Solaris™ PC NetLink 1.2 Installation Guide

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Installing PC NetLink 1.2 Software

This document describes the Solaris™ PC NetLink[1] 1.2 product and explains how to install PC NetLink components.

About This Guide

If you want to learn more about the product, read the next section, “PC NetLink Features Introduced in Version 1.0” on page 4.

If you want instructions for installing product components, turn to “How to Install PC NetLink 1.2 Software” on page 9.

If you plan to use PC NetLink in a Sun™ Cluster environment, follow installation instructions in the *Solaris PC NetLink 1.2 High Availability Guide*.

If you plan to use PC NetLink with Legato NetWorker® or Solstice Backup™ software, follow installation instructions in “How to Install the PC NetLink 1.2 Backup Module” on page 14.

Related Online Information

Additional sources of information are available to guide you through installing, configuring, and administering the system. TABLE 1 describes these sources and how to access them.

- The file `install_guide.pdf` is an online version of this document.
- PC NetLink Server Manager Online Help guides you through system administration and configuration tasks.

1. PC NetLink software incorporates AT&T’s Advanced Server for UNIX Systems.

- *Solaris PC NetLink 1.2 Administration Guide* explains critical concepts and describes how to administer a PC NetLink system. It is available in PDF and HTML formats.
- *Solaris PC NetLink 1.2 High Availability Guide* explains how to install and configure the PC NetLink high availability agent for use in a clustered environment. It is available in PDF and HTML formats.

TABLE 1 Sources of Related Online Information

What's Available	How to Access From the Solaris Operating Environment	How to Access From the Microsoft Windows Operating Environment
This document	Load the PC NetLink CD-ROM, then use Adobe Acrobat Reader to open `/cdrom/pcnl_1_2/doc/en/install_guide.pdf`	Load the PC NetLink CD-ROM, then use Adobe Acrobat Reader to open *drive*:`\pcnl_1_2\doc\en\install_guide.pdf`, where *drive* is the letter of your CD-ROM drive.
	After installation, use Adobe Acrobat Reader to open `/opt/lanman/doc/en/install_guide.pdf`	*After installation*, use Adobe Acrobat Reader to open `C:\Program Files\Sun Microsystems\PC NetLink Server Manager\doc\en\install_guide.pdf` If you did not install PC NetLink Server Manager in the default location, edit the portion of the path before `\doc` accordingly.
PC NetLink Server Manager Online Help	*After installation*, start PC NetLink Server Manager using this command: `% /opt/lanman/sbin/slsmgr &` Then, click the Help Topics button in the lower right part of the PC NetLink Server Manager window.	*After installation*, click on Start, select PC NetLink Server Manager from the Programs submenu, and then select PC NetLink Server Manager. Then, click the Help Topics button in the lower right part of the PC NetLink Server Manager window.
Solaris PC NetLink 1.2 Administration Guide		
In PDF format	Load the PC NetLink CD-ROM, then use Adobe Acrobat Reader to open `/cdrom/pcnl_1_2/doc/en/admin_guide.pdf`	Load the PC NetLink CD-ROM, then use Adobe Acrobat Reader to open *drive*:`\pcnl_1_2\doc\en\admin_guide.pdf`, where *drive* is the letter of your CD-ROM drive.
	After installation, use Adobe Acrobat Reader to open `/opt/lanman/doc/en/admin_guide.pdf`	*After installation*, use Adobe Acrobat Reader to open `C:\Program Files\Sun Microsystems\PC NetLink Server Manager\doc\en\admin_guide.pdf` If you did not install PC NetLink Server Manager in the default location, edit the portion of the path before `\doc` accordingly.

