SPECTRACOM
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APPLICATION NOTE FOR ASSISTANCE WITH INITIAL INSTALLATION OF A SPECTRACOM NETWORK TIME SERVER

The following document provides detailed assistance with the initial installation of a Spectracom NTP Time Server (Models 9188, 9183, 9189 and TTSXXX series). This includes instructions on how to configure the network settings of the Time Server and how to connect to the WebUI (Web User Interface). This process is the first step to configuring the front panel display (Not applicable to all models) and the rear panel output ports for connection to various external devices.

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Section 1: INTRODUCTION

Spectracom Time Servers have front and rear panel outputs that can provide time to various systems. Some models even have a front panel display that can be configured to show local time if desired. Each of the rear panel outputs can be configured to provide local time in different Data Formats and different baud rates to these systems. The configuration of the front panel display and rear panel outputs is performed in the webUI. To be able to access the webUI, the Time Server Ethernet port needs to be connected to either a PC on a network (Via a Hub or Switch) OR a laptop PC (via the Ethernet Network Interface Card).

In addition to the cabling requirements, the IP address of the Time Server and the IP address of the PC have to be on the same "network". Once the two devices are on the same "network", the WebUI will be available and you will be able to configure the outputs as desired. Refer to Section 3 for more detail about this theory and procedures to accomplish this.

Section 2: REQUIRED ITEMS

The following items are required for setting up the Time Server to allow the outputs to be configured.

1) If the Time server is to be eventually installed on a network, the following items need to be obtained from the network administrator:
   A) An available static IP address for the network.
   B) The subnet mask value for the network.
   C) If there gateway on the network and the PC's on the other side of the gateway need to access the Time Server, the immediate gateway IP address needs to be obtained.

2) Laptop PC with Internet Explorer installed (Version 4 or above) as well as HyperTerminal, Procomm or any other terminal emulator program installed.
   * PC should have a serial com port (Or USB to serial adapter) and an Ethernet NIC card (Network Interface Card) card installed.

3) A straight-thru DB9M to DB9F serial cable (Pinned 2 to 2, 3 to 3 and 5 to 5) to set the IP address of the Time Server.
   Note: Do not use a null-modem cable or a UPS cable as these are not pinned correctly.

4) Either a cross-over Ethernet cable OR a Hub/Switch and two straight-thru Ethernet cables.

5) Spectracom's HyperTerminal Application Note if you are not familiar with the Windows HyperTerminal program. This can be obtained from the Spectracom website- (Support/FAQ's and Troubleshooting drop-down): http://www.spectracomcorp.com/support/pdf/using_hyperterminal.pdf

Section 3: CONFIGURING THE PC AND TIME SERVER FOR THE ABILITY TO COMMUNICATE WITH EACH OTHER

Before Internet Explorer or Netscape (Mozilla and FireFox are not fully supported) can communicate with the Time Server WebUI, the IP address of the PC and the IP address of the Time Server must be using the same "IP scheme". For example, the IP address of the PC is 10.10.200.50 and the IP address of the Time Server IP is 10.10.200.1 (Factory Default IP address). The Subnet mask determines how many segments of the IP address have to match. The default subnet mask is 255.255.255.0 which means that the only set of numbers that can be different is the last three digits.

There are a couple of ways to get both the PC and the Time Server on the same "network". Either the IP address of the Time Server can be changed to match the scheme of the laptop or the IP address scheme of the laptop can be changed to match the scheme of the Time Server. Once the two configurations match, the WebUI can be accessed and full control of the unit will be available (Output ports can be configured as local time for example)

Of these two methods, the second one (Changing the IP address of the PC) is normally the better method to use. The reason for this is that if the laptop PC is used in a network environment, the IP address may be currently set to "automatically assigned by a DHCP Server" instead of having a static IP address. In this configuration, once the PC is disconnected from the network, it no longer has an IP address so it will have to be configured to manually assign an IP address anyways. Just set it to one that matches the Time Server's IP scheme.

If the Time Server is immediately being installed onto a network and is not being connected to a laptop PC first, change the Time Server's IP address to the assigned static network IP address using the RS-232 method. Don't change the IP address of the computer (Skip down to **CONNECTING TO TIME SERVER WITH RS-232**).

DETERMINE CURRENT IP ADDRESS OF THE PC

To determine what the IP address of the PC is currently set to, In Windows XP and 2000, go into the command prompt (Start button to Run and then type: cmd <enter>). In the command prompt, type: ipconfig <enter>. The screen will show the IP address of the PC, if it has one.

- If the IP address responds that it is using DHCP, the IP address of the PC needs to be manually set to match the Time Server.
- If the IP address responds with a value completely different that the Time Server's IP address, either:
  A) Change the IP address of the PC to match the Time Server
  B) Change the IP address of the Time Server to match the PC
  (Personal preference dictates which of these two methods to use).

