

# **Radiant Communications Corporation**

## **V4400 MPEG-2 Digital Video/Audio Encoder/Decoder**

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## ***DESCRIPTION***

The Radiant Communications Corp. V4400 Series Provides broadcast quality, full motion video over IP networks. The system meets MPEG-2 (4,2,0) to 10/100 Ethernet. The bandwidth is user selectable from 1 to 7 MBS. The V4400 series transmits one video channel, stereo audio signals. There are a myriad of applications-for CATV companies sending broadcast channels from TV station to Headend, or from one Headend to another. In general, anywhere broadcast quality video/audio needs to be transported over an IP network. Also, the V4400 system can be multicast, meaning that one encoder can transmit to any number of network locations, using either PC's or decoders.

## ***UNPACKING THE UNIT***

Remove all materials from the packing box and confirm receipt of the following:

- V4410-T Video Encoder
- A/C power cord.
- User's manual.
- One Audio Cable (1/8 in. to 2 x RCA), male-to-male, 6ft
- One Video Cable (RCA to RCA), male-to-male, 6ft
- One S-video Cable, male-to-male, 6ft
- Two CAT 5 Ethernet Cable, 6ft
- Adapter BNC/RCA
  
- V4420-R Video Decoder
- A/C power cord.
- User's manual.
- One Cable 3-Plug RCA/RCA, male-to-male, 6ft
- Two CAT 5 Ethernet Cable, 6ft
- One IR Keyboard

In the unlikely event that anything is missing, contact your authorized Radiant Communications dealer or representative. If it becomes necessary to return the unit (s), repackage the unit in its original box.

## **V4410 Set-up**

### **Hardware Installation**

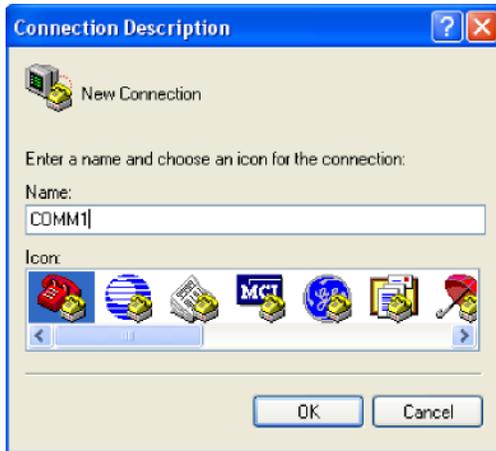
1. Connect the video source to either the BNC Video connector (for composite video) or the S-Video connector.
2. Connect your Lan Ethernet cable to the Ethernet RJ-45. Note: Link and Activity Leds indicate 100Mb and Full Duplex Respectively
3. Power up the unit using the AC line cord.
4. Connect Audio source to the 1/8<sup>th</sup> inch Audio Connector using the RCA-to-1/8”Adapter provided.

### **Configuring the V4410**

Before you can use the V4410 on your network, you will need to determine whether or not to assign a static IP Address to your V4410 (which means that it retain same the IP Address until you change it), or use the default DHCP setting that allows your network to automatically assign a dynamic IP address. It is recommended that you assign a static IP Address to your V4410.

1. In order to configure your V4410, you will need to ask your IT/Networking department for the following information:
  - a. Does your network use DHCP and have a DHCP Server running? (Yes or No. If No, you will need to assign a static IP Address to your V4410.)
  - b. What is the subnet mask of your network? (Example: 255.255.255.0)
  - c. What is the default gateway address on your network? (Example: 192.168.1.1)
  - d. What is an available IP address we can assign to the V4410 unit? (Example: 192.168.1.100)
2. Connect the Null Modem cable between the RS-232 port of the V4410 and a COMM port on your PC (typically the COM1 port).
3. Launch Microsoft’s HyperTerminal application. [If you do not have HyperTerminal installed, go to the Windows Control Panel> Add or Remove Programs> Add/Remove Windows Components, and install it from there.]
  - a. Go to the Windows Start menu, select Programs> Accessories> Communications> HyperTerminal.

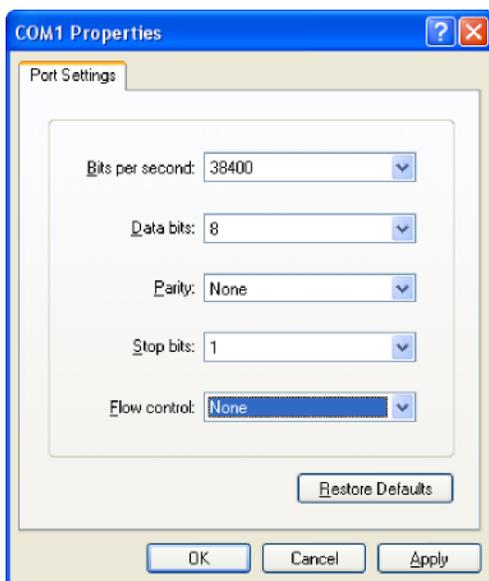
b. Select a name and an icon for this connection, click OK.



