Chapter2
Preparing to Install CiscoWorks

Before installing CiscoWorks 1.0(*x*), you must ensure that your system meets the requirements for CiscoWorks and that you have obtained the information required to install the product.

This chapter describes how to prepare for your installation and configuration of CiscoWorks 1.0(x) and provides worksheets to help you gather the necessary information.

Process Overview for Preparing to Install or Upgrade

This section provides an overview of the tasks you should perform before you install and configure CiscoWorks 1.0(*x*). Each step is explained in detail in the section cited. Follow these steps to prepare for installing and configuring CiscoWorks 1.0(*x*) for the first time, upgrading from CiscoWorks Release 1.0(1) or 1.0(2) to Release 1.0(3), or upgrading from NetCentral 1.3 to CiscoWorks 1.0(*x*). Skip step 4 if you are not upgrading from NetCentral 1.3 to CiscoWorks.

1. Verify that your workstation meets the minimum hardware and software requirements for CiscoWorks. See “Verifying Your System Requirements.”
2. Gather information necessary for completing CiscoWorks installation and configuration by filling in the information requested in the Installation and Configuration Worksheets. See “Gathering Information for Installation and Configuration.”
3. Become a super user on your system. See “Becoming a Super User.”
4. Upgrade from NetCentral 1.3 to CiscoWorks. See “Upgrading from NetCentral 1.3 to CiscoWorks.” Skip this step if you are not upgrading.
5. Upgrade your SunOS 4.1.1 or older version to SunOS 4.1.2 if your system is not using SunOS 4.1.2 currently. See “Upgrading Your SunOS 4.1.1.”
6. Install SunNet Manager 2.0 on your Sun workstation. Refer to the *SunNet Manager 2.0 User’s Guide* for information.

7. Verify that SunNet Manager is installed on your system by starting the SunNet Manager Console with the sample database file created during installation. Test the SNM installation by starting a request to an agent on your local machine. Using SNM option Quick Dump, perform a Quick Dump on an agent on your machine to ensure that the agent is responding. Refer to the *SunNet Manager 2.0 User's Guide* for instructions on verifying SNM installation.
8. Set up TFTP (Trivial File Transfer Protocol). Refer to "Setting Up TFTP."
9. If your CiscoWorks software is in CD-ROM format, perform the appropriate steps to mount your local or remote CD-ROM drive. See the section entitled "Installing from a Local or Remote CD-ROM".
10. Transfer the CiscoWorks 1.0(*x*) documentation from the CD-ROM to your hard disk. See "Transferring CD-ROM Documents to Your Hard Disk."

After completing these steps, you are ready to install and configure CiscoWorks on your system.

Verifying Your System Requirements

Before you install CiscoWorks 1.0(*x*) on your system, make sure that your system meets the hardware and software requirements described in the following sections.

Hardware Requirements

CiscoWorks requires the following hardware:

- Any one of the following Sun systems: Sun SPARCstations 1, 1+, 2, SLC, IPC, 330, 370, or Sun-4/xx series.
- Hard disk space requirements as described in Table 2-1. CiscoWorks software requires a single disk partition on your system, with a minimum of 200 MB of disk space. Additional hard disk space may be necessary for CiscoWorks 1.0(3). See the section, "Expanded Hard Disk Space Requirements for Upgrades to CiscoWorks 1.0(3)."
- The SunNet Manager database exists in the */var/adm/snm* directory unless you installed it in a different directory. Sun recommends about 10 to 15 MB of space for the initial database directory to allow enough space for the growth of SNM log files. If the log files require more hard disk space, you can change the location of the database directory. Refer to the *SunNet Manager 2.0 User's Guide* for detailed information on the hard disk space requirements for

SunNet Manager and on changing the location of the database directory.

- RAM requirements as described in Table 2-2.
- 32 MB of free swap space available. Additional swap space is required for managing large numbers of devices. For managing more than 75 to 100 devices, we recommend 64 MB of swap space.
- Color monitor.
- For CiscoWorks 1.0, a 1/4-inch tape drive that is local to the workstation or available remotely through the network. For CiscoWorks 1.0(3), a local or remote CD-ROM drive.
- PostScript-compatible printer (optional).

Table 2-1 Hard Disk Space Requirements

Software	Minimum Hard Disk Space Requirements
CiscoWorks	27 MB
Sybase (provided with CiscoWorks)	45 MB
SunNet Manager	10 MB
OpenWindows V3.0	75 MB
Sybase tables storage	43 MB
Total Disk Space	200 MB[1]

[1]CiscoWorks software must be installed in a single disk partition that contains at least 200 MB.

Table 2-2 RAM Requirements

CiscoWorks Software and Application	RAM Requirements
CiscoWorks[1]	18 MB
CiscoWorks applications[2]	14 MB
Total RAM for CiscoWorks software and all CiscoWorks applications	32 MB

[1]RAM requirements specified for CiscoWorks software include the RAM requirements for SunNet Manager, snmpd, nmpolld and nmdevmond processes in CiscoWorks, Sybase dataserver, xnews, and shared libraries.

[2]Approximately 14 MB of RAM enables you to run a minimum of seven CiscoWorks applications simultaneously. If you plan to run more than seven applications at the same time, you may need to increase the RAM, depending on the application and the activity performed.

Software Requirements

CiscoWorks requires the following software:

- SunOS Version 4.1.2 or later
- OpenWindows Version 3.0 or later
- SunNet Manager 2.0

CiscoWorks does not run on Solaris 2.*x*. The configuration management feature of CiscoWorks requires Cisco Systems device software version of Software Release 8.2 or later.

