

Palindrome Storage Manager
NetWare Edition
Version 4.0
Installation Guide

Palindrome Corporation
Palindrome Storage Manager™ V.4.0b (NetWare Edition) Installation
Guide
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Table of Contents

About This Guide	v
Audience	vi
Registration and Technical Support	vii
Registration	vii
Technical Support	vii
Palindrome's Bulletin Board System	ix
CompuServe	ix
Fast Fax System	x
Training Programs	x
Optional Service Programs	x
Priority Answers	xi
Software Maintenance	xi
README File	xi
Installing The Hardware	1-1
Introduction	1-3
Supported Backup Devices	1-3
Supported SCSI Host Adapters	1-3
Autoloader Support	1-3
Installing the SCSI Host Adapter and Backup Device	1-4
Requirements	1-4
Installing the SCSI Host Adapter	1-5
Servers With More Than 16MB of Memory	1-7
Installing a Single Backup Device	1-7
Setting the SCSI Address	1-9
AutoLoader Setup	1-9
AutoLoaders with Multiple Devices	1-9
Daisy Chaining Devices	1-9
Setting the SCSI Address	1-11
Backup and Hard Disk Devices	1-11
SCSI Bus Termination	1-12
Why Must it Be Terminated?	1-12
Installing the Termination Block	1-12
Installing the SCSI Host Adapter Driver	1-14
Hardware Installation Notes	1-15
Hardware Installation Checklist	1-15
SCSISCAN.NLM	1-16
8500 8mm Tape Drives	1-16
8200 8mm Tape Drives	1-16
Upgrading Devices	1-17
Server Setup and TSAs	2-1

Contents

Preparing Your Server(s)	2-3
Workstation/Server Requirements	2-4
Determine Where To Install Storage Manager	2-4
Upgrades	2-5
Running SETUP.NLM	2-5
Down the Server	2-6
Loading PALSTART.NCF	2-6
PALSTART.NCF Example	2-7
Installing Target Service Agents	2-9
What is a Target Service Agent?	2-9
Installing the Target Service Agents	2-9
To Protect Servers	2-10
Protecting NetWare Directory Services**	2-10
To Protect Workstations	2-11
Copying TSAs	2-11
Protecting DOS and Windows Workstations	2-12
Removing Older Versions	2-12
Installing the DOS/Windows Workstation TSA	2-12
NET.CFG	2-13
Sample NET.CFG File	2-14
Assigning Passwords To Workstations	2-15
Protecting OS/2 Workstations	2-16
Loading TSAOS2.EXE Automatically	2-16
Create the TSAOS2.CFG file	2-17
Place the TSAOS2 icon in the "Startup" folder	2-18
Protecting Macintosh Workstations	2-18
System Requirements	2-18
Installing the Macintosh TSA	2-19
Creating the Auto Login User	2-21
Rights	2-21
Protecting 3.x Servers	2-22
Protecting 4.x Servers	2-23
Protecting Servers in Different NDS Trees	2-23
Bindery Emulation User Example	2-24
Tuning Your Servers	2-26
PALCHECK.NLM	2-26
Packet Receive Buffers	2-27
SPX Settings	2-27
Directory Cache Buffers	2-28
Cache Buffers	2-29
Short Term Memory Allocation	2-29
Checking Loaded Modules	2-29
Current CLIB Versions	2-30
Current LAN Drivers	2-30
Installing The Software	3-1

Installation Procedures	3-3
Load PALLOADR.NLM	3-3
Running the Install Program	3-4
Select a Server	3-5
Select Installation Directories	3-5
File Copy	3-6
Enter your Serial Number	3-6
Choose the Operation	3-7
Media Library Name	3-7
Auto Login Name and Password	3-8
MultiServer Software	3-9
AutoLoader Software	3-9
Server Memory Above 16MB	3-10
Installing Support for VISTA	3-10
Remote Loading of NLMs	3-10
Environment Check	3-11
Creating the Group	3-11
Selecting Device(s)	3-11
Registration	3-12
Adding Resources to Protect	3-12
Upgrading the Software	3-13
DOS Upgrades	3-13
Select A Server	3-14
Select Installation Directories	3-15
File Copy	3-16
CDB Found	3-16
Serial Number (Upgrades from 2.x only)	3-17
System Control Database Translation	3-17
Library Name	3-17
Server Memory Above 16MB	3-18
AutoLoader Software	3-18
Installing Support for VISTA	3-18
Remote Loading of NLMs	3-18
File History Database Translation	3-19
Translating Volume Records	3-19
Location of Databases	3-19
Environment Check	3-20
Creating the Group	3-20
Completing Your System Installation	3-21
Granting Access to Storage Manager	3-21
Adding Storage Manager to the Desktop	3-21
File Manager for End Users	3-22
Running Storage Manager Executables on a Workstation	3-22
Files that should remain on the server	3-23
Multi Server version and Upgrades	3-24
Complete Registration Card	3-24

Contents

Old Software and Tape Library	3-24
Upgrades and Translating File History Databases	3-24
IBM SCSI Host Adapter Support	3-26
NetFRAME and Tricord Users	3-27
NetFRAME Users	3-27
Tricord Users	3-28
Windows For Workgroup Users	3-29
Installing Additional Software	3-30
Installing AutoLoader Software	3-30
Installing Multi Server Software	3-31
Installing Recall Agents	3-32
PALWINRC.EXE	3-32
PALRECAL.EXE	3-32
PALSMRCL.EXE	3-33
PALRECAL.NLM	3-33
Which Agents Should I Install?	3-33
Macintosh Support	3-33
Windows or DOS Agent	3-34
Installing the Server Recall Agent	3-34
Installing the Workstation Recall Agents	3-35
Loading the Windows Recall Agent	3-37
Manually Installing PALWINRC.EXE	3-37
Loading the DOS Recall Agent	3-38
Installation Notes	A-1
General Hardware Notes	A-2
Adaptec 1540 Host Adapters	A-2
Servers With More than 16MB of Memory	A-2
Host Adapter Bios	A-3
Tape Drive Cleaning	A-3
8500 Tape Drives	A-3
General Software Notes	A-4
Resource Files	A-4
NETWARE.DLL	A-4
Multiple Server Environment	A-4
Read Fault Emulation	A-4
Auto Login user on NetWare 4.x Servers	A-4
Time Zone Environment Variable	A-5
Execute-Only attribute	A-5
DOS TSA and SEND messages	A-5
Search Mode	A-5
Unloading TSAs	A-5
NetWare Upgrades	A-5
Workstation TSA Options	A-6
Index	i-1

About This Guide

This guide contains everything you need to know about installing Storage Manager so you can begin your backups as quickly as possible. In addition to providing instructions for installing the hardware and software, this guide provides registration, technical support, and system requirement information.

The following describes where you can find information about other important topics:

If you want to....	See....
Learn about the program Configure Storage Manager Perform a backup or restore operation Customize your installation	 Administrator's Guide
Review system messages Review some troubleshooting procedures	 Administrator's Reference Guide
Learn about the history of LAN backup Understand the theory behind Storage Manager operations Know details about the databases	 Concepts Guide

Audience

This guide is intended for anyone responsible for installing hardware and software on a Local Area Network. To effectively use this guide, the user should have:

- A thorough understanding of DOS and Windows.
- A good understanding of Novell's NetWare 2.x, 3.x, and/or 4.x.
- Experience installing hardware and software on a Local Area Network.

Registration and Technical Support

Before you begin using Palindrome Storage Manager you should:

- Ensure you received what you ordered.
- Ensure your system matches requirements specified.
- Fill out your registration card.

Registration

Included with your Palindrome purchase is a postage paid, product Registration card. Please take time now to fill out and return your Registration card. You may also fax it to us at (708) 505-7917. Customers in Europe, the Middle East, and Africa may fax it to Seagate Software, Ltd. at +44 (0) 344 360910. If you've misplaced your card, contact Palindrome.

Registration is required for technical support and activation of your warranty. You also receive:

- Details about Palindrome Storage Manager updates
- FREE product information mailings from Palindrome
- FREE quarterly newsletter "Beyond Backup"
- FREE Palindrome Support Encyclopedia

Technical Support

Palindrome support services provide a range of support options to access top quality technical support. Customers using current versions of software, receive free telephone technical support.

All customers can also receive free technical support using the Palindrome BBS or CompuServe.

Your Palindrome Authorized Reseller should provide primary technical support for Palindrome Storage Manager. Palindrome provides ongoing educational and support programs for its resellers. Prior to calling your reseller or Palindrome, be sure to review the system messages for helpful information on diagnosing the problem.

If you need to call Palindrome, be sure to have the following information:

- Palindrome Storage Manager software serial number (found on your registration card and on the Help/About... screen).
- A list of warnings or error messages (error messages are recorded in the PAL_LOG file).
- Complete information about your operating environment including network and workstation information, your backup media (type and drivers), and SCSI adapter.
- Palindrome Storage Manager documentation.

Once you have the necessary information mentioned above, you may contact Palindrome Technical Support at (708) 505-3300 or by fax at (708) 505-3337. Hours are Monday through Friday, 7 a.m. to 7 p.m. CST (except holidays).

Customers in Europe (except Germany), the Middle East, and Africa should contact Seagate Software, Ltd. at +44 (0) 344 360888 or fax +44 (0) 344 360910. Customers in Germany should contact Seagate Software, GmbH at +49 2154916350 or fax +49 2154916370.

For extended hours support, the Palindrome Priority Answers program is available. See the Optional Service Programs section in this chapter for details.

Palindrome support services are subject to Palindrome's terms and conditions, and is subject to change without notice.

Palindrome's Bulletin Board System

Palindrome also provides a Bulletin Board System (BBS) at (708) 505-3336 for the exchange of messages and files between Technical Support, resellers, and users.

To access the BBS, you need a modem and a communications program that allows for setting baud rate, parity, data bits, stop bits, duplex mode, and terminal emulation. Configure your communications program to the following settings:

- Baud Rate to highest supported (1,200-14,400 bps)
- Parity to none
- Data Bits to 8
- Stop Bits to 1
- Duplex to FULL
- Terminal Emulation to ANSI or IBM PC

Once these have been set, instruct your program to dial (708) 505-3336 and follow the instructions on screen.

CompuServe

Interact with other users and Palindrome support engineers. At any ! prompt, type GO PALINDROME to access the Palindrome forum.

For an introductory CompuServe membership kit, call (800) 524-3388, operator 419.

Fast Fax System

Palindrome's Fast Fax system allows you to quickly download literature including:

- Specification and Pricing sheets for all Palindrome products
- Certified device, SCSI drivers, and media lists
- Various technical support documents

To receive something via the Fast Fax system, dial the general Palindrome business number (708) 505-3300, press 7, and follow the instructions. To download a listing of available documents, select image 1000.

Training Programs

Palindrome Corporation provides a number of training programs. For information about current training opportunities and schedules, call Palindrome Customer Service at (708) 505-3300.

Optional Service Programs

Palindrome offers two optional service programs: Priority Answers and Software Maintenance.

Priority Answers

Priority Answers (available only in North America) is Palindrome's optional priority, extended hours telephone support program. This program includes:

- One year of extended hours telephone access to Palindrome's Technical Support Department.
- Guaranteed response within one hour of inquiry.
- Two contact names per company.
- Renewable terms.
- Extended technical support seven days a week including holidays.

Software Maintenance

Palindrome's Software Maintenance program provides free software upgrades (and therefore free technical support) whenever a major software advancement is released. Subscribers contract Palindrome for a one-year upgrade program per software license. This service includes:

- Unlimited number of upgrades for one year at no charge.
- Free telephone technical support.
- Software and documentation shipped automatically when upgrade is released.
- Notification of product updates.
- Volume discounts available.

README File

The README.TXT file contains valuable late-breaking information not contained in the documentation. To view the README file, double-click on the README icon in your Palindrome group.

Contents

Chapter 1

Installing The Hardware

Overview

This chapter provides detailed procedures for installing:

- SCSI host adapters
- backup devices and termination blocks
- SCSI Device Drivers

If you have already installed your hardware, proceed to Chapter 2.

Installing The Hardware

Introduction

Storage Manager software operates in a server on a local area network. The software supports a wide variety of third-party 4mm DDS DAT, DLT, 8mm tape drives, and optical disk drives. All supported devices communicate through a SCSI host adapter.

Supported Backup Devices

As a general rule, Storage Manager's support of tape and optical drives is determined by the firmware revision of that drive. (Note that the firmware revision is important when determining support for a drive since features and functionality may vary from one revision to the next.)

Supported SCSI Host Adapters

Storage Manager supports host adapters for Micro-Channel Architecture (MCA), EISA, and ISA/AT-style computers, but configuration options may vary depending upon the server used.

Autoloader Support

Palindrome Autoloader and Multi-Drive Autoloader software packages (purchased separately) allow you to use a tape or optical robotic librarian to completely integrate Storage Manager operations for all backup and restore tasks.



TIP: For a list of the most recent certified backup devices and host adapters, download **CDL40.ASC** from the Palindrome BBS. For a list of certified device drivers, download **TSTDVR.ASC**.

