

**PC/POLL SYSTEMS**  
**Version 7 Polling**  
**SPS2000 Cash Register**  
**TCP/IP Communications**

PC/POLL SYSTEMS supports native TCP/IP polling for the SPS2000 cash register. It is recommended users have the register updated to ROM 2.02k or above and the software to version 7.1.1.449 or above. Detailed below are the setup instructions. Prior to beginning, please verify both the Polling build number and register ROM version to insure communications.

**Register Setup**

On the register side, users should begin by configuring basic S Mode parameters such as Register Number, Store Number and IRC range. Prior to all Polling communications, these options must be set at the register. Other S Mode options on pages 2, 3 and 5 should be set as needed.

Below is a sample image from the cash register.

S-MODE SYSTEM OPTIONS							
PAGE #1	PAGE #2	PAGE #3	PAGE #4	PAGE #5			
1. REGISTER # (01-32)							01
2. STORE #	000001		STORE NAME				TEST
3. IRC : FROM REGISTER #							01
4. IRC : TO REGISTER #							01
5. IRC # OF RETRIES							00
6. PRINT/DISPLAY DECIMAL POSITION							2
7. PASSWORD (0000=NO PASSWORD)							
X	0000	Z1	0000	Z2	0000	Z3	0000
Z4	0000	Z5	0000	SYSTEM	9999	STRING REPORT	0000
OK				CANCEL			

On Page 4 of S-Mode, users will need to program a few additional options for TCP/IP communications. The options will vary based upon the network settings of the system and the location of the PC. A LAN (Local Area Network) is generally a connection made within one geographic location, such as an office network. A WAN (Wide Area Network) is generally a connection made across a larger distance, such as across two different US states using the Internet. The SPS2000 and PC/POLL support both types of connections, however, for more information on your network, please consult your IT administrator.

Below is a sample screen from a register that was setup for TCP/IP communications on a LAN.

