Solstice Enterprise Manager Installation Guide

Release 2.0

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Preface

This manual explains how to install the Solstice Enterprise Manager™ software, hereafter referred to as Solstice EM™, and AnswerBook® software from the product CD-ROM onto your machine.

Who Should Use This Book

This book is written for users installing Solstice EM software. It assumes you are familiar with the Solaris® 2.4 or later operating environment.

Before you Read This Book

If you have just acquired the Solstice EM product, you should read the "Overview" chapter of the *Solstice Enterprise Manager Reference Manual* for an overview of the Solstice EM product functions, features, and components. You should also read the *Solstice Enterprise Manager 2.0 Release Notes* for information on compatibility and minimum machine and software requirements, known problems, an inventory of the product components, and late-breaking information about the Solstice EM product.

How This Book Is Organized

This book contains the following chapters and appendixes:

- Chapter 1, "Pre-Installation Notes and Requirements," provides information you should have before installing Solstice EM software.

- Chapter 2, “Customizing Solstice EM Software,” provides information about the Solstice EM software packages, how the `em_install` program combines these packages in components, the various package dependencies, and customizing the software.
- Chapter 3, “Inserting and Accessing the CD-ROM,” explains how to insert and access the CD-ROM containing the Solstice EM software.
- Chapter 4, “Installing AnswerBook,” provides instructions for installing the AnswerBook online documentation package.
- Chapter 5, “Installing the Software,” explains how to install the Solstice EM software packages using the `em_install` program.
- Chapter 6, “Finishing the Installation,” explains what should be done after the packages are installed.
- Chapter 7, “Starting the MIS and Other Applications,” provides instructions on starting the Solstice EM MIS and various other applications.
- Chapter 9, “Installing SNM Agents on Remote Machines,” provides instructions for installing SunNet Manager 2.2 agents on remote machines.
- Chapter 10, “Removing Solstice EM Software,” explains how to remove pre-existing Solstice EM software using either the `pkgrm` command or the `em_install` program.
- Appendix A, “Installing Solstice EM Using pkgadd,” contains instructions on how to install the Solstice EM software using the `pkgadd` command.
- Appendix B, “Sample Installation,” contains the actual output of a sample installation.
- Appendix C, “GDMO and ASN.1 File Usage,” describes the files that are used to build the MIS database and specifies the purposes to which these files are put.

Conventions Used in This Manual

This section describes the conventions used in this manual.

Operating System Terminology

This manual contains references to the Solaris 2.4 and later operating environment and to the SunOS™ 4.x operating environment.

The Solaris 2.4 and later environment includes:

- SunOS 5.4 or later Operating System
- SPARC® computer, either a server or a workstation
- OpenWindows™ 3.4 or later application development platform

The SunOS 4.x environment includes:

- SunOS 4.1.x operating system
- SPARC computer, either a server or a workstation
- OpenWindows 3.0 application development platform

SunOS 4.1.x implies one of the following:

- SunOS 4.1.3 with optional patches
- SunOS 4.1.2 with optional patches
- SunOS 4.1.1 with optional patches

What Typographic Changes and Symbols Mean

The following table describes the type changes and symbols used in this book.

Table 0-1 Typographic Conventions

Typeface or Symbol	**Meaning**	**Example**
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `system% You have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`system% su` `Password:`
<*AaBbCc123*>	Command-line placeholder: replace with a real name or value	To delete a file, type `rm` <*filename*>`.`
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in *User's Guide*. These are called *class* options. You *must* be root to do this.

