# NetScanTools Name Server Lookup Help



**What is Name Server Lookup?** Name Server Lookup **Simple Query** takes a hostname (xx.yy.com or xx.yy.edu etc.) or an IP address (123.45.67.8 etc.) and returns the associated information from your network name server (DNS or WINS). It also returns alias names for the input name and as many IP addresses as are mapped to that name.

**Usage:** Enter a hostname or IP address and press **Simple Query**.

**Adv Query.** Name Server Lookup Advanced Query returns more detailed information about a hostname, IP address or domain name as specified in the **A Q Setup** dialog box. You can configure the Advance Query to use a specific DNS (Domain Name Service), not necessarily your default name server, to gain access to information about other domains. When you set the Current Name Server to an Authoritative Name Server for a domain, you can then use the **List Domain** function to list all the computers registered to that domain. *(Note: if you try to use List Domain with a Name Server other than an Authoritative Name Server for that domain, the current name server will return 0 records.)*

Advance Query only works with DNS; it does not work with WINS.

## Adv Query Usage:

1) Verify your settings in A Q Setup, including the intended Name Server hostname or IP address.
2) Enter a hostname or IP address and press **Adv Query**.

## List Domain Usage:

1) Verify your settings in A Q Setup, including the intended Authoritative Name Server hostname or IP address for the target domain. You must determine the Authoritative Name Server for the target domain by selecting Any or NS and running an Adv Query on the domain name.

2) Enter a domain name (like nwpsw.com) and press **List Domain**.

## A Q Setup.

The **Query Type** options are:

**A** - The address resource record maps a hostname to an Internet IP address in a DNS zone. **This is the only valid setting for IP address to hostname lookups.**
**ANY** - List any record type for that host found in the name server. This normally shows most records including CNAME and others not specifically selectable by the options.
**HINFO** - Host information. A resource record containing hardware or operating system information.
**MX** - Mail exchanger record specifying the mail exchange host for a DNS

domain name. Many hosts like ABigCompany.com, do not actually have a machine with that name, they run the smtp mail service on a machine specified by the MX record.
**NS** - The name server record returns the Authoritative and Non-Authoritative DNS Name Servers for a Domain. Copy the name server hostnames into the Current Server entry box to get the exact information about a domain. Example: if you enter the Authoritative host for nwpsw.com in the Current Server entry box, then hit OK in the setup dialog, then go back and enter nwpsw.com and press List Domain, you get all the hosts registered in the nwpsw.com domain.
**PTR** - The pointer resource record maps an IP address to a host name in a DNS reverse zone, the in-addr.arpa DNS domain. It is the counterpart of the A resource record.
**SOA** - Start of Authority resource record information is as shown below:
nwpsw.com

origin = DNS1.simplenet.com
mail addr = postmaster.simplenet.com
serial = 1114207651
refresh = 10800(3 hours)
retry = 3600(1 hour)
expire = 5184000(60 days)
minimum ttl = 86400(1 day)

The **Timeout** and **Retries** settings affect the time that you want to wait for a DNS to reply with the requested information. A good recommended timeout is 5 seconds for ethernet connected DNS and 15 seconds for modem connected DNS.

**Server Selection** group.

**Current Server** is the one you will use the most. When you make a query about a host or domain with option ANY or NS set, it normally returns one or more Authoritative Name Servers. Copy one of the Authoritative Name Server's name or IP address into the Current Server box. When you close the dialog by hitting OK, it will set the NetScanTools resolver to use the new Current Server (timeout and retry affects how long this can take). The server's name and IP address will show in the results area. You can then query the Authoritative Name Server about the host or domain you are interested in. *Note: The List Domain button will only return information about a domain from an Authoritative Name Server assigned to that domain and listed in A Q Setup as the current name server.*

**Root Server** is the other option. If you select the root server with the Any option (and you can change it to something other than the default ns.internic.net) and close the dialog, then do an Adv Query on a hostname, it will give you the Authoritative Name Servers for the domain in question.

Both the Current Server and Root Servers are saved from session to session in a list which may be edited from the Preferences tab.

**Append Default Domain Name** appends your default domain name to non-fully qualified domain names (i.e. Entering hostA will cause the name hostA.nwpsw.com to be queried if your domain name is set in your TCPIP setup as nwpsw.com) if checked.

**Use Recursion** will cause the Advance Query feature to search in more detail through the DNS tree.

**Use Virtual Circuit** activates a different type of TCPIP connection to the Name Server.

**Verbose Mode** shows all the details of a query. Analogous to NSLOOKUP's debug mode.

This function requires a connection to a network with a DNS (Domain Name Server) or a WINS server or other type of name server. Your computer must be configured to access the DNS.

If you do not know your local DNS IP address, typing ipconfig at a command line on Windows NT or winipcfg on Windows 95 for a list of your local DNS addresses.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## NetScanTools Finger Help

**What is Finger?** Finger is a client function that comes from the UNIX world and is typically only supported by UNIX machines although some Windows NT machines run a finger server. The purpose of this function is to obtain information about a particular user or set of users on a host using their Email address.

**Usage:** You must enter addresses in the form of user@hostname.suffix (suffix can be com, net, mil, etc.) and press the **finger** button. You may also enter @hostname.suffix to get a list of all users currently on that system.

The ***Verbose Mode checkbox*** sends a /W (unix syntax: finger -l x@yz.com) command with your query string. This instructs complying hosts to send expanded information back to NetScanTools, if available. This option must be checked *prior* to making the finger request.

**Setup:**

**Finger Proxy.** NetScanTools also supports finger proxies two separate ways.

1) Use the proxy host entry field in the **Finger Setup** dialog box, enter the hostname there (ex. firewall.company.com) and enable proxy use in this dialog. Then enter the standard Finger string: user@hostname.suffix. You must check the **Use Firewall Proxy Server** checkbox to enable the proxy usage.

2) Use the traditional UNIX way of using finger proxies: user@hostname1.com@hostname2.com. You do not have to enable proxy support in the setup dialog box to use this, just enter it as shown.

**Finger Security.** For security reasons, many systems will refuse access to user information--you will get an error message similar to "*connection refused*". Some hosts will return an empty string. Other hosts are aliased (see MX records in Name Server Lookup's Adv Query) so the email address maps to a different computer than the one the user actually has an account on.

The IDENT server works with Finger to identify you to the other host if it requests identification information. Some hosts request identification from you before they return the Finger information. NetScanTools' IDENT server is fully configurable and will only supply information you want sent.

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About the Lower Button Row.

## NetScanTools Ping Help

**What is Ping?** Ping (Packet InterNet Groper) is a UNIX utility for detecting connectivity between hosts. Ping sends a series of bytes in the form of ICMP Echo Request type 8 packets to the other host and looks for return ICMP type 0 Echo Reply messages. Most TCP/IP connected machines respond to ping.

**Ping Usage:** Enter a hostname or IP address and press **Ping**.

**AutoPing Usage:** Enter a hostname or IP address and select **AutoPing**. Your system will now automatically ping the given host indefinitely according to the parameters in **Ping Setup**.

**Ping Setup.** Use the setup dialog box to change the parameters affecting the ping ICMP packet transmission and configuration for the "**AutoPing**" settings.

**Time Between Packets.** The time Ping waits *after* the last packet was supposed to be received.

**Packet Timeout.** The time Ping waits for a response after sending a packet.

**Packet Time To Live (TTL).** The maximum number of hops (routers/gateways) that the ICMP packet can travel between your computer and the target host.

**Number of Packets Sent.** Typically five (5).

**Base Packet Length.** The number of data bytes (excluding the 8 byte ICMP header) that is sent in each Ping packet. By varying this number and setting the **Don't Fragment checkbox**, you can determine the maximum transmission unit (MTU) of the route between your computer and the target system. This number can be from 4 to 4000 bytes. A small data packet size (32 bytes) is recommended. A minimum of 4 data bytes are required for storage of the packet transmission time.

**Don't Fragment Checkbox**. If checked, the ICMP packet will not be fragmented.

**AutoPing Settings - Threshold % Non-responding Pings.** During AutoPing, if the number of non-responding pings exceeds this percentage of the number of packets sent, your machine will beep twice and an entry will be logged in the AutoPing log.

**AutoPing Settings - Time Between Ping Sets (sec).** The time between each set of packets sent.

**AutoPing Settings - Edit AutoPing Log.** Uses Notepad for editing the AutoPing log.

**AutoPing Settings - Log All Data.** All displayed results are appended to a single log file.

List View and Classic View radio buttons toggle between the two possible ways of viewing results.

**Notes:** See the Preferences Tab for setting the compatibility between your type of WinSock and NetScanTools.

Ping requires a static IP address for your computer. It will also work with IP addresses assigned by a DHCP server. Ping will not work on systems that rely on emulated IP addresses such as UNIX systems running TIA or SLIRP. Ping will not work across firewalls unless the firewall has been configured to pass ICMP packets.

If your computer uses raw sockets as would be shown under the socket types supported section of WinSock Info tab, you can go to the preferences tab and select the TTL compatibility Winsock 2.0 setting if you are using Windows NT 4.0, 5.0 or Windows 98. Some versions of Windows 95 also support raw sockets. If you are using 32 bit Trumpet Winsock or Instant Internet, then select the "other" setting. As an added benefit for those using raw sockets selections, NetScanTools will automatically attempt to use high resolution timers for timing packet travel times if they are supported by your operating systems.

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About the Lower Button Row.

## NetScanTools TraceRoute Help

**What is TraceRoute?** TraceRoute is a UNIX utility for determining the route taken by ICMP packets from your computer to another computer . TraceRoute sends a series of ICMP Echo Request type 8 bytes to the other host and looks for a return message. The Time-To-Live parameter is incremented for each packet starting at 1 until a return message is received from the other host. Each hop returns a packet message, either ICMP type 11 for gateways/routers or ICMP type 0 for the final destination host. Some hops (routers or gateways) will not return a message, so you will get a message stating "No data received".

**Usage:** Enter a hostname or IP address and press **Trace**.

**TraceRoute Setup.** Use the setup dialog box to change the parameters affecting the TraceRoute ICMP packet transmission.

> **Time Between Packets.** The time TraceRoute waits *after* the last packet was supposed to be received.
>
> **Packet Timeout.** The time TraceRoute waits for a response after sending a packet.
>
> **Maximum Hops (TTL).** The maximum number of hops (routers/gateways) that the ICMP packet can travel between your computer and the target host.
>
> **Base Packet Length.** The number of data bytes (excluding the 8 byte ICMP header) that is sent in each TraceRoute packet. By varying this number, you can determine the maximum transmission unit (MTU) of the route between your computer and the target system. This number can be from 4 to 4000 bytes. A small packet size (32 bytes) is recommended. Larger packets tend to be dropped during periods of heavy load.
>
> **Don't Fragment Checkbox**. If checked, the ICMP packet will not be fragmented.
>
> **Retries**. The number of times a packet should be sent with the current TTL (hop number).
>
> **Starting Hop**. Allows setting of the number of the first hop from which you expect response.

List View and Classic View radio buttons toggle between the two possible ways of viewing results.

**Notes:** See the Preferences Tab for setting the compatibility between your type of WinSock and NetScanTools.

TraceRoute requires a static IP address for your computer. It will also work with IP addresses assigned by a DHCP server. TraceRoute will not work on systems that rely on emulated IP address such as UNIX systems running TIA or SLIRP. TraceRoute will not work across firewalls unless the firewall has been configured to pass ICMP packets.

If your computer uses raw sockets as would be shown under the socket types supported section of WinSock Info tab, you can go to the preferences tab and select the TTL compatibility Winsock 2.0 setting if you are using Windows NT 4.0, 5.0 or Windows 98. Some versions of Windows 95 also support raw sockets. If you are using 32 bit Trumpet Winsock or Instant Internet, then select the "other" setting. As an added benefit for those using raw

sockets selections, NetScanTools will automatically attempt to use high resolution timers for timing packet travel times if they are supported by your operating system (usually supported on NT 4+).

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About the Lower Button Row.

## NetScanTools Whois Help

**What is Whois?** Whois is a database client utility for querying whois server for names of companies, people, network domains, and IP address assignments. You can use it to determine if a domain name you are interested in has been used by someone else.

**Usage:** Enter a hostname, domain name, person's name or IP address and press query. For more help enter the word help in the edit box and press **Query**.

**Common Whois queries:**

**Hostname** www.nwpsw.com

**Domain name** nwpsw.com

**Person's name** Smith (try to pick the least common part of the person's name-first or last)

**IP address** 204.123.15.2 or 2.0.123.15 (we do not recommend adding the last IP part since it normally will not be found. Entering the first three parts, 204.123.15 etc., will usually work)

**Setup:**

**Whois Proxy.** NetScanTools also supports whois proxies:

If your company has a firewall that supports Whois Proxies, use the proxy host entry field in the **Whois Setup** dialog box, enter the proxy hostname (ex. firewall.company.com) and enable proxy use in this dialog. Then enter the whois query string as above. You must check the **Use Firewall Proxy Server** checkbox to enable the proxy usage.

**Enable Smart Whois.** NetScanTools now includes this feature which will automatically determine the whois server to query based upon the country extension found in the query string. For instance, if you put in nwpsw.com, it will select whois.internic.net. If you put in www.xyz.co.uk, it will select whois.nic.uk. You can uncheck the Enable Smart Whois checkbox to force your queries to go to the server specified in Whois Setup. If a country extension is not found in our database, then Whois will query the server specified in Whois Setup.

The **Enum Hosts** button makes a request to a whois server at Massachusetts Institute of Technology for a current list of known Whois servers. You may choose from this list and enter a new server in the "Change Host" dialog box. The default is whois.internic.net.

**Some popular whois servers are list below:**

| | |
|---|---|
| rs.internic.net | USA domains |
| whois.arin.net | USA IP address assignments |
| whois.ripe.net | Europe |
| www.nic.uk | United Kingdom |
| whois.apnic.net | Asia/Pacific |
| whois.aunic.net | Australia |

**Notes:** Whois is client database utility. The whois servers may from time to time present various warning or errors messages about skipping records or aborting searches. *NetScanTools does not generate these messages, it only reports them--much like a web browser.* Do not email us asking what these messages mean. Instead, ask the whois server for help as describe in Usage above. NetScanTools error messages generally mention a communication error and a connection or a socket.

**WHOIS Server More Records Available Questions.** Another type of Whois Server message is one where the whois server states that there are more records available and asks you if you would like to see them. NetScanTools will allow you to place your cursor in the results area for entering yes or no whenever a question is asked.

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About the Lower Button Row.

## NetScanTools "Whats New At NWPSW" Help

**What is this?** The "Whats New At NWPSW" page is actually a simple web browser. It grabs the raw text URL and posts it in the results area. When you first activate the page, it requests the News URL from Northwest Performance Software's Web Site and displays it. This URL contains the latest news about NetScanTools and other happenings.

**Usage:** Enter a URL in the form of http://www.nwpsw.com/index.html and press **Get URL**. Pressing **Get FAQ's** will retrieve the NetScanTools Frequently Asked Questions page.

The **Display HTTP Headers and HTML tags** checkbox toggles display of the headers and the html tags that are sent with each web page. Most web servers send header information that you can view if this checkbox is selected.

**Setup:** The setup dialog has two selections. Most users will be using the "Direct Internet" selection. For corporate users behind firewalls, NetScanTools supports CERN proxies. The CERN proxy settings require you to enter the name of your proxy computer. Example: www.proxy.domain.com Port: 80

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## NetScanTools Daytime Help

**What is Daytime?** The Daytime page is an implementation of the daytime TCP client protocol based on RFC 867. Upon making a connection to a host, the host immediately returns the time of day at the host's location. . If NetScanTools is used on a Windows NT system that is running Simple TCPIP Services, localhost will return the time on your system using the localhost loopback address (127.0.0.1) of your system.

**Usage:** Enter a hostname or IP address and press **daytime**. Many Windows NT servers and most Unix servers will return the daytime.

Attempting to connect to a host that does not support this service will result in a connection refused message.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## NetScanTools Quote of the Day Help

**What is Quote?** The Quote page is an implementation of the Quote of the Day TCP client protocol based on RFC 865 (also known as cookie or quotd). Upon making a connection to a host, the host immediately returns a random quote. If NetScanTools is used on a Windows NT system that is running Simple TCPIP Services, localhost will return the quote from your system using the loopback address (127.0.0.1) of your system.