**S-MODE SYSTEM OPTIONS**

PAGE #1 | PAGE #2 | PAGE #3 | PAGE #4 | PAGE #5

# NETWORK SETTING? YES

AUTOMATICALLY GET IP ADDRESS? (DHCP) NO

IP ADDRESS 192.168.0.11

SUBNET MASK 255.255.255.0

GATEWAY 192.168.0.200

DNS SERVERS#1 0.0.0.0

DNS SERVERS#2 0.0.0.0

PC CONNECTION TYPE ETHERNET

PC CONNECTION PORT NUMBER 8027

OK CANCEL

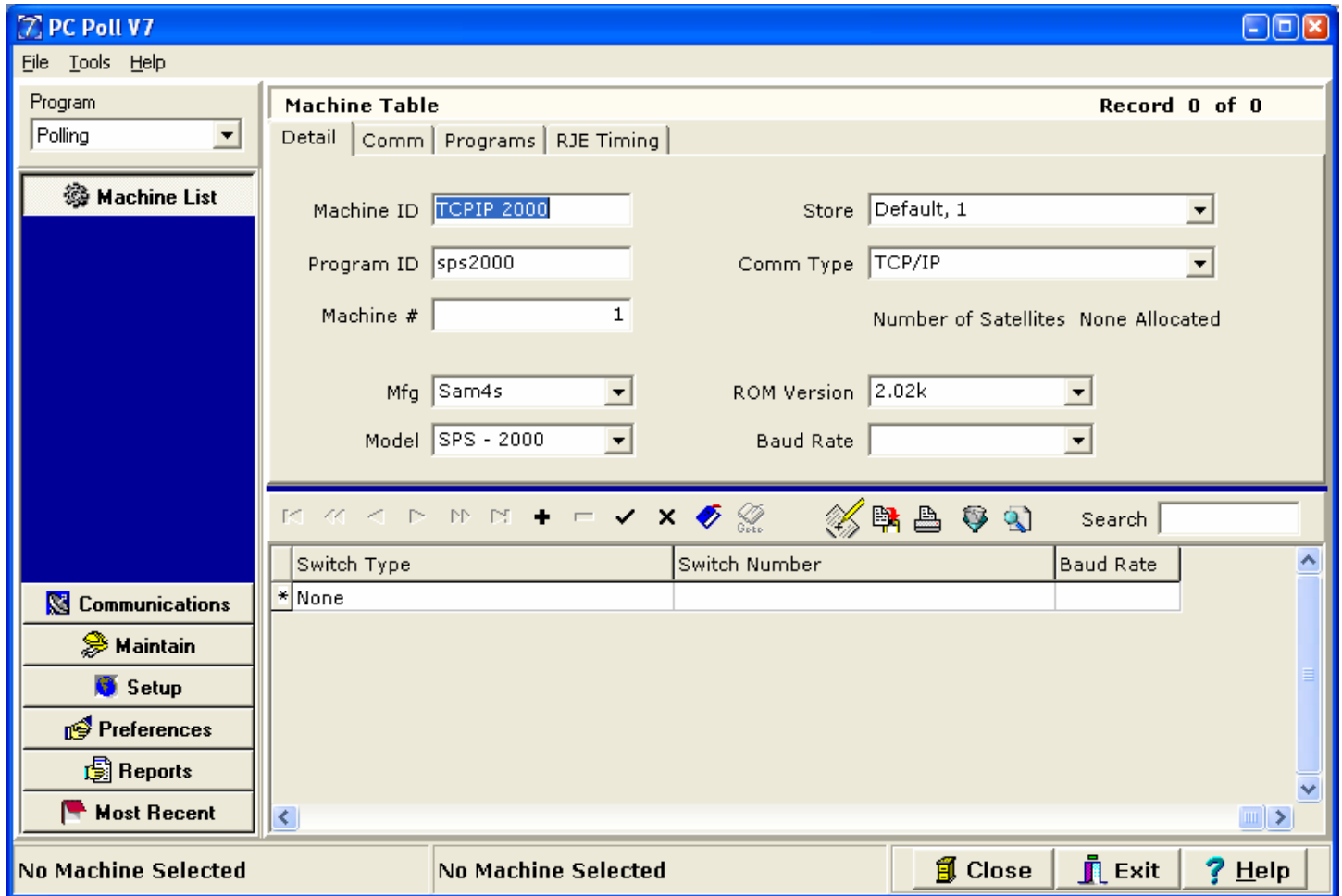
**Register Fields:**

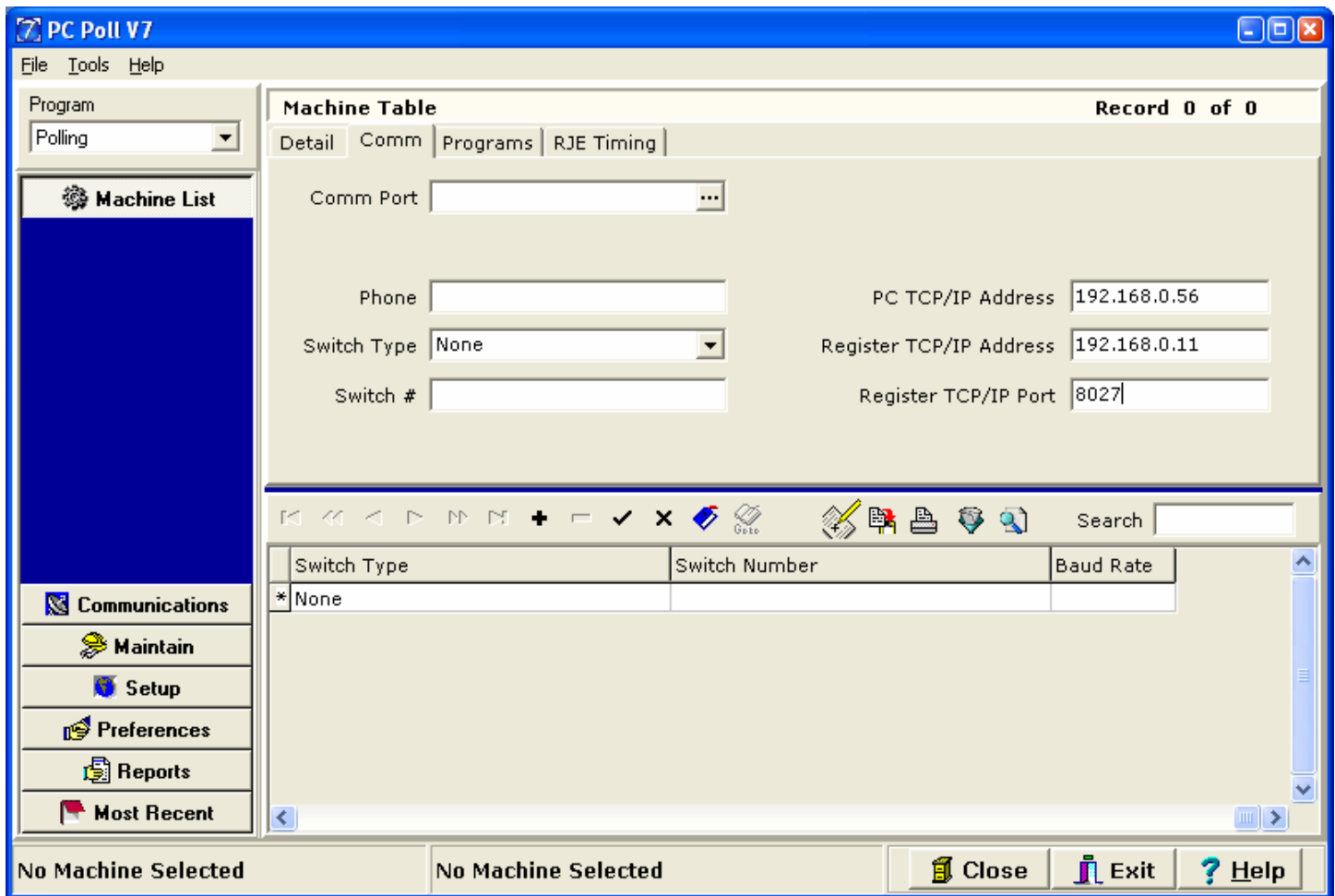
# Network Setting	Should be enabled if an IP address needs to be entered manually. (The software has been tested with and without this option set to YES. If set to NO, a master register defaults to an IP address of 192.168.000.011, satellite 1 to 192.168.000.012, etc.)
Automatically Get IP Address (DHCP)	If the network is using a DHCP server the server will automatically assign an IP address to the cash register. Please consult your IT administrator.
IP Address	The IP address of the cash register. This field must be manually populated with an address. Please consult your IT administrator for a list of available IP address.
Subnet Mask	A series of numbers that designates the size or range of available host ID numbers within a network. Please consult your IT administrator for this number.
Gateway	Is an access point on a computer network. In most cases it is the internal IP address of your router or, usually, the first IP address of your network. Please consult your IT administrator for this number.
DNS Server #1	The IP address of a domain name server. Please consult your IT administrator for this number.
DNS Server #2	A backup address for DNS Server #1. Please consult your IT administrator for this number.
PC Connection Type	For TCP/IP communications this must be set to Ethernet. For serial communications, please

	set this option to Serial.
PC Connection Port Number	In order to direct communications to a TCP/IP register, the register needs a port number. This number is also used in WAN communications by the router. The router must be programmed to forward transmissions that are incoming on the specified port number to the register's IP Address. 8027 is the default port number.

### Software Setup

The following two images are the software screens necessary for making a LAN connection to the machine pictured above.





Within the software, users simply create a machine (similar to serial communications), with the following options set:

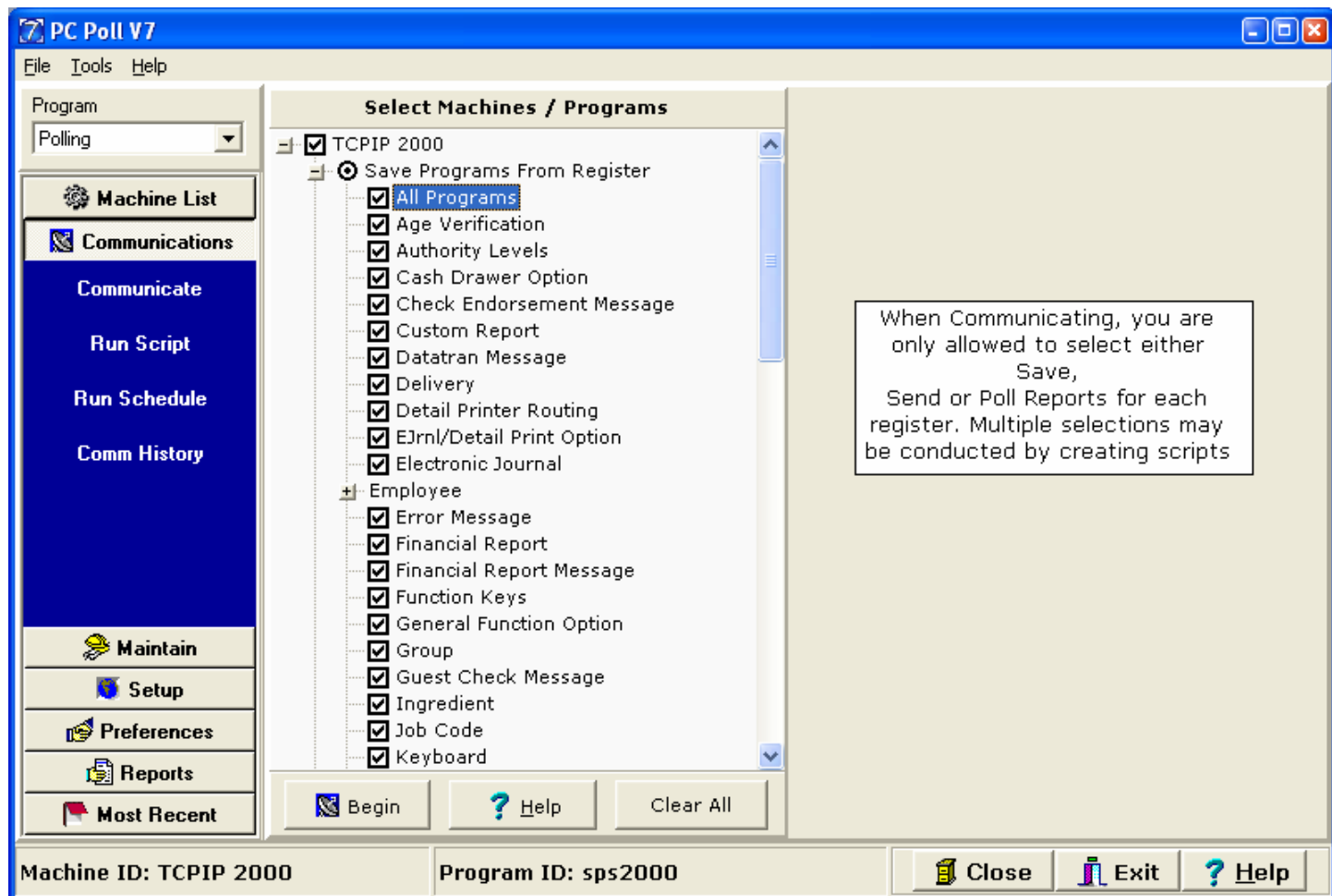
**Software Fields:**

Machine ID	A user defined name for the machine.
Program ID	A user defined name for the database files.
Machine #	This number must match the Register Number within the cash register.
Mfg	Sam4s
Model	SPS – 2000
Store	Select a previously created store that corresponds with the programmed Store Number within the cash register.
Comm Type	TCP/IP
ROM Version	2.02K or above
Baud Rate	N/A (Only needed for serial communications.)
Comm Port	N/A (Only needed for serial communications.)
Phone	N/A (Only needed for serial communications via modem.)
Switch Type	N/A (Only needed for serial communications via a switchbox.)
Switch #	N/A (Only needed for serial communications via a switchbox.)
PC TCP/IP Address	The IP address of the communicating PC. Please consult your IT administrator for this number; or, from a command prompt, enter IPCONFIG. The screen will display the IP address as well as additional network settings.
Register TCP/IP Address	The IP address of the cash register. This

	address will depend upon previously programmed S Mode settings at the cash register.
Register TCP/IP Port	8027 is the default port setting; however it is programmable by the user. It will depend upon previously programmed S Mode settings at the cash register.