Expanded Hard Disk Space Requirements for Upgrades to CiscoWorks 1.0(3)

The new Sybase server that is installed with CiscoWorks Release 1.0(3) requires extra disk space to store your current database during the upgrade. If you are upgrading from CiscoWorks Release 1.0(1) or 1.0(2) to CiscoWorks Release 1.0(3), see the "Upgrading from CiscoWorks Release 1.0 or 1.0(2) to 1.0(3)" section. If you are upgrading from NetCentral 3.1 to CiscoWorks Release 1.0(3), see the "Upgrading from NetCentral Release 1.3 to CiscoWorks Release 1.0(3)" section.

Caution: Cisco recommends that you back up your Sybase database before you perform the upgrade procedure. This precaution is strongly recommended because the Sybase upgrade writes over your existing database and may corrupt your data if the upgrade is unsuccessful.

Upgrading from CiscoWorks Release 1.0 or 1.0(2) to 1.0(3)

When upgrading from CiscoWorks Release 1.0 or 1.0(2) to 1.0(3), make sure your system has a minimum of 70+ MB of free disk space in the database. Sybase requires this space in order to keep the current database running while installing the new database in a different directory.

The amount of space required will display during the installation, but you may want to calculate the space ahead of time. To calculate your disk space requirement, perform the following steps:

Step 1: Back up your current database.

The Sybase database upgrade writes over your current database files. This backup ensures that a recovery can be performed in case of installation failure.

Step 2: To calculate the current amount of disk space used in *$SYBASE/data*, enter the following command string at the UNIX prompt (%):

```
% du -s $SYBASE/data
```

This will report the total number of kilobytes used by the *$SYBASE/data* directory.

Step 3: Divide that number by 1000 to get the approximate number of megabytes.

$SYBASE/data / 1000 = current amount of disk space used in *$SYBASE/data*

Step 4: Add 45 MB to the number of megabytes to determine how much extra space will be required during installation.

Use this number to ensure that you have the required amount of disk space before attempting an upgrade to CiscoWorks Release 1.0(3). The CiscoWorks upgrade also requires at least 1 MB of swap space in the database when it upgrades the database.

Upgrading from NetCentral Release 1.3 to CiscoWorks Release 1.0(3)

The upgrade from NetCentral Release 1.3 to CiscoWorks Release 1.0(3) includes the installation of the new Sybase server 4.9.1.

When upgrading from NetCentral Release 1.3 to CiscoWorks Release 1.0(3), make sure your system has the required amount of disk space before proceeding with the installation.

The amount of space required will display during the installation, but you may want to calculate the space ahead of time. To calculate the disk space needed for your NetCentral Release 1.3 upgrade, refer to the "Database Administration" chapter in the *CiscoWorks User Guide*. Perform the steps described in the sections "Verifying Available Database Space" and "Calculating Disk Space Utilization" to calculate the disk space used. Use this number to ensure that you have sufficient free disk space for that database information and the new Sybase server 4.9.1.

Gathering Information for Installation and Configuration

Before you install and configure CiscoWorks, use the CiscoWorks Installation and Configuration Worksheets to identify installation requirements and obtain the information required for running the installation and configuration scripts.

The “Blank Worksheets” Appendix contains blank installation and configuration worksheets.

The CiscoWorks Installation Worksheet, if properly filled out, will contain the values you need to enter when running the *extract_unbundled* script. The CiscoWorks Configuration Worksheet enables you to obtain values that you need to enter when running the *ncsconfigure* script. Complete all preparations so that you can install and configure your CiscoWorks software correctly.

Filling in the CiscoWorks Installation Worksheet

The CiscoWorks Installation Worksheet is shown on the next page. Retrieve the blank CiscoWorks Installation Worksheet provided in Appendix C before continuing. Use it as you proceed through the descriptions to record your information.

Each item in this worksheet is described in the following section, “Installation Worksheet Items.”

CiscoWorks Installation Worksheet

Installation Worksheet Items

This section explains each question in the Installation Worksheet. The information is required for the installation of CiscoWorks. To obtain and verify system information for some items in the worksheet, you may need to be logged in as a super user. For information on how to log in as a super user, refer to "Becoming a Super User."

SunOS 4.1.2 Requirements

Your Sun system must have SunOS Version 4.1.2 in order for CiscoWorks to be installed. To find out whether your system is using SunOS 4.1.2, enter the following command at the UNIX prompt:

```
hostname% uname -r
```

The SunOS version number is displayed:

```
hostname% 4.1.2
```

OpenWindows 3.0

Cisco recommends OpenWindows 3.0 on your Sun system. Confirm whether your system is running OpenWindows 3.0.

SunNet Manager Installation

SunNet Manager software must be installed on your Sun system before you can install CiscoWorks. To find out whether the SunNet Manager software is installed on your system, enter the following command:

```
hostname% $SNMHOME/bin/snm_version
```

If the SNHOME environment variable was defined, the SunNet Manager software version is displayed.

Hard Disk Space

CiscoWorks requires 200 MB of disk space in a single disk partition on your system. Some disk partitions on your system may be full, with inadequate disk space available for CiscoWorks. If that is the case, create either a disk partition, a file system, or both for CiscoWorks software.