**Usage:** Enter a hostname or IP address and press **quote**. Most Windows NT web servers will return a quote from their location. Some Unix servers will also return the quote. *There are many do so--If you find one let us know!*

Attempting to connect to a host that does not support this service will result in a connection refused message.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## NetScanTools Database Tests Help

**Socket Services Test** This selection tests your Winsock's implementation of the sockets services database translation capabilities. It starts at service 1 and ends at service 65535. It checks for both TCP and UDP service translations. The services that can be translated by your implementation of the sockets service database are displayed.

**Socket Protocols Test** This selection tests your Winsock's implementation of the sockets protocols database translation capabilities. It scans all protocols starting at 1 and ending with 255. The protocols that can be translated by your implementation of the sockets protocols database are displayed.

NOTE: this is NOT a port scanner.

**Usage:** Select the database you want to test, and press **analyze.**

Your services database is called services and your protocols database is called protocols (no file extension) and they are located in the Windows folder on Windows 95 or in the WindowsNT\System32\drivers\etc directory\folder on Windows NT.

How is this function useful? If either or both of these databases are missing, some Winsock programs may not function correctly because they access these databases for translation of a service or protocol name into a numerical equivalent.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## NetScanTools WinSock Info Help

**What is WinSock Info?** The WinSock Info page queries your implementation of sockets to determine what basic information is available.

The Information displayed is provided by your Winsock implementation.

**Notes:**
If "raw sockets" is in your Socket Types Supported list, you may use the TTL Compatibility selections other than automatic for Ping, TraceRoute and NetScanner.

NetScanTools requests WinSock 1.1 compatibility for operation even though higher WinSock versions may be available.

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About the Lower Button Row.

# NetScanTools NetScanner Help

**What is NetScanner?** NetScanner is a very powerful utility capable of determining which TCP/IP connected computers are active on a network. It can resolve the IP addresses of the active computers to hostnames if desired. Once a hostname is found, it can also automatically query a Whois server for the domain information associated with that host. NetScanner can also probe a single port on each responding remote host for TCP service activity. This is useful for finding hidden services like web servers or ftp.

NetScanner sequentially pings each of the addresses in the range entered between the start and end IP edit boxes inclusively. An ICMP ping packet (1 or more depending on retries) is sent to each host. Hosts that return a ICMP Echo Reply ping acknowledgment are shown in the results section. If you check the "Translate IPs to Hostnames" box, NetScanner will attempt to resolve the name of the host associated with that IP. Warning: this can significantly slow the operation.

Use the setup dialog box to change the maximum time-out waiting for a packet to return and the maximum hops to reach that host.

Optional Features:

- NetScanner can selectively return the hostname that is associated with the responding IP address. It will display a "?" mark if the IP address does not have an associated hostname in your hosts file, DNS or WINS. Check the "Translate IPs to Hostnames" checkbox to enable this feature.

- You can force NetScanner to ignore host or net unreachable responses from gateways or routers. You may get an unreachable response if the computer you are trying to ping is off line or the routing tables are not right. The response usually comes from a different IP address than the one you are trying to reach. The default is checked.

- You can add responding IP addresses and corresponding hostnames automatically to your hosts file. This file is located in the ..\windows directory for Windows 95 and the ..\system32\drivers\etc directory for Windows NT. This is disabled by default.

- You can verify the connectivity of the IP addresses found in the hosts file. It will go through the file and ping each IP address and display the status of each computer. Press the **Verify Hosts File IPs** to activate this. *Port testing and Whois Queries are not done for this feature*.

- You can enable whois queries on returned hostnames for automatic lookup and display of associated whois information. Check the Enable Whois Queries checkbox to enable this feature.

- You can enable probing of a single user defined TCP port on responding remote hosts. Enter a port number 1-65535 or a service name such as ftp, http, smnp, smtp, etc.

**Usage:** Select options, enter a starting and ending IP address and press **start**. **Cancel** will stop the operation. **Stop Whois Query** will cancel a pending whois query, but not stop the ping sequence.

**NetScanner Setup.** Use the setup dialog box to change the parameters affecting the NetScanner ICMP Ping packet transmission.

**Packet Timeout.** The time TraceRoute waits for a response after sending a packet.

**Maximum Hops (TTL).** The maximum number of hops (routers/gateways) that the ICMP packet can travel between your computer and the target host.

**Base Packet Length**. The number of data bytes (excluding the 8 byte ICMP header) that is sent in each Ping packet.

**Retries**. The number of times a packet should be sent to the each IP address.

**Don't Fragment Checkbox**. If checked, the ICMP packet will not be fragmented.

**Notes:** See the Preferences Tab for setting the compatibility between your type of Winsock and NetScanTools.

Any changes made to Whois Setup also apply to the Whois Tab and vice versa. This includes Enabling Smart Whois Queries.

In certain cases, the NetBios computer name may appear if the IP address is not found in the DNS. You will need to have NetBios over TCPIP bound to your network port.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## Northwest Performance Software, Inc. Customer Support

**Help File:**
Your first place to look for help should be this help file.

**Web Help:**
Press the ? button on each NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

**Support Web Page:**
*Primary Web Site*: **http://www.nwpsw.com/support.html**
*Mirror Web Site:* **http://www.eskimo.com/~nwps/support.html**

**Email Your Questions:**

If you need help beyond the scope of this help file try our support web pages first. If you cannot find the answer to your question, then email to:
**sales@nwpsw.com**
Email is checked frequently.
*If you are a registered user, please include you serial number in your email to ensure prompt attention.*

**Phone contact:**
If you choose to call and you get a recording, leave your name, phone number including area code or country code, country you are calling from and your local time when you called. To save everyone phone charges, **please leave a clearly enunciated email address for fastest response**. All email addresses and other information are kept strictly confidential.

**Our voice phone number** is **(253) 630-7206 Pacific (Seattle) Time (UTC - 8)**.
Our telephone hours are generally 8am to 5pm Monday through Friday Pacific (Seattle/Los Angeles) time. Check the What's New tab or our website main page for holiday observances.

**24 Hour 7 day FAX** is **(253) 639-9865 or (425) 413-0745.**

**Web Site Access**
*Primary Web Site*: **http://www.nwpsw.com/**
*Mirror Web Site:* **http://www.eskimo.com/~nwps/index.html**

Check the web sites for news about this program. Don't forget to use the What's New at NWPSW Web Site for the latest direct news from our web site.

## Upgrade and Replacement Policies

**UPGRADES**
*"What's New at NWPSW Web Site"* will contain news about upgrades as will the main page on our web site. Minor version upgrades are available for free (subject to restrictions below) using email or www for registered users. If you require the upgrade on disk, you will be asked to pay a shipping and handling charge--email for the current fee.

**Automatic Upgrading**
The current upgrade method is to use the most current shareware version of NetScanTools to upgrade an existing registered version. Instructions are here:
http://www.nwpsw.com/nstautoupgrade.html

**Upgrade Restrictions**:
*You may only upgrade for free from a minor version to another minor version. That is 3.xx users may upgrade to version 3.yy, not version 4.zz. This upgrade policy is subject to change without notice and any changes in upgrade policy published at our web sites or by mail/email take precedence over the upgrade policy mentioned herein.*

**Replacements**
If you received your registered version via email attachment or www download, **it is your responsibility to backup your entire NetScanTools program using the instructions found here:**
http://www.nwpsw.com/nstbackup.html

**We are not responsible for loss of your registered program due to failure to adequately backup your software.**

# General Information

## Copyright Notice

**Program Requirements:** This program is designed to run on Windows 95 or Windows NT. It requires a connection to a network using the TCP/IP protocol. You must have the TCPIP network support software (also known as Winsock) installed. This program also requires ICMP.DLL. It is normally located in your windows directory, or windows\system or windows\system32 directory. If ICMP.DLL is not usable for PING, TRACEROUTE and NETSCANNER, then you may choose to try to use the Raw socket capabilities. You must set the TTL compatibility on the Preferences tab to either "Winsock 2.0" or "other" and the words "Raw Sockets" must appear in the Socket Types Supported list on the Winsock Info tab. Note: Non-Microsoft Winsocks do not support the usage of the ICMP.DLL, even if it is present.

**Warning:** This program has not been tested with all non-Microsoft Winsocks. Use with such Winsocks may result in varied levels of performance, specifically with Ping, TraceRoute, and NetScanner. This program has been found to be compatible with Winsock 2.0 found on Windows NT 4.0 (TTL Compatibility setting Winsock 2.0) and Trumpet Winsock 3.x 32 Bit version and 32 Bit Instant Internet Winsocks (TTL Compatibility setting -other-) .

**Full Screen Viewing.** Version 3.1 supports maximizing the window as well as resizing the window by grabbing the edges and dragging it. If also remembers previous window size and position between sessions.

**Printing:** Most functions in this program allow basic printing. Print fonts are set in the Preferences Tab and are valid for all printed output. The recommended print font is Courier New 11 point. 9 Point looks best for viewing results. You will be warned about font size if you attempt to use a small font for printing the orderform.

**Copying Text to the Clipboard.** You may also copy results from most results areas to the clipboard using ctrl+c or ctrl+insert. You may then paste the results into another portion of this program or to another program. Windows 95 and Windows NT 4.0 users may also right click on the mouse button over a results area to bring up the cut/copy/paste popup menu.

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## Copyright Notice

# Preferences Help

## Font Settings

Use the font button for changing the font that is used for printing and for displaying the results of each function. We recommend using a fixed spacing True Type (TM) font like Courier New.

Courier New, 11 point works best for printing. 9 point is best for viewing results.

**Usage:** Press **Change Font**. Changes are recorded in the Registry.

## Listbox History Entries

**Enable Listbox History**, when checked, enables saving of hostnames or IP addresses for each NetScanTools client page after that host is entered and the client activated.

**Editing Listbox History Entries**
Whenever you enter a hostname or IP address into one of the NetScanTools clients and activate the client, the hostname or IP address is memorized by storing it into a *.dat file. These .dat files are kept in the NetScanTools program executable directory/folder. Version 3.1 provides a way to edit this history list by selecting the appropriate history list and pressing edit The edit dialog box shows all the entries and you use it by highlighting an entry by clicking on it, then moving it up, down or deleting it. You cannot add to the list from this editor. To add to the list, just use the appropriate client function and it will automatically fill the list.

## Ping, TraceRoute, NetScanner TTL Compatibility

The three settings affect the performance of Ping, TraceRoute and NetScanner. The default setting is **Automatic**. **Automatic** first attempts to use the ICMP.DLL that is installed with Microsoft's TCP/IP protocol during network setup. Then it will test for the presence of Raw Socket capability and attempt to determine how the TTL (time-to-live) field of the IP header should be set. The **Winsock 2.0** setting bypasses the detection of the ICMP.DLL and forces the TTL compatibility to be set according to the method employed by Windows NT 4.0. The **other** setting also bypasses the detection of the ICMP.DLL and forces the TTL field to be set according to the methods used by Trumpet WinSock 3.0 32 Bit and compatibles.

Note: If your Winsock is NOT a Microsoft default Winsock and it does not have raw socket capability according to the Winsock Info tab, then Ping, TraceRoute and NetScanner will not work. The ICMP.DLL will not load with non-Microsoft Winsocks even if the DLL is present and in the current path.

## Appearance Checkboxes

**Minimize to Taskbar Tray**
When checked, the program will minimize to a Taskbar tray icon. If not checked, it minimizes to the Taskbar. No effect on Windows 3.51 which minimizes to the desktop.

**Display "How to Purchase" tab**
When checked the tab is displayed; when not checked, it is not displayed. Action

takes effect after exiting and restarting NetScanTools.

**Show NSLOOKUP Color Banner**
Display or hide the color Northwest Performance Software/NetScanTools banner on the Name Server Lookup tab.

**Name Server Timeout**

**Name Server Timeout (sec)**
This entry controls how long you want to wait for a hostname-to-IP or IP-to-hostname resolution cycle to complete. It affects all client functions EXCEPT Adv Query which has a separate timeout entry in the A Q Setup dialog.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

## Character Generator Client

**What are Character Generator Services?** Character Generator services send out a stream of characters upon accepting a client connection to the CHARGEN port. This is in accordance with RFC 864. The NetScanTools chargen client will connect to any computer running the CHARGEN service and display the data being transmitted. This client will operate under both the TCP and UDP protocols.

**Usage:** Enter a hostname and press **Connect**.

**Note:** If you switch to another tab while characters are being received, the connection to the server computer will be closed. Most Windows NT hosts and a good number of UNIX hosts will respond to this client.

The characters received per second may be higher than the communications rates of some modems because many modems use data compression.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## No Help Available

**There is no help available for this topic.**

## Echo Client

**What is an Echo Client?** An echo client connects to an echo server on another machine. All text sent to the echo server by the echo client is repeated back, "echoed", to the source. This client is capable of using both TCP, connection oriented, and UDP, which is not as reliable. TCP connections will usually not drop characters, while the UDP connection may occasionally drop characters.

**Usage:** Enter a hostname, select TCP or UDP protocol and press **Connect**. Once connected the enter your text in the "Input text to send" window and the echo response will appear in the "Echo response from target host" window. Select **Disconnect** or switch tabs to terminate the connection.

Any error messages will appear in the bottom results window.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## IDENT Server

**What is an IDENT Server?** For security reasons, many host computers would like to identify the users who connect to services like Finger and even the web server before they send back information to the client. The IDENT protocol is defined in RFC 1413. When a connection is made to a host service, like Finger, the host knows which ports were connected and it sends a message to the IDENT port on your computer asking who you are. It will then decide whether or not to send the requested information to you based on your IDENT response.

**Enable IDENT Server.** Checking this box enables the IDENT server.

**Configure.** This IDENT server is fully configurable. You can choose the name by which you wish to be known, and the type of message to send back to the host when an IDENT request is made. You can even log the IDENT requests (recommended).

**Edit IDENT Log.** This launches Notepad to view the IDENT server log file. Sometimes error messages appear in the log file:

> Error accepting connection to IDENT server:
> A blocking Windows Sockets operation is in progress.

This error is usually due to operation of the Advance Query full NSLOOKUP feature while an IDENT request came into your computer.

A normal log entry looks like this:
Tue, 27 May 1997 15:58:51 IP: 204.122.16.4 - 1394,110 : USERID : WIN32, US-ASCII : user

It shows the date and time, the IP address that connected to your IDENT server, the port on your computer and the port on their computer that is connected. The IDENT server responded with:
USERID: WIN32, US-ASCII : user. "User" is the name defined in the Configure dialog.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## Time Sync

**What is an Time Sync?** Time Sync is a client function which can connect to a time server using any of three time protocols and display the difference in time between your computer's clock and the time server's clock. It can also synchronize your computer's clock to that of the time server.

**Note**: Windows NT users must be a member of the Administrator's group to set your system's clock.

**Usage:** Enter a hostname, select the time sync protocol and press **Query Time** or **Time Sync**

**Notes:** Time Sync TCP and UDP protocol selections have a 1 second resolution and DO NOT account for packet travel times.

The SNTP protocol selection has a 200 picosecond resolution and it accounts for packet delay times. It operates using UDP protocol, so sometimes the packets will be lost necessitating pressing the stop button and restarting the time query or sync sequence.

- Usage rules and a list of time servers are located here.

Any error messages will appear in the status window.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

# Time Servers

Updated versions of the following web pages are available at:
http://www.eecis.udel.edu/~mills/ntp/servers.html

The following notice applies to the text following on this page and the server lists:



**Public NTP Time Servers**

These pages contain lists of Network Time Protocol (NTP) public time servers. They are provided for information purposes only and represents the best information available at the current date. It does not represent a commitment to provide connectivity or time service on the part of the operators involved. Further information of a technical nature can be obtained from the ntp@ni.umd.edu list. To subscribe to this list, contact Louie Mamakos (ntp-request@ni.umd.edu). Alternatively, if possible, please subscribe to the newsgroup comp.protocols.time.ntp which is gatewayed to the mailing list.

Please send corrections or additions to Dave Mills (mills@udel.edu) in HTML format as used in the list pages.

**Rules of Engagement**

As the load on the hosts supporting NTP primary (stratum 1) time service is heavy and always increasing, clients should avoid using the primary servers whenever possible. In most cases the accuracy of the NTP secondary (stratum 2) servers is only slightly degraded relative to the primary servers and, as a group, the secondary servers may be just as reliable. As a general rule, a client should use a primary server only under the following conditions:

1. The server provides synchronization to a sizable population of clients on the order of 100 or more.

2. The server operates with at least two and preferably three other local servers in a common synchronization subnet designed to provide reliable service, even if some local servers or the lines connecting them fail.