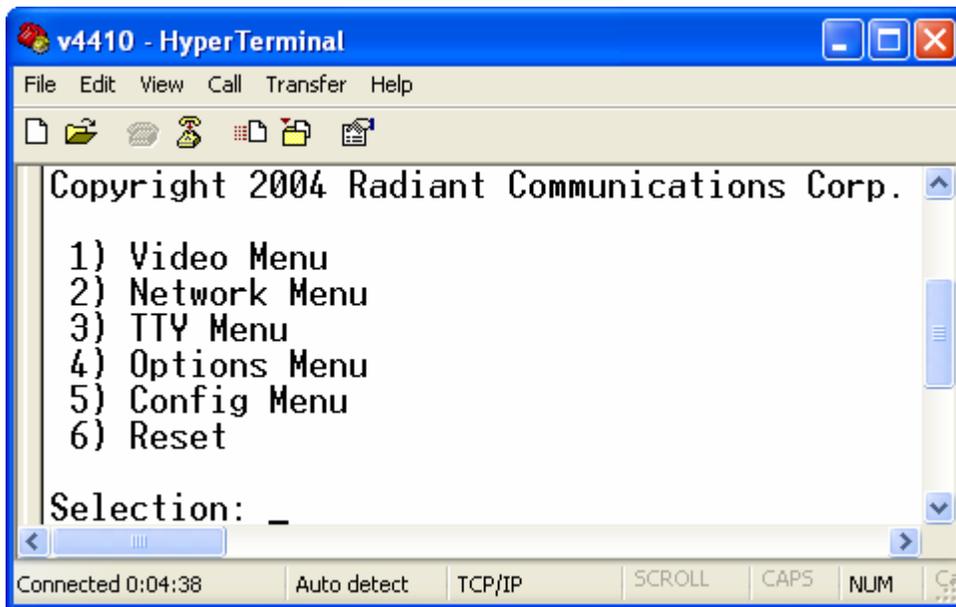
c. Specify the port that you are connected to on your PC (typically COM1), click OK.



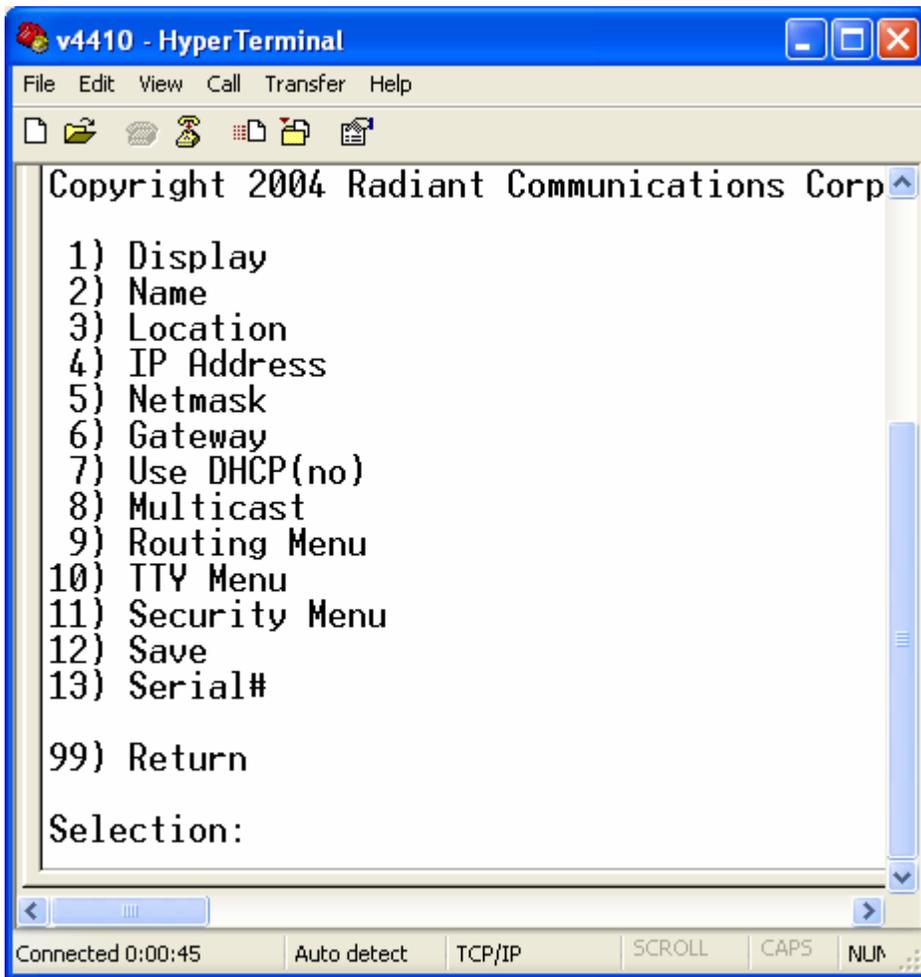
d. Configure the Port Settings as shown next to communicate with the V4410, click OK.