After the register is programmed and the software is configured, simply enter the Communications area of Version 7 Polling.

1. Select the newly created machine.
2. Choose Save Programs From Register.
3. Check the All Programs option.
4. Click the Begin button.



### Communications Window

6:15:31 PM Initiating Communications for: TCP SPS2000  
6:15:31 PM Saving Program Memory and Version  
PE  
6:15:31 PM Saving Program to Database, Completed.  
6:15:32 PM Saving Program Cash Drawer Option  
PE  
6:15:33 PM Saving Program to Database, Completed.  
6:15:36 PM Terminating Communications

Cancel

Cancel All

Print

**Connected**

RXD

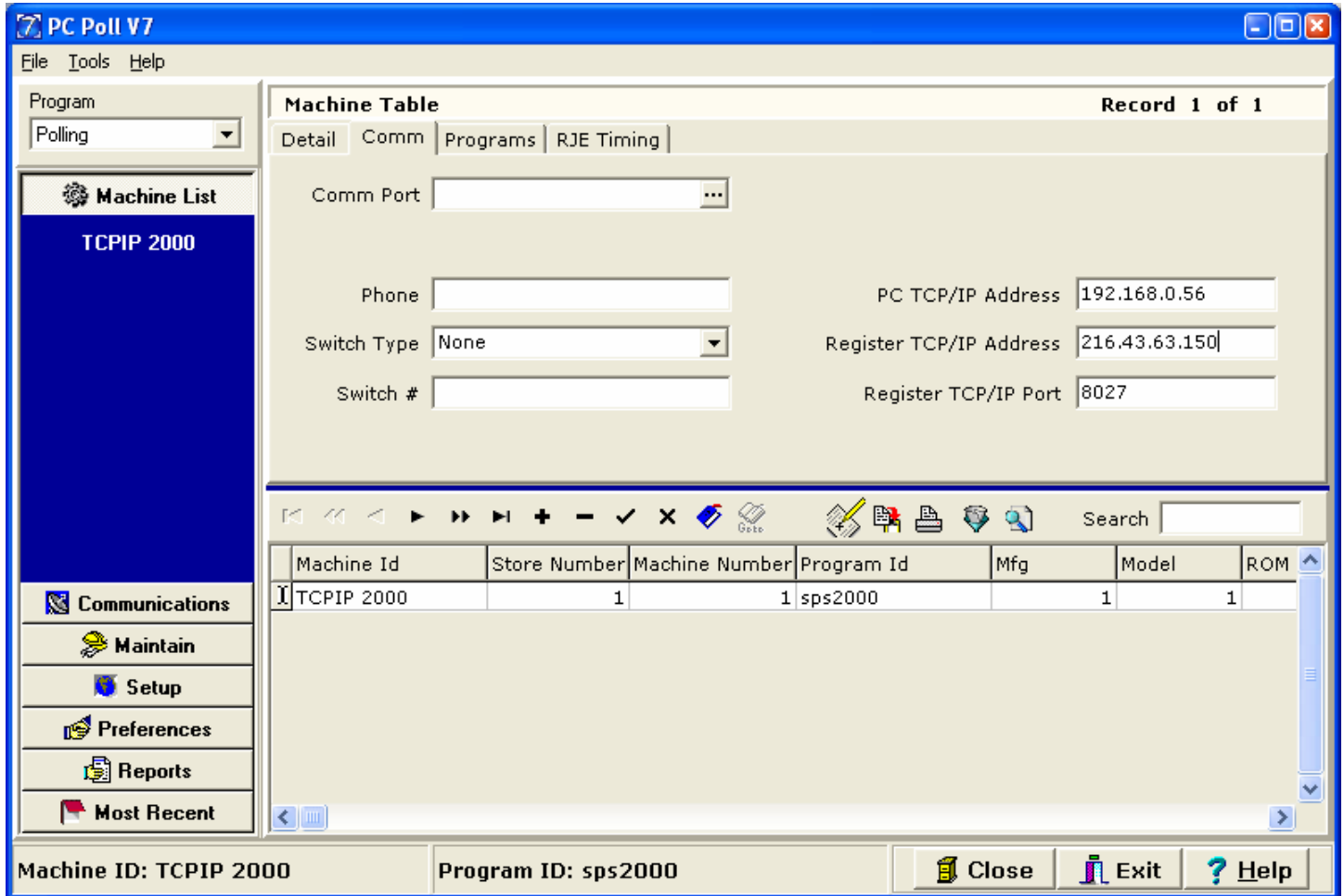


TXD



## General Notes on WAN Polling:

The SPS2000 supports LAN and WAN connections both over a cabled network and wireless. For WAN communications users should take note that additional hardware may be needed and may require additional configuration. The router will need to be configured to port forward on the register's PC Connection Port (default 8027) to the programmed IP address of the register. Within the Polling software, the register address field should be populated with the external IP address of the router on the cash register side of the installation. This address must be a static IP address. See the software image below. In the example below, the register IP address is still 192.168.0.11, however, the external (static) router IP address is 216.43.63.150. Within the router a port forward option was setup to send all incoming requests on port 8027 to the register's IP address of 192.168.0.11.