Shell Prompts in Command Examples

All command line examples in this guide use the C-shell environment. If you use either the Bourne or Korn shells, refer to `sh`(1) and `ksh`(1) man pages for command equivalents to the C-shell. The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

Table 0-2 Shell Prompts

Shell	**Prompt**
C shell prompt	`hostname%`
C shell superuser prompt	#
Bourne shell and Korn shell prompt	`hostname$`
Bourne shell and Korn shell superuser prompt	#

Related Documents

The Solstice EM2.0 documentation set includes the following documents:

- *Solstice Enterprise Manager Installation Guide* (this document)
- *Solstice Enterprise Manager 2.0 Release Notes*
- *Solstice Enterprise Manager Administration Guide*
- *Solstice Enterprise Manager API Syntax Manual*
- *Solstice Enterprise Manager Application Development Guide*
- *Solstice Enterprise Manager Reference Manual*
- *Cooperative Consoles Administration Guide*
- *Site/SunNet/Domain Manager Application and Agent Development Guide*
- *Site/SunNet/Domain Manager Reference Manual*
- *Solstice Enterprise Manager Troubleshooting Guide*
- Solstice User Interface Style Guide (not available on AnswerBook)

You might want to have your Solaris 2.4 or later or SunOS 4.x system documentation available as a reference if you need additional information on procedures in this manual.

Pre-Installation Notes and Requirements 1

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

This chapter provides a checklist of installation requirements and other information you might need for installing Solstice EM and the AnswerBook system software. It also provides information on getting help if you need it.

1.1 Installation Requirements

The Solstice EM 2.0 product runs on Sun systems at least as powerful as a SPARC-5™ with a minimum of 64 Mb of RAM installed. The product requires a minimum of the disk space availability outlined in Section 1.1.1, “Compatibility and Requirements.”

Note – Refer to the *Solstice Enterprise Manager 2.0 Release Notes* for definitive compatibility information, hardware and software requirements, and other important information that was not available when this book was published.

1.1.1 Compatibility and Requirements

This checklist is provided to help you gather information you need to complete the installation procedures. You must be able to answer yes or fill in the appropriate information on the lines provided. If you have problems with your installation, you will need this information when you call customer support.

1. Is your installation machine a Sun SPARC® machine? _____
2. Is your machine running Solaris 2.4 or later system software? _____
3. Is your machine running Motif 1.2.3, Common Desktop Environment (CDE), or OpenWindows 3.4 (or later) software? _____
4. Is the installation medium a CD-ROM? _____
5. Do you have access to a local or remote CD-ROM drive? (The remote drive can be attached to a SunOS 4.1.x machine.) _____
6. If remote, what is the host name of the machine to which the CD-ROM drive is attached? _____
7. In which directory are you installing the Solstice EM software? (The default directory is `/opt`.) _____

Note – Throughout this book, `/opt` is referenced. `/opt` is the default installation directory for the Solstice EM product. If the Solstice EM product is going to be installed in a directory other than `/opt`, change all references accordingly.

8. Use the following command to check for disk space usage:

```
hostname% df -k /opt
```

- 112 Mb are required in the partition where you install all Solstice EM packages except for the Geographical Map Data (SUNWemmap) and AnswerBook (SUNWabem) packages. By default, this is /opt. Table 1-1 lists the packages and their individual space requirements.

Table 1-1 Required Free Disk Space

Space (Kb)	Packages	Package Name
33000	Solstice EM AnswerBook package	SUNWabem
425	Cooperative Consoles Configuration Tool	SUNWccfg
238	Cooperative Consoles Receiver package	SUNWccrcv
8750	Solstice EM Libraries package	SUNWemalb
29811	Solstice EM Applications package	SUNWemapp
2379	Solstice EM SNM Compatibility package	SUNWembc
1154	Solstice EM CMIP MPA package	SUNWemcpa
507	Daemons package	SUNWemdmn
3901	Solstice EM Export Log Data package	SUNWemlog
267000	Geographical Map Data package	SUNWemmap
12837	Solstice EM MIS package	SUNWemmis
1085	Solstice Object Development Tools package	SUNWemobj)
14950	Site/SunNet/Domain Manager Agents and Libraries package	SUNWsnmag
915	Site/SunNet/Domain Manager SNMP Daemon package	SUNWsnmpd

Note – A common configuration is to install the MIS-related packages on a server-type machine, then install the application-type packages on other machines that can communicate with the MIS machine. For more information about configuring the Solstice EM software, see Chapter 2, “Customizing Solstice EM Software.”

