255.255.255.0

IP Gateway: 172.22.22.254

Rest as defaults as shown.

Submit

Radio Configuration

Operating Mode: Remote

Network Name: Lab_TestF (Each radio in a network must have the same Network name)

Link Rate: 230 Kbps (Each unit in a network must have the same link rate)

Unit Address: 2 (Each unit needs a address, this is not related to the IP address.)

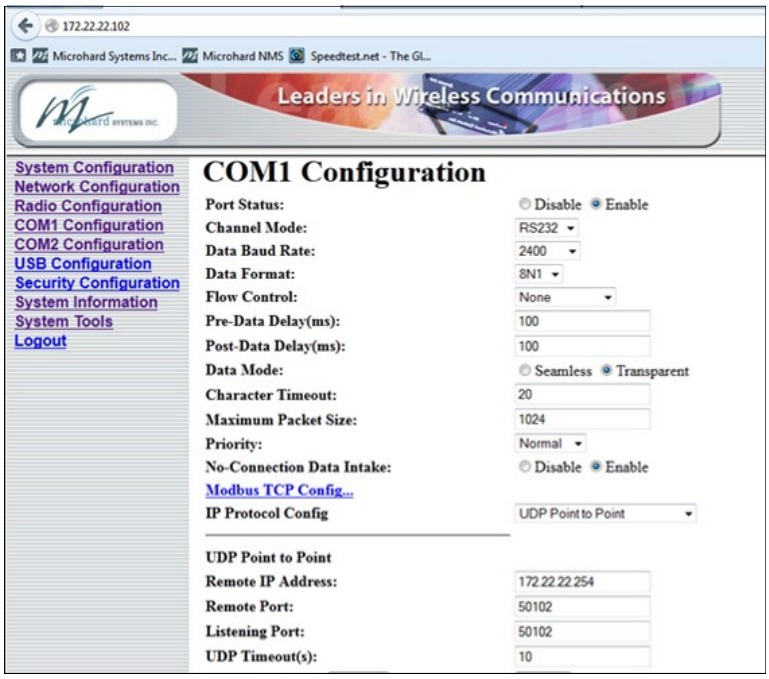
Network Type: Point to Multipoint

Rest as defaults as shown.

Submit

Radio Setup (Continued…)

Remote 2 (Continued…)



COM1 Configuration

Channel Mode: RS232

Data Baud Rate / Data Format: 2400/8/N/1 (As defined by traffic controller, must match)

Character Timeout: 20 (This was the key field that needed to be changed from the default configuration to get Centracs working, less than 20 did not work)

IP Protocol Config: UDP Point to Point

Remote IP Address: 172.22.22.254 (Address of Centracs comms server)

Remote Port: 50102 (Must be specified in Centracs as the "Source" port)
Listening Port: 50102

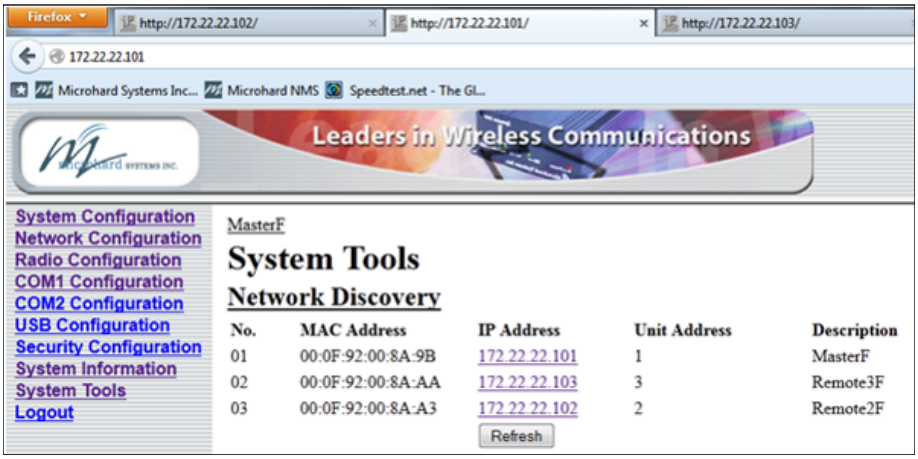
Rest as defaults as shown.

Submit

Remote 3

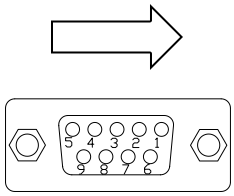
The configuration for Remote 3, as well as any additional remotes is identical to the steps listed to this point. Remember that each radio needs a different IP address, and unique radio address (unit address).

