

# LAN Speed Test (version 3)

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## LAN Speed Test Overview

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LAN Speed Test was designed from the ground up to be a simple but powerful tool for measuring file transfer, hard drive, USB Drive, and Local Area Network (LAN) speeds (wired & wireless). It does this by building a file in memory, then transfers it both ways (without effects of windows file caching) while keeping track of the time, and then does the calculations for you. Simple concept and easy to use. You'll find that LAN Speed Test will quickly become one of your favorite network tools!

### Some of LAN Speed Test features include...

- Completely portable - No installation needed
- Incredibly small (183KB) and can run from a hard drive, USB Flash drives, etc.
- Compatible with Windows versions 2000 & up (2000, XP, Vista, Win7, Win8, Server2003, Server 2008, Server 2012)
- Very fast! Most tests are less than 1 minute
- Test packet sizes up to 9 GB while taking a maximum of just 10 MB of RAM on your system
- Progress window that displays progress bar and allows user to cancel at any time
- Compatible with LST Server for real network performance results without hard drive limitations - Even test WAN (internet) speed with LST Server
- Network Scan (lets you see all other computers/devices that are on your network) with the ability to Ping test to any of them
- Log viewing screen with ability to add notes
- Scheduling test runs now an option with logging and the new Command Line format
- Open/Save option to .csv file
- Selectable Speed Measurements
- Simultaneous multiple stream support
- View Avg, Max, & Min throughput results
- Automatically re-start tests for a set period of time or until manually stopped
- Email results manually, automatically, or only when under a certain speed
- Revised! Command Line Mode (Allows network administrators to start the test from the command line with all test options now available)
- And much more!

## What's new

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### LAN Speed Test History (A=Added, B=Bug fix, C=Change)

#### 3.5 (01/25/15) - Seventeenth Public Release

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- B - Finally found and eliminated the Network Scan Bug - this bug affected certain processors under certain situations, and caused the Network Scan to never finish
- B - Fixed screen size issues and fonts for Windows 8 and above
- B - Folder or Server IP limited to 32 chars - now unlimited
- A - Running LAN Speed Test from Command Line /D2 (Just Status Bars) or /D3 (Silent) now suppresses all errors (no longer waits for an acknowledgement from the user - just log it, if required, and continue)
- C - Wait Time between tests is now 1-3600 seconds instead of 1-60 seconds
- A - Add read and write times to Log
- C - Update clear cache routine - much faster

#### 3.4 (12/12/12) - Sixteenth Public Release

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- C - When in continuous mode, and there is an error on the current test, do not wait for an acknowledgement from the user - just log it and continue
- C - When in continuous mode, and there is an error on the current test, do not end the current job - just log it, and continue
- B - When email notifications set to below xxxx - Errors were not always triggering the system to send an email alert - now they are
- A - Add status to Email & Print Out
- A - Add RTT (Round Trip Time to LST Server) to log

#### 3.3 (12/06/12) - Fifteenth Public Release

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- B - The new config screens introduced in v3.2 were not high dpi aware causing some options to not be visible when using larger fonts, higher dpi settings, etc.
- C - Help routines completely overhauled - now supports Rich Text for easier viewing
- C - Spaces were sometimes being copied over when using copy/paste for registering and would result in invalid registration. Spaces are now ignored.

#### 3.2 (11/20/12) - Fourteenth Public Release

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- A - Ability to email results with built in SMTP mail client. Results can be emailed manually when pressing the button, automatically after each test, or only when results are below your setpoint.
- A - Added the new Email feature to Command Line options
- B - 'Log File' option always started enabled instead of honoring the last used setting
- B - In certain situations, LAN Speed Test would not automatically log results - even with 'Log File' enabled
- C - Help updated with new features

#### 3.1 (10/24/12) - Thirteenth Public Release

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- B - In certain situations (Win7 to Win7 shared folder), the timer would stop after the packet was sent to the local cache instead of the drive's cache. This would cause the write results and throughputs to show a lot faster than it should.
- B - In certain situations (Win7 to Win7 shared folder), the last packet being read was already cached and would cause the read results and max throughput to show faster than it should.

