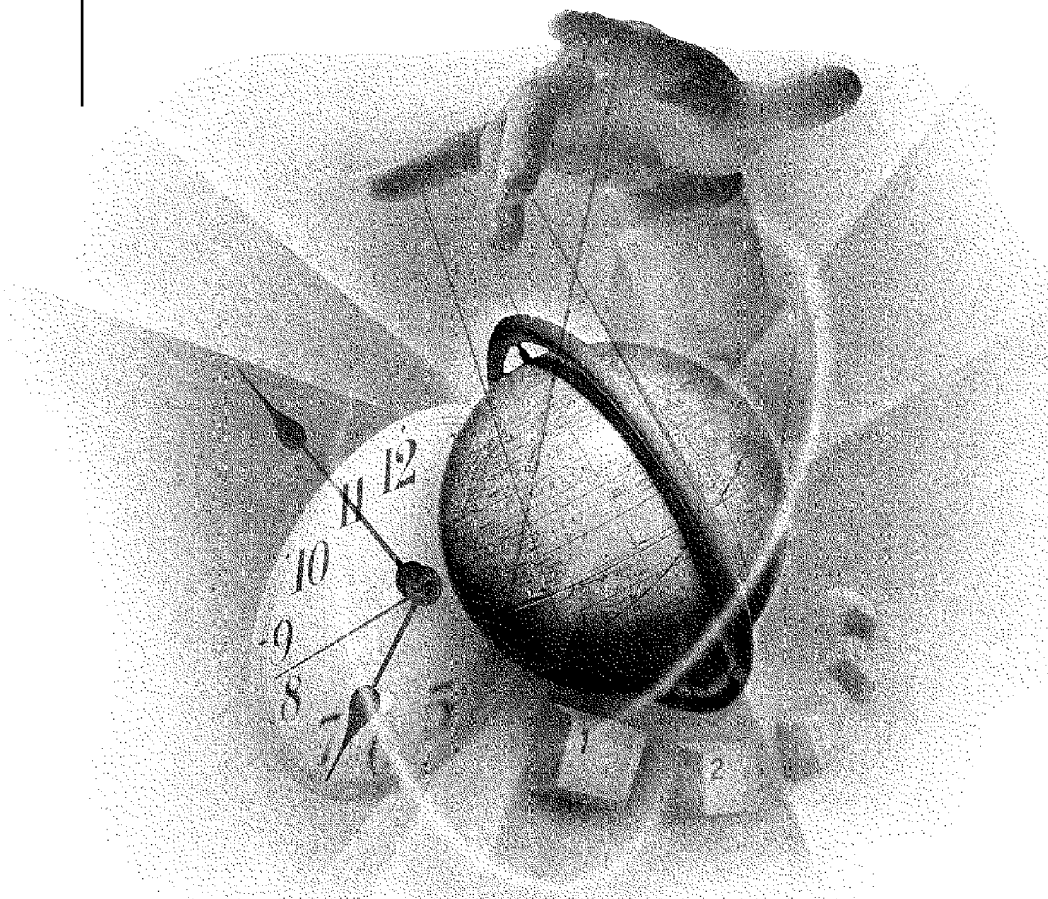


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**NetWare LANalyzer® Agent™**

**Installation and Administration Guide**



**Novell®**

**ManageWise® 2.7**

MANAGEMENT SOFTWARE

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## **Troubleshooting NetWare LANalyzer Agent**

# Overview

NetWare® LANalyzer® Agent™ enables you to monitor a heterogeneous LAN environment comprising of Ethernet, FDDI\* ring, and Token Ring segments from the management console.

NetWare LANalyzer Agent is a Remote Monitoring (RMON) agent that can run on a NetWare® server. It implements a set of functionality defined by RMON Management Information Base (RFC 1271). NetWare LANalyzer Agent collects information about activity on your network and makes it available to management console via SNMP.

## Functionality of the NetWare LANalyzer Agent

The NetWare LANalyzer Agent provides the following functionality:

- ◆ Monitors the performance of the segments and provides vital network statistical information to the management console
- ◆ Makes it easy to set alarm thresholds for proactive network management
- ◆ Captures all or selected packets to help you diagnose and resolve problems on the monitored networks
- ◆ Monitors multiple network segments including the Symmetric Multi-Processing (SMP) architecture
- ◆ Monitors the network segment for problems, such as high network utilization and communication errors

- ◆ Tracks dynamic IP address assignments from the Dynamic Host Configuration Protocol (DHCP) server to the nodes on the network
- ◆ Stores data to display real-time trends (hourly) and historical trends (daily, weekly, monthly, and yearly) for statistics such as Total Bytes, Total Packets, Good Packets, Error Packets and so forth
- ◆ Monitors nodes for inactivity, so that you are alerted if the monitored nodes becomes inactive

# 1

## Understanding NetWare LANalyzer Agent

NetWare<sup>®</sup> LANalyzer<sup>®</sup> Agent<sup>™</sup> runs on a NetWare<sup>®</sup> server and analyzes your Local Area Network (LAN). It is a set of NetWare Loadable Modules that enable NetWare 3.12, 3.20, 4.x, and 5.0 to monitor traffic on Ethernet, FDDI\* ring, and Token Ring and segments.

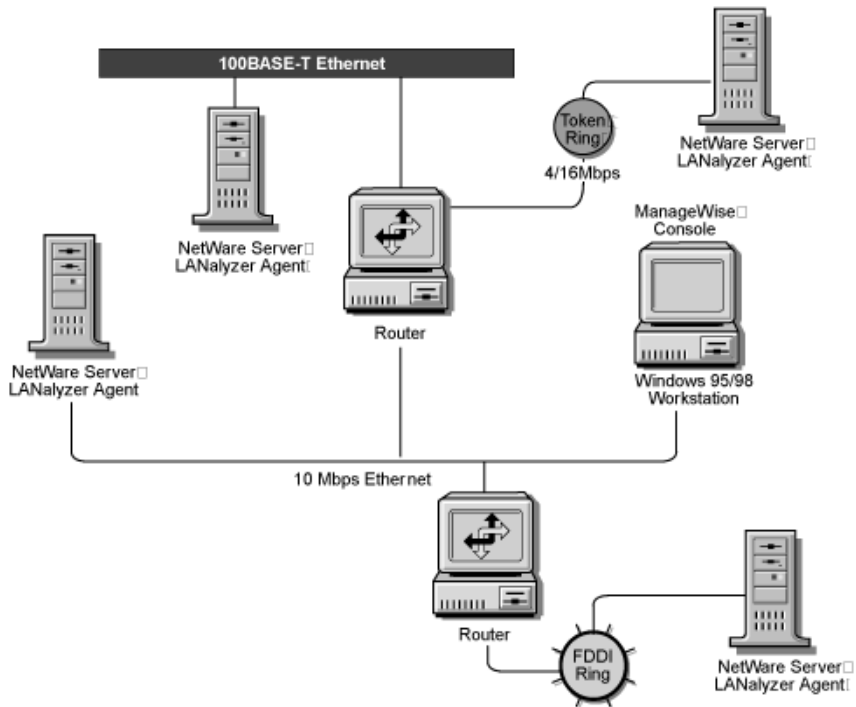
### Overview

NetWare LANalyzer Agent implements Token Ring extensions for RMON MIB (RFC -1513) for Token Ring media, and a Novell proprietary MIB for FDDI media, in addition to implementing RMON (RFC 1757) for Ethernet media.

