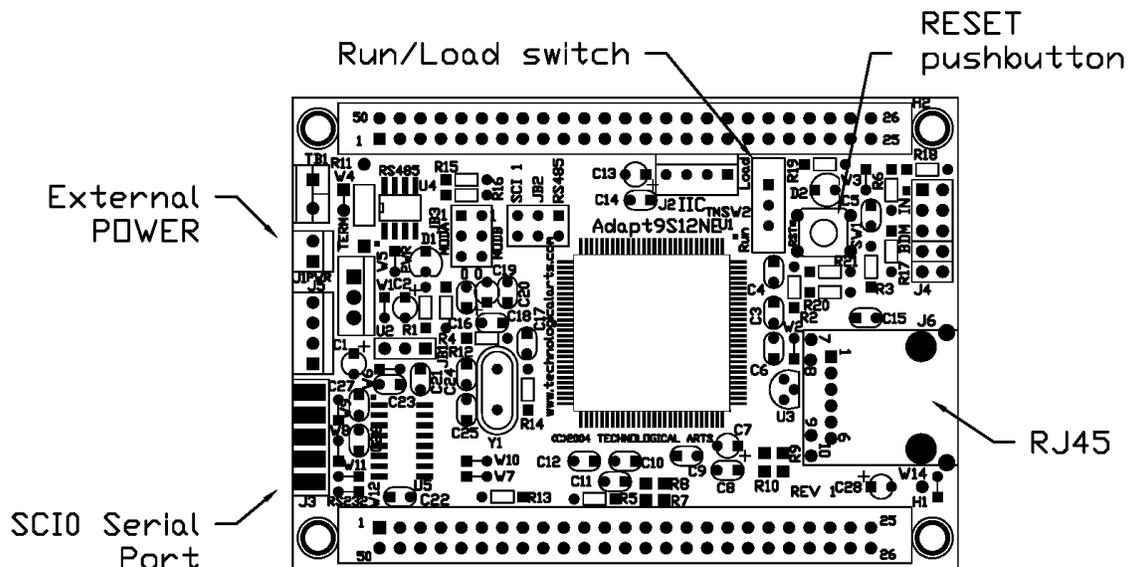


## Using Adapt9S12NE64 + Demo Card with uIP

### Programming Adapt9S12NE64 with uBUG12:

The Adapt9S12NE64 is pre-programmed with SerialMonitor/Loader to interface with uBUG12 GUI a Windows application program. Therefore, programming and erasing the MCU is made easy and straight forward.

On the Adapt9S12NE64 module is the Run/Load switch to place the MCU into Run or Load mode. The switch is connected to Port L bit 6. From RESET or Power up, the SerialMonitor/Loader checks the switch status. If it is low then it will run the SerialMonitor/Loader otherwise the user's application is executed.



To start, slide Run/Load switch to Load, power up the board then press the RESET pushbutton momentarily. Double click on the uBUG12 icon to execute uBUG12 program. In the command bar type “con 1” (without the double quote) for COM 1 and “con 2” for COM 2. A “connect” message will appear in the uBUG12 window to indicate that PC and Adapt9S12NE64 established communications.

Make sure to erase the FLASH memory by typing the command “FBULK”. Then to program, type the command “FLOAD ;b” for banked S records. For non-banked S2 the command is “FLOAD”. Once the command FLOAD is invoked uBUG12 will open an explorer window to help search and locate the S record. Double click on the appropriate S record to initiate download to MCU.

After successful a programming a message “LOADED OKAY: 1.578125Sec. Transfer rate was 9.9802Kb/sec” will appear in the window. Slide the

Run/Load switch to Run and press the RESET button momentarily. The programmed application is now running.

