

Novell(R) LANalyzer(R) for Windows(tm) Demo LZREAD.ME File

This LZREAD.ME file contains additional information about Novell LANalyzer for Windows Demo. It consists of the following sections:

1. System requirements
2. Additional information about the installation process
3. Suggestions to improve overall performance
4. Questions and answers (after installation)
5. Known problems
6. Running LANalyzer for Windows from a NetWare(R) server
7. How the Station Monitor sorts
8. How the Station Monitor works
9. Performance

Section 1: System requirements

The following hardware and software are minimum requirements for running LANalyzer for Windows Demo:

- o 80386- or 80486-based PC/AT* or PS/2*-compatible computer with at least 5 MB of disk space available for LANalyzer for Windows, 4 MB of RAM, and one 5.25-inch or 3.5-inch high-density floppy diskette
- o DR DOS(R) 6.0, Novell DOS(tm) 7.0 or later, or MS-DOS* 3.3 or later
- o Microsoft* (MS) Windows 3.1
- o No network adapter is necessary for the demo

Section 2: Additional information about the installation process

The installation is a three-step process:

1. LANalyzer for Windows software installation:

. Expand and copy product files to the specified directory (hereafter referred to as <product> directory).

2. Workstation software installation:

. Copy the LANalyzer for Windows LZFW.INI file to the WINDOWS directory.

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3. System setup:

After installing all necessary files, SETUP updates the following files:

- . Modifies the Windows SYSTEM.INI file to include the one virtual driver, VCAFT.386.

For each file to be modified, you have two choices:

- . Let SETUP back up the current file and update the file accordingly.
- . Leave the file untouched and have SETUP provide a sample file.

SETUP creates a program group and icons for LANalyzer for Windows Demo. If they already exist, they are replaced.

Section 3: Suggestions to improve overall performance

For better overall system performance, you should minimize your usage of DOS conventional memory and provide as much extended memory as possible.

Following are some sample files for CONFIG.SYS and AUTOEXEC.BAT. Depending on your system configuration, you can use all or some of the suggestions.

For systems with MS-DOS 5.0:

Sample CONFIG.SYS file:

```
DEVICE      = C:\DOS\HIMEM.SYS
DEVICE      = C:\DOS\EMM386.EXE NOEMS
DOS         = HIGH,UMB
BREAK      = ON
BUFFERS    = 10
FILES      = 30
STACKS     = 9,256
DEVICEHIGH = C:\DOS\ANSI.SYS
DEVICEHIGH = C:\DOS\SMARTDRV.SYS 1024
DEVICEHIGH = C:\DOS\RAMDRIVE.SYS 1024 /e
```

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SHELL = C:\DOS\COMMAND.COM C:\DOS\ /e:1024 /p

LASTDRIVE = f

In your AUTOEXEC.BAT file, you might want to add the following lines to load the drivers into high memory (assuming that you have your driver directory on your PATH) instead of running the LZENET.BAT or LZTNET.BAT batch file:

```
LOADHIGH C:\LZFW\ODI\LSL
LOADHIGH C:\LZFW\ODI\NE2000
LOADHIGH C:\LZFW\ODI\IPXODI
LOADHIGH C:\LZFW\ODI\NETX
```

If you get the error message "cannot execute <program name>" or other errors when loading these drivers high, you should try loading some of them normally, in low memory.

Section 4: Questions and answers (after installation)

The following answers are to common questions that you might have after you complete the installation:

1. What do I need to load before I run Windows and LANalyzer for Windows Demo?

You must load the following software:

- . LZFWTSR1(With either a "-e" or "-t" switch. This determines the network type for the demo.)
- . LZFWTSR2

SETUP has created the sample batch file LZENET.BAT or LZTNET.BAT to load these drivers. You can find it in the <product> directory. To check the version for a driver, run it with a ?. For example: LZFWTSR1 ?

2. Can I run LANalyzer for Windows Demo without NETX.EXE and IPXODI.COM?

Yes. The demo version works with or without networking software loaded. The demo does not need or use the network. However, it does allow the networking software on your PC to run concurrently with the demo, and it can be used with either NETX.EXE or the VLM client.

