TB14110401F
Establishing a Remote Data Connection with Orion

Cameron Grant, Sigma Eight Inc.
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A cellular data connection is quite reliable for communicating with Orion since the transport protocol has an inherent error checking system to ensure accurate end to end transmission. To utilize this type of connection, you need a data modem like the Microhard IPn4G which has an RS232 port which is accessible via a TCP connection, a static IP address for the data modem, and a good signal in the location of your receiver. The following are the steps required to set up this connection.

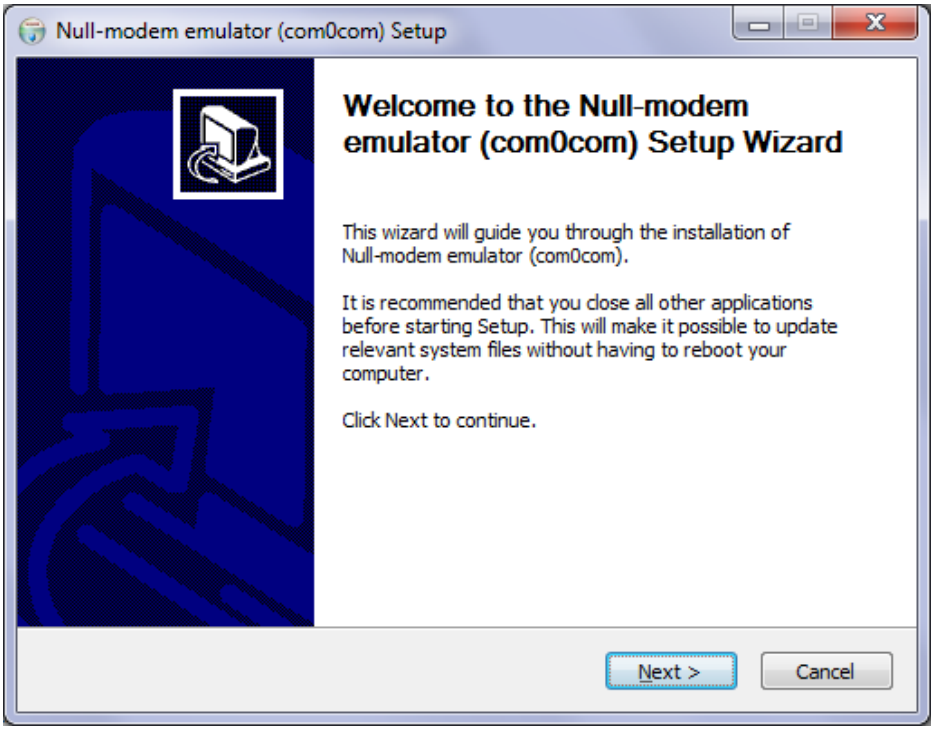
Extract the Orion Remote Connection toolkit

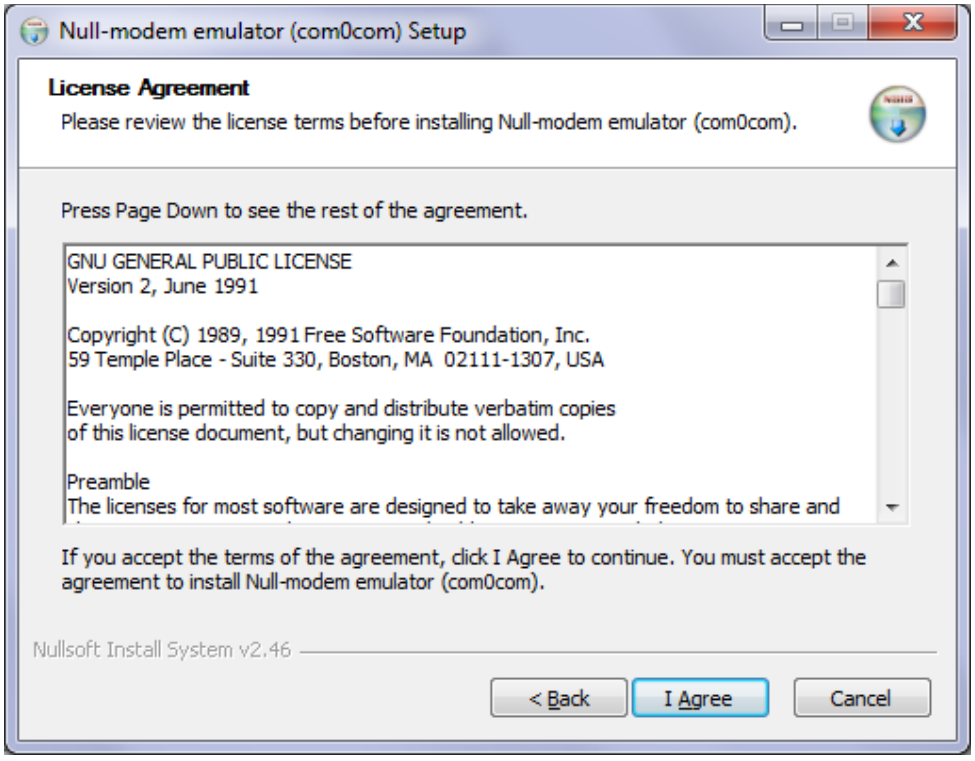
Unzip the "Orion Remote Connection Toolkit-2.0.zip" in a convenient directory (we recommend C:\SEI). In this directory you will have the following sub directories.

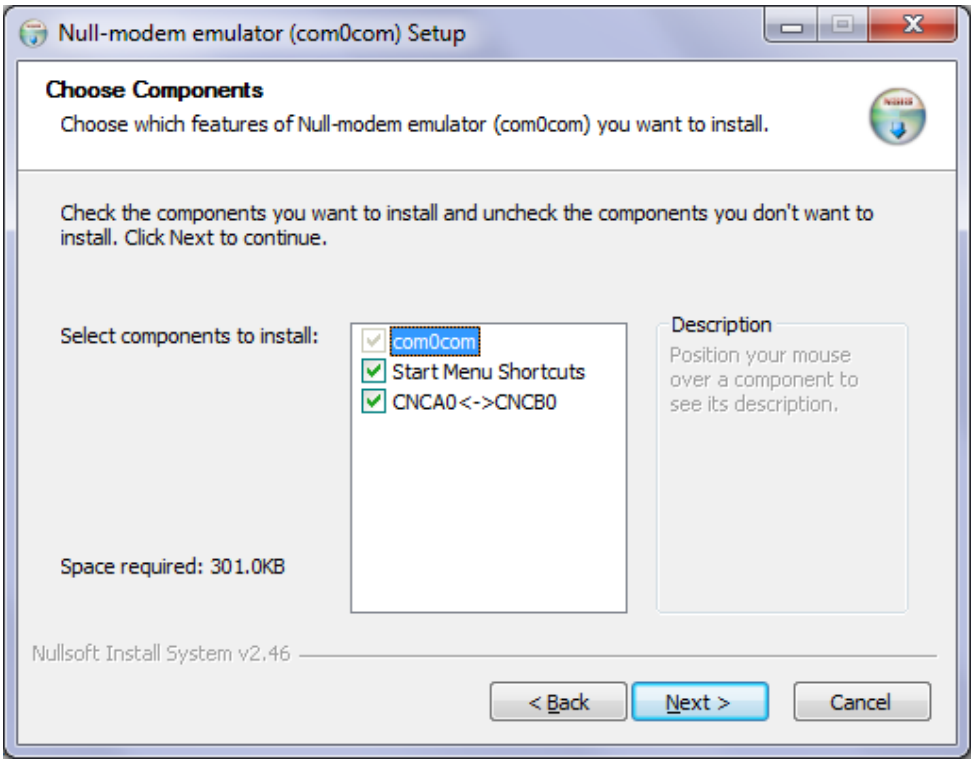
com0com-2.2.2.0-x64-fre-signed
com0com-2.2.2.0-i386-fre
com0com-SEI