Figure 1 illustrates a functional view of NetWare LANalyzer Agent



**Figure 1** Functional View of NetWare LANalyzer Agent



# 2

## Planning to Install NetWare LANalyzer Agent

Before you begin to install the NetWare® LANalyzer® Agent™ on a NetWare server, ensure that you have system requirements as specified in [Installation Requirements](#).

To ensure that NetWare LANalyzer Agent is smoothly installed on the server, it is recommended that you configure NetWare SNMP Parameters as explained in the following section:

- ◆ [Configuring SNMP Parameters on NetWare 4.x or NetWare 5.0](#)
- ◆ [Configuring SNMP Parameters on NetWare 3.x](#)

## Configuring SNMP Parameters on NetWare 4.x or NetWare 5.0

**To configure SNMP Parameters on NetWare 4.x or NetWare 5.0**

1. At the server prompt type the following command:  
`load inetcfg`
2. From the Internetworking Configuration screen, select Manage Configuration > Configure SNMP Parameters.
3. From the Monitor Community Handling options, select Specified Community May Read, and type the following community name:  
`public`

4. From the Control Community Handling options, select Specified Community May Write, and type the following community name:  
`public`
5. From the Trap Handling options, select Send Traps with Specified Community, and type the following community name:  
`public`
6. Press Esc to exit the SNMP Parameters screen, and save the changes.
7. Press Esc to exit the Internetworking Configuration screen, and restart the server.

## Configuring SNMP Parameters on NetWare 3.x

### To configure SNMP Parameters on NetWare 3.x

1. At the server prompt type the following command:  
`load tcpcon`
2. From the TCPCON screen, select Options.
3. From the TCPCON Options screen, select Community Name and type:  
`public`
4. Press Esc to exit the TCPCON Options screen, and save the changes.
5. Press Esc to exit the TCPCON screen and restart the server.

# 3

## Setting Up the NetWare LANalyzer Agent

The NetWare<sup>®</sup> LANalyzer<sup>®</sup> Agent<sup>™</sup> is a distributed network analyzer that complements ManageWise<sup>®</sup>. While other ManageWise agents collect data about specific network nodes such as servers or hubs, NetWare LANalyzer Agent observes the interaction among these nodes on a specific LAN segment. The agent is installed on a NetWare<sup>®</sup> server.

The NetWare LANalyzer Agent operates with NetWare 3.x, NetWare 4.x, and NetWare 5.0.

The following topics are discussed in detail:

- ◆ [Installation Requirements](#)
- ◆ [Installing the NetWare LANalyzer Agent Software](#)
- ◆ [Reviewing the AUTOEXEC.NCF File](#)
- ◆ [Reconciling the NCF Files](#)
- ◆ [Enabling the NetWare LANalyzer Agent Installation](#)
- ◆ [Uninstalling the NetWare LANalyzer Agent Software](#)

### Installation Requirements

To install the NetWare LANalyzer Agent, the following requirements must be met:

- ◆ A NetWare server with NetWare 3.x, NetWare 4.x, or NetWare 5.0 installed and configured for an Ethernet, FDDI\*, or Token Ring network
  - ◆ ManageWise server installed on the NetWare server 4.x or later
  - ◆ The RAM requirement for a NetWare LANalyzer Agent server is  $N/2 + 1.5$  MB where N is the number of monitored adapters. For example, if the agent monitors two adapters, it requires 2.5 MB of RAM
  - ◆ At least 10 MB of free disk space on the server to install the agent
  - ◆ To capture one year of trend data, at least 25 MB of free disk space on the server for each monitored Ethernet adapter, and at least 50 MB of disk space on the server for each monitored FDDI ring adapter, or Token Ring adapter
  - ◆ The ManageWise server must be able to access the NetWare server over the network
  - ◆ LAN drivers already installed on the NetWare server
  - ◆ Promiscuous mode LAN drivers for the network adapters
- NetWare LANalyzer Agent requires promiscuous mode drivers to monitor segment traffic and capture packets addressed to various nodes on each segment.

## Installing the NetWare LANalyzer Agent Software

Installing the NetWare LANalyzer Agent software consists of four tasks:

- ◆ Install the NetWare LANalyzer Agent files
- ◆ Review the AUTOEXEC.NCF file
- ◆ Reconcile the AUTOEXEC.NCF and NMSBASE.NCF files to ensure that they are consistent.
- ◆ Bring down and restart the server

Once you install the NetWare LANalyzer Agent software, you must restart the server. If your server is not configured to restart automatically when brought down, you must restart it at the server console.

## Reviewing the AUTOEXEC.NCF File

The installation procedure for the NetWare LANalyzer Agent does not modify your AUTOEXEC.NCF file. If you were running a previous version of the agent before you installed the NetWare LANalyzer Agent, you do not need to modify the file. You need to only bring down and restart the server to enable the new version of the NetWare LANalyzer Agent.

However, if you specifically "commented-out" the commands in the AUTOEXEC.NCF file that automatically load the agent, you must modify the file accordingly. In addition, we recommend that you compare your AUTOEXEC.NCF and NMSBASE.NCF files to make sure they are consistent. For details, see [Reconciling the NCF Files](#).

### To check your AUTOEXEC.NCF file

- 1 At the server prompt, type:

```
LOAD INSTALL
```

- 2 Select NCF File Options > Edit AUTOEXEC.NCF File.

[“NetWare LANalyzer Agent Statements in the AUTOEXEC.NCF File” on page 16](#) illustrates the statements in the AUTOEXEC.NCF file that are pertinent to the NetWare LANalyzer Agent.

**Figure 2 NetWare LANalyzer Agent Statements in the AUTOEXEC.NCF File**

```
# $NMSBASE$ DO NOT DELETE THIS LINE
# NetWare Management System installation has
# created the following NMSBASE.NCF file.
# Review the load sequence of the NLMs
# in NMSBASE.NCF.
# Make sure that the NLMs loaded by NMSBASE.NCF
# do not conflict with your existing setup.
# Uncomment the following lines after review:
#     Statement 1

NMSBASE.NCF
LOAD SNMP verbose Control= Trap=
.
# $LANZ$ DO NOT DELETE THIS LINE
# NetWare LANalyzer Agent installation has created
# the following to load NetWare LANalyzer Agent.
# Uncomment the following 2 lines after review:
#     Statement 2

SEARCH ADD SYS:LANZ
LANZ.NCF
```

When the NetWare LANalyzer Agent was installed, the Installation utility added two sets of statements that are uncommented in order to run the agent.

- ◆ Statement 1 adds the NMSBASE.NCF load statement, and also loads Simple Network Management Protocol (SNMP).

SNMP must be loaded with the Verbose, Control, and Trap parameters as shown, so that ManageWise can retrieve information from the server.

There must be two spaces after the Control= parameter in order for ControlCommunity to accept any community name.