3. When I run the LZENET.BAT or LZTNET.BAT batch file, why do I get messages such as "LZFWTSR1 already loaded"?

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This is because you have already loaded the corresponding drivers, probably from your AUTOEXEC.BAT file. You might want to change your AUTOEXEC.BAT file to load all the drivers at system startup time so you don't need to run LZENET or LZTNET before you invoke Windows.

4. Why do I get the message "LZFWTSR1 is not loaded" when I try to load LZFWTSR2?

You must load LZFWTSR1 before you load LZFWTSR2, as explained in the answer for question #1.

5. Why do I get the message "VCAFT.386 is not loaded...." when invoking LANalyzer for Windows Demo?

You should have the following line in your SYSTEM.INI file under the [386Enh] section:

```
device=<product>\vcaft.386
```

where <product> is the directory in which you installed LANalyzer for Windows Demo. Also check to ensure that these files are in your LANalyzer for Windows Demo directory.

Otherwise, the problem might be caused by not loading the LZFW TSRs before running Windows.

6. Can I use LAN WorkPlace for DOS while running LANalyzer for Windows Demo?

Yes.

7. Do I need to be logged in to a NetWare server to run LANalyzer for Windows?

No. However, you must log in if you want to access the server while you are running LANalyzer for Windows Demo.

Section 5: Known problems

1. Setting a very large capture buffer causes Windows to page memory to accommodate the buffer. Other applications are paged out of memory at this time. This might cause problems for these other applications problems.

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Section 6: Running LANalyzer for Windows Demo from a NetWare server

You can install LANalyzer for Windows on a NetWare server and invoke it from your NetWare workstation. The following steps are required to complete the installation:

1. Install LANalyzer for Windows as you would normally on your PC. Specify the target to be a directory on your server.
2. After installation is completed, edit the LZFW.INI file in your local Windows directory and change the DataPath line to point to a local directory on your workstation (for example, DataPath=c:\lzfw\data). This directs LANalyzer for Windows to output data files, such as trend files (with extension .TRD) and name files (with extension .CSV), to your local directory.

Section 7: How the Station Monitor sorts

The Station Monitor performs an automatic sort every 15 seconds. If the sort is an ASCII type field (the name or address fields), the name/address with the lowest ASCII value is sorted first. For example:

```
Zoo  
Arthur  
00-00-1B-47-74-47
```

is sorted as

```
00-00-1B-47-74-47  
Arthur  
Zoo
```

The dynamic rate data fields are sorted in a different way. Over the 15-second period between sorts, the total activity is accumulated and the sort is performed on that number. For example, station Arthur might have a constant transmit rate of 2 packets per second over the sort period. Another station, Zoo, transmits a burst of 15 packets in the last second before the sort and no other transmit activity during the sort period. After the sort, Arthur is sorted above Zoo.

Other fields, such as total packets and bytes, are sorted in the normal descending fashion.

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Section 8: How the Station Monitor works

New stations are added to the Station Monitor table as they appear on the network, until the table becomes full. You can specify the maximum number of stations (up to 1000) by changing the "Maximum Stations" parameter in the LZFW.INI file. Specifying a smaller number uses less memory. A new station is added to the Station Monitor only when its address appears as the source or destination address in an error-free packet. Thereafter, that station's statistics are updated for each relevant packet, irrespective of whether that packet is good or has errors.

A new station is added only when its address is seen in a good packet because of collision fragments, which are a normal occurrence on an Ethernet network. A collision fragment is formed when two or more stations try to transmit at the same time, detect the collision, and then transmit a jam pattern to ensure that all other parties also detect a collision. Depending on how late in the packet the collision occurs, the source and destination address fields typically contain garbage. It serves no useful purpose to fill the Station Monitor table with these garbage addresses.

There are two consequences of this algorithm that you should be aware of:

1. If a station's address never appears in an error-free packet, the station does not appear in the Station Monitor table.
2. You might see nonzero transmit counts for the broadcast address. This apparent anomaly occurs because many fragments contain the jam pattern (all ones) in the address fields. An address of all ones is, by convention, the broadcast address, which is almost always seen in an error-free packet.