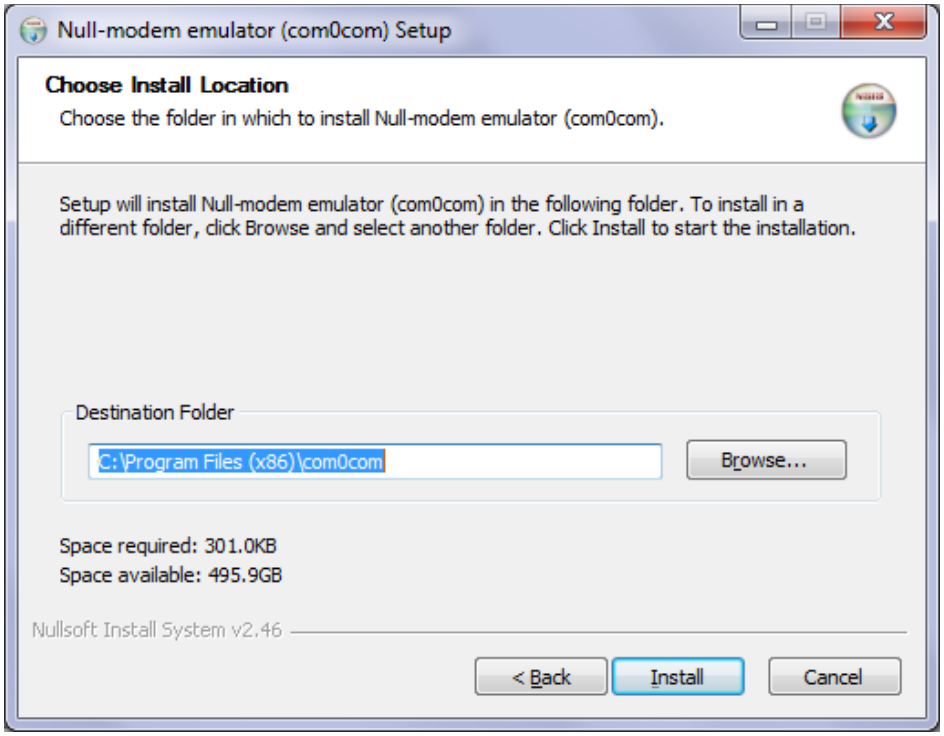
Install the com0com driver

Go into the subdirectory of "com0com-2.2.2.0-x64-fre-signed" if you have a 64 bit machine or "com0com-2.2.2.0-i386-fre" if you have a 32 bit machine and run the setup.exe file. Select the defaults in the following screens.

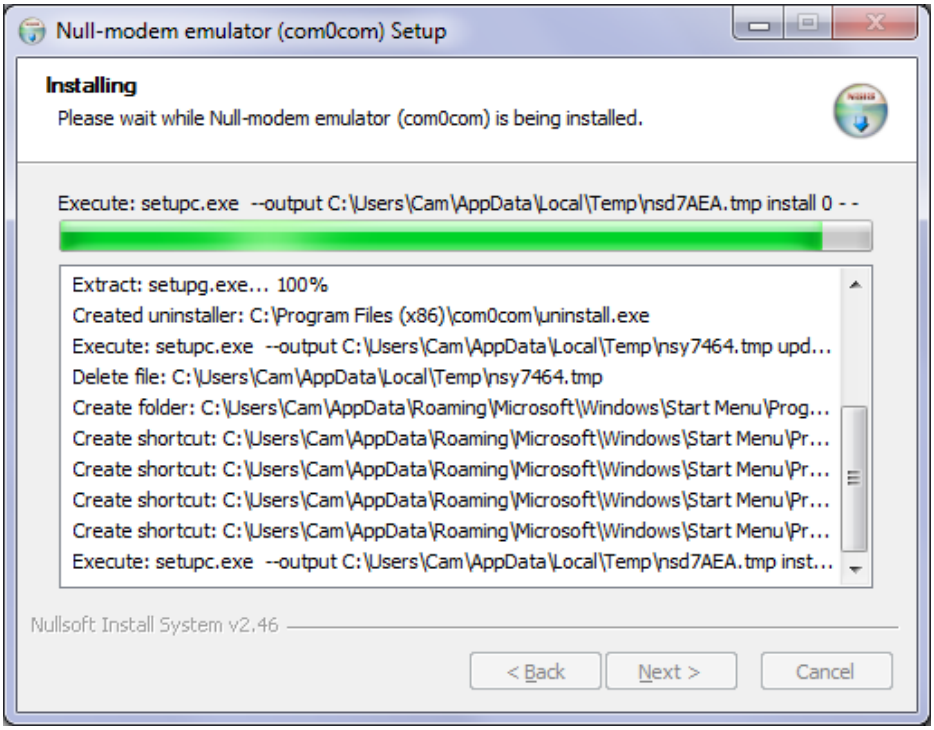


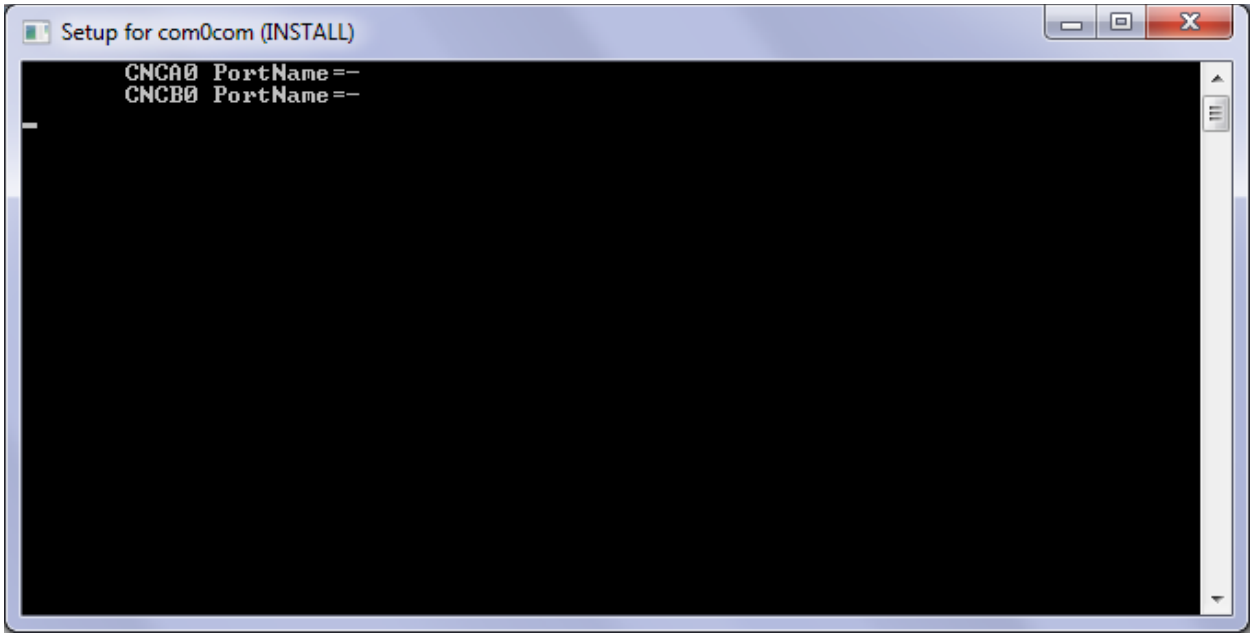

Null-modem emulator (com0com) Setup
License Agreement
Please review the license terms before installing Null-modem emulator (com0com).
Press Page Down to see the rest of the agreement.
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991
Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place - Suite 330, Boston, MA 02111-1307, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
Preamble
The licenses for most software are designed to take away your freedom to share and
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install Null-modem emulator (com0com).
Nullsoft Install System v2.46
< Back
I Agree
Cancel