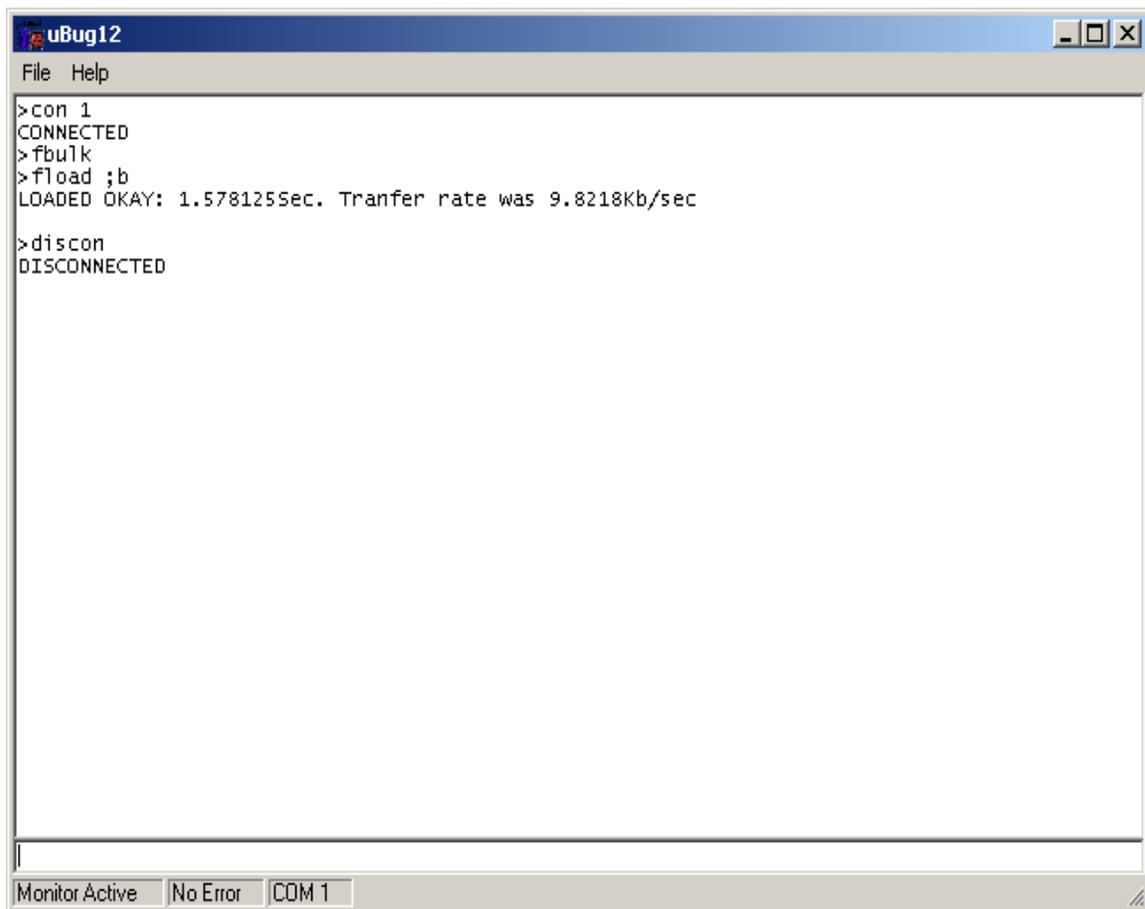
Programming the Adapt9S12NE64 made easy. Follow the instruction above how to do so. In uBUG12 window these are the programming sequences as shown. In this example, the serial cable is plug into the PC COM 1 serial port.

con 1 – uBUG12 connecting to the PC COM 1 serial port

fbulk – erasing the FLASH

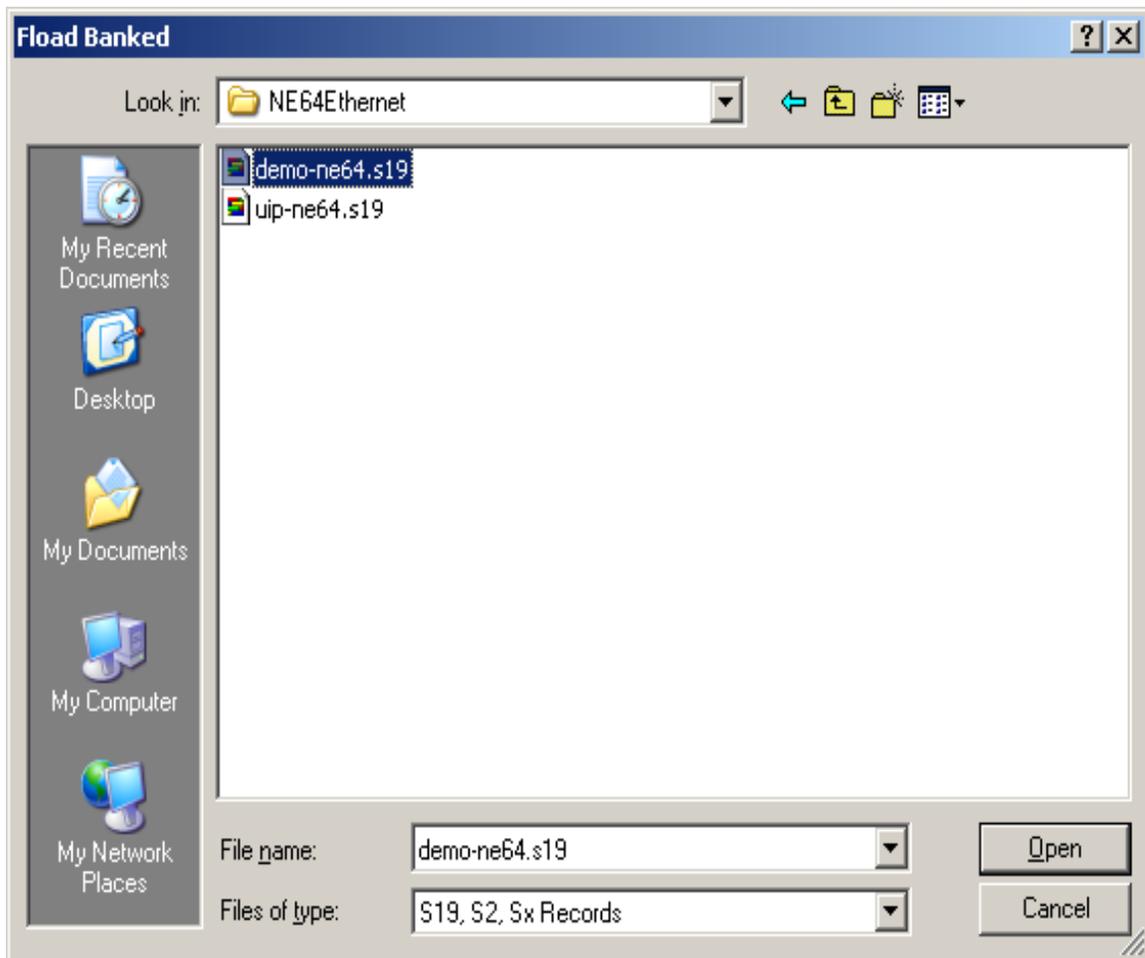
fload ;b – uploading the s-record to Adapt9S12NE64