- ◆ Statement 2 adds the SYS:LANZ directory to the search path and adds a statement to load the LANZ.NCF file.

- 3** Uncomment or modify any of these statements in your current AUTOEXEC.NCF file.
- 4** When you have verified that the entries are correct, save the changes.
- 5** Press Esc until you are prompted to exit the Installation utility. Click Yes.

# Reconciling the NCF Files

Complete the following steps to ensure that the AUTOEXEC.NCF and NMSBASE.NCF files are consistent:

- 1** Log in to the server on which the NetWare LANalyzer Agent is installed.
- 2** Change to the SYS:\SYSTEM directory.
- 3** Print the AUTOEXEC.NCF and NMSBASE.NCF files.
- 4** Compare the files and make the following changes, as necessary.
  - 4a** If there are duplicate entries with different values or parameters, reconcile them and set one value for both files.
  - 4b** Remove any duplicate statements from one of the files.
  - 4c** Confirm the order of the LOAD statements in the NMSBASE.NCF file to ensure consistency with the system configuration.
- 5** When you finish reconciling the NCF files, save your changes and log out of the server.

# Enabling the NetWare LANalyzer Agent Installation

For the changes you have made to take effect and to enable the NetWare LANalyzer Agent installation, you must bring down the server and then restart it.

## Bringing Down and Restarting a NetWare 4.x, 5.0 Server

To bring down and restart a NetWare 4.x or NetWare 5.0 server

- 1** At the NetWare system console prompt, type:  
`DOWN`
- 2** At the server prompt, type:  
`RESTART SERVER`



## Bringing Down and Restarting a NetWare 3.x Server

### To bring down and restart a NetWare 3.x server

- 1** At the NetWare system console prompt, type:  
DOWN
- 2** To return to DOS, type:  
EXIT
- 3** At the DOS prompt, type:  
SERVER

## Uninstalling the NetWare LANalyzer Agent Software

Depending on your network configuration, you might have to uninstall the NetWare LANalyzer Agent to make room for another agent or to upgrade to a more recent version of the agent.

### To uninstall the NetWare LANalyzer Agent

- 1** At the server console prompt, type:  
ULANZ
- 2** Type:  
LOAD LANZUNDO

Uninstalling the NetWare LANalyzer Agent, does the following:

- ◆ Removes all the files in the SYS:\LANZ directory and deletes the directory
- ◆ Removes the LANZ.NCF and ULANZ.NCF files from the SYS:\SYSTEM directory
- ◆ Removes the NetWare LANalyzer Agent statements from the AUTOEXEC.NCF file
- ◆ Deletes the long-term trend data file from the GTREND directory

# 4

## Optimizing the NetWare LANalyzer Agent Performance

The measures described in the following sections can improve the performance of your NetWare<sup>®</sup> LANalyzer<sup>®</sup> Agent<sup>™</sup> server.

You can configure the NetWare LANalyzer Agent functions described in the following sections by setting the parameters in the LANZ.NCF file.

- ◆ [Contents of the LANZ.NCF File](#)
- ◆ [Modifying the LANZ.NCF File](#)

### Contents of the LANZ.NCF File

The LANZ.NCF file loads all the NetWare Loadable Module<sup>™</sup> (NLM<sup>™</sup>) software required for NetWare LANalyzer Agent operation. The LANZ.NCF file resides in the SYS:SYSTEM directory.

The following example displays the complete text of the default LANZ.NCF file.

---

```
#  
  
# NetWare LANalyzer Agent  
  
# Version 1.21  
  
#  
  
# -----
```

---

---

```
# LANZ.NCF: NetWare LANalyzer Agent Load File

#

# This NCF file is created by the NetWare LANalyzer Agent install program.

# It is used to load the NetWare Loadable Module files that make up NetWare LANalyzer Agent.

# WARNING: You should not modify this file unless you need to change one of the configuration

# parameters documented below. Other changes to this file are not recommended.

# Should you damage this file, you must reinstall NetWare LANalyzer Agent.

#

# NOTE: To enable or disable the monitoring of network adapters by NetWare LANalyzer Agent,

# use the LANZCON utility as described in the NetWare LANalyzer Agent Installation and

# Administration guide.

#

# -----

# Load Parameter Descriptions

#

# load LANZSU debug=1

#

# debug=1 Turns on the LANZ Control screen to see the transactional messages from the

# NetWare LANalyzer Agent.

#

# load LANZMEM bound=KB age=HHH

#

# bound=KB This is the upper limit on memory that can be allocated

# dynamically by the NetWare LANalyzer Agent.

#
```

---

---

# Increasing this number allows you to create larger packet  
# capture buffers and maintain data for inactive stations  
# for a longer period of time.  
#  
# Decreasing this value reduces the amount of memory that  
# can be used by NetWare LANalyzer Agent. This leaves more  
# memory for the other server tasks.  
#  
# NetWare LANalyzer Agent automatically purges data for  
# inactive stations as the memory boundary is approached.  
# This allows NetWare LANalyzer Agent to adjust to  
#  
# the memory that is available to it dynamically.  
#  
# If the boundary is low, purging occurs frequently, saving  
# only data for stations that have been recently active on  
# the network. If this happens, a message appears on the  
# system console indicating that not enough memory has been  
# allocated to NetWare LANalyzer Agent.  
#  
# KB is the memory boundary in kilobytes.  
#  
# Initial value: Set by the installation program  
# based on memory usage  
#

---

---

# Minimum recommended value: 512

#

# Maximum recommended value: 75% of free server memory

# when NLM files are loaded

#

# Default value: If bound=KB is not specified,

# it defaults to 3072.

#

# age=HHH NetWare LANalyzer Agent purges data for stations that have

# not been active on the network recently. This parameter

# controls how long data for inactive stations is maintained.

#

# Memory that is used by the station table is not available

# for other uses, such as capturing packets. Reducing the

# AGE value tends to increase the amount of memory

# available for capturing packets.

#

# If you cannot allocate capture buffers that are large,

# you may need to reduce the AGE value.

#

# HHH is the inactivity period, in hours, before station data

# is purged.

#

# Minimum recommended value: 1

#

---

---

```
# Default value:          If age=HHH is not specified,
# it defaults to 168 (1 week)
#
# load LANZDI level=1
#
# level=1  It indicates that the LANZDI will stop receiving packets
# when CPU utilization gets high.
#
# Default is OFF. LANZDI will continue to receive packets even
# when CPU utilization gets high.
#
# load LANZSM topn=N
#
# topn=N   The number of concurrent sorts of top N nodes that
#
# NetWare LANalyzer Agent supports for each network adapter.
#
# Recommended value: 4
# Minimum value:    2
# Maximum value:   10
#
# load LANZTR poll = 1
#
# poll=1   Polls token ring source-routed bridges.
#
```

---

---

```
# load LANZCTL trapreg=1

#

# trapreg=1 Causes SNMP traps to be sent to management consoles

# advertising themselves on the network, as well as stations

# listed in SYS:\ETC\TRAPTARG.CFG. Omitting this parameter

# or setting it to 0 causes traps to be sent only to those

# stations listed in the SYS:\ETC\TRAPTARG.CFG file.

#

# -----

load gtrend.nlm \dvolname:\GTREND

load lanzsu.nlm

load lanzmem.nlm bound = 3072 AGE = 168

load lanzlib.nlm

load lanzdi.nlm

load lanzael.nlm

load lanzhis.nlm

load lanzfcb.nlm

load lanzsm.nlm topn = 4

load lanztr.nlm

load lanzfddi.nlm

load lanzctl.nlm trapreg = 1
```

---

## Modifying the LANZ.NCF File

The sections below describe how to modify the parameters of the commands in the LANZ.NCF file to configure the NetWare LANalyzer Agent functions.