TABLE 1 Sources of Related Online Information *(Continued)*

What's Available	How to Access From the Solaris Operating Environment	How to Access From the Microsoft Windows Operating Environment
In HTML format	*After installation,* point your browser to `file:/opt/lanman/doc/en/admin_guide/index.html`	*After installation,* point your browser to `C:\Program Files\Sun Microsystems\PC NetLink Server Manager\doc\en\admin_guide\index.html` If you did not install PC NetLink Server Manager in the default location, edit the portion of the path before `\doc` accordingly.
Solaris PC NetLink 1.2 High Availability Guide		
In PDF format	Load the PC NetLink CD-ROM, then use Adobe Acrobat Reader to open `/cdrom/pcnl_1_2/doc/en/ha_guide.pdf`	Load the PC NetLink CD-ROM, then use Adobe Acrobat Reader to open *drive*:`\pcnl_1_2\doc\en\ha_guide.pdf`, where *drive* is the letter of your CD-ROM drive.
	After installation, use Adobe Acrobat Reader to open `/opt/lanman/doc/en/ha_guide.pdf`	*After installation,* use Adobe Acrobat Reader to open `C:\Program Files\Sun Microsystems\PC NetLink Server Manager\doc\en\ha_guide.pdf` If you did not install PC NetLink Server Manager in the default location, edit the portion of the path before `\doc` accordingly.
In HTML format	*After installation,* point your browser to `file:/opt/lanman/doc/en/ha_guide/index.html`	*After installation,* point your browser to `C:\Program Files\Sun Microsystems\PC NetLink Server Manager\doc\en\ha_guide\index.html` If you did not install PC NetLink Server Manager in the default location, edit the portion of the path before `\doc` accordingly.

What's New in PC NetLink 1.2 Software

In addition to all of the features in the 1.0 and 1.1 releases of the product, the PC NetLink 1.2 release includes the following major new features:

- Ability to act as a Windows NT member server
- Client software to enable full backup capability
- High availability agent software
- Windows NT Service Pack 4 (SP4) bug fixes

See "New Features in PC NetLink 1.2 Software" on page 8 for a description of these features.

PC NetLink Features Introduced in Version 1.0

PC NetLink software from Sun Microsystems implements Microsoft Windows NT network services in the Solaris operating environment. As a result, PC NetLink software ensures compatibility with Microsoft networking features and desktop environments, while taking advantage of the Solaris operating environment's native ability to function simultaneously as a file, print, communications, and applications server. PC NetLink software provides networking capabilities that are functionally equivalent to those offered by Microsoft Windows NT Server. Solaris servers can take over key roles in a Windows NT local area network (LAN), replacing Windows NT servers or coexisting with them.

A Solaris server running PC NetLink software in a LAN allows you to share computing resources among a community of desktop users, and delivers powerful new network administration and enhanced security features. PC NetLink software interoperates with systems running the following operating environments:

- Windows NT Server 3.51
- Windows NT Server 4.0
- Windows NT Workstation 3.51
- Windows NT Workstation 4.0
- Windows 95
- Windows 98
- Windows for Workgroups 3.11

The following sections summarize PC NetLink features available since version 1.0.

Integration With the Solaris Operating Environment

PC NetLink software includes many features of the Solaris operating environment, including preemptive multitasking and symmetric multiprocessing. The time-sharing, multiuser model employed by the Solaris operating environment ensures file system integrity and continued server availability, even if a user's application crashes. See "Security" on page 5 for an overview of PC NetLink security features.

Interoperability With Other Systems

A server running PC NetLink software can function as a file and print server for a small, isolated community of users, or as the foundation of an enterprise networking scheme for a large network distributed over a wide area.

You can deploy a server running PC NetLink software as either a primary domain controller (PDC) or a backup domain controller (BDC) in a network composed of other servers running PC NetLink software or the Windows NT Server operating environment. (A new feature in Version 1.2 adds member server capability as well.)

You can replace existing Windows NT servers in your network with Solaris servers running PC NetLink software. You can do this gradually if you want, replacing backup domain controllers and later promoting one to primary domain controller. Your network will continue to behave as it did before, and users can benefit immediately from the new resources offered by PC NetLink software without additional training, because there is no change in the way they access network resources.

A major feature of PC NetLink software is that you can replace several smaller Windows NT servers with a single, larger server running PC NetLink software.