In Windows 95 and 98, go into the MS-DOS prompt and type: ipcfg <enter>. Then, refer to the two bullets above.

Note: If the PC is currently configured as DHCP (The PC is typically connected to a network running DHCP), the computer will not have an IP address while it is disconnected from the network.

SETTING A NEW IP ADDRESS ON THE PC

If the PC is currently set to either DHCP or the IP address is a static address other than a 10.10.200.x, the IP address of the PC will have to be set to a new static address. The default IP address for the Time Server is 10.10.200.1 so the last three numbers of the assigned static IP address of the PC can be any number between 2 and 254 (Like 10.10.200.2 or 10.10.200.254).

Setting the static address on a Windows PC:

Refer to **Figure 1: Setting the IP address of a Windows PC** and the procedure below.

1) Go to: Start, Settings, Control Panel and then chose Network Connections.
2) In Network connections, double-click on the "Local Area Connection" icon.

   Note: If the "Local Area Connection" icon is not displayed in "Control Panel/Network connections" either a Network Interface Card (NIC) is either not installed or is not configured correctly. Contact either the PC manufacturer or the NIC card manufacturer for assistance with this issue.

3) In the "General" tab, click on "Properties".
4) Scroll down to "Internet Protocol TCP/IP" and double-click on this entry. A setup window for configuring the IP address will open.
5) Click on "Use the following address".
6) Type in the desired IP address of the PC (For example 10.10.200.50) **Note**: don't enter leading zeroes.
7) Type in the desired subnet mask (Typically 255.255.255.0)
8) Click "OK"
9) The PC may prompt for a re-boot. Re-boot the PC if necessary to accept the new IP address.
10) Once it re-boots, verify the new IP address by following the procedure above (Typing either ipconfig in command prompt or ipcfg in the MS-Dos prompt). The IP address should show the same value entered in step 6.