Installing the SCSI Host Adapter and Backup Device

The following topics are covered in this section:

- installing the SCSI host adapter
- installing the backup device and SCSI cable
- terminating the SCSI bus
- installing and configuring the host adapter driver software

Requirements

To properly install your backup device, you should have the following:

- A Storage Manager supported backup device, host adapter, and driver software appropriate for your type of machine.
- A SCSI connector cable.
- A termination block (unless you are certain that your drive is already internally terminated).
- A static-free work environment.
- The appropriate tools for accessing the adapter slots in your computer. (Typically a phillips and flat-head screwdriver are sufficient.)

Installing the SCSI Host Adapter

1. Turn off the computer and all external peripherals such as printers or modems.
2. Disconnect the power cord from the computer.
3. Remove the computer cover using the instructions provided with your computer. Be sure to touch the computer's metal frame to discharge any static electricity you may have built up.
4. Choose an appropriate, unused expansion slot in the computer.
5. Each expansion slot has a corresponding opening on the back of your computer that is covered. Remove this slot cover and the single screw holding the slot cover in place.



NOTE: Unless your backup device is connected to a host adapter with an attached bootable hard disk, Palindrome recommends disabling the on-board BIOS on the host adapter. Palindrome does not require the BIOS enabled on any host adapters. Bootable hard disks on the same SCSI bus require the BIOS to be enabled however.

Installing The Hardware

6. Align the host adapter with the expansion slot ensuring that the mounting bracket aligns with the slot opening. Press the host adapter firmly (but gently) into the expansion slot until you feel that it is securely seated. Secure the mounting bracket with the slot cover screw (removed earlier).

Installing the Host Adapter



WARNING: Failure to mount your adapter correctly could cause numerous hardware errors and may result in the adapter not being recognized by your system.

7. Replace the cover on the computer but do not secure it yet. Secure it only after you are sure the host adapter has been installed properly and does not conflict with any other adapters you have installed in your machine.

Servers With More Than 16MB of Memory

If you have a server with more than 16MB of memory (and you are using a SCSI adapter that uses on-line DMA or AT Bus Mastering and therefore cannot access memory above 16MB [for example an Adaptec 1540]), you must use Palindrome's SCSI Driver (PALSDRV.NLM) with the ABOVE16MEG switch. See page 2-8 for more information.

Installing a Single Backup Device

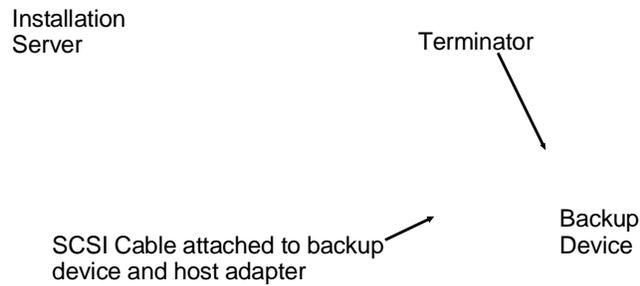
This section provides instructions on installing a single backup device. If you are installing multiple backup devices, proceed to the section, *Daisy Chaining Devices*, beginning on page 1-9.



WARNING: Do not connect the power cord at this time. Doing so may damage circuit board components when the SCSI cables are connected between the computer and the backup device(s).

Installing The Hardware

1. Locate the SCSI cable shipped with the SCSI host adapter and plug one end into the host adapter at the back of the computer.
2. Plug the other end of the cable into either one of the 50-pin connectors on the back panel of the backup device enclosure.
3. Install the termination block on the other open 50-pin connector on the back of the backup device (see page 1-12 for more information on SCSI Bus Termination).
4. Connect the power cord to the backup device and plug it in.
5. Reconnect all of the peripherals and the power cord to the computer.



Installing a Single Backup Device



NOTE: If you have an **internal** backup device, follow the installation instructions that came with the device.

Setting the SCSI Address

If your host adapter is being used for other devices, be sure your SCSI address on your backup device is different than the SCSI address on your other device(s). Zero is the highest priority; 7 is the lowest.

On most backup devices the SCSI address is set by incrementing an external dip switch on the back panel of the drive.

- Press the button labeled “+” to increment the SCSI address on the dip switch or the button labeled “-” to decrement it. (If using a single device on the SCSI bus, it is unlikely you will have to set the SCSI address.)

AutoLoader Setup

In an autoloader, the backup device and robotic arm each must have a unique SCSI ID.

If you are using a 4mm ADIC or Palindrome autoloader (such as the Palindrome FAST 2000C Turbo AutoLoader), the drive’s SCSI ID must be set at 0, 1, or 2 to avoid conflicts with the robotic arm. Also be sure that the drive and autoloader are set to SCSI IDs other than the one used by the host adapter (which is typically 7).

AutoLoaders with Multiple Devices

If your autoloader has more than one backup device, the backup devices’ SCSI IDs must be set to the numbers immediately following the robotic arm’s SCSI ID. For example, if the robotic arm SCSI ID is set to 2, the first drive must be set to 3, the second drive must be set to 4, etc.

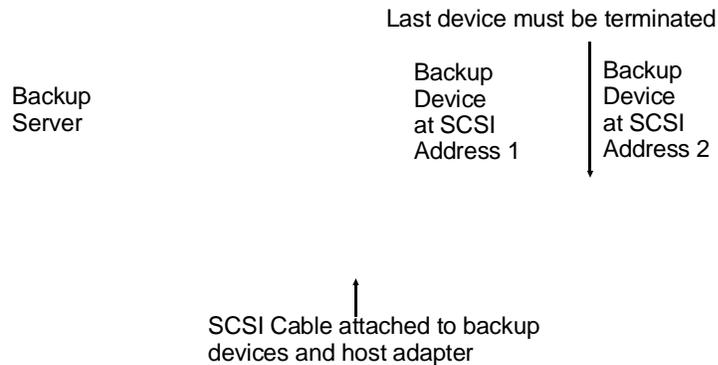
Daisy Chaining Devices

Storage Manager allows you to use multiple devices for backup and restore operations. To use these devices you may connect them to separate host adapters or daisy chain devices together off the same host adapter.

Installing The Hardware

To daisy chain multiple backup devices, you will need to have SCSI cables to attach to your adapter and to each of your backup devices, and one termination block to terminate the last device on the bus.

1. Locate the SCSI cable (matching the connector on the SCSI host adapter) and plug it into the host adapter connector at the back of the computer.
2. Plug the other end of the cable into *either* of the 50-pin connectors on the back panel of one of the backup devices.
3. From this first backup device plug another SCSI cable into the remaining open connector and attach it to second backup device.
4. Continue attaching cables between backup devices.
5. Terminate the **last** backup device using a termination block on the open connector. (See Page 1-12 for details on SCSI Bus Termination.)



Daisy Chaining Multiple Backup Devices

6. Connect the power cords to all of the backup devices and plug them in.
7. Reconnect all of the peripherals and the power cord to the computer.

Setting the SCSI Address

To ensure your multiple devices will work correctly with Storage Manager, you must set a **unique** SCSI address for each device.

The SCSI address is set by either jumpers or dip switches on the backup device. Once configured, the assigned SCSI address will be “learned” by Storage Manager when scanning the SCSI bus during device configuration.

On most backup devices the SCSI address is set by incrementing an external dip switch on the back panel of the drive.

- ▶ Press the button labeled “+” to increment the ID number or the button labeled “-” to decrement the ID number. Choose a different SCSI address for each backup device you are using. Zero is the highest priority; 7 is the lowest.



NOTE: Once you have configured devices in Storage Manager, it assumes those devices will always be at that location (address). If you change the addresses on your backup devices, be sure to reconfigure your device using Device Manager.

Backup and Hard Disk Devices

Palindrome recommends that you keep your backup devices and hard disks on separate SCSI buses (i.e., connect your backup device to a separate host adapter).

Customers have found that backup devices are easier to maintain when kept on a separate SCSI bus.

SCSI Bus Termination

Why Must it Be Terminated?

SCSI is the acronym for Small Computer System Interface. It is a specification designed by ANSI (American National Standard for Information Systems). It provides the mechanical, electrical, and functional requirements for a small computer input/output bus and command sets for peripheral device types commonly used with small computers.

SCSI is an eight-bit, parallel I/O bus that provides a host computer with device independence within a class of devices. This means that different disk drives, backup devices, printers and communications devices can be added to a host computer without major modifications to the system hardware or software.

The first (usually the host adapter) and last device on the SCSI bus must be terminated. Terminators match electrical line impedances and effectively eliminate any appreciable signal reflection. Unterminated bus situations can corrupt both tape backup device commands and data being transferred between the computer and backup devices. So, for a system that has only a SCSI host adapter and a tape drive, both must be terminated.



NOTE: To minimize signal reflections, cables of different impedances should not be used on the same bus.

Also, the length of your SCSI bus cable should not exceed 6 meters (19 feet). Remember to include the internal cable length in autoloaders as part of your total SCSI bus cable length.

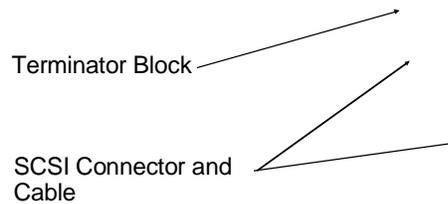
Installing the Termination Block

Most internal backup devices come with terminators factory installed. Since these drives are already properly terminated, no further action is required.

External backup devices typically *do not* come with terminators factory installed and require an external termination block to properly terminate the SCSI bus. The SCSI termination block should have been provided with your hardware.

Before installing the Storage Manager software, you must ensure that the SCSI bus is properly terminated. The SCSI bus must be terminated at both ends for proper backup device operation. Since the SCSI host adapter is shipped with terminating resistors already installed, you simply need to terminate the SCSI bus at the backup device.

To install the termination block, attach it to the unused 50-pin SCSI connector on the back panel of the backup device (see illustration below). The SCSI cable is then attached to the other remaining SCSI connector.



Backup Device, SCSI Cable, and Termination Block

After installing the software, if you see messages indicating that Storage Manager cannot communicate with the drive or occasional read-write errors, remove the termination block.

The intermittent messages may be the result of “double termination” if your drive is already internally terminated. Removing the external termination block may leave the drive properly terminated.



NOTE: If you have more than one peripheral on the same SCSI bus, only the host adapter and last device should be terminated. The SCSI bus should never have more than two terminators installed.

Installing the SCSI Host Adapter Driver

The following are general instructions for installing your host adapter’s device driver and ASPI module. More detailed instructions can be found with your host adapter’s documentation.



NOTE: Device drivers for NetFRAME and Tricord servers and IBM PS2 SCSI host adapters, are copied to the installation directory during installation of the client software. See page 3-26 for information on installing these drivers.

To install the device driver and ASPI module

1. Copy the device driver from the diskette to the SYS:\SYSTEM directory, using the DOS COPY command. For example, from the DOS prompt type:

COPY B:\<DEVICE DRIVER> MYSERV\SYS:\SYSTEM

where B: contains the software diskette your driver is on.

2. Load the device driver software. For example, from the server console prompt type:

LOAD AHA1740 (or equivalent)
3. Edit your AUTOEXEC.NCF file so that it contains the LOAD command(s) described above.
4. After you have updated your AUTOEXEC.NCF file, save the changes so that the driver(s) will be loaded automatically when your server boots.

For EISA and MCA machines, you must also install configuration files and initialization parameters, respectively.

Hardware Installation Notes

Hardware Installation Checklist

Before powering your system, please be sure the following items are completed and checked:

- The host adapter is firmly seated in the host computer's adapter slot.
- SCSI devices are properly installed and cabled.
- The correct SCSI addresses are selected on all attached SCSI devices. Be sure there is a unique address for each device.
- The correct operating modes are selected on all attached SCSI devices (as described in the documentation supplied with the SCSI device).
- Be sure both ends of the SCSI bus are terminated. Use the termination block provided with your hardware (unless you know the drive is already internally terminated) to terminate the backup device.

After installing your backup device and host adapter, be sure to turn on your backup devices before powering up your server.

SCSISCAN.NLM

To ensure the backup device is properly installed, copy SCSISCAN.NLM from the \TOOLS directory on the last Storage Manager installation diskette to your server and run it from your server console prompt.

SCSISCAN displays all SCSI devices on your SCSI bus. If all of your devices do not display, use the checklist above to ensure you have installed your backup device properly.

8500 8mm Tape Drives

For any FAST 5000 (or other Exabyte 8500) 8mm tape drive, the default transfer mode is asynchronous; meanwhile the default transfer mode of the many host adapters is synchronous.

This may cause a conflict if the tape drive is ever disconnected or powered off and then powered on again while the server is still running since the tape drive will default to asynchronous transfer and the adapter will fail to renegotiate transfer mode. The next tape operation will then fail and lock the workstation or server console screen.

If the tape operation is hanging, you must down the workstation or the server. To avoid potential conflicts, always power on the tape drive prior to powering on your workstation or server.

8200 8mm Tape Drives

Due to its older technology, standard 8200 8mm tape drives lack positioning commands (used by SMS) that are available in newer tape drives. If using the standard 8200 tape drive, you will notice a performance impact, especially when recovering from error conditions.

Upgrading Devices

If you upgrade or change your backup device(s), be sure to configure the new device(s) using Device Manager. Storage Manager recognizes the device after scanning the SCSI bus.