#### 3.0 (10/20/12) - Twelfth Public Release

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- A - Ability to view avg, max, & min test results
- A - Ability to test with simultaneous multiple streams (Up to 25 with LST Server and up to 2 when testing to a folder)
- A - Ability to automatically re-start test (with programmable wait times between tests) for 1-24 hours or until manually stopped
- A - GBit (Gbps & GBps) labels and calculations
- A - Option to bypass drive's write caching during tests.
- A - Packet counter on the status screen

- A - Drop down edit box at 'Folder or Server IP' to remember last 9 entries
- A - 'Check for update' link on help screen
- A - 'Check for update online at startup' option
- A - Running from Command Line now supports all testing options!
- A - Each test begins with a Latency (RTT) measurement and displayed along with other new details in debug window for advanced troubleshooting
- A - Cut/Copy/Paste/Select All/Delete/Edit Note hot key support in 'View Log' window
- A - '# of Data Streams' and 'Test Status' fields added to log
- C - LAN Speed Test does not keep individual settings based on MAC address anymore. Now there is only one group of common settings. Previously you had to set up each client manually. Now you set it up once, and all tests from all clients will default that way. If you need individual control for certain computers, you can do this from the updated command line interface, and this will override any default settings.
- C - Change right click options in view log ('Select All', 'Clear Selection', 'Copy With Headers', 'Copy Without Headers', and removed 'Copy All')
- C - Log file - all fields are now SQL compatible. This allows for easy import into SQL Server, MySql, etc.
- C - 'Number of Test Packets' max increased to 1,000
- C - Test filename (when testing to folder) now consists of random numbers and test number so that there can be multiple tests done to one folder at the same time
- C - Fixed the timeout issues with slower WAN connections. Timeout occurred if a packet took longer than 5 seconds to send/receive. The new logic allows up to 60 seconds.
- A - High DPI aware in Windows 7
- B - Fixed minor display issues in Windows 7
- B - Fix debug mode displaying write speed twice instead of write speed then read speed
- C - Updated Logging, Printing, Open/Save, debug, and help routines to support all the new features

### **2.0.8 (10/03/11) - Eleventh Public Release**

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- A - Option to switch between Binary Mode (1MB = 1,048,576) and Decimal Mode (1MB = 1,000,000) that affects results as well as building of the test file
- C - Minor changes and updates
- C - Help file updated

### **2.0.7 (09/22/11) - Tenth Public Release**

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- A - HUGE!! LAN Speed Test now builds the large test files on the fly in 1 MB chunks instead of the whole thing at once. Now you can test with test packets up to 9 GB in size and LAN Speed Test will still only take a maximum of 10 MB of your RAM! This works when testing to a shared folder or to the LST Server.
- C - Cancel is very responsive now on all data transfers
- C - All Network Scan info (Name & Notes) is now saved by MAC address instead of IP address since IP addresses are not always static
- A - Name is now editable in Network Scan
- A - Sort by columns is now supported in Network List and Log View
- B - 'Folder or Network IP' can now be over 30 characters in Log View (this was causing Log View display to be empty)
- C - Log file is now a .csv file instead of a .txt file
- B - If you closed the log window with the 'X' - you could have lost changes to the Log file without warning
- C - All results are now correctly displayed as decimal instead of binary (i.e. 1 MB = 1,000,000 instead of 1,048,576)
- C - Progress display is more responsive and displays more information
- A - Add network card information to debug window
- A - Add Windows 7 & Server 2008 information to debug window
- C - All Network Scan info is now saved in LST\_Settings.ini instead of it's own file
- C - Printing routine updated
- A - Display results after each packet and between write/reads
- A - Can log results even when cancelled or errored out - adding 'Cancelled...' or 'Error...' in the comment
- A - Added status and date to debug window
- C - Changed the way the 'Test Packet Size' is adjusted to a scrollbar
- C - Minor bug fixes and internal updates
- C - Help file updated

### **2.0.6 (06/25/11) - Ninth Public Release**

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**This version fixes all known timer issues!**

- C - New high precision Timer routine - no longer dependent on LAN Speed Test calculating the processor speed. This was causing some issues in very rare situations
- A - Automatically downgrades to a compatible Timer if your hardware does not support the high precision Timer (most do)
- A - New log view window with ability to edit logs and add notes
- C - Packet sizes can now be as low as 2KB for testing slow wireless networks - previous minimum was 1MB
- A - Ability to add notes to the Network List (for IP descriptions, etc.)
- A - Added option to automatically populate 'Folder or Server IP' from Network List
- C - Network List Window can now stay open while doing tests, etc.
- C - Removed unregistered restrictions from Network List
- C - Lots more backend information fed to the Debug Window
- A - Added more help information (What's New, FAQ, Errors, etc.)
- C - Some UI enhancements
- C - Minor bug fixes and internal updates