- 100 Mb are recommended in the partition where `/var` resides for the runtime environment. This figure will vary, depending upon the number of objects you store in the MIS. To check this, use the following command:

```
hostname% df -k /var
```

- At least 200 Mb of swap space is recommended on the machine where the Solstice EM MIS is running. To check this, use the following command:

```
hostname% swap -l
```

Is enough free disk space available in your installation directory? _____

9. Do you have the superuser password for both the machine where the Solstice EM software is to be installed and the machine with the CD drive, if different? _____
10. Does the superuser have read, write, and execute access to the installation directory (where Solstice EM and the AnswerBook software are being installed)? _____
11. Do you have the required software? _____

The following are software requirements and product compatibility features of Solstice EM 2.0:

- If you are going to create your own applications using the Solstice EM libraries, you must have the use of a DevPro™ (SPARCworks) 4.0/C++4.1 compiler to compile programs that use the Solstice EM Portable Management Interface (PMI) or the Nerve Center Interface Library. This is included in the Solstice EM Developer's Kit.
- If you plan to develop Motif applications, you should have installed Motif 1.2.3, which is part of the Solaris 2.4 System Developer's Kit.

1.1.2 CMIP MPA Versions

Two CMIP MPAs were shipped with Solstice EM 1.2. For Solstice EM 2.0, only one CMIP MPA is shipped with the product. This CMIP MPA allows Solstice EM to control association management, and thus disables the association

management feature that is internal to the SunLink MPA product. Communication alarms are generated by the CMIP MPA when a previously established connection goes down. If the connection is subsequently re-established, the communication alarm is cleared by the MPA. The Solstice EM Alarm Manager application can be used to view CMIP communication alarms.

1.1.3 CMIP Requirements

If you plan to use Solstice EM to communicate with a CMIP agent, you must use the SunLink OSI and CMIP products. The possible combinations of SunLink products that you can use are:

- SunLink OSI 8.0.2 & SunLink CMIP 8.1 RT
- SunLink OSI 8.0.2 & SunLink CMIP 8.1 RT & SunLink X25 8.0.2
- SunLink OSI 8.0.2 & SunLink CMIP 8.1 SDE
- SunLink OSI 8.0.2 & SunLink CMIP 8.1 SDE & SunLink X25 8.0.2
- SunLink CMIP 8.2 Only (RFC1006)
- SunLink CMIP 8.2 & SunLink OSI 8.1 for other stack configurations (CLNP/LLC, CONS).

The following table indicates the patches needed for the SunLink products:

Table 1-2 Solaris Patches Needed for SunLink Products

SunLink Product	**Solaris Patches**
SunLink OSI 8.0.2	102205-3
SunLink CMIP 8.1 RT	102483-17
SunLink CMIP 8.1 SDE	102245-17
SunLink X25 8.0.2	102256-05

The TMNQ3 Kit contains the SunLink 8.0.2 OSI and SunLink 8.1 CMIP products.

1.1.3.1 Important Note for Using CMIP 8.1

The CMIP MPA employs the new `libXmp.so/libXom.so` shared libraries, and by default, the CMIP MPA looks for them in `/opt/SUNWconn/cmip/lib`. However, to avoid conflict as CMIP 8.1 originally delivered static libraries, the new dynamic libraries are placed in `/opt/SUNWconn/cmip/lib/shared`.

These dynamic libraries replace the static libraries in CMIP 8.2. Thus, as a temporary measure, you need to link the new shared libraries to the location where the CMIP MPA looks for them. This is done by creating two symbolic links to `/opt/SUNWconn/cmip/lib` as follows:

```
# ln -s /opt/SUNWconn/cmip/lib/shared/libXmp.so /opt/SUNWconn/cmip/lib
# ln -s /opt/SUNWconn/cmip/lib/shared/libXom.so /opt/SUNWconn/cmip/lib
```

If you have installed CMIP 8.1 in a non-default location, you must set the `LD_LIBRARY_PATH` environment variable so that the CMIP MPA can find the location of the CMIP 8.1 libraries, `libXmp.so` and `libXom.so`.

