

# WS\_Watch Help Index

## Windows Sockets Net Monitor (WS\_Watch)

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**WARNING: Do NOT monitor host systems that you do not have control of without the express permission of the owners of that host!!**

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Ipswitch, Inc. develops and sells a family of TCP/IP products for a range of PC platforms: Acadia/VxD for Windows, Piper/IP for DOS and Windows, Vantage/IP for OS/2, the Catapult Netware to TCP/IP gateway, IMail electronic mail for Windows and INews network news for Windows.

This program was developed entirely on personal equipment using personal time and personal resources. My association with the U.S. Army has no bearing on the design or implementation of this program nor does it imply that the U.S. Army, Fort Gordon, the United States Military Academy or the U.S. Army Computer Science School endorse the use of this program.

## Description

The primary purpose of this program is to make active checks on hosts that are listed in its database file and to graphically display the status of those hosts. In addition, this program provides access to finger, whois, ping, traceroute and name server lookup (see [tools](#)).

Since this program is still being developed, there are some things that are not the best in the world (like the map editor) and things that may not work correctly. If you find something that does not seem to be working correctly or want to make a suggestion on features to implement or how to implement a feature, send me mail. I will not guarantee that I will respond to your mail (I would not have time to do any development if I responded to all my mail!), but you can be sure I will read it and consider any suggestions and attempt to correct any problems. Please also realize that I am supporting a number of different programs so development is not constant.

This program can also read .DB files created by my EGA Netwatch program (which requires FTP's PC/TCP to work). EGA Netwatch cannot read files from this system.

Session settings are saved in the WS\_WATCH.INI file in your WINDOWS or WINNT directory. It is safe to delete this file anytime you want to set things back to default.

### **PING**

Provides the ability to measure round trip time to a remote host as well as provide reachability information.

### **TRACEROUTE**

Provides the ability to view the network path to a remote host. (not on all network stacks)

### **NSLOOKUP**

Provides the ability to retrieve and view Domain Name Service information.

### **WHOIS**

Provides the ability to query WHOIS servers for user and network information.

### **FINGER**

Provides the ability to query hosts for user information.

## Requirements

This program requires Microsoft Windows NT, Microsoft Windows 95 or Win32s and a working Windows Sockets DLL. (It works best on Windows NT or Windows 95)

This program is designed to work on any Winsock DLL, however it works **BEST** on the Microsoft TCP/IP 32 stack that comes with Windows NT 3.5 and Windows 95. In the Windows 3.x environment it works best on a stack that supports raw sockets (such as Ipswitch's Acadia, FTP PC/TCP, Novell LWP, Trumpet Winsock, Super-TCP, Netmanage, etc..). It does NOT work well on Microsoft's TCP/IP stack for Windows for Workgroups and uses a completely different method for determining if a host is up or not. (This probably wont work with your Microsoft TCP/IP-32 under your Win32s.)

**This program has been tested on: (refer to ws\_watch.txt for further info)**

Windows NT 3.5 - Microsoft TCP/IP

Windows 95 - Microsoft TCP/IP

Windows for Workgroups 3.11 - Ipswitch Acadia 1.0 - Win32s 1.2

Windows for Workgroups 3.11 - SuperTCP - Win32s 1.2

Windows for Workgroups 3.11 - Trumpet 2.0b - Win32s 1.2

## Installation

1. Install a Windows Sockets stack.
2. Install Win32s (if you are using Windows 3.x)
3. Make a directory and copy WS\_Watch.EXE and WS\_Watch.HLP to the directory.
4. Make a link in your program manager to point to WS\_Watch.
5. Create your own map, MAKE SURE YOU SAVE IT!!

**WARNING: Do NOT monitor host systems that you do not have control of without the express permission of the owners of that host!! Some people overreact to things like this.**

## The Main Window

The Main Window of WS\_Watch graphically displays the database of items and networks that it is monitoring and provides menus (also see [tools](#)) to access the other features of WS\_Watch.