If a new device also entails a media type change (e.g., upgrading from 4mm to 8mm), you may want to retire all media sets associated backup device or change the Library ID. This procedure allows you create a new media library and retires the previous media type.

You can still restore data on the older media type by keeping the older device configured. To only restore data from the older device, set the operational priorities in Device Manager so the device is used as a restore only device.

Installing The Hardware

Chapter 2

Server Setup and TSAs

Overview

This chapter explains how to:

- update servers with the most recent NetWare modules
- load TSAs on servers and workstations
- create the auto login user (if necessary)
- tune your servers to ensure optimal performance

Server Setup and TSAs

Preparing Your Server(s)

Prior to installing Storage Manager, perform the following steps during off hours or when there is little activity on your server(s).

The following steps are described in detail below.

Step	Description	See page
Determine where to install Storage Manager.	Determine the server on which you want to install Storage Manager.	2-4
Update Servers	Run SETUP.NLM to install the latest TSAs and NetWare modules on each of your servers.	2-5
Load TSAs	On each server you are protecting, load the appropriate TSAs.	2-9
Create the auto login user	Storage Manager uses the auto login user to access remote servers and the Storage Manager job queue. During installation, the default auto login user is the person installing the software. If you want to use a different user as the auto login user, you should create the user prior to installing the software if the user doesn't already exist.	2-21
Install Workstation TSAs	If you want to protect workstations, install the appropriate TSAs on each workstation.	2-11
Optimize Server Settings	Check your server environment for proper settings or continue to Chapter 3 to install Storage Manager.	2-26

Workstation/Server Requirements

- Workstations (at a minimum) must be able to run Windows 3.1 or 3.11 in enhanced mode (at least a 386sx or greater with 4MB RAM). Palindrome recommends a 486-based PC with 8MB or RAM.
- Color monitor is recommended but not required with Super VGA resolution or better.
- The latest versions of NetWare's IPX (or IPXODI) and NETX or the NetWare DOS Requestor (VLM). VLMs are required to access Storage Manager installations on NetWare 4.x servers and are also recommended over NETX.
- At least 8MB of disk space for the Windows executables and DLLs and 3MB disk space on your SYS: volume for NLMs.
- Server memory should be at least 16MB.

Determine Where To Install Storage Manager

You can install Storage Manager on a NetWare 3.x, 4.02, or 4.1 server (NetWare 4.01 is not a supported version). When you install Storage Manager a job queue is created that stores all backup and restore requests.

When you install Storage Manager on a NetWare 4.x server, an NDS connection is required by NetWare if you want to submit jobs to the job queue. Therefore, to access Storage Manager installations on NetWare 4.x servers, you must log into the tree with an NDS connection.

This may be especially important for end users that use Palindrome's File Manager (PALFILER.EXE). Users must be logged in with NDS connections to submit jobs to the Storage Manager queue on 4.x servers.

Upgrades

Prior to running SETUP.NLM, be sure to unload any currently loaded Palindrome NLMs such as PNASM, PALSDRV, PALALDRV, etc. If you are using Palindrome's File Manager, be sure there are no jobs in the queue before you unload the queue server (PALQSRVR.NLM).

During installation of the client software, all files from previous Palindrome installations are deleted.

Running SETUP.NLM

SETUP.NLM automatically copies Palindrome NCF files, updated TSAs, and newer NetWare modules to each server you are protecting. You should run SETUP.NLM on all servers that you want to protect prior to installing Storage Manager software.

Because you may have to down your server after files are updated on your server, Palindrome recommends running SETUP.NLM during off hours.

To run SETUP.NLM

1. Insert server preparation diskette #1 into the floppy drive of your server.
2. At the server console prompt, type:

LOAD A:SETUP

(where A: is the floppy drive your diskette is in).

The setup program asks if the server you are running SETUP.NLM on is your installation server. Answer "YES" if this is the server where you will install Storage Manager or currently have it installed.

You are then prompted whether you want to install the server recall agent (PALRECAL.NLM) on the server. The server recall agent automatically submits restore jobs to the job queue when users attempt to open migrated phantom files. Choose YES at the prompt if you want to automatically load the recall agent on the server.

Server Setup and TSAs

The program then checks what modules you have loaded and copies newer Novell recommended versions of the following modules to your server (if necessary):

A3112.NLM	SPXMSFIX.NLM
AFTER311.NLM	SPXNSFIX.NLM
CLIB.NLM	SPXS.NLM
IPXS.NLM	STREAMS.NLM
MATHLIB.NLM	TLI.NLM
MATHLIBC.NLM	TSA311.NLM
SMDR.NLM	TSADOS.NLM
SPXDDFIX.NLM	TSAPROXY.NLM
SPXFIX2.NLM	WSMAN.NLM
SPXFSFIX.NLM	XMDFIX.NLM
SPXLISFX.NLM	

A list of files that were updated displays after the files have been copied. Files that are updated are renamed with a file extension of "PAL".

Down the Server

After the install program has finished copying the necessary files, you may want to down your server to ensure any modules (such as CLIB.NLM) that were updated are loaded on your server.

Loading PALSTART.NCF

If you don't down your server(s), you should run PALSTART.NCF from the server console prompt to load the necessary Palindrome modules.

PALSTART.NCF contains statements to automatically load required files such as your device driver, Palindrome NLMs (including the server recall agent), and Target Service Agents. SETUP.NLM copies PALSTART.NCF to the SYS:\SYSTEM directory of each server that you run SETUP.NLM on.

By adding the PALSTART.NCF statement to your AUTOEXEC.NCF file on each server, you can be sure required NLMs and TSAs load whenever you reboot your server.

Before loading the file, review the file and edit it as necessary for your particular environment.

PALSTART.NCF Example

Below is an overview of the statements contained in PALSTART.NCF. Note that on remote servers, PALSTART.NCF only loads TSAs and the server recall agent (if selected). All other statements apply only to the installation server.

LOAD AHA1740.DSK port=330

Sample statement for loading host adapter device driver. You must load the device driver for your host adapter. Edit the statement to include your device driver's syntax.

LOAD PALLOADR

PALLOADR.NLM is used by the Windows install program to automatically load NLMs on your installation server during installation of the client software. This statement is removed from the PALSTART.NCF file after installing the client software.

LOAD PALJSRVR

PALJSRVR.NLM (the job server) services the Storage Manager job queue and must be loaded to process any submitted jobs.

LOAD PALMEDIA

PALMEDIA.NLM scans the SCSI bus and keeps track of currently configured devices and what media is loaded in each device.

LOAD PALSDRV ABOVE16MEG

If you have a server with more than 16MB of memory (and you are using a SCSI adapter that uses on-line DMA or AT Bus Mastering and therefore cannot access memory above 16MB [for example an Adaptec 1540]), you must use Palindrome's SCSI Driver (PALSDRV.NLM) with the ABOVE16MEG switch.



NOTE: PALSDRV ABOVE16MEG is not a substitute for the ABOVE16 option that you may use when loading your host adapter's device driver.

Also, when using PALSDRV ABOVE16MEG you may have to increase the number of buffers in the SET RESERVE BUFFERS BELOW 16 MEG setting on your server. See page A-3 for more information.

LOAD TSAXXX

This statement loads the appropriate TSAs for your server (for example, if your server is NetWare 4.1 this statement reads:

LOAD TSA410

LOAD PALRMON

This statement loads the NLM responsible for monitoring volumes processing recall requests.

LOAD PALAGENT

This statement loads an agent that allows Palindrome's Visual Storage Administrator Agent (VISTA) to monitor the installation.

LOAD PALRECAL

This statement loads the server-based recall agent used to demigrate phantom files on the server.

Installing Target Service Agents

What is a Target Service Agent?

For more information on SMS architecture and TSAs, see the *Concepts Guide*.

Target Service Agents (TSAs) provide Storage Manager access to servers and workstations within Novell's SMS architecture. TSAs handle requests by Storage Manager to backup and restore client data.

You must install TSAs on every server and workstation you want to protect. Most workstations also require a TSA module on a server.

The TSA on the server manages communication between the server and the workstation and keeps configuration information about each workstation connected to it. Once loaded, the servers and workstations can be backed up by Storage Manager.



NOTE: Workstations must be turned on and the proper TSAs must be loaded for Storage Manager to access them but workstations do not have to be logged in to the network.

Installing the Target Service Agents

TSAs are automatically copied to each server when you run SETUP.NLM from the server preparation diskette (see page 2-5) and are loaded when you run PALSTART.NCF.

Before loading TSAs manually on your servers and workstations, be sure to unload any previous versions. Also, use only TSAs provided by Palindrome either on the diskette or via the Palindrome BBS.

The procedures below assume you have copied the appropriate TSAs (and SMDR.NLM file) to each server using the SETUP.NLM program or you have manually copied them from the server preparation diskette.

To Protect Servers

Load the following TSAs according to what type of server you want Storage Manager to protect.

To Protect...	Type at the server console:
NetWare 4.1	LOAD TSA410 LOAD TSANDS**
NetWare 4.02	LOAD TSA400 LOAD TSANDS**
NetWare 3.12	LOAD TSA312
NetWare 3.11	LOAD TSA311

Note that SMDR.NLM file is autoloaded when you load the TSA on a server.

Protecting NetWare Directory Services**

If protecting NetWare Directory Services, you only need to load the NDS TSA (TSANDS.NLM) once per tree. In other words, if you have multiple servers in the same tree, you only need to load the TSA on a single server in that tree for NDS to be protected.

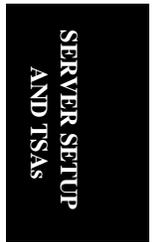
If you have multiple servers, Palindrome strongly recommends that you use NetWare's Directory Services Replication feature for increased protection of NDS.

To Protect Workstations

If you do not need to install workstation TSAs, go to page 2-21 to learn how to create the auto login user.

To protect DOS/Windows, OS/2, and MAC workstations, you must load a TSA on the server and on the workstation.

To Protect...	Type at the server console...	Load at the workstation...
DOS/Windows workstations	LOAD TSADOS (autoloads SMDR.NLM and WSMAN.NLM)	TSASMS.COM*
OS/2 workstations	LOAD TSAPROXY (autoloads SMDR.NLM)	TSAOS2 .EXE*
MAC workstations	LOAD TSAPROXY (autoloads SMDR.NLM)	MACTSA



Prior to loading the DOS and OS2 TSAs on the workstation you must create the appropriate configuration file. See the procedures below to create the NET.CFG file at the DOS/Windows workstation and the TSAOS2.CFG file on OS2 workstations.

Copying TSAs

Workstation TSAs can be found on the Storage Manager preparation diskette #3 in the \DOS, \OS2, and \MAC directories respectively. You may want to copy the files to your network so you can access them from each workstation prior to loading them.

After configuring the TSAs and installing the client software, you can add your workstations to the Protected Resource List (in Resource Manager) so that they can be backed up.

Protecting DOS and Windows Workstations

TSASMS.COM (loaded on the workstation) and TSADOS.NLM (loaded on the server) allows Storage Manager to protect hard disks on DOS and Windows-based workstations.



NOTE: The DOS TSA (TSADOS.NLM) loaded on the server manages a maximum of 100 clients. If you have more than 100 DOS/Windows clients, load TSADOS.NLM on multiple servers. When installing the workstation TSA, specify the appropriate server.

If you are not upgrading your TSAs, skip to *Installing the DOS/Windows Workstation TSA* below.

Removing Older Versions

In previous versions of the DOS TSA, the workstation name was stored in the Bindery or NDS. New versions of the DOS TSA store the workstation name in WSMAN.NLM.

Prior to removing your TSAs from your workstations, you should remove the workstation name from the Bindery or NDS. To remove the workstation name, type:

TSASMS /U
at each workstation.

If you previously removed the TSA from the workstation without removing it from the Bindery or NDS, a Novell utility SMSDBOBJ.NLM allows you to delete multiple workstation names. You can obtain SMSDBOBJ.NLM from the Palindrome BBS or from NetWire on CompuServe.

Installing the DOS/Windows Workstation TSA

TSASMS.COM (located in the \DOS directory on server preparation diskette #2) must be loaded on each DOS or Windows workstation you want to protect. Prior to loading TSASMS, be sure to load TSADOS.NLM on the server.

When loading TSASMS.COM, you must first create a NET.CFG file (or use command line parameters) to specify:

- the name of the server you want the workstation to register to
- the drives to protect on the workstation
- the name of the workstation
- the security option.



NOTE: When backing up workstations, Palindrome recommends disabling broadcast messages (using NetWare's CASTOFF ALL command) since broadcast messages can interrupt backup operations.

NET.CFG

TSASMS.COM uses the NET.CFG file to load parameters such as the workstation name, the server to register to, etc. NET.CFG is also used by Novell's DOS requestor (VLM.EXE).

To modify the NET.CFG file

1. Create (or edit an existing) NET.CFG file using a DOS editor to add the required parameters as described below. The NET.CFG file must be located in the root directory on your workstation or in the same directory as TSASMS.COM.



NOTE: Verify that SHELL.CFG does not exist in the same directory as your NET.CFG file. TSASMS.COM will use SHELL.CFG instead of NET.CFG if it finds it and will fail.