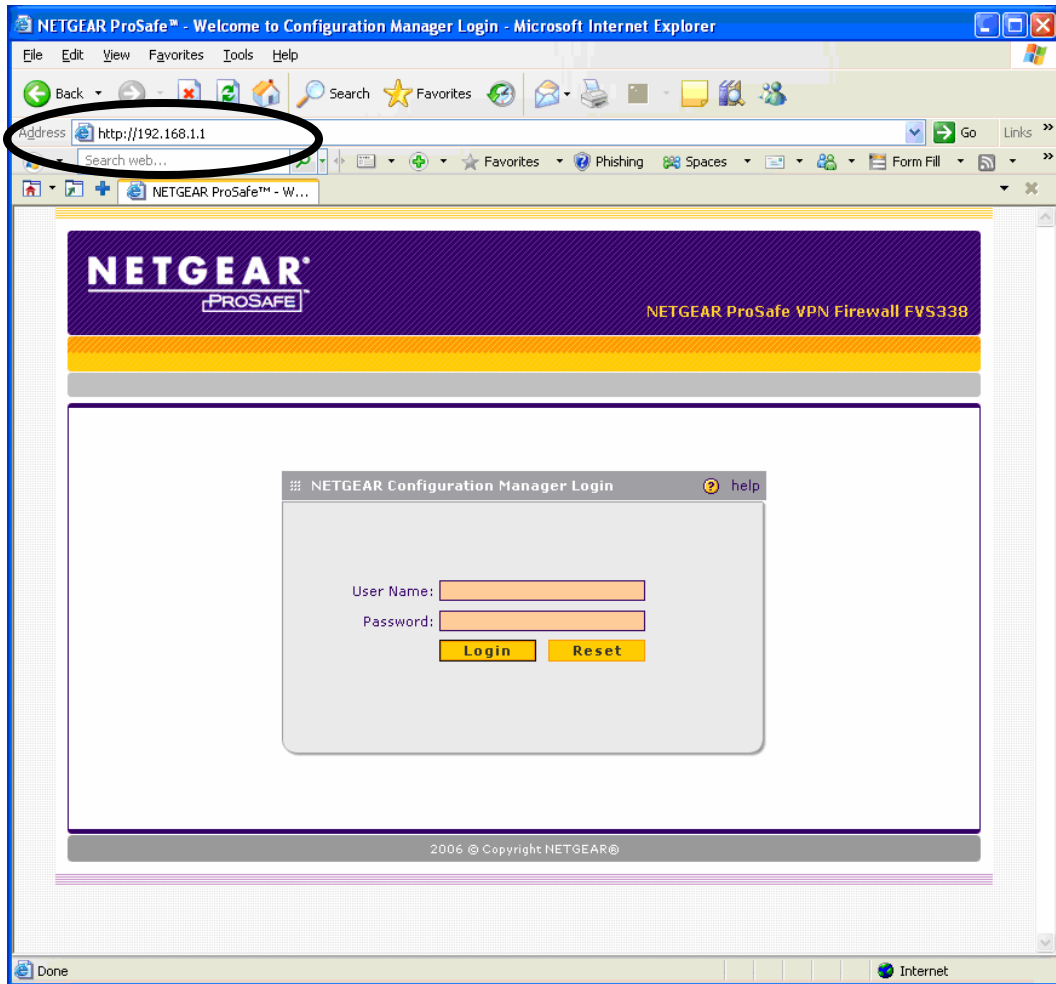


Setting up the router for WAN communications can be time consuming. If the customer does not have an IT administrator that can complete the task, it is recommended that dealers buy and install a router they know how to configure. CRS ([www.crs-usa.com](http://www.crs-usa.com)) does sell a Netgear router. Below are instructions, from CRS, on configuring that router to work with an SPS2000 via WAN polling. For more information, support or to purchase the router, please contact CRS directly. The instructions below are included as a general guideline on router setup.

## Netgear Router Setup

Before you begin, be sure you have the configuration parameters from your ISP handy.

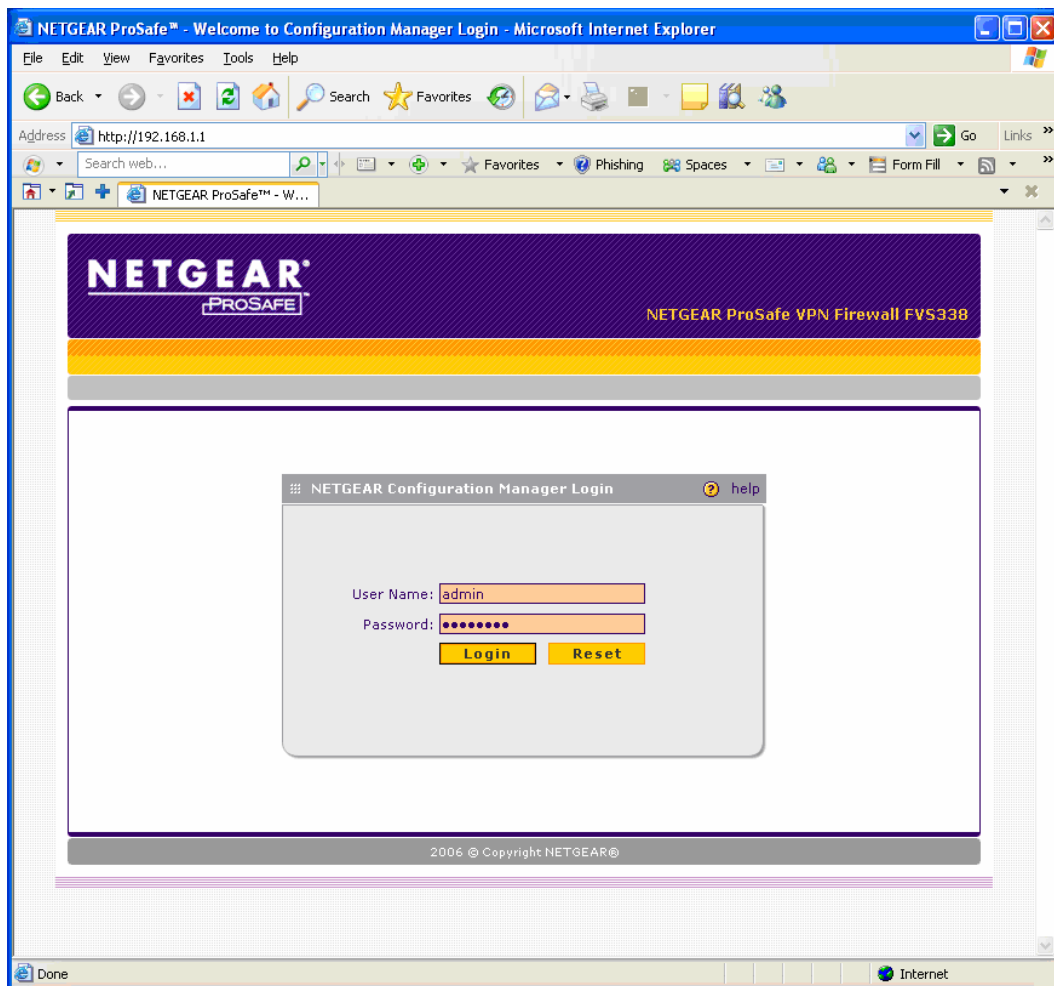
1. Log in to the Router. Use a browser like Internet Explorer or Netscape to connect to <http://192.168.1.1>



## 2. Log in:

Use the default user name: “**admin**”

Use the default password “**password**”



3. From the NETGEAR application:
  - a. Click **Network Configuration**.
  - b. Click **WAN Settings**.
  - c. Enter Static IP Address information, as supplied by your ISP.
  - d. Enter DNS Server information, as supplied by your ISP.

The screenshot shows the NETGEAR ProSafe VPN Firewall FVS338 web interface. The top navigation bar includes 'Network Configuration', 'Security', 'VPN', 'Administration', 'Monitoring', 'Web Support', and 'Logout'. The breadcrumb trail shows 'WAN Settings' > 'WAN Mode' > 'Dynamic DNS' > 'LAN Setup' > 'LAN Groups' > 'Routing'. The 'Broadband ISP Settings' section is active, showing 'Operation succeeded.' and 'ISP Login' fields. The 'ISP Type' section is set to 'Other (PPPoE)'. The 'Internet (IP) Address' section is set to 'Use Static IP Address' with fields for IP Address (209.150.204.203), IP Subnet Mask (255.255.255.248), and Gateway IP Address (209.150.204.201). The 'Domain Name Server (DNS) Servers' section is set to 'Use These DNS Servers' with fields for Primary DNS Server (209.150.200.15) and Secondary DNS Server (209.150.200.10). Callouts 'a.', 'b.', 'c.', and 'd.' point to the 'Network Configuration' menu item, the 'WAN Settings' breadcrumb, the 'Use Static IP Address' section, and the 'Use These DNS Servers' section, respectively.