Items that are responding to the monitor are displayed in green. Items that are not accessible or have not responded to 4 consecutive monitor requests are displayed in red. Items that are displayed in yellow have missed at least one monitor request. *Note that these colors are changable by pressing the [Colors](#) button in the [Options](#) dialog.*

To display additional status information about a item, you can point to the top left corner of an item and depress the left mouse button. (See [Host Information](#)) The small window will remain on the screen as long as the left mouse button is depressed.

To access some of the advanced features of WS\_Watch, you can click the right mouse button on the top left corner of a item and a [pop-up menu](#) will appear. Provided the environment you are working in supports it, you can then ping the item, trace the route to the item or edit the items properties. You can also double click the left mouse button on the top left corner of the item and automatically execute the [connect program](#) associated with an item.

You can move hosts by holding one of the SHIFT keys down and dragging an Icon to its new location with the LEFT mouse button. You can move lines by holding one of the SHIFT keys down and dragging a line to its new location with the RIGHT mouse button. (Note you MAY have to press the STOP or ABT button to return to normal operation.)

## Pop-up Menu

You can click the right mouse button while pointing to an item or on a blank area of the map. A pop-up menu will appear somewhere close to where you clicked. This menu allows you to create new items, delete items or provides you access to the items properties or access a few utilities.

### **NEW->HOST**

To create a new host in normal display mode, point to an open area in the map and click the right mouse button and select New->Host from the pop-up menu. At that point, a dialog will appear requesting the items information detail. (See [Host Information](#))

### **NEW->LINE**

To create a new line in normal display mode, point to one desired endpoint of the line and click the right mouse button. After selecting New->Line from the popup menu, (with the left mouse button!), move the mouse cursor to the second desired endpoint of the new line and click the RIGHT mouse button.

### **DELETE->HOST**

To delete a host in normal display mode, point to an existing host on the map and click the right mouse button and select Delete->Host from the pop-up menu. At that point the program will remove the item. (NOTE: Additional information on the item is not removed from the INI file as it may be used by other maps.)

### **DELETE->LINE**

Point to one of the endpoints of the line you wish to delete, click the right mouse button and select Delete->Line from the popup menu.

### **CONNECT**

This executes the [connect program](#) defined for the current item or if no special program is defined, it will use the defined Telnet program. If no special characters are on the program line, the IP address is appended to the end of the program line before attempting to execute the program. (You can also double click the left mouse button on an item and automatically execute the [connect program](#).)

### **PING**

This opens the ping window and pings the ip-address of the current item using the current set of options. You can change the number and size of the pings by pressing the Options button in the ping window.

### **TRACEROUTE**

This opens the traceroute window and traces the route to the ip-address of the current item using the current set of options. You can change the max number of hops and size of the probes by pressing the Options button in the traceroute window.

### **PROPERTIES**

This allows you to change the properties of the item using the same dialog as when the item was created. (See [Host Information](#))

# Using edit mode

The purpose of this program is not to draw fancy pictures! So do not expect too much from the editor. I will, however, continue to improve it. (secondary priority) Sorry if its cryptic!

Basically the editor uses the left mouse button to work with hosts and the right mouse button to work with lines (or nets). (You can actually create new hosts and delete old hosts by bringing up the popup menu on the normal desktop and selecting New->Host from the popup menu.)

## CREATING A NEW HOST

To create a new host in edit mode, select the Add->Host menu item and then drag the NewHost symbol to its desired location and click the left mouse button. At that point, a dialog will appear requesting the items information detail. (See [Host Information](#)) Optionally, you can point to an open area in the map and click the right mouse button and select New->Host from the [pop-up menu](#) while in the normal display mode.

## MOVING A HOST

To move a host, point to the top left corner of the host (in edit mode), hold the left mouse button down and drag the host to its desired location. Optionally, you can hold the SHIFT key down and drag a host with the left mouse button while in the normal display mode.

## CHANGING HOST INFORMATION

To change a hosts information, double click on the host (in edit mode). Optionally, you can point to an item and click the right mouse button and select Properties from the [pop-up menu](#) while in normal display mode.