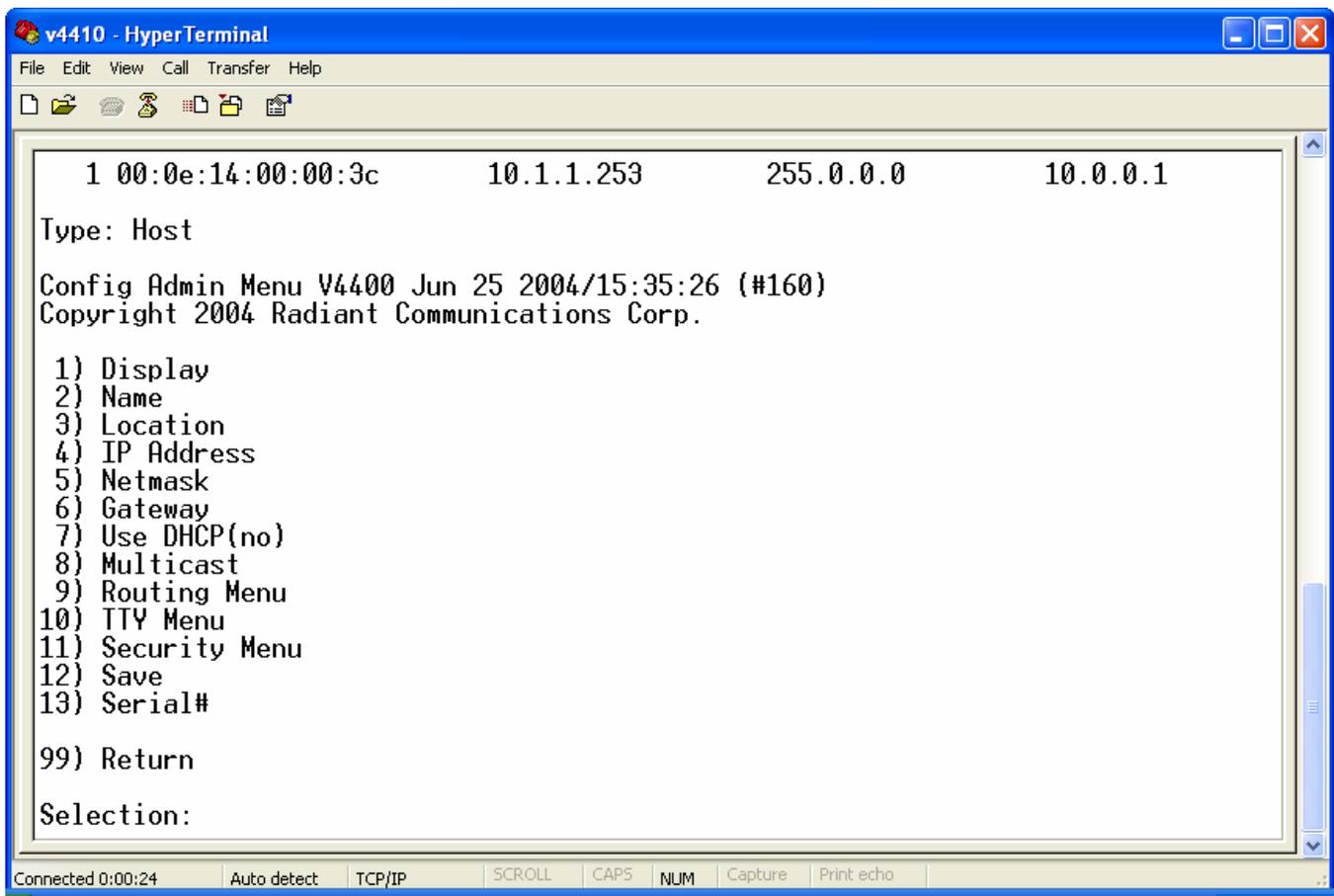
e. From the Main Admin Menu, select “5” and press ENTER to open the Config Menu.



f. Once DHCP is turned off, you will want to modify options 4–7. Record each value that you enter as you will need those values when you go to start/connect to a video stream.



- g. When you are finished configuring options, select “12” to Save your settings, and “99” to Return to the Main Admin Menu.