3. The administration(s) that operates the subnet coordinates other clients within the region, in order to reduce the resources required outside that region. Note that at least some interregional resources are required in order to ensure reliable service.

In order to ensure reliability, clients should spread their use over many different servers. As a general rule, no more than two clients per network should use the same server on another network; however, in order to simplify management of host configuration tables, many hosts on the same network may use the same (redundant) servers on the same network.

Unix users are strongly encouraged to adopt the latest NTP Version 3 software in the compressed tar distribution shown in the NTP home page. Besides providing more accurate, reliable service, this version automatically increases the polling intervals for all peer associations, but without sacrificing performance. This can significantly reduce network loads, as well as the loads on the busy primary servers, some of which have over 400 clients.

**Public NTP Time Servers**

The list of primary (stratum 1) and secondary (stratum 2) designates the NTP time servers available for public access under stated restrictions. Each entry gives the hostname, Internet address, approximate location and geographic coordinates (if available), synchronization source (stratum, type of radio or satellite receiver and host type), suggested service area, access policy (as notified) and contact name and e-mail address. Those servers known to be running NTP Version 3 are indicated as well. It is always wise to consult the DNS to verify host addresses, which are changed from time to time. When more than one address is given, preference should given to each in order. All servers are equipped with uncompensated crystal-stabilized timebases, unless indicated otherwise.

It is very important that potential clients avoid use of servers not listed as open access, unless approved first by the contact person. This especially includes indiscriminate use of servers not listed in the table, since this can be disruptive. The contact person should always be notified upon establishment of regular operations with servers listed as open access. Please respect the access policy as stated by the contact person. Servers listed as closed access should NOT be used without prior permission, since this may disrupt ongoing research in which these servers are involved.

**Accessing the Lists**

* **Public NTP Primary Time Servers**
* **Public NTP Secondary Time Servers**

# Public NTP Primary (stratum 1) Time Servers

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Walt Kelly
Last update: 19 August 1997 UTC

1.bigben.cac.washington.edu 140.142.16.34 (CNAME ntp-wu.usno.navy.mil)
Location: University of Washington, Seattle, WA
Synchronization: NTP primary (GPS clock), HP9000/747i HPUX
Service Area: Pacific Northwest
Access Policy: open access to Pacific Time Zone stratum 2's and to Univ. of Washington clients; others by arrangement
Contact: Rich Schmidt, USNO, res@tuttle.usno.navy.mil, Bill Mar, Univ. of Washington (bmar@cac.washington.edu)

2.bitsy.mit.edu (18.72.0.3)
Location: MIT Information Systems, Cambridge, MA
Geographic Coordinates: 42:21:36N, 71:05:24W
Synchronization: NTP primary (WWV clock), VAX/Unix
Service Area: NSFNET, NEARnet area
Access Policy: open access
Contact: Jeff Schiller (jis@mit.edu)

3.canon.inria.fr (192.93.2.20)
Location: INRIA, Rocquencourt (near Paris), France
Synchronization: NTP V3 primary (TDF clock), Sun/Unix
Service Area: RENATER, France
Access Policy: open access, please send a message to notify
Contact: ntp-adm@inria.fr
Note: We use a Datel RCH208 clock with SER024 V24 interface.

4.chronos.univ-rennes1.fr (129.20.128.2)
Location: University of Rennes, Britany, France
Synchronization: NTP V3 primary (GPS clock), Sun/Unix
Service Area: France/Europe
Access Policy: open access, send a message to notify
Contact: timemaster@univ-rennes1.fr
Note: the reference time is given by a Trimble SVeeSix receiver with PPS signal

5.clock.cmc.ec.gc.ca
Location: Canadian Meteorological Centre, Dorval, Qu=E9bec, Canada
Synchronization: NTP V3 primary (GOES OM/DC-468 clock), HP-UX/Unix
Service Area: Econet (environment canada national network)
Access Policy: open within Econet. Outside by prior arrangement only.
Contact: Peter Silva ( webmaster.cmc@ec.gc.ca)

6.clock.isc.org (192.5.5.250)
Location: Internet Software Consortium, Palo Alto, CA
Geographic Coordinates: 122 9 41 W / 37 26 35 N
Synchronization: NTP primary (GOES clock), BSD UNIX
Service Area: BARRnet, Alternet-west, CIX-west
Access Policy: open access
Contact: Paul Vixie (paul@vix.com)

7.clock.llnl.gov (128.115.14.97)
Location: Lawrence Livermore National Laboratory, Livermore, CA
Synchronization: NTP V3 primary (WWVB clock), Sun 3/60
Service Area: BARRNet, ESNet
Access Policy: open access
Contact: Joe Carlson (carlson@lll-winken.llnl.gov)

8.clock.nc.fukuoka-u.ac.jp (133.100.9.2)
Location: Fukuoka university, Fukuoka, Japan
Geographic Coodinates: 130:21.81E, 33:32.87N
Synchronization: NTP V3.3 primary (GPS clock), Heliostation 400/SunOS 4.1.3
Service Area: Japan/Pacific area
Access Policy: open access
Contact: TSURUOKA Tomoaki (tsuruoka@fukuoka-u.ac.jp), YOSHIMURA Kenji (yosimura@tl.fukuoka-u.ac.jp)
Note: We use a TRAK 8810 GPS STATION CLOCK and a Furuno Electric Co.'s GN-72 GPS receiver respectively.

9.clock.tl.fukuoka-u.ac.jp (133.100.11.8)
Location: Fukuoka university, Fukuoka, Japan
Geographic Coodinates: 130:21.81E, 33:32.87N
Synchronization: NTP V3.3 primary (GPS clock), Heliostation 400/SunOS 4.1.3
Service Area: Japan/Pacific area
Access Policy: open access
Contact: TSURUOKA Tomoaki (tsuruoka@fukuoka-u.ac.jp), YOSHIMURA Kenji (yosimura@tl.fukuoka-u.ac.jp)
Note: We use a TRAK 8810 GPS STATION CLOCK and a Furuno Electric Co.'s GN-72 GPS receiver respectively.

10.clock.osf.org (130.105.4.59)
Location: Open Software Foundation, Cambridge, MA
Synchronization: NTP primary (WWV clock), i586/OSF1
Service Area: NSFNET, NEARnet region
Access Policy: open access
Contact: Paul Groff (groff@osf.com)
Note: prior permission to access required

11.fuzzy.nta.no (128.39.1.149)
Location: The Research Department of the Norwegian Telecommunications Administration (NTA-RD), Kjeller, Norway
Synchronization: NTP primary, (NTP clock), Fuzzball (LORAN-C timebase)
Service Area: Norway
Access Policy: closed access; for use only by prior arrangement
Contact: Terje Hammer (ham@tor.nta.no)

12.jamtepat.singnet.com.sg (165.21.110.7)
Location: SingNet, Singapore
Geographic Coordinates: 1.292N 103.808E (GPS WGS84)
Synchronization: Datum Tymserve 2100-GPS
Service Area: STIX/Asia (outside Singapore), others by arrangement
Access Policy: port access granted by arrangement
Contact: timekeeper@singnet.com.sg

13.lerc-dns.lerc.nasa.gov (128.156.1.43)
Location: NASA Lewis Research Center, Cleveland, OH
Synchronization: NTP Primary (WWVB clock), Sun/Unix Service Area: NSFNET, OARNET
Access Policy: open access
Contact: Joe Rossoll (yyjer@scivax.lerc.nasa.gov)

14.mizbeaver.udel.edu (128.4.1.2)
Location: University of Delaware, Newark, DE
Geographic Coordinates: 39:40:48.425N, 75:45:02.392W (GPS WGS84)
Synchronization: NTP V3 primary (GPS clock), Tymeserve 2000 LAN Time Server
Service Area: NSFNET, SURA region
Access Policy: closed access, except for stratum-2 servers providing synchronization to local networks of ten or more hosts

Contact: Dave Mills (mills@udel.edu)
Note: This server does not implement the NTP control-message protocol

15.navobs1.usnogps.navy.mil (204.34.198.40) CNAME: tick.usnogps.navy.mil
Location: Falcon AFB, Colorado
Geographic Coordinates: 104 31 30 W, 38 48 30 N WGS84
Synchronization: NTP V3 primary (USNO Alternate Master Clock H-maser)
HP9000/747i
Service area: USA Pacific and Mountain timezones, others by arrangement.
Access Policy: open access
Contact: Rich Schmidt, US Naval Observatory (res@tuttle.usno.navy.mil)

16.navobs2.usnogps.navy.mil (204.34.198.41) CNAME: tock.usnogps.navy.mil
Location: Falcon AFB, Colorado
Geographic Coordinates: 104 31 30 W, 38 48 30 N WGS84
Synchronization: NTP V3 primary (USNO Alternate Master Clock H-maser)
HP9000/747i
Service area: USA Pacific and Mountain timezones, others by arrangement.
Access Policy: open access
Contact: Rich Schmidt, US Naval Observatory (res@tuttle.usno.navy.mil)

17.navobs1.wustl.edu (128.252.19.1) CNAME: tick.wustl.edu
Location: Washington University, St. Louis, MO
Synchronization: NTP V3 primary (GPS) HP9000/747i
Service area: USA Central timezone, others by arrangement.
Access Policy: open access
Contact: Rich Schmidt,US Naval Observatory (res@tuttle.usno.navy.mil)

18.ncar.ucar.edu (192.52.106.6, 192.43.244.9)
Location: NCAR Supercomputer Center, Boulder, CO
Synchronization: NTP V3 primary (WWVB clock), Sun 4/690
Service Area: NSFNET, WESTnet region
Access Policy: open access, please limit to two peer hosts per site
Contact: Greg Woods (woods@ucar.edu)

19.ncnoc.ncren.net (192.101.21.1)
Location: MCNC, Research Triangle Park, NC
Synchronization: NTP V3 primary (WWVB clock), Netclock/2, Sun 4/65
Service area: NC-REN region
Access Policy: NC-REN region, other use by prior arrangement
Contact: Tim Seaver (tas@ncren.net, clockmaster@ncren.net)

20.ntp.nasa.gov (192.203.230.10)
Location: NASA Ames Research Center, Moffett Field, CA
Synchronization: NTP primary (WWVB clock), Sun/Unix
Service Area: NSFNET, BARR region, NASA NSN, DOE ESNET, DDN
Access Policy: open access
Asim Mughal (clockmaster@ntp.nasa.gov)

21.ntp.cc.utexas.edu (129.116.206.10)
Location: University of Texas at Austin, Austin TX
Synchronization: NTP V3 primary (WWV clock), Sun Sparc1+/SunOS 4.1.3_U1
Service Area: THENET region
Access Policy: open access
Contact: William L. Jones (jones@hpcf.cc.utexas.edu)

22.ntp.cs.mu.OZ.AU (128.250.36.2)
Location: The University of Melbourne, Melbourne Australia.
Geographic Coordinates: 37:48:06S 144:57:44E
Synchronization: NTP V3 primary (GPS clock), Sun Sparc2/SunOS 4.1.4
Service area: Australia, New Zealand, PACCOM (by prior arrangement)
Access policy: open access, please limit to two peer hosts per site
Contact: David Hornsby (ntp@cs.mu.OZ.AU)

23.ntp.dgf.uchile.cl (146.83.8.200)
Location: Dpto. Geofísica, Universidad de Chile. Santiago, Chile.
Geographic Coordinates: Lat: 33° 27.19'S. Lon: 70° 39.70'W. Alt: 533m.
Synchronization: NTP V3 primary (GOES OM/DC-468 clock), SunSparc10/SunOS 4.1.3.
Service area: REUNA and interconnected networks, Chile.
Access Policy: open access, please send a message to notify.
Contact: Gonzalo Pérez (gperez@dgf.uchile.cl)
Note: ntp is an alias and the IP address may change; please use DNS.

24.ntp.ml.csiro.au (192.67.12.101)
Location: CSIRO Marine Laboratories, Hobart, Tasmania, Australia
Geographic Coordinates: 42:53:14S, 147:20:18E
Synchronization: NTP V3 primary (Kinemetrics OM-DC Omega clock), SGI/Unix
Service Area: AARNet
Access Policy: open access
Contact: Paul Tildesley (tildes@ml.csiro.au)
Note: ntp is an alias and the IP address may change; please use DNS.

25.ntp.syd.dms.csiro.au (swifty.dap.csiro.au) 130.155.98.13
Location: National Measurements Laboratory, Sydney Australia.
Geographic Coordinates: 33:46:58S 151:09:06E
Synchronization: NTP V3, HP 5061B Cesium Beam Frequency Standard via Leitch CSD-5300 Master Clock System Driver
Service Area: AARNet
Access Policy: open access
Contact: Mark Andrews (clockmaster@syd.dms.csiro.au)

26.ntp0.ja.net (128.232.0.8)
Location: University of Cambridge Computer Laboratory, UK
Geographic Coordinates: 52:12:00N, 00:09:00E
Synchronization: NTP V3 primary (MSF EES clock), Sun/Unix
Service Area: JIPS, UK, Europe
Access Policy: closed access, email address below.
Contact: jips-nosc@nic.ja.net
Note: This server is part of the centrally managed JIPS (approximately ac.uk) NTP network. Any requests for connections (internal or external to JIPS) should be emailed to the Contact address above.

27.ntp0.nl.net (193.78.240.12)
Location: NLnet, Amsterdam, The Netherlands
Synchronization: NTP primary (DCF77), Sun/Unix SunOS 4.1.3
Service Area: The Netherlands/Europe
Access Policy: open access
Contact: beheer@nl.net

28.ntp1.delmarva.com (138.39.7.20)
Location: Delmarva Power & Light Co., Newark DE
Synchronization: NTP primary (GPS clock), Bancomm 2200 GPS Clock
Service area: MCInet
Access policy: open access
Contact: John K. Scoggin (scoggin@delmarva.com)

29.ntp1.nss.udel.edu (128.175.60.175)
Location: University of Delaware, Newark, DE
Geographic Coordinates: 39:40:35.8N, 75:44:36.6W (GPS WGS 84)
Synchronization: NTP V3 Primary (GPS clock) TrueTime NTS-100-GPS
Service Area: BBN Planet SER
Access Policy: closed access, except for stratum-2 servers providing synchronization to local networks of ten or more hosts
Contact: Ron Reisor (ron@udel.edu)

Note: This server does not implement the NTP control-message protocol.