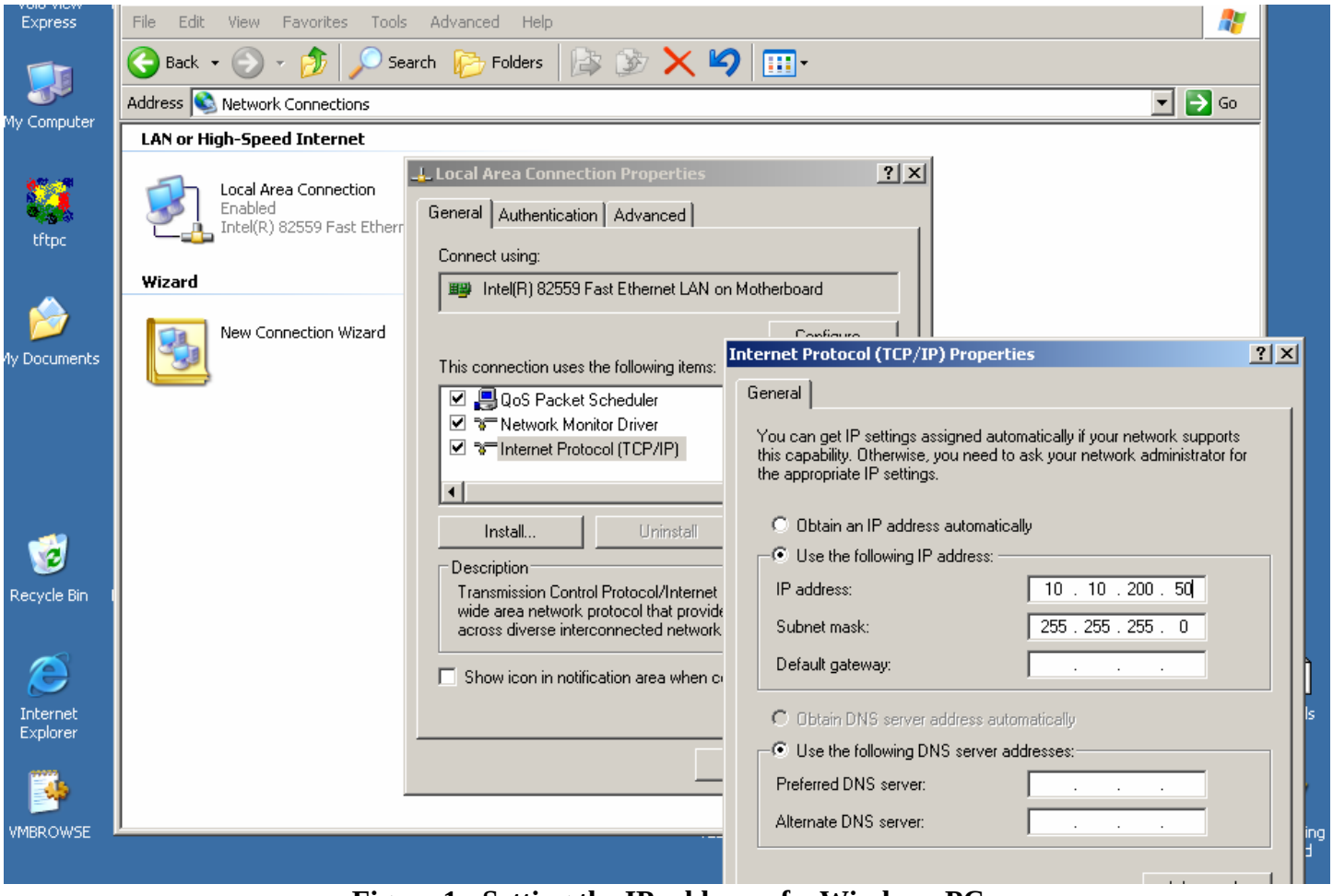

Figure 1: Setting the IP address of a Windows PC

If the PC already has an IP address assigned (Not running DHCP) and you prefer to leave the PC set to this value and would rather change the IP address of the Time Server to match the PC, the following procedure will explain how to do this.

CONNECTING TO TIME SERVER WITH RS-232

The IP address of the Time Server is configured by using the PC's serial com port and the straight- thru serial cable listed in **Section 2: REQUIRED ITEMS.** With the cable connected to the Serial Setup Interface, and running a terminal emulator program such as HyperTerminal, the IP address can be configured. Follow the procedure below. The procedure below may vary slightly depending on the software version of the Time Server. Some versions of software require the login process to occur twice, using the same login level and same password. Refer to **Figure 2: Time Server login.**

Note: Windows HyperTerminal is a program that is installed on all Windows PC's (Unless it was unchecked when Windows was installed). If you are not familiar with how to use this program, refer to the HyperTerminal Application Note on our website. The link is
http://www.spectracomcorp.com/support/pdf/using_hyperterminal.pdf

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1) Connect the DB9M end of the serial cable to the rear panel DB9F connector labeled Serial Setup Interface.
2) Connect the DB9F end of the serial cable to the serial com port/USB to Serial adapter on the PC.
3) Open HyperTerminal.
4) Configure HyperTerminal to use the serial com port of the PC and to use standard configuration of 9600, 8, N, 1.
5) Press "enter". A command prompt of a">" should be displayed.

Note: If this is the first time the unit is being configured since leaving the factory, the unit will prompt for the desired IP address, new subnet mask (If desired) and new gateway IP address (If desired) without having to login as described below. After 15 minutes, if the desired values haven't been entered, either login as described below, or power cycle the unit.

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6) At the command prompt, type: login <enter>.
7) At Spectracom login, type: admin <enter>
8) At Password, type: admin123<enter> **Note**: Some version of software will display an "*" for each character, while other versions will not display anything for each password character typed.
9) The unit may either respond with "Security Level is now: Admin Level" or the unit may require the same procedure above to be repeated to receive the message (Depends on the software version).
10) Refer to View current and Change current Network configurations below.

Once you are logged into admin mode, you can either view the current network configuration or change the current configuration.