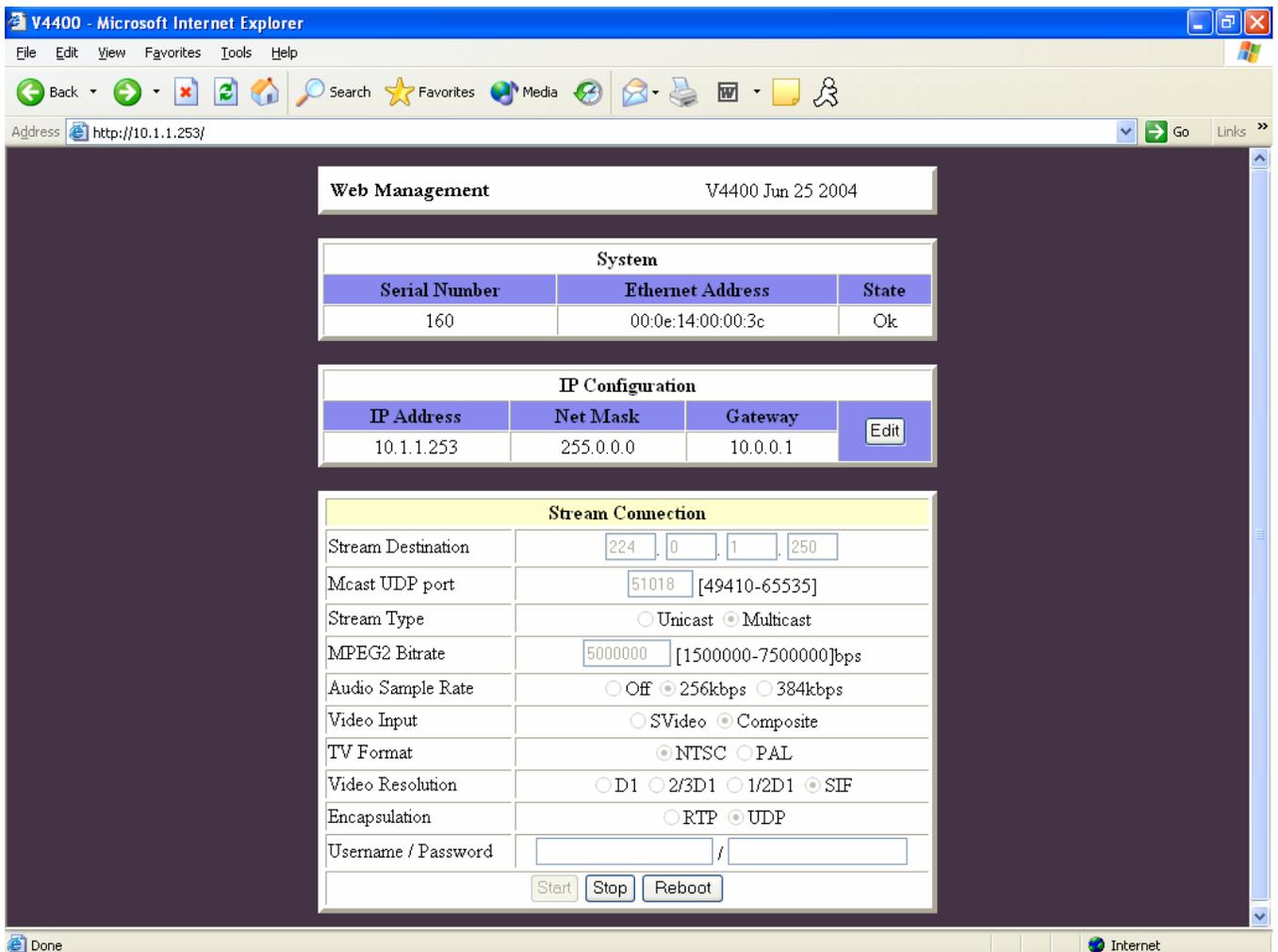
- b. Enter the items that you would like to modify. When you modify the Password, your entry will be visible in plain text and you will be asked to confirm your entry. When finished, you must save your settings in order for them to take effect. Select “3” and press ENTER.
5. After saving your changes, go up to the top-level Main Admin Menu (99 to go up) and select “6” to issue a Reset. The V4410 should reset and the Menu should appear on your console window again when the reboot is complete. Your V4410 should be ready to test.  
NOTE: The values that you enter and save in this menu will be stored even if the unit is rebooted. If at any point your V4410 becomes unusable or has undesirable settings, it can be restored to a factory default state by pressing and holding in the blue reset button on the front of the unit for 3 seconds.
6. Exit HyperTerminal and disconnect your Null Modem Cable if no longer needed.

## Starting a Video Stream

1. Select Connections to add, modify, or control a connection.
2. Enter the IP Address of the V4410 that you are connecting to and assign a name to your connection, renaming the existing default connection.
3. In the Basic and Advanced dialog boxes, enter the desired configuration setting for the unit including the Stream Type, then click Save.
4. Click Start to begin the video stream.