To find out how much disk space is available on your system, enter the following command:

```
hostname% df
```

Your system should display output similar to the following, indicating the file systems on your system.

```
Filesystem             kbytes      used      avail    capacity     Mounted on
/dev/root               18903     15952       1060       94%       /
/dev/dsk/isc0d3s2      983350    744939     228577       77%       /minxbackup
/dev/dsk/isc0d2s2      983350    870164      14851       98%       /users-dir
/dev/dsk/isc0d1s12     228751    186863      19012       91%       /docs
/dev/dsk/isc0d1s11     391207    343222       8864       97%       /dreggs
/dev/usr               558438    360349     142245       72%       /usr
dirt:/rfc              629610    527525      39124       93%       /mnt_tmp/rfc
clash:/tex             100047     77974      12068       87%       /mnt_tmp/tex
```

The amount of disk space available in each file system is displayed. Select a file system that has sufficient disk space available for installing CiscoWorks. For detailed information on how to manage disk partitions and file systems, refer to the *Sun System and Network Administration* manual.

Note: CiscoWorks 1.0(3) Upgrades may require additional hard disk space. See the section entitled "Expanded Hard Disk Space Requirements for Upgrades to CiscoWorks 1.0(3)" to confirm that you have sufficient disk space for installing CiscoWorks 1.0(3).

If you are unfamiliar with repartitioning disks or creating file systems, contact a knowledgeable system administrator. The following overview summarizes the steps involved in creating a file system. For information on the steps included in this overview, refer to the Sun *System and Network Administration* manual or the man pages on **mkfs**, **fsck**, **mkdir**, **fstab**, and **mount**.

Step 1: Create an empty file system on the disk partition you plan to use.

Step 2: Verify the integrity of the empty file system.

Step 3: Create a mount point directory.

Step 4: Configure the file system table and edit the */etc/fstab* file.

Step 5: Mount the new file system.

RAM

CiscoWorks requires a minimum of 32 MB of RAM. To find out how much RAM is available on your system, make sure you are logged in as super user. Then enter the following command at the UNIX prompt:

```
hostname# dmesg | grep mem
```

The following type of output is displayed:

```
mem = 16384K (0x1000000)
avail mem = 14385152
```

The entry “avail mem” indicates the amount of RAM memory available on your system.

Swap Space

CiscoWorks requires a minimum of 32 MB swap space on your system. To find out how much swap space is available on your system, make sure you are logged in as a super user. Then use the following command at the UNIX prompt:

```
hostname# pstat -s
```

Output similar to the following is displayed, indicating the amount of swap space available on your system:

```
15608k allocated + 5960k reserved = 21568k used,33448k
available
```

If the swap space on your system is less than 32 MB, expand the swap space by following the instructions in the Sun *System & Network Administration* manual.

Configuring TFTP for Configuration Management

Once installed and configured, the CiscoWorks configuration management application enables you to use Trivial File Transfer Protocol (TFTP) to transfer configuration files between your system and other devices on your network that use SNMP.

In order for TFTP to operate, you need to edit the */etc/inetd.conf* file on your system as described in “Setting Up TFTP.” You can perform this task either before or after CiscoWorks installation and configuration.

Check the box on your worksheet if you want TFTP enabled on your system.

Tape Drive Location

CiscoWorks can be installed from a local tape drive attached to your system or a tape drive attached to a remote system. Identify whether you plan to install from a local or remote tape drive.

Check the appropriate box on your worksheet.

Note: For installing or upgrading to CiscoWorks 1.0(3), you must have a local or remote CD-ROM drive. CiscoWorks 1.0(2) and 1.0(3) are not available in 1/4-inch tape format. Identify whether you plan to install from a local or a remote CD-ROM drive.

Super User Access to Remote System

If you plan to install CiscoWorks from a tape or a CD-ROM drive attached to a remote system, find out whether you have a login account as a super user (*root*) on that system. If you do not have a super user access to the remote system, contact the system administrator of the remote system to obtain a login account with a super user access to that system.

Name of Remote System

If you are installing CiscoWorks from a tape or CD-ROM drive attached to a remote system, obtain the complete host name of the remote system and make sure that this host name is listed in the */etc/hosts* file on your system.

Enter the remote system's host name on your worksheet.

Checking the .rhosts File

The *.rhosts* file enables users to login to another user's account on a remote system. If you plan to install CiscoWorks from a tape or a CD-ROM drive attached to a remote system, the *.rhosts* file on that system must contain your local system's host name and your username specified as super user. To find out if this is true, access the *.rhosts* file by using a text editor such as *vi* or *textedit*.

For more information on the *.rhosts* file, refer to the *SunOS Network Environment* manual.

Device Name

The installation script requires you to specify the device name for the tape or CD-ROM drive. You can either obtain the device name from your UNIX system administrator or view the contents of the */dev* directory on your system by following these steps:

Change to the */dev* directory:

```
hostname% cd /dev
```

Verify that you are in the */dev* directory by using the following command:

```
hostname% pwd
```

The directory path is displayed.

List the devices available to your system to find out whether you have a device name similar to *rst* (tape drives usually have device names similar to *rst0*, *rst1*, *rst2* and so on).

```
hostname% ls | more
```

A list of available devices is displayed.

To display the remainder of the list of devices, press the space bar.

If you cannot identify an appropriate device name for your tape drive, contact your UNIX system administrator for help in obtaining device information.

Note: CiscoWorks 1.0(3) is available only in CD-ROM format. Verify the device name for your CD-ROM drive.