- ◆ Turning on the LANZ Control Screen
- ◆ Disabling Packet Capture
- ◆ Disabling Generation of Duplicate IP Address Alarms
- ◆ Setting Packet Flow Control
- ◆ Setting the Upper Limit of Available Memory
- ◆ Purging Data from Server Memory
- ◆ Sorting Concurrent Top Stations
- ◆ Sending Alarms to Management Consoles Automatically
- ◆ Polling Source Route Bridges
- ◆ Activating Changes in the LANZ.NCF File

**To make changes in the LANZ.NCF file and to modify the NetWare LANalyzer Agent configuration**

- 1** Open the LANZ.NCF file with a text editor.
- 2** Insert or modify the appropriate parameter as shown, save the file.
- 3** Unload and reload NetWare LANalyzer Agent as described in [Activating Changes in the LANZ.NCF File](#).

## Turning on the LANZ Control Screen

The LANZ Control screen reports significant events for the NetWare LANalyzer Agent.

To turn on the LANZ Control screen, insert the DEBUG parameter in the LOAD LANZSU.NLM statement as shown below:

```
LOAD LANZSU.NLM DEBUG=1
```

The default setting turns off the LANZ Control screen by omitting the DEBUG parameter.



## Disabling Packet Capture

You might want to disable the NetWare LANalyzer Agent packet capture function for security reasons to prevent others from observing sensitive data captured in the packets sent on the network segment.

To disable the NetWare LANalyzer Agent packet capture function.

Insert a comment mark (#) as the first character in the following statement:

```
LOAD LANZFCB.NLM
```

If you want to control packet capture during high levels of traffic rather than disabling packet capture entirely, see the next section, Setting Packet Flow Control.

## Disabling Generation of Duplicate IP Address Alarms

In the DHCP environment, the IP address is released to the DHCP server when a DHCP client is shutdown. During the process of releasing the IP address to the DHCP server, the client sends a DHCPRELEASE packet. If this packet does not reach the DHCP server, false duplicate IP address alarms will be generated. The NetWare LANalyzer Agents provides an option to disable the generation of duplicate IP address alarms.

To disable the generation of duplicate IP address alarms, specify zero as the value for the DUPIP parameter.

```
LOAD LANZSM DUPIP=0
```

If the DUPIP parameter contains a non-zero value or if the parameter is not specified, duplicate IP address alarms are generated.

## Setting Packet Flow Control

The NetWare LANalyzer Agent typically operates in promiscuous mode, receiving all packets on the network. However, if server utilization is high and performance becomes degraded, you can set the LEVEL parameter to 1, which configures the agent to yield when server traffic is high, and then automatically resume operation in promiscuous mode when the traffic level returns to normal.

The default is not to specify the LEVEL parameter at all, which allows continuous operation in promiscuous mode.

To set packet flow control, use the LEVEL parameter setting shown in the following statement:

```
LOAD LANZDI LEVEL=1
```

## Setting the Upper Limit of Available Memory

The BOUND parameter sets the upper limit of available memory that can be allocated dynamically to the NetWare LANalyzer Agent.

The value of the BOUND parameter is measured in kilobytes. The default value is 3072 KB. The minimum recommended value is 512 KB. The maximum recommended value is 75 percent of the memory that is available after all NLM files are loaded.

You might receive the message "Insufficient memory available for NetWare LANalyzer Agent" in the following situations:

- ◆ The server has too little memory
- ◆ The server has sufficient memory, but the memory is not available to the NetWare LANalyzer Agent
- ◆ You requested a packet capture buffer that is too large, and the agent grants you less memory than requested

In each of these cases, we recommend that you increase the value of the BOUND parameter and add more RAM to your NetWare server.

To change the value of the BOUND parameter, edit the parameter with the appropriate value in the following statement in the LANZ.NCF file:

```
LOAD LANZMEM BOUND=3072 AGE=168
```

## Purging Data from Server Memory

The NetWare LANalyzer Agent holds its data in server memory. You can control the amount of data held in memory by setting the value of the AGE

parameter. When data reaches the "age" specified in the parameter, the data is purged from memory.

The value of the AGE parameter is measured in hours. The default value is 168, which is one week. The minimum recommended value is one hour.

Setting the AGE parameter prevents old conversation and node data from consuming excessive memory. This is of concern primarily on large, bridged networks.

We recommend that you lower the AGE parameter if you receive the message "Insufficient memory available for NetWare LANalyzer Agent" and you have allocated sufficient memory for the agent.

Having insufficient memory is not harmful to the agent or the server. The NetWare LANalyzer Agent can run indefinitely, even when the memory allocated to it is not sufficient.

To modify the amount of data held in server memory, change the value of the AGE parameter in the following LANZ.NCF file statement:

```
LOAD LANZMEM BOUND=3072 AGE=168
```

## Sorting Concurrent Top Stations

The NetWare LANalyzer Agent sorts stations whenever the graph of top eight nodes in the Segment Dashboard view, the top 20 nodes list in the Stations view, or both are displayed by the management console. The sorts are independent of each other and can be computed on the basis of different statistics.

Because each of the sort computations uses server CPU cycles, we recommend that you limit the number of concurrent computations.

The TOPN parameter sets the number of concurrent sorts of top nodes that the NetWare LANalyzer Agent can support for each network adapter.

To set the number of concurrent sort computations per network adapter, set the TOPN parameter in the following statement:

```
LOAD LANZSM TOPN=n
```

The default value of the TOPN parameter is 4. The minimum value is 2. The maximum value is 10.

## **Sending Alarms to Management Consoles Automatically**

The NetWare LANalyzer Agent can automatically send SNMP alarms (sometimes referred to as SNMP Traps) to management consoles or other nodes on the network in the following configurations:

- ◆ The NetWare LANalyzer Agent receives the Service Advertising Protocol (SAP) packets sent by one or more management consoles
- ◆ The management console or other node is listed in the server's TRAPTARG.CFG file

The TRAPTARG.CFG file is stored in the SYS:\ETC directory. The file provides instructions for its use. You can edit the file with any ASCII text editor.

To enable alarms to be sent automatically, add the TRAPREG parameter setting as shown in the following LANZ.NCF file statement:

```
LOAD LANZCTL TRAPREG=1
```

The default is 1. If you omit the TRAPREG parameter or set its value to 0 (zero), the agent sends alarms only to management consoles listed in the TRAPTARG.CFG file.