**2.0.5 (02/21/11) - Eighth Public Release**

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- A - Network Scan (lets you see all other computers/devices that are on your network) with ability to Ping test to any of them
- C - Logging has been re-vamped. Now logs are kept in table format
- A - New log view window
- A - More communication options added with LST Server allowing for better logging, etc. on the server end (Requires LST Server v.1.1 or greater)
- A - Debug Window added giving a behind the scenes look for advanced troubleshooting
- A - Added more options for 'Folder or Server IP:' i.e. \\192.168.30.201\files
- A - Update Help with detailed instructions for 'Folder or Server IP:'
- A - Added more details to error windows
- B - Last used 'Folder or Server IP:' did not always get saved in .ini file when typed in manually
- C - Code cleaned and optimized for even smaller/faster executable
- C - Minor bug fixes and internal updates

**2.0.4 (10/28/10) - Seventh Public Release**

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- A - Display processor speed
- A - Advanced Configuration Screen for fine tuning the network tests
- C - Updated the routine that calculates the processor speed
- B - Fixed window dimensions for Windows 2003 Server
- C - Numerous internal updates
- C - Help File updated

**2.0.3 (9/23/10) - Sixth Public Release**

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- A - Added support for LST Server (Test Client to Server (LAN or WAN) network speed without limitations of hard drives)  
\* LST Server is an add-on available at <http://www.totusoft.com>
- C - Timer has now been greatly enhanced for more accurate results! The resolution used to be 1/100th of a second. Now the resolution is actually the frequency of your processor. A 3 Ghz processor means a resolution of 1/3,000,000,000th of a second! This allows for super fast network measurement speeds - especially with the new LST Server option
- A - Added ability to change packet size (1-100MB) in .ini file (advanced users only)
- A - Added logging capability
- C - Command Line Mode much more user friendly (/D /S /SS)
- C - Scheduling runs now an option with logging and new Command Line format
- B - Misc small bug fixes
- C - Help File updated with new features

**2.0.2 (7/19/10) - Fifth Public Release**

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- A - Added /SS switch (Super Silent - no progress bars or dialog boxes)
- C - Cleaned up some code (Filesize is actually smaller - now 100KB!)

C - Help File updated

**2.0.1 (7/12/10) - Fourth Public Release**

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B - On very fast transfer rates, bit calculations were so high that the results went into scientific mode and would show negative (Thanks John!)

**2.0.0 (6/17/10) - Third Public Release**

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C - Completely re-written (much faster and more accurate way to measure) Most tests are done in less than a minute!

C - New GUI - Much more user friendly

A - New window that displays progress bar and allows user to cancel at any time

A - New Open/Save option to .csv file

A - Individual profiles automatically saved to .ini file to remember all settings

A - Selectable Speed Measurements

A - MAC address is now displayed and used for individual profiles

A - Command Line Mode (Allows network administrators to start the test from the client's workstation and view the automatically generated .csv file from anywhere on the network)

A - Added help for all functions

A - Helpful network tips

C - Help File updated with new features

## F.A.Q.

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### LAN Speed Test FAQ

#### **I've registered LAN Speed Test, where is my registration information?**

After registering your software, our website sends out the registration information immediately to the email address you used with paypal. If this is different than your normal email address, then make sure you check there. Also, some anti-spam engines are a little too aggressive, make sure you check your spam or junk folder. You can always email us at support@totusoft.com and we will re-send it to you.

#### **I've lost my license, what are my options?**

Just email us at support@totusoft.com with either your name or email address used when registering, and we can email you a copy of your registration right away.

#### **Why don't you offer a 30 day trial on LAN Speed Test?**

LAN Speed Test is completely portable. There are no hidden registry entries, etc. that most time trial software uses. Instead, we have LAN Speed Test (Lite) which is completely free with no time limitations, no installation, etc. Just download it and run it. The timing mechanism is the same as LAN Speed Test. When you're ready for the extra features that the full version of LAN Speed Test has, you can purchase it then.

#### **What is 'Write Speed'?**

This is the 'Upload' speed writing to your server or shared folder.

#### **What is 'Read Speed'?**

This is the 'Download' speed reading from your server or shared folder.

#### **What is the time measurement in the box 'Time to Complete:'?**

Time is all represented in seconds. Now, keep in mind that the timer only times actual data transfer relevant to the speed test. It shuts off while the client and server are talking to each other giving commands, etc. It also shuts off while updating the screen, during time slicing, etc.

#### **Why are my write speeds faster than my read speeds?**

The write speed can be faster because your drives are caching the writes. That means that we are writing to the memory on the drive, and then the drive takes it from the memory and places in on the hard drive. The drive tells LAN Speed Test that the file is done transferring after the test packet is written to the cache memory - not the hard drive. Since the cache memory is lots faster than the hard drive the results for writing are faster than the reading. When reading the data back from the hard drive, the data has to actually come from the hard drive. In other words, what the results are really displaying here is the real read speed from the drive, but the transfer speed from the host computer to the hard drive cache memory on the write. Now you can bypass your write cache settings right from LAN Speed Test. Just go to the 'Config' screen and check/uncheck 'Bypass drive's write cache'.