Security

PC NetLink software offers a logical administrative model that enables efficient management of large networks. An administrator can set up domains and trust relationships between domains to centralize user account and other security information, making the network easier to manage and use. Each user needs only one account and one password. This account can provide the user with access to resources anywhere on the network.

PC NetLink software incorporates enhanced features that support discretionary access control permissions on individual files, directories, and resources, and also includes comprehensive auditing capabilities. These features provide an administrator with a fine level of control over user and resource permissions and auditing.

Network Services

After installation, PC NetLink software starts several network services automatically so that the capabilities of the network are available as soon as you want to work with the system. You also can choose to start other network services automatically at system startup depending on your system needs.

Network Activity Tracking

PC NetLink software allows you to monitor network activity and track computer usage. For example, you can view servers and see which resources they are sharing; view which users currently are connected to any network server; see which files are open; log and view security auditing entries; keep sophisticated error logs; and specify that alerts be sent to administrators when certain events occur. You can also use Microsoft's NT Server Tools to monitor network activity.

Printing

PC NetLink software supports network printers. You can also attach a local printer to a Solaris server running PC NetLink software, and it will appear and function the same as other printers in your domain. If you attach a printer only to a Solaris system that is not running PC NetLink software, it will not be visible to other computers in the domain. See the *Solaris PC NetLink 1.2 Administration Guide* for information about installing a PC NetLink printer on a Solaris system.

Browsing

From your Microsoft Windows desktop, you can browse domains, workgroups, and computers to look for shared directories and printers. You can specify a network name to display available domains and workgroups, a domain or workgroup name to display available computers, or a computer name to display its shared directories.

Network File Sharing

PC NetLink software provides reliable and secure sharing of files and directories among Windows NT network users. Discretionary access controls and PC NetLink security on each file and directory provide the ability to specify the groups and users who can access files, to define the levels of access that each group or user is permitted, and to control auditing. Additional features include file ownership and directory replication.

User Environment Management

PC NetLink supports Windows NT user profiles, which enable administrators to control access to network resources and to manage Windows NT Workstation user desktops.

Remote Administration

PC NetLink software includes PC NetLink Server Manager software, which allows you to administer PC NetLink from the Solaris server and also from Microsoft Windows and Solaris client machines on your network. Remote administration is supported for network functions, including server management, policy management, and Solaris printer installation.

PC NetLink software can operate and be administered regardless of whether Windows NT is running on the network. In addition, you can use Microsoft network administration tools running on Microsoft Windows client computers for remote administration of Windows NT network services provided by PC NetLink software. The following Windows NT Server Tools are included in the PC NetLink kit:

- Server Manager
- User Manager for Domains
- Event Viewer
- System Policy Editor
- WINS Manager

Depending on your operating environment, some or all of these tools may be available. Sun Microsystems does not support Microsoft's Windows NT Server Tools; for assistance, refer to the online help that accompanies those tools.

Year 2000 Compliance

Sun Microsystems certifies that PC NetLink software is Year 2000 compliant. This compliance has been appropriately and adequately tested, and meets Sun's Year 2000 compliance standards.

New Features in PC NetLink 1.2 Software

PC NetLink 1.2 software introduces the following new features.

Member Server

Available at installation time (Custom installation only), the member server option enables a PC NetLink server to act as a Windows NT member server; that is, neither a primary domain controller (PDC) nor a backup domain controller (BDC). Member servers don't assist in user logon validation, so virtually all of their resources are available at all times. For example, you can use a member server as a file and print resource server, assign Administrator rights to the system, and exclude unnecessary access to the system.

You can also reconfigure a PC NetLink server as a member server after installing the product.

Backup

Included in the 1.2 release is client software that enables use of the Solstice Backup and Legato NetWorker products to back up Solaris files in shared directories, including Access Control Lists (ACLs) associated with files. After installing the PC NetLink base product, you must install the backup package `SUNWlzlb` separately on each server you plan to back up. See "How to Install the PC NetLink 1.2 Backup Module" on page 14 for installation details.