1.1.4 Backward Compatibility

To use SunNet Manager applications under the Solstice EM 2.0 environment, the `elements.schema` file must first be converted to GDMO and ASN.1 format. For more information, refer to the “Compilers” chapter in the *Solstice Enterprise Manager Reference Manual*. After this is done, if the application uses the element types in from the `elements.schema` file, then the definitions of the object classes and name bindings must be made known to the Solstice EM 2.0 platform. The way this is done is by using `em_compose_poc`, and `em_load_name_bindings`. The problem is that you must do this for all the definitions in the `elementsschema.gdmo` file. To make this process much easier, a script has been developed which performs the `em_compose_poc` and `em_load_name_bindings` for the entire file. This utility is `em_compose_all`. It should be used in the following manner:

```
# em_compose_all elementsschema.gdmo
```

1.1.5 Installing the SNMP Agent

The Simple Network Management Protocol (SNMP) agent allows your management system to communicate with other SNMP-based systems. If you install the Sun SNMP agent, you need to specify the read and write community names for the agent. The defaults are, respectively, “public” and “private.” Community names are equivalent to passwords and are used to authorize read and write access. Although many sites use “public” for read access, you should

choose the write community name with the same care as a system root password. The community names are stored in the `/etc/opt/snm/snmpd.conf` file, which should be readable only by `root`.

1.2 Installing on File Servers

If you want to share product software among multiple machines on the network, you can install the software on a file server. This allows access to the software by all hosts on the network, depending on their access rights. To allow access to the software you need only mount `/opt/SUNWconn` from the file server.

Note – If the superuser has a non-standard `umask` set, make sure that the public has read and execute privileges; otherwise, users might not be able to run Solstice EM.

1.3 Installing from Packages Only

Always install Solstice EM from its packages, using either `em_install` or `pkgadd`. Do not attempt to install the Solstice EM software on a machine by copying it over the network from a machine where it has already been installed. If a previous version of the Solstice EM software already exists on the machine, you should remove it before performing your installation. For information on how to do this, see Chapter 10, “Removing Solstice EM Software.”

1.4 Getting Help

If you have problems installing or using the Solstice EM software, consult the *Solstice Enterprise Manager 2.0 Release Notes* or the *Solstice Enterprise Manager Troubleshooting Guide*. If a solution cannot be found in the documentation, you can call your authorized service provider and have the following information ready:

- Model number of the machine
- Serial number of the machine
- SunOS release number

- Release number of the Solstice EM product (2.0)

You can display information needed for help calls by entering the following command:

```
hostname% showrev
```

Your screen will show information similar to the following:

```
doctest% showrev
Hostname: doctest
Hostid: 807914a7
Release: 5.5
Kernel architecture: sun4m
Application architecture: sparc
Hardware provider: Sun_Microsystems
Domain: sunsoft.eng.sun.com
Kernel version: SunOS 5.5 Generic November 1995
```

Customizing Solstice EM Software 2

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

2.1 Overview

The individual packages shipped with Solstice EM are quite flexible with regard to where they can be installed. This chapter provides a description of the various installation options.

Choosing to install the Solstice EM packages using the default installation precludes you from using the various options specified in this chapter. To customize the installation of the various packages, you must use either a non-default installation, or use `pkgadd` to install the Solstice EM software. Using `pkgadd` gives you the most flexibility for installing the Solstice EM software.

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This chapter also lists and describes the 14 packages that are shipped with the Solstice EM software, and describes how `em_install` installs the packages as components, and the dependencies of each package.

2.2 Solstice EM Packages

The entire Solstice EM product consists of 14 packages. You might not need to install all of them. Shown below is a listing of all 14 packages.