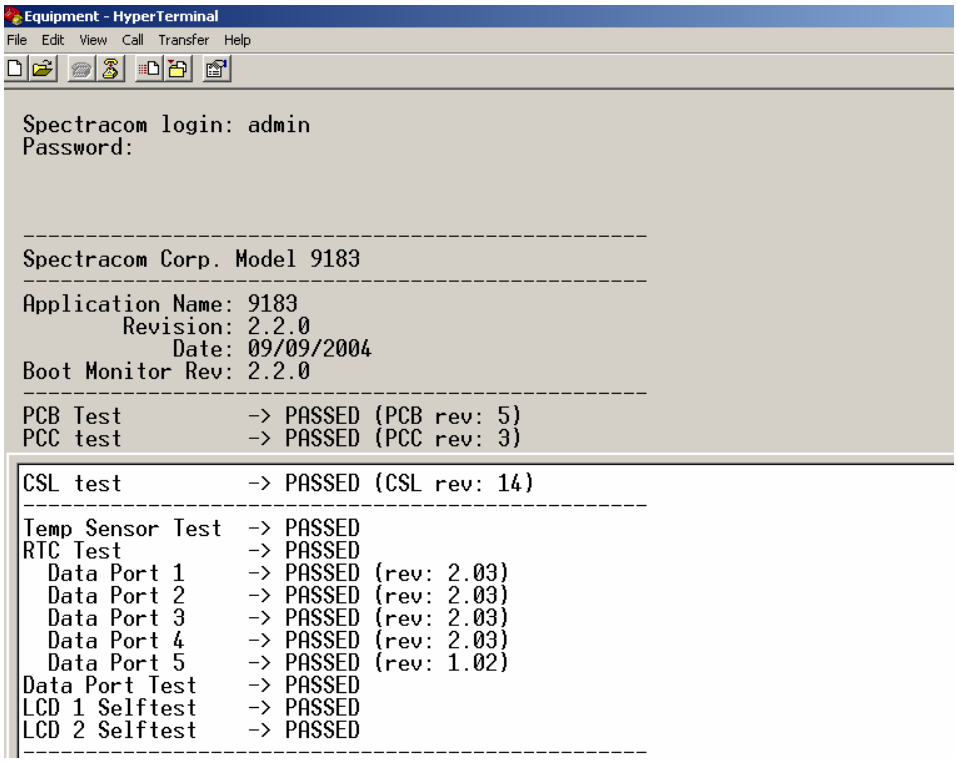

Figure 2: Time Server login with RS-232

VIEW CURRENT TIME SERVER NETWORK CONFIGURATION

To view the current network configuration, at the command prompt type: net show <enter>. The unit will display the current IP address, subnet mask and gateway address.

CHANGE CURRENT TIME SERVER NETWORK CONFIGURATION

Change IP address

To change the current IP address, at the command prompt while logged into the admin mode:
Type: net ip (desired IP address) <enter> (Like: net ip 10.10.200.1 <enter>)

Change subnet mask

To change the current netmask, at the command prompt while logged into the admin mode:
Type: net mask (desired net mask) <enter> (Like: net mask 255.255.255.0 <enter>)

Change Gateway

To change the current gateway, at the command prompt while logged into the admin mode:
Type: net gateway y (desired gateway IP address) <enter> (Like: net gateway y 10.10.200.2 <enter>)

Note: Configuring the gateway IP address is only necessary if the Time Server is being installed on a network with a gateway to another subnet that desires to view or sync to the Time Server. It is not needed if just connecting a laptop to the unit to configure the rear panel outputs or to access the WebUI.

Section 4: ETHERNET CONNECTION TO THE TIME SERVER

Now that the IP address of the PC and the IP address of the Time Server are on the same subnet (Using the same IP scheme), the two devices need to be connected together to allow communication through the Ethernet port. This connection can be one of there ways:

1) Ethernet connection from the Time Server to a laptop with a cross-over cable.
2) Ethernet connection from the Time Server to a laptop with two straight-thru cables and a HUB/switch.
3) Ethernet connection from the Time Server to the live network with a straight-thru cable to an available HUB/switch on the network.

1) ETHERNET CONNECTION FROM A LAPTOP PC TO TIME SERVER WITH CROSS-OVER CABLE

1) Connect one end of the Ethernet cross-over cable to the Time Server front panel Ethernet port.
2) Connect the other end of the cross-over cable to the Ethernet port on the NIC (Network Interface Card) on the PC.
3) Verify the green GL (Good Link) lamps on the Time Server Ethernet jack and the PC Ethernet jack turn on.

2) ETHERNET CONNECTION FROM A LAPTOP PC TO TIME SERVER WITH A HUB AND TWO STRAIGHT-THRU CABLES

1) Connect one end of the first Ethernet straight-thru cable to the Time Server front panel Ethernet port.
2) Connect the other end of the straight-thru cable to the Hub/switch.
3) Connect one end of the second Ethernet straight-thru cable to the Hub/Switch.
4) Connect the other end of the second Ethernet straight-thru cable to the Ethernet port on the NIC (Network Interface Card) on the PC.
5) Verify the green GL (Good Link) lamps on the Time Server Ethernet jack and the PC Ethernet port turn on.

3) ETHERNET CONNECTION FROM A NETWORK TO THE TIME SERVER

1) Connect one end of the Ethernet straight-thru cable to the Time Server front panel Ethernet port.
2) Connect the other end of the straight-thru cable to the Hub/switch on the network.

Verify the green GL (Good Link) lamps on the Time Server Ethernet jack and the network HUB/Switch Ethernet port turn on.

Section 5: USING INTERNET EXPLORER TO ACCESS THE WEBUI

Once the Ethernet connections above have been made, Internet Explorer can open the webUI, providing the ability to view and configure the Time Server.

ACCESS THE WEBUI WITH INTERNET EXPLORER

To access the webUI using Internet Explorer, perform the following:

1) On either a laptop PC connected directly to the Time Server, or on any network PC connected to the Time Server via a Hub or Switch, open Internet Explorer.
2) In the URL "run line", either highlight the entire contents of the box and then type in just the IP address of the Time Server or leave "HTTP://" and type the IP address after this.
3) Internet Explorer should open the WebUI as shown in **Figure 3: WebUI using Internet Explorer**
4) Press enter main page to access the webUI functionality.