High Availability

You can install Solaris PC NetLink software on a Sun Cluster instead of a single system to provide high availability (HA) capabilities to the PC NetLink network. The cluster provides redundancy and automatic failover capabilities to ensure that the PC NetLink network operates without interruption in the event of a component or system failure. Installation on a Sun Cluster consists of a few extra steps and configuration. For instructions, see the *Solaris PC NetLink 1.2 High Availability Guide*.

Service Pack 4 Bug Fixes

All bug fixes required for compatibility with Windows NT Service Pack 4 (SP4) are included in the 1.2 release.

How to Install PC NetLink 1.2 Software

PC NetLink software includes server and client components that you can install on computers running the Solaris operating environment, and a client-side administration tool that you can install on computers running Microsoft Windows operating environments. You can also install Windows NT Server Tools on Microsoft Windows clients.

On Microsoft Windows operating environments, you can preserve a previous version of the client software so that you can continue to use it to manage servers running previous versions of PC NetLink. On the Solaris operating environment, installing version 1.2 of the client software removes any previous Solaris versions of the client software.

PC NetLink 1.2 installation supports a fresh installation as well as upgrade, reinstall, and uninstall procedures. If you plan to use PC NetLink software in a high availability cluster environment, see the *Solaris PC NetLink 1.2 High Availability Guide*.

Server System Requirements

You can install PC NetLink Solaris components on a Sun Ultra™ 5 system, or on a more advanced system that meets the following restrictions:

- Solaris 2.6 software or a later compatible release, entire distribution installation only.
- 100 Mbytes of free disk space in the `/opt` directory.
- 100 Mbytes of free disk space in the `/var` directory; 1024 Mbytes is recommended for a large user environment.
- 48 Mbytes of RAM is recommended for running applications.
- To test HA interoperability, you must have a second system meeting all the above requirements, an additional 100-Mbyte network interface card installed in each system, and you must have Sun Cluster software installed on both systems.
- To test backup functionality after installing the PC NetLink backup module, you must have the Solstice Backup or Legato NetWorker client component installed on each PC NetLink server that you plan to back up. You must also have one of the following versions of Legato NetWorker or Solstice Backup server software installed on a system somewhere on your network:
  - Solstice Backup 5.1.1
  - Solstice Backup 5.5.1
  - Legato NetWorker 5.5.1
  - Legato NetWorker 5.5.2

About PC NetLink Installation, Upgrade, and Reinstallation

If you install PC NetLink software on a system that does not have any version of PC NetLink packages installed, the installation performs a fresh installation.

If you install PC NetLink on a system that has PC NetLink software packages installed, the installation upgrades or reinstalls your software by removing your existing PC NetLink packages and replacing them with the corresponding packages attached to the installation script. Your system's current data and configuration are left unchanged. If your current installation does not include all PC NetLink components, you will have the opportunity to add additional components.

Installation Suggestion

For best performance and simplest administration, install PC NetLink software on the systems that have the local resources that you want to share within the network, such as files and printers.

Your server should preferably have enough extra local disk space to hold all the data you want to share with Microsoft Windows clients. Although you can share non-local files accessed through NFS, this will increase network load and can result in inconsistent ACL information if the same files are shared with Microsoft Windows clients by two different machines using PC NetLink software.

Directories and Files Created by Installation

The following table lists directories and files created by PC NetLink 1.2 installation.

TABLE 2 PC NetLink Directories and Files

Directory	Contents
`/opt/lanman`	All user commands, executables, libraries, and documentation
`/var/opt/lanman`	All server data files (SAM, Registry, etc.)
`/etc/opt/lanman`	The file `lanman.ini`
`/opt/SUNWlznb`	All NetBIOS related user commands and documentation
`/var/opt/SUNWlznb`	Data regarding the WINS servers that NetBIOS uses; this directory may be empty if you are not using a WINS server
`/etc/opt/SUNWlznb`	NetBIOS configuration files

System Requirements for PC NetLink Server Manager

You can install PC NetLink Server Manager, the PC NetLink administration tool, on systems running the following operating environments:

- Solaris 2.6 software or a later compatible release
- Windows NT Workstation 4.0
- Windows 95
- Windows 98

Solaris systems should have a minimum of 3 Mbytes of free disk space before beginning installation. For best display results, run PC NetLink Server Manager locally; not on a remote display device.