#### **When I test, why I am getting 'Error 57'?**

Error 57 means that LAN Speed Test client can't find LST Server at the IP address you entered. Unless you are using LST Server, you need to put in the shared folder that you want to test to instead of the ip address of the LST Server. Just press the [...] button (next to 'Folder or Server IP'), select the shared folder, and run the test. You should see the right results now!

#### **Why does my test not finish correctly or take long pauses?**

This is usually caused by certain anti-virus engines or software firewalls. Try disabling the anti-virus software and firewall temporarily for testing. You may be surprised how much your anti-virus/firewall software can affect your network speeds.

#### **I have two network adapters, can I select which one to use?**

When using LST Server, it's simple...Just select your NIC under 'Listening NIC + Port' and click on 'Reset Server'. For LAN Speed Test, however, Windows does not give us an easy way to manually choose which NIC to use as a client. Windows tries to figure out which NIC is performing the best and then chooses that one to route IP traffic. With that being said, I know of two different ways we can get around that...The first option (the easiest, but probably least desirable), is to first disable the NIC that you don't want to use, and then run LAN Speed Test. The second option, is to go into your LAN NIC settings, Select 'Internet Protocol (TCP/IP)', select properties, select advanced, uncheck automatic metric, and adjust accordingly as suggested in this article... <http://support.microsoft.com/kb/299540>.



**Is it possible to run LAN Speed Test with Command Line Parameters?**

Yes, you can with LAN Speed Test v2.0 & above. Starting with v3.0 you have all the options available from the command line as you do from starting the test manually.

Please click on the F.A.Q. web link above for more of the latest frequently asked questions.

## Instructions

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### Getting Started

LAN Speed Test displays your Computer Name, IP address, and MAC address automatically. If this is the first time using LAN Speed Test then you will need to select the network folder you want to test the write and read speeds from (or the IP address of the computer running LST Server) as well as the number of test packets (number of times to repeat the process). Make sure 'Log Results' is checked if you want to log your results.

LAN Speed Test basically builds a file, transfers it both ways, keeps track of the time it takes, and does the calculations for you. Here is a little more detail...

1. Build the test packet file (the size you choose) in memory and on the fly (in 1 MB chunks).
2. Start the Write Timer
3. Write the file to the location you choose (this can be another drive, network url, or the IP address of the LST Server)
4. Stop the Write Timer and do necessary write calculations
5. Continue the writing process the number of times entered in 'Number of Test Packets'
6. Clears Out the Windows File Cache (so that reading will be accurate without having to re-start the computer)
7. Start the Read Timer
8. Reads back (to memory) the file that had been transferred
9. Stop the Read Timer and do necessary read calculations
10. Continue the reading process the number of times entered in the 'Number of Test Packets'
11. Fill in all result fields
12. Delete the file from the network folder if not using LST Server

Note. If testing with LST Server there is no file saved to any hard drive. The Client talks directly to the Server through the network with no hard drive limitations. This gives more accurate results of true network performance. LST Server also makes it possible To test your WAN (internet) connection! LST Server is an add-on available at <http://www.totusoft.com>

Tip... Most network speeds are specified in Mbps - that is Mega bits per second. Don't get this confused with MBps (Mega bytes per second) as it takes 8 bits to make a byte. For example: A 100 Meg network card has a theoretical rate of 100 Mbps (Mega bits per second). A 1 Gig network card is 1000 Mbps. Again, these are theoretical. Real world speeds (speed displayed in results) with protocol overhead, network switches, hard drives, etc. could be 50 % of theoretical speeds or less.

### Folder or Server IP:

There are a variety of ways to tell LAN Speed Test where you want to test and this is the place to do that.

If testing without LST Server, then you enter the location of the shared folder to test to. The easiest way to do this is by clicking on the '...' button and finding the shared folder from there. You must have read/write access to this shared folder. You can also enter the info manually or select a recently entered folder from the drop down box.

Here are some examples...

- > N: (Root folder of your mapped drive)
- > N:\Files (Shared folder 'Files' of your mapped drive)
- > U: (Root folder of your USB drive to check the speed of that drive)
- > \\Server\Files (Shared folder 'Files' on computer named 'Server')
- > \\192.168.0.1\Files (Shared folder 'Files' on computer at IP address 192.168.0.1)

If testing with LST Server, then you enter the location of the computer running LST Server.

Here are some examples...