Table 2-1 Solstice EM 2.0 Packages

Package	Description
`SUNWemmis`	Solstice EM Management Information Server (MIS)
`SUNWemobj`	Solstice EM Object Development Tools
`SUNWemlog`	Solstice EM Export Log Data
`SUNWemdmn`	Solstice EM Daemons
`SUNWemapp`	Solstice EM Core Applications
`SUNWembc`	Solstice EM SNM Compatibility
`SUNWemalb`	Solstice EM Common Libraries
`SUNWsnmag`	Site/SunNet/Domain Manager Agents and Libraries
`SUNWsnmpd`	Site/SunNet/Domain Manager SNMP Daemon
`SUNWccrcv`	Cooperative Consoles Receiver Application
`SUNWcccfg`	Cooperative Consoles Configuration Tool
`SUNWemcpa`	Solstice EM Common Management Information Protocol (CMIP) Management Protocol Adaptor (MPA)
`SUNWemmap`	Geographical Map Data
`SUNWabem`	Solstice EM AnswerBook

2.3 Package Components

The `em_install` command allows you to install the software according to function, and organizes the packages into components to automatically take care of all package dependencies. For example, if you choose to install the

Solstice EM Management Information Server (MIS) component, the SUNWemmis, SUNWemlog, SUNWemobj, SUNWembc, and SUNWsnmag packages are all automatically installed.

The Solstice EM components used by em_install are:

Table 2-2 Components and Packages

Component	Packages
Configure Solstice EM Installation for Internet Protocol (IP) Management	SUNWemalb SUNWemdmn SUNWsnmpd
Configure Solstice EM Installation for Distributed Common Management Information Protocol (CMIP) Management	SUNWemalb SUNWemcpa
Configure Solstice EM Installation for both Internet Protocol (IP) and Common Management Information Protocol (CMIP) Management	SUNWemalb SUNWemdmn SUNWsnmpd SUNWemcpa
Install the Solstice EM Management Information Server (MIS)	SUNWemmis SUNWemlog SUNWemobj SUNWembc SUNWsnmag
Install Cooperative Consoles	SUNWcccrv SUNWcccfg
Install Solstice EM Applications	SUNWemapp
Install Geographical Map Data	SUNWemmap
Install Solstice EM AnswerBook	SUNWabem

2.4 Package Dependencies

Several Solstice EM software packages pre-suppose the existence of other packages. To avoid any complications during and after the installation, you should be familiar with the table shown below, which lists all of the package dependencies.

Table 2-3 Solstice EM 2.0 Package Dependencies

Package	Dependencies
SUNWemmis	SUNWemalb
SUNWemobj	SUNWemmis, SUNWEMalb
SUNwemlog	SUNWemmis, SUNWemalb
SUNWemdmn	SUNWemalb
SUNWemapp	SUNWemalb
SUNWembc	SUNWemmis, SUNWemalb, SUNWsnmag
SUNWemalb	None
SUNWsnmag	None
SUNWsnmpd	None
SUNWccrcv	SUNWcccfg, SUNWembc, SUNWsnmag
SUNWcccfg	SUNWembc, SUNWsnmag
SUNWemcpa	SUNWemalb
SUNWemmap	SUNWemapp, SUNWemalb
SUNWabem	None

2.5 Customizing Solstice EM Software

You can customize the installation of the Solstice EM packages as described below.

Note – All package dependencies are included.

- Install the MIS packages (SUNWemmis, SUNWemalb, SUNWemlog, SUNWemobj) on the machine that runs the MIS.