Once the configuration is submitted all radio's should be communicating. To verify you can (a) look at the RSSI Led's and ensure they are solid and not scrolling, (b) connect a PC to the Ethernet port of the Master (set a static IP that matches the network settings i.e 172.22.22.200, and ping each radio or, (c) Under System tools > Network Discovery on the Master you should see something like what is shown in the screen shot below: (If connected to a remote you will only see the Master and the Remote you are connected to, not all the remotes)



Cabling

This application requires a serial connection between the IPn920 and the Traffic Controller. We found that a NULL modem cable was required between the IPn920 Data Port (The rear DB(port)) and the Traffic Controller. This means that the devices are cross connected, the TX of the IPn920 is connected to the RX of the Controller and so on. The pin out of the IPn920 is shown below for reference.



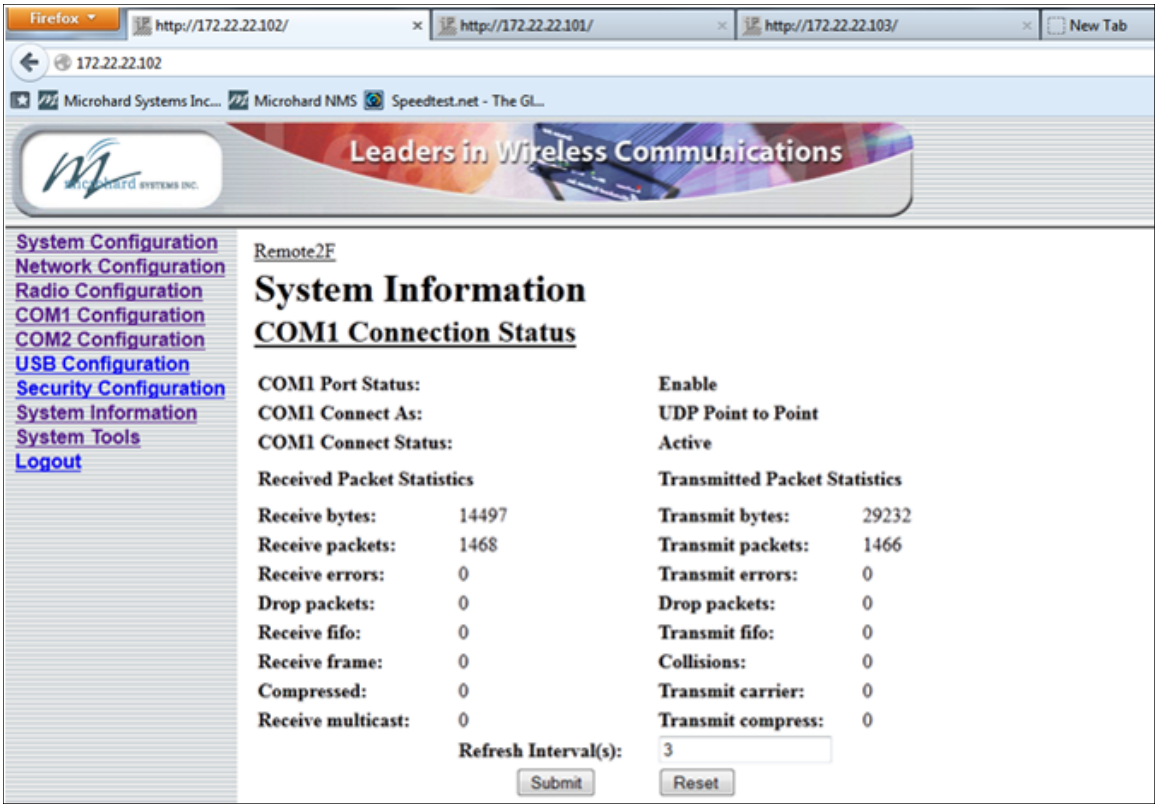
RS232 Serial Connection
(2400/8/N/1)
NULL Modem Cable Required.

Name	Data Port	Input or Output
DCD	1	O
RXD	2	O
TXD	3	I
DTR	4	I
SG	5	
DSR	6	O
RTS	7	I
CTS	8	O
RING	9	O

Data RS232 Pin Assignment

Testing

Now that the radio's are powered up and communicating and the controller has been connected to the radio, Centracs should be able to communicate with the controller through the Microhard Radio's. To verify communication on the radio's, navigate to the WebUI of the connected radio, and go to the System Information > COM1 Connection Status:



As shown above the "COM1 Connect Status" shows as Active, meaning that Centracs has successfully sent packets to the IPn920, and the Transmit and Receive bytes show that data is flowing from Centracs, to the Controller and back, through the IPn920 Radio's

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