If the webUI fails to open refer to **Figure 3:WEBUI WITH INTERNET EXPL0RER FAILS TO OPEN** below

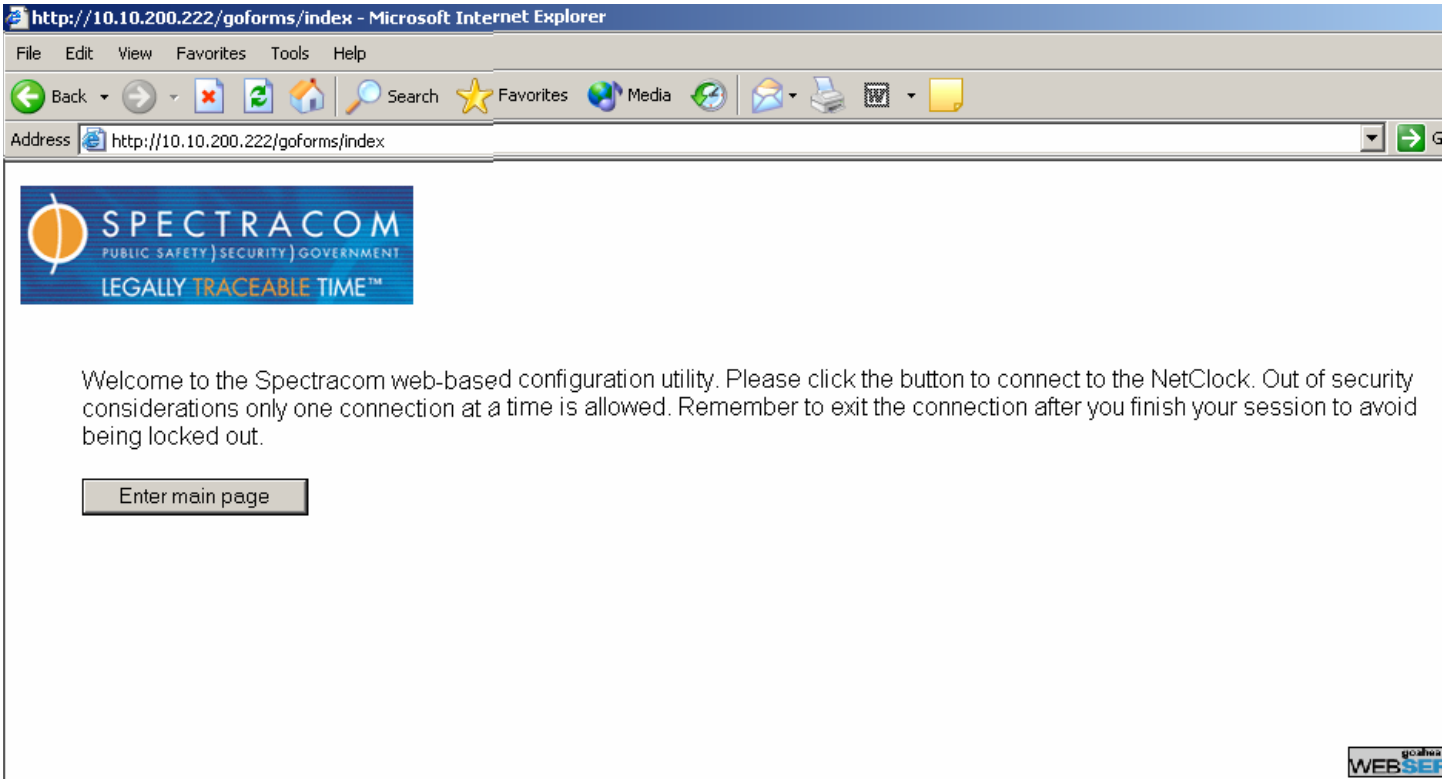

Figure 3: WebUI using Internet Explorer

WEBUI WITH INTERNET EXPL0RER FAILS TO OPEN

If the webUI fails to open while using Internet Explorer, perform the following:

1) Try hitting "enter" again. Sometimes it will go in on the second attempt.
2) On Internet Explorer, click on "Tools"
3) Click on the "Connections" tab
4) If the proxy server button is checked, uncheck this box. (Refer to **Figure 4: Internet Explorer configuration**)
5) Click "OK" twice to get back to the main page. Try the connection again.

WEBUI WITH INTERNET EXPL0RER CONTINUES TO FAIL

If the WebUI continues to not open, there may be a network configuration issue or cable issue.

1) Try to ping the Time Server. Go into either command prompt or MS-DOS prompt and type: Ping (IP address of Time Server) <enter>. Ping should reply with four valid responses.
2) If ping responds, try to telnet into the Time Server. In either command prompt or MS-DOS prompt type: telnet (IP address of Time Server) <enter>. The telnet connection should either open or be refused.

If ping was successful but telnet and webUI fail, verify the IP addresses of the Time Server and the PC are on the same subnet and if there is a Gateway between the two devices, that the Gateway is enabled in the Time Server.