4. From the NETGEAR application:
  - a. Click **Network Configuration**.
  - b. Click **LAN Setup**.
  - c. Enter:

IP Address **192.168.0.200**

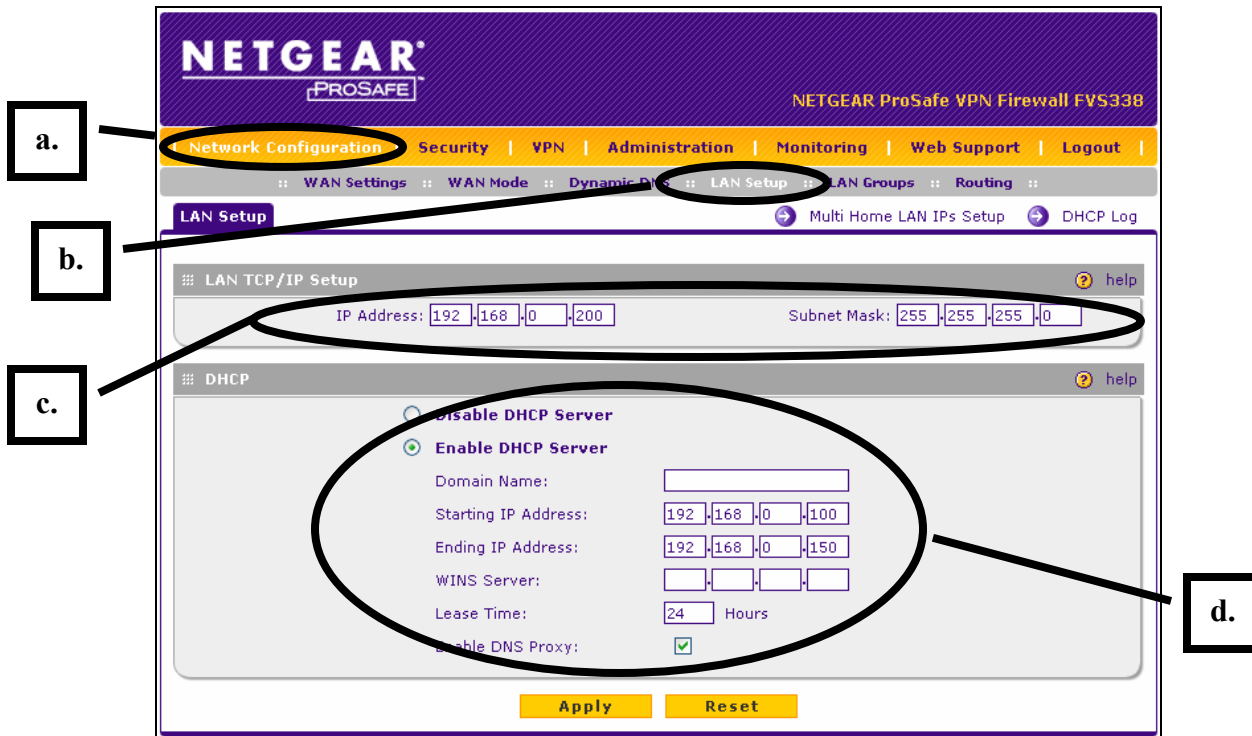
Subnet Mask **255.255.255.0**

- d. Enable DHCP Server:

Starting IP Address **191-168-0-100**

Ending IP Address **192-168-0-150**

*This is mandatory when using IPTran/IPEnabler connected to the same router.*



5. From the NETGEAR application:

- a. Click **Security**.
- b. Click **Services**.
- c. Enter: Descriptor (Name)/Type/Start Port/Finish Port  
*Note: Port must match register port assignment*
- d. Click **Add**.

The screenshot shows the NETGEAR ProSafe VPN Firewall FVS338 web interface. The navigation menu includes 'Network Configuration', 'Security', 'VPN', 'Administration', 'Monitoring', 'Web Support', and 'Logout'. The 'Security' menu item is circled and labeled 'a.'. Below the navigation menu, the 'Services' link is circled and labeled 'b.'. The 'Services' section displays a 'Custom Services Table' with one entry: '55 crs ip adapter TCP 5000 5000 Normal-Service'. Below the table are 'select all' and 'delete' buttons. The 'Add Custom Service' form is shown below the table, with the following fields: Name (SPS-2000 Reg1), Type (TCP), ICMP Type (empty), Start Port (8027), Finish Port (8027), and Default QoS Priority (Normal-Service). The 'Add' button is circled and labeled 'd.'. The 'Add Custom Service' form is also circled and labeled 'c.'. The footer of the page reads '2006 © Copyright NETGEAR®'.

#	Name	Type	Start Port	Finish Port	Priority	Action
55	crs ip adapter	TCP	5000	5000	Normal-Service	edit

Name	Type	ICMP Type	Start Port	Finish Port	Default QoS Priority	Add
SPS-2000 Reg1	TCP		8027	8027	Normal-Service	add ...

6. You can see the service in now added.

NETGEAR PROSAFE NETGEAR ProSafe VPN Firewall FVS338

Network Configuration | Security | VPN | Administration | Monitoring | Web Support | Logout

Services :: Schedule :: Block Sites :: Firewall Rules :: Source MAC Filter :: Port Triggering :: Trend Micro

Services

Operation succeeded.

Custom Services Table help

#	Name	Type	Start Port	Finish Port	Priority	Action
55	...	TCP	5000	5000	Normal-Service	edit
58	SPS-2000 Reg1	TCP	8027	8027	Normal-Service	edit

select all delete

Add Custom Service:

Name	Type	ICMP Type	Start Port	Finish Port	Default QoS Priority	Add
	TCP				Normal-Service	add ...

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7. From the NETGEAR application:
  - a. Click **Security**.
  - b. Click **Firewall Rules**.
  - c. Click **Firewall Add**.

**NETGEAR PROSAFE** NETGEAR ProSafe VPN Firewall FVS338

Network Configuration | **Security** | VPN | Administration | Monitoring | Web Support | Logout

Services :: Schedule :: Block Sites :: **Firewall Rules** :: Source MAC Filter :: Port Triggering :: Trend Micro

LAN WAN Rules Mask Checks

Default Outbound Policy: Allow Always

Outbound Services help

	Service Name	Filter	LAN Users	WAN Users	Priority	Log	Action
<input type="checkbox"/>							

Inbound Services help

	Service Name	Filter	LAN Server IP Address	LAN Users	WAN Users	Destination	Log	Action
<input type="checkbox"/>	crs ip adapter	Allow Always	192.168.0.231		ANY	WAN1	Never	<input type="button" value="up"/> <input type="button" value="down"/> <input type="button" value="edit"/>

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8. You will view this screen:

**NETGEAR PROSAFE** NETGEAR ProSafe VPN Firewall FVS338

Network Configuration | Security | VPN | Administration | Monitoring | Web Support | Logout

Services :: Schedule :: Block Sites :: Firewall Rules :: Source MAC Filter :: Port Triggering :: Trend Micro

**Add LAN WAN Inbound Service**

Operation succeeded.

Inbound Service help

Service: ANY

Action: BLOCK always

Select Schedule: Schedule 1

Send to LAN Server: . . .

Translate to Port Number :

WAN Destination IP Address: Broadband . . .