## **Polling Source Route Bridges**

To control source route bridge polling on Token Ring networks, use the POLL parameter as shown in the following statement:

```
LOAD LANZTR POLL=1
```

For the POLL parameter, 1 = On and 0 = Off.

Setting the POLL parameter to 1 polls source routed bridges once every second. You cannot change the polling rate. The default is On.

To turn off this function, set the POLL parameter to 0 as shown in the following statement:

```
LOAD LANZTR POLL=0
```

The default is to omit the POLL parameter. Also, the LOAD LANZTR statement is commented out on systems that do not have a Token Ring adapter installed.

## Activating Changes in the LANZ.NCF File

To activate the changes you make in the LANZ.NCF file, save the file and then unload and reload the NetWare LANalyzer Agent by issuing the following commands at the server prompt:

- 1** Save the LANZNCF file.
- 2** Unload and reload the NetWare LANalyzer Agent.
  - 2a** To unload the agent, type the following at the server prompt:  
ULANZ
  - 2b** To reload the agent, type the following at the server prompt:  
LANZ

# 5

## Using the NetWare LANalyzer Agent Console Utility

The NetWare® LANalyzer® Agent™ provides a Console utility (LANZCON.NLM) that performs three tasks:

- ◆ Enables or disables network monitoring by the selected network adapters
- ◆ Provides a source of detailed troubleshooting information
- ◆ Resolves a residual entry (for example, a Host TopN entry created by a management console that was terminated unexpectedly)

When you install the NetWare LANalyzer Agent, LANZCON.NLM is installed automatically in the SYS:\LANZ directory.

The following topics are discussed in detail:

- ◆ [Loading the NetWare LANalyzer Agent Console Utility](#)
- ◆ [Enabling or Disabling Network Adapter Monitoring](#)
- ◆ [Viewing Network Adapter Information](#)
- ◆ [Viewing the Agent Items Status](#)
- ◆ [Accessing Detailed Information About Each Item](#)

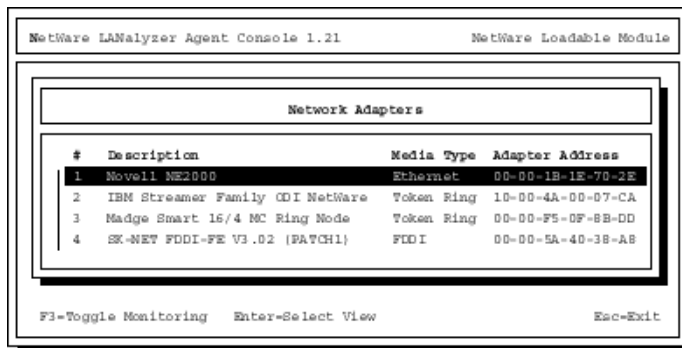
# Loading the NetWare LANalyzer Agent Console Utility

To use LANZCON.NLM, type the following command at the NetWare console prompt:

```
LOAD LANZCON
```

LANZCON.NLM is loaded and it displays the Network Adapters screen (see [“Network Adapters Screen” on page 32](#)). The Network Adapters screen displays summary information about the network adapters that are currently installed on the server.

**Figure 3 Network Adapters Screen**



```
NetWare LANalyzer Agent Console 1.21          NetWare Loadable Module

Network Adapters

#  Description                      Media Type  Adapter Address
1  Novell NE2000                      Ethernet   00-00-1B-1E-70-2E
2  IBM Streamer Family CCI NetWare    Token Ring 10-00-4A-00-07-CA
3  Madge Smart 16/4 MC Ring Node       Token Ring 00-00-F5-0F-8B-DD
4  SK-NET FDDI-FE V3.02 (PATCH1)     FDDI      00-00-5A-40-3B-AB

F3=Toggle Monitoring  Enter=Select View          Esc=Exit
```

The following information is displayed for each network adapter:

- ◆ Number

The network adapter entry number in the network interface table.

- ◆ Description

A brief description of the network adapter.

- ◆ Media Type

The type of network connected to the network adapter: Ethernet, FDDI\*, Token Ring.

- ◆ Adapter Address

The physical address of the network adapter.

# Enabling or Disabling Network Adapter Monitoring

You can enable or disable monitoring of a selected network adapter.

## To enable or disable monitoring

- 1** From the Network Adapters screen, select the appropriate adapter > press F3.
  - ◆ If the selected adapter is currently monitoring an Ethernet, FDDI\*, or Token Ring network, the console displays the Adapter is Monitoring screen.
  - ◆ If the selected adapter is not monitoring an Ethernet, FDDI, or Token Ring network, the console displays the Adapter is not Monitoring screen.
- 2** Select Yes or No to enable or disable monitoring by the network adapter.

If you disable monitoring, all LAN analysis data for the selected adapter is deleted.

# Viewing Network Adapter Information

You can view more detailed information about the items being monitored by each network adapter listed.

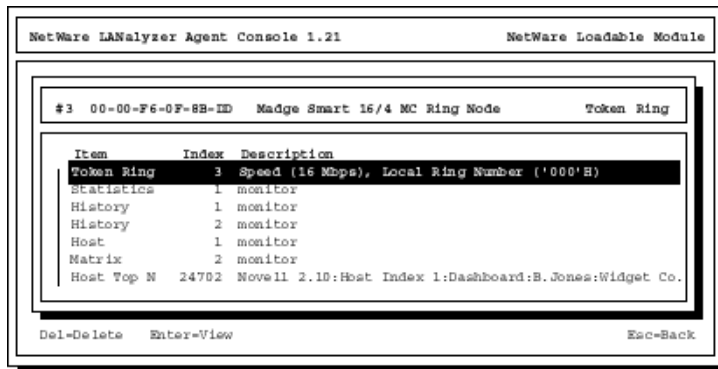
## To bring up detailed information for network adapter items

- 1** From the Network Adapters screen, select an adapter > press Enter.
- 2** From the Select Information to View screen, select Show Adapter Items.

The LANZCON utility displays the Network Adapter Items screen that displays all the items related to the selected network adapter. The following figure shows an example for a Token Ring adapter.



Figure 4 Network Adapter Items Screen



The screen for a Token Ring adapter includes the information from the Novell<sup>®</sup> Token Ring RMON MIB. For more information, see [Viewing the Agent Items Status](#).

To return to the Select Information to View menu, press Esc.

The following information is provided for the selected adapter:

- ◆ Item

The types of items that are currently being monitored by the selected adapter. “[Network Adapter Items Screen](#)” on page 34 shows a set of typical items consisting of Token Ring, Statistics, History, Host, Matrix, and Host TopN. The NetWare LANalyzer Agent monitors these items by default. In “[Network Adapter Items Screen](#)” on page 34 the Host TopN item, indicating the list of the busiest nodes, has been added by a user. You can add other items to this display from the management console, depending on your configuration.

You can select any of these items for more information about each topic. To view the values for the selected item, select the desired item > press Enter. See the following sections for more examples of the screens.

- ◆ Index

The entry number of the displayed item in the list of all the items of the same type. The related tables are identified by this index.

- ◆ Description

A brief description of the entry. This column indicates the software entity or user that created the item. The items automatically monitored by the NetWare LANalyzer Agent are indicated by monitor.