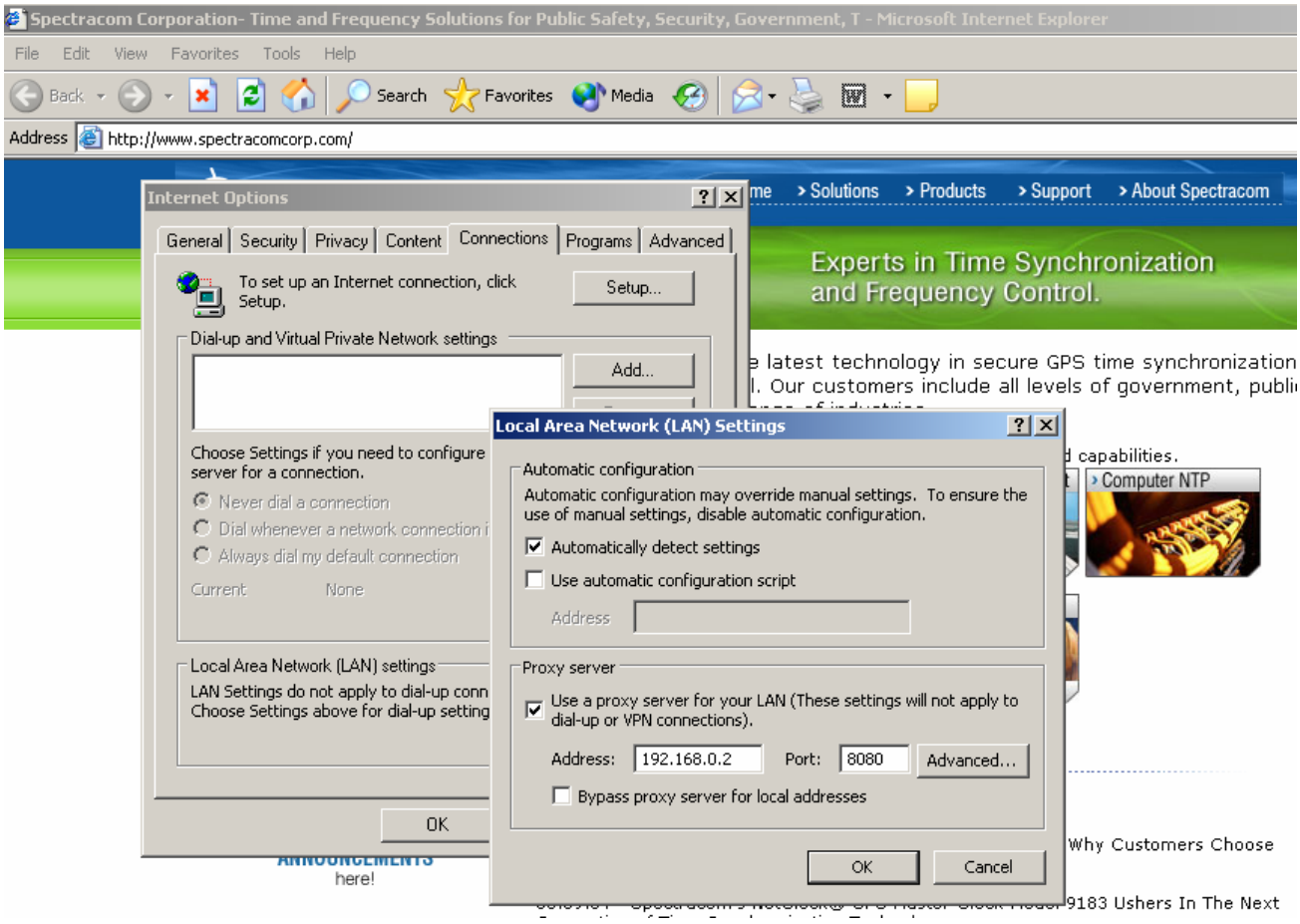

Figure 4: Internet Explorer configuration

WEBUI FUNCTIONALITY

Once the webUI has initially opened and you have pressed the button for the main page, the login screen will appear. Refer to **Figure 5: WebUI Login screen.**

1) Click on “administrator mode login” to open the admin screen login.

2) In the admin login screen (Refer to **Figure 6: Admin mode Login screen)**, next to "User name", type: admin.
3) Next to "Password" type: admin123 (Password is case sensitive. Must be all lower case letters).
4) After hitting enter, "Welcome to the admin mode" will be displayed.