30.ntp0.sdd.hp.com (15.255.160.64) (was known as wwvb.sdd.hp.com)
Location: Hewlett Packard Co., San Diego, CA
Synchronization: NTP V3 primary (HP58503A GPS Clock), HP-UX/Unix
Service Area: NSFNET, BARR region
Access Policy: semi-open access, prior arrangment required
Contact: Ken Stone (timekeeper@sdd.hp.com)
Note: Used for code development

31.ntp1.sony.com (198.93.3.1)
Location: Sony San Jose, San Jose, CA
Geographic Coordinates: 37:24:9.7N 121:55:55.8W (GPS)
Synchronization: NTP V3 primary (GPS clock), PC/BSDI 1.1
Service Area: NSFnet, BARRnet region
Access Policy: open access, please contact first
Contact: Jerry Scharf (scharf@sony.com), Paul Vixie (vixie@vix.com)

32.ntp2.usno.navy.mil (192.5.41.209)
Location: U.S. Naval Observatory, Washington, DC
Geographic Coordinates: 77 03 57.7W 38 55 14.1N WGS84
Synchronization: NTP V3 primary (USNO Master Clocks 1,2, and GPS)
Service area: USA Eastern timezone, others by arrangement
Access Policy: open access for stratum 2 servers
Contact: Rich Schmidt, US Naval Observatory (res@tuttle.usno.navy.mil)

33.ntps1-0.uni-erlangen.de (131.188.1.40)
Location: University Erlangen-Nuernberg, D-91058 Erlangen, FRG
Geographic Coordinates: 49.573N 11.028E (from Meinberg GPS 166)
Synchronization: NTP V3 primary (GPS receiver (<<1us)), Sun SS2/Unix
SunOS 4.1.3
Service Area: Germany/Europe
Access Policy: open access, pick one of ntps1-{0,1,2}.uni- erlangen.de
Contact: Frank Kardel, Rainer Pruy (time@informatik.uni-erlangen.de)

34.ntps1-0.cs.tu-berlin.de (130.149.17.21)
Location: Technische Universitaet Berlin, D-10587 Berlin, FRG
Geographic Coordinates: 52.518N 13.326E
Synchronization: NTP V3 primary (Meinberg GPS 166), Sun 4/65 SunOS4.1.3
Service Area: Germany/Europe
Access Policy: open access
Contact: Gerard Gschwind (gg@cs.tu-berlin.de)

35.ntps1-1.cs.tu-berlin.de (130.149.17.8)
Location: Technische Universitaet Berlin, D-10587 Berlin, FRG
Geographic Coordinates: 52.518N 13.326E
Synchronization: NTP V3 primary (Meinberg GPS 166), SunS10-402 SunOS5.4
Service Area: Germany/Europe
Access Policy: open access
Contact: Gerard Gschwind (gg@cs.tu-berlin.de)

36.ntps1-1.rz.Uni-Osnabrueck.DE (131.173.17.7)
Location: University of Osnabrueck, D-49069 Osnabrueck, FRG
Synchronization: NTP V3 primary (DCF77 clock), Sun/Unix
Service Area: Germany/Europe
Access Policy: open access
Contact: Gernot Skalla (timeadm@Uni-Osnabrueck.DE)

37.ntps1-1.uni-erlangen.de (131.188.1.45)
Location: University Erlangen-Nuernberg, D-91058 Erlangen, FRG
Geographic Coordinates: 49.573N 11.028E (from Meinberg GPS 166)
Synchronization: NTP V3 primary (DCF77 PZF receiver (Service Area:
Germany/Europe

Access Policy: open access, pick one of ntps1-{0,1,2}.uni- erlangen.de
Contact: Frank Kardel, Rainer Pruy (time@informatik.uni-erlangen.de)

38.ntps1-2.uni-erlangen.de (131.188.1.31)
Location: University Erlangen-Nuernberg, D-91058 Erlangen, FRG
Geographic Coordinates: 49.573N 11.028E (from Meinberg GPS 166)
Synchronization: NTP V3 primary (DCF77 PZF receiver (Service Area:
Germany/Europe
Access Policy: open access, pick one of ntps1-{0,1,2}.uni- erlangen.de
Contact: Frank Kardel, Rainer Pruy (time@informatik.uni-erlangen.de)

39.otc1.psu.edu (128.118.46.3)
Location: Penn State University, University Park, PA
Synchronization: NTP V3 primary (WWV clock), Sun/Unix
Service Area: NSFNET, PREPNET, JvNCnet
Access Policy: open access
Contact: John Balogh (JohnBalogh@psu.edu) (no longer: jdb@ecl.psu.edu)

40.rackety.udel.edu (128.4.1.1)
Location: University of Delaware, Newark, DE
Geographic Coordinates: 39:40:48.425N, 75:45:02.392W (GPS WGS84)
Synchronization: NTP V3 primary (GPS clock), Sun IPC/SunOS 4.1.3
Service Area: NSFNET, SURA region
Access Policy: closed access, except for stratum-2 servers providing
synchronization to local networks of ten or more hosts
Contact: Dave Mills (mills@udel.edu)

41.swisstime.ethz.ch (129.132.2.21)
Location: Integrated Systems Laboratory, Swiss Fed. Inst. of Technology,
CH 8092 Zurich, Switzerland
Geographic Coordinates: 47:23N, 8:32E
Synchronization: NTP primary (DCF77 clock), Sun-4/490/SunOS 4.1.3
Service Area: Switzerland/Europe
Access Policy: open access, Please send e-mail message to notify that
you are using us for time service, so that we can alert you about any
interruptions of service, etc.
Contact: Adam Feigin (time@swisstime.ethz.ch)
Note: The hostname is an alias used only for time service.

42.tempo.cstv.to.cnr.it (150.145.33.1)
Location: CSTV of National Research Council, Torino, Italy
Geographic Coordinates: 45:00:54N, 7:38:20.7E, 306.6H
Syncronization: NTP V3 primary (IEN CTD clock), DecSystem 5500/Ultrix
4.4
Service Area: Italy/Europe
Access Policy: open access
Contact: Fabrizio Pollastri (pollastri@cstv.to.cnr.it)
Note: information at http://www.cstv.to.cnr.it/toi

43.navobs1.gatech.edu (130.207.244.240) CNAMES: tick.gatech.edu,
ntp-gatech.usno.navy.mi
Location: Georgia Institute of Technology, Atlanta, GA
Geographic Coordinates: 84 23 40.9W 33 46 30.0N WGS84
Synchronization: NTP V3 primary (GPS)
Service area: USA Eastern timezone, others by arrangement
Access Policy: open access for stratum 2 servers
Contacts: Rich Schmidt, US Naval Observatory (res@tuttle.usno.navy.mil),
Ray Spalding, Georgia Institute of Technology,
(cc100aa@xray.oit.gatech.edu)

44.tick.mit.edu (129.7.1.66) CNAME: navobs1.mit.edu
Location: Massachusetts Institute of Technology, Cambridge, MA
Synchronization: NTP V3 primary (GPS) HP9000/747i

Service Area: eastern time zone, others on request
Access Policy: open access to stratum-2 servers and to MIT clients
Contacts: Rich Schmidt (res@tuttle.usno.navy.mil)

45.tick.ucla.edu (164.67.62.194) CNAMEs: navobs1.ucla.edu, time.ucla.edu
Location: UCLA, Los Angeles, CA
Synchronization: NTP V3 primary (GPS) HP9000/747i
Service area: Pacific time zone, others on request
Access policy: open access to stratum-2 servers and to UCLA clients
Contacts: Rich Schmidt (res@tuttle.usno.navy.mil), Scott Burris (scott@cns.ucla.edu)

46.tick.uh.edu (129.7.1.66) CNAME: time.uh.edu
Location: University of Houston, Houston, TX
Geographic Coordinates: 29:43:37N,95:20:22W
Synchronization: NTP V3 primary (GPS) HP9000/747i
Service Area: US Central time zone, others on request
Access Policy: open access to stratum-2 servers and to UH clients
Contacts: Rich Schmidt (res@tuttle.usno.navy.mil), Alan Pfeiffer-Traum (apt@uh.edu)

47.tick.usask.ca (128.233.3.100)
Location: University oc Saskatchewan, Saskatoon, Saskatchewan, SK, Canada
Geographic Coordinates: 52:08:01N,106:38:11W
Synchronization: NTP V3 Primary (GOES clock), DEC Mips/Unix
Service Area: SASK#net, CA*net, Canada
Access Policy: open access, prior arrangment required
Contact: Alfred Hovdestad (alfred.hovdestad@usask.ca)
Note: priority given to local regional sites
Note: tick.usask.ca and tock.usask.ca share a single GOES receiver

48.tick.usno.navy.mil (192.5.41.40)
Location: U.S. Naval Observatory, Washington, DC
Geographic Coordinates: 38:55:14.01 77:03:58.03 (GPS WGS84)
Synchronization: NTP V3 primary (USNO Master Clock 2, H-maser), HP9000/747i
Service Area: NSFNET
Access Policy: open access
Contact: Rich Schmidt (res@tuttle.usno.navy.mil)

49.time.ien.it (193.204.114.1)
Location: IEN Galileo Ferraris, Torino, Italy
Synchronization: NTP primary (Cesium Beam Frequency Standard), Sun/Unix
Service Area: Italy/Europe
Access Policy: open access
Contact: denasi@ien.it

50.time.nist.gov (192.43.244.18)
Location: National Center for Atmospheric Research, Boulder, Colorado
Geographic Coordinates: 39:58:43.44N 254:43:32.5E +1840m (WGS 84)
Synchronization: ACTS dial-up with NTP backup, DECstation/ULTRIX Service Area: NSFnet, WESTnet
Access Policy: open to stratum-2 servers and others by arrangement
Contact: Judah Levine (jlevine@time.nist.gov), (303) 492-7785

51.Time1.Stupi.SE (192.36.143.150)
Location: Stupi AB, Stockholm, SWEDEN
Synchronization: NTP V3 primary (Saphir Cesium Beam Standard/GPS), BSDI Unix
Service Area: SUnet, NORDUnet
Access Policy: open access
Contact: Peter Lothberg (roll@Stupi.SE)

52.time.service.uit.no
Location: The EDB Centre, University of Tromsoe, Norway
Synchronization: NTP V3 primary (GPS clock), HP-UX/Unix
Service Area: NORDUnet
Access Policy: semi-open access, prior arrangment required
Contact: (timekeeper@uit.no)

53.time-a.nist.gov (129.6.16.35)
Location: NIST Central Computer Facility, Gaithersburg, Maryland
Synchronization: ACTS dial-up using lockclock algorithm, DEC Alpha/UNIX
Service Area: NSFnet, SURAnet
Access Policy: Open to stratum-2 servers, others by arrangement; please use one of the servers as primary with the other as a backup.
Contact: Judah Levine (jlevine@time.nist.gov) 303 492 7785

54.time-b.nist.gov (129.6.16.36)
Location: NIST Central Computer Facility, Gaithersburg, Maryland
Synchronization: ACTS dial-up using lockclock algorithm, DEC Alpha/UNIX
Service Area: NSFnet, SURAnet
Access Policy: Open to stratum-2 servers, others by arrangement; please use one of the servers as primary with the other as a backup.
Contact: Judah Levine (jlevine@time.nist.gov) 303 492 7785

55.time-a.timefreq.bldrdoc.gov (132.163.135.130)
Location: NIST Boulder Laboratories, Boulder, Colorado
Synchronization: Direct 1 pps from clock ensemble; lockclock algorithm and ACTS dial-up as backup; DEC Alpha/UNIX
Service Area: NSFnet, WESTnet
Access Policy: Open to stratum-2 servers, others by arrangement; please use only one of the servers as primary with the other as a backup.
Contact: Judah Levine (jlevine@time.nist.gov) 303 492 7785

56.time-b.timefreq.bldrdoc.gov (132.163.135.131)
Location: NIST Boulder Laboratories, Boulder, Colorado
Synchronization: Direct 1 pps from clock ensemble; lockclock algorithm and ACTS dial-up as backup; DEC Alpha/UNIX
Service Area: NSFnet, WESTnet
Access Policy: Open to stratum-2 servers, others by arrangement; please use only one of the servers as primary with the other as a backup.
Contact: Judah Levine (jlevine@time.nist.gov) 303 492 7785

57.tock.usask.ca (128.233.3.101)
Location: University oc Saskatchewan, Saskatoon, Saskatchewan, SK, Canada
Geographic Coordinates: 52:08:01N,106:38:11W
Synchronization: NTP V3 Primary (GOES clock), DEC Mips/Unix
Service Area: SASK#net, CA*net, Canada
Access Policy: open access, prior arrangment required
Contact: Alfred Hovdestad (alfred.hovdestad@usask.ca)
Note: priority given to local regional sites
Note: tick.usask.ca and tock.usask.ca share a single GOES receiver

58.tock.usno.navy.mil (192.5.41.41)
Location: U.S. Naval Observatory, Washington, DC
Geographic Coordinates: 38:55:14.01 77:03:58.03 (GPS WGS84)
Synchronization: NTP V3 primary (USNO Master Clock 2, H-maser), HP9000/747i
Service Area: NSFNET
Access Policy: open access
Contact: Rich Schmidt (res@tuttle.usno.navy.mil)

59.truechimer.cso.uiuc.edu (128.174.5.58)

Location: University of Illinois, Urbana-Champaign, IL
Synchronization: NTP V3 primary (WWVB clock), IBM-RS6000/250
Service Area: CICNET, Midwest, NCSA region
Access Policy: closed access except for peers that meet the three conditions outlined in the "Time Servers" section of this file. State agreement with those conditions in notification message. All others may use the ntp-{0,1,2}.cso.uiuc.edu stratum 2 servers.
Contact: Charley Kline (kline@uiuc.edu)
Note: truechimer is a DNS CNAME. The host with the WWVB clock will always have the truechimer alias.

60.umd1.umd.edu (128.8.10.1)
Location: University of Maryland, College Park, MD
Synchronization: NTP V3 primary (WWVB clock), Fuzzball
Service Area: NSFNET, SURA region
Access Policy: closed access, except for stratum-2 servers providing synchronization to local networks of ten or more hosts
Contact: Michael Petry (petry@ni.umd.edu)

61.usno.pa-x.dec.com (204.123.2.72) CNAME: navobs1.pa-x.dec.com
Location: Digital Equipment Corp. Palo Alto, CA (122 9 41.7 W 37 26 42.6 N WGS84)
Synchronization: NTP V3 primary (GPS)
Service area: USA Pacific and Mountain timezones, others by arrangement.
Access Policy: open access
Contact: Rich Schmidt, US Naval Observatory (res@tuttle.usno.navy.mil)
Paul Flaherty, Digital Equipment Corp.(flaherty@pa.dec.com)

62.utcnist.microsoft.com (131.107.1.10) CNAME: time-nw.nist.gov
Location: Microsoft Corporation, Redmond, Washington
Synchronization: ACTS Dial-up and lockclock algorithm, DEC Alpha/UNIX
Service Area: NorthWestNet, NSFnet
Access policy: open to stratum-2 servers and others by arrangement.
Contact: Judah Levine (jlevine@time-a.timefreq.bldrdoc.gov) (303) 492-7785

63.utcnist1.reston.mci.net (204.70.131.13)
Location: MCI facility, Reston, VA
Synchronization: ACTS dial-up using lockclock algorithm, DEC Alpha/Unix
Service area: NSFnet, SURAnet
Access policy: Open to servers with multiple clients, others by arrangement
Contact: Judah Levine (jlevine@boulder.nist.gov (303 492 7785

64.vecrhc1.hpl.hp.com - retired - do not use

65.wave.mbari.org (134.89.2.200)
Location: Monterey Bay Aquarium Research Institute, Moss Landing, CA
Synchronization: NTP primary (WWV clock), HP/Unix
Service Area: San Francisco / Monterey Bay Area
Access Policy: closed access; for use only by prior arrangement
Contact: Pat Allen (timekeeper@mbari.org)

66.wwvb.erg.sri.com (128.18.{4,100,110}.39)
Location: SRI International, Menlo Park, CA
Synchronization: NTP primary (WWVB clock) Sun/Unix
Service Area: NSFNET, BARRnet Region
Access Policy: open access
Contact: clockmaster@erg.sri.com
Note: wwvb.erg.sri.com is a CNAME for (presently) sparkyfs.erg.sri.com. clockmaster@erg.sri.com is currently aliased to John Ferguson (ferg@erg.sri.com) and Bryan McDonald (bigmac@erg.sri.com). Last update: 5/25/94.

67.wwvb.isi.edu (128.9.2.129)
Location: USC Information Sciences Institute, Marina del Rey, CA
Geographic Coordinates: 33:58:49N, 118:26:20W (USGS map NAD27)
Synchronization: NTP V3 primary (WWVB clock), Fuzzball
Service Area: NSFNET, Los Nettos region
Access Policy: open access
Contact: Steve Casner (casner@isi.edu)

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David L. Mills (mills@udel.edu)

# Public NTP Secondary (stratum 2) Time Servers

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Walt Kelly
Last update: 29 September 1997 UTC

1.ashe.cs.tcd.ie (134.226.32.17) deleted; see ntp.maths.tod.ie

2.augean.eleceng.adelaide.edu.au (129.127.28.4)
Location: University of Adelaide, South Australia
Synchronization: NTP secondary (stratum 2), Sun-4/75/Unix
Service area: AARNet
Access policy: open access, please send a message to notify
Contact: systems@eleceng.adelaide.edu.au

3.bernina.ethz.ch (129.132.98.11)
Location: Swiss Fed. Inst. of Technology, CH 8092 Zurich, Switzerland
Geographic Coordinates: 47:23N, 8:32E
Synchronization: NTP secondary (stratum 2), Sun SS10-51/SunOS4
Service Area: Switzerland/Europe
Access Policy: open access
Contact: Adam Feigin (time@iis.ee.ethz.ch)

4.biofiz.mf.uni-lj.si (193.2.69.11)
Location: Institute of Biophysics, University of Ljubljana, Slovenia
Geographic Coordinates: 46:03:09N, 14:30:40E
Synchronization: NTP V3 secondary (stratum 2), HP/Unix
Service Area: Slovenia/Europe
Access Policy: open access, please send a message to notify
Contact: Primoz Peterlin (time@biofiz.mf.uni-lj.si)

5.black-ice.cc.vt.edu (128.173.14.71)
Location: Virginia Tech Computing Center, Blacksburg, VA, USA
Synchronization: NTP V3 secondary (Stratum 2), RS/6000-220
Service Area: southeastern US, anyplace netwise close to ANSNet Greensboro
Access Policy: open access
Contact: valdis@black-ice.cc.vt.edu or Valdis.Kletnieks@vt.edu
Note: ntp-2.vt.edu is a CNAME for black-ice.cc.vt.edu

6.bug.fe.up.pt (193.136.54.1)
Location: Oporto University, Portugal
Synchronization: NTP secondary (stratum 2), i486/Linux
Service Area: Portugal/Europe
Access Policy: For use only by prior arrangement. Mail timemaster@bug.fe.up.pt for more information.