2. For each workstation, enter parameters similar to the following:

NetWare DOS TSA

TSA Server Name = <Myserver>
Workstation Name = <Myworkstation>
Password = (See below)
Disk Buffers = 30
Stack Size = 2048
Drives = C

Sample NET.CFG File

Link Driver 3C5X9

Port 300

Int 10

Frame Ethernet_ii

NetWare DOS Requester

NetWare Protocol = NDS BIND

Preferred Server = SERVER1

Search Mode = 0

Show Dots = ON

NetWare DOS TSA

TSA Server Name = SERVER1

Workstation Name = JSMITHS_PC

Password =

Disk Buffers = 30

Stack Size = 2048

Drives = C

To load the DOS TSA

1. After adding the appropriate parameters to the NET.CFG file, from the DOS prompt type:

TSASMS

to load the TSA.

2. Add TSASMS to the AUTOEXEC.BAT or STARTNET.BAT files, so that the TSA is automatically loaded whenever the workstation boots.

For more information on TSASMS parameters, see Appendix A.



NOTE: When adding or renaming any workstations, be sure that these workstations are logged on to the network when you modify the Protected Resource List.

Assigning Passwords To Workstations

Storage Manager allows you to configure a separate password for each target service (workstation or server) you are protecting or use Trust mode (no password is required). Adding a password is not required by Storage Manager but you may find it useful for security purposes.

Configuring Passwords

If you configure a password when loading the TSA on the workstation, you will be prompted for each workstation's password when adding the workstation to the Protected Resource List. Once you identify the password, Storage Manager will not prompt for it again unless you change it at the workstation.

Trust Mode

You can enable trust mode by loading TSASMS with the command line option **/T**. See page A-6 for more information on loading TSASMS using command line options.

On NetWare 3.x servers, trust mode automatically allows the auto login user (defined during installation of Storage Manager) to back up the workstation's local drives.

On NetWare 4.x servers, the user ADMIN is the only user that can access the workstation when using trust mode (you may want to configure a password instead of using trust mode on 4.x servers). When adding the workstation to the Protected Resource List, you must type in the ADMIN user and password.

Also on NetWare 4.x servers, you must run bindery emulation wherever TSADOS.NLM is loaded and the bindery context must be set to the container where ADMIN resides.

Protecting OS/2 Workstations

TSAOS2.EXE (loaded on the workstation) and TSAPROXY.NLM (loaded on the server) allows Storage Manager to protect hard disks on OS/2-based workstations.

TSAOS2.EXE is automatically copied to the workstation's hard disk when you install the Novell OS/2 Requestor, and an icon for the TSA is placed in the Novell group on your desktop. Use TSAOS2.EXE (with TSARC.DLL and TSAOS2.HLP) on server preparation diskette #2, however, to ensure you have the correct version to use with Storage Manager.

If the TSA icon does not appear on your desktop, create it using the Template Folder specifying the correct path to TSAOS2.EXE.



NOTE: Palindrome recommends using version 2.01 (or greater) of the Novell OS/2 Requestor.

TSAOS2.EXE allows you to specify:

- the name of the server you want the workstation to register to
- the drives to protect on the workstation
- the name of the workstation
- the security option.

TSAOS2.EXE can be loaded automatically or manually. Palindrome recommends starting the program automatically (using the "Startup" folder) so that it loads each time a user boots the workstation.

Loading TSAOS2.EXE Automatically

To configure the TSAOS2.EXE program to start up automatically each time the workstation is booted, you must:

- Set up the TSAOS2.CFG file.

- Place the TSAOS2 icon in the “Startup” folder.



NOTE: Before continuing, be sure that the TSAPROXY.NLM is loaded on the primary server (using the MODULES command at the server) and the NetWare Requestor for OS/2 (version 2.01 or higher) is installed on the OS/2 workstation(s) you plan to protect. (OS/2 workstations should be running OS/2 2.0 or higher.)

Create the TSAOS2.CFG file

You can create a text file called TSAOS2.CFG to store settings for the TSAOS2.EXE program. These settings are automatically read by the TSAOS2.EXE program each time it starts up.

If you load TSAOS2.EXE without creating the TSAOS2.CFG first, a pop-up window displays where you can define the parameters that the TSA uses when loading.

After creating this file, save it to the directory where TSAOS2.EXE is located (usually \NETWARE). Below is an example of what your TSAOS2.CFG may look like and an explanation of each option. Note that the TSAOS2.CFG file is not case-sensitive.

TSAOS2.CFG Example

WSName	JOHN_OS2
ServerName	FS1
UserName	JSMITH [PASSWORD]
AutoRegister	ON
TempFilesDir	c:\temp

Storage Manager requires unique workstation names. When adding workstation resources, no two workstation names can be identical (even if the workstations are protected by different TSAs).

For more information on TSAOS2 parameters, see Appendix A.

Place the TSAOS2 icon in the “Startup” folder

Complete the following steps to place the TSAOS2 icon in the “Startup” folder.

1. Open the “OS/2 System” folder on the desktop. The “OS/2 System” window appears.
2. Open the “Startup” folder from the “OS/2 System” window. The “Startup” window appears.
3. Without closing the “Startup” window, open the “Novell” group on your desktop. The “Novell” window appears.
4. Create a Shadow, or Copy the NetWare TSA icon from the “Novell” window into the “Startup” folder.

Whenever the machine is rebooted, the TSAOS2 program will start automatically when your TSAOS2.CFG file is properly configured.

Protecting Macintosh Workstations

The Macintosh TSA allows Storage Manager to protect Macintosh clients. The TSA and preferences program is compressed in the file MACTSA.EXE found on server preparation diskette #3.

System Requirements

- NetWare for Macintosh installed using MACIPX version 1.2 or higher.
- The Macintosh TSA requires a Macintosh 68020 machine or higher running System 7 or higher.
- Novell recommends using the MAC TSA with a NetWare 3.12 or 4.1 server.

Installing the Macintosh TSA



NOTE: The following procedures assume that NetWare for Macintosh has been installed. Prior to installing the Macintosh TSA be sure to install NetWare for Macintosh as described in your NetWare documentation.

The Macintosh TSA requires TSAPROXY.NLM loaded on the server where you have installed NetWare for Macintosh. TSAPROXY is automatically copied to each server that you run SETUP.NLM on.

If you did not run SETUP.NLM on the server where you have installed NetWare for Macintosh, run it now (see page 2-5).

To install the Macintosh TSA

1. At the server console prompt of the server, type:
LOAD TSAPROXY
2. From a DOS workstation, copy MACTSA.EXE from the \MAC directory on server preparation diskette #3 to a NetWare volume that has the MAC namespace loaded.
3. From the NetWare volume and directory that you copied the files to, type:
MACTSA
to decompress the TSA. TSA.EXE is extracted.
4. Type **TSA.EXE** to extract TSA.SEA. At a Macintosh workstation, copy TSA.SEA from the NetWare volume to the Macintosh hard disk.
5. Double click on TSA.SEA on the Macintosh hard disk. The MACTSA and MACTSAPR files are created on your desktop.
6. Double-click on the Macintosh TSA preferences icon. Type in the name of the NetWare host server (where NetWare for Macintosh is installed and TSAPROXY is loaded).
7. Type in a user name and password Storage Manager will use to access the TSA. When finished, select *Hide MACTSA Prefs*.

Server Setup and TSAs

8. Double-click on the Macintosh TSA icon to publish the workstation. You can now add the Macintosh workstation to the Protected Resource List in Storage Manager.



TIP:

You may want to place the MAC TSA application in your startup folder so that it loads automatically.

Creating the Auto Login User

To access servers and the Storage Manager job queue, Storage Manager relies on an auto login user. Using a single auto login user to attach to remote servers provides maximum security for backup and restore operations.



NOTE: If you have a valid user already defined that can be used as the auto login user, go to page 2-26 to review Tuning Your Servers or to Chapter 3 to begin installing the software.

During installation of the software, you will be prompted to specify a single auto login user (either as a Bindery user or as an NDS user) that is stored in the Storage Manager System Control Database. When you add resources to protect, if the auto login user doesn't exist on those servers (or in the NDS tree), you will be prompted to specify a user and password to access those resources.

By default, the user installing the software displays as the auto login user name. You can use this user or any other existing user that has supervisor-equivalent rights to each server you want to protect.

Rights

In NetWare 3.x environments, the auto login user must exist on every server and have supervisor-equivalent rights.

In NetWare 4.x environments, the user only needs to exist once in the tree and should have supervisor object rights to the **each server** object you want to protect and to **the container** that the installation server is in.

If backing up the NDS tree, the auto login user needs supervisor object rights to the root object.



WARNING: Do not place account restrictions on the auto login user (for example, do not limit concurrent connections).

Protecting 3.x Servers

On each 3.x server you want to protect

- Create the auto login user using NetWare's Name Service NETCON or SYSCON utility.
- At each remote server, grant the user supervisor-equivalent rights and give the user a password to keep your network secure.

Protecting 4.x Servers

To protect 4.x servers in the same tree

- Create the auto login user using NWADMIN.
- Give the user supervisor-object rights to all servers you want to protect, supervisor object rights to the container the installation server is in, and write rights to the root object.

Protecting Servers in Different NDS Trees



NOTE: If you are not backing up servers in multiple trees, go to page 2-26 to review *Tuning Your Servers* or to Chapter 3 to begin installing the software.

Logging into NDS trees outside of the installation server's tree requires Bindery emulation. (Bindery emulation allows applications that relied on the Bindery in 3.x versions of NetWare to work with NetWare 4.x and is also required for attaching to multiple trees.)

When you install a NetWare 4.x server into the NDS tree, a NetWare server object is created in the specified container object. By default, Bindery emulation is activated and the server's Bindery context is set for that container object. When protecting servers that are not in your installation server's NDS tree, you should create the auto login user in the container object where Bindery emulation is set for each server.

To add the auto login user to the remote NDS tree

- Determine the default Bindery context for the remote server. From the server console prompt, type:

SET BINDERY CONTEXT

the server displays:

Bindery Context: O=(Container Name of current Bindery context)

- If the Bindery context does not show the container object that the server resides in, change it using the “**Set Bindery Context =**” command at the server console prompt and add the command to your AUTOEXEC.NCF file.
- Use NWADMIN to create the auto login user in the same container object where your server is located in the NDS tree.
- Give the user supervisor-object rights to all servers you want to protect.

Bindery Emulation User Example

Assume you have a server named **SERVER1** in an NDS tree part of an Organizational Unit (Container Object) named **SALES** that you want to protect with Storage Manager installed on a server in a different NDS tree.

The Organizational Unit **SALES** exists under an Organization named **ACME**. The auto login user should be created in

OU=SALES.O=ACME.

Therefore, when viewing the Bindery context for SERVER1 it should read: Bindery CONTEXT: OU=SALES.O=ACME

To set the Bindery context, use the following command:
SET Bindery CONTEXT =OU=SALES.O=ACME

If the Bindery context cannot be set, ensure that a read-write or master replica of the partition that contains OU=SALES.O=ACME is located on server SERVER1. If it does not, use Partition Manager to place a copy of the partition on the server.

Tuning Your Servers

This section provides instructions on using PALCHECK.NLM and how to modify settings on your server to enhance server performance. These settings include:

- Packet Receive Buffers
- SPX parameters
- Directory Cache Buffers
- Reserving Buffers Below 16MB
- Cache Buffers
- Short Term Memory Allocation

PALCHECK.NLM

PALCHECK.NLM is a Palindrome utility that examines your environment and makes recommendations based on:

- server memory
- loaded modules
- server settings

PALCHECK can be used as a troubleshooting tool or as a preventive maintenance utility to ensure your servers are properly configured.

To run PALCHECK

- At the server console prompt of each server you are protecting, type:

LOAD PALCHECK

PALCHECK displays recommendations about modules and system settings it finds on your servers.



NOTE: You do not need to manually load PALCHECK.NLM on your installation server. It automatically runs during installation of the client software.

Packet Receive Buffers

Packet Receive Buffers are areas in the server's memory that temporarily hold data packets arriving from network stations. Palindrome recommends setting the "Minimum Packet Receive Buffer" to a minimum of 100 and the "Maximum Packet Receive Buffer" to 500. Use commands similar to the following at the server prompt:

```
SET MINIMUM PACKET RECEIVE BUFFERS=100  
SET MAXIMUM PACKET RECEIVE BUFFERS=500
```

Add the "Minimum Packet Receive Buffer" statement to your STARTUP.NCF file and the "Maximum Packet Receive Buffer" to your AUTOEXEC.NCF file. When setting this, ensure available cache buffers does not fall below 20-30% of total cache buffers.

SPX Settings

SPX is a communications protocol that monitors network transmissions.

To avoid communications problems, such as an NATV-11 dropped connection error, Palindrome recommends that you set appropriate SPX settings for your version of NetWare.

To set SPX settings on NetWare 3.x Servers

Palindrome recommends using the following timeout values on your server if SPX is used: Abort=5000, Verify=100, Wait=3000, Retry=255, Quiet=1.