## DELETING HOSTS

To delete a host, select the Delete->Host menu item and point to the top left corner of the item to delete and click the left mouse button. Optionally, you can point to an item and click the right mouse button and select Delete->Host from the [pop-up menu](#) while in normal display mode.

## CREATING A NEW LINE

To add a new line, select the Add->Line menu item and point to one of the end points for the line and click the right mouse button. After releasing the mouse button, a line will follow the mouse from that end point as you move the mouse. Move the mouse to the other end point and click the right mouse button.

## MOVING A LINE

To move an existing line, point to an end point, press and hold the right mouse button down and drag the end of the line to its new end point and release the right mouse button. When multiple lines terminate at the same location, you may have to move lines out of the way to get to the line you want to move. Optionally, you can hold the SHIFT key down and drag a line with the right mouse button while in the normal display mode.

## DELETING A LINE

To delete an existing line, select the Delete->Line menu item and point to the end of the line you wish to delete and click the right mouse button. When multiple lines terminate at the same location, you may wish to move other lines out of the way before to insure you delete the desired line.



# Host Information

**DISPLAY NAME:**

This is the name that is displayed on the screen and should be from 1 to 8 characters long.

**ADDRESS/NAME:**

This can be a name that can be resolved or it can be an IP address. This field is limited to 25 characters.

**INFO LINES 1 & 2**

These fields are purely informational and can be used as you see fit. I would suggest putting in the POC for a system or location or description in these fields. This information is displayable by clicking on the hosts during normal operation.

**CONNECT PRGM:**

The command entered here is executed with the IP address of an item as the last argument on the command line when you select Connect from the popup menu for a item. (See [connect program](#))

**SYSTEM TYPE:**

This option is used to select the icon to display when the Use Icons option is enabled. Select the desired type from the drop down list.

**TYPE:**

Currently, only TCP/IP or None are selectable. This defines for the system how to talk to the item.

**MONITOR:**

When this is selected the item is checked on each poll. If this is not checked (or if None is selected as a Type), the item is displayed as gray.

**LOG ACTIVITY:**

When this is selected a log entry is written in the mapname.LOG file in the same directory of the map when the item has missed 4 polls and when the item recovers after missing 3 or more polls.

**SOUND:**

Defines the sound file that will be displayed when the host goes down. Low priority=down1.wav, Middle priority=down2.wav, High priority=down3.wav. When multiple hosts go down simultaneously, the highest numbered sound has priority.

**[Beeper Support](#)**

# Beeper Support

Beeper support is a new area and the internal support may not work properly for many beepers. I'd suggest using the external program method and writing that support yourself. A code skeleton for a console application BEEPER.EXE is provided. The presence of an **external program** name in the beeper section of the host configuration enables the external program when the **enable internal code** option is not checked.

The following information is made available to the external program via the command line.

- arg 1:** either DN or UP
- arg 2:** the phone number as specified in the host configuration
- arg 3:** the code as specified in the host configuration
- arg 4:** the ip address of the host

## External program example arguments:

```
0: beeper.exe 1: DN 2: 8694297 3: 3333 4: 127.0.0.1
0: beeper.exe 1: DN 2: 8694297 3: 2222 4: 127.0.0.1
0: beeper.exe 1: UP 2: 8694297 3: 2222 4: 127.0.0.1
```

The external program is executed with SW\_SHOWMINNOACTIVE.

If you have **beep each** enabled, the external program is executed for each down host. If it is disabled, the external program is executed once at the end of the POLL using the information from the down host that had the highest numeric priority.

The beep will not be activated if someone silenced the alarm before the **beep count** is reached.

The UP message will only be sent if the packets lost is greater than **beep count** when the host comes back alive.

UP and DN messages use the same priority system. So it is possible to receive an UP message from a high priority host and miss a DN message from a low priority host.

## PHONE

This is the number that is dialed or passed as **arg 2** to the external program.

## COUNT

This is an exact match of the down count for when the beeper should be activated. This number SHOULD be greater than 4. The default is 15 greater than the sound activation trigger. (sound activation trigger is 4)

## CODE

This is the number that is sent to the beeper or passed as **arg 3** to the external program. When the internal code is used, a prefix of 000 is used for down messages and 999 is used for up messages.