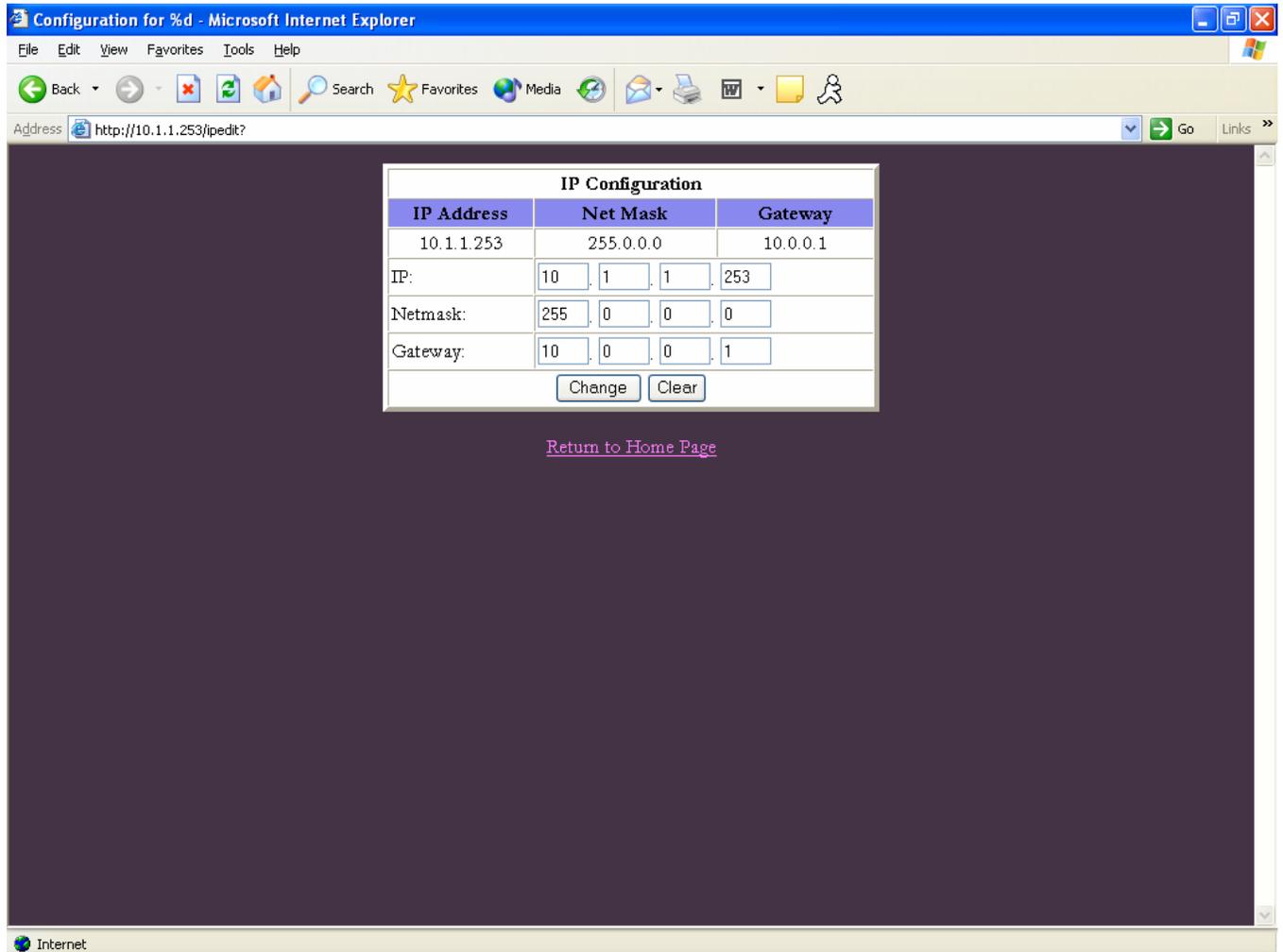
## Appendix A: Embedded Web Server Configuration

1. To configure a V4410 unit via the embedded web sever, you must first determine the current IP address of the unit. This can be accomplished using the Configuration Utility. Once the IP address is known, open any standard web browser such as Microsoft's Internet Explorer or Netscape's navigator and specify the address of the unit in the browser location bar.
2. This will bring up the main configuration page, which will allow you to start/stop streams. In the upper middle portion of the page we can see the current IP Configuration, along with an edit button. Pressing this Edit button will take us to a page which will allow us to modify these settings.



3. From this page we can change the IP address, subnet mask, and Gateway settings...but we have no control over the setting DHCP. This will be addressed in a future release, along with the requirement

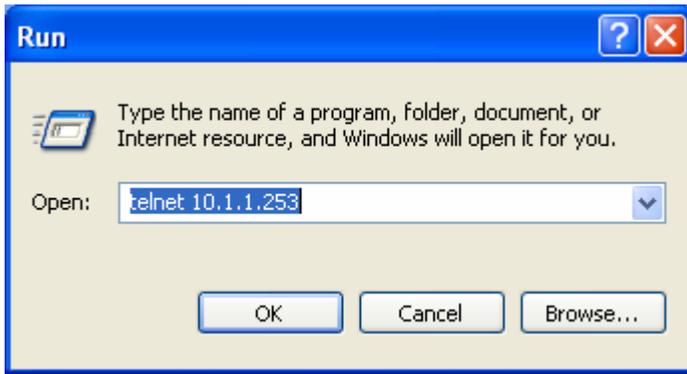
for administrative privileges to allow changes from this page. For now as a work around to no control of the DHCP setting, you can power on the unit without connecting the Ethernet, give the unit enough time to boot and fail DHCP, then the unit will default to this configured address, and will respond as such when the Ethernet cable is eventually connected. Otherwise you can currently change the setting for enabling DHCP from either the V4410 Config Utility, or the console menu.



## Appendix B: Console Menu Configuration

1. There are two ways to connect to the Console Menu System in the V4410.

- a) If the IP address of the V4410 unit is known, and your PC is on a network reachable by the unit V4410, then you can simply telnet into the V4410. From Windows 2000/XP click on the start menu, and then the Run...dialog box. Enter the command telnet 192.168.1.84, where you will replace 192.168.1.84 with the actual IP address of the V4410 unit.