Station Monitor data is gathered constantly, irrespective of whether the Station Monitor window is open. Therefore, you can open and close the Station Monitor window at will, without fear of losing data.

Section 9: Performance

LANalyzer for Windows has been carefully designed to take maximum advantage of the hardware you install it on. In general, the following hardware factors affect performance:

- . CPU speed. The higher the clock speed, the better the performance.
- . CPU type. A 486 gives almost twice the performance of a 386 running at the same clock speed. A 386DX gives better performance than a 386SX because it has a 32-bit rather than a 16-bit address bus and LANalyzer for Windows takes advantage of that. Note, however, that the 486DX and 486SX both have 32-bit busses; the 486SX simply lacks the integrated floating point unit of the 486DX. This does not affect LANalyzer for Windows.
- . Bus type. An EISA or Micro Channel bus gives better performance than an ISA bus.

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. Network adapter card and driver. A 32-bit adapter gives better performance than a 16-bit adapter, and a 16-bit adapter gives better performance than an 8-bit adapter. The quality of the driver is also a very important factor.

. RAM. Not having sufficient RAM makes the user interface sluggish and might severely impact packet capture performance, as explained in the following paragraphs.

LANalyzer for Windows attempts to keep up with the traffic on your network. However, if you installed the product on too slow a machine, it is unable to do so. When such an overload occurs, LANalyzer for Windows periodically (every 5-10 seconds) and temporarily disables capturing and statistics gathering long enough to allow the user interface to update. If you are capturing packets and have the "don't wrap capture buffer" option set, the overload protection mechanism (which causes packets to be dropped) does not kick in until the buffer is full and capture turns itself off.

If you are benchmarking LANalyzer for Windows to determine what class of machine to install it on, you should be aware that the type of network load affects performance. LANalyzer for Windows gives optimum performance on real networks, where packets are different sizes and arrive with differing interpacket spacing. Therefore, you should try to benchmark against such a load rather than a homogeneous stream of identically sized packets with identical interpacket gaps that can give you misleading results. If you are using a Novell LANalyzer to generate the load, use RANDLOAD rather than GENLOAD to generate the test load

Packet capture is probably the most performance-sensitive area of the product. However, there are several things you can do to maximize performance on whatever hardware platform you have chosen:

. Do not turn on packet capture needlessly.

. Set the tightest capture filter you can. The fewer packets you capture, the better the performance (the less data you must look at also!).

. Set the smallest applicable Slice Size. This not only reduces the amount of time LANalyzer for Windows must spend copying data, it also allows you to store more packets in the same size capture buffer. In almost all cases, the most interesting information (for troubleshooting) is contained in the packet header rather than the packet data, so it is not worthwhile capturing the whole packet. A slice length of 64 bytes gives optimal performance, but might not always be long enough to include all interesting information; 128 bytes is probably a good compromise.

. Do not make the capture buffer larger than necessary. You can make the capture buffer as large as you like (so long as it fits in Windows virtual memory) by adjusting the "CaptureSize" parameter in the LZFW.INI file. However, you should try to keep it down to a size that fits in real memory (actual RAM). When you change the capture buffer size from within the product, if you select too large a buffer to fit in memory, the message displayed tells you the maximum optimum buffer size. You should choose a number less than this for best performance. A 256 KB capture buffer is guaranteed to give optimal performance. A larger buffer might not, unless you have sufficient RAM on your system. If the disk light keeps coming on while you are capturing, your buffer is probably too big to fit in RAM and is being paged to disk by Windows - a relatively slow operation.

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If you make the buffer so big that it can't be locked in real memory during capture, it is subject to paging to disk by Windows. LANalyzer for Windows has fancy algorithms to optimize performance under these conditions. However; if the sustained data capture rate is higher than the disk transfer rate, it drops packets. How big is too big? It depends on how your system is configured. At the time you start capture, LANalyzer for Windows tries to lock as much of the capture buffer into real memory as it can. It always locks at least 256 KB; if you have more than 2 MB of real memory under control of the Windows pager, it uses that excess to lock more, up to a maximum of 8 MB. When the capture buffer is subject to paging, performance degrades significantly once the buffer has wrapped. This can be avoided by using the "Don't wrap capture buffer" option.

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