discon – disconnecting COM 1 from the uBUG12 application



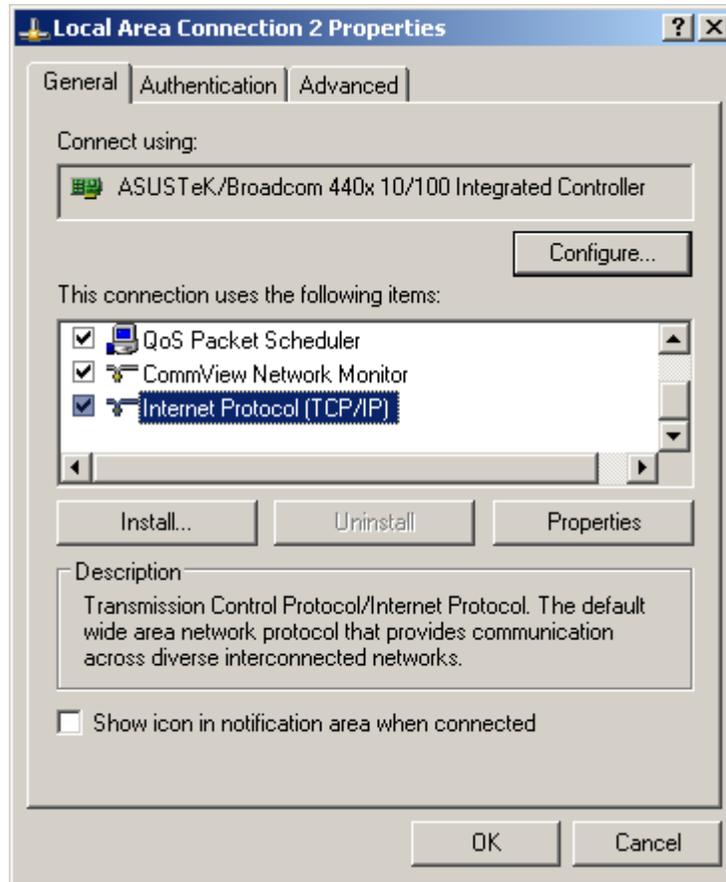
```
uBug12
File Help
>con 1
CONNECTED
>fbulk
>fload ;b
LOADED OKAY: 1.578125Sec. Tranfer rate was 9.8218kb/sec
>discon
DISCONNECTED
Monitor Active No Error COM 1
```

uBUG12 explorer window below is searching for the demo-ne64.s19 after “fload ;b” command is invoked.



Configuring PC Ethernet card:

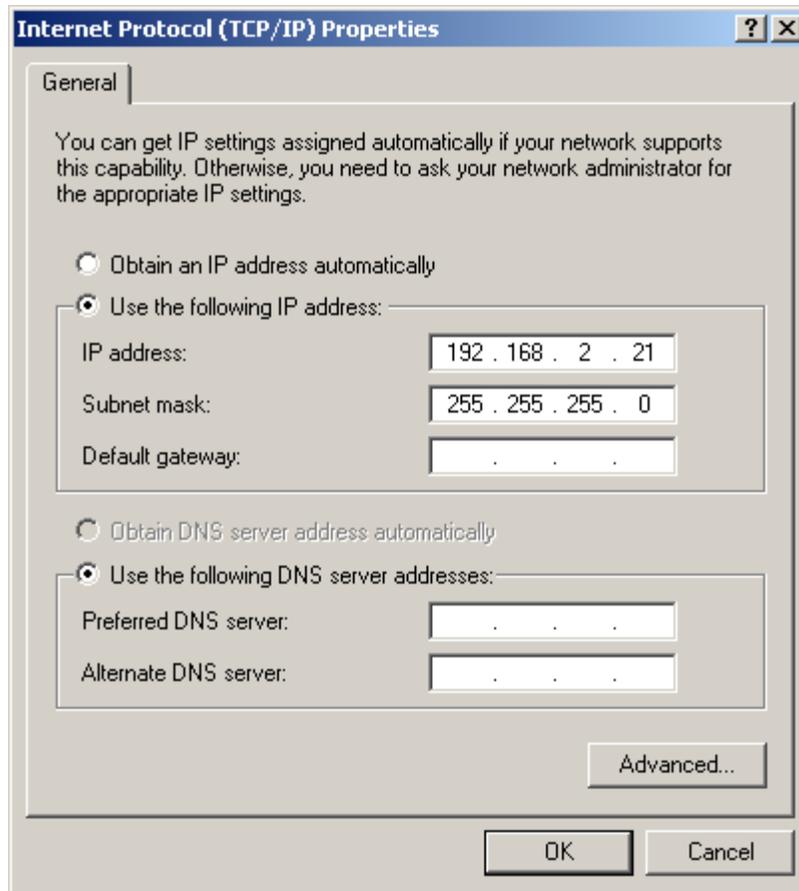
The Ethernet Card IP address must change to be able to communicate to the Adapt9S12NE64. Locate MyNetwork icon to change the Ethernet IP address. Below is what to look for.



Locate the Internet Protocol (TCP/IP) connection type, highlight it then press the Properties button.