Once connected to the unit you will be prompted for a username and password before you can access the menu. (Note: default username/password is admin/admin, also there is known bug in the implementation of Microsoft's XP telnet application, after entering the username you will notice a dead character before you type the password. To get around this you will need to insert an extra junk character for each line of communication with the menu, after the username is entered, or use any other telnet program)

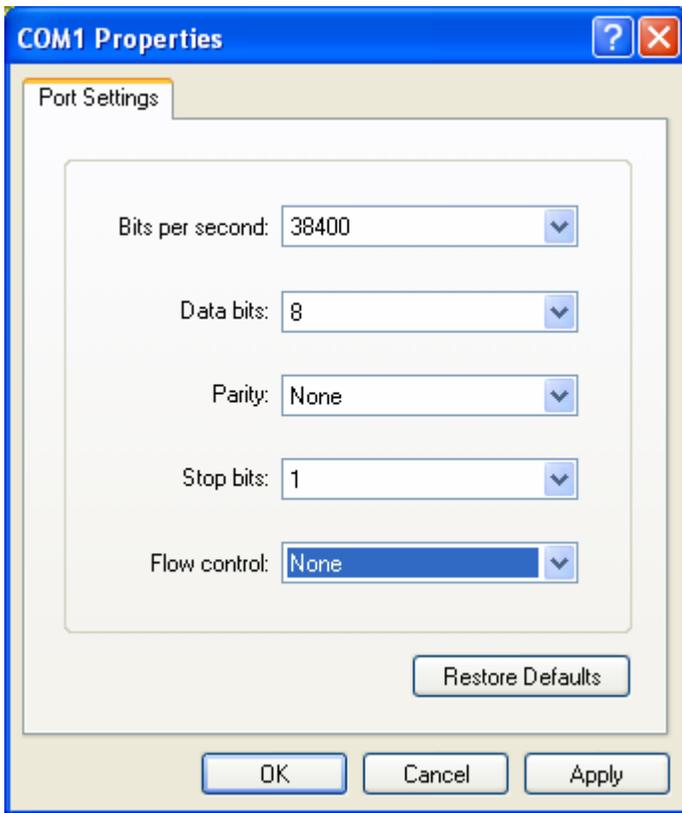
- b) If you do not know anything about the V4410, then a serial connection is most likely the easiest way to perform your initial configuration. Use the serial null modem cable supplied with your unit, and connect one end to the V4410, and the other to one of the communications ports on your Windows 2000/XP PC. You will then want to launch Microsoft's HyperTerminal application, which will allow you to communicate with the V4410 through your PC's serial communications port. If you do not have HyperTerminal installed, go to the control panel, add/remove settings, add/remove windows components, and install it from there. To launch HyperTerminal go to the start menu, select Programs>Accessories>Communications>HyperTerminal.

Select a name and an icon for this connection...then hit OK



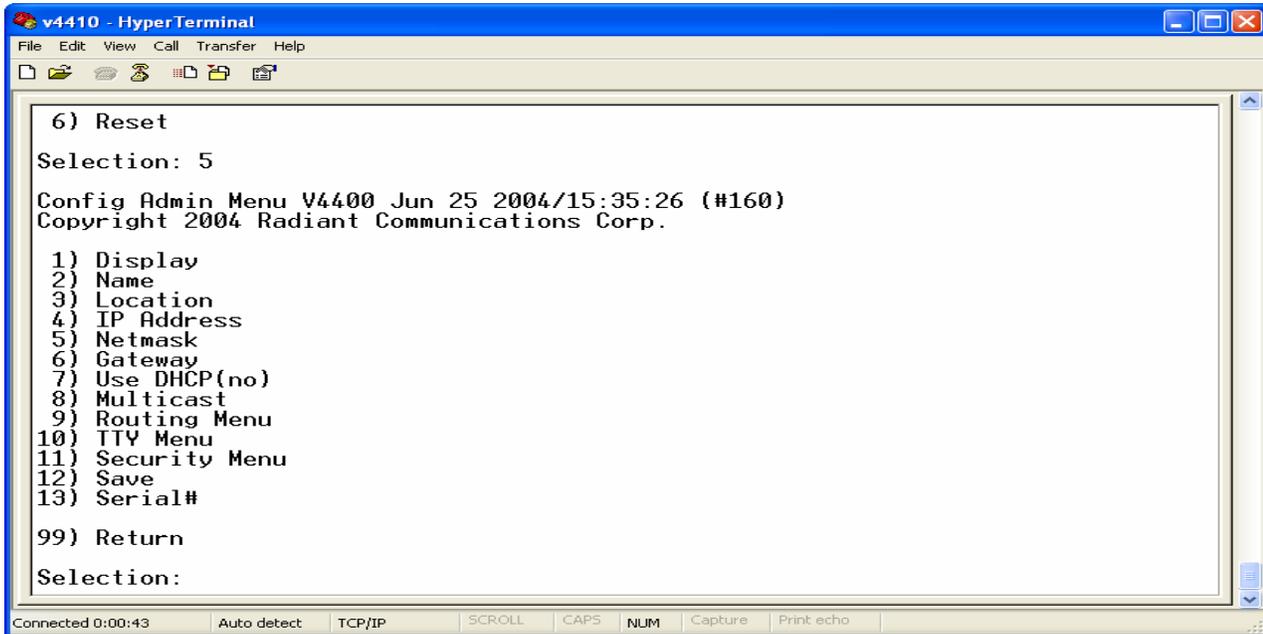
Choose the appropriate communications port, the one the cable is connected to...then hit OK.





Configure the settings so they match the above...then hit OK.