To configure these settings, use a command similar to the following at the server prompt:

```
LOAD SPXCONFIG A=5000 V=110 W=3000 R=255 Q=1
```

To set SPX settings on NetWare 4.1 Servers

1. Load SPXCONFIG on your NetWare 4.1 server.
2. Set the fields with the following values:

SPX Parameter	Recommended Setting
SPX wathcdog abort timeout	5000
SPX watchdog verify timeout	110
SPX ack wait timeout	3000
SPX default retry count	255
Maximum concurrent SPX sessions	1000

Directory Cache Buffers

A directory cache buffer is a portion of server memory that holds entries from the directory table. Be sure your cache buffers are set high enough to handle directories with large numbers of files. Generally, you can calculate how many cache buffers a server should have by doing the following:

1. Multiply the number of files (or the potential number of files) in the largest directory by the number of name spaces on the volume (use the VOLUMES command at the server console to view the number of name spaces).

For example, if your largest directory has 5,000 files in it and you have two name spaces loaded (DOS and AFP for example) on that volume, multiply $5,000 \times 2 = 10,000$

2. Multiply that number (from step 1) by the size of a directory entry, 128 bytes. $128 \times 10,000 = 1,280,000$
3. Divide this number by the size of the cache buffers (default size is 4K). $1,280,000/4,096 = 320$

- Using the number from Step 3 as a minimum baseline, enter the following command at the server console prompt:

SET MINIMUM DIRECTORY CACHE BUFFERS=320

Remember that the Maximum Directory Cache Buffers must be greater than the minimum number.

Cache Buffers

The Total Cache Buffer pool must be greater than 25% of total server memory (according to NetWare documentation, 40-60% of total memory). If Total Cache Buffers are less than 30% of total memory, consider adding more memory to the server.

Palindrome's NLMs require 1.5MB of memory which is taken from the Cache Buffer Pool. After the NLM is loaded there must be 20% still available at a minimum.

Short Term Memory Allocation

On 3.x servers with a large amount of communications activity (many users), the default (2MB) of Allocated Short Term Memory is often not enough.

Depending on the number of users connected, the Allocated Short Term Memory should generally be somewhere between 3 and 9MB. Use the command syntax similar to the following at the server console prompt:

SET MAXIMUM ALLOC SHORT TERM MEMORY = 6000000

You should add this statement to your AUTOEXEC.NCF file.

Checking Loaded Modules

PALSDUMP (located on the last installation diskette in the \TOOLS directory) generates a report of all loaded modules and other valuable information such as what namespaces are loaded, contents of NCF files, and all current SET parameters and is useful for troubleshooting purposes.

Contact Novell (or use NetWire) or Palindrome for a list of the latest versions of NetWare modules. Replace any old versions of NetWare modules that you find.

Current CLIB Versions

Be sure you are using a current version of CLIB. Compare the date of the CLIB loaded on your server(s) to the dates listed below. If you are not using the current CLIB version, update each server you want to protect.

Server	Minimum CLIB version
NetWare 3.11	3.11D 12-16-92
NetWare 3.12	3.12G 5-19-94
NetWare 4.1	4.10 11-3-94

Current LAN Drivers

Be sure you are using the most current LAN driver version available for your specific network card and NetWare version. If you need to verify the current version of your LAN driver, contact the vendor from whom you purchased the driver.

Novell provides updates to the latest Novell-certified server drivers for NExxx.* boards, TOKEN, TRXNET, and PCN2L. These updates are located on NETWIRE in the file LANDR3.EXE.

LANDR3.EXE also contains updates to the NetWare 3.x and 4.x media support module (MSM and MSM31X) and the Ethernet topology support module (ETHERTSM).

Chapter 3

Installing The Software

Overview

This chapter provides instructions for:

- installing Storage Manager software
- installing AutoLoader Software
- Installing Multi-Server Software

Before performing these procedures, be sure to review Chapter 2.

Installing The Software

Installation Procedures

Before running the install program:

- ▶ Review Chapter 2 for instructions on optimizing your servers and updating NetWare modules.
- ▶ Install TSAs on all servers and workstations you want to protect (see page 2-9). If upgrading, be sure to install the latest TSAs from the server preparation diskettes.
- ▶ If necessary, create the auto login user (see page 2-21).
- ▶ If not already loaded, load PALLOADR on your installation server (see below).

Load PALLOADR.NLM

PALLOADR.NLM allows Storage Manager to automatically load other Palindrome NLMs while running the install program from a Windows workstation. PALLOADR is copied to your installation server when you run SETUP.NLM.

If you have already loaded PALSTART.NCF, PALLOADR may already be loaded and you can skip this step.

To load PALLOADR

- ▶ From the server console prompt of your installation server, type:

LOAD PALLOADR

Running the Install Program

After loading PALLOADR.NLM on your installation server, you can run the install program from a Windows workstation.



NOTE: If you are upgrading your software from previous versions of Storage Manager, proceed to page 3-13 .

1. Log into the network as a supervisor-equivalent user (the user must have rights to create users and directories). Be sure to have a drive mapping to the volume where you want to install Storage Manager.

If installing on a NetWare 4.x server, the person installing the software must also have write rights to all properties of the root object in the tree and supervisor object rights to the container the installation server is in.

2. Insert Storage Manager installation diskette #1 into your disk drive.
3. Access Windows from a workstation.
4. Open the File menu and select *Run*. Type:

A:SETUP

(where A: is the drive your diskette is in)

Select a Server

5. On the *Server Selection* dialog box, select the server where you want to install Storage Manager and choose **OK**. (This is the same server where PALLOADR.NLM should be loaded.)

Select Installation Directories

6. Determine the directory path where you want the install program to copy the Windows application files and database files and choose **OK**.

Storage Manager NLMs are automatically copied to the SYS:\SYSTEM directory of the installation server.

Installing The Software

File Copy

7. The install program copies files to the specified locations. Insert the requested diskettes into the drive as prompted. After all files are copied, you are prompted to type in your serial number.

Enter your Serial Number

8. Type your serial number (01xxxxxxxx) and choose **OK**. This number is on two labels on your software box. Affix one to your registration card prior to sending it in and keep the other label in case you have to re-install the software.

Choose the Operation

9. Choose Installation if you are installing, re-installing, or upgrading the software.

Media Library Name

**INSTALLING THE
SOFTWARE**

The media library name is required and must be assigned before you can begin using Storage Manager. Storage Manager uses this name to identify and label the media in your library.

To avoid confusion, the media library name should be unique from others in your company, department, or area.

10. Type the media library name to be used for this installation and choose **OK**.

Auto Login Name and Password

The auto login user is used to access the installation server's job queue and remote servers (if any). By default, the person installing the software is defined as the auto login user.

This user should have supervisor-equivalent rights to any server you want to protect (on NetWare 4.x servers, the user should have supervisor object rights to each server and to the container object that the installation server is in).

The auto login user name and password is stored by Storage Manager in its System Control Database. When adding server volumes to protect, if this user is not a valid user on those servers, you will be prompted to specify a valid user name and password (for ease of use and security reasons, however, Palindrome recommends using a single auto login user).

11. If you want to change the default auto login user, the user must already exist on the network. Type in the name and password for the auto login user and choose **OK**.

If your auto login user is on a 4.x server, type in the complete name including the leading dot "." or the fully qualified name. For example, you can type:

.jsmith.sales.acme

or

.cn=.jsmith.ou=sales.o=acme

See page 2-21 for more information on the auto login user.

After typing in your auto login user name and password, choose **OK**.

MultiServer Software

- 12.** If you purchased the Multi Server version of Storage Manager, select **YES** and type in your serial number. The serial number (05xxxxxxxx) is on a label on your software box that should be affixed to your registration card.

AutoLoader Software

- 13.** If you purchased AutoLoader Software, select **YES** and type in the AutoLoader Software serial number. The serial number (031xxxxxxxx) is on a label on your software box.
- 14.** Insert the AutoLoader Software diskette when prompted.

Server Memory Above 16MB

15. If your installation server has more than 16MB of memory (for example, an EISA machine) and you are using a SCSI host adapter that uses on-line DMA or AT Bus Mastering (for example, an Adaptec 1540 or 1640), choose **YES** so memory above 16MB can be accessed by the Palindrome SCSI driver.

Choose **NO** if your SCSI host adapter can address memory above 16MB or if your server has less than 16MB of RAM.

Installing Support for VISTA

16. Palindrome's Visual Storage Administrator (VISTA) is an add-on product that allows you to manage multiple Palindrome installations from a single console. VISTA uses the agent to connect to the Palindrome installation. Choose **YES** if you want to install the agent for use with VISTA.

Remote Loading of NLMs

After responding to the previous prompts the install program loads the required Storage Manager NLMs on the installation server. For NLMs to be loaded, PALLOADR.NLM must be loaded on your installation server.

Environment Check

The install program then checks the server environment to ensure it has up-to-date NetWare modules. Any older modules will be listed in the PAL_LOG file.

Creating the Group

17. After checking your Windows environment, you are prompted to create the Storage Manager program group. Select the group and choose **OK**.

Selecting Device(s)

The program scans the SCSI bus for any available devices. Any backup devices found are displayed on this screen.

18. Highlight the device(s) you want to use and choose **OK**.

Registration

19. If you want to register Storage Manager online, choose **YES**. Type in the required information and fax it to Palindrome after printing.

Adding Resources to Protect

After adding devices (or registering online), you are prompted if you want to add all resources on your installation server (including the bindery on 3.x servers; NDS on 4.x servers) to the Protected Resource List so that they can be immediately protected.

20. Choose **YES** to add all resources on your installation server .

When finished adding the resources from your installation server, you are prompted to run an automatic backup operation. If you select **OK** the automatic backup operation is submitted to the job queue.

If you have more resources to protect, choose **NO**. Open the Operations menu and select *Add Resources*.

You can now add any resources on remote servers or workstations where you have installed TSAs. For more information on adding resources, see chapter 8 of the Administrator's Guide.

21. To exit Resource Manager, open the file menu and select *Exit*.

After adding all resources you want to protect or submitting a backup operation, go to *Completing Your System Installation* beginning on page 3-21.

Upgrading the Software

When upgrading, be sure to:

- Unload any Palindrome NLMs from previous versions such as PALJSRVR, PALMEDIA, PALLIB, PNASM, PALALDRV, PALSDRV, etc.
- Run SETUP.NLM on each of your servers (see page 2-5.
- Load the appropriate TSAs on all servers and workstations (see page 2-9 for more information.)
- Identify the volume and path of your current installation (the location of your System Control Database) when prompted.

DOS Upgrades

If your current installation is the DOS version and it is installed on a local workstation, copy your System Control Database files (ASDB.PAC and ASNX.PAC) to the server/volume where you want to install Storage Manager prior to running the install program.

The directory name you copy the database files to must be the same name as the directory on the workstation. For example, if your directory is \PNA on the workstation it must be \PNA on the server/volume. This will then also be the directory name of your new installation.



NOTE: The installation program automatically deletes older versions of Palindrome files. It also deletes the ARCHIVIST queue used by Palindrome File Manager. If you want to save Palindrome NLMs and executables, copy them to a different directory prior to upgrading.

To upgrade the software

After running SETUP.NLM on each of your servers, perform the following:

1. Log into the network as a supervisor-equivalent user (the user must have rights to create users and directories). Be sure to have a drive mapping to your current installation.

If installing on a NetWare 4.x server, the person installing the software must also have write rights to all properties of the root object in the tree and supervisor object rights to the container the installation server is in.

2. Access Windows from a workstation.
3. Open the File menu and select *Run*. Type:

A:SETUP

(where A: is the drive your diskette is in)

Select A Server

4. On the *Server Selection* dialog box, select the server where your backup product is currently installed and choose **OK**. (This is the same server where PALLOADR.NLM should be loaded.)

If Storage Manager finds an installation on the server you selected, you are asked if you want to use that installation directory for your new installation. If you want to upgrade, choose **OK**.

Select Installation Directories

If Storage Manager found your original installation, the directory path of that installation should appear in the dialog box.

To upgrade a current installation, the Database Files directory path must point to that installation. If it does not, type in your current installation directory that you want to upgrade in the Database Files text box. Choose **OK**.

Installing The Software

File Copy

5. The install program copies files to the specified locations. Insert the requested diskettes into the drive as prompted.

CDB Found

After copying files, Storage Manager indicates it has found a System Control Database and asks you to confirm whether or not to upgrade that database. Select **<Upgrade>**.

Serial Number (Upgrades from 2.x only)

If you are upgrading from version 2.x of Backup Director or Network Archivist, you are prompted for a serial number.

6. Type your serial number (01xxxxxxxx) and choose OK. This number is on two labels on your software box. Affix one to your registration card prior to sending it in and keep the other label in case you have to re-install the software.

System Control Database Translation

After typing your serial number, the translation of the System Control Database begins.

Library Name

Upgrades to version 4.x, require a new media library name (formerly Archive ID) to take advantage of new media labeling scheme and added media set support. When you specify a new media library name, your old library is retired.

Installing The Software

7. Specify a library name to identify media used by this Storage Manager installation.

Server Memory Above 16MB

8. If your installation server has more than 16MB of memory (for example, an EISA machine) and you are using a SCSI host adapter that uses on-line DMA or AT Bus Mastering (for example, an Adaptec 1540 or 1640), choose YES so memory above 16MB can be accessed by the Palindrome SCSI driver.