The IP address of the Adapt9S12NE64 per uIP port is 192.168.2.7. The subnet mask is 255.255.255.0

Below is what the settings should be set as an example. Once the IP address and Subnet mask are set then press the OK button then OK on Local Area Connection Properties.



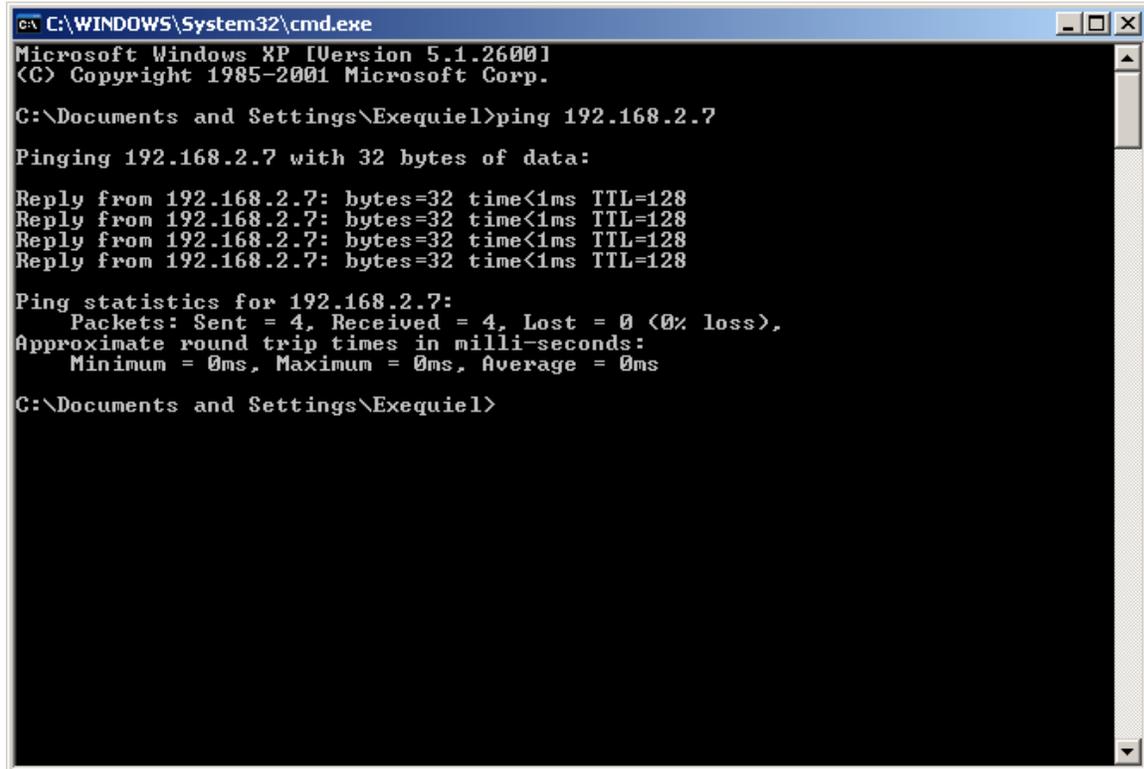
Now that the PC Ethernet Card has been configured they can now be all connected. It is better to use a HUB and a straight cable to make it easy for hardware debugging. The main reason is to be able to look at the link LED activity at a glance without having to check the back of the computer. The other reason is the Packets from the PC will be sent to all ports without them being altered and be packet sniff without difficulty.

All the Ethernet cables are straight thru type. Connect the Ethernet cable from PC to HUB. Make sure the Link LED is active that correspond to the PC and HUB connections. Connect another Ethernet cable from Adapt9S12NE64 to HUB. The Link LED on the HUB between these 2 will NOT be active until the Adapt9S12NE64 has been initialized.

Follow the sequences:

1. Power up Adapt9S12NE64 with Run/Load switch in Run mode.
2. Press RESET button momentarily
3. Upon RESET release the Link LED should be ACTIVE on the HUB and Adapt9S12NE64

At this point we can now PING the Adapt9S12NE64 as shown below.



```

c:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Exequiel>ping 192.168.2.7

Pinging 192.168.2.7 with 32 bytes of data:

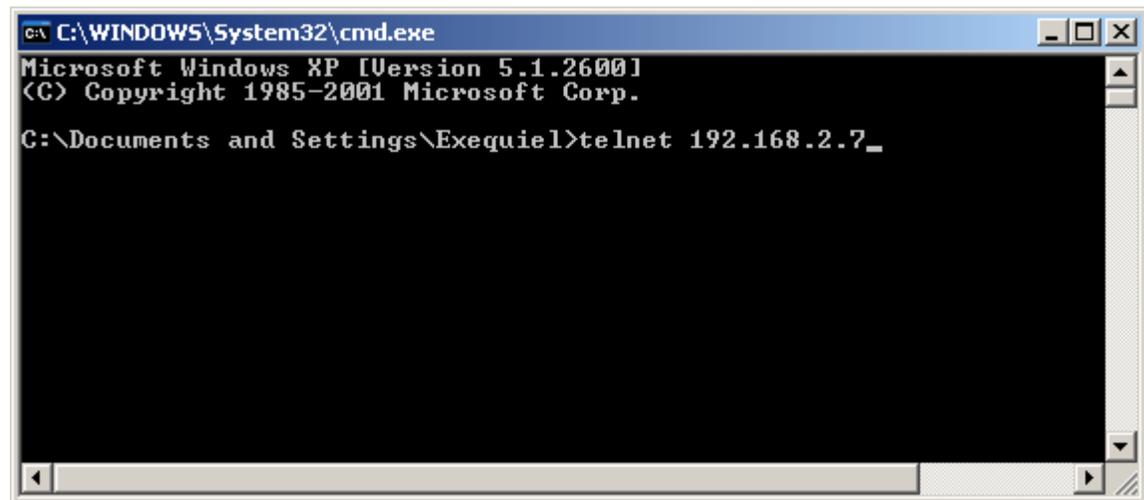
Reply from 192.168.2.7: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Exequiel>