- Install the application (SUNWemapp and SUNWemalb) and CMIP MPA (SUNWemcpa and SUNWemalb) packages on the MIS machine or on multiple remote machines.
- Install the CMIP MPA (SUNWemcpa and SUNWemalb) package on the machine on which you have SunLink OSI and SunLink CMIP running (this can be the MIS machine or another machine).
- Install the Site/SunNet/Domain Manager Agents and Libraries package (SUNWsnmag) on machines you intend to manage with those agents.
- Install the SNM-compatibility package (SUNWembc, SUNWemmis, and SUNWemalb) on the MIS machine or on multiple remote machines.
- Install the Export Log Data package (SUNWemlog, SUNWemmis, and SUNWemalb) on the MIS machine.
- Install the Site/SunNet/Domain Manager SNMP Daemons package (SUNWsnmpd) on your workstation or any other Sun workstation running Solaris 2.x. It requires neither the Solstice EM applications nor the Solstice EM MIS packages.
- Install the Cooperative Consoles packages (SUNWccrcv and SUNWcccfg) on the machine where the MIS is installed. These two packages also require the SNM backward compatibility package (SUNWembc and SUNWemalb).

As a result of installing the MIS (SUNWemmis) and SNM Compatibility (SUNWembc) packages, a set of GDMO and ASN.1 files are installed in the Solstice EM product directories. You might not need all of the files to use Solstice EM. Using only the files that you need can have a positive effect on product performance. See Appendix C, “GDMO and ASN.1 File Usage,” for a discussion of the consequences of installing different sets of GDMO and ASN.1 files for Solstice EM performance.

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Inserting and Accessing the CD-ROM

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Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

3.1 Overview

This chapter provides instructions for inserting and accessing the CD-ROM, from which the Solstice EM product is installed. The CD-ROM can be inserted into either a local or remote CD drive.

3.2 Inserting the CD-ROM

If you have had prior experience installing Sun products from a CD-ROM, you can skip to Chapter 5, “Installing the Software.” This section describes how to insert the CD-ROM into the drive and, if you are using a remote CD drive, how to export or share the CD-ROM filesystem.

To install the Solstice EM software you must have either a local CD drive or a CD drive that is accessible over a network.

Your target machine for *installing* the Solstice EM software must always be a system running SunOS 5.4 (Solaris 2.4) or later. You can use a remote SunOS 4.1.x or 5.x system to provide the CD drive.

Note – In SunOS 5.*x*, to add a CD-ROM device, connect the device to the machine's SCSI bus and to a power source. Power up the device, then halt your machine by entering `init 0`. At the `ok` prompt enter `boot -r`.

▼ To Insert Your CD-ROM

1. **Remove the CD-ROM from its plastic case and place the CD-ROM in its caddy, as shown in Figure 3-1.**
   When the CD-ROM is properly inserted into the caddy, the label is visible.

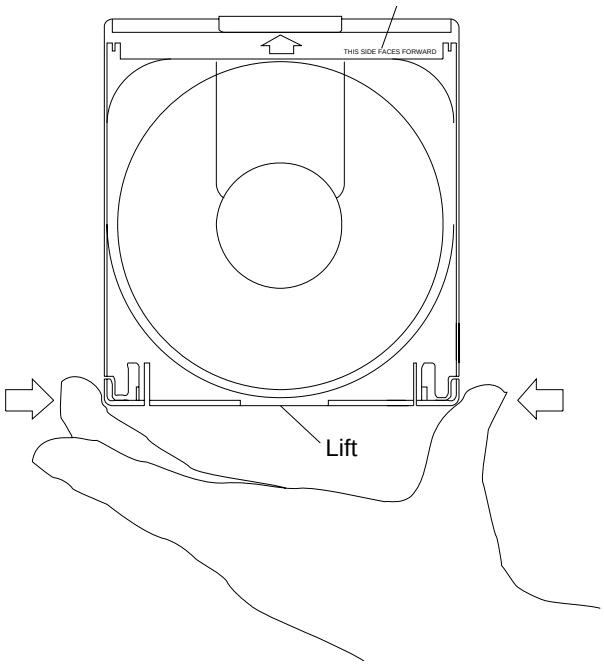

Figure 3-1 Insert the CD-ROM into the Caddy

2. **Insert