7.chime.utoronto.ca (128.100.102.201)
Location: University of Toronto, Toronto, Ontario, CANADA
Synchronization: NTP V3 secondary (stratum 2), Sparc 5, Solaris 2.5
Service Area: Eastern Canada
Access Policy: open access, send email to notify.
Contact: Russell Sutherland (russell.sutherland@utoronto.ca)
Note: IP addresses are subject to change; please use DNS

8.chime1.surfnet.nl (192.87.106.101)
Location: SURFnet Amsterdam PoP (SARA, Kruislaan, Amsterdam, The Netherlands)
Synchronization: NTP secondary (Stratum 2), Sun Sparc 10
Service Area: SURFnet, The Netherlands
Access Policy: open for SURFnet connected sites, others by prior arrangement
Contact: netmaster@surfnet.nl

Note: Chime1.surfnet.nl is peering with Stratum 2 Server chime2.surfnet.nl (192.87.36.2), which is located in the SURFnet Delft PoP (TUDelft RC, Julianalaan, Delft). Please notify the address above in case you start chiming us.

9.churchy.udel.edu (128.4.1.5)
Location: University of Delaware, Newark, DE
Geographic Coordinates: 39:40:48.425N, 75:45:02.392W (GPS WGS84)
Synchronization: NTP V3 secondary (stratum 2), cisco IGS 9.2 router
Service Area: NSFNET, SURA region
Access Policy: experimental access only; service may be withdrawn without notice
Contact: Dave Mills (mills@udel.edu)

10.clepsydra.dec.com (16.1.0.4, 204.123.2.5)
Location: DEC Western Research Laboratory, Palo Alto, CA
Synchronization: NTP V3 secondary (stratum 2), Ultrix RISC
Service Area: NSFNET, BARR region
Access Policy: open access, send email to notify before using
Contact: ntp-admin@pa.dec.com
Note: The hostname is an alias used only for time service.

11.clock.psu.edu (128.118.25.3)
Location: Penn State University, University Park, PA
Geographic Coordinates: 40:47:58.1N, 77:51:44.8W (USGS 40077-G7-TF-024)
Synchronization: NTP V3 secondary (stratum 2), Sun SPARCstation 2/Solaris 2.5.1
Service Area: NSFNET, CICnet, PREPnet
Access Policy: open access
Contact: John Balogh (JDB@psu.edu)
Note: clock.psu.edu is a CNAME for otc2.psu.edu

12.clock.tricity.wsu.edu (192.31.216.5)
Location: Washington State University Tri-Cities, Richland, Wa
Synchronization: NTP secondary (stratum 2), DS5100/Unix
Service Area: NSFNET, NorthWestNet
Access Policy: open access
Contact: postmaster@beta.tricity.wsu.edu)
Note: clock.tricity.wsu.edu is a CNAME for meson.tricity.wsu.edu

13.clock1.unc.edu (152.2.21.1)
Location: University of North Carolina-Chapel Hill, Chapel Hill, NC
Geographic Coordinates: 35:54N, 79:03W
Synchronization: NTP secondary (stratum 2), Sun4/SunOS/xntpd (V3)
Service Area: CONCERT region
Access Policy: CONCERT region, others by prior arrangement
Contact: Timekeeper (timekeeper@clock1.unc.edu) NOTE: The default restriction on this host is "noserve". Hosts outside the service area must make prior arrangements to receive time service.

14.clock-1.cs.cmu.edu (128.2.250.95)
Location: Carnegie Mellon University Computer Science, Pittsburgh, PA
Geographic Coordinates: 40:26:39N, 79:57:12W
Synchronization: NTP V3 secondary (stratum 2), DECstation 5000-120/Ultrix 4.2A
Service Area: PREPNET, PSC region
Access Policy: semi-open access; for use only by prior arrangement
Contact: Rudy Nedved (ern+@cs.cmu.edu)
Note: The hostname is an alias used only for time service.

15.clock-2.cs.cmu.edu (128.2.222.8)
Location: Carnegie Mellon University Computer Science, Pittsburgh, PA
Geographic Coordinates: 40:26:39N, 79:57:12W

Synchronization: NTP V3 secondary (stratum 2), DECstation 5000-120/Ultrix 4.2A
Service Area: PREPNET, PSC region
Access Policy: semi-open access; for use only by prior arrangement
Contact: Rudy Nedved (ern+@cs.cmu.edu)
Note: The hostname is an alias used only for time service.

16.constellation.ecn.uoknor.edu (129.15.22.8)
Location: University of Oklahoma, Norman, Oklahoma, USA
Synchronization: NTP secondary (stratum 2), Mac Quadra 700/A/UX 3.0
Service Area: Midnet
Access Policy: open access
Contact: Robert Shull (rob@mailhost.ecn.uoknor.edu)

17.cuckoo.nevada.edu (131.216.1.101)
Location: University of Nevada System Computing Services, Las Vegas, NV
Synchronization: NTP V3 secondary (stratum 2), DEC Alpha/Unix
Service Area: NevadaNet, NSFNET, SDSC region
Access Policy: open access, please send message to notify
Contact: Systems Group (software@nevada.edu)
Note: cuckoo.nevada.edu is a CNAME for alphabits.nevada.edu

18.cyclonic.sw.stratus.com (134.111.10.64)
Location: Stratus Computer, Marlboro, MA
Synchronization: NTP V3 secondary (stratum 2), Sun 4/490
Service Area: NEARNET, NSFNET
Access Policy: open access, please send a message to notify.
Contact: Jim Murray (timekeeper@stratus.com)
Note: Please select one of (lectroid.sw.stratus.com, cyclonic.sw.stratus.com) to equalize the load.

19.delphi.cs.ucla.edu (131.179.128.36)
Location: UCLA Computer Science Department, Los Angeles, CA
Geographic Coordinates: 34:04:08N, 118:26:31W
Synchronization: NTP secondary (stratum 2), Sun/SunOS
Service Area: NSFNET, SDSC region
Access Policy: open access
Contact: Chinson Yi (chinson@cs.ucla.edu)

20.eagle.tamu.edu (165.91.72.27)
Location: Texas A&M University, College Station, Texas
Synchronization: NTP v3 secondary (stratum 2), DEC Alpha/Unix
Service Area: NSFNET, SESQUI region, THEnet, Texas
Access Policy: open access
Contact: privitt@eagle.tamu.edu (Carl Privitt)

21.everest.cclabs.missouri.edu (128.206.206.12)
Location: University of Missouri-Columbia, Columbia, MO, USA
Synchronization: NTP secondary (stratum 2), SGI Indigo R4000/IRIX 5.3
Service Area: MOREnet
Access Policy: open access, please send a message to notify
Contact: Paul Walmsley (ccshag@cclabs.missouri.edu) or timemaster@cclabs.missouri.edu

22.fartein.ifi.uio.no (129.240.102.2)
Location: University of Oslo, Norway
Geographic Coordinates: 59:56:32N, 10:43:22E
Synchronization: NTP secondary (stratum 2), VAXstation/Ultrix
Service Area: NORDUnet
Access Policy: open access
Contact: Anders Ellefsrud, Ole Bjorn Hessen (timekeeper@ifi.uio.no)
Note: Other stratum 2 servers in the Oslo area available on request

23.fuzz.psc.edu (128.182.58.100)
Location: Pittsburgh Supercomputing Center, Pittsburgh, PA
Synchronization: NTP V3 secondary (stratum 2), DEC5000/200
Service area: NSFNET, PSC region
Access policy: open access, but please send a message to notify.
Contact: noc@psc.edu

24.fuzz.sura.net (192.80.214.42)
Location: SURAnet, College Park, MD
Synchronization: NTP V3 secondary (stratum 2), Fuzzball
Service Area: NSFNET, SURAnet region
Access Policy: closed access; please use ntp1.sura.net or ntp2.sura.net
Contact: timekeeper@sura.net
Note: formerly known as clock.umd.edu (192.41.177.92); fuzz.sura.net has
a CNAME of clock.sura.net

25.gazette.bcm.tmc.edu (128.249.2.2)
Location: Baylor College of Medicine, Houston, Tx
Synchronization: NTP secondary (stratum 2), Solbourne-OS/MP 4.0C
Service Area: NSFNET, SESQUI region
Access Policy: open access
Contact: Postmaster (postmaster@bcm.tmc.edu)

26.gilbreth.ecn.purdue.edu (128.46.129.93, 128.46.141.93, 128.46.147.93,
128.46.148.93, 128.46.171.93)
Location: Purdue University Engineering Computer Network, West
Lafayette, IN
Synchronization: NTP V3 secondary (stratum 2), Sun SPARCserver
1000/Solaris 2.3
Service area: NSFNET, CICNET area
Access policy: open access
Contact: Mike Moya (moyman@ecn.purdue.edu)

27.harbor.ecn.purdue.edu (128.46.128.76, 128.46.129.76, 128.46.154.76)
Location: Purdue University Engineering Computer Network, West
Lafayette, IN
Synchronization: NTP V3 secondary (stratum 2), Sun-4/75+/Solaris 2.3
Service area: NSFNET, CICNET area
Access policy: open access
Contact: Mike Moya (moyman@ecn.purdue.edu)

28.info.cyf-kr.edu.pl: 149.156.4.11
Location: Academic Computer Centre, CYFRONET, Krakow, Poland
Synchronization: NTP V3 secondary (stratum 2), HP/Unix
Service Area: Poland/Europe
Access policy: open access, please send a message to notify
Contact: Jerzy.Pawlus@cyf-kr.edu.pl

29.hmljhp.rzs-hm.si (193.2.208.12)
Location: Hydrometeorological Institute of Slovenia, Ljubljana, Slovenia
Geographic Coordinates: 46:03:09N, 14:30:40E
Synchronization: NTP V3 secondary (stratum 2), HP/Unix
Service Area: SLovenia/Europe
Access Policy: open access, please send a message to notify
Contact: Metod Kozelj (metod.kozelj@rzs-hm.si)

30.lassen.slc.ca.gov (134.186.121.10)
Location: California State Lands Commission, Sacramento, CA
Synchronization: NTP V2 secondary (stratum 2), Digital UNIX
Service Area: CSGNet, California & Western US
Access Policy: Open Access for service area/others by arrangement, all
send E-mail to notify
Contact: kauffme@slc.ca.gov, reinerg@slc.ca.gov

Note: Will be converted to V3 late 1997

31.molecule.ecn.purdue.edu (128.46.129.95, 128.46.132.95, 128.46.136.95, 128.46.145.95, 128.46.167.95, 128.46.169.95, 128.46.181.95)
Location: Purdue University Engineering Computer Network, West Lafayette, IN
Synchronization: NTP V3 secondary (stratum 2), Sun SPARCserver 1000/Solaris 2.3
Service area: NSFNET, CICNET area
Access policy: open access
Contact: Mike Moya (moyman@ecn.purdue.edu)

32.finch.cc.ukans.edu (129.237.32.1)
Location: Kansas University Computer Center, Lawrence, Kansas 66047, USA
Geographic Coordinates: 39:56N, 95:14W
Synchronization: NTP secondary (stratum 2), DEC 3000-500 Digital Unix
Service Area: Midnet, NSFnet
Access policy: open access
Contact: Craig Paul (paul@kuhub.cc.ukans.edu)

33.kuhub.cc.ukans.edu (129.237.32.2)
Location: Kansas University Computer Center, Lawrence, Kansas 66047, USA
Geographic Coordinates: 39:56N, 95:14W
Synchronization: NTP secondary (stratum 2), DEC 7000-610 OpenVMS Alpha
Service Area: Midnet, NSFnet
Access policy: open access
Contact: Craig Paul (paul@kuhub.cc.ukans.edu)

34.lectroid.sw.stratus.com (134.111.10.1)
Location: Stratus Computer, Marlboro, MA
Synchronization: NTP V3 secondary (stratum 2), Sun Sparc 2
Service Area: NEARNET, NSFNET
Access Policy: open access, please send a message to notify.
Contact: Jim Murray (timekeeper@stratus.com)
Note: Please select one of (lectroid.sw.stratus.com, cyclonic.sw.stratus.com) to equalize the load.

35.lib1.tcd.ie (134.226.1.24) deleted; see ntp.tcd.ie.

36.libra.rice.edu (128.42.1.64)
Location: Rice University, Houston, TX
Synchronization: NTP secondary (stratum 2), Fuzzball
Service Area: NSFNET, SESQUI region
Access Policy: open access
Contact: Farrell Gerbode (gerbode@rice.edu)
Note: this server has not been heard from for many months [dlm]

37.louie.udel.edu (128.175.1.3)
Location: University of Delaware, Newark, DE
Synchronization: NTP V3 secondary (stratum 2), Vax-11/780/Unix
Service Area: NSFNET, SURA region
Access Policy: open access
Contact: Dave Mills (mills@udel.edu)

38.nic.near.net (192.52.71.4) - deleted

39.noc.near.net (192.52.71.21) - deleted

40.ns.scruz.net (165.227.1.1)
Location: scruz-net, inc. Santa Cruz, CA USA
Synchronization: NTP V3 secondary (stratum 2), BSD on Intel
Service area: Western USA (MAE-West attached)
Access policy: open access (scruz-net customers use both ns.scruz.net

and nic.scruz.net, others please use one or the other, not both...
please drop us a note if you're using the server so we can keep you on
our status list)
Contact: Matthew Kaufman (matthew@scruz.net)

41.ns.nts.umn.edu (128.101.101.101)
Location: Minneapolis, MN
Synchronization: NTP secondary (stratum 2), Sun/SunOS 4.1.3
Service Area: CICNET region
Access Policy: open access, please send a message to notify.
Networking & Telecommunications Services (nts@nts.umn.edu)
Note: select one of ns.nts.umn.edu or nss.nts.umn.edu to equalize load

42.nss.nts.umn.edu (134.84.84.84)
Location: St Paul, MN
Synchronization: NTP secondary (stratum 2), Sun/SunOS 4.1.3
Service Area: CICNET region
Access Policy: open access, please send a message to notify.
Networking & Telecommunications Services (nts@nts.umn.edu)
Note: select one of ns.nts.umn.edu or nss.nts.umn.edu to equalize load

43.ntp.adelaide.edu.au (129.127.40.3)
Location: University of Adelaide, South Australia
Synchronization: NTP V3 secondary (stratum 2), DECsystem 5000/25 Unix
Service Area: AARNet
Access Policy: open access
Contact: Danielle Hopkins (dani@itd.adelaide.edu.au)

44.ntp.cox.smu.edu (129.119.80.126)
Location: Cox School of Business, Southern Methodist University, Dallas,
TX
Synchronization: NTP V3 secondary (stratum 2), DEC 3000/300LX AXP DEC
OSF/1 AXP
Service Area: NSFNET, SESQUI region
Access Policy: open access
Contact: Allen Gwinn (allen@mail.cox.smu.edu)
Note: Please send e-mail letting us know you will be using
ntp.cox.smu.edu. ntp.cox.smu.edu is a CNAME for nyse.cox.smu.edu.

45.ntp.css.gov (140.162.1.5)
Location: Center for Seismic Studies, Arlington, VA
Geographic Coordinates: 38:53:50N, 77:04:34W
Synchronization: NTP V3 secondary (stratum 2), Sun-4/330, SunOS 4.1.3
Service Area: NSFNET, SURA region
Access Policy: open access
Contact: David Comay (dsc@seismo.css.gov)

46.ntp.ctr.columbia.edu (128.59.64.60)
Location: Columbia University Center for Telecommunications Research;
New York City, NY
Synchronization: NTP secondary (stratum 2), Sun/Unix
Service Area: Sprintlink/NYSERnet
Access Policy: open access, authenticated NTP (DES/MD5) available
Contact: Seth Robertson (timekeeper@ctr.columbia.edu)
Note: IP addresses are subject to change; please use DNS

47.ntp.exnet.com (194.207.34.9)
Location: ExNet Ltd, London, UK
Synchronization: NTP secondary (stratum 2), Sun-4/Unix
Service area: UK/Europe/any
Access policy: semi-open access, please send message first for access
Contact: sysadmin@exnet.com or dhd@exnet.com
Note: Please see our Web page before using. Please use CNAME

ntp.exnet.com since IP address may well change.