```

We can also use a DOS Telnet session.



```

c:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

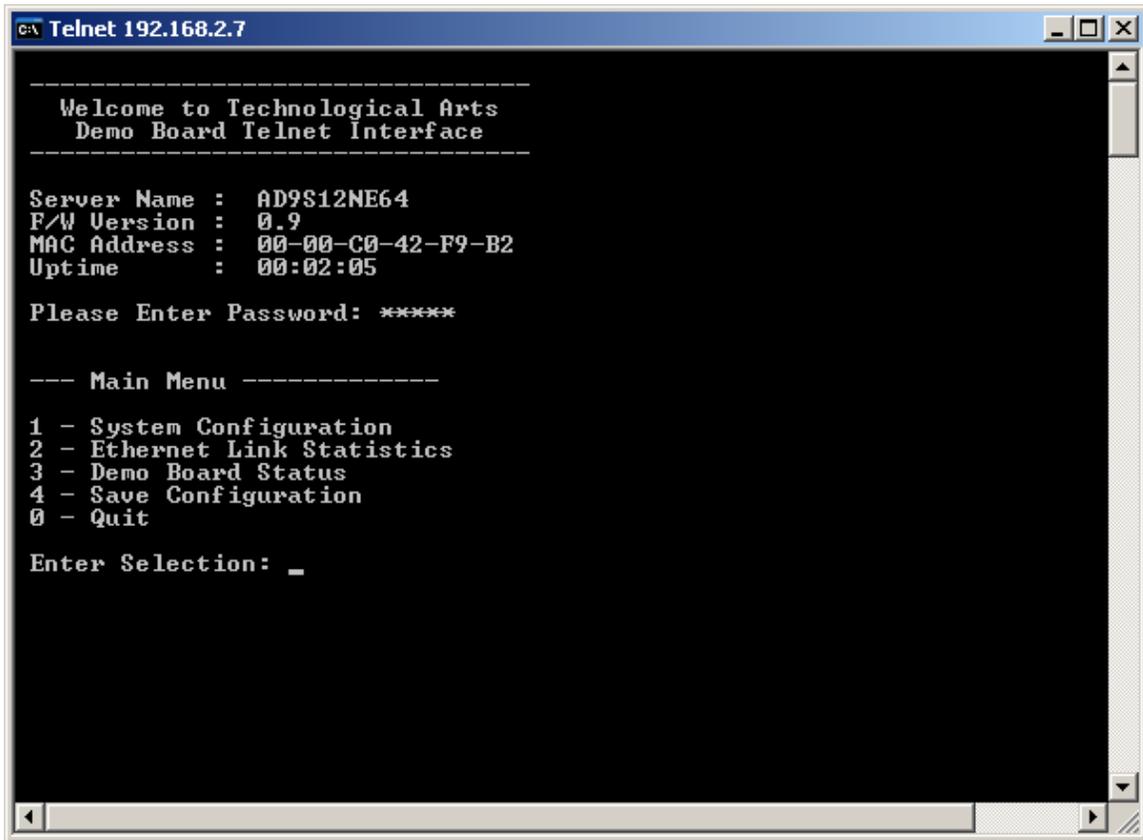
C:\Documents and Settings\Exequiel>telnet 192.168.2.7_

```

Once the Telnet command is invoked the session will change as shown below. Here it is asking for the password.