Systems running Microsoft Windows operating environments should have at least 30 Mbytes of free disk space before beginning installation, and 48 Mbytes of memory.

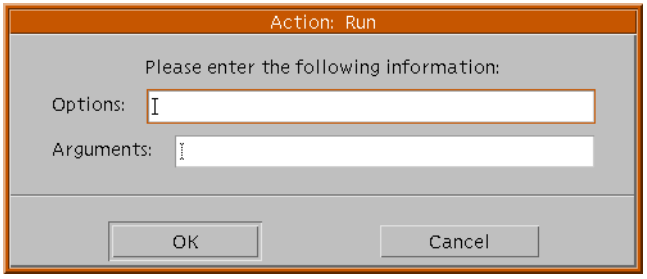
▼ How to Install or Upgrade Solaris Components

To install PC NetLink Solaris components (including PC NetLink Server Manager):

1. **Log in to the server as root.**
2. **Insert the product CD-ROM into a drive.**
3. **Double-click `install` in File Manager, or execute the following command:**

```
# /cdrom/pcnl_1_2/install
```

If you double-click `install` and the following window appears, click OK to continue. Do not enter options or arguments.



4. **Follow the prompts that appear on your screen.**

During a fresh installation, you can perform either an Express installation or a Custom installation. Express installation creates a PDC in a new domain, and installs:

- All PC NetLink server components
- PC NetLink Server Manager, the administration tool
- All necessary patches and Java™ components
- Windows NT Server Tools and other client tools

During a new Express installation, you will need to enter server, domain, and Administrator account names if you do not want to use the default names, and a password for the Administrator account. After Express installation finishes, you can run PC NetLink Server Manager or NT Server Tools to change this configuration.

Custom installation gives you greater control over how you install and configure PC NetLink. To perform a new Custom installation, you will need to specify:

- Which components to install—server, administration tool, or both
- If installing server components, whether the server will become a PDC, BDC, or member server

- Information about server and/or domain names and passwords
- What type of NetBIOS configuration to use
- Whether to install Windows NT Server Tools
- Whether to install client tools

Note – You must be experienced with Windows NT system administration to perform a Custom installation. Otherwise, it will be easier for you to perform an Express installation and then reconfigure the server using PC NetLink Server Manager.

About Upgrading PC NetLink Components

If you install PC NetLink software on a system that has a previous version of PC NetLink software packages installed, the installation upgrades your software by removing your existing PC NetLink packages and replacing them with the corresponding packages attached to the installation script. Your system's current data and configuration are left unchanged. If your current installation does not include all PC NetLink components, you will have the opportunity to add additional components.

▼ How to Reinstall PC NetLink 1.2 Software

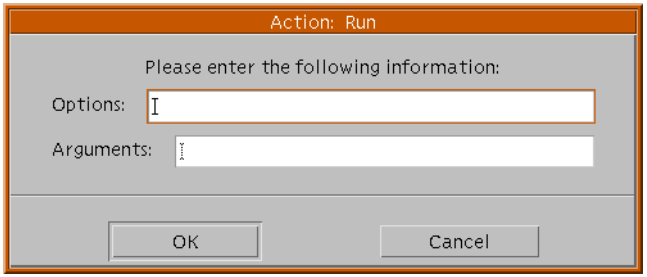
You can run the installation script to reinstall PC NetLink 1.2 software. Your system's current data and configuration are left unchanged. If your current installation does not include all PC NetLink components, you will have the opportunity to add additional components.