## PRIORITY

When using the internal code, only the down host with the highest numeric priority is sent to the beeper. The same is true of the external program when **beep each** is not enabled.

# Connect Program

The Connect program that is entered in the item information dialog supports some special values. This field's usefulness is tied to the Connect menu item in the pop-up menu. If the field is left blank the program used to connect to an item is the program defined as the Telnet program in the system options dialog.

Special values

## **[LOAD] database\_file\_name%**

This causes the specified database to be loaded. This is intended to be used in conjunction with an item that has a System Type of Net.

## **%l**

This is replaced with the contents of the label field of the item's properties.

## **%n**

This is replaced with the contents of the address/name field of the item's properties.

## **%a**

This is replaced with the ip-address of the item.

## **%1**

This is replaced with the contents of the info1 field of the item.

## **%2**

This is replaced with the contents of the info2 field of the item.

## **Examples:**

```
Connect prgm: d:\mosaic\mosaic.exe http://%a/  
Connect prgm: d:\apps\telnet.exe %1  
Connect prgm: [LOAD] subnet.db%
```

# System Options

You can change a number of options by selecting the File->Options menu item in the main window or by pressing the Options button in various dialogs.

## SECONDS BETWEEN CHECKS

This is the number of seconds between polls. The countdown of this is displayed in the title bar of the window if the **Show Timer in Title** option is enabled.

## DISABLE AUTO CHECK

If this option is enabled, the program will not automatically poll items for their status. You will have to press the CHK button in the lower right corner of the screen to find the current status of the items. All other functions of the program are available in this mode.

## SECONDS TO WAIT BEFORE TIME-OUT

This is the number of seconds to wait for a response from a host. This should be set to the smallest possible value. For a local network, a time-out of 2 seconds is usually valid. For a long distance (or slow path) network, this time-out may need to be as high as 10 seconds.

## TELNET

Program to execute when the user selects Tools->Telnet and default tool for Connect popup menu option. (also see [tools](#))

## FTP

Program to execute when the user selects Tools->FTP (make sure you take a look at WS\_FTP, another excellent program I wrote!) (also see [tools](#))

## ENABLE SOUNDS

Controls the sounding of the alarm when a host goes down or comes up.

## FIXED FONTS IN MAP

Changes handling of fonts in item display. Try it both ways!

## FIXED FONTS IN TOOLS

Changes handling of fonts in tool displays like whois, finger, lookup, etc..

## RAW SOCKET ICMP PING

This should be selected if you are using a stack that supports raw sockets, such as Ipswitchs Acadia, FTP Incs OnNet, Trumpet Winsock, etc.

## MICROSOFT ICMP PING

This should be selected if you are using Microsofts TCP/IP 32 on Windows NT or Windows 95. If this is checked and you are not using the correct platform, you will get an error on ICMP.DLL.

## SHOW TIMER IN TITLE

Toggles the timer in the title.

## SOLID BACKGROUND

The background can either be the same color as your desktop or one of the solid colors that is available in the [Colors](#) dialog. If the option is unchecked, the program will use the color of your desktop (this can be changed from the control panel or in the screen properties). If the option is checked, the program will use the nearest solid color to the color that you have set in the Colors dialog. Changes to this option do not take affect until you restart the program.

## USE ICONS

The system will display Icons in place of the simple host name if this is checked. The type of icon is determined by the System Type property of the item.

**LABEL ICONS**

The simple name will be displayed below the icon when Use Icons and this option are enabled. Note that the color of the background under an icon is the nearest solid color to the current color of the icon.

# Changing Colors

You can change some of the colors by pressing the Colors button in the Options dialog. (NOTE: Not all colors will be available for use in all systems or for all fields. You will need to experiment for the best results on your system.)

To change a color, select the color name in the list box and click on the color patch that you wish to change to. The current setting for a name is displayed to the right of the list box, above the color patches.

The colors that can be modified are:

## **Responding**

This is the color used to paint the icon or text background of an item that is responding to active checks. Default is solid light green.