Please Enter Password: hello

Once the Password is entered then it will run the Demo application.



```
c:\ Telnet 192.168.2.7

-----
Welcome to Technological Arts
Demo Board Telnet Interface
-----

Server Name : AD9S12NE64
F/W Version : 0.9
MAC Address : 00-00-C0-42-F9-B2
Uptime      : 00:02:05

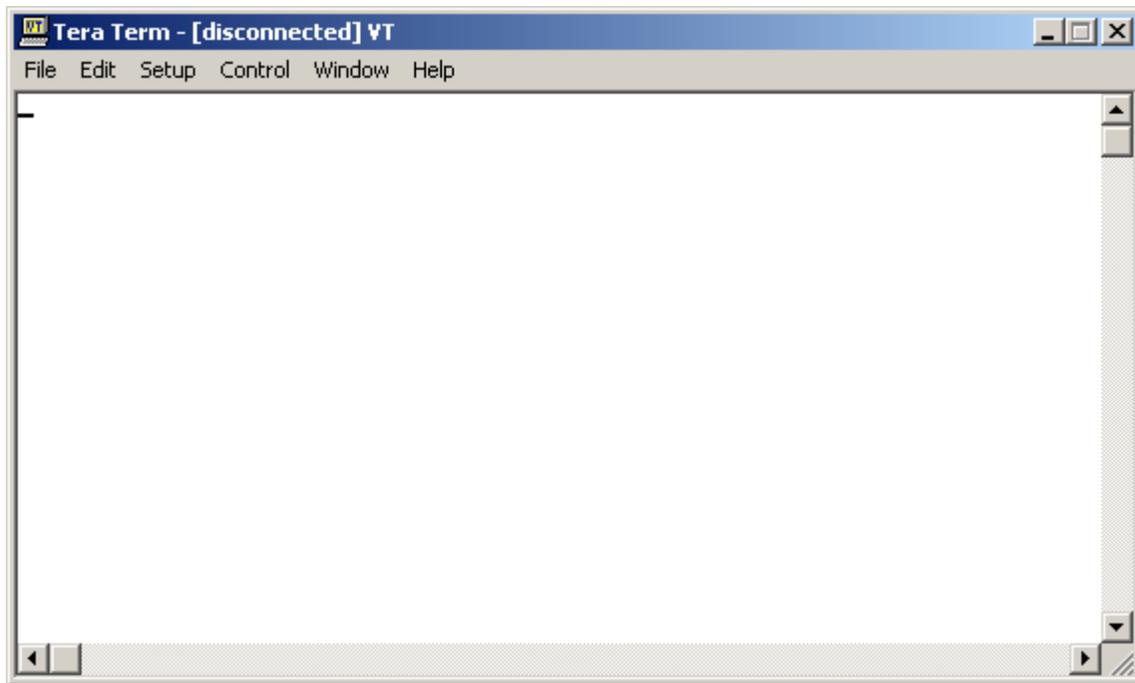
Please Enter Password: *****

--- Main Menu -----
1 - System Configuration
2 - Ethernet Link Statistics
3 - Demo Board Status
4 - Save Configuration
0 - Quit

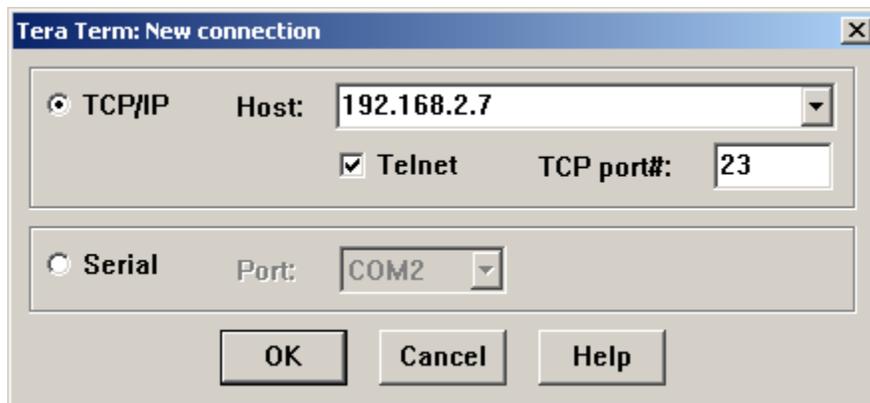
Enter Selection: _
```

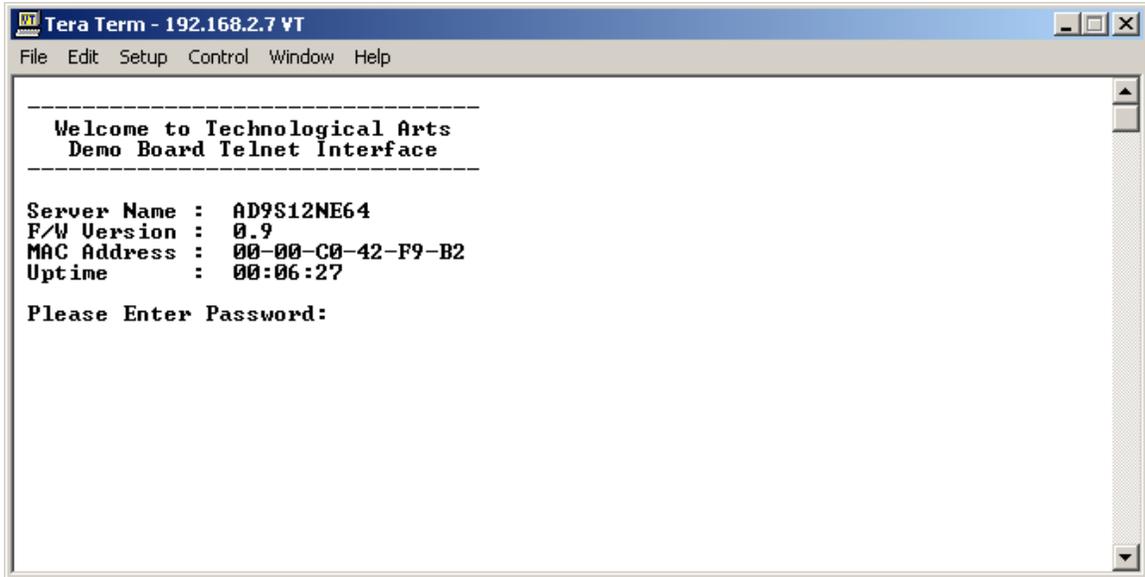
In this other example the TeraTerm GUI is used. It can be downloaded from this link <http://hp.vector.co.jp/authors/VA002416/teraterm.html>

Below is a sequence of how to use Tera Term with the Adapt9S12NE64. Open File menu and select New Connection.