Choose NO if your adapter can address memory above 16MB or if your server has less than 16MB of RAM.

AutoLoader Software

9. If you currently have AutoLoader Software installed, you will be prompted to upgrade the software. Insert the AutoLoader Software diskette when prompted.

Installing Support for VISTA

10. Palindrome's Visual Storage Administrator (VISTA) is an add-on product that allows you to manage multiple Palindrome installations from a single console. VISTA uses the agent to connect to the Palindrome installation. Choose YES if you want to install the agent for use with VISTA.

Remote Loading of NLMs

After typing in your serial number, the install program loads the required Storage Manager NLMs on the installation server. For NLMs to be loaded, PALLOADR.NLM must first be loaded on your installation server.

File History Database Translation

After the necessary NLMs are loaded, a job is sent to the job queue to translate all File History Databases for all resources on your Protected Resource List.

Because this job is an NLM, you can continue with the installation while the File History Databases are being translated and/or exit the program.

File History Databases are translated one at a time. Because the database structure has changed in Storage Manager 4.0, translation may take a long time to complete.



TIP: To view the progress of the translation job, open Storage Manager. Open the status menu, and select Job Queue. Highlight the job and select View.

Translating Volume Records

If the installation you are upgrading was a non-SMS version or if you were protecting workstations, you will be prompted to manually add the volumes or skip them. If you choose to add the volume, you must perform the following:

- Ensure the proper agents are loaded on the workstation and/or the server.
- Select the Server where you agent is loaded
- Select TSA on that server
- Select the resource you want to protect.

Location of Databases

Although Storage Manager defaults to installing File History Database in a central location, File History Databases on previously protected volumes remain in their original location (i.e., they are not moved from the volume they are protecting) except for workstation File History

Installing The Software

Databases. If you want to move your File History Databases, follow the instructions in the Administrator's Guide.



NOTE: Depending on the size and complexity of your File History Databases, translations may take significant time.

Environment Check

The install program then checks the server environment to ensure it has up-to-date NetWare modules. Any older modules will be copied to a list and to the PAL_LOG file.

Creating the Group

11. After checking your Windows environment, you are prompted to create the Storage Manager program group. Select the group and choose **OK**.

Completing Your System Installation

Granting Access to Storage Manager

The admin list in Storage Manager allows you to configure a list of names of administrators and operators you want to have access to Storage Manager.

The auto login user and the user installing the software are automatically added to the admin list as Administrators during installation.

Administrators have full access to all Storage Manager managers. Only those with supervisor-type rights should be defined as Administrators in Storage Manager.

Administrators should be granted Read, Write, and File Scan rights (RWF) to the Storage Manager installation directory (the directory where the System Control Database is located [as*.pac files]).

Operators have access the Control Console where they can submit pre-configured jobs, respond to prompts, and determine what media is required for operations.

Operators need only Read and File Scan rights to the same directory.

See chapter 3 in the Administrator's Guide for information on configuring the admin list.

Adding Storage Manager to the Desktop

When installing the software, the Storage Manager icon is automatically created on the desktop for the person installing the software.

For other administrators and operators to access Storage Manager, they must create the Storage Manager icon on their Windows desktop using Program Manager. Administrators/Operators must have a search mapping to the installation directory and the appropriate rights (see above) to use Storage Manager.

To create the Storage Manager icon

1. Access Windows.
2. Open the File menu and select New. Select Program Item.
3. Type in a description. In the Command Line text box, type:

FS1\APPS:\PAL\PALMON.EXE

(where FS1\APPS: is the installation server and volume, \PAL is the directory path, and PALMON.EXE is the file that creates the Storage Manager icon.)

File Manager for End Users

Palindrome's File Manager allows end users to submit backup and restore requests from resources protected by Storage Manager.

During installation, the group EVERYONE is automatically added to the Storage Manager User list with Read and File Scan rights to the Storage Manager installation directory allowing anyone in the EVERYONE group to submit backup and restore jobs to the job queue.



NOTE: On NetWare 4.x servers, the group EVERYONE is created in the same container that the installation server resides and is populated with all users that reside in the installation server's container.

The File Manager executable, PALFILER.EXE, can be placed anywhere on the network for end user access. If you do move it from the directory where other Storage Manager executables are located, you must configure the Storage Manager installation(s) it uses. See chapter 3 of the Administrator's Guide for more information on configuring File Manager for end users.

Running Storage Manager Executables on a Workstation

Storage Manager executables are installed on a NetWare server/volume by default. You can move the installation to a workstation if you desire.

The following provides guidelines for setting up Storage Manager to run on a workstation.

1. Create a subdirectory on your workstation (for example, \PAL).
2. From the server directory where Storage Manager is installed, copy the following files to the workstation installation directory.
 - ENTRNDX.PAC and ENTRDAT.PAC (enterprise database files)*
 - ARNADAT.RSF and ARNANDX.RSF (resource files)
 - all executables (*.EXE files)
 - the help file (PALWIN.HLP)
 - all DLL files (*.dll)

*If these files are not copied, when you open Storage Manager no installation will be open and you will have to manually insert the installations.

3. Create an icon for Storage Manager using PALMON.EXE (from the installation directory on the workstation) in the command line field.
4. In the working directory field, specify the drive letter and directory where the software was installed on the **server**.

The EXEs, DLLs and help files can be on both the workstation and server.

Files that should remain on the server

The resource files (*.RSF), System Control Database files (AS*.PAC), and File History Database files (AV*.PAC in the \DB directory) must remain in the installation directory on the server (where the software was originally installed).

The \DB, \ATTACH, and \JOBS directories must remain in the installation directory also.

Multi Server version and Upgrades

If you are upgrading and you newly purchased the Multi Server version, follow the instructions on page 3-31 to enable Multi Server software.

Complete Registration Card

If you haven't already done so, fill out your registration card and return it to Palindrome to activate your warranty.

Old Software and Tape Library

If you are upgrading from another backup system, Palindrome recommends that you retain your existing backup software even after successful installation of Storage Manager. This will allow you to easily restore files in the event that a required file is not part of Storage Manager's file history.

When you are satisfied that Storage Manager has generated a thorough file history, your previous system will no longer be needed and can be removed from your network.

Upgrades and Translating File History Databases

When upgrading, File History Databases must be translated. If you are upgrading from non-SMS versions of Network Archivist or Backup Director and you installed TSAs on all servers and workstations prior to installing the software, File History Databases on those resources are automatically translated.

If TSAs were not installed prior to upgrading, you must manually translate the File History Databases for those resources. Note that resources with File History Databases that have not been translated cannot be used for backup or restore operations.

Prior to manually translating File History Databases, be sure to load TSAs on all servers and workstations you are protecting.

To translate server/volume File History Databases

1. Install TSAs according to the instructions beginning on page 2-9.
2. Open Storage Manager.
3. Open the Managers menu and select *Resource Manager*.
4. Highlight a server/volume resource that indicates it needs translation.
5. Click on the Config tab. Select **Edit**.
6. In the Protected Resource Name group box, select **Configure**.
7. Choose the Server, Target Service, TSA, and Resource name for the resource and choose OK. The resource should now appear in the tree.
8. Tag the resource and open the Operations menu. Select *Translate History Database*. The File History Database for the resource is translated.

To translate workstation File History Databases

1. Install TSAs according to the instructions beginning on page 2-9.
2. Open Storage Manager.
3. Open the Managers menu and select Resource Manager.
4. Highlight a workstation resource that indicates it needs translation.
5. Click on the Config tab. Select Edit.
6. In the History Database Location group box, select Configure.
7. Select the server where you want to locate the resource's File History Database. You most likely should pick the Storage Manager installation server (by default File History Databases are stored on that server).
8. Next pick the volume where you want to locate the resource's File History Databases. This should be the Storage Manager installation volume.

9. Record the history database location path as displayed the History Database Server/Volume location and History Database Path fields. This is the path where you will need to copy the original workstation File History Database as described below.
10. Repeat steps 4-9 for each workstation resource to be translated.
11. From the workstation you are upgrading, copy the File History Database (AV*.PAC) files (located in a directory of the same name as your installation directory) to the server/volume and directory path recorded in step 9. Repeat this step for each workstation resource needing translation.
12. In Resource Manager, tag a workstation resource that needs File History Database translation.
13. Open the Operations menu. Select Translate History Database. The File History Database for the resource is translated.

IBM SCSI Host Adapter Support

Storage Manager supports IBM SCSI PS2 host adapters. If using this adapter, you must load the device driver (PS2SCSIA.DSK) and ASPI manager (IBMASPI.NLM). These files (and IBMENTRY.NLM) are copied to your installation directory during installation of the software.

PS2SCSIA.DSK—SCSI device driver for NetWare 3.x and 4.x. This file replaces PS2OPT.DSK or PS2SCSI.DSK (using ASPI). This file should be loaded first.

IBMASPI.NLM—ASPI manager for NetWare 3.x and 4.x. This file should be loaded after PS2SCSIA.DSK.

IBMENTRY.NLM (optional)—This file should be loaded if you have a SCSI host adapter from a different vendor that uses the exported ASPI_Entry point. This file then replaces IBMASPI.NLM which exports a different entry point function.

PS2SCSIA.DSK and IBMASPI.NLM can be added to your AUTOEXEC.NCF file so they load automatically when the server boots.

In addition, the following NetWare patches are required when using the IBM SCSI host adapter with NetWare versions prior to 4.1. Contact Novell for information on obtaining these patches.

NetWare 4.x

DAICCFIX.NLM 1031 bytes, 02-07-94

PM401.NLM 8113 bytes 08-26-93

REALMFIX.NLM 2756 bytes 02-07-94

NetWare 3.12

DAICCFIX.NLM 1076 bytes 02-07-94

PM312.NLM 9586 bytes 08-31-93

REALMFIX.NLM 3207 bytes 02-07-94

NetFRAME and Tricord Users

If you're installing Storage Manager on a NetFRAME or Tricord server, follow the instructions below.

NetFRAME Users

If you are using Storage Manager on a NetFRAME server, use the driver located in your installation directory (default=\PAL). Copy the NetFRAME device driver (PALNFDRV.NLM) into your SYS:\SYSTEM directory using a command similar to the following:

COPY F:\PAL\PALNFDRV.NLM FS1/SYS:\SYSTEM
(where F:\PAL is your Storage Manager installation directory)

Edit your server's STARTUP.NCF or AUTOEXEC.NCF files to include the following statement (preferably before loading other Palindrome NLMs):

LOAD PALNFDRV

Tricord Users

If you are installing Storage Manager on a Tricord server, you need three drivers for communication with your backup device: NWIOP31.DSK, ASPITRAN.DSK, and ASPI.DSK.



NOTE: If you are already using the correct version of NWIOP31.DSK or the above ASPI drivers, you may not have to install the files. Palindrome recommends that you use a version dated no earlier than “5/93”.

Follow the steps below to install these files.

1. Copy ASPITRAN.DSK and ASPI.DSK from your Storage Manager installation directory to the SYSTEM directory on your SYS: volume:

COPY F:\PAL\ASPITRAN.DSK FS1/SYS:\SYSTEM

COPY F:\PAL\ASPI.DSK FS1/SYS:\SYSTEM

(where F:\PAL is your installation directory)

2. Edit your AUTOEXEC.NCF file on your server to include the following:

LOAD ASPITRAN

LOAD ASPI

3. Type the load statements in the same order at the server console prompt to load the drivers.
4. If necessary, copy NWIOP31.DSK from your Storage Manager installation directory to the boot partition of your server.
5. Edit your STARTUP.NCF file on your boot partition to automatically load this file using the following syntax:

LOAD NWIOP31.DSK



NOTE: If your original driver was the same name (NWIIOP31.DSK) and version, and was loaded from your STARTUP.NCF file, you do not need to add it to your STARTUP.NCF.

6. Down your server and reboot it to initialize the driver.

Windows For Workgroup Users

If installing Storage Manager on a workstation using Windows for Workgroups, be sure your network settings are set up to support Novell NetWare only.

To check your system's current settings

1. Select the network settings icon in your network program group.
2. Choose **Networks**.
3. Be sure the option "Install Windows support for the following network only:" is set to **Novell NetWare**.

Installing Additional Software

This section includes installation instructions for installing AutoLoader Software, Multi Server Software, and Recall Agents.

Installing AutoLoader Software

AutoLoader Software controls the robotic arm of an autoloader device and retains information about the contents and status of the autoloader.

For more information on AutoLoader Software, refer to the AutoLoader Software Guide.



NOTE: Be sure to unload PALMEDIA, PALALDRV (autoloader driver), and PALSDRV (SCSI driver) before installing AutoLoader Software.

To install AutoLoader Software, perform the following:

1. Insert the AutoLoader Software diskette into a floppy drive at your workstation.
2. Access Storage Manager.
3. Open Configuration Manager.
4. Open the Install menu and select *AutoLoader Software*.
5. The program prompts for the serial number:

Please enter the AutoLoader Software serial number:

Type the serial number and choose **OK**. This number is on a label that is on the outside of your AutoLoader Software box. Affix this label to your registration card if you haven't already.