Check the appropriate box on your worksheet and, if applicable, specify the name of the device.

Type of Installation

If you are installing CiscoWorks for the first time on your system, you are performing a new installation. If you already have NetCentral 1.3 software on your system and you are upgrading to CiscoWorks, you are performing an upgrade installation.

Check the appropriate box on the worksheet.

If you are upgrading to to CiscoWorks, make sure you fill out the "Upgrade Information" portion of the worksheet.

Directory Path Name for CiscoWorks

Specify the directory where you want the CiscoWorks software to be installed. If the directory does not already exist on your system, the installation script creates the directory and installs the software in that directory. The default directory path name is */usr/nms*.

Check the appropriate box on the worksheet. If applicable, specify the the directory pathname you plan to use.

Sybase Modifications to the Kernel Configuration File

All Sun systems contain a kernel. In order for the Sybase Version 4.8 software to work on your system, the kernel needs to be modified. The kernel is built from a configuration file in either the */usr/share/ARCH/conf* directory (where ARCH could be *sun4c*, *sun4m*, or *sun4n*) or the /*usr/sys/ARCH /conf* directory.

Most systems use a generic kernel that is stored in a configuration file called *GENERIC*. If the kernel was customized for your system, it may be stored in a customized configuration file with a different name. If you choose to allow the installation script to build the new kernel, it uses your current system configuration.

You can allow the CiscoWorks scripts to modify the kernel's configuration file or you can modify it manually by adding the following lines:

```
options “SHMSIZE=0x20000”
options “SEMMNS=640”
options “SHMMNI=256”
```

If you choose to allow the installation script to modify the kernel configuration file, it saves the old kernel configuration file and names it as *vmunix.syb_inst*.

You need not allow the installation script to modify your system's kernel if the kernel was already modified for Sybase Version 4.8 or if you wish to modify the kernel manually.

If you want the installation script to modify the existing kernel, check the appropriate box on your worksheet. If you want the installation script to modify a customized configuration file on your system, specify the name of this file on your worksheet.

Additional Installation Information for Upgrading

This section explains items in the Installation Worksheet that are applicable only if you are upgrading from NetCentral 1.3 to CiscoWorks.

Complete Path Name for NetCentral 1.3 Directory

Specify the directory path name for the existing directory where NetCentral 1.3 software exists. The installation script installs the CiscoWorks software in this existing directory.

Check the appropriate box on the worksheet and if applicable, specify the path name for the directory.

Sybase Password

During installation, the installation script accesses the existing Sybase database on your system. In order to do so, it prompts you to enter the Sybase password you used for the NetCentral 1.3 Sybase database.

Specify the Sybase password on your worksheet.

Disk Space for Saving the Database

The installation script saves your existing NetCentral 1.3 database in the */usr/tmp* directory unless you choose to save the database in a different directory. A minimum of 2 MB of disk space is required to save your database. If your database is larger and requires more than 2 MB of disk space, make sure that your system has the required disk space.

Use the **df** command to verify that you have adequate disk space for saving the database.

After verifying that your system has the necessary disk space, check the appropriate box on your worksheet.

Directory for Saving the Database

The installation script saves your existing NetCentral 1.3 database in the */usr/tmp* directory unless you choose to save the database in a different directory. Check the appropriate box on your worksheet.

Filling in the CiscoWorks Configuration Worksheet

The CiscoWorks Configuration Worksheet is shown on the next page. Retrieve the blank CiscoWorks Configuration Worksheet provided in Appendix C before continuing. Use it as you proceed through the descriptions to record your information.

Each item in this worksheet is described in the following section, “Configuration Worksheet Items.”

CiscoWorks Configuration Worksheet

Configuration Worksheet Items

This section explains each question in the Configuration Worksheet. The information is required for the configuration of CiscoWorks. For detailed information on the */etc/passwd* and */etc/group* files, usernames, user IDs, group names, and group IDs, refer to Sun's *System & Network Administration* guide.

Type of Installation

Verify whether the CiscoWorks installation was a new installation or an upgrade installation. If you performed an upgrade installation, make sure you complete the last portion of the worksheet, which requires additional information on an upgrade configuration. See the section "Additional Information for an Upgrade Configuration."

Check the appropriate box on your worksheet.

Directory Where CiscoWorks Is Installed

Verify the complete directory path where CiscoWorks is installed.

Check the appropriate box on your worksheet, and if applicable, enter the directory path where CiscoWorks was installed.

Note: The following information for groups and users is normally applied to the */etc/passwd* and */etc/group* files on the host system. If you are running Network Information Services (NIS) at your site, you will need to manually update these entries on your NIS server.

CiscoWorks Group Name

In order for CiscoWorks users to access and use CiscoWorks, they must belong to a CiscoWorks group that is specified in the */etc/group* file on your system. The configuration script prompts you to supply the group name you wish to use for CiscoWorks users. The default name for the group is *CscWorks*. If you are upgrading from NetCentral 1.3, you can use the NetCentral group name that you used for NetCentral 1.3.

Check the box for the default *CscWorks* group name on your worksheet or specify a unique name for the CiscoWorks group.

CiscoWorks Group ID

The CiscoWorks group, which is created and added to */etc/group* file by the *ncsconfigure* script, must be assigned with a unique number. The

configuration script proposes a default group ID number that you could accept. If you specify a different group ID number for the CiscoWorks group, make sure that it is unique and that no other group specified in the */etc/group* file uses it.