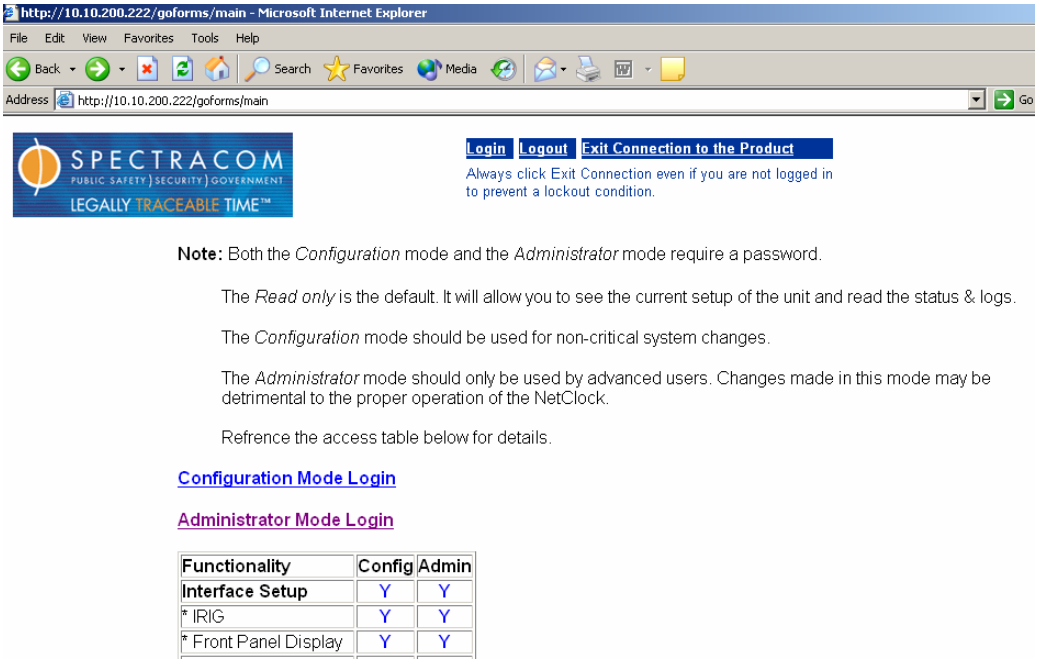

Figure 5: WebUI Login screen

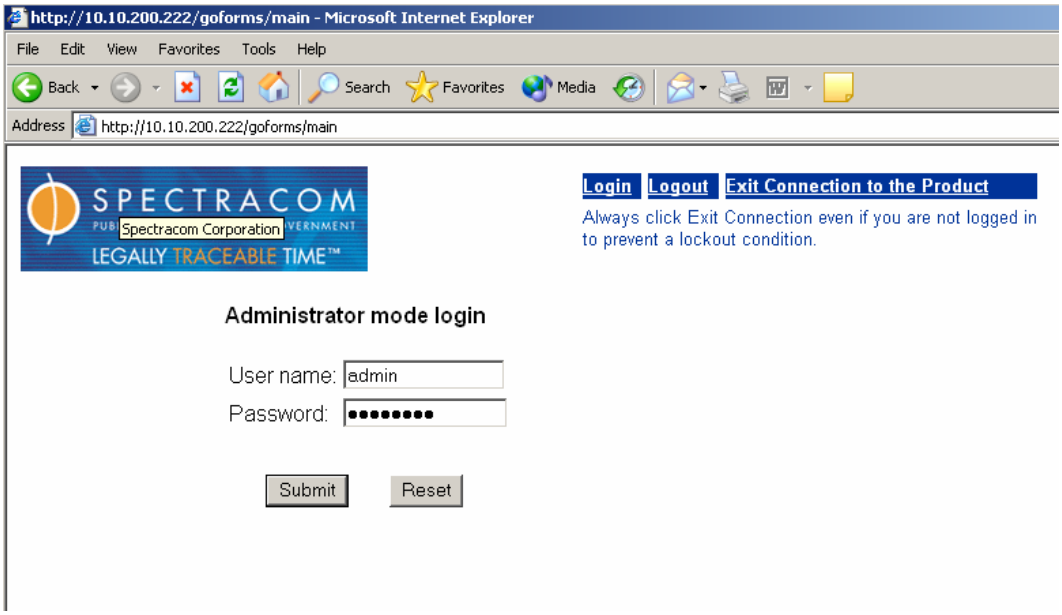

Figure 6: Admin mode Login screen

Now that you are successfully logged into the webUI, you can view the status and logs of the unit, as well as configure the outputs. Refer to the appropriate instruction manual for your Time Server for details on how to access these and other features of the webUI.

Section 6: INITIALLY SETTING THE TIME SERVER NETWORK PARAMETERS WITH A LAPTOP BUT I NOW WANT THE DEVICE CONNECTED TO A NETWORK

If the Time Server was initially configured with a laptop, but now you want to place the Time Server on a network to provide accessibility and time synchronization on the network, just change the network configuration with the laptop Internet Explorer.

For example, the Time Server output ports were configured prior to installing the unit at the site. The IP address of the unit will still be set to match the laptop, but the network may be completely different. The IP, netmask and gateway network parameters will need to be changed to match the network. This can be done with the RS-232 serial cable as described in section 3. Or, the parameters can be changed in the webUI using the laptop PC Ethernet connection.