For a Token Ring network entry, this column shows the media speed and the local ring number.

## Viewing the Agent Items Status

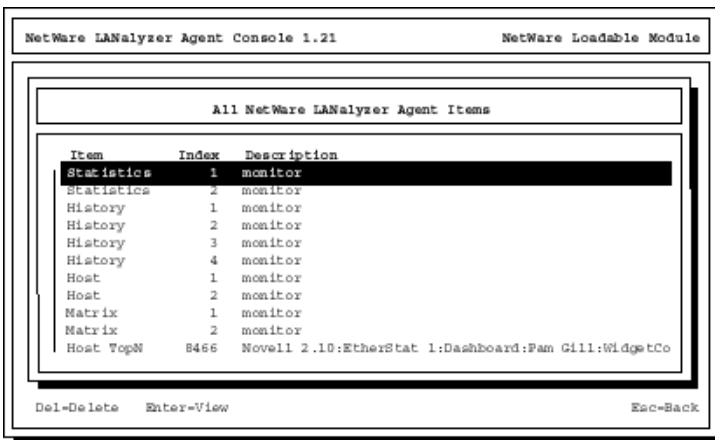
When you click the Select Information to View menu > Show Agent Items, LANZCON displays all the items for each network adapter being monitored by the NetWare LANalyzer Agent.

### To view the agent items status for the selected agent

- 1 From the Network Adapters screen, select an adapter > press Enter.
- 2 From the Select Information to View screen, select Show Agent Items.

The LANZCON utility displays the screen shown below.

Figure 5 All NetWare LANalyzer Agent Items Screen



Item	Index	Description
Statistics	1	monitor
Statistics	2	monitor
History	1	monitor
History	2	monitor
History	3	monitor
History	4	monitor
Host	1	monitor
Host	2	monitor
Matrix	1	monitor
Matrix	2	monitor
Host TopN	8466	Novell 2.10:EtherStat 1:Dashboard:Pam Gill:WidgetCo

The All NetWare LANalyzer Agent Items screen shows all the items related to the agent monitoring the segment. Thus, if you are using multiple adapters to monitor multiple network segments, the screen lists all the items being monitored by the agent.

To delete any entry (except the Token Ring network entry), select the entry > press Delete > click Yes.

To return to the Network Adapter Items screen, press Esc.

The following information is provided for the agent:

- ◆ Item

The types of items available. “[All NetWare LANalyzer Agent Items Screen](#)” on page 35 shows a set of typical items consisting of Statistics, History, Host, Matrix, and Host TopN. Additional items can be displayed, depending on your configuration.

You can select any of these items for more information about each topic. To view the values for an item, select the desired item > press Enter. See the following sections for more examples of the screens.

- ◆ Index

The entry number of the displayed item in the list of all the items of the same type. The related tables are identified by this index.

- ◆ Description

A brief description of the entry. This column indicates the software entity or user that created the item table. The items automatically monitored by the NetWare LANalyzer Agent are indicated by monitor.

For a Token Ring network entry, this column shows the media speed and the local ring number.

## Accessing Detailed Information About Each Item

This section describes the major categories of information available for both the selected network adapter and the NetWare LANalyzer Agent.

- ◆ [Viewing the Token Ring RMON MIB Information](#)
- ◆ [Viewing the FDDI Ring RMON MIB Information](#)
- ◆ [Viewing Statistics Information](#)

- ◆ Viewing History Information
- ◆ Viewing Host Information
- ◆ Viewing Matrix Information

## Viewing the Token Ring RMON MIB Information

To view the Token Ring RMON MIB information

- 1 From the Network Adapter Items screen, select the Token Ring item > press Enter.
- 2 From the Select Information to View screen, select Show Adapter Items > press Enter.

Figure 6 Token Ring RMON MIB Table Screen

NetWare LANalyzer Agent Console 1.21      NetWare Loadable Module

#3 00-00-F6-0F-8B-ED Madge Smart 16/4 MC Ring Node

Field	Value
If Index	3
Table Last Reset Time	42370
Local Ring Number	0
Media Speed (Mbps)	4
Number of Bridges Attached	0
Number of Active Stations	4
Number of Inactive Stations	0
Last Entered MAC Address	00 00 79 70 01 8C
Last Exited MAC Address	00 00 00 00 00 00
State of the Network	normalOperation(3)
Cause of the Network State	normalRing(3)
State Sender MAC Address	10 00 5A D1 03 7C
Beacon Upstream Neighbor	00 00 00 00 00 00
Number of Host Order Changes	0
Number of Active Monitor Changes	1

Esc=Back

Press Esc to exit this screen.

## Viewing the FDDI Ring RMON MIB Information

To view the FDDI ring RMON MIB information

- 1 From the Network Adapter Items screen, select the FDDI Ring item > press Enter.
- 2 From the Select Information to View screen, select Show Adapter Items > press Enter

Figure 7 FDDI Ring Table Screen

```
NetWare LANalyzer Agent Console 1.21          NetWare Loadable Module

#2 00-00-5A-40-38-A8  SE-NET FDDI-FE v3.02 (PATCH1)  Fddi Ring Table

Field                                     Value
Ring If Index                             20
Num Active Stations                         30
Num Inactive Stations                       00
Target Token Rotation Time                 99840
Last Reset Time                           3619600
Ring State                                 10
Ring State Sender MAC Address              00 00 FB 63 270
Ring State Sender UNA Address              00 00 5A 40 380
Host Order Changes                         00
Last enter MAC Address                     00 20 AF FB F80
Last exit MAC Address                      00 00 00 00 00
Beacon Event Index                         00
Host enter exit Event Index                0

Esc-Back
```

## Viewing Statistics Information

The statistics information presents the basic statistics for each monitored adapter per segment.

To view the statistics information

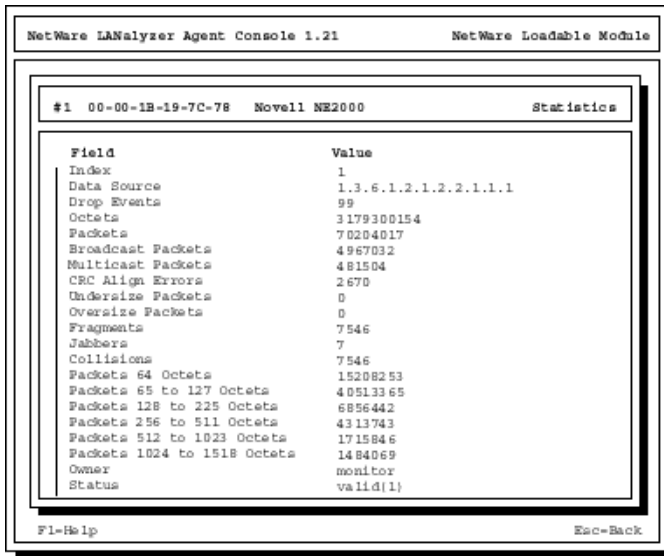
- 1 From the Network Adapter Items screen, select Statistics (see “[Network Adapter Items Screen](#)” on page 34).

Alternatively, select Statistics from the All NetWare LANalyzer Agent Items screen (see “All NetWare LANalyzer Agent Items Screen” on page 35).