Check the box for the default CiscoWorks group ID number on your worksheet or specify a unique group ID number for CiscoWorks.

Usernames for CiscoWorks Group

In order to specify usernames while running the installation script and allow users to access and use CiscoWorks, the following must be true:

- A user must have a login account on the Sun system.
- A user's login account information must exist in the */etc/group* and the */etc/password* files on the system.

If you need to create user login accounts, refer to the instructions in Sun*'s System & Network Administration* guide.

In the worksheet, enter the usernames for users who have valid login accounts on your system and need to use CiscoWorks. If you are upgrading from NetCentral 1.3 to CiscoWorks, the configuration script displays the usernames of existing NetCentral users. You can either accept them and or add new usernames.

CiscoWorks Username

In order for the CiscoWorks software to work on your system, it requires a CiscoWorks login account and username. The configuration script prompts you to supply the username for CiscoWorks. Cisco recommends that you use the default username *cscworks*. The configuration script adds theCiscoWorks login account and username to the */etc/passwd* file. In addition, the username is also added to the CiscoWorks group in the */etc/group* file.

Check the appropriate box on your worksheet, and if applicable, specify a unique name for the CiscoWorks login account.

CiscoWorks User ID Number

Users with valid login accounts and usernames on your system have unique user ID numbers that are specified in the */etc/password* file. The CiscoWorks login account, which is created and added to the */etc/password* file by the configuration script, must be assigned with a unique user ID number. The configuration script proposes a default user ID number. To specify a different user ID number for the CiscoWorks login account, make sure that it is unique and that no other user login account uses it.

Check the appropriate box on your worksheet, and if applicable, specify a unique user ID number for the CiscoWorks username.

Full Name for CiscoWorks

Users with valid login accounts and usernames on your system should have their full names specified in the */etc/password* file. A full name must be specified for the CiscoWorks login account. The configuration script proposes a default full name (CiscoWorks) that you could accept.

Check the appropriate box on your worksheet, and if applicable, specify a different full name for theCiscoWorks login account.

CiscoWorks Home Directory

The configuration script installs the CiscoWorks software in a directory on your system. The default directory is */usr/nms*. You can either accept the default directory or specify a subdirectory within the default directory.

Check the box for the appropriate Sybase directory name on your worksheet, and if applicable, specify a different directory for the Sybase software.

Type of Shell for CiscoWorks

As a user, you interact with the UNIX operating system via a shell. Two standard shells used on UNIX systems are the C-Shell and the Bourne Shell. The C-Shell is the default shell you would use for Sybase-related tasks that are performed at the UNIX prompt.

Check the appropriate box on your worksheet, and if applicable, specify a shell of your choice.

Sybase Username

The CiscoWorks software includes Sybase Version 4.8 software. In order for the Sybase software to work on your system, it requires a Sybase login account and username. The configuration script prompts you to supply the username for Sybase. Cisco recommends that you use the default username *sybase*. The configuration script adds the sybase login account and username to the */etc/passwd* file. In addition, the username is also added to the CiscoWorks group in the */etc/group* file.

Check the appropriate box on your worksheet, and if applicable, specify a unique name for the Sybase login account.

Sybase User ID Number

Users with valid login accounts and usernames on your system have unique user ID numbers that are specified in the */etc/password* file. The Sybase login account, which is created and added to the */etc/password* file by the configuration script, must be assigned with a unique user ID number. The configuration script proposes a default user ID number. To specify a different user ID number for the sybase login account, make sure that it is unique and that no other user login account uses it.

Check the appropriate box on your worksheet, and if applicable, specify a unique user ID number for the Sybase username.

Sybase Group ID

The Sybase group, which is created and added to */etc/group* file by the *ncsconfigure* script, must be assigned with a unique number. The configuration script proposes a default group ID number that you can accept. If you specify a different group ID number for the Sybase group, make sure that it is unique and that no other group specified in the */etc/group* file uses it.

Either check the box for the default Sybase group ID number on your worksheet or specify a unique group ID number.

Full Name for Sybase Username

Users with valid login accounts and usernames on your system should have their full names specified in the */etc/password* file. A full name must be specified for the Sybase login account. The configuration script proposes a default full name (Sybase) that you could accept.

Check the appropriate box on your worksheet, and if applicable, specify a different full name for the Sybase login account.

Sybase Home Directory

The configuration script installs the Sybase software in a directory on your system. The default directory is *$NMSROOT/sybase*. You can either accept the default directory or specify a substitute within the default directory.

Check the box for the appropriate Sybase directory name on your worksheet, and if applicable, specify a different directory for the Sybase software.

Type of Shell for Sybase

As a user, you interact with the UNIX operating system via a shell. Two standard shells used on UNIX systems are the C-Shell and the Bourne Shell. The C-shell is the default shell you would use for Sybase-related tasks that are performed at the UNIX prompt.

Check the appropriate box on your worksheet, and if applicable, specify a shell of your choice.

Directory Path Name for SNM

The CiscoWorks software needs to identify the directory where SunNet Manager software was installed on your system. Unless you installed the SNM software in a different directory, the SNM software is generally installed in the default directory */usr/snm*.

Verify the directory where the SNM software is installed on your system. If it is installed in the */usr/snm* directory, select the default directory path listed on your worksheet. Otherwise, specify the correct directory where the SNM software was installed.

Check the appropriate box on the worksheet. If the SNM software was installed in a directory other than the default directory, specify the correct directory.