- > 192.168.0.1 (LST Server is on computer at this IP address)
- > 192.168.0.1:1234 (LST Server is on computer at this IP address listening on port 1234)
- > server.totusoft.com (LST Server is on computer with this DNS Name)
- > http://server.totusoft.com (Same as above)
- > server (LST Server is on computer with this name)

## LST Server Option

LST Server is an add-on available at <http://www.totusoft.com>.

Do I need LST Server to use LAN Speed Test?

Absolutely not. Using LAN Speed Test with LST Server writes the test file to the server's memory and takes the hard drive out of the picture for more true network speed results. Using LAN Speed Test without LST Server, writes the test file to another computer's hard drive. Tests will show slower speeds, but is more of a 'real-world' test as most of the time you are writing files to other hard drives (file servers, etc.).

First, run LST Server on the computer (Server) you wish to test your computer (Client) With. Next, on the Client, run LAN Speed Test (this program), type in the ip address or computer name of the server in 'Folder or Server IP' (the server's ip address is shown under 'Server Status' in the LST Server program). Now when you run the test, the file is being sent to (and read from) the LST Server's memory instead of another computer's hard drive. This takes the slowest device of the network out of the picture for more 'True' network speed accuracy! In my tests using LST Server, I am seeing network speeds of 700 - 800 Mbps on my 1000 Mbps network compared to 300 - 400 Mbps when testing to the same computer's hard drive!

LST Server uses port 4456 by default. If it is necessary to change ports, first change ports on the LST Server (instructions are in that program), then add the port # to the ip address with a colon. i.e. 192.168.0.1:4457

Also, with this feature, it is now possible to test computers over a WAN (internet) connection to get your internet speed! LST Server uses port 4456 by default. Further instructions for testing your internet speed is beyond the scope of this help file. Go to our website for more information.

## Open

Opens a previously saved file. This allows you to view previous results, etc.

## Save

Saves results to .csv file. This file can then be opened back up in LAN Speed Test or notepad, excel, or any programs that supports .csv files.

## Print

Prints results to your printer for a hard copy. Some helpful information is also printed below the results. This option can be turned off in the 'Advanced Configuration' screen.

## Configuration-General

This configuration screen allows you to fine tune the network test performed by LAN Speed Test. Remember that the testing time will vary greatly depending on the size of the packet/stream and the number of packets/streams to test. The values inside the ( ) are the default settings.

### Test Type (Successive):

Testing Client/Server speeds should normally be done in 'Successive Mode' (packets sent/received one after the other). Simultaneous testing (streams sent/received at the same time) is an advanced test. This is usually used to test routers, switches, etc. for maximum throughput.

### Test Packet Size (1 KB - 9 GB):

This changes the size of the test packet that is sent to the server or the test file sent to the server's shared folder. 1 MB is a good size test packet to start with. You can adjust this up or down to fine tune the testing with your network (on slower wireless networks, you may need to make this 500 KB or less for the test to complete with LST Server). This packet/file is then sent and received the number of times in 'Number of Test Packets (1-1000):'.

### Number of Test Packets (1-1000): (Successive Testing)

Number of packets to test successively (one after the other). Results are displayed and logged as average, maximum, or minimum throughput for all packets tested.

**Number of Streams (1-25):** (Simultaneous Testing)

Number of streams to test simultaneously (at the same time). Currently, when testing to a folder, the maximum is 2 simultaneous tests due to head bouncing. When testing to LST Server the maximum is 25 simultaneous tests. Results are displayed and logged as maximum throughput for all streams tested.

**Continuous Mode:**

You can choose to repeat test for up to 24 hours or even until manually stopped.

**Wait Time:**

Number of seconds / minutes to wait between repeated tests (only applies if Continuous Mode is activated)

**Binary Display Mode:**

With this option checked, the test file and the results displayed are in binary format (1KB = 1024 Bytes, 1MB = 1,048,576 Bytes, etc.). Otherwise, the test file and the results displayed are in decimal format (1KB = 1000 Bytes, 1MB = 1,000,000 Bytes, etc.). The default is to display in decimal format.

**Bypass Drive's write caching when testing to a folder:**

Normally, when we are writing to the hard drive, we write to the cache memory on the drive, and then the drive takes it from the memory and places it on the hard drive. The drive tells the program that the file is done transferring after it is written to the cache memory - not the hard drive. Since the cache memory is lots faster than the hard drive, writing to a drive with the write cache enabled, is also much faster than with it disabled. If this option is checked, LAN Speed Test will not stop the timer until all data is completely written to the hard drive regardless of the drive's write cache setting in your control panel. If unchecked, LAN Speed Test will use your control panel's write cache setting (usually write cache enabled and LAN Speed Test will stop the timer after all data is written to the drive's cache memory).