6. Choose the disk drive your diskette is in. The program copies the appropriate files to the SYS:\SYSTEM directory on your installation server.
7. PALMEDIA autoloads the autoloader driver. To load PALMEDIA, at the server console prompt, type:

LOAD PALMEDIA

8. Complete your AutoLoader Software registration card and return it to Palindrome.

Installing Multi Server Software

Multi Server Software allows you to protect an unlimited number of servers. If you originally purchased Storage Manager as a Multi Server version, you should enable the Multi Server Software during installation of Storage Manager.

To upgrade from a single server version

1. Insert the Multi Server Software diskette into a floppy drive.
2. Access Storage Manager.
3. Open Configuration Manager.
4. Open the Install menu and select *Multi Server Software*.
5. The program prompts for the serial number:

Please enter the Multi Server Software serial number:

Type the serial number and choose **OK**. This number is on a label that is on the outside of your Multi Server Software box. Affix this label to your registration card if you haven't already.

6. After typing in your serial number, you are prompted to insert the Multi Server Software diskette. Choose the disk drive your diskette is in.
7. Complete your Multi Server Software registration card and return it to Palindrome.

Installing Recall Agents

If using Storage Manager's migration feature, recall agents provide a quick and easy method to restore migrated phantom files.

When using recall agents to detect a file open request of migrated phantom files, the recall agent immediately submits a restore request for the file eliminating the need for the administrator to manually restore the file.

The recall agents run in the background on the workstation.

Storage Manager provides recall agents for:

Windows Workstations	(PALWINRC.EXE)
DOS workstations	(PALRECAL.EXE and PALSMRCL.EXE)
NetWare servers	(PALRECAL.NLM)

When recalling a file, users can wait for the file to be recalled or continue with the application they were working in.

PALWINRC.EXE

PALWINRC.EXE is a Windows-based recall agent that displays a dialog box when a phantom file is accessed. The dialog box provides status messages about the recall job and gives the user the choice to cancel the request or to continue with the current task while the recall request is processed.

PALRECAL.EXE

PALRECAL.EXE is a DOS-based TSR that provides a dialog box when a phantom file is accessed. The dialog box provides status

messages about the recall job and gives the user choices on whether to delete the request or continue with the current task while the recall request is processed.

PALSMRCL.EXE

PALSMRCL.EXE is a smaller DOS-based TSR that does not display a pop-up screen but rather “beeps” when a phantom file is accessed and continues beeping until the file is successfully restored.

PALRECAL.NLM

The server recall agent monitors file open requests from any workstation attached to a NetWare server. If the file is a phantom file, a recall job is automatically submitted to the Palindrome job queue. No dialog box appears when PALRECAL is processing a recall request.

Which Agents Should I Install?

If you want a majority of your users (or all of them) to have automatic recall available, you should probably have the server recall agent loaded on your servers.

The server recall agent is indiscriminate about demigrating files; if a client accesses a migrated phantom file on a server where the recall agent is installed, the restore request is submitted to the job queue.

On the other hand, workstation agents are specific to the workstation they are installed on. That is, only the user using a workstation where the workstation agent is loaded can automatically recall migrated phantom files on NetWare servers.

Macintosh Support

If you have Macintosh clients, you must use the server recall agent if you want the Macintosh clients to automatically demigrate NetWare files.

Windows or DOS Agent

Normally, if Windows is the predominant operating environment, load the Windows recall agent; if DOS is the predominant environment, load a DOS recall agent.

Both agents can intercept file open requests in either environment. When a Windows application opens a phantom file with the DOS agent loaded, the recall agent will provide a continuous beeping until the file is restored (that is, no pop-up screen displays). You can still use the keyboard to continue (C), delete the request (D), or silence the beeping (S), however. See Appendix E of the *Administrator's Guide* for more information.

If running a program in a DOS window under Windows, the DOS recall agent works as it would running under DOS (i.e., the pop-up screen displays if using PALRECAL.EXE; if using PALSMRCL.EXE, you will hear a continuous beep).

The Windows recall agent can also intercept open requests of DOS or Windows applications.

Installing the Server Recall Agent

The server recall agent (PALRECAL.NLM) can be installed on any server and monitors phantom file access on the server it is installed on. When running SETUP.NLM, PALRECAL.NLM is copied to the SYS:\SYSTEM directory on the server and you are asked if you want to install the server recall agent.

If you answered **YES**, PALRECAL.NLM is automatically loaded when running PALSTART.NCF.

If you answered **NO** you can edit the PALSTART.NCF file so that it automatically loads when the server boots or type **LOAD PALRECAL** at the server console prompt.

If you didn't run SETUP.NLM and you want to install the server recall agent, perform the following:

- ▶ Copy PALRECAL.NLM and PALRECAL.DAT from the server preparation diskette #1 to a server (SETUP.NLM copies these files to the SYS:\SYSTEM directory by default).
- ▶ At the server where you are installing the recall agent, type the following from the server console prompt:

LOAD PALRECAL

See Appendix E of the *Administrator's Guide* for more information about PALRECAL.NLM.

Installing the Workstation Recall Agents

Workstation agents are installed on individual workstations and intercept file open requests of phantom files on NetWare servers. They can also be used to disable the server recall agent at specific workstations.

When running the Windows-based workstation recall agent install program (RCSETUP.EXE), both the DOS and Windows recall agents are copied to the directory you specify.

If upgrading recall agents on a workstation, be sure older versions of the recall agents are not loaded. If you are loading older recall agents automatically when the workstation boots, be sure to disable them from loading automatically and reboot the workstation.

To install workstation recall agents

1. Login to the network from the workstation where you want to install the agent.
2. Map a drive to the Storage Manager installation directory (where the executables are located).



NOTE: If you want to immediately use the Windows recall agent, you should close all Windows applications prior to running the setup program. At the end of the setup program you will be asked if you want to restart Windows so changes can take affect. If you have other applications open, you will have to close them prior to restarting Windows.

- Using Window's program manager, open the File menu and select *Run*. In the command line text box, type the following to run the agent installation program:

F:\PAL\RCSETUP.EXE

(where F:\PAL is your Storage Manager installation directory)

The following dialog box appears.



- Specify the directory to copy the workstation agents to.
Both the DOS and Windows workstation agents are copied to the specified directory.
- If you want to load the Windows recall agent whenever you run Windows choose **Run Agent on Windows Startup**.
- Select **Continue**.
- You will be prompted to restart Windows so changes can take affect. (Prior to using the Windows recall agent you must restart Windows after running RCSETUP.EXE.)

Loading the Windows Recall Agent

When loaded (either automatically at startup or when double-clicking on the icon) the Windows recall agent runs in the background so you will not see the application until you access a phantom file.

To load the Windows recall agent (if not loaded on startup)

- ▶ Double-click on the icon—the agent loads similar to a hidden application (i.e., no window or dialog box displays). Although hidden, the recall agent is active.

If you want to see what the window looks like when it detects a file open request of a phantom file, double-click on the icon again.

For more information on the recall agent, see Appendix E of the *Administrator's Guide*.

Manually Installing PALWINRC.EXE

Normally, you run RCSETUP.EXE from the Storage Manager installation directory to install the Windows recall agent.

You can also install the agent manually by performing the following:

1. Copy PALWINRC.EXE, PALRCVXD.386, and PALRCDLL.DLL to a common directory on a workstation from the Storage Manager installation directory.
2. Using an ASCII text editor or an editor from within Windows (e.g., SYSEDIT or NOTEPAD), add the following statement to the 386Enh section [386Enh] of your SYSTEM.INI file:

DEVICE=C:\WINDOWS\PALWINRC\PALRCVXD.386

(assuming C:\WINDOWS\PALWINRC is the directory you copied PALRCVXD.386 to)

3. To add the agent to your desktop, create a new item on your desktop for the recall agent icon. In the command line text box, type:

C:\WINDOWS\PALWINRC\PALWINRC.EXE

(assuming C:\WINDOWS\PALWINRC is the directory you copied PALWINRC.EXE to)

4. Refer to the procedures above to load the recall agent so that it can monitor file open requests.

Loading the DOS Recall Agent

Storage Manager provides two DOS-based recall agents: PALRECAL.EXE and PALSMRCL.EXE. These agents are copied to the directory you specified when running RCSETUP.EXE.

To load either DOS recall agent

- From the DOS prompt of the directory where you installed the recall agents, type:

PALRECAL

(or)

PALSMRCL

The program loads into your workstation's memory. You can load either PALRECAL or PALSMRCL in the high memory area using the DOS LOADHIGH command or similar command available with your memory manager. (PALRECAL.EXE requires 22K and PALSMRCL requires 17K of RAM.)



TIP:

If desired, you can add PALRECAL (or PALSMRCL) to the AUTOEXEC.BAT file on each workstation so it loads automatically whenever the workstation boots. You should copy the agent to each workstation before attempting to load it automatically.

See Appendix E of the *Administrator's Guide* for more information.

Appendix A

Installation Notes

INSTALLATION
NOTES

General Hardware Notes

This section provides information on hardware-related items that may affect Storage Manager's performance or prevent proper backups.

Adaptec 1540 Host Adapters

Unless you have a bootable hard disk attached, Palindrome recommends disabling the AT BIOS port address jumper (J6, pin 1) on the Adaptec AHA-1540B SCSI host adapter card. See the documentation included with your host adapter for a description and location of this jumper.

If using the AHA-1540C, disable the Host Adapter BIOS setting using the Advanced Configuration option screen.

Servers With More than 16MB of Memory

If your installation server has more than 16MB of memory (for example, an EISA machine) and you are using a SCSI host adapter that uses on-line DMA or AT Bus Mastering (for example, an Adaptec 1540 or 1640), you should use Palindrome's SCSI Driver PALSDRV.NLM with the ABOVE16MEG switch.

PALSDRV is automatically loaded during installation but if you have added memory or changed host adapters, you may need to manually load the PALSDRV with the switch.

When loaded with the ABOVE16MEG switch, PALSDRV allows the host adapter to access memory above 16MB.



WARNING: The ABOVE16MEG option should only be used if your host adapter cannot address memory above 16MB of RAM. Do not use this option if your adapter can address memory above 16MB.

Load PALSDRV manually (with the option) or execute it from the PALSTART.NCF file so that it loads automatically. Because PALSDRV is autoloaded automatically during any backup, restore, or

utility operation, to use the ABOVE16MEG option, it must be loaded prior to running any operation.

If using this option, you may have to increase the number of reserve buffers below 16MB on your server, especially if you have a server with device drivers that access memory below 16MB. Add the NetWare set command:

SET RESERVED BUFFERS BELOW 16 MEG = 200
to your STARTUP.NCF file and reboot your server.

This command should proceed the loading of your device driver for your host adapter.

Host Adapter Bios

Palindrome does not require the BIOS enabled on any host adapters. Bootable hard disks on the same SCSI bus require the BIOS to be enabled however.

Tape Drive Cleaning

Be sure to clean the drive **after each** initial backup with a **new** tape.

8500 Tape Drives

For any FAST 5000 (or other Exabyte 8500) tape drive, the default transfer mode is asynchronous; meanwhile the default transfer mode of many host adapters is synchronous.

This may cause a conflict if the tape drive is ever disconnected or powered off and then powered on again while the server is still running. The tape drive will default to asynchronous transfer and the adapter will fail to renegotiate transfer mode. The next tape operation will then fail and lock the workstation or server console screen.

If the tape operation is hanging, you must down the workstation or the server. To avoid potential conflicts, always power on the tape drive prior to powering on your workstation or server.

General Software Notes

Resource Files

During installation, Storage Manager copies its Resource files from the installation diskettes. Resource files (*.RSF) are required for any Storage Manager program (executable) to run. Do not rename, move, or delete these files.

NETWARE.DLL

When starting Storage Manager, if you receive a message:

“Cannot find NETWARE.DLL”

it means you have an old version of the Windows NetWare driver NETWARE.DRV or you have not configured Windows for using NetWare. Ensure your version of NETWARE.DRV is dated 7-23-93 or later or configure Windows to use with NetWare.

Multiple Server Environment

If you are backing up multiple servers, be sure the installation server has the NetWare set command “Reply to Get Nearest Server” set to “ON” (the default setting) especially if your File History Databases are not centrally located on the installation volume.

Read Fault Emulation

Be sure to set Read Fault Emulation to ON on all NetWare 4.x servers.

Auto Login user on NetWare 4.x Servers

Previous versions of Storage Manager required the auto login user be defined on each NetWare 4.x server protected. This is no longer necessary.

The auto login user only has to be created once unless you are protecting 4.x servers that are not part of the same the NDS tree as your installation server. In this case, you must create the auto login user in the bindery context on each server in a different NDS tree.

Time Zone Environment Variable

Palindrome recommends that you use the Time Zone (TZ) environment variable with caution. If you back up files under one time zone setting and attempt to restore them under a different time zone setting, Storage Manager will be unable to restore the files due to conflicting time zones.

Execute-Only attribute

Files marked with the NetWare attribute EXECUTE-ONLY cannot be read by Storage Manager and therefore cannot be backed up. If you are required to designate files EXECUTE-ONLY, be sure they are fully protected first before assigning this attribute.