## **Lost 1 pkt**

This is the color used to paint the icon or text background of an item that has timed out to 1 active check. Default is solid light green.

## **Lost 2 pkts**

This is the color used to paint the icon or text background of an item that has timed out to 2 consecutive active checks. Default is solid yellow.

## **Lost 3 pkts**

This is the color used to paint the icon or text background of an item that has timed out to 3 consecutive active checks. Default is solid yellow.

## **Lost 4-7 pkts**

This is the color used to paint the icon or text background of an item that has timed out to 4 to 7 consecutive active checks. Default is solid light red.

## **Lost 8+ pkts**

This is the color used to paint the icon or text background of an item that has timed out to 8 or more consecutive active checks AND for items that have a network error such as network unreachable. Default is solid light red.

## **Inactive**

This is the color used to paint the icon or text background of an item when monitoring is disabled for the item. Default is dark grey.

## **Background**

This is the color used to paint the background of the screen if the **Solid Background** option is enabled in the Options dialog. Default is light gray.

## **Text**

This is the foreground color used for the text. Default is black.

# Tools

This program also provides access to a small number of tools that are often used during the troubleshooting of problems on a network.

These include:

## TELNET

Provides access to a telnet application that you may have on your system. Telnet is not included in this program. Go to the Options dialog to define the telnet program.

## FTP

Provides access to a ftp application that you may have on your system (might I suggest WS\_FTP!). FTP is not included in this program. Go to the Options dialog to define the ftp program.

## LOOKUP

Provides access to the name resolving functions in your network stack. What comes back from any lookups is determined by what your systems network stack will return. Usually, you can enter an IP address and get back the official name of the system or you can enter a name and get back the IP address of the system.

## PING

Provides access to ICMP ping. A set number of ICMP echo requests are sent to the specified IP address and the network response is displayed on the screen. The default is to send 5 packets of 56 bytes each to the address. Response time is displayed in milli-seconds and will vary due to network load. Advanced options are available by pressing the Options button in this dialog.

## TRACEROUTE

Provides a means of seeing the actual network path that an ICMP echo request takes to arrive at a destination host. Times are displayed in milli-seconds. The second column is the difference from the previous response time. Response times will vary due to network load. Advanced options are available by pressing the Options button in this dialog.

## WHOIS

Provides a means of looking up network information (or user information) from the various network information providers. For Department of Defense lookups, use NIC.DDN.MIL as the WAIS host. For non-military sites, use RS.INTERNIC.NET as the WAIS host. Additionally, many sites such as MIT provide their own lookup hosts.

## FINGER

Provides a means of querying a host by use of the finger protocol. (Try fingering zj8549@trotter.usma.edu). Usually, you can enter just a host name and see what users are currently logged on and then specify a userid@host to display additional information about a specific user. *NOTE: Many sites (especially military) have disabled the finger servers for security reasons.*

## Hints and Known Problems

DO NOT EXIT THIS PROGRAM WHILE A CHECK IS IN PROGRESS! If you do, you may have to reboot the system to rerun the program or to remove file concurrency errors on the EXE. There are checks to help correct this situation but they are not 100% complete.

Appears to be a bug when running on Win32s on the Microsoft TCP/IP stack. Works on some systems and not on others. Program seems to time-out on all remaining hosts after the first host fails. This MAY be a problem in my timer routines so I am looking at that.

You MAY have to move other lines out of the way before you can reference the line you want. When deleting a line, you need to try to click on an end of the line where no other lines meet it.



## About the author

The following is provided so that you have an idea of who I am, why I write programs like this and so you may understand my lack of response to much of my electronic mail. (I do still read it, so keep it coming!)

I am a Master Sergeant in the United States Army, currently stationed at Fort Gordon, Georgia, as the NCOIC (Non-Commissioned Officer In-Charge) of the PDNEB (Professional Development Network Engineering Branch) at CSS (the U.S. Army Computer Science School). The PDNEB primary mission is to improve network connectivity and network services for the PDN (Professional Development Network) organizations. Secondary missions include improving network connectivity and network services for the U.S. Army Signal School and for Fort Gordon.