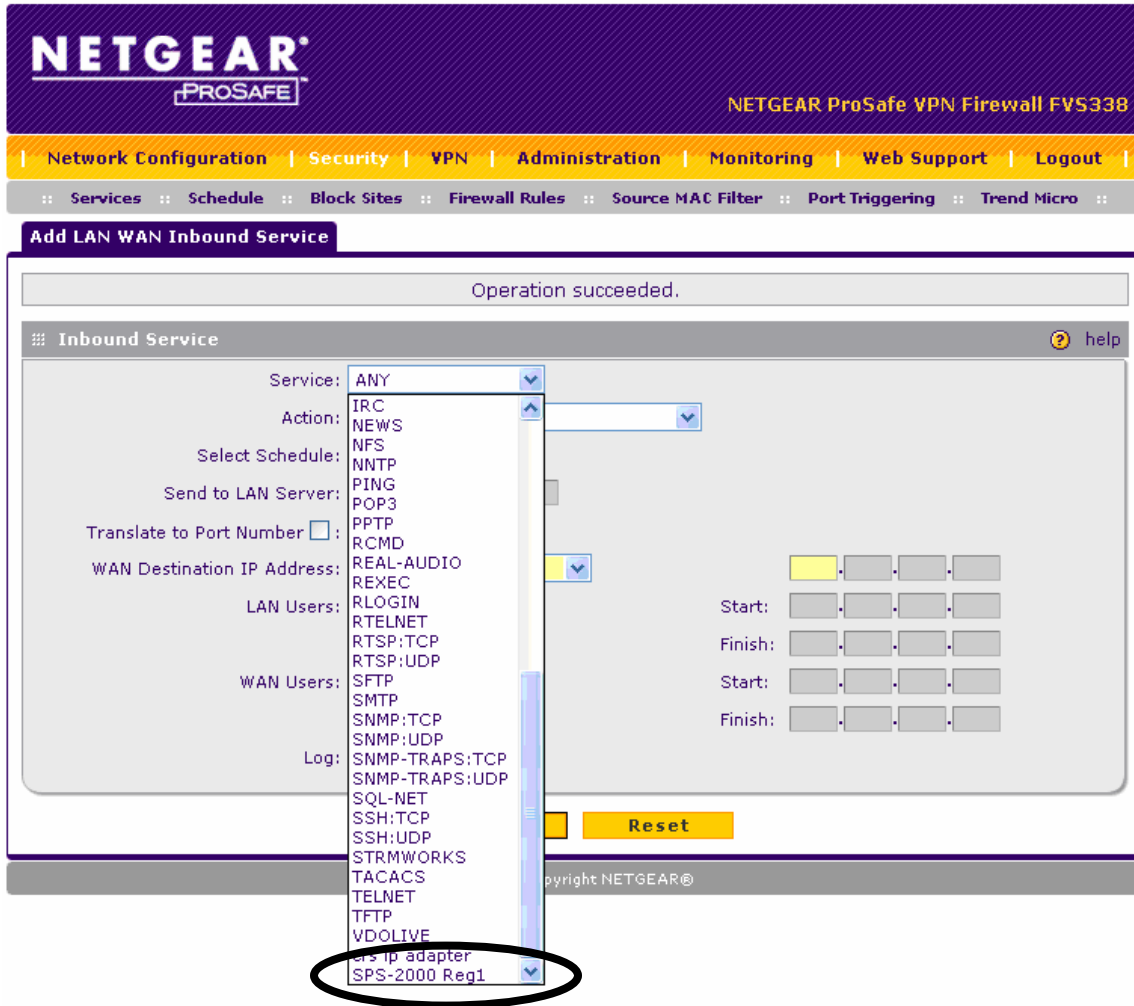
LAN Users: Any Start: . . .

WAN Users: Any Finish: . . .

Log: Never

2006 © Copyright NETGEAR®

9. From the **Service** drop-down box, select the service added previously.



10. Complete the settings shown below:

*Note that the network setting in the “Send to LAN Server” field must match the network settings set within S-Mode System Options.*

11. Click **Apply**.

NETGEAR PROSAFE NETGEAR ProSafe VPN Firewall FVS338

Network Configuration | Security | VPN | Administration | Monitoring | Web Support | Logout

Services :: Schedule :: Block Sites :: Firewall Rules :: Source MAC Filter :: Port Triggering :: Trend Micro

Add LAN WAN Inbound Service

Operation succeeded.

# Inbound Service help

Service: SPS-2000 Req1

Action: ALLOW always

Select Schedule: Schedule

Send to LAN Server: 192.168.0.11

Translate to Port Number:

WAN Destination IP Address: Broadband

LAN Users: Any

WAN Users: Any

Log: Never

Start: . . . .

Finish: . . . .

Start: . . . .

Finish: . . . .

Apply Reset

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12. You will see the added service.

The screenshot shows the NETGEAR ProSafe VPN Firewall FVS338 configuration interface. The top navigation bar includes "Network Configuration", "Security", "VPN", "Administration", "Monitoring", "Web Support", and "Logout" (circled in red). The "Services" menu is expanded, showing "Outbound Services" and "Inbound Services". The "Default Outbound Policy" is set to "Allow Always". The "Outbound Services" table is empty. The "Inbound Services" table contains two entries:

	!	Service Name	Filter	LAN Server IP Address	LAN Users	WAN Users	Destination	Log	Action
<input type="checkbox"/>	<input checked="" type="checkbox"/>	crs ip adapter	Allow Always	192.168.0.231		ANY	WAN1	Never	<input type="checkbox"/> up <input type="checkbox"/> down <input type="checkbox"/> edit
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SPS-2000 Reg1	Allow Always	192.168.0.11		ANY	WAN1	Never	<input type="checkbox"/> up <input type="checkbox"/> down <input type="checkbox"/> edit

At the bottom of the interface, it says "2006 © Copyright NETGEAR®".

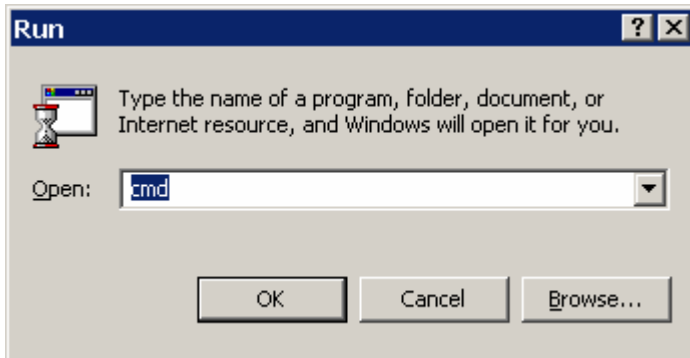
13. Click Logout. The application closes and the settings are complete.

The screenshot shows the NETGEAR Configuration Manager Login dialog box. It has a title bar that says "NETGEAR Configuration Manager Login" and a "help" icon. The dialog contains two input fields: "User Name:" and "Password:". Below the input fields are two buttons: "Login" and "Reset". At the bottom of the dialog, it says "2006 © Copyright NETGEAR®".

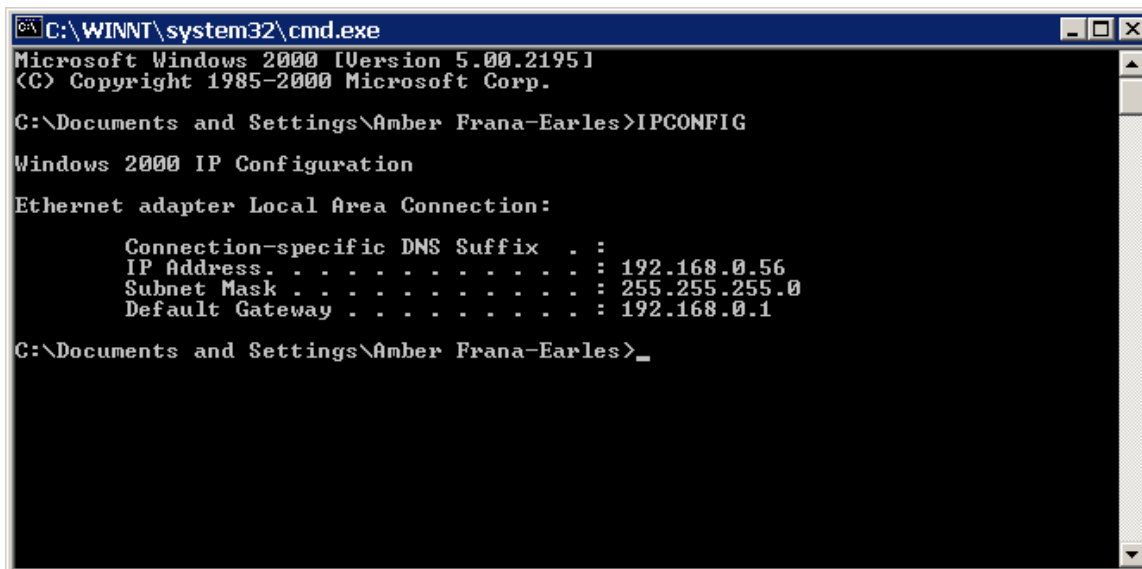
## Helpful Hints and Suggestions:

### Hint #1: Finding the IP address of a PC

1. Click on Windows Start button.
2. Locate and select the Run option.
3. From the Run menu type 'cmd' and click OK.



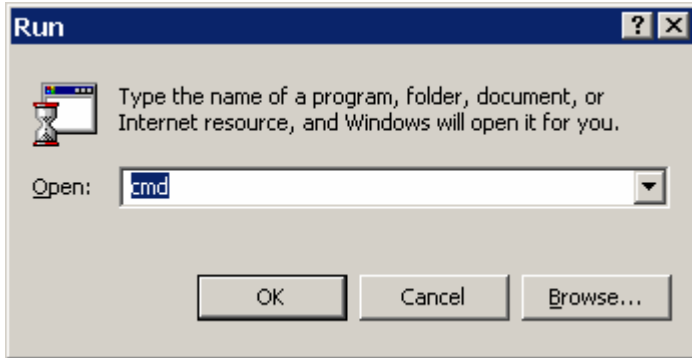
4. Within the command screen type IPCONFIG and hit the Enter key.
5. The screen will display your network information.