48.ntp.lth.se (130.235.20.3)
Location: Lund Institute of Technology, Lund, Sweden
Synchronization: NTP V3 secondary (stratum 2), Sun/Solaris
Service Area: Sweden, NORDUnet
Access Policy: open access, send email to notify. Please limit access to one or two hosts per site (large sites should set up their own ntp server)
Contact: timemaster@lth.se

49.ntp.maths.tcd.ie, ntp.cs.tcd.ie, ntp.tcd.ie
Location: School of Mathematics, Trinity College, Dublin, Ireland.
Synchronization: NTPV3 secondary (stratum 2), Sparc Station 1
Service Area: Ireland, UK
Access Policy: open access
Contact: time@maths.tcd.ie
Note: ntp.cs.tcd.ie , ntp.maths.tcd.ie and ntp.tcd.ie peer together over local area net, and one or more usually run at stratum 2. It is normally sufficient just to pick one machine to peer with.

50.ntp.olivetti.com (129.189.134.11, 129.189.134.6)
Location: Olivetti ATC, Cupertino, CA
Synchronization: NTP secondary (stratum 2), VAX/Unix
Service Area: Alternet
Access Policy: open access
Contact: Jerry Aguirre (jerry@olivetti.com)

51.ntp.saard.net (203.21.37.18)
Location: The University of Adelaide, Adelaide, South AUSTRALIA
Synchronization: NTP secondary (stratum 2), DEC 3000/300L OSF/1
Service Area: AARNet
Access Policy: open access
Contact: Danielle Hopkins (dani@itd.adelaide.edu.au)

52.ntp.ucsd.edu (132.239.51.18)
Location: UCSD Computer Science & Engineering Department, San Diego, CA
Synchronization: NTP secondary (stratum 2), DEC AlphaStation 250 4/266, Digital UNIX
Service Area: CERFNET; NSFNET, SDSC region
Access Policy: open access, please send a message to notify.
Contact: timekeeper@cs.ucsd.edu

53.ntp.univ-lyon1.fr (134.214.100.6)
Location: CISM, Lyon, France
Synchronization: NTP V3 secondary (stratum 2), Sun SS10
Service Area: France, Switzerland, Italy, Europe
Access Policy: open access
Contact: ntp-adm@univ-lyon1.fr
Note: consult DNS to get host address, ntp is an alias.
Note: we would appreciate getting a little note if you make regular use of this server, so that we can put you on our NTP mailing-list.

54.ntp0.cornell.edu (192.35.82.50)
Location: Cornell University, Ithaca, NY
Synchronization: NTP secondary (stratum 2), Sun/Unix
Service Area: NSFNET, NYSER region
Access Policy: open access
Contact: Donald Redick (dredick@nmc.cit.cornell.edu)

55.ntp0.pipex.net 158.43.128.33
Configuration: NTP V3 secondary (stratum 2), Sun sparc Ultra, Solaris 2.5.1, xntpd 3-5.90

Location: Cambridge, UK
Service Area: UUNET UK (formerly known as PIPEX); UK
Access Policy: Semi-open access. These are primarily for use by UUNET UK customers, but others are welcome to peer if they give notice.
Contact: timelord@uunet.pipex.com
Note: This is not currently a supported service of UUNET UK, and is not subject to any guarantees. UUNET UK customers should peer with all three: ntp0.pipex.net, ntp1.pipex.net, and ntp2.pipex.net. Other users please peer with one of these three only.

56.ntp1.kansas.net (206.103.126.59)
Location: KansasNet OnLine Services, Manhattan, KS
Synchronization: NTP V3 secondary (stratum 2), Linux on Intel
Service area: Central USA / Great Plains
Access policy: open access to ntp1.kansas.net *or* ntp2.kansas.net; customers may use both servers.
Contact: Joel Baker (bsafh@kansas.net)

57.ntp1.pipex.net 158.43.128.66
Configuration: NTP V3 secondary (stratum 2), Sun sparc Ultra, Solaris 2.5.1, xntpd 3-5.90
Location: Cambridge, UK
Service Area: UUNET UK (formerly known as PIPEX); UK
Access Policy: Semi-open access. These are primarily for use by UUNET UK customers, but others are welcome to peer if they give notice.
Contact: timelord@uunet.pipex.com
Note: This is not currently a supported service of UUNET UK, and is not subject to any guarantees. UUNET UK customers should peer with all three: ntp0.pipex.net, ntp1.pipex.net, and ntp2.pipex.net. Other users please peer with one of these three only.

58.ntp2.pipex.net 158.43.192.66
Configuration: NTP V3 secondary (stratum 2), Sun sparc Ultra, Solaris 2.5.1, xntpd 3-5.90
Location: London, UK
Service Area: UUNET UK (formerly known as PIPEX); UK
Access Policy: Semi-open access. These are primarily for use by UUNET UK customers, but others are welcome to peer if they give notice.
Contact: timelord@uunet.pipex.com
Note: This is not currently a supported service of UUNET UK, and is not subject to any guarantees. UUNET UK customers should peer with all three: ntp0.pipex.net, ntp1.pipex.net, and ntp2.pipex.net. Other users please peer with one of these three only.

59.ntp0.strath.ac.uk (130.159.132.1, 130.159.144.62) ocation: Dept. Computer Science, Strathclyde University, Glasgow, Scotland.
Geographic Coordinates: 04:14W, 55:52N
Synchronization: NTP V3 secondary Sun/Unix Service Area: UK/Europe/any
Access Policy: open access
Contact: Jim Reid (ntp@cs.strath.ac.uk)
Note: IP addresses are subject to change; please use DNS

60.ntp1.strath.ac.uk (130.159.132.66, 130.159.152.62)
Location: Dept. Computer Science, Strathclyde University, Glasgow, Scotland.
Geographic Coordinates: 04:14W, 55:52N
Synchronization: NTP V3 secondary Sun/Unix
Service Area: UK/Europe/any
Access Policy: open access
Contact: Jim Reid (ntp@cs.strath.ac.uk)
Note: IP addresses are subject to change; please use DNS

61.ntp2.strath.ac.uk (130.159.132.6, 130.159.132.65)

Location: Dept. Computer Science, Strathclyde University, Glasgow, Scotland.
Geographic Coordinates: 04:14W, 55:52N
Synchronization: NTP V3 secondary Sun/Unix
Service Area: UK/Europe/any
Access Policy: open access
Contact: Jim Reid (ntp@cs.strath.ac.uk)
Note: IP addresses are subject to change; please use DNS

62.ntp3.strath.ac.uk (130.159.196.126, 130.159.132.2)
Location: Dept. Computer Science, Strathclyde University, Glasgow, Scotland.
Geographic Coordinates: 04:14W, 55:52N
Synchronization: NTP V3 secondary Sun/Unix
Service Area: UK/Europe/any
Access Policy: open access
Contact: Jim Reid (ntp@cs.strath.ac.uk)
Note: IP addresses are subject to change; please use DNS

63.ntp4.strath.ac.uk (130.159.132.16, 130.159.132.124)
Location: Dept. Computer Science, Strathclyde University, Glasgow, Scotland.
Geographic Coordinates: 04:14W, 55:52N
Synchronization: NTP V3 secondary Sun/Unix
Service Area: UK/Europe/any
Access Policy: open access
Contact: Jim Reid (ntp@cs.strath.ac.uk)
Note: IP addresses are subject to change; please use DNS

64.ntp1.sura.net (128.167.1.222)
Location: SURAnet, College Park, MD
Synchronization: NTP V3 secondary (stratum 2), Sun Sparc/SunOS
Service Area: SURAnet region
Access Policy: open access; please send a message to notify.
Contact: timekeeper@sura.net

65.ntp2.sura.net (128.167.254.198)
Location: SURAnet, College Park, MD
Synchronization: NTP V3 secondary (stratum 2), DEC DECstation/Ultrix
Service Area: SURAnet region
Access Policy: open access; please send a message to notify.
Contact: timekeeper@sura.net

66.ntp1.tamu.edu, ntp2.tamu.edu, ntp3.tamu.edu, ntp4.tamu.edu, and ntp6.tamu.edu withdrawn from public service

67.ntp5.tamu.edu (165.91.52.110)
Location: Texas A&M University, College Station, TX
Synchronization: NTP secondary (stratum 2, ver. 3), SPARCstation 10/Solaris 1.x
Service area: NSFNET, SESQUI region, THEnet, TAMUSDSN
Access policy: open access
Contact: NTP Administrator (ntp@tamu.edu)

68.ntp-1.ece.cmu.edu 128.2.236.71
Location: Carnegie Mellon Electrical and Computer Engineering, Pittsburgh, PA
Geographic Coordinates: 40:26N, 79:57W
Synchronization: NTP V3 secondary (stratum 2), VAXstation 3200/Ultrix 4.4
Service Area: PREPNET, PSC region
Access Policy: open access, please notify
Contact: ECE Facilities (gripe@ece.cmu.edu)

Note: Name is an alias for use by NTP.

69.ntp-2.ece.cmu.edu 128.2.25.7
Location: Carnegie Mellon Electrical and Computer Engineering,
Pittsburgh, PA
Geographic Coordinates: 40:26N, 79:57W
Synchronization: NTP V3 secondary (stratum 2), VAXstation 3200/Ultrix
4.4
Service Area: PREPNET, PSC region
Access Policy: open access, please notify
Contact: ECE Facilities (gripe@ece.cmu.edu)
Note: Name is an alias for use by NTP.

70.ntp-1.mcs.anl.gov (140.221.10.70)
Location: Argonne National Laboratory, near Chicago, IL
Synchronization: NTP secondary (stratum 2), Sun Sparcstation 1
Service Area: NSF/ANSNet, CICNet, NetIllinois, ESNet, others welcome
Access Policy: open access, please send a message to notify
Contact: Support Staff (support@mcs.anl.gov)
Note: IP addresses are subject to change; please use DNS

71.ntp-2.mcs.anl.gov (140.221.9.6, 140.221.10.64)
Location: Argonne National Laboratory, near Chicago, IL
Synchronization: NTP secondary (stratum 2), Sun Sparcstation 2
Service Area: NSF/ANSNet, CICNet, NetIllinois, ESNet, others welcome
Access Policy: open access, please send a message to notify
Contact: Support Staff (support@mcs.anl.gov)
Note: IP addresses are subject to change; please use DNS

72.ntp1.ossi.com (192.240.4.1)
Location: Emeryville, CA
Synchronization: NTP V3 secondary (stratum 2), Sun4-330/Unix
Service Area: BARRNet
Access Policy: open access, please send a message to notify.
Contact: Mary Seabrook (mary@ossi.com)
Note: select one of ntp1.ossi.com or ntp2.ossi.com to share load

73.ntp2.ossi.com (192.240.4.50)
Location: Emeryville, CA
Synchronization: NTP V3 secondary (stratum 2), Sun4-690/Unix
Service Area: BARRNet
Access Policy: open access, please send a message to notify.
Contact: Mary Seabrook (mary@ossi.com)
Note: select one of ntp1.ossi.com or ntp2.ossi.com to share load

74.ntp-0.cso.uiuc.edu (130.126.24.53)
Location: University of Illinois, Urbana-Champaign, IL
Synchronization: NTP secondary (stratum 2), Cisco-ASM/4
Service Area: CICNET, Midwest, NCSA region
Access Policy: open access
Contact: Charley Kline (kline@uiuc.edu)
Note: select one of (ntp-0.cso.uiuc.edu, ntp-1.cso.uiuc.edu, ntp-
2.cso.uiuc.edu) to equalize load. Use names rather than IP addresses if
possible. The ntp-N aliases follow wherever the service is moved to.

75.ntp-1.cso.uiuc.edu (130.126.24.24)
Location: University of Illinois, Urbana-Champaign, IL
Synchronization: NTP secondary (stratum 2), Cisco-ASM/4
Service Area: CICNET, Midwest, NCSA region
Access Policy: open access
Contact: Charley Kline (kline@uiuc.edu)
Note: select one of (ntp-0.cso.uiuc.edu, ntp-1.cso.uiuc.edu, ntp-
2.cso.uiuc.edu) to equalize load. Use names rather than IP addresses if

possible. The ntp-N aliases follow wherever the service is moved to.

76.ntp-2.cso.uiuc.edu (130.126.24.44)
Location: University of Illinois, Urbana-Champaign, IL
Synchronization: NTP secondary (stratum 2), Cisco-ASM/4
Service Area: CICNET, Midwest, NCSA region
Access Policy: open access
Contact: Charley Kline (kline@uiuc.edu)
Note: select one of (ntp-0.cso.uiuc.edu, ntp-1.cso.uiuc.edu, ntp-2.cso.uiuc.edu) to equalize load. Use names rather than IP addresses if possible. The ntp-N aliases follow wherever the service is moved to.

77.ntp2a.audiotel.com.mx (200.34.146.67)
Location: Audiotel office, Mexico D.F., Mexico
Synchronization: NTP V3 secondary (stratum 2), NeXTstation/33
Service Area: Avantel, MCINet, Mexico
Access Policy: open access, but please send a message to notify.
Contact: Pedro Resendiz (resendiz@audiotel.com.mx)

78.ntp2b.audiotel.com.mx (200.34.146.68)
Location: Audiotel office, Mexico D.F., Mexico
Synchronization: NTP V3 secondary (stratum 2), NeXTstation/33
Service Area: Avantel, MCINet, Mexico
Access Policy: open access, but please send a message to notify.
Contact: Pedro Resendiz (resendiz@audiotel.com.mx)

79.ntp2c.audiotel.com.mx (200.34.146.69)
Location: Audiotel office, Mexico D.F., Mexico
Synchronization: NTP V3 secondary (stratum 2), NeXTstation/33
Service Area: Avantel, MCINet, Mexico
Access Policy: open access, but please send a message to notify.
Contact: Pedro Resendiz (resendiz@audiotel.com.mx)

80.ntp2a.mcc.ac.uk (130.88.200.22)
Location: University of Manchester, Manchester, England
Synchronization: Sun
Service Area: UK
Access Policy: Open Access
Contact(s): timelords@mcc.ac.uk

81.ntp2b.mcc.ac.uk 130.88.200.6)
Location: University of Manchester, Manchester, England
Synchronization: Sun
Service Area: UK
Access Policy: Open Access
Contact(s): timelords@mcc.ac.uk

82.ntp2c.mcc.ac.uk 130.88.200.4)
Location: University of Manchester, Manchester, England
Synchronization: Sun
Service Area: UK
Access Policy: Open Access
Contact(s): timelords@mcc.ac.uk

83.ntp2d.mcc.ac.uk 130.88.203.12)
Location: University of Manchester, Manchester, England
Synchronization: HP 9000/750
Service Area: UK
Access Policy: Open Access
Contact(s): timelords@mcc.ac.uk

84.Rolex.PeachNet.EDU (131.144.4.22)
Location: PeachNet NOC, Kennesaw, GA

Synchronization: NTP secondary (stratum 2), Sun Sparc/Unix
Service Area: PeachNet (Georgia), SURAnet
Access Policy: open access, please send a message to notify.
Contact: timekeeper@peachnet.edu
Note: Please use the CNAME Rolex if at all possible, the IP might change one day.

85.slug.ctv.es [194.179.52.14] (will add an alias for this purpose)
Location: Altea (Alicante/SPAIN)
Synchronization: Stratum-2/i486DX2/66/Linux
Service Area: Spain
Access Policy: Public (glad to receive a note)
Contact: Luis Colorado (luis.colorado@slug.ctv.es)

86.salmon.maths.tcd.ie (134.226.81.11)
Location: Trinity College, Dublin, Ireland
Synchronization: NTP secondary (stratum 2), MIPS Magnum
Service Area: Ireland, UK
Access Policy: open access
Contact: time@maths.tcd.ie
Note: salmon.maths.tcd.ie (134.226.81.11), ashe.cs.tcd.ie (134.226.32.17) and lib1.tcd.ie (134.226.1.24)peer together over local area net, and one or more usually run at stratum 2. It is normally sufficient just to pick one machine to peer with.