## 2 Press Enter.

For an Ethernet network entry, the LANZCON utility displays the Statistics Information screen shown in the following figure.

**Figure 8 Statistics Information Screen**



The screenshot shows a terminal window titled "NetWare LANalyzer Agent Console 1.21" and "NetWare Loadable Module". The main display area shows the following information:

```
#1 00-00-1B-19-7C-78 Novell NE2000 Statistics
```

Field	Value
Index	1
Data Source	1.3.6.1.2.1.2.2.1.1.1
Drop Events	99
Octets	3179300154
Packets	70204017
Broadcast Packets	4967032
Multicast Packets	481504
CRC Align Errors	2670
Undersize Packets	0
Oversize Packets	0
Fragments	7546
Jabbers	7
Collisions	7546
Packets 64 Octets	15208253
Packets 65 to 127 Octets	40513365
Packets 128 to 225 Octets	6856442
Packets 226 to 511 Octets	4313743
Packets 512 to 1023 Octets	1715846
Packets 1024 to 1518 Octets	1484069
Owner	monitor
Status	valid(1)

At the bottom of the screen, there are two keyboard shortcuts: "F1=Help" on the left and "Esc=Back" on the right.

The Statistics Information screen displays the statistical values of the selected network adapter. The display is updated periodically with the latest values for each field.

To exit this screen, press Esc.

## Viewing History Information

The history information defines sampling functions for the networks that are being monitored. The History Control table defines a set of samples at a particular sampling interval for a particular network adapter.

## To view the history information

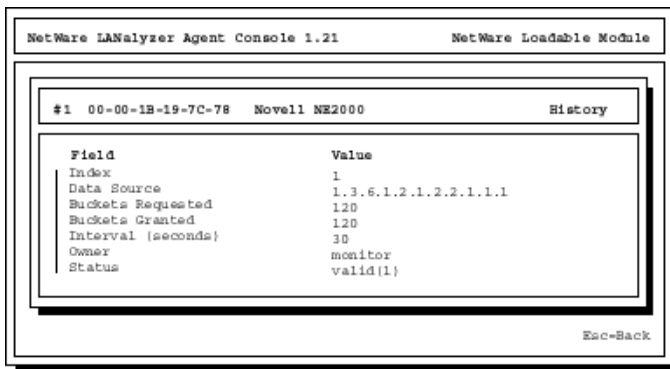
- 1 From the Network Adapter Items screen, select History (see “[Network Adapter Items Screen](#)” on page 34).

Alternatively, select History from the All NetWare LANalyzer Items screen (see “[All NetWare LANalyzer Agent Items Screen](#)” on page 35).

- 2 Press Enter.

The LANZCON utility displays the screen shown in the following figure.

**Figure 9** History Information Screen



To exit this screen, press Esc.

The field descriptions are as follows:

- ◆ Index  
An integer that uniquely identifies a row in the History Control table.
- ◆ Data Source  
Identifies the network adapter and the Ethernet, FDDI\*, or Token Ring segment that is the source of the data for entries defined by this object.
- ◆ Buckets Requested  
The requested number of discrete sampling intervals over which data is to be saved in the portion of the media-specific table associated with this entry.

- ◆ Buckets Granted

The actual number of discrete sampling intervals over which data is to be saved.

- ◆ Interval

The interval, in seconds, over which data is sampled for each bucket. The interval can be set to any number between 1 and 3,600 (one hour). The default interval for past hour is 30 seconds per sample, and the default interval for past day is 30 minutes (or 1,800 seconds) per sample.

The sampling scheme is determined by the buckets granted and the control interval.

- ◆ Owner

The entity that created the item. Monitor indicates that the item was created by the NetWare LANalyzer Agent.

- ◆ Status

A status of valid indicates that the agent is operating normally under the instructions given by the table.

## Viewing Host Information

The host group gathers statistics about specific hosts or nodes on the LAN. The NetWare LANalyzer Agent learns of new nodes on the LAN by observing the source and destination media access control (MAC) addresses in good packets. For each node known to the agent, a set of statistics is maintained.

### To view the host (node) information

- 1 From the Network Adapter Items screen, select Host (see “[Network Adapter Items Screen](#)” on page 34).

Alternatively, select Host from the All NetWare LANalyzer Agent Items screen (see “[All NetWare LANalyzer Agent Items Screen](#)” on page 35).

- 2 Press Enter.

The LANZCON utility displays the Host Information screen shown in the following figure.



**Figure 10 Host Information Screen**

```
NetWare LANalyzer Agent Console 1.21          NetWare Loadable Module

#1 00-00-1B-19-7C-78  Novell NE2000          Host

Field          Value
Index          1
Data Source    1.3.6.1.2.1.2.2.1.1.1
Table Size     392
Last Delete Time 0
Owner          monitor
Status        valid(1)

Esc-Back
```

The host group consists of three tables: two data tables and one control table. The two data tables are hostTable and hostTimeTable. The control table, hostControlTable, includes the following objects, which correspond to the fields displayed in the Host Information screen:

- ◆ Index

An integer that uniquely identifies a row in the hostControl Table. Each row in the control table refers to a unique network adapter and, thus, a unique segment.

- ◆ Data Source

Identifies the network adapter, the Ethernet, FDDI\*, or Token Ring segment that is the source of the data for entries defined by this object.

- ◆ Table Size

The number of rows in the hostTable associated with this row.

- ◆ Last Delete Time

The value of the sysUpTime MIB object that corresponds to the last time an entry was deleted from the portion of the hostTable associated with this row. The value is 0 if no deletions occurred.

- ◆ Owner

Indicates the entity or user that created the item. Monitor indicates that the item was created by the NetWare LANalyzer Agent.

- ◆ Status

A status of valid indicates that the agent is operating normally under the instructions given by the table.

## Viewing Matrix Information

The matrix group records information about the conversations between pairs of nodes on a network segment. The information is stored in the form of a matrix. This method of organization is useful to retrieve specific pairings of traffic information, such as finding out which nodes are making the most use of a server.

### To view the matrix information

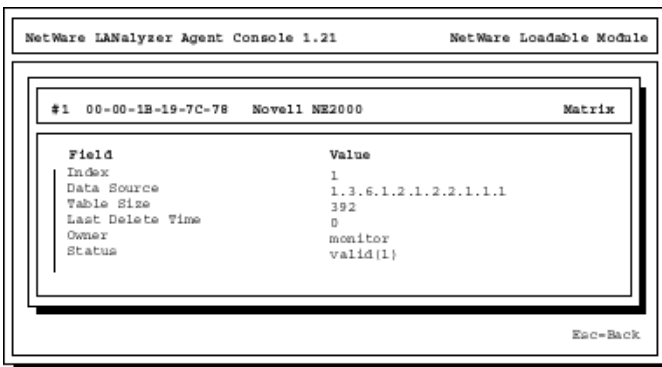
- 1 From the Network Adapter Items screen, select Matrix (see “[Network Adapter Items Screen](#)” on page 34).

Alternatively, select Matrix from the All NetWare LANalyzer Agent Items screen (see “[All NetWare LANalyzer Agent Items Screen](#)” on page 35).