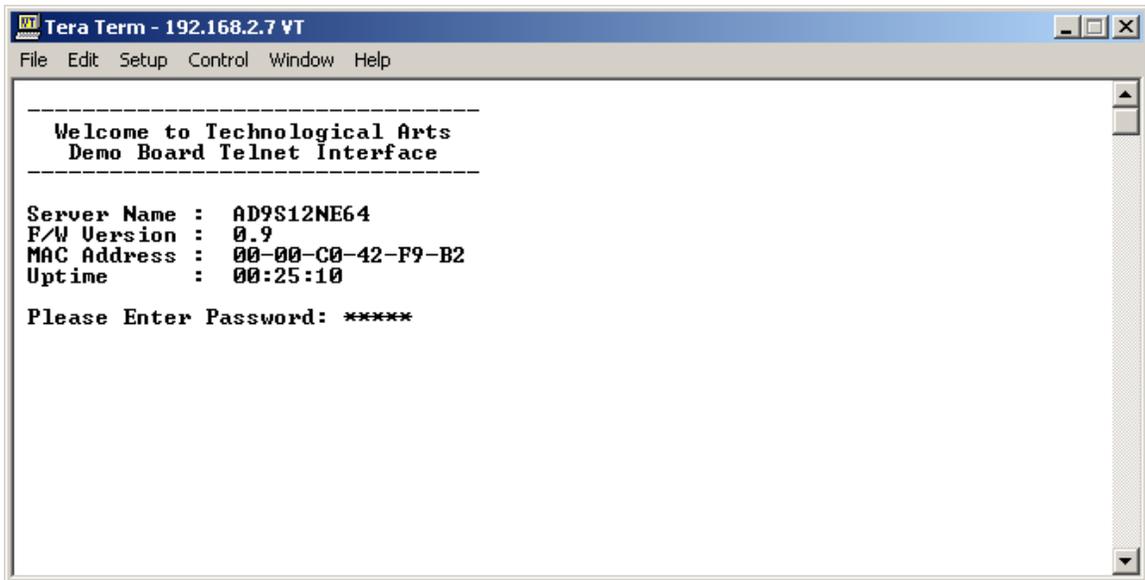


Select TCP/IP, type in the Host address, Telnet type checked then press OK.





Type in the Password: hello



Choose 1 to see System Configuration

```
Tera Term - 192.168.2.7 VT
File Edit Setup Control Window Help

-----
Welcome to Technological Arts
Demo Board Telnet Interface
-----

Server Name : AD9S12NE64
F/W Version : 0.9
MAC Address : 00-00-C0-42-F9-B2
Uptime      : 00:25:10

Please Enter Password: ****

--- Main Menu -----

1 - System Configuration
2 - Ethernet Link Statistics
3 - Demo Board Status
4 - Save Configuration
0 - Quit

Enter Selection: 1_
```

Here it will display the TCP/IP Address, Subnet Mask, Default Gateway, Admin Email Address and Change Password menu.

Do not change these settings until such time as one is familiar and confident with the hardware.

```
Tera Term - 192.168.2.7 VT
File Edit Setup Control Window Help

-----
Welcome to Technological Arts
Demo Board Telnet Interface
-----

Server Name : AD9S12NE64
F/W Version : 0.9
MAC Address : 00-00-C0-42-F9-B2
Uptime     : 00:25:10

Please Enter Password: *****

--- Main Menu -----
1 - System Configuration
2 - Ethernet Link Statistics
3 - Demo Board Status
4 - Save Configuration
0 - Quit

Enter Selection: 1

--- System Configuration ---
1 - TCP/IP Address      : 192.168.2.7
2 - Subnet Mask        : 255.255.255.0
3 - Default Gateway    : 192.168.10.10
4 - Admin Email Address : pmorency@globetrotter.net
5 - Change Password

0 - Return to Main Menu

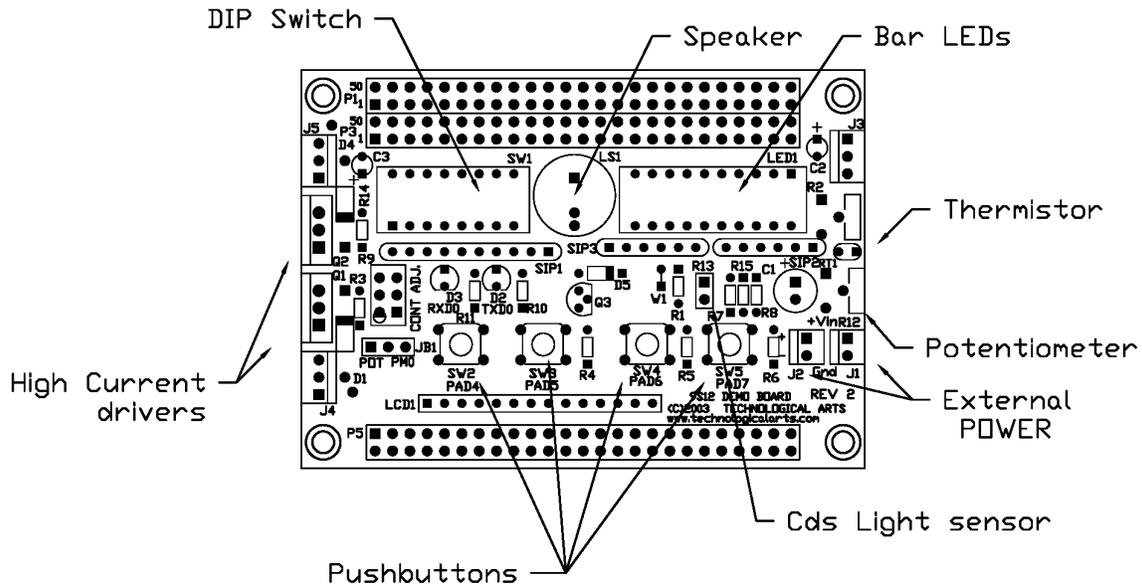
Enter Selection: _
```