**Delete test file from server when test is finished:**

With this option checked, the generated test file will be deleted from the server when the test is finished. This should normally be checked.

**Print help section on printed results report:**

With this option checked, the helpful explanation section will be printed on the printed report.

**Check for Update online at startup:**

With this option checked, LAN Speed Test will check to make sure that you are using the latest version upon startup. You will be notified only if it finds a newer version.

**Debug Window**

This opens a debug window that gets populated with behind the scenes info during the testing process. This is also used by tech support for troubleshooting specific issues. If you need to email your results, just click on the 'Copy to Clipboard' button after doing a test and paste in your email.

## Configuration-Email

This configuration screen allows you to set up the built in SMTP email client so that you can email your results manually when pressing the email button, automatically after each test, or only when the results are below your setpoint.

This SMTP email client expects to be connected to the internet when testing. If you have dialup connection, it will not dialup on it's own before sending an email.

**Enable Email Notifications:**

When this option is checked, all emailing options become available to you. When this option is unchecked, no emails will be sent out, and all emailing options become unavailable.

**Manual**

Results will only be emailed when you press the 'Email' button on the main page.

**Always**

Results will be emailed after every test automatically.

**Below \_\_\_\_\_**

Results will only be emailed when results are below the speed indicated by the slider bar. This can be very useful in alerting you when connections need to be reset, etc.

**SMTP Server Name or IP:**

Enter the DNS name or IP address of the SMTP server to be used to send emails (example: mail.yourdomain.com).

**Port:**

Enter the port number to be used by the SMTP server to send the emails. The default value is 25.

**Send Test Email:**

Press Send Test Email if you want to test the configuration you just entered. If all the settings are correct, a test email should arrive in your specified email account.

**From:**

Enter the sender's email address. If you enter a wrong email address, the email will not be sent.

**To:**

Specify the email address where the emails will be sent. You can enter multiple email addresses separated by comma.

**Server Requires Authentication:**

If checked the SMTP server uses authentication and you will need to supply a user name and a password.

**User Name:**

Enter the user name to be used when authenticating on the SMTP server.

**Password:**

Enter the password to be used when authenticating on the SMTP server.

## Network Scan

Click on this button and LAN Speed Test will scan your local network (i.e. 192.168.1.1 - 192.168.1.254) and display the results in a new window. Click on a column header to sort by that column. All columns are sortable.

Right click on one of the devices to edit the device or do a ping test to that device. A ping test basically is a way to make sure you can actually communicate to that device.

Please Note...Windows firewall defaults to block ICMP (Ping) messages. If a computer has windows firewall enabled with default settings, then the computer will still show up on the list, but as '[Unknown Device]' and will block ping requests. You can add a note or change the name of that or any device if you choose by right clicking on that device and choosing 'Edit Device Information'.

Windows defaults to save IP addresses for a short time even after the computer is removed from the network. So, even when a computer is shut down or removed from the network, you might still see it listed in the Network Scan for a short time afterwards.

Right click on a device and choose 'Use Selected' to automatically fill in the 'Folder or Server IP' on the main screen with that devices IP address.

## (?) Typical

### What do my results mean?

When assessing the performance of your network, keep in mind that there is always a difference between theoretical speed ratings, and 'real-world' throughput. If your network is set up well, then this difference is relatively small but still significant. Otherwise, the difference can be extremely large.

#### Typical Results without LST Server

Network connected at...

- 100Mbps -> 50-70 Mbps
- 1000 Mps (gigabit) -> 400-600 Mbps
- 802.11b (11 Mbps wireless) -> 2-4 Mbps
- 802.11g (54 Mbps wireless) -> 20-30 Mbps

#### Typical Results with LST Server

Network connected at...

- 100Mbps -> 60-80 Mbps
- 1000 Mps (gigabit) -> 600-800 Mbps
- 802.11b (11 Mbps wireless) -> 4-6 Mbps
- 802.11g (54 Mbps wireless) -> 30-50 Mbps

The reasons for the difference between what a network is supposed to be able to do and what it can actually do are many.

First, there is normal network overhead. This is the data that is used to package and address the data, deal with data collisions, etc. There is even more network overhead on wireless networks.

Second, there are external performance limiters. These are your hardware devices on your network (network cards, hubs, switches, other users on the network, server hard drives, etc.)

Third, is the network configuration problems. This is anything from a bad cable, bad hardware device, etc.

LAN Speed test is an excellent tool to use when troubleshooting or optimizing your network by making it easy to test your 'Real World' network speeds. A good rule of thumb I follow is 'real-world' speed of 50% - 70% of your rated speed. On larger networks with more users, your speed can drop considerably, so you should be doing your tests when network traffic is low.