- 2 Press Enter.

The LANZCON utility displays the Matrix Information screen shown in the following figure.

Figure 11 Matrix Information Screen



The matrix group consists of three tables: two data tables and one control table. The data tables are matrixSDTable and matrixDSTable. The control table, matrixControlTable, includes the following objects, which correspond to the fields displayed in the Matrix Information screen:

- ◆ Index

An integer that uniquely identifies a row in the matrixControl Table. Each row in the control table defines a function that discovers conversations on a particular network and places statistics about them in the two data tables.

- ◆ Data Source

Identifies the network adapter, the Ethernet, FDDI\*, or Token Ring segment that is the source of the data for entries defined by this object.

- ◆ Table Size

The number of rows in the matrixTable associated with this row.

- ◆ Last Delete Time

The value of the sysUpTime object that corresponds to the last time an entry was deleted from the portion of the matrixTable associated with this row. The value is zero if no deletions occurred.

- ◆ Owner

Indicates the entity or user that created the item. Monitor indicates that the item was created by the NetWare LANalyzer Agent.

- ◆ Status

A status of valid indicates that the agent is operating normally under the instructions given by the table.

# Troubleshooting NetWare LANalyzer Agent

The following sections are discussed in detail:

- ◆ Suggestions and information for troubleshooting the installation
- ◆ Messages the NetWare<sup>®</sup> LANalyzer<sup>®</sup> Agent<sup>™</sup> software displays in response to problems encountered when monitoring adapters

This section presents tips for handling problems that you may have while installing the NetWare LANalyzer Agent. We recommend that you also consult the SYS:\LANZ\INSTALL.LOG file for information about the installation.

## **Your server abended when you backed it up after installing the NetWare LANalyzer Agent.**

**Explanation:** This problem is not related to the installation process. However, some NetWare LANalyzer Agent files were loaded and probably were open when you backed up the server. Depending on the backup software you use, backing up the LANZ.CFG file when it is open can abend the server.

**Action:** Do not back up the LANZ.CFG file when you back up the server.

## **After the NetWare LANalyzer Agent is installed, the SMART386.LAN driver cannot be loaded.**

**Explanation:** When you install the NetWare LANalyzer Agent, the SMART386.LAN driver is updated with a driver named MADGEODI.LAN. Because the driver name was changed, you need to update the files that load drivers.

**Action:** Modify the files that load the adapter drivers to load the MADGEODI.LAN driver.

**After the NetWare LANalyzer Agent is installed, the NE3200.LAN driver cannot be loaded.**

Explanation: When you install the NetWare LANalyzer Agent, the NE3200.LAN driver is updated with a driver named NE3200P.LAN. Because the driver name was changed, you need to update the files that load drivers.

Action: Modify the files that load the adapter drivers to load the NE3200P.LAN driver.

**After the NetWare LANalyzer Agent is installed, the NE2-32.LAN driver cannot be loaded.**

Explanation: When you install the NetWare LANalyzer Agent, the NE2-32.LAN driver is updated with a driver named NE2\_32.LAN. Because the driver name was changed, you need to update the files that load drivers.

Action: Modify the files that load the adapter drivers to call the NE2-32.LAN driver, and then load the NE2\_32.LAN driver.

**The LANalyzer - Ethernet adapter [MAC address] is not monitored because it is a pipelined adapter.**

Explanation: A pipelined adapter is one that begins to send received data to the driver before the entire packet has been received. The NetWare LANalyzer Agent cannot support this method of data reception because it must tally all the information in a packet before the information is sent to its destination.

Action: If the adapter lets you switch from pipelined mode to non-pipelined mode, do so. If the adapter cannot switch modes, use a non-pipelined adapter for NetWare LANalyzer Agent transactions. Check the Novell® website for information regarding availability of the recommended adapters. You might have to contact your adapter vendor for the appropriate adapter.

**The LANalyzer - Ethernet adapter [MAC address] is not monitored because the driver does not support promiscuous mode.**

Explanation: A promiscuous mode driver receives all the packets and errors on the network it is attached to. The NetWare LANalyzer Agent requires promiscuous mode to function properly, so the agent does not support non-promiscuous mode Ethernet or Token Ring adapters.

Action: Install a promiscuous mode driver on the server. Check the Novell® website for information regarding availability of the latest promiscuous mode drivers. You might have to contact your adapter vendor for the appropriate driver.

**The LANalyzer - Token Ring adapter [MAC address] is not monitored because it is a pipelined adapter.**

**Explanation:** A pipelined adapter is one that begins to send received data to the driver before the entire packet has been received. The NetWare LANalyzer Agent cannot support this method of data reception because it must tally all the information in a packet before the information is sent to its destination.

**Action:** If the adapter lets you switch from pipelined mode to non-pipelined mode, do so. If the adapter cannot switch modes, use a non-pipelined adapter for NetWare LANalyzer Agent transactions. Check the Novell® website for information regarding availability of the recommended adapters. You might have to contact your adapter vendor for the appropriate adapter.

**The LANalyzer - Token Ring/FDDI adapter [MAC address] is not monitored because the driver does not support promiscuous mode.**

**Explanation:** A promiscuous mode driver receives all the packets and errors on the network it is attached to. The NetWare LANalyzer Agent requires promiscuous mode to function properly, so the agent does not support non-promiscuous mode Ethernet, FDDI\*, or Token Ring adapters.

**Action:** Install a promiscuous mode driver on the server. Check the Novell® website for information regarding availability of the latest promiscuous mode drivers. You might have to contact your adapter vendor for the appropriate driver.

**The LANalyzer - Token Ring adapter [MAC address] is not monitored because the driver does not support raw send.**

**Explanation:** The NetWare LANalyzer Agent requires an adapter driver that supports the raw send feature. An adapter driver that supports raw send allows applications to build both the header and data components of a frame. The driver then receives the packet and sends it to its destination.

**Action:** Install an adapter driver on the server that supports raw send. Check the Novell® website for information regarding availability of the recommended drivers. You might have to contact your adapter vendor for the appropriate driver.

**The LANalyzer - Adapter [MAC address] is not monitored because it is not a supported media type.**

**Explanation:** The NetWare LANalyzer Agent supports Ethernet, FDDI\*, or Token Ring, although 100BaseT and 100VG-AnyLAN are considered Ethernet media types. Any other adapter media types are not supported.

Action: Use an Ethernet, FDDI\*, or Token Ring adapter for NetWare LANalyzer Agent operations.

**The LANalyzer - Adapter [MAC address] is not monitored because the NetWare LANalyzer Agent cannot allocate memory.**

Explanation: The NetWare LANalyzer Agent does not have adequate RAM available for it to build the internal data structures required to monitor the adapter.

Action: Do one or both of the following:

- ◆ Unload any unnecessary NLM™ files

OR

- ◆ Add additional memory to your server.

**The LANalyzer - Adapter [MAC address] is not monitored because the driver's promiscuous mode cannot be turned on.**

Explanation: The driver is corrupted or the adapter is damaged.

Action: Replace the adapter. If the problem persists, call your Novell® Authorized Reseller group.