Null-modem emulator (com0com) Setup
Choose Components
Choose which features of Null-modem emulator (com0com) you want to install.
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.
Select components to install:
com0com
Start Menu Shortcuts
CNCA0<->CNCB0
Description
Position your mouse over a component to see its description.
Space required: 301.0KB
Nullsoft Install System v2.46
< Back
Next >
Cancel

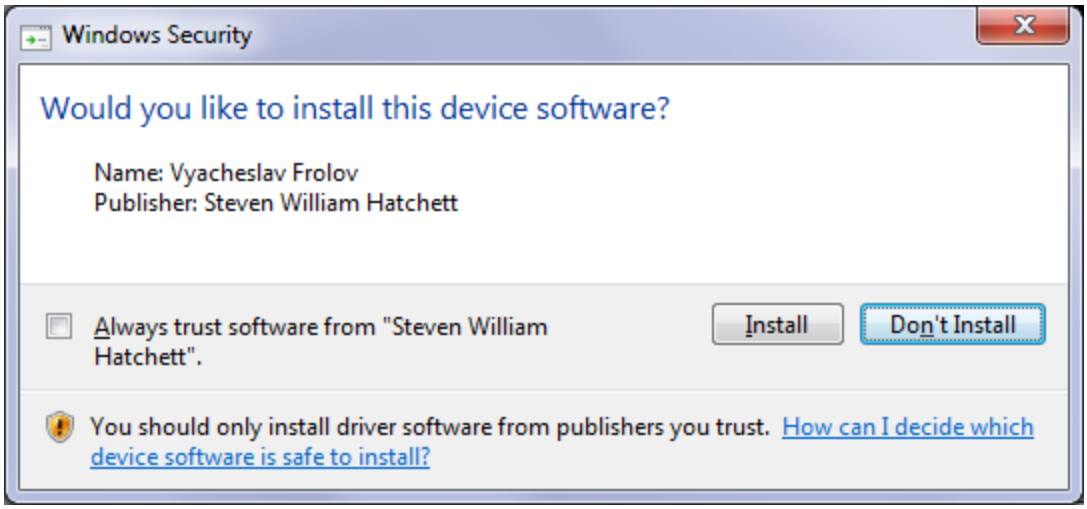


When you press install, the system will start extracting and installing files opening two windows as follows:

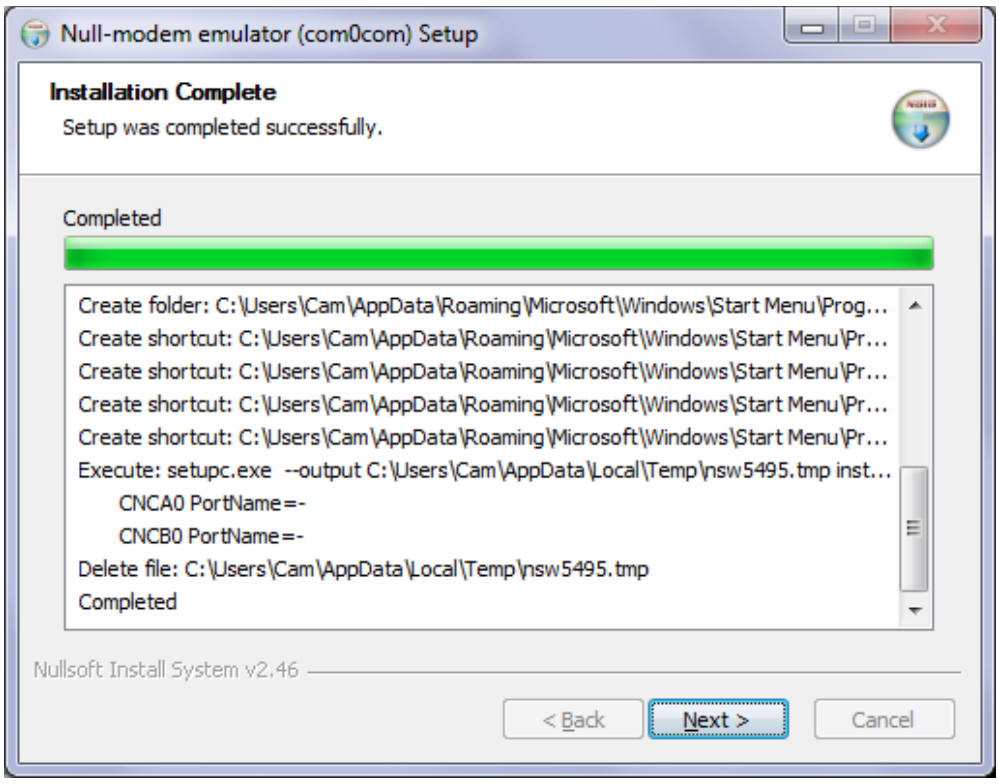




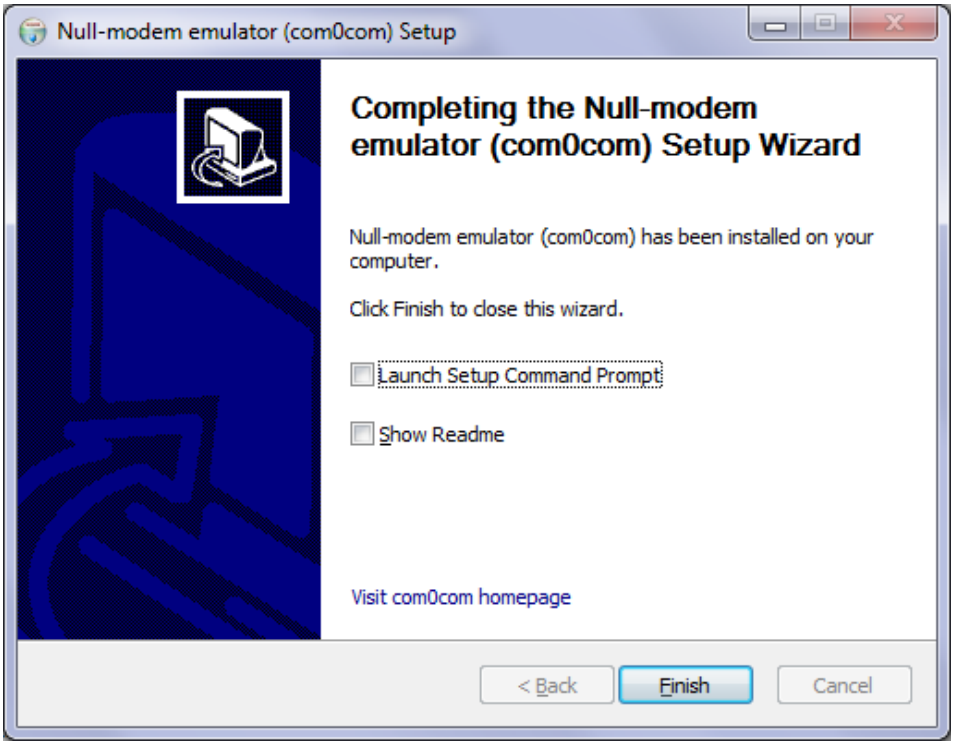
Eventually it will prompt you as follows.



Select install, and the installation will proceed. It will take a minute or two to complete, then you will get a completed message as follows.

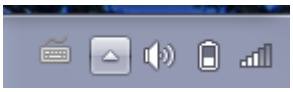


Select Next to get the following.