## Hint #2 Ping the cash register

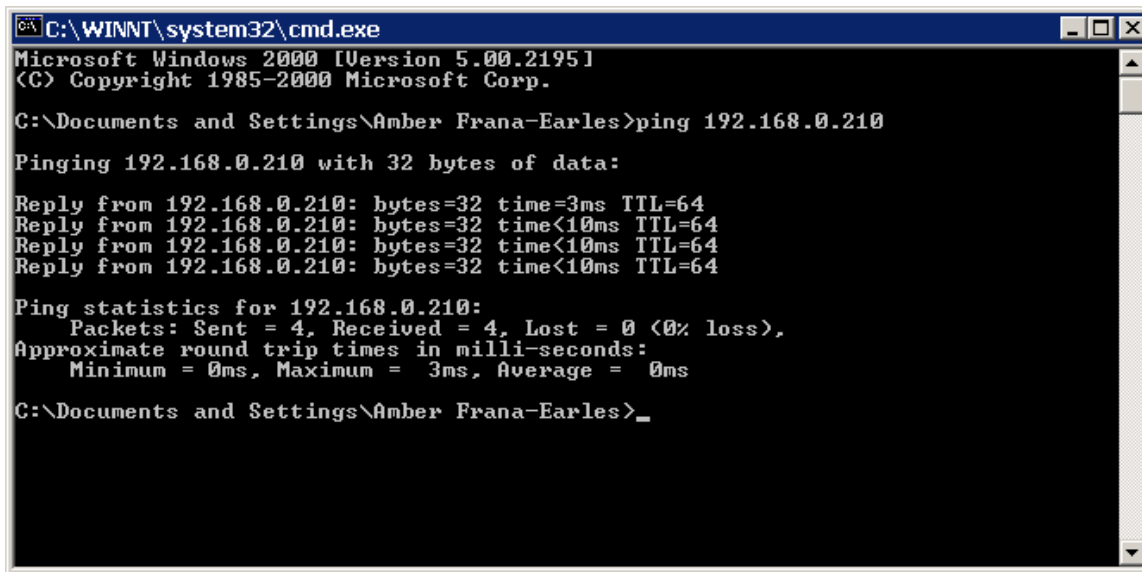
In order to ensure there is a connection between the register and PC it is strongly recommended that users PING the cash register prior to attempting polling communications. (This is for LAN communications only.)

1. Click on Windows Start button.
2. Locate and select the Run option.
3. From the Run menu type 'cmd' and click OK.



4. On the command screen type 'ping' followed by the IP address of the cash register. If the register is connected correctly, it should reply; or else the request will time out.

Correct Connection

A screenshot of a Windows command prompt window. The title bar reads 'C:\WINNT\system32\cmd.exe'. The window content shows the following text:

```
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\Documents and Settings\Amber Frana-Earles>ping 192.168.0.210

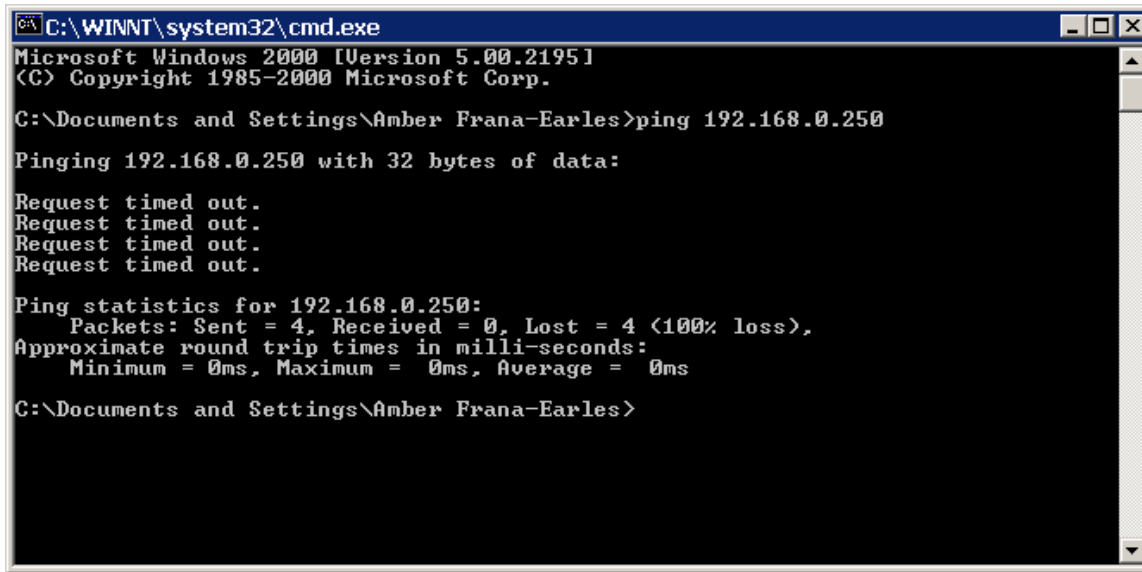
Pinging 192.168.0.210 with 32 bytes of data:

Reply from 192.168.0.210: bytes=32 time=3ms TTL=64
Reply from 192.168.0.210: bytes=32 time<10ms TTL=64
Reply from 192.168.0.210: bytes=32 time<10ms TTL=64
Reply from 192.168.0.210: bytes=32 time<10ms TTL=64

Ping statistics for 192.168.0.210:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\Documents and Settings\Amber Frana-Earles>_
```

## Error Connecting



```
C:\WINNT\system32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\Documents and Settings\Amber Frana-Earles>ping 192.168.0.250

Pinging 192.168.0.250 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.0.250:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Amber Frana-Earles>
```