To change the network parameters using the laptop PC, connect the PC and login to the webUI as administrator mode using the procedures described at the beginning of this document. Once you are logged in as admin mode, click on "System Setup" on the bottom bar and "Network" on the left bar. Enter the new IP address, subnet mask and gateway IP address (If needed). Then, scroll down and hit submit. As soon as you hit submit, the browser connection will be lost. At this point, connect a straight-thru network cable from the front panel Ethernet port to a Hub/Switch on the network. The Time Server will now be accessible from the network and be able to provide time synchronization to the network.

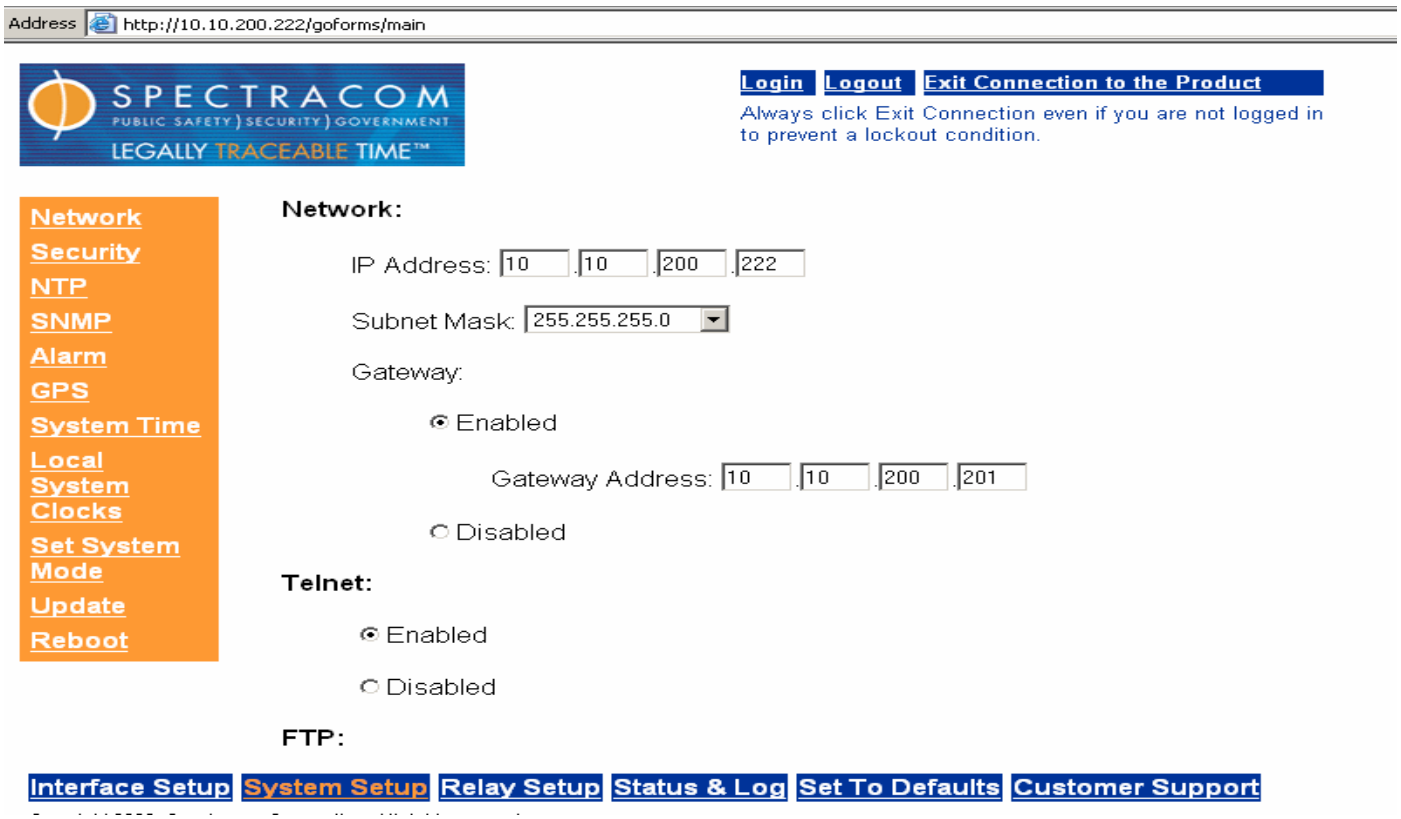

Figure 7: Changing network parameters in the webUI

Section 7: TECH SUPPORT

For assistance with Spectracom equipment installation, synchronizing computers or interfacing the Time Server to PSAP/911 equipment, contact Spectracom Tech Support via phone or email at the address information below. Tech Support is available Monday through Friday from 8:00 AM – 5:00PM (Eastern).

Additional assistance is also available 24/7 from our website. Refer to the "Support"/ FAQ's and Troubleshooting drop-down.

Phone: 585-321-5800

Email: techsupport@spectracomcorp.com

WEB: **http://www.spectracomcorp.com/support/faq.php**