DOS TSA and SEND messages

On workstations with the DOS TSA loaded, network SEND messages may cause dropped connections between the TSA and Storage Manager if the message is not cleared by the user. You should use NetWare's CASTOFF at the workstation to reject any broadcast messages especially before running any Storage Manager operations.

Search Mode

If using NetWare's SEARCH MODE (SMODE), do not assign it to any Storage Manager files. Unless absolutely necessary, Palindrome recommends leaving SMODE set to 0. If you use SMODE, use it only for specific files (usually older files) that need non-standard behavior.

Unloading TSAs

Whenever unloading TSADOS or TSAPROXY on the server, you should unload and reload the TSAs on workstations that the server TSA manages.

NetWare Upgrades

If you upgrade NetWare versions, for example from NetWare 3.12 to NetWare 4.1, be sure to unload the TSAs on all protected servers and load the appropriate TSAs for your new NetWare version.

Workstation TSA Options

The following provides details on the TSASMS.COM and TSAOS2.EXE command line parameters.

TSASMS Options

Below is a description of available parameters for the DOS TSA (TSASMS) that you can set in the NET.CFG file or use on the command line. To load TSASMS from the command line, use syntax similar to the following:

TSASMS /SE=SERVER1 /N=JSMITH /B=8 /ST=2048 /D=C /T
these parameters are described in detail below.

TSA Server Name Specifies the name of the server you want this workstation to connect to for backup and restore operations. This is the server where TSADOS.NLM is loaded (and is usually the primary server).

Example: TSA Server Name = SERVER1

Command line: /SE=servername

Workstation Name Sets the workstation's unique name up to 10 characters (no spaces). You may want to choose a name such as the name of the user who uses the workstation. For example, JSMITH.

This parameter is required when you first load TSASMS as it registers the workstation with the bindery or NDS. After initially installing TSASMS with this parameter, you will not need to use the parameter again unless you want to change the workstation name or remove the workstation object from the bindery or NDS.

Example: Workstation Name = JSMITH

Command line: /N=workstation name



NOTE: Storage Manager requires unique workstation names. When adding workstation resources, no two workstation names can be identical (even if the workstations are protected by different TSAs). For example, you cannot have two workstations on your Protected Resource List named JSMITH.

Password

Sets a password for the workstation. If you use this option, you must type in the password for each workstation when adding the resources to the Protected Resource List. If you do not want to configure passwords for each workstation, use Trust Mode (/T) (described below).

Example: Password = Test

Command line: /P=password

Disk Buffers

1K buffers (n=1 through 30). The default is one. Increasing the number increases throughput backup speed, but requires more RAM on the workstation and also reduces responsiveness of the keyboard when a backup is in progress. Palindrome recommends increasing this setting to at least 4. If this is insufficient, try increasing the setting in increments of 4.

Example: Disk Buffers = 30

Command line: /B=n(number of buffers)

Stack Size

Specifies the stack size represented as a decimal (512 through 5096 bytes). The default is 2048 bytes. Do not change this number unless RAM is extremely limited or you receive "Stack Overflow" messages. You may need to increase the setting, depending on the structure of your disk.

Example: Stack Size = 2048

Command line: /ST=n(stack size)

Drives This required parameter indicates the DOS drives containing data that you want to protect. Note that a colon is not accepted with the drive letter.

Example: Drives=CD
(where "C" represents the C: drive and "D" represents the D: drive.)
Command line: /D=x(drive letter)

Other Command Line Options

/H Help. Displays all options.

/R=server name/workstation name Removes the workstation address from NDS or the Bindery. Use this option when installing new hardware or if you want to change the workstation name. You must have supervisory rights to remove the workstation from NDS or the Bindery and TSASMS must first be unloaded at the workstation.

Example: TSASMS /R=FS1/JSMITH

/T Trust Mode. When using this option, the defined user must have Supervisor-equivalent rights on the server where TSADOS.NLM is loaded in order to protect the workstation.

This option provides a high level of security without the need to configure and remember workstation passwords.

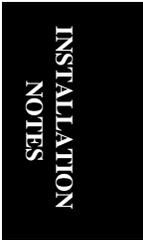
Example: TSASMS /T

/U Unload. Unloads TSASMS from the workstation's memory.

Example: TSASMS /U

TSAOS2.CFG Options

Auto Register	Required parameter (ON or OFF) used to automatically register with the server whenever the workstation boots. To use this parameter you must also specify a valid WSName, ServerName, and UserName. Example: AutoRegister ON
Hide Resource	The drives you do not want to protect. Repeat this line for each drive that you do not want to protect. The colon after the drive is allowed but is not required. By default, the TSA provides access to all drives on the workstation. Example: HideResource C
Server Name	The name of the server where TSAPROXY.NLM is loaded (usually the primary server). Example: ServerName FS1
TempFiles Dir	The location on your hard drive where the TSA can temporarily store files during backup operations. These files are removed when the backup is completed. Do not use spaces in the directory name. If you do not specify this parameter, the temporary files will be located in the same directory as TSAOS2.EXE. Example: TempFilesDir C:\TEMPTSA
UserName	The user that you allow to attach to the OS/2 workstation (this must be the Auto Login user). If you want to specify a password, specify it on the same line as the username. Example: UserName ADMIN [PASSWORD] The username must be your auto login user. If you specify a password, the network administrator (during installation of Storage Manager) must configure that password when adding the workstation to the Protected Resource List.



Appendix A - Installation Notes

To protect from unauthorized use of Storage Manager and your network, if you configure a password, do not use the Auto Login Password (the password configured for the Auto Login user). If users know the Auto Login user's password, they could access the network as a supervisor equivalent user.

WSName

The Target Service name you assign to your workstation. Do not use spaces in the workstation name.

Example: WSName JOHN_OS2

Index

!

386enh
in SYSTEM.INI file 3-37

A

ABOVE16MEG 2-7, A-2
Accessing
Storage Manager 3-21
Accessing servers
See auto login user
Admin list 3-21
Administrators
of Storage Manager 3-21
ASPI
module installation 1-14
ASPI.DSK 3-28
ASPITRAN.DSK 3-28
Auto Login user
adding during installation 3-8
concurrent connections 2-22
defined 2-21
requirements 2-21
rights 2-22
Autoloader
setup 1-9
AutoLoader Software 1-3
installing 3-30

B

Backup device
daisy chaining 1-9
installing 1-7
supported 1-3
verifying 1-16
Backup Software
replacing 3-24
BBS i-ix
Bindery user 2-21
Broadcast messages 2-13

C

Cache Buffers 2-29
Cannot Find NETWARE.DLL message A-4
Capacity
See Multi Server Software
CASTOFF ALL 2-13
Changing the Archive ID 1-17
CLIB
current versions 2-30
CompuServe i-ix
Concurrent Connections 2-22
Windows For Workgroups 3-29
Configuring
DOS workstations 2-12
OS2 workstations 2-16

D

Databases
translating 3-24
Device driver
host adapter 1-14
loading for Windows 3-37
Devices
8200Tape Drive 1-16
See also Backup Device
Upgrading 1-17
Directory Cache Buffers 2-28
DOS workstations
installing TSAs 2-12
protecting 2-11
trust mode 2-15
Drivers
IBM 3-26

E

Environment variables
Time Zone A-5
EVERYONE Group 3-22
Exabyte 8500 A-3

INDEX

Index

Execute-Only
attribute A-5

F

Fast Fax
from Palindrome i-x
File History Database
location after upgrade 3-20
translation 3-24
File Manager
end user 3-22
on 4.x servers 2-4
Files
from old versions 2-5
NetWare versions 2-6
Resource A-4

G

Graphics mode 3-34
Group
EVERYONE 3-22

H

Hardware Installation
checklist 1-15
Hardware requirements 1-4
Host Adapter
accessing more than 16MB 1-7, A-2
BIOS disable 1-5
IBM 3-26
installation 1-5
supported 1-3

I

IBM
SCSI support 3-26
IBMASPI 3-26
IBMENTRY 3-26
Icon
creating Storage Manager 3-21

Installation

AutoLoader Software 3-30
backup device 1-1
choosing server 2-4
client software 3-4
device driver 1-14
DOS TSA 2-12
host adapter 1-4
Macintosh TSA 2-19
Multi Server Software 3-31
NLM updates 2-5
OS2 TSA 2-16
recall agents 3-32
requirements 2-4
SCSI cable 1-7
SCSI card 1-5
server software 2-5
Server TSAs 2-10
single device 1-7
TSAs 2-5, 2-9
workstation recall agents 3-35

J

J6 jumper
disabling 1-5

L

LAN Drivers 2-30
Loading
PALLOADR 3-3
PALRECAL.NLM 2-6
PALSTART 2-6
Recall Agents 3-38
TSAs using the command line A-6

M

Macintosh support
recall agents 3-33
Macintosh TSA
installation 2-19
MACTSA.EXE 2-18
MACTSAPR.EXE 2-18
Media library name 3-7

Media type
 Changing 1-17
 Memory
 requirements 2-4
 Minimum Directory Cache Buffers 2-28
 Multi Server Software
 installing 3-31

N

NET.CFG 2-14
 NETCON 2-22
 NetFRAME
 installing drivers for 3-27
 NetWare
 4.01 servers 2-4
 memory allocation 2-29
 Packet Receive Buffers 2-27
 Search Mode A-5
 Upgrades A-5
 NetWare compatibility
 Read Fault Emulation A-4
 NetWare files
 updates 2-6
 NETWARE.DLL A-4
 NETWARE.DRV A-4
 NLMs
 from previous versions 3-13
 NWIOP31.DSK 3-28

O

Operators
 of Storage Manager 3-21
 OS/2 Requestor 2-16
 OS2 Workstations
 protecting 2-16

P

PALJSRVR 2-7
 PALLOADR 2-7
 PALMEDIA 2-7
 PALNFDRV.NLM 3-27
 PALRCVXD 3-37
 PALRECAL.EXE

disabling 3-38
 loading 3-38
 PALRECAL.NLM 3-32
 loading 2-6
 PALSDRV 2-8, A-2
 PALSTART.NCF 2-6 - 2-7
 PALWINRC.EXE 3-32
 Password
 DOS workstations 2-15
 OS2 Workstations A-9
 Priority Answers i-xi
 PS2OPT 3-26
 PS2SCSI 3-26
 PS2SCSIA 3-26

R

RAM
 required 2-4
 requirements 3-38
 Recall Agent
 graphics mode 3-34
 installing 3-38
 loading 3-38
 Recall Agents
 installing 3-32
 Macintosh support 3-33
 Registration i-vii
 Removing
 old software 3-24
 workstation TSAs 2-12
 Requirements
 Auto Login user 2-21
 hardware 1-4
 server 2-4
 workstation 2-4
 Resource Files A-4
 Restoring media
 From a different media type 1-17
 Rights 2-21
 auto login user 2-22
 to install software 3-4, 3-14

S

SCSI Bus
 bus length 1-12

Index

- cables 1-12
 - defined 1-12
 - termination 1-12
- SCSI card
 - installation 1-5
- SCSI ID requirements
 - multiple devices 1-9
- SCSISCAN 1-16
- Search Mode
 - See SMODE
- Server
 - choosing installation 2-4
 - configuration 2-26
 - optimizing 2-26
 - protecting multiple 3-31
 - TSAAs 2-10
 - unloading TSAAs A-5
- Set
 - Allocated Short Term Memory 2-29
 - Directory Cache Buffers 2-29
- SETUP.NLM 2-5
- SMODE A-5
- SMSDBOBJ.NLM 2-12
- Software Maintenance program i-xi
- SPX settings 2-27
- SPXCONFIG 2-27
- Stackers
 - See AutoLoader Software
- SYSCON 2-22

T

- Tape Drives
 - 8200 1-16
- Target Service Agent
 - See TSA
- Technical Support i-vii
- Termination of SCSI Bus 1-12
- Time Zone
 - restore problems A-5
- Training Programs i-x
- Translation 3-24
- Tricord
 - installing drivers for 3-28
- Trust mode A-8
 - on DOS workstations 2-15
- TSA
 - installing 2-9

- installing OS2 2-16
 - server 2-10
 - workstation 2-11
- TSADOS.NLM 2-12
- TSAOS2
 - options A-9
- TSAOS2.CFG 2-17, A-9
- TSAOS2.EXE 2-16
- TSAPROXY
 - loading for Macintosh 2-19
- TSAAs
 - unloading A-5
- TSASMS
 - command line parameters A-6
 - installing 2-12
 - NET.CFG 2-14
 - options A-6
- TSR
 - PALRECAL 3-33
 - PALSMRCL 3-33

U

- Unload
 - NLMs from previous versions 3-13
- Unloading TSAAs A-5
- Upgrade
 - File History Database location 3-20
- Upgrade Assurance
 - See Software Maintenance program
- Upgrades
 - backup devices 1-17
 - NetWare A-5
 - unloading NLMs 2-5
 - workstation version 3-13
 - workstations 3-24
- User
 - auto login 2-21
 - creating on server 2-22
 - requirements 2-21
- User list 3-22

V

- VISTA agent
 - loading 2-8

W

Workstation

- naming A-7
- protecting DOS 2-12
- protecting OS2 2-16
- recall agents 3-38
- requirements 2-4
- upgrading 3-13, 3-24!

INDEX

Index