## Throughput

Click on Average, Maximum, and Minimum any time after the test to display that throughput for the last completed test. Also, the selection that you are currently on, will be the one that will be displayed and logged for the next test.

### Average Throughput

Average throughput is 'Total Packets' or 'Total Streams' multiplied by 'Packet Size' and then divided by 'Time to Complete' for the complete test.

### Maximum/Minimum Throughput

Maximum and minimum throughputs are the maximum and minimum speeds for all packets in that test. In other words, lap timers keep track of fastest and slowest packets written and read during the duration of the test.

Please note... If you're only testing with 1 packet, then average, maximum, and minimum throughputs will all be the same.

## 'Log' Button

Click on this button to manually add the current results to the log file.

For instance...

Suppose after a test, the average throughput is displayed and logged. You click on 'Maximum Throughput', look at the results and decide you want to add the maximum throughput to the log. Just click on the 'Add to Log' button, and the results will get logged with the 'Maximum' tag.

## 'Email' Button

Just like the 'Log' Button, but emails the current results instead.

'Enable Email Notifications' (in 'Config') has to be enabled and there has to be current results displayed before this button is enabled.

## View Log File

Click on this button to view/edit your log file.

You can adjust this window to your liking and LAN Speed Test will remember the screen settings each time you use this button.

You can click on a column header to sort by that column. All columns are sortable.

You can right click on an entry and a list of options will pop up. You can also multi-select by using the normal Windows 'Ctrl' & 'Shift' options

### Select All (Ctrl+A)

Selects all lines in log file

### Clear Selection

Unselects all selected log lines

### Cut (Ctrl+X)

Copies the line/lines that are selected to the clipboard along with the header and then delete's the line/lines. You can then paste the lines into notepad, etc.

### Copy with Headers (Ctrl+C)

Copies the line/lines that are selected to the clipboard along with the header. You can then paste the lines into notepad, etc.

### Copy without Headers (Ctrl+D)

Copies the line/lines that are selected to the clipboard. No headers are included. You can then paste the lines into notepad, etc.

### Delete (Del)

Deletes the line/lines that are selected.

### Edit Note (Ctrl+N)

This option lets you add/edit notes to the lines you select. If you have multiple lines selected, the note you enter will go to all the selected lines.

### Clear Log

Clears the log file - caution this will clear it out and you will lose all the entries. Cancel does not restore the log file.

### Cancel

Cancel's any current changes to the log file (except clearing the log - there is no cancelling that) and closes the window.

### Close

Saves all current changes to the log file and closes the window

## Command Line Mode

The Command Line options have been completely overhauled with version 3.0. All LAN Speed Test configuration options are now available from the command line.

### The format to run LAN Speed Test from the command line is...

/Mode (Folder or Server IP,Test Type,Packet Size,# of Test Packets/Streams,Continuous Mode,Wait Time, Bypass Drive's Write Cache,Speed Measurement, Email Results,Log Results,Custom Log Folder, Log Notes)

### Examples...

```
LAN_SpeedTest /D1 (N:\Test,0,1000000,10,0,0,0,1,1,1,,Test)
```

```
LAN_SpeedTest /D2 (192.168.0.1,0,1000000,10,0,0,0,1,1,1)
```

### /Mode:

/? - This help screen

/D1 - Tells LAN Speed Test to run automatically with the options from the command line. The status bars will be displayed throughout the process, and the results will be displayed when the program is finished.

/D2 - Same as '/D1', but displays just the status bars. No results or errors will be displayed.

/D3 - Same as '/D1', but completely silent. There are no status bars. No results or errors will be displayed.

**Folder or Server IP:**

Please see 'Folder or Server IP:' in the help (under instructions) for details on using this option.

**Test Type (0=Successive, 1=Simultaneous):**

Testing Client/Server speeds should normally be done in 'Successive Mode'. Simultaneous testing is an advanced test. This is usually used to test routers, switches, etc. for maximum throughput.

**Packet Size (1000-9663676416 bytes):**

This changes the size of the test packet that is sent to the server or the test file sent to the server's shared folder. 1000000 is a good size test packet to start with. You can increase or decrease this to fine tune the testing with your network (on slower wireless networks, you may want to make this 500000 or less). This packet/file is then sent and received the number of times from 'Number of Test Packets (1-1000):'.

**Number of Test Packets (1-1000):** (Successive Testing)

Number of packets to test successively (one after the other). Results are displayed and logged as average throughput for all packets tested.