Log File for CiscoWorks Messages

The CiscoWorks Log Manager application uses a centralized log file, */var/log/nmslog*, which gets messages from the UNIX *syslogd* process. If you want these messages to be logged to a different file, you can specify a different filename for this log file.

Check the appropriate box on your worksheet and, if applicable, specify the name of the file where the messages can be logged.

Syslog Facility for CiscoWorks Messages

The CiscoWorks Log Manager application uses a centralized log file that gets messages from the UNIX *syslogd* process. The default facility used by the configuration script is *local7*.

Use the default facility, *local7*, if you want to log both CiscoWorks messages and Cisco device messages and view them through the Log Manager application. Cisco routers use the *local7* facility. If you specify a facility in the range of *local0* through *local6*, only CiscoWorks messages are logged.

Information about the facility you choose will be stored in the *$NMSROOT/etc/nms.rc* file. At a later time, you can change the facility

you use by modifying your system's *rc.local* file and either setting the *NCSSYSLOG* environment variable or editing the *nms.rc* file. Refer to the *CiscoWorks User Guide* for instructions on performing these tasks.

Check the appropriate box on your worksheet.

Erasing Applications That Use the Facility

The configuration script asks you whether it can erase any other applications that might be using this facility. If you choose **no**, note that CiscoWorks log utility may not be able to use this facility to do the following:

- Transfer or exchange information such as error messages.
- Receive extraneous messages in the CiscoWorks Log Manager.

Check the appropriate box on your worksheet.

CiscoWorks Log Purging Utility

CiscoWorks contains a centralized log file called *nmslog*. This log file can be automatically purged and backed up every day. As a result, the log purging utility is started automatically by the UNIX cron daemon. If you want the *nmslog* file to be purged and backed up automatically, select **yes**. Otherwise, select **no**.

Check the appropriate box on your worksheet.

Additional Information for an Upgrade Configuration

If you are upgrading from NetCentral 1.3 to CiscoWorks, the configuration script prompts you for additional information. Complete this portion of the worksheet if you are upgrading.

Replacement of Startup in /etc/rc.local File

You can specify whether you want the CiscoWorks daemons and the Sybase dataserver to be started automatically whenever the system is rebooted. If you choose to allow them to be started automatically, the startup commands are added to the */etc/rc.local* file on your system. Otherwise, you may have to perform this task manually.

Check the appropriate box on your worksheet.

Installation of New MIB Files

The CiscoWorks software contains new MIB files. If you already had any MIB files on your system, they are saved in a file called *mibs.BAK* in the *$NMSROOT/etc* directory under the appropriate CiscoWorks directory.

Check the box on the worksheet.

Becoming a Super User

To perform the tasks associated with installing and configuring CiscoWorks, you must log into your system as a super user (*root*). Being a super user allows you to perform functions restricted from normal users.

Caution: If you are a relatively inexperienced UNIX user, limit your activities as a super user to those tasks described in this manual. As a super user, you can potentially cause adverse effects to your operating environment, if you are unaware of the effects of the commands you use.

To become a super user, you must know the root password. In the following examples, the root password is *rootpassword*.

Note: This discussion assumes you use the C-Shell (csh). If you are using a Bourne Shell, the prompt displays as a dollar sign ($).

If you are not logged in, enter the following commands to log in as a super user:

```
login: root
Password: <rootpassword>
```

The UNIX prompt changes to a pound sign (#), indicating that you are logged in as a super user.

Note: For security reasons, when you enter **rootpassword**, nothing appears on the screen because passwords are not echoed.

If you are already logged in, but not as root, enter the following commands to change your login to root:

```
hostname% su
Password: <rootpassword>
```

The UNIX prompt changes to a pound sign (#), indicating that you are logged in as a super user.

Upgrading from NetCentral 1.3 to CiscoWorks

If you are upgrading from NetCentral 1.3 to CiscoWorks, perform the steps in this section. Skip this section if you are not upgrading.

Shutting Down the Sybase Database

Since CiscoWorks accesses the Sybase database, close all database files and shut down your database before starting the backup process. If you do not perform these steps before you perform your backup, the integrity of your backup cannot be ensured.

To shut down the database, perform the following procedure:

Step 1: Log into your system as a super user.

Step 2: At your UNIX prompt, enter:

```
hostname# setenv SYBASE $NMSROOT/sybase
```

Execute the isql binary by entering the following:

```
hostname# $SYBASE/bin/isql -Usa -P <password>
```

If you have changed the password for the sybase sa account, replace <*password*> with your password. If you have not changed the password, do not supply a password.

Step 3: After starting isql, you get the prompt 1>. At the prompt. enter the **shutdown** command as follows.

```
1> shutdown
2> go
```

The database shuts down and you are returned to the UNIX prompt.

Backing Up Your NetCentral 1.3 Software

Back up your entire NetCentral 1.3 system, including the *$NMSROOT* directory, current database and map files, as well as any additional Sybase data files stored elsewhere. Refer to the UNIX man pages on **tar**(1) or **cpio**(1) for information on making backups of UNIX files.

Opening Sybase Files and Starting nmdaemon

NetCentral's nmdaemon process performs the database queries created with the **DBMS Query Configuration** command.

Before you upgrade from NetCentral 1.3 to CiscoWorks, enter the following command to open the appropriate NetCentral 1.3 Sybase files and start the nmdaemon process:

```
hostname# $NMSROOT/etc/nmstartup
```

This command allows the CiscoWorks installation and configuration scripts to perform a complete upgrade to CiscoWorks.