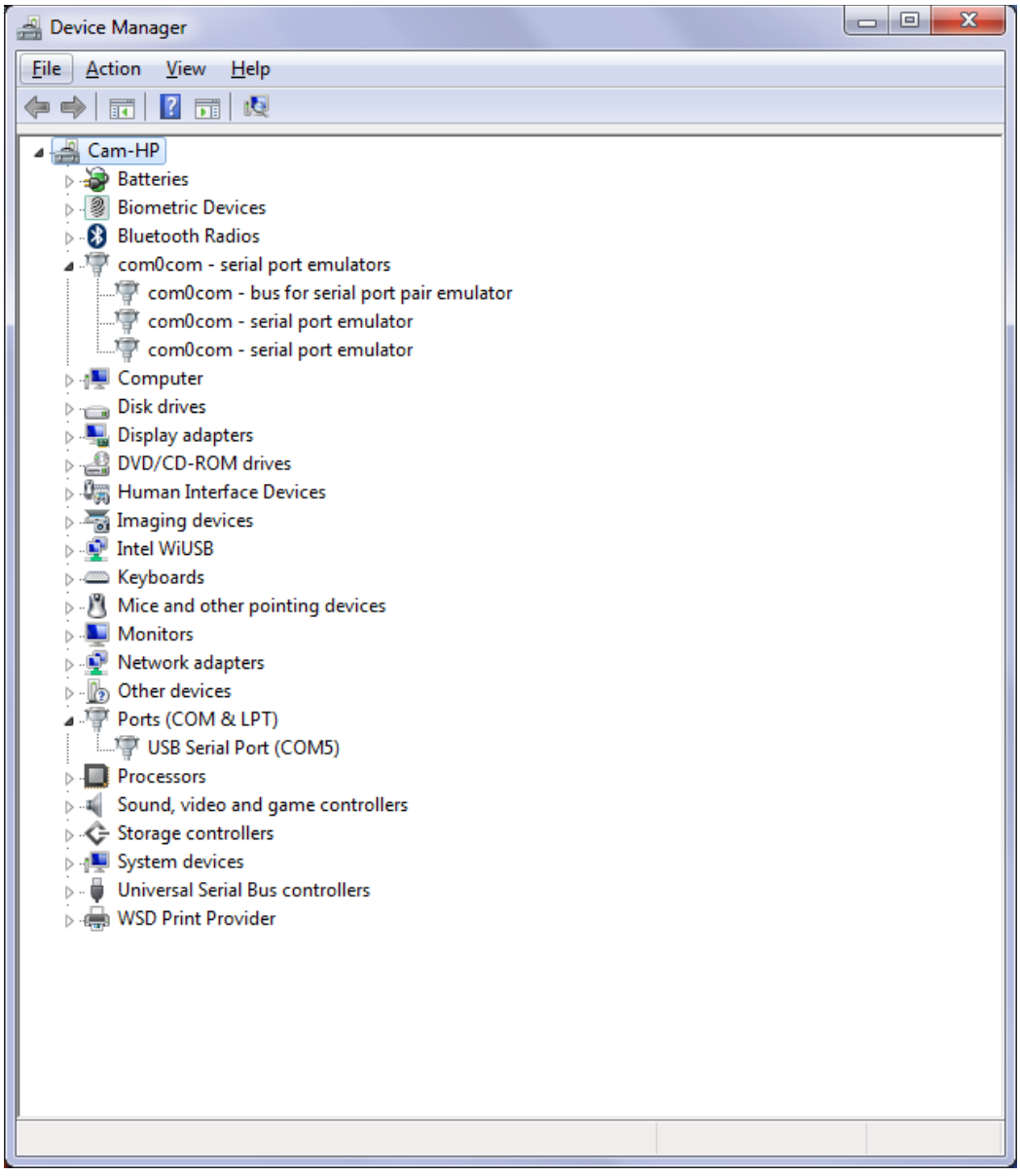


Finally, press finish and the program will exit.

After a while a com0com emulator should appear in the device manager with three components. IT CAN TAKE A FEW MINUTES for these to install and you should see an active driver installation icon if you press the up arrow on the task bar or a message might show up automatically at the bottom of your screen.



When it is finished you should see a device list as follows.



Set up the virtual COM ports

Now, start the com0com command prompt by pressing the start button and following:

Start/All Programs/com0com/Setup Command Prompt

You will may get a prompt from the User Access Control before you run the program, but go ahead and proceed. You will get a black window with the “command>” prompt.

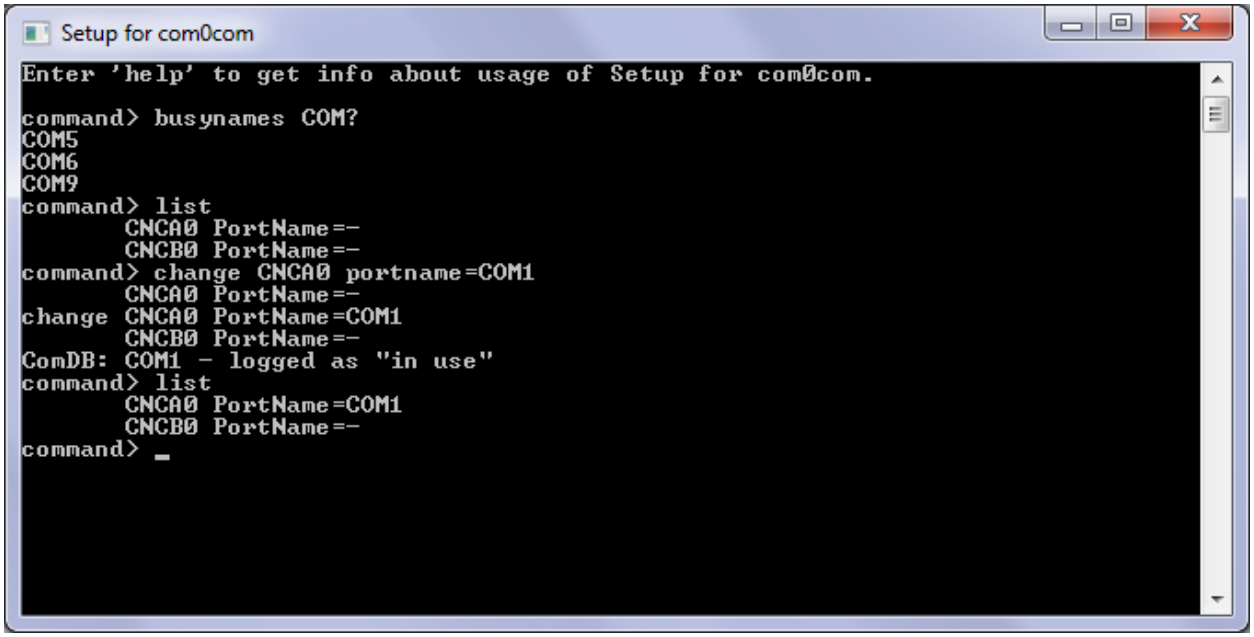
Type “busynames COM?” at the prompt and you will get a list of COM ports that are in use on your computer. Note a port that is not in use.

Then type list and you should see the virtual com ports that were setup on installation.

Finally, change the name of the CNCA0 port to the com port you have available. The following is an example for COM1,

command> change CNCA0 portname=COM1

The whole process should look like this.



Now, type quit at the command prompt.

You now have a virtual null modem connection in your computer with two COM ports. One port is a standard COMx type port that you will connect Orion to. The other is a port called CNCB0 that you will use to connect a program to that will establish a TCP connection through the Internet to your remote site. Graphically it will look like this.

OrionTool <----> COMx<------>CNCB0<----->com2tcp program<---->data modem<--->Orion

Now, go into the “com0com-SEI” directory. Right click on the OrionTCP.bat file and select Edit. A notepad editor will open up. You will see the following line in the batch file.

start com2tcp \\.\CNCB0 xx.xx.xx.xx pppp

This will start the com2tcp program, attach it to the virtual CNCB0 port and connect it to the IP address

(xx.xx.xx.xx) and port number (pppp) given. Change the IP address to match your static IP for your data modem. Port 20001 is the default port for the RS232 port on the modem. If you have a different port number, you may need to change this as well.