1. **Log in to the server as root.**
2. **Insert the product CD-ROM into a drive.**

3. **Double-click `install` in File Manager, or execute the following command:**

```
# /cdrom/pcnl_1_2/install
```

If you double-click `install` and the following window appears, click OK to continue. Do not enter options or arguments.



4. **Follow the prompts that appear on your screen.**

▼ How to Uninstall PC NetLink 1.2 Software

Uninstalling PC NetLink 1.2 software removes all PC NetLink software including any client, data, group, user, and log components that may have been created as a result of use or installation of the software. To uninstall PC NetLink 1.2 software:

1. **Log in to the server as root.**
2. **Execute the following command:**

```
# /opt/lanman/sbin/uninstall
```

3. **Follow the prompts that appear on your screen.**

▼ How to Install the PC NetLink 1.2 Backup Module

Before installing the PC NetLink 1.2 backup module on a PC NetLink server, check that the following conditions are true:

- The PC NetLink 1.2 server component is installed.
- The Solstice Backup or Legato NetWorker client package is installed.

- One of the following versions of backup software must be installed somewhere on the network:
  - Solstice Backup 5.1.1
  - Solstice Backup 5.5.1
  - Legato NetWorker 5.5.1
  - Legato NetWorker 5.5.2

Note – You should install the backup module on each PC NetLink server that you plan to back up.

Follow these steps to install the PC NetLink backup module.

1. **Log in to the server as root.**
2. **Insert the product CD-ROM into a drive.**
3. **Execute the following command:**

```
# pkgadd -d /cdrom/pcnl_1_2/PCNL/sparc SUNWlzlb
```

The backup module allows backup of files in shared Solaris directories only. Whenever you create or modify shares, you must log in as root and run the file `lmnsr.share` to enable backup for those shares. See the man page for `lmnsr.share`.

Note – Although the Solstice Backup and Legato NetWorker base products allow you to run backup commands when logged in as any user, you must log in as root before using these commands to back up PC NetLink shared directories.

▼ How to Install PC NetLink Server Manager on Microsoft Windows Clients

You can install PC NetLink Server Manager client software on a computer running one of the following operating environments:

- Windows NT 4.0
- Windows 95
- Windows 98

If you need to continue managing servers running previous versions of PC NetLink software, do not remove previous versions of PC NetLink Server Manager. Respond **No** to the installation prompt that asks if you want to remove the previous version.

To install PC NetLink Manager, use the PC NetLink 1.2 CD-ROM or access the `tools` share after PC NetLink software has been installed on the server computer.

▼ From the CD-ROM

Follow these steps to install PC NetLink Server Manager from the PC NetLink 1.2 CD-ROM.

1. **Quit any active Microsoft Windows programs.**
2. **Insert the product CD-ROM into a drive.**

   The install screen will appear automatically. If the install screen does not appear after a few seconds, select Run from the Start menu and enter *drive*`:\mswin\intel32\setup.exe`, where *drive* is the letter of the CD-ROM drive into which you loaded the product CD.
3. **Follow the prompts that appear on your screen.**

▼ From the `tools` Share

Follow these steps to install PC NetLink Server Manager from the share `/opt/lanman/shares/tools`. PC NetLink software must be installed on the server and you must be authenticated in your domain. The client computer must be on the same subnetwork as the server, or you must use WINS.

1. **Quit any active Microsoft Windows programs.**
2. **Open the `tools` share and follow the instructions in the file `readme_en.txt`.**

▼ How to Install Windows NT Server Tools on Microsoft Windows Clients

Follow these steps to install Windows NT Server Tools from the `tools` share. PC NetLink software must be installed on the server and you must be authenticated in your domain. The client computer must be on the same subnetwork as the server, or you must use WINS.

1. **Quit any active Microsoft Windows programs.**
2. **Open the `tools` share and follow the instructions in the file `readme_en.txt`.**

   Sun Microsystems does not supply localized versions of Microsoft's NT Server Tools. Check with Microsoft for availability of these tools.