Upgrading Your SunOS 4.1.1

After you shut down the Sybase database and back up the NetCentral 1.3 software, follow the instructions in the Sun documentation to upgrade from SunOS 4.1.1 to SunOS 4.1.2. Skip this step if you already have SunOS 4.1.2 on your system.

Installing SunNet Manager

Install SunNet Manager on your system according to the instructions provided in the *SunNet Manager 2.0 User's Guide*.

Setting Up TFTP

The Trivial File Transfer Protocol (TFTP) enables you to transfer files to and from remote systems. The configuration management application in CiscoWorks enables you to edit configuration files by using a text editor and download the files to devices on your network. It also enables you to retrieve a device's configuration file, view it, edit it, add it to the database, or return it to the device. TFTP is used to transfer the configuration files from a device to your system via the network.

You must verify that the TFTP daemon is enabled, the TFTP environment variable is set correctly, and a *tftpboot* directory exists. If you do not perform these tasks, you will not be able to use the configuration management application and a message will appear on the screen stating that TFTP was not enabled.

Enabling the TFTP Daemon

In order for CiscoWorks software to operate, the TFTP daemon (*tftpd*) must be enabled. When you executed the *ncsconfigure* script to configure CiscoWorks, you may have noted a message stating that TFTP is not set up correctly. The steps in this section will correct that situation.

If you are using the standard Sun software, verify that *tftpd* is enabled by completing the following steps:

Step 1: Log in as a super user. For information on becoming a super user, see the section, "Becoming a Super User."

Step 2: Using a text editor such as *vi*, edit the */etc/inetd.conf* file.

Step 3: Look in the file */etc/inetd.conf* for the line that invokes *tftpd*. If the line is commented out (starts with a pound sign (#) as in the following example), remove the pound sign with an editor.

```
tftp  dgram  udp  wait  root  /user/etc/in.tftpd  in.tftpd
-s /tftpboot
```

Step 4: Save the changes in the edited file and exit.

Step 5: At the UNIX prompt, enter the following command to display the process id number for the *inetd* configuration.

```
hostname# ps  -ax  |  grep  -v grep  |  grep inetd
```

The system response is similar to the following:

```
hostname# 119  ?   S   0:05 inetd
```

The first number in the output is the process ID of the *inetd* process. You must kill this inetd process by entering the following command:

```
hostname# kill  -HUP  119
```

Step 6: Verify that TFTP is enabled by typing:

```
hostname# netstat -a | grep tftp
```

The output should be similar to the following:

```
hostname# udp     0       0   *.tftp        *.*
```

If there is no output, *tftpd* is not enabled. For additional information on TFTP, refer to the UNIX man pages on **tftp** and **tftpd**.

Setting the TFTPTYPE Environment Variable

TFTPTYPE is an environment variable used by ncsconfigure to describe which type of TFTP is being used. Sun's TFTP daemon requires that a file that is being transferred must first exist as a "dummy" file on the

destination system. Other implementations require that the file does not exist on the destination system.

TFTPTYPE can take the value OVERWRITE (the file must exist and is overwritten) or NOOVERWRITE (the file cannot be overwritten; it must not exist). If you are using the standard Sun TFTP daemon, no action is required to set the *TFTPTYPE* variable. Otherwise, you must set *TFTPTYPE* accordingly.

Creating the tftpboot Directory

The *tftpboot* directory can be used to save and store configuration files that are loaded to a device when using the configuration management application in CiscoWorks. The SNMP device configuration file is saved in the form of a TFTP boot file.

Note: Creating and using the *tftpboot* directory on your system is optional. The *tftpboot* directory is accessible by all users. To protect the security of your system and limit access to it, you may choose not to set up this directory on your system.

If you upgraded from NetCentral 1.3 to CiscoWorks, the *tftpboot* directory may already exist on your system. If that is the case, you need not perform these steps.

Follow these steps to create the *tftpboot* directory.

Step 1: If the *tftpboot* directory does not exist, use the following command to create the directory:

```
hostname# mkdir /tftpboot
```

Step 2: The *tftpboot* directory must have the appropriate permissions. Modify the permissions with the following command:

```
hostname# chmod 777 /tftpboot
```

As a result, all users accessing the /tftpboot directory will have read, write, and execute permissions.

Installing from a Local or Remote CD-ROM

Software for CiscoWorks Release 1.0(3) is distributed on a CD-ROM. To install CiscoWorks from either a CD-ROM drive attached to your system or a drive attached to a remote system, do the following:

- Attach a CD-ROM drive either to your workstation or to a remote workstation.
- If you plan to install from a remote host, acquire the appropriate login account to mount the CD-ROM remotely.
- Have the CiscoWorks 1.0(3) CD-ROM with you.
- Log in as a superuser. For instructions, refer to the section entitled "Becoming a Super User."

Caution: Avoid exposing the CiscoWorks Release 1.0(3) CD-ROM to direct sunlight because it might harm the contents.

Before beginning the installation procedure, place the CiscoWorks CD-ROM into its caddy and insert it into the CD-ROM drive. If you are using a CD-ROM drive that is connected to your workstation, refer to the following section, "Mounting from a Local CD-ROM." If you are using a CD-ROM drive that is connected to a remote workstation, refer to the section "Mounting from a Remote CD-ROM." These instructions are also provided in the CiscoWorks Release 1.0(3) CD-ROM insert booklet shipped with the product.