This running program will need to stay active while you connect to your remote Orion. You can close it when you are finished and re-run the batch file before a future session. You can also create several copies of this batch file with different IP addresses to setup quick access to several different sites.

When the com2tcp program is running, you can now start OrionTool as you normally would. Check that the OrionTool COM port under options/set options matches the COM port you selected for the com0com driver.

Preparing the Data Modem

IPn4G

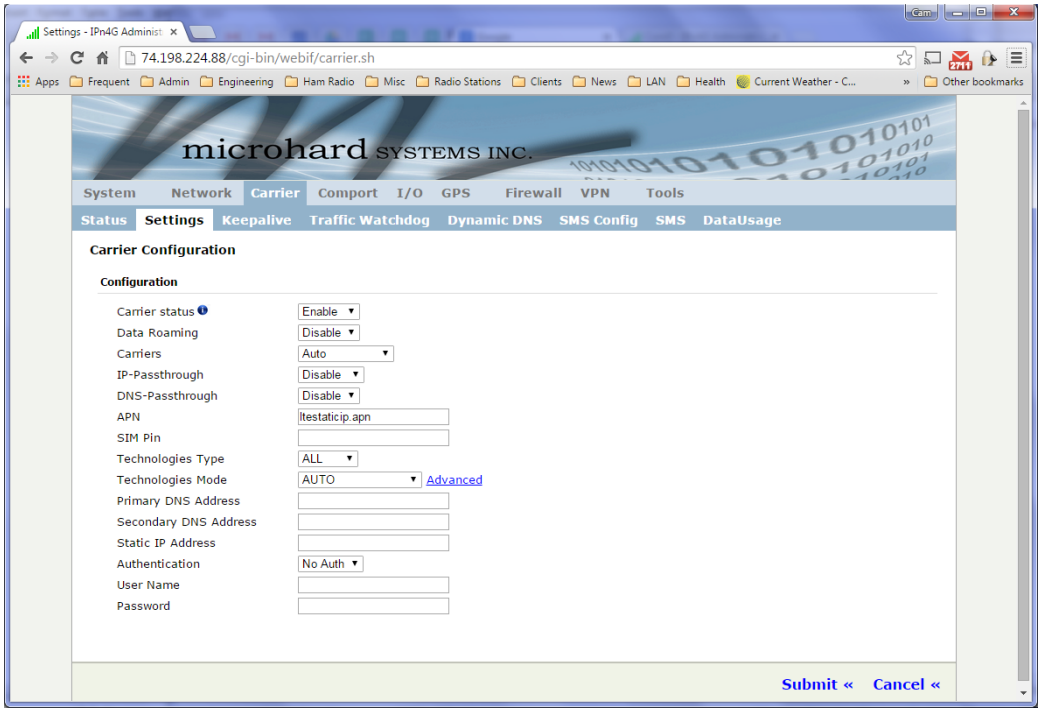
If you are using an Microhard IPn4G cellular data modem, you will need to make a few changes from the default for things to work properly.

Carrier Settings

For most carriers, after you obtain a static IP assignment, you need to change the APN to match the server that will assign the static IP address to you based on your SIM card account. Once done, your modem will be visible from the outside world at your given IP address. The firewall will now determine what you have access to.

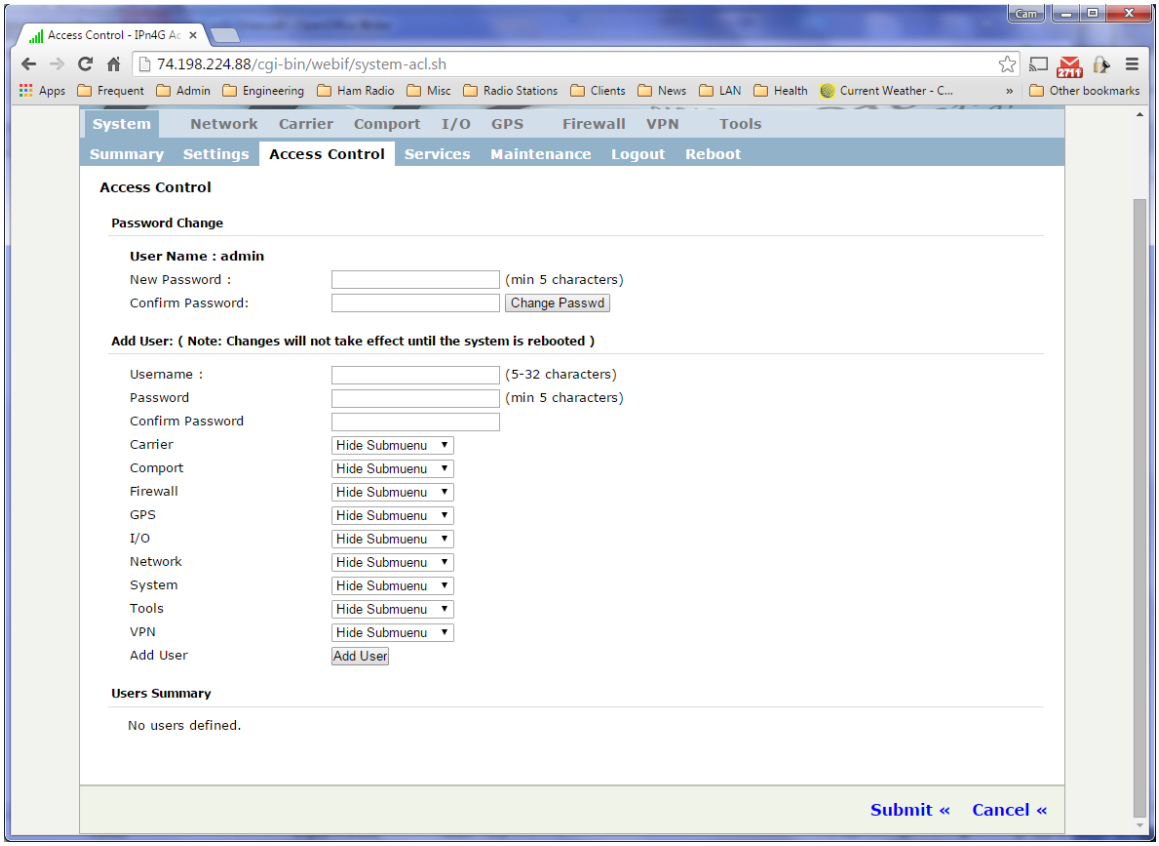
For the Microhard IPn4G, insert the SIM card and power up the modem. Attach an Ethernet cable between your PC and the modem. The modem will automatically assign an IP address to your PC and you should be able to connect to the modem with the browser at the address 192.168.168.1. Login as user “admin” password “admin”.

Navigate to the menu Carrier/Settings and change the APN from auto to the the assigned name (for Rogers, ltestaticip.apn). At the bottom of the page, select “submit”.