87.smart1.svi.org (192.216.191.10)
Location: Smart Valley Inc., Stanford Uninversity, Palo Alto, CA
Synchronization: NTP V3 secondary (stratum 2), HP9000/890/HP-UX
Service Area: BARRNet, SF Bay Area
Access Policy: open access
Contact: James Eniti (jeniti@svi.org)

88.sundial.columbia.edu (128.59.35.142)
Location: Morningside Campus, Columbia University, New York, NY
Synchronization: NTP V3 secondary (stratum 2), Sun Sparc10 model 40
Service Area: NYSERnet
Access Policy: open access
Contact: timekeeper@columbia.edu

89.tick.anice.net.ar (200.5.72.1)
Location: Buenos Aires, Argentina
Synchronization: NTP V3 secondary (stratum 2), Cisco IGS 11.1
Service Area: Argentina
Access Policy: open access, please send a message to notify
Contact: Pablo J. Fritz (timekeeper@anice.net.ar)
Note: tick.anice.net.ar is a CNAME for cisco.ad.net.ar

90.tick.cs.unlv.edu (131.216.16.9)
Location: UNLV College of Engineering, Las Vegas, NV
Synchronization: NTP V3 secondary (stratum 2), Mips/Unix
Service Area: Sprintnet
Access Policy: open access
Contact: Greg Wohletz <greg@cs.unlv.edu>
Note: select one of tick.cs.unlv.edu or tock.cs.unlv.edu at random to equalize load

91.tick.koalas.com (207.48.109.6)
Location: Koala Computers, Coos Bay, OR
Geographic Coordinates: 43.36N 124.19W
Synchronization: NTP V3 Secondary (Stratum 2), PC/Linux
Service Area: Northwestern U.S.
Access Policy: open access
Contact: ( webmaster@koalas.com )

92.tick.utoronto.ca (128.100.96.9)
Location: University of Toronto, Toronto, Ontario, CANADA
Synchronization: NTP V3 secondary (stratum 2), Cisco 4700, IOS 11.1
Service Area: Eastern Canada
Access Policy: open access, send email to notify.
Contact: Russell Sutherland (russell.sutherland@utoronto.ca)
Note: IP addresses are subject to change; please use DNS

93.timelord.uregina.ca (142.3.100.15)
Location: University of Regina, Regina, Saskatchewan, Canada
Geographic Coordinates: 50:25N , 104:35:20 W
Synchronization: NTP V3 secondary (stratum 2), IBM RS6000/AIX
Service Area: SASK#net, CA*net, Canada
Access Policy: open access
Contact: Mark Haidl (timekeeper@uregina.ca)
Note: please limit to one or two hosts per site.

94.ticktock.wang.com (150.124.136.4)
Location: Wang Labs, Billerica MA, USA
Synchronization: NTP V3 secondary (stratum 2), Pentium/BSDI 2.0
Service Area: AlterNet, New England
Access Policy: Open access, please send mail to notify
Contact: net-services@wang.com
Note: ticktock is a CNAME

95.time.software.net
Special note: IP address available only from POC
Location: CyberSource Corporation, San Jose, Ca, USA
Synchronization: NTP V3 secondary (stratum 2), PC Linux
Service Area: anybody less than 100ms rtt from us.
Access policy: open access
Contact: jpp@software.net
Note: time.software.net is a CNAME the underlying machine and IP address
may move soon so use DNS. John Pettitt, jpp@software.net EVP,
CyberSource Corporation, 408 556 9300 x 6013 PGP Key available at:
http://www-swiss.ai.mit.edu/htbin/pks-extract-key.pl?op=get&search=0xB7A
A3705

96.timeserver.cs.umb.edu (158.121.104.4)
Location: University of Massachusetts, Boston, MA
Synchronization: NTP V3 secondary (stratum 2), DEC/Ultrix
Service Area: NEARNET, (and anyone else who would like it)
Access Policy: open access
Primary Contact: John Rouillard (rouilj@cs.umb.edu)
Secondary Contact: Rick Martin (rickm@cs.umb.edu)

97.timex.cs.columbia.edu (128.59.16.20)
Location: Columbia University Computer Science Department, New York
City, NY
Synchronization: NTP secondary (stratum 2), Sun/Unix
Service Area: PSINET; NSFNET, NYSER region
Access Policy: open access, authenticated NTP (DES/MD5) available
Contact: James Tanis (timekeeper@cs.columbia.edu)
Note: IP addresses are subject to change; please use DNS

98.Timex.PeachNet.EDU (131.144.4.21)
Location: PeachNet NOC, Kennesaw, GA
Synchronization: NTP secondary (stratum 2), Sun Sparc/Unix
Service Area: PeachNet (Georgia), SURAnet
Access Policy: open access, please send a message to notify.
Contact: timekeeper@peachnet.edu
Note: Please use the CNAME Timex if at all possible, the IP might change

one day.

99.tmc.edu (128.249.1.1)
Location: Baylor College of Medicine, Houston, Tx
Synchronization: NTP secondary (stratum 2), Sun/SunOS 4.1
Service Area: NSFNET, SESQUI region
Access Policy: open access
Contact: Stan Barber (sob@tmc.edu)

100.tock.anice.net.ar (200.5.73.1)
Location: Buenos Aires, Argentina
Synchronization: NTP V3 secondary (stratum 2), Cisco IGS 11.1
Service Area: Argentina
Access Policy: open access, please send a message to notify
Contact: Pablo J. Fritz (timekeeper@anice.net.ar)
Note: tock.anice.net.ar is a CNAME for router.anice.net.ar

101.tock.cs.unlv.edu (131.216.18.4)
Location: UNLV College of Engineering, Las Vegas, NV
Synchronization: NTP V3 secondary (stratum 2), Mips/Unix
Service Area: Sprintnet
Access Policy: open access
Contact: Greg Wohletz <greg@cs.unlv.edu>
Note: select one of tick.cs.unlv.edu or tock.cs.unlv.edu at random to equalize load

102.tock.utoronto.ca (128.100.100.128)
Location: University of Toronto, Toronto, Ontario, CANADA
Synchronization: NTP V3 secondary (stratum 2), Sparc 5, Solaris 2.5
Service Area: Eastern Canada
Access Policy: open access, send email to notify.
Contact: Russell Sutherland (russell.sutherland@utoronto.ca)
Note: IP addresses are subject to change; please use DNS

103.truechimer[123].waikato.ac.nz (130.217.76.16, 130.217.66.91, 130.217.96.20)
Location: The University of Waikato. Hamilton, New Zealand
Synchronisation: NTP V3 (stratum 2), Digital AlphaServer 800 and AXP 3000's/Digital UNIX
Service Area: New Zealand
Access Policy: open access within New Zealand
Contact: ntp@waikato.ac.nz

104.vtserf.cc.vt.edu (128.173.4.6)
Location: Virginia Tech Computing Center, Blacksburg, VA, USA
Synchronization: NTP V 3 secondary (Stratum 2), DEC 5810/ultrix
Service Area: southeastern US, anyplace netwise close to ANSNet Greensboro
Access Policy: open access
Contact: valdis@black-ice.cc.vt.edu or Valdis.Kletnieks@vt.edu
Note: ntp-1.vt.edu is a CNAME for vtserf.cc.vt.edu

105.wuarchive.wustl.edu (128.252.135.4)
Location: Washington University, St. Louis, Missouri, USA
Synchronization: NTP secondary (stratum 2), DECstation 5000/Ultrix
Service Area: Midnet
Access Policy: open access
Contact: Chris Myers (chris@wupost.wustl.edu)

106.www1.cmc.ec.gc.ca
Location: Canadian Meteorological Centre, Dorval, Québec, Canada
Synchronization: NTP V3 secondary SGI/Unix
Service Area: Eastern Canada

Access Policy: open access
Contact: Peter Silva ( ntp-admin@cmc.ec.gc.ca)

107.www2.cmc.ec.gc.ca
Location: Canadian Meteorological Centre, Dorval, Québec, Canada
Synchronization: NTP V3 secondary SGI/Unix
Service Area: Eastern Canada
Access Policy: open access
Contact: Peter Silva ( ntp-admin@cmc.ec.gc.ca)

108.xfiles.esa.lanl.gov (128.165.196.1)
Location: Los Alamos National Laboratory - Los Alamos, NM
Synchronization: NTP secondary (stratum 2), Alpha 4/233 VMS
Service Area: ESNET, TECHNET area
Access Policy: open access
Contact: Jim A. Whitfill whitfill@lanl.gov

109.xfiles-jr.esa.lanl.gov (128.165.196.2)
Location: Los Alamos National Laboratory, Los Alamos, NM
Synchronization: NTP secondary (stratum 2), VAXStation 4000-60
VMS+Multinet
Service Area: ESNET, TECHNET area
Access Policy: open access
Contact: Jim A. Whitfill whitfill@lanl.gov

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David L. Mills (mills@udel.edu)

## Lower Button Row

**Print** allows you to print the results.

**Save to File** allows you to save the results to a text file.

**Find** searches for specific text in the results.

**Copy** copies highlighted results text or all the results text if nothing is highlighted to the clipboard.

**Email Results** uses Windows built-in messaging services to email messages.

**[ <-> ]** is the **AutoPaste** function. This copies hostnames or IP addresses between tabs. Highlight a hostname or IP address in the results window and press [ <-> ]. You will be presented with a dialog which allows you to select the highlighted text or the current host/IP for automatic transfer. You may also clear the AutoPaste text from this dialog.

The "**Exit**" button exits the program

The "**Help**" button activates this file.

# NetScanTools TCP Term Help

**What is TCP Term?** TCP Term is like a mini-Telnet client without the Telnet negotiation protocols. It allows you to connect to a TCP port on a target computer, then once connected, you can type text and view responses. This is useful for things like validating email accounts, testing finger servers, IDENT servers, etc.

**Usage:** Enter a hostname or IP address, target port name or number and press **connect**. You can also optionally specify the source port for the connection. (Each TCP connection consists of a source and destination port pair, normally the source port is assigned by Winsock)

**Notes:**
Attempting to connect to a host that does not have a service on that port will result in a connection refused message.

As with Telnet, you can specify whether or not the characters you type will be locally echoed.

Press the  button on this NetScanTools tab while connected to the Internet to access our web site for help specific to the tab.

About the Lower Button Row.

## Viewing Hidden Headers in Web Pages



---

**Background**
Web pages (HTML or HTM) contain formatting information to tell your web browser how to format the page. They also contain headers which can tell you alot about the web server software residing on the machine that sent you the web pages to view. Typical things that you might see are the type and version of web server software used, the creation date (in GMT) of the web page, and the number of bytes in the web page HTML file. For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Grabbing a web page.**

1. Start NetScanTools.
2. Switch to the "What's New at NWPSW" tab. (The first time you do this after the program has been started, it will automatically get the Latest News web page from us.)
3. Enter any URL in normal format: http://www.nwpsw.com/index.html
4. Press the "Get URL" button.
5. Check the "Display HTTP Headers and HTML Tags" checkbox.
6. You should see the results similar to these as shown below:

HTTP/1.0 200 OK
Server: Netscape-Enterprise/2.01
Date: Mon, 05 Jan 1998 15:35:46 GMT
Accept-ranges: bytes
Last-modified: Sun, 04 Jan 1998 15:16:59 GMT
Content-length: 2597
Content-type: text/html

What's New at Northwest Performance Software, Inc for Jan 4, 1998
Maple Valley Weather: rain Hi: 39 deg F

## Getting your IP address



---

**Background**
Many ISPs (internet service providers) configure their PPP connections to give out IP addresses to users as they log in. This means you will usually get a different IP address each time you connect to the internet. The same is true for DHCP clients in large intranets. How do you use NetScanTools to find out your IP address?

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Getting your IP address.**
1.Start NetScanTools.
2.View your IP address(es) on the Name Server Lookup tab as shown below:

This Computer's Name and IP Address:
Translated Name: p166.eskimo.com
IP Address: 203.28.133.4
IP Address: 10.1.5.7

This example has more than one IP address because it is a multi-homed system. It has more than one TCPIP network card or modem (NDISWAN) connection. Most users will only have one IP address listed.

## Finding text in a results window



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**Background**
Many of the client functions contained in NetScanTools produce results which exceed the window size of the results area. A good example is the "whois" client. Entering a query such as the word "Smith" (no quotes) produces a long list of all the persons and companies with the name Smith in it. So how do you find the right text?

For the following example, we are assuming that you are actively connected to a TCPIP network.

**Using the Find text button**

1. From the NetScanTools Whois tab, press the "setup" button.
2. Set the following values: •whois.internic.net for server •Optionally, you may need to set your whois proxy if you are behind a firewall.
3. Close the whois setup by pressing OK.
4. Enter the word "eskimo" (no quotes) in the whois query entry box and press the Query button. (note: you may use any other query string you wish)
5. When NetScanTools is done receiving the data from the whois server (this may take up to a couple of minutes), the NST logo will stop spinning. You should have several companies with the word eskimo in them.
6. Now press the Find button at the bottom of the NetScanTools window. You may also press cntl-F.
7. Enter the text North in the Find dialog and press Find First. The first occurrence of North should be highlighted. Note that this search is not case sensitive.
8. Press the F3 key to highlight subsequent occurrences.

Note that Find does not work with list view on Ping or Traceroute. You must use "Classic View" on Ping and Traceroute to find text.

# How to detect link layer MTU using Ping



---

**Background**
NetScanTools 3.1 includes a new feature as part of the Ping tab utility: control of the Don't Fragment IP header bit. Packets travel from one place to another across many different types of routers. Some packets may need to be split into more than one packet because of limitations on the size of a packet through a router. The maximum size of a packet allowed to pass between two systems is the Maximum Transmission Unit or MTU. If a packet needs to be split and the Don't Fragment bit is set, the router returns an ICMP message to the sender indicating that the packet needs to be fragmented. This message, along with other techniques, can be used to determine the MTU. This value can vary depending on the path your packets take.

For the following example, we are assuming that you are actively connected to a TCPIP network.

**Method for detemining MTU**
1. From the NetScanTools Ping tab, press the "setup" button.
2. Set the following values:
    - Time Between Packets: 200
    - Packet Timeout: 5000 for internet via ISP, 1000 for intranet
    - Packet TTL: 64
    - Number of Packets Sent: 5
    - Base Packet Length: 56 (note: this is 8 bytes less than the true data portion length)
    - Don't Fragment Packets checkbox MUST BE CHECKED
1. Select a host the you know you can reach with Ping, like www.nwpsw.com, and press the Ping button.
2. Increase the Base Packet Length several hundred bytes at a time, until you no longer receive a type 0 response. Then narrow it down to the highest byte count just before you no longer receive the type 0 response.
3. Calculate the MTU using the method below after you have determined the largest packet you can send.

**How to calculate the link layer MTU once you have determined the largest packet you can send**
Take the number of bytes in the results display (it will be 8 more than the Base Packet Length (BPL)), add 20 for the IP header and 8 for the ICMP header and you have the link layer MTU between your computer and the other host system. For Windows NT 3.5x and 4.0 on an ethernet system, this value will typically be 1500 (1464 BPL + 8 Reserved + 20 IP + 8 ICMP).

NOTE: Some ISPs may limit the ICMP data packet byte count to 64 bytes (56 BPL + 8 Reserved) in an effort to reduce exposure to denial of service attacks.

# Using AutoPaste



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**Background**
NetScanTools 3.1 has a button located next to the copy button with a strange label: "<->". This button activates the AutoPaste feature. AutoPaste takes text from the input area of the current tab or any highlighted text in a results area and presents it to the user for inclusion into the AutoPaste buffer. Text in the AutoPaste buffer is automatically pasted into the input area of any tab that you switch to. This is very useful for transferring IP addresses and long hostnames between tabs.

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Using AutoPaste.**
1. Start NetScanTools.
2. On the Name Server Lookup tab, enter www.nwpsw.com and press the Simple Query button.
3. When you see the results, highlight 207.137.171.253 and press the <-> button at the bottom of the main window.
4. You will be presented with the AutoPaste Host/IP Selection dialog box. The IP address that you highlighted will appear on the top line with a ">>" button to the left. The query text "www.nwpsw.com" will appear in the lower line, also with a ">>" button. Select either one by pressing the ">>" next to it. The dialog box will disappear and the text you selected will appear in the input area of the other client function tabs when you switch to them.