Mounting from a Local CD-ROM

To mount the CD-ROM from a local CD-ROM drive, perform the following steps:

Step 1: Place the CD-ROM into its caddy and insert it into the CD-ROM drive.

Step 2: Become a superuser by entering the following command and supplying your root password:

```
login: su
Password: <rootpassword>
```

Step 3: If the */cdrom* directory does not already exist, enter the following command to create a new directory:

```
hostname# mkdir /cdrom
```

If the */cdrom* directory already exists, proceed to the next step.

Step 4: To mount the CD-ROM, enter the following command:

```
hostname# mount -rt hsfs /dev/sr0 /cdrom
```

In this command, the **-r** option mounts the CD-ROM in ReadOnly mode. The **-t** indicates the type of filesystem where **hsfs** specifies a filesystem with an ISO 9660 standard or High Sierra standard with Rock Ridge extensions. If you do not use these options, media error messages may display on the console.

Mounting from a Remote CD-ROM

If you plan to use a CD-ROM drive attached to a remote system, CiscoWorks does not require any disk space on the remote system. The software is copied across the network to the local workstation.

The root *.rhosts* file on the remote system must contain the local host name of your system and your user name. Otherwise, you will not be able to access the remote system to download software from the CD-ROM drive connected to the remote system. For more information, refer to the manual pages on **rhosts**.

To mount the CD-ROM from a remote CD-ROM drive, perform the following steps on the remote machine:

Step 1: Place the CD-ROM into its caddy and insert it into the CD-ROM drive.

Step 2: Become a superuser by entering the following command and supplying your root password:

```
login: su
Password: <rootpassword>
```

Step 3: If */cdrom* directory does not already exist, enter the following command to create a new directory:

```
hostname# mkdir /cdrom
```

If the */cdrom* directory already exists, proceed to the next step.

Step 4: If the */etc/exports* file does not exist, create it.

Step 5: Edit the */etc/exports* file to include the following line:

```
/cdrom -ro
```

Step 6: If */etc/exports* did not exist previously, reboot your workstation to become an NFS server, so the *nfsd* can be started.

Step 7: To mount the CD-ROM, enter the following command:

```
hostname# mount -rt hsfs /dev/sr0 /cdrom
```

In this command, the **-r** option mounts the CD-ROM in ReadOnly mode. The **-t** indicates the type of filesystem where **hsfs** ISO 9660 standard or High Sierra standard with Rock Ridge extensions. If you do not use these options, media error messages may display on the console.

Step 8: If the */etc/exports* existed previously, run **exportfs -a**.

```
hostname# exportfs -a
```

Perform steps 9 through 11 on the local workstation:

Step 9: Become a superuser by entering the following command and supplying your root password:

```
login: su
Password: <rootpassword>
```

Step 10: If the */cdrom* directory does not already exist, enter the following command to create a new directory:

```
hostname# mkdir /cdrom
```

If the */cdrom* directory already exists, proceed to the next step.

Step 11: To mount the CD-ROM, enter the following command:

```
hostname# mount remote_workstation: /cdrom /cdrom
```

Transferring CD-ROM Documents to Your Hard Disk

Your CD-ROM contains the CiscoWorks Release 1.0 documentation. If you are upgrading from CiscoWorks Release 1.0(2) and have already transferred the CD-ROM documents to your hard disk, you do not need to repeat this procedure.

Note: No additional documents were added to the CD-ROM since the CiscoWorks Release 1.0(2) version. All new release note and addendum information are on paper, not CD-ROM. This is due to early CD-ROM press schedules.

Perform the following steps to copy these documents from the CD-ROM to your hard disk:

Step 1: If the CD-ROM is not already mounted, refer to the CiscoWorks 1.0(3) CD-ROM installation booklet or the section entitled “Installing from a Local or Remote CD-ROM” for instructions on mounting the disc.

Step 2: Create a directory to store the CD-ROM files by entering the following at the UNIX prompt (%). This path allows the documentation to remain with the source software.

```
% mkdir /usr/nms/docs
```

Step 3: Change to the new */usr/nms/docs* directory by entering the following:

```
% cd /usr/nms/docs
```

Step 4: To copy all the document files to your */usr/nms/docs* directory, enter the following:

```
% cp /cdrom/documentation/Viewer_docs/UserGuide/* .
```

Step 5: To copy a specific document file to your */usr/nms/docs* directory, enter the following:

```
% cp /cdrom/documentation/Viewer_docs/UserGuide/filename.view .
```

Substitute the name of your file for *filename.view*.

Step 6: To copy the complete directory structure with the documents to your system, enter the following:

```
% cp -r /cdrom/documentation .
```

For additional information on accessing the documents on the CD-ROM, refer to the *README* file in the */cdrom/documentation* directory.

After completing all the preparations required to install CiscoWorks, you are ready to proceed to the next chapter, "Installing and Configuring CiscoWorks."

- If you are installing CiscoWorks for the first time, refer to the section, "Installing CiscoWorks Release 1.0(3) for the First Time."
- If you are upgrading from CiscoWorks Release 1.0(1) or 1.0(2) to Release 1.0(3), refer to the section, "Performing a CiscoWorks Release 1.0 or 1.0(2) to Release 1.0(3) Upgrade."
- If you are upgrading from NetCentral Release 1.3 to CiscoWorks Release 1.0(3), refer to the section, "Performing a NetCentral 1.3 to CiscoWorks 1.0(3) Upgrade."