-or-

**Number of Streams (1-25):** (Simultaneous Testing)

Number of streams to test simultaneously (at the same time). Currently, when testing to a folder, the maximum is 2 simultaneous tests due to head bouncing. When testing to LST Server the maximum is 25 simultaneous tests. Results are displayed and logged as maximum throughput for all streams tested.

**Continuous Mode (0-25):**

(0)=Don't repeat test, (1-24)=Repeat test for this many hours, (25)=Repeat until manually stopped

**Wait Time (1-3600):**

Number of seconds to wait between repeated tests (only applies if Continuous Mode is activated)

**Bypass Drive's Write Cache (0=No, 1=Yes):**

If No, LAN Speed Test will use the control panel's write cache setting (usually write cache enabled and will stop the timer after all data is written to the drive's cache memory). If yes, LAN Speed Test will not stop the timer until all data is completely written to the hard drive regardless of the control panel's setting.

**Speed Measurement (0-5):**

(0)=Gbps, (1)=Mbps, (2)=Kbps, (3)=GBps, (4)=MBps, (5)=KBps

**Email Results (0-1) or (1000-1000000000 bps):**

SMTP settings must be set up using the 'Configuration-Email' screen before using this option from command line

(0)=Do not email results

(1)=Email average results

(bps)=Email average results as an alert only if below this bps (1000-1000000000)

**Log Results (0-4):**

(0)=Do not log results

(1)=Log average results

(2)=Log maximum results

(3)=Log minimum results

(4)=Log all results

**Custom Log Folder:**

If you would like to save the logs to a different location than the default folder location, then enter it here (ie. N: \TestFolder) - otherwise leave it blank for default folder location.

**Log Notes (Optional):**

Any text here will get added to the log notes for this test

## Command Line Examples



**LAN\_SpeedTest /D1****(N:\Test,0,1000000,10,0,0,0,1,1,1,,Test)**

This will start LAN Speed Test, testing to shared folder N:\Test (successive), with test file size of 1MB, 10 times, measure speed in Mbps, Email & Log results (to default folder) and add Test to the log notes, and finally display results when finished.

**LAN\_SpeedTest /D1****(192.168.0.1,0,1000000,10,0,0,0,1,1,1)**

Same as above, but testing to a computer using LST Server, on IP address 192.168.0.1, and no notes to include with the logged results.

**LAN\_SpeedTest /D3****(192.168.0.1,0,1000000,10,24,60,0,1,1000000,1,"F:\LANTests")**

This will start LAN Speed Test, testing to a computer using LST Server on IP address 192.168.0.1, with 10 test packets (1 MB in size), and will automatically re-start test for 24 hours - pausing 60 seconds between tests, measure speed in Mbps, Email an alert if results are below 1 Mbps, log results to folder "F:\LANTests", and finally do not display any results.

**Errors**

The most common error is trying to test a folder that you do not have write permissions for (ie. Error creating test file... (53) File not found). Either changing permissions or choosing another folder is required. Be aware that there are certain folders that windows 7 won't let you create new files in (ie. c:\ or c:\program files) - even with admin rights.

Another error that is commonly seen is 'The Folder xxx is not writable...If you want your settings saved you must have read/write access to this folder.' LAN Speed Test checks to make sure the LST\_Settings.ini file (contains settings & registration info) is writeable (unless started in Command Line Mode). If it is not, you get this warning letting you know that settings will not be able to be saved.

Another common error is 'Error opening port: Error #57'. This usually means one of the following:

- 1) You have a firewall blocking the port of LST Server. Open port 4456 (or your custom LST Server port) on your LST Server's firewall
- 2) You have the incorrect ip address or port # of the computer running LST Server. Double check your IP address and port # of LST Server (shown on LST Server's screen) and correct on LAN Speed Test.
- 3) LST Server is not running on the computer to be tested with. If you do not have LST Server, what you want to do is click on the [...] button and select a shared folder from the server to test with. Now the 'Folder or Server IP:' box should contain something like 'F:\Public Files'
- 4) LAN Speed Test starts testing, but then pauses or does not finish correctly. This is usually caused by certain anti-virus engines. Try disabling the anti-virus software temporarily for testing. There are many anti-virus engines that affect your network speed considerably.

## Registering LAN Speed Test

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### **Thank you for using LAN Speed Test!**

LAN Speed Test v3.0 does require registration. There have been a lot of features added to this version that are not in the free version - LAN Speed Test (Lite)

Registering LAN Speed Test removes this screen on startup, removes the results limitations, and helps support Totusoft and our efforts to provide new simple software solutions. Simply click on the 'Register' button above and follow the instructions.

Please remember to keep a copy of the Serial and Key numbers! These numbers or a copy of the .ini file will be needed when moving LAN Speed Test to another computer or flash drive.

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