I have been in the Army since 1978 and have served as a Forward Observer, a Brigade Fire Support NCO, Instructor (computer), the NCOIC of the GoldCoats at West Point, the Chief of Academic Network Engineering Branch at West Point and the NCOIC of Technology Integration Division at CSS.

My awards in the Army include the Legion of Merit, numerous Army Commendation Medals, Army Achievement Medal, Good Conduct Medals, Overseas Service Ribbon, and NCO Professional Development Ribbon. My Army education includes 13F AIT, 74F AIT, Primary Leadership Course, Basic Non-Commissioned Officers Academy (13F) and Advanced Non-Commissioned Officers Academy (74F) (I was a distinguished graduate from most of these.). My civilian education includes a High School Diploma, 2 years trade school for Auto Mechanics and an Associated Degree in Computer Science.

I worked as an auto mechanic for two years after graduating from high school in Greenville, Illinois and then worked for four years as an industrial electrician before joining the Army.

I started with computer programming by learning Basic and then Machine Language programming on a TRS-80 Model I starting in 1979. Some of my accomplishments in that arena were a complete operating system of my own, a tactical forward observer training program, a menu system (later known as Gmenu or Vmenu), a OS Shell (later known as Auto or Valet) and a few games.

In 1981, I picked up Cobol programming through the Army. From 1982 through 1986, I taught IBM DOS-E (mainframe) internals and debugging, Cobol Programming, Basic Programming, Systems Analysis and Design, GCOS (honeywell) and picked up IBM (mainframe) and GCOS (honeywell) Assembler Language programming. I also taught some of the above courses for University of Maryland and City Colleges of Chicago (overseas).

In 1986, I started learning about IBM PCs and MS-Dos. I developed a few assembler language programs based on older TRS-80 programs such as Auto and Gmenu. I also learned C, Pascal and FORTRAN around this time and released a few shareware games written in C and Pascal.

I was introduced to UNIX in 1987 and developed a whole series of programs for UNIX in C, including a version of Gmenu (menu shell), Gmail (mail interface for sendmail, mmdf and more), Rbbs (USENet interface), FSE (full screen editor), Ginput (forms input system) and a simple hypertext information system. Much of this was later adopted by the Army and distributed with standard systems. It is all still in use at West Point and full source code is available. Some parts of it were also adopted by colleges and universities across the country. Over 90% of the development of all the UNIX programs was performed at night at home in addition to my regular military duties.

Also in 1986, I was introduced to the world of networking and went on to help develop the extensive TCP/IP network in place at West Point. My involvement included design, installation, testing, operation and maintenance of much of the network including both the physical network and the software that ran on the PCs, on network devices and on the host systems. I was involved in every aspect of the network including implementation of network management tools which is where WS\_Watch has its roots. The network at West Point when I left in 1993 had 12 FDDI routers, 40+ subnets and over 6000 nodes. There were over 40 UNIX host systems, 15 Lan Manager servers, 3 Novell servers, a couple IBM

mainframes, a Unisys 1100 mainframe, a Teradata mainframe, a few DEC VMS systems and other miscellaneous systems on the network, all of which I had something to do with (from a network configuration point of view). (Myself and two people working for me, did all the system support on 23 of the UNIX systems and provided all the system support on the Lan Manager servers for a couple of years while we did everything else!) Also at the beginning of this time period I took over the support of the Domain Name Server for usma.edu and assisted in setting up the first army.mil name server.

Since 1993, I have taken on more freelance programming work outside the Army and have produced network related products such as WS\_Ping, WS\_FTP, WS\_GMail, WS\_News and WS\_Watch. This is outside of my normal job where I have been assisting in the design of a new network at Fort Gordon and in moving Fort Gordon into the future of automation. Our current network initiatives include implementation of ATM in conjunction with the Army SBIS program (an addition to). One of our accomplishments here is in the setup of the Signal Center Web Home Page at <http://www.gordon.army.mil>.

My hobbies are (you guessed it!) computer programming, chess, working on cars, building car models and spending time with my wonderful wife Denise, my three daughters and my grand-daughter Madison.

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