### Hint #3 Quick and easy register setup

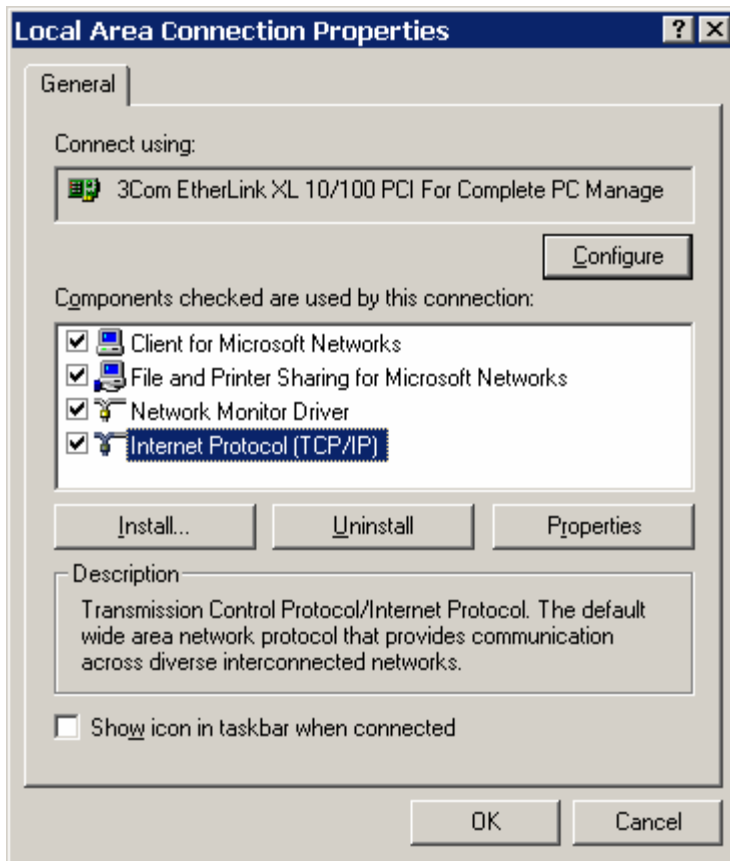
The simplest way to configure the SPS2000 for TCP/IP communications is to setup all S Mode settings as usual for a serial connection, except change the PC Connection Type from Serial to Ethernet and set the PC Connection Port to 8027. There is no need to set any other fields within S Mode, page 4, they will be set automatically by the register. The default IP address of a master register is 192.168.0.11. The IP addresses increase by one for each satellite i.e. satellite number 1 is 192.168.0.12. (Note: This setup is for a network with a subnet mask of 255.255.255.0 and gateway 192.168.0.1. If other settings are needed, please follow the complete setup as detailed above.)

Then simply, connect the register to your network. In most LAN configurations the register and PC will require a standard network cable, connected to a network router/hub/RJ45 network jack.

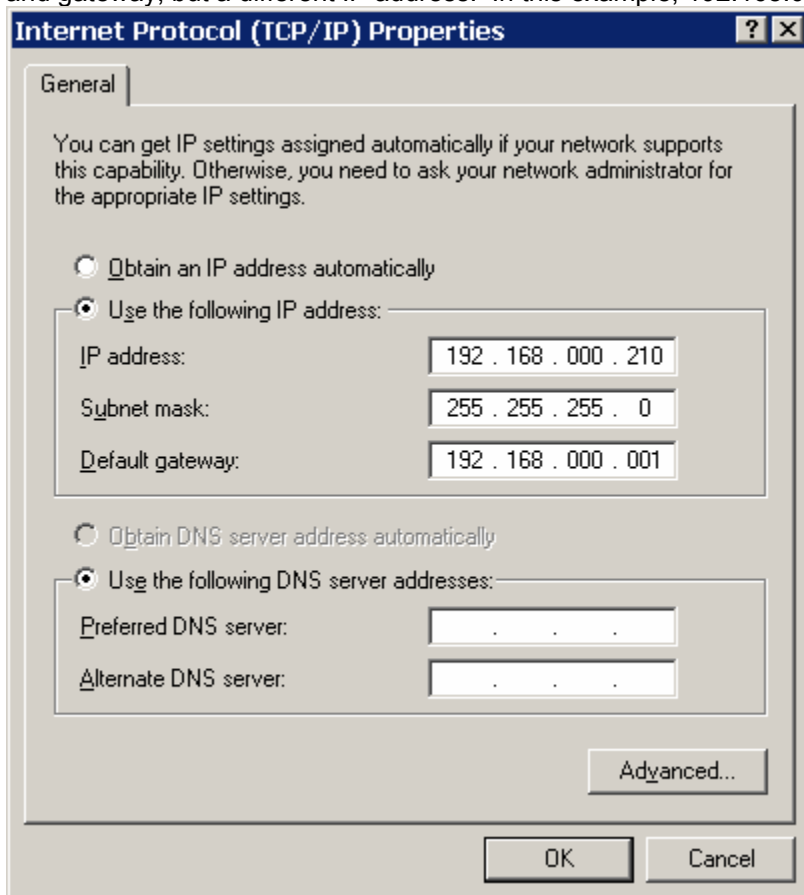
### Hint #4 PC and register crossover connection

The communications connection can also be made directly between PC and the register using a crossover cable. This would be a connection between 1 PC and 1 register. The register could not be part of an IRC. The PC will not be able to connect to a network or the Internet. In this situation, additional network settings may be required on the PC, such as programming an IP address. Please consult your IT administrator. Below is a sample PC setup, configurations may vary.

1. Open the control panel.
2. Select Network and Dial-up Connections.
3. Right-click Local Area Connection.
4. Choose Properties.
5. Select Internet Protocol (TCP/IP).



6. Click on the Properties button.
7. Set your IP options and click OK. On the register side you will want to setup the register with the same subnet mask and gateway, but a different IP address. In this example, 192.168.0.211 would be a good choice for ease of use.



**Hint #5 TCP/IP cabling**

Please read Hint #3 and #4. In general a standard network cable can be used in a LAN scenario. If the connection is directly between the register and the PC, a crossover should be utilized.

**Hint #6 Power the register on and off**

After any S Mode edits, please power the register on and off for those settings to take affect.

**Hint #7 Virus software and firewall**

Please make sure Version 7 Polling and CalendarPoll have been added to the exception list of your virus software and firewall. One troubleshooting trick would be to temporarily disable virus and firewall protection in order to conduct a test. This should be a temporary change. Please consult your IT administrator before making these changes.

**Hint #8 IRC communications**

Version 7 Polling supports polling of satellite registers through the use of register numbers for both TCP/IP and serial communications. From within a reporting screen, users can select which registers they wish to poll. For example, within a 2 register IRC, users may poll a report from 1-1, 2-2, or 1-2.

The software also supports program downloads to select registers. The only caveat to this operation is that the master terminal will receive all program downloads. Thus with a 3 register IRC, users may send programming changes only to register 3, but the master terminal will also receive those changes. To use this option, please select the Use Other Reg Range for Send option within S Mode programming on the software. For more information please contact PC/POLL support. (By default, the software is configured to send all programming changes to all registers within an IRC.)

With TCP/IP communications, users can talk directly with any register within the IRC using that register's IP address. However, it is still recommended, for simplicity of use, to communicate **directly to the master terminal** and then request data from the satellite registers via the register range option on the reporting selection screen. Please review sample software screens below.

Below is a sample report screen and the S Mode program broadcast option screen.

**Report Options - Financial**

Area to Poll

- Daily (X1/Z1)
- PTD (X2/Z2)
- Monthly (X3/Z3)
- Periodic (X4/Z4)
- Periodic (X5/Z5)

Register Range

Reg  To

Mode

- Read Reports (X)
- Reset Reports (Z)

Print Options

- Do NOT Print Report at the Register
- Print Report on Receipt

OK Cancel Help

**PC Poll V7**

File Tools Communicate Help

Program: Polling

**Sam4s SPS - 2000 S Mode Option** Record x of xxxx

Page 1 Page 2 Page 3

Reg# Holds KP Global Order	<input type="text" value="0"/>	Store Name	<input type="text"/>
Reg# Holds Clerk Intrpt Data	<input type="text" value="0"/>	S-Mode Password	<input type="text" value="2000"/>
# Reg Hold DataTran	<input type="text" value="0"/>	P-Mode Password	<input type="text" value="2000"/>
MSR Connected	<input type="text" value="DATATRAN"/>	Manager Password	<input type="text" value="9999"/>
PINPAD Connected	<input type="text" value="DATATRAN"/>	Report Mode Password	<input type="text" value="2000"/>
PINPAD Key Type	<input type="text" value="DUKPT"/>	System Password	<input type="text" value="9999"/>
Track# Holds Delivery Table	<input type="text" value="0"/>		

Use Other Reg Range for Send

From Reg  To Reg

Broadcast S Mode Options to Satellites

- Send PLU Descriptor when Polled
- Display Printer Error
- Enable Front Power Switch
- Use Graphic Table Man.

Machine ID: Program ID: Close Exit Help