Note: you can clear the AutoPaste buffer by pressing the "<->" button and clicking on the Clear AutoPaste button. You can also clear it by exiting and restarting NetScanTools. NetScanner will only display IP addresses contained in the AutoPaste buffer; it will not paste hostnames.

## MX Records



---

**Background**
Many large corporations and ISPs use email addresses similar to user@someBigCompany.com. Unfortunately someBigCompany.com is just an email alias meaning the email is actually handled by one or more mail exchange machines like smtp.someBigCompany.com. Once you have the actual MX machine name, you can use Finger on user@smpt.someBigCompany.com with much better success. How do you use NetScanTools to find out the real name of the mail machine that handles the email?

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Getting the MX machine name.**

1. Start NetScanTools.
2. On the Name Server Lookup tab, press A Q Setup.
3. For Query Type, select MX and click OK.
4. Enter nwpsw.com and press Adv Query. Note: your name server will be different.

Looking up [nwpsw.com]

Server: isumataq.eskimo.com
Address: 204.122.16.31

nwpsw.com preference = 8, mail exchanger = mail.nwpsw.com
nwpsw.com nameserver = NS1.resolver.net
nwpsw.com nameserver = NS2.resolver.net
mail.nwpsw.com internet address = 209.75.46.2
NS1.resolver.net internet address = 207.137.72.3
NS2.resolver.net internet address = 207.137.171.3

[End Query]

The mail exchanger (MX record) is listed. Many times you will get multiple mail exchangers with varying numerical preferences. The MX record with the lowest number is the one that SMTP mail programs try first, followed by the next lowest number.

# Finding an Upstream Internet Provider



---

**Background**
The first question you may ask is "What does this mean and what good is it?". Very often we receive spam suggesting that we come to a specific site, usually given in the form of an IP address, like http://10.1.2.3/getrichquick.html. Obviously, they don't give you a way to remove your name from their list. The email headers are forged, and if they give you a "remove" email address, it's either bogus or a email address collection account which confirms to the spammer that your email address is good. One thing you can do is complain to their upstream provider. All of these web sites have an upstream provider. You can use NetScanTools to find their upstream provider.

Assumption #1: they have given you a valid URL to come visit.

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Getting the upstream provider.**

1. Start NetScanTools.
2. Carefully copy the IP address or hostname into the TraceRoute tab. Be sure you get it right so you don't falsely accuse anyone. DO NOT include the http:// part or any /getrichquick.html pages in the info you enter. Just the name or IP address. For the following fictitious example we are using 10.8.3.56.
3. Press the "Trace" button.
4. You should see the results similar to these as shown below:

...
8 10.1.5.6 router24.theUpstreamProvider.net 250 type 11
9 10.8.3.1 gateway.theSpammer.com 250 type 11
10 10.8.3.56 ? 350 type 0

What you are after is the either the second to last or third to last hop (as in the example). Then you would email your complaint to abuse@theUpstreamProvider.net. Be nice to them, they didn't originate the spam. If they get enough complaints they may deal with it.

# Finding the Authoritative Nameserver for a Domain



---

**Background**
Each domain has a DNS name server or servers which are called Authoritative Name Servers. It is responsible for maintaining accurate information about that domain. Usually one name server is a primary called the Start of Authority and it is almost always mirrored to one or more backup name servers. NetScanTools can locate the Authoritative Name Server(s) for any domain.

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Finding the Authoritative Nameserver for a Domain.**

1. Start NetScanTools.
2. On the Name Server Lookup tab, press the Setup... button, check to be sure that a name server IP address or hostname is entered in the Current Server edit box and select NS (Name Server) for query type. Then Press OK to close. (NOTE: NetScanTools makes every attempt at automatically determining the default name server for your computer and places it in the Current Server box)
3. On the Name Server Lookup tab, enter a domain name like nwpsw.com and press the Adv Query button.
4. You should see the results showing the Authoritative Name Server(s) as shown below.

Looking up [nwpsw.com]
Server: NS2.NETDIRECT.NET
Address: 204.120.164.4

Non-authoritative answer:
nwpsw.com nameserver = NS2.resolver.net
nwpsw.com nameserver = NS1.resolver.net

Authoritative answers can be found from:
NS2.resolver.net internet address = 207.137.171.3
NS1.resolver.net internet address = 207.137.72.3

[End Query]
---

1. Now copy NS1.resolver.net or NS2.resolver.net to the clipboard, and go back to the Setup dialog.
2. Enter either of those name servers into the current server edit box, select SOA for query type and press OK.
3. On the Name Server Lookup tab, enter nwpsw.com and press the Adv Query button.
4. You should see the results showing the Start of Authority Name Server (origin

entry) as shown below.

Looking up [nwpsw.com]

Server: NS1.resolver.net
Address: 207.137.72.3

nwpsw.com
origin = NS1.resolver.net
mail addr = postmaster.resolver.net
serial = 1121226758
refresh = 10800(3 hours)
retry = 3600(1 hour)
expire = 5184000(60 days)
minimum ttl = 86400(1 day)
nwpsw.com nameserver = NS1.resolver.net
nwpsw.com nameserver = NS2.resolver.net
NS1.resolver.net internet address = 207.137.72.3
NS2.resolver.net internet address = 207.137.171.3

[End Query]

## Listing all computers in a domain--(zone transfer)



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**Background**
Last week's topic was about locating an Authoritative Name Server. Once you know the Authoritative Name Server for a domain, you can usually get a list of all computers recorded in that DNS for the domain.

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**STEP 1: Finding the Authoritative Nameserver for a Domain.**

1. Start NetScanTools.
2. On the Name Server Lookup tab, press the Setup... button, check to be sure that a name server IP address or hostname is entered in the Current Server edit box and select NS (Name Server) for query type. Then Press OK to close. (NOTE: NetScanTools makes every attempt at automatically determining the default name server for your computer and places it in the Current Server box)
3. On the Name Server Lookup tab, enter a domain name like nwpsw.com and press the Adv Query button.
4. You should see the results showing the Authoritative Name Server(s) as shown below.

Looking up [nwpsw.com]
Server: NS2.NETDIRECT.NET
Address: 204.120.164.4

Non-authoritative answer:
nwpsw.com nameserver = NS2.resolver.net
nwpsw.com nameserver = NS1.resolver.net

Authoritative answers can be found from:
NS2.resolver.net internet address = 207.137.171.3
NS1.resolver.net internet address = 207.137.72.3

[End Query]
---

1. Now copy NS1.resolver.net or NS2.resolver.net to the clipboard, and go back to the Setup dialog.
2. Enter either of those name servers into the current server edit box, select SOA for query type and press OK.
3. On the Name Server Lookup tab, enter nwpsw.com and press the Adv Query button.
4. You should see the results showing the Start of Authority Name Server (origin entry) as shown below.

Looking up [nwpsw.com]

Server: NS1.resolver.net
Address: 207.137.72.3

nwpsw.com
origin = NS1.resolver.net
mail addr = postmaster.resolver.net
serial = 1121226758
refresh = 10800(3 hours)
retry = 3600(1 hour)
expire = 5184000(60 days)
minimum ttl = 86400(1 day)
nwpsw.com nameserver = NS1.resolver.net
nwpsw.com nameserver = NS2.resolver.net
NS1.resolver.net internet address = 207.137.72.3
NS2.resolver.net internet address = 207.137.171.3

[End Query]
---

**STEP 2: Using the Authoritative Nameserver for a Domain with List Domain.**

1. On the Name Server Lookup tab, press the Setup... button, and enter the hostname or IP address of one of the Authoritative Name Servers in the Current Server edit box. (In this example it would be: NS1.resolver.net or NS2.resolver.net) Then Press OK to close.
2. On the Name Server Lookup tab, enter a domain name like nwpsw.com and press the List Domain button.
3. After a little waiting, you should see domain listed--this can be very large depending on the domain--several thousand records.

Typical output:

Listing domain [nwpsw.com]

Server: NS1.resolver.net
Host or domain name Resource Record Info.
nwpsw.com. SOA NS1.resolver.net postmaster.resolver.net. (1121226758
10800 3600 5184000 86400)
nwpsw.com. NS NS2.resolver.net
nwpsw.com. NS NS1.resolver.net
nwpsw.com. MX 8 mail.nwpsw.com
nwpsw.com. A 207.137.171.253
mail A 209.75.46.2
ftp MX 8 mail.nwpsw.com
ftp A 207.137.171.253
www MX 8 mail.nwpsw.com
www A 207.137.171.253
nwpsw.com. SOA NS1.resolver.net postmaster.resolver.net. (1121226758
10800 3600 5184000 86400)
Received 11 records.

[End Query]

ERROR CONDITIONS. If you get a listing that looks like this:

Listing domain [nwpsw.com]

Server: isumataq.eskimo.com
Host or domain name Resource Record Info.
Received 0 records.

[End Query]

Then you have the wrong DNS (not an Authoritative DNS) for that domain. OR, that DNS you have selected has been programmed to reject NetScanTools' list request--try another of the Auth Servers for that domain--most domains have more than one.

## Multiple Instances of NetScanTools



---

**Background**
NetScanTools has the ability to run more than one instance of itself. This is particularly useful when doing two simultaneous sweeps of different networks using NetScanner. By doing this, you can do more than one of the same task simultaneously. The only drawback is that when setup parameters are changed, the last instance of the program to change them writes the changes to the registry.

For the following example, you must be actively connected to a TCPIP network PRIOR to starting NetScanTools.

**Running a second instance of NetScanTools.**

1. Start NetScanTools.
2. Start NetScanTools again.
3. You should now have two copies running.
4. On instance 1, go to the NetScanner tab and specify a range of IP addresses and press start.
5. On instance 2, go to the NetScanner tab and specify a different range of IP addresses and press start.
6. You should see different results for each of the NetScanner tabs. The important thing to note is that you are able to do two of the *same* function simultaneously.

# Ping and TraceRoute ICMP packet types



---

**Background**
When using NetScanTools, you may have noticed that the Ping and TraceRoute results areas include a field called "Type". This field is reporting the type of ICMP packet received in response to the ICMP echo request Type 8 packet NetScanTools sends. Normally, the type field will show either a Type 11 "Time Exceeded" or Type 0, Echo Reply. Other types are possible depending on the response of routers between you and the target host.

**Other "Type" Field Codes**
List of common types that NetScanTools may report during Ping or TraceRoute:
•0 - Echo Reply - this is sent back by the target host we were trying to reach.
•3 - Destination Unreachable - this comes in several flavors or "Codes", some of which you won't see using NetScanTools:
•0 - Net Unreachable
•1 - Host Unreachable
•2 - Protocol Unreachable
•3 - Port Unreachable
•4 - Fragmentation needed and Don't Fragment was set
•5 - Source Route Failed
•6 - Destination Network Unknown
•7 - Destination Host Unknown
•8 - Source Host Isolated
•9 - Communication with Destination Network is Administratively Prohibited
•10 - Communication with Destination Host is Administratively Prohibited
•11 - Destination Network Unreachable for Type of Service
•12 - Destination Host Unreachable for Type of Service

•4 - Source Quench - unlikely, but the router wants NetScanTools to stop sending ICMP packets so quickly.
•11- Time Exceeded - sent to us by routers along the way to our target host. It means that our ICMP echo request packet expired.
•12- Parameter Problem - the packet was corrupted when received by that router.

# NetScanTools 3.01a Introduces Web Help



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**Background**
In talking with NetScanTools users, we found that similar questions we being asked on a regular basis. Although we already have a NetScanTools FAQ page, there needed to be something more immediately accessible to the users. So we now have a quick way to get web based help from the NetScanTools tabs. Most of the tabs have a little yellow question mark inside a red background--the web help icon. Clicking on this image launches web help. Note: This does not work on Windows NT 3.51.

**Launching Web Help**
Switch to a NetScanTools tab containing the web help icon and click on it. If your web browser is properly configured, (installing Internet Explorer 3+ or 4 will leave it configured properly) your browser will launch and go to our main site for the web help HTML page specific to that tab.

**Launching the "blue text" Hyperlinks**
You may also click on the blue text hyperlinks found on the About tab and How-to-Purchase tabs. In the case of the email link, it will launch any emailer you have configured for handling "mailto:" tags.

# NetScanTools 3.01a Registry Settings



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**Background**
Disclaimer: The registry editor (regedit.exe under Windows 95 and regedt32.exe under Windows NT) is a powerful utility that can cause serious operating system problems that may require you to reinstall your operating system. Use the Registry Editor at your own risk. Now that that's out of the way, let's talk about some of what NetScanTools keeps in the registry. First of all, "Registration" information is NOT kept in the registry. The information kept there is what would have been formerly kept in an "INI" file. This registry location is:

HKEY_CURRENT_USER/Software/NWPS/NetScanTools 3.00/

You will find things like the last query you made for each tab, the current font, setup parameters for each setup dialog box and other general settings. Go ahead and look at the various values. You will see the associations between the values you set and where they are kept.

Now that you know where to find the settings, let's look at a real world problem that came up just this week.

**Problem**: I changed screen resolutions and NetScanTools 3.01a is a strange size!%#$*@ The only way to correct this is to use the registry editor. Exit NetScanTools. Go to the path above and locate the "Settings" subkey. It will contain a value called "WindowPos"--the NetScanTools last window size and position. Delete the WindowPos value. (If you don't know how, consult the Registry Editor help file and BE CAREFUL!) NetScanTools will regenerate (just like Dr. ?) this subkey with the right value for your current screen resolution.

You might ask why you need to go to all this trouble? The answer is simple: this version contains the necessary underlying support functions for doing window resizing...

**Other Current Problems and Issues**
The above topic was typical of a problem or an issue discussed here. New to our Product Support Area is an on-line forum for each of our products. Feel free to leave questions or comments there. We will try to answer them as soon as possible. If you have a more immediate problem, fill out one of the forms linked off of this page.

# NetScanTools and your Hosts file



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**Background**
Microsoft Windows NT and 95 both use a derivative of Berkeley Unix Sockets called "Winsock". Historically, it was common for unix machines to use a "hosts" file for rapid translation of hostnames to IP addresses and vice versa without going to a DNS or other name server. This has been carried over into the Windows TCP/IP environment, although most people don't use the hosts file. (DO NOT confuse the "hosts" file with the LMHOSTS file. They are not the same. LMHOSTS is used for Lan Manager Hosts translation.) This week's discussion will cover the hosts file location, format and the effects of using it with NetScanTools.

**Hosts file location**
The hosts file is located in different places depending on the operating system you are using. Note that the hosts file DOES NOT HAVE A FILE EXTENSION. DO NOT confuse it with hosts.sam (the sample hosts file) or lmhosts or lmhosts.sam.

Windows 95:
%win95folder%\hosts
Note: Windows 95 does not always have a hosts file installed by default. NetScanTools will offer to create a simple one if a hosts file is not found.

Windows NT:
%winNTfolder%\system32\drivers\etc\hosts

**Format of the hosts file**
The format of a hosts file is very simple. Each entry consists of a single IP address followed "aliases" or human readable text names for the IP address such as www.nwpsw.com. There are some rules to a hosts file: each IP address must start in the leftmost column of the line. Only one IP address per line. Each alias must be separated from the IP address or other aliases by at least one whitespace character. Comments begin with a # symbol.

**What NetScanTools does with the hosts file?**
As mentioned above, some systems may not have a hosts file installed. This is mostly true for Windows 95. NetScanTools will offer to create a simple one if a hosts file is not found. The simple hosts file consists of one entry:

127.0.0.1 localhost

This is known as the loopback address.

NetScanTools can also add the IP address and hostname of responding computers while doing a sweep of IP addresses during NetScanner. Because the hosts file is case sensitive, each entry is added in normal and upper case. In order to use this option, you must select the corresponding checkbox on the NetScanner tab to activate it.

**Problems encountered when using a hosts file**
Since the hosts file is static and must be maintained by YOU, the user of your computer, there is a risk that entries in the hosts file will become out of date. For instance, if your own computer name and IP address were in the file and you changed internet providers, your IP

address would change. Then NetScanTools would report your OLD IP address when it starts up if you DID NOT change the IP address in your hosts file. This is because Winsock searches the hosts file FIRST before going to any DNS or WINS to resolve the name. The same thing would also apply to any other hosts you've added using NetScanner. So, if you use the hosts file, YOU MUST MAINTAIN IT.