2. Once connected to the console Menu System, either by telnet or by a serial connection the interaction should be same in either case. In order to configure the V4410 unit's IP settings you will want to go to the Configuration Submenu

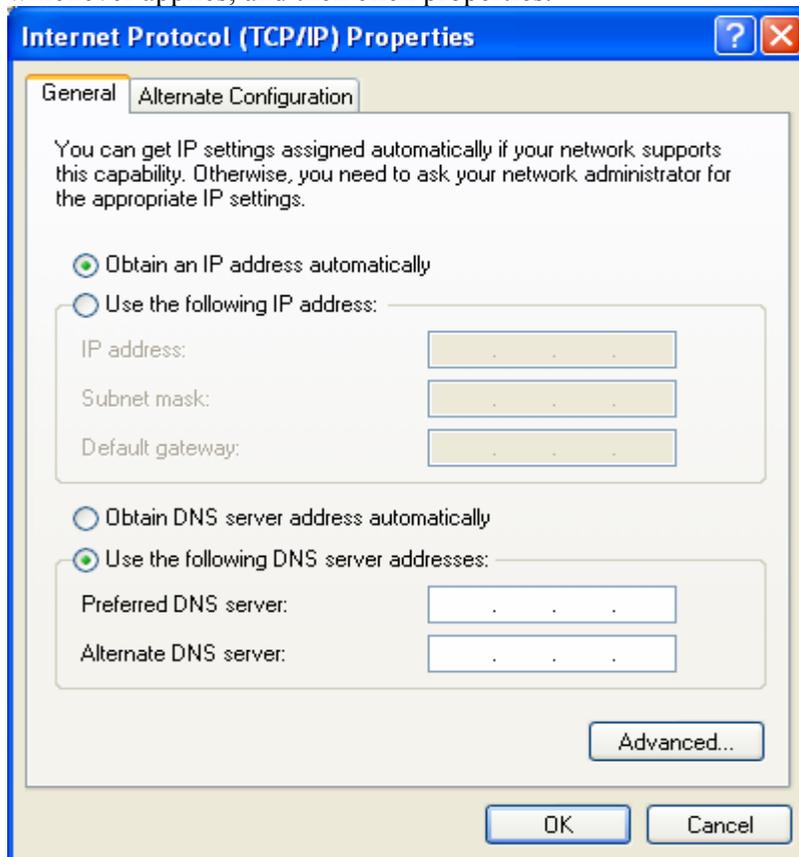


```
v4410 - HyperTerminal
File Edit View Call Transfer Help
6) Reset
Selection: 5
Config Admin Menu V4400 Jun 25 2004/15:35:26 (#160)
Copyright 2004 Radiant Communications Corp.
1) Display
2) Name
3) Location
4) IP Address
5) Netmask
6) Gateway
7) Use DHCP(no)
8) Multicast
9) Routing Menu
10) TTY Menu
11) Security Menu
12) Save
13) Serial#
99) Return
Selection:
Connected 0:00:43 | Auto detect | TCP/IP | SCROLL | CAPS | NUM | Capture | Print echo
```

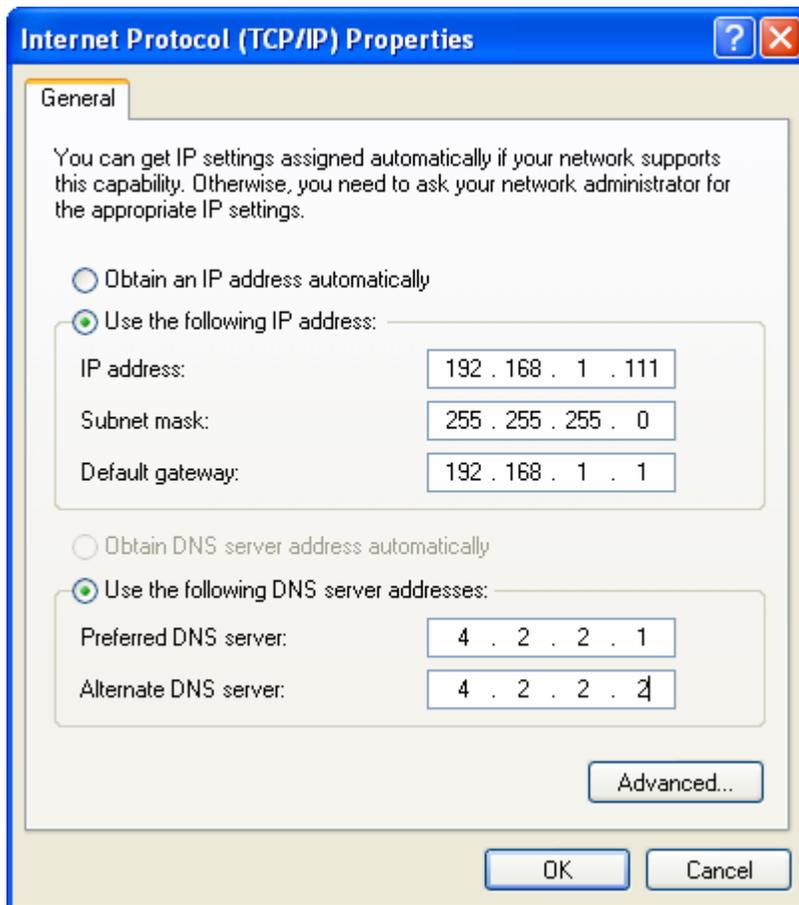
3. From the Configuration Submenu you will want to modify options 4-7. Once these options have been set to the desired values, you should invoke configuration Submenu item#12 (Save) which will store the new settings into the flash, so they will be stores across a reboot. After saving your changes go up to the top-level menu (99 to go up), and then issue a reset from the top-level menu. The V4410 unit should reset and the Menu should appear on your console window again when the reboot is complete, and your V4410 should be ready to test.