## Sample Application.

The demo-ne64.s19 is an example of the TCP/ip stack implementation ported to the Adapt9S12NE64. Here another card called Demo card is added. See link <http://www.technologicalarts.com/myfiles/AD9S12DEMO.html>

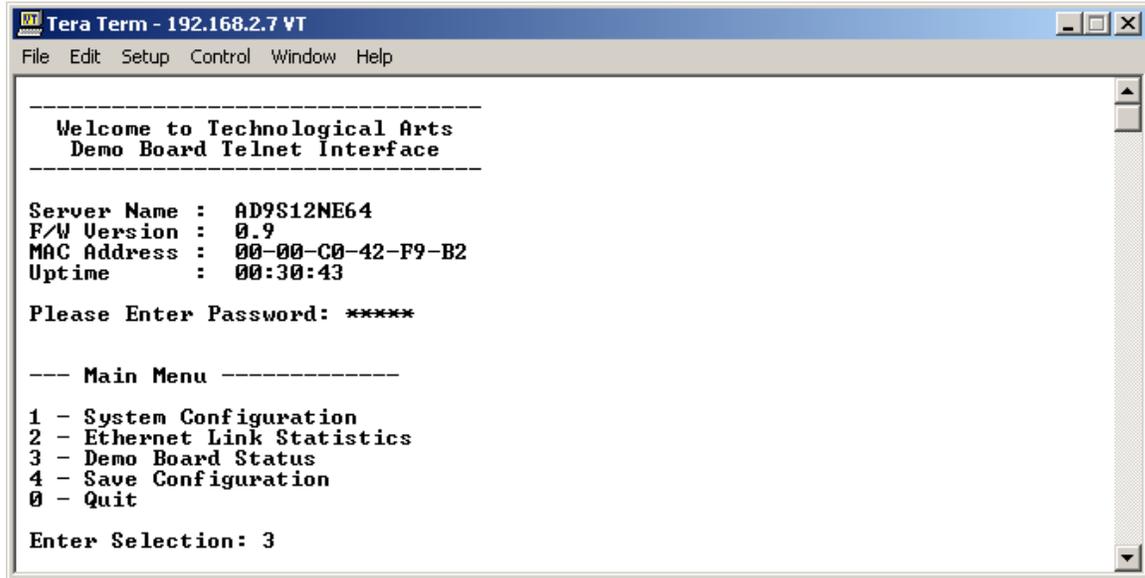
On the Demo Card are:

- 1 - Bar LED
- 4 - Pushbuttons
- 2 - High current drivers
- 1- Thermistor
- 1 - light sensor
- 1 - Potentiometer
- 1 - Dip Switch
- 1 - Speaker



The demo program will monitor the state of the DIP switch position, the analog values of potentiometer, thermistor, and Cds light sensor as percentage of full scale. As well, the high current drivers and Bar LEDs can be controlled to be turned off or on via PC Telnet session.

Below is a demonstration of the demo program. Choose 3 to show demo board status.



```
Tera Term - 192.168.2.7 VT
File Edit Setup Control Window Help

-----
Welcome to Technological Arts
Demo Board Telnet Interface
-----

Server Name : AD9S12NE64
F/W Version : 0.9
MAC Address : 00-00-C0-42-F9-B2
Uptime      : 00:30:43

Please Enter Password: *****

--- Main Menu -----
1 - System Configuration
2 - Ethernet Link Statistics
3 - Demo Board Status
4 - Save Configuration
0 - Quit

Enter Selection: 3
```

Once the command is invoked the window will change to show the inputs status of DIP switches, Potentiometer, Temperature Sensor and light sensor. It will also show the output status of LED Bar and the high current drivers. To refresh the status, press the CR on the PC keyboard.

```
Tera Term - 192.168.2.7 VT
File Edit Setup Control Window Help

-----
Welcome to Technological Arts
Demo Board Telnet Interface
-----

Server Name : AD9S12NE64
F/W Version : 0.9
MAC Address : 00-00-C0-42-F9-B2
Uptime      : 00:30:04

Please Enter Password: *****

--- Main Menu -----
1 - System Configuration
2 - Ethernet Link Statistics
3 - Demo Board Status
4 - Save Configuration
0 - Quit

Enter Selection: 3

--- Demo Board Inputs -----
DIP Switches <1..4> : 0000
Potentiometer Position : 0 %
Temperature Sensor   : 32 %
Light Sensor         : 86 %

--- Demo Board Outputs -----
1 - LED Bar Graph <2+8> : 00 X0110000
2 - MOSFET Switch Q1   : OFF
3 - MOSFET Switch Q2   : OFF

0 - Return to Main Menu

Enter Selection:
```

This demo program can then be used as basis of one's project for Ethernet application.