Setting the password

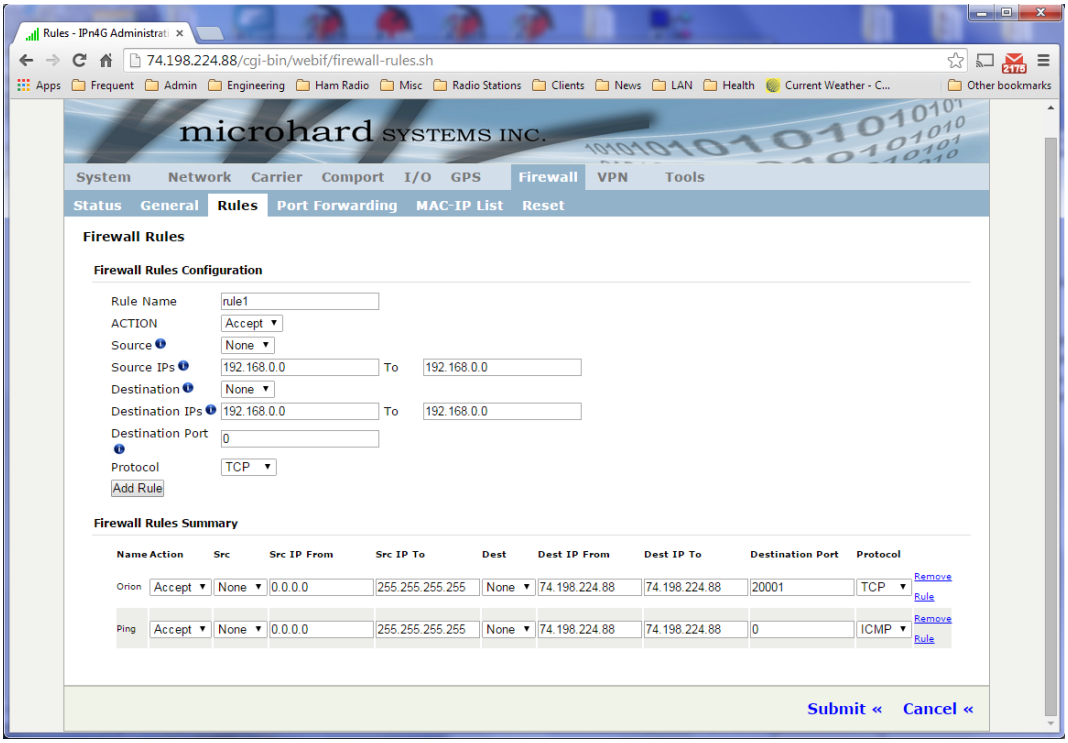
Navigate to System/Access Control and change the password.



Adjusting the Firewall

Once the modem has a static IP, the firewall setting will control what connections are permitted. For Orion, you wan to enable two protocols, ICMP for testing the access to the data modem via a PING command, and TCP on the 20001 port to allow access to Orion.

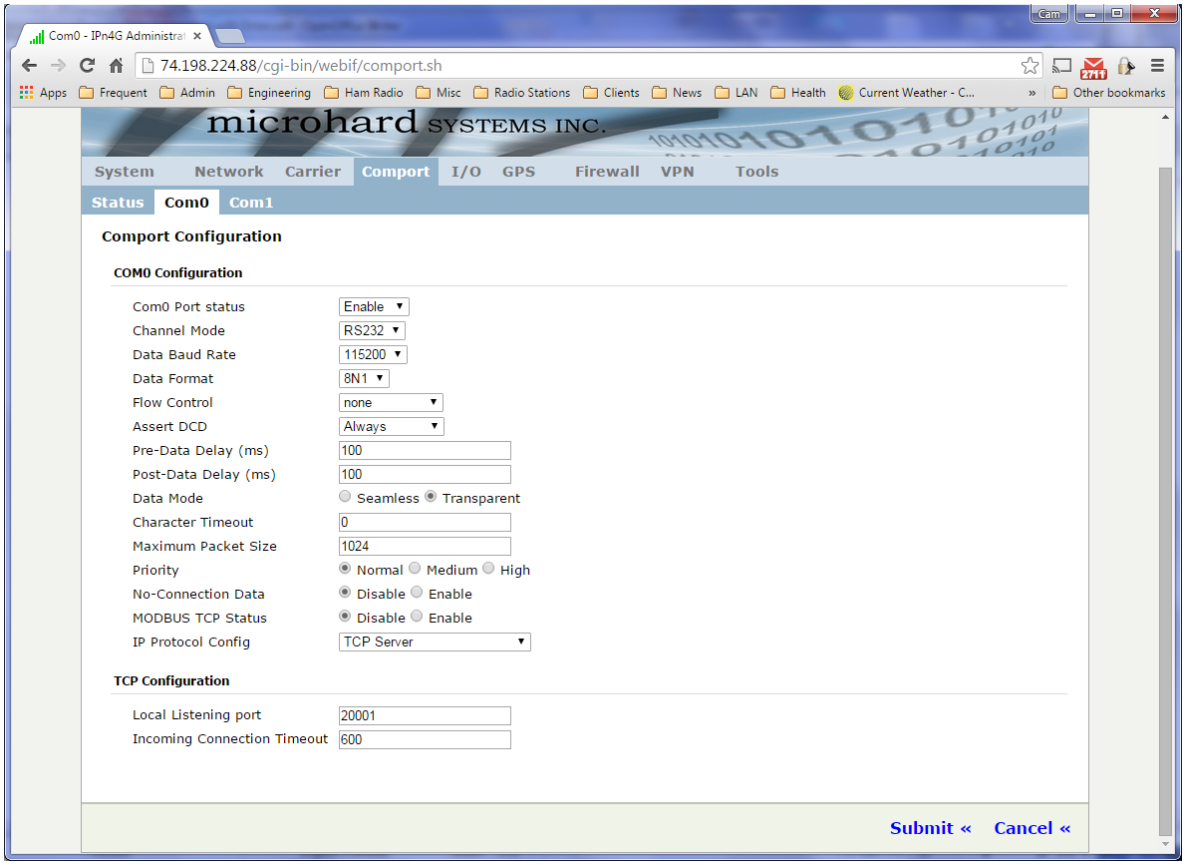
For the Microhard IPn4G the rules would look like this.



Adjusting the COM Port settings

The COM port settings need to be adjusted to match the speed of the Orion port and be connected to a TCP server so that a remote connection can be established.

For the Microhard IPn4G modem navigate to Comport/COM0 and adjust the Data Baud Rate to 115200. The other default parameters should be ok (8 bits, no parity, 1 stop bit). Change the IP Protocol Config to “TCP Server”. Finally, change the Incoming Connection Timeout to 600 seconds. The local Listening port can be left at 20001. Submit these changes.



Bullet Plus

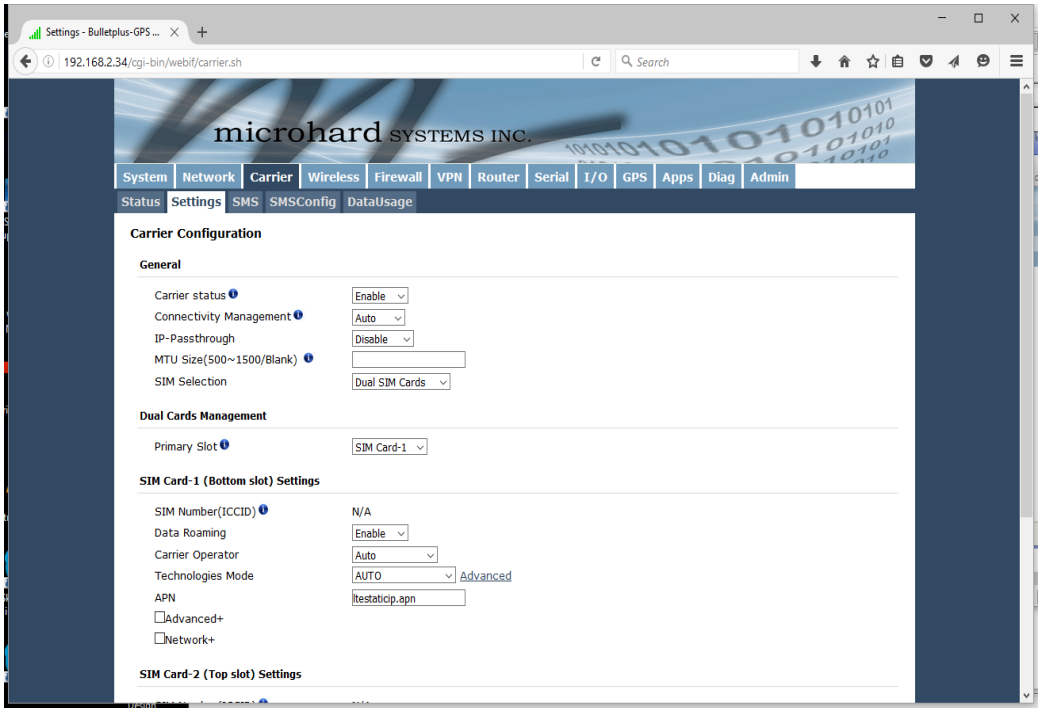
If you are using an Microhard Bullet Plus cellular data modem, you will need to make a few changes from the default for things to work properly.

Carrier Settings

For most carriers, after you obtain a static IP assignment, you need to change the APN to match the server that will assign the static IP address to you based on your SIM card account. Once done, your modem will be visible from the outside world at your given IP address. The firewall will now determine what you have access to.

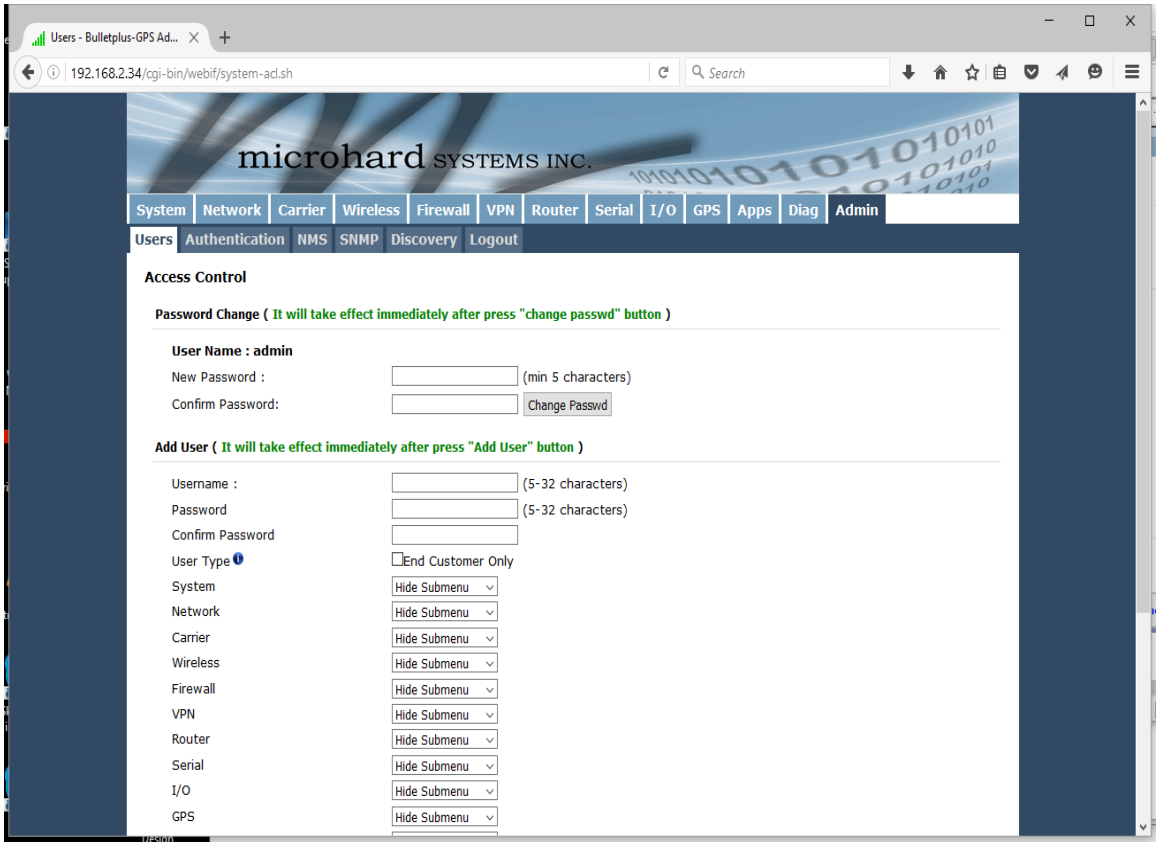
For the Microhard Bullet Plus, insert the SIM card and power up the modem. Attach an Ethernet cable between your PC and the modem. The modem will automatically assign an IP address to your PC and you should be able to connect to the modem with the browser at the address 192.168.168.1. Login as user “admin” password “admin”.

Navigate to the menu Carrier/Settings and change the APN from auto to the the assigned name (for Rogers, ltestaticip.apn). If you may be taking your modem to a different country/carrier, you might want to allow roaming as well. At the bottom of the page, select “submit”.



Setting the admin password

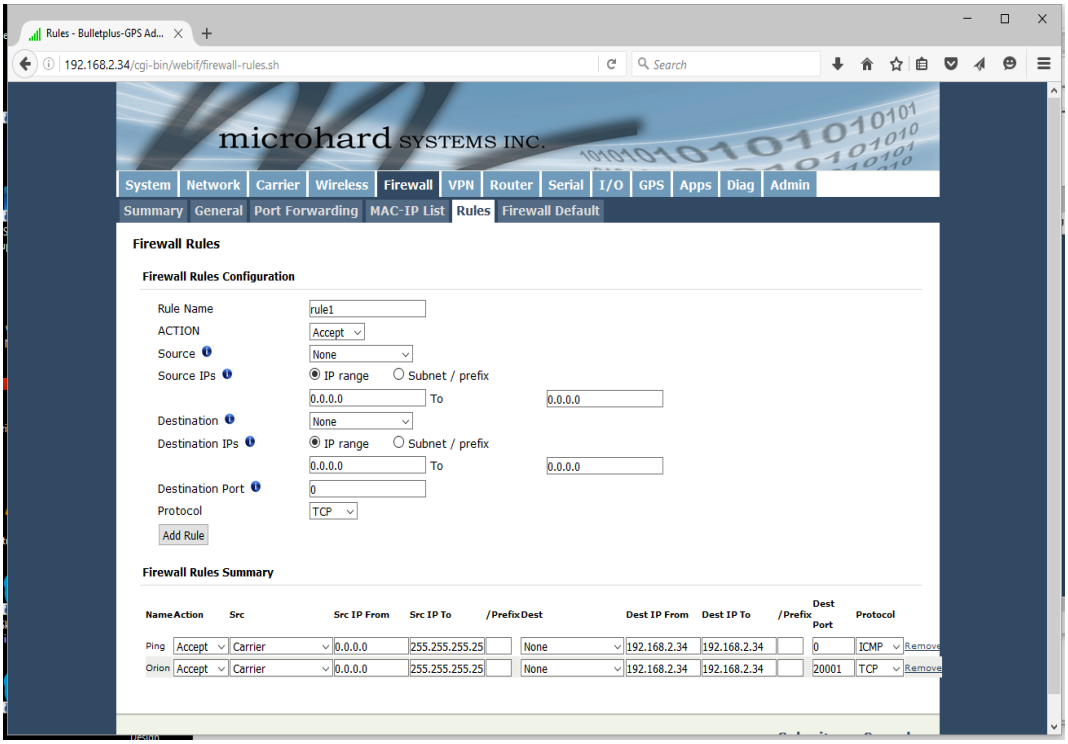
Navigate to Admin/Users page and change the admin password.



Adjusting the Firewall

Once the modem has a static IP, the firewall setting will control what connections are permitted. For Orion, you wan to enable two protocols, ICMP for testing the access to the data modem via a PING command, and TCP on the 20001 port to allow access to Orion.

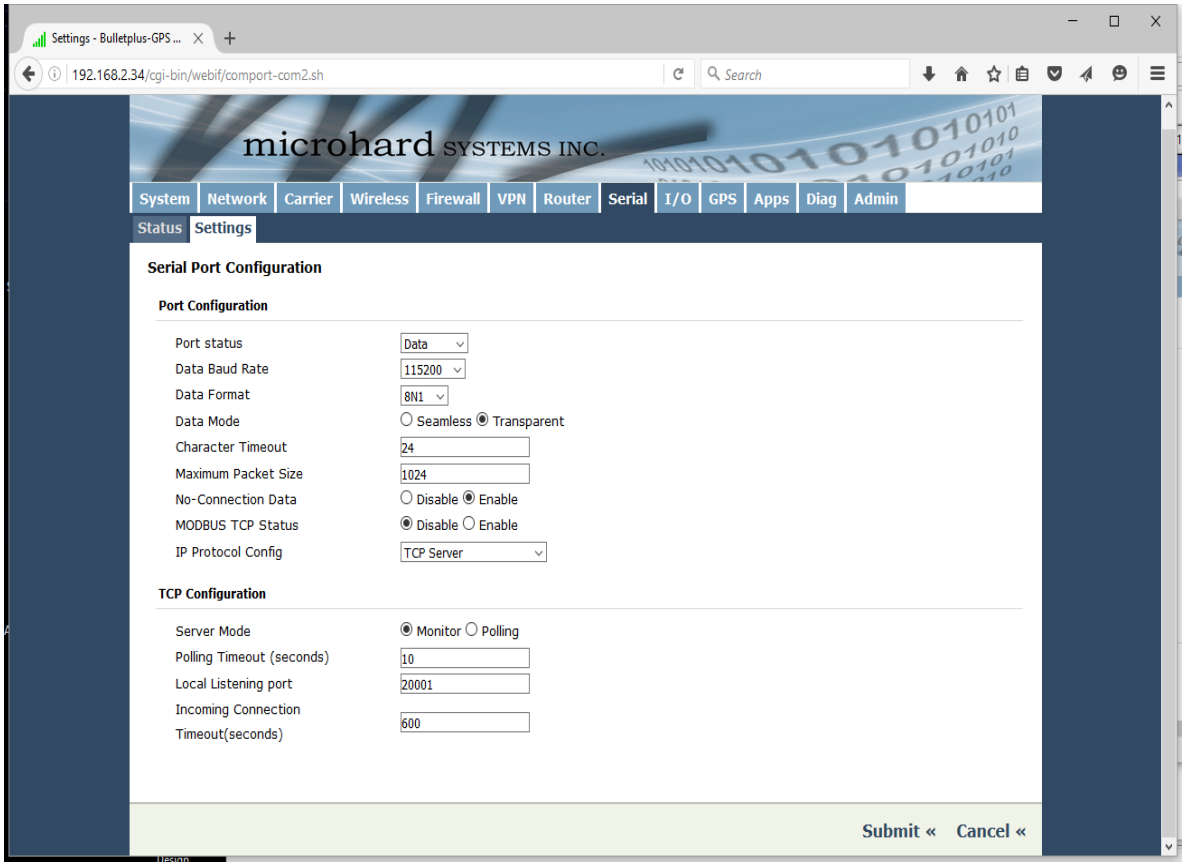
For the Microhard Bullet Plus the rules would look like this. For the destination address range, use the static IP provided by your carrier rather than the one shown.



Adjusting the Serial Port settings

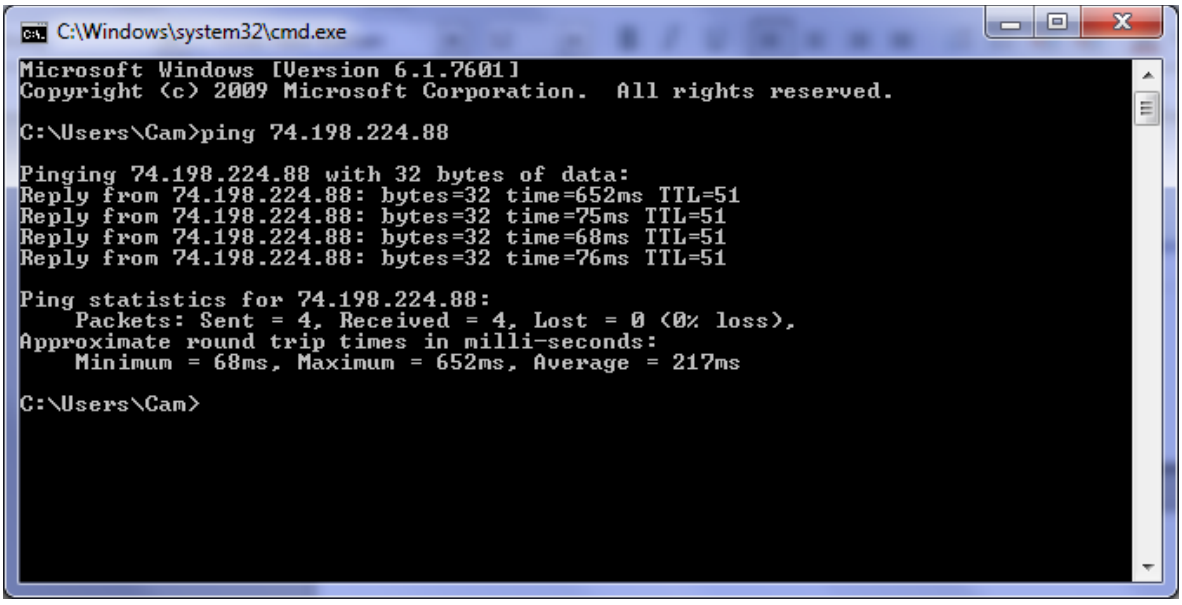
The Serial port settings need to be adjusted to match the speed of the Orion port and be connected to a TCP server so that a remote connection can be established.

For the Microhard Bullet Plus modem, navigate to Serial/Settings page and set the Port status to “data.” Adjust the Data Baud Rate to 115200. The other default parameters should be ok (8 bits, no parity, 1 stop bit). Change the IP Protocol Config to “TCP Server”. Finally, change the Incoming Connection Timeout to 600 seconds. The local Listening port can be left at 20001. Also change the maximum packet size to 1024. Submit these changes.



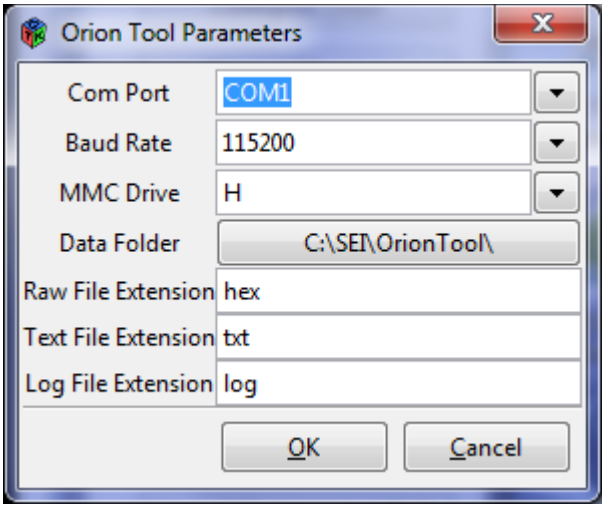
Testing the connection

You should now be able to ping your data modem. at the command prompt on your PC, you should be able to see replies from the modem as follows.



Start the com0com driver to open the TCP connection through the Internet to from your computer to the modem. To do this, go into the “C:\SEI\com0com-SEI” directory or wherever you unzipped your files. Double click on the OrionTCP.bat file you modified earlier. At this point, the TCP connection should be open.

Now, open up OrionTool, and set the COM port to match the one you assigned with the com0com driver.



Now you should be able to access the Orion with Configure Orion, Manage Memory, Open Serial Port,

etc. as you normally would.

When you are finished with OrionTool, make sure you close the com2tcp window as well.

If you have multiple sites, you can create multiple versions of the OrionTCP.bat file using different extensions to the name such as “OrionTCP-Site1.bat” and modifying each one with the IP address of each site. Then, all you need to do is open the batch file that corresponds to the site you want to access.

For convenience, you might want to place links to your OtionTCP.bat files on your desktop.