## Appendix C: Special PC Configuration

1. If all other communication fails with the unit, due to interoperable network configurations it may be necessary for a PC to be removed from the standard network, and specially configured to communicate with the V4410. Once the unit is configured, the PC can be set back to how it was before.
2. Unplug the Ethernet cable from the back of your PC
3. Go to the control panel on your PC, and select the Network Connections Icon.
4. Use your right mouse button to select your specific network connections, and choose properties.
5. A Dialog Box should appear with your PC's current networking settings.
6. There should be an item in the middle of the box labeled Internet Protocol (TCP/IP). If there is more than one with this name, there should be one per network interface installed in the machine. Select the only one, or the appropriate one for your network interface whichever applies, and then click properties.



7. Record the current settings in this window, because we are going to want set them all back to how they look now when we are done. If it is currently set for “Obtain an IP address automatically” then this is all you have to remember, otherwise you will need each of the above settings.
8. After recording the current valid values, you will want to change them to something on the 192.168.1.0. Network. You can use the settings in this example, and they should work just fine.



9. After making the changes press OK and exit from all the open windows on your machine.
10. Next you need to plug one end of the supplied Ethernet Crossover Cable into your PC, and

the other end into the V4410 unit, and then power up the unit.

11. Assuming that you PC is not running any kind of a DHCP server itself, the Encoder should boot and default to its stored IP 192.168.1.253, unless this has been changed. If the PC is running a DHCP server, then the unit should negotiate an IP address from it.
  
12. Once booted you should be able to configure the V4410 using any of the configuration techniques discussed in this document. Once the V4410 has been configured to live on your network; you can return the PC to its original settings, and original Ethernet cable connection. The V4410 should be reachable /configurable from all machines once properly configured to your network.

## V4420 Decoder Set-up and Installation

All set-up interactions with the V4420 will be handled via the IR Keyboard provided.

### Management pages

Internal web pages are accessible to allow the authorized user to adjust all the settings of the unit that may be needed to install it on a network.

<Alt>m

enters the Management pages, which gives the authorized user the ability to view and update the STB configuration.

The password is set by default to

leaves<Return>

The password must be entered each time the set-up screen is exited.

Upon which the management pages are entered. The pages with typical entries are illustrated below.

Each page can either be left unchanged (may be necessary to scroll down to discover the link) or changed with the values entered. The password is

snake<Return>and the submit option selected.

The **main menu page** consists of:

#### Linux STB Management

Choose an option:

- Network configuration
- Browser set up
- Proxy set up
- Channels

- Trusted domains
- Software
- Hardware Information
- Smart Card usage
- Updated Software
- Identity

By selecting the required option, the following pages are accessed.

Basic network configuration is set up from the first page. Generally, the STB will use DHCP to load its network parameters, and the 'use DHCP' box should be ticked. For lab use, the individual parameters can be set:

### Network Configuration

Use DHCP

Hostname:	myhostname
IP Address:	123.456.789.1
NetMask:	255.255.255.0
Gateway:	123.456.769.2
Domain:	myco.co.uk
DNS:	123.456.789.2
Timeserver:	123.456.789.4
Timezone:	GMT+2

Use the browser set up page to set the home page IP address and proxy address, if used. It is also used to define the type of video server, in particular those that conform to Oracle OVS RTSP or others.

### Browser set up

Home page:	123.456.789.2/index.html
Help page:	<url of web page for help>



## **SPECIFICATIONS**

### **INPUTS/OUTPUTS**

#### **VIDEO**

NTSC 1Vp-p, 75 ohm, 60Hz

Or

PAL 1Vp-p, 75 ohm, 50Hz

#### **AUDIO**

2 channels (stereo), line level

#### **NETWORK**

Data Rate: 1-7 Mbps

Ethernet: RJ45

Interface: 10/100Base-T

IEEE 802.3\Protocols: Multicast IGMP,

UDP, IP

#### **MECHANICAL**

1U Rack: 19" x 1.75 x 12"

#### **POWER**

1U Rack: 95-130VAC or

200-240 VAC

#### **COMPRESSION**

#### **MPEG-2 (4,2,0)**

NTSC

352 X 240 CIF

352 X 480 1/2 D1

480 X 480 2/3 D1

PAL

352 X 288 CIF

352 X 576 1/2 D1

480 X 576 2/3 D1

720 X 576 D1

Frame Rate 30 FPS

#### **ENVIRONMENTAL**

Temperature

Operational: -10° to 50° C

Storage: -10° to 70° C

Humidity: 0 to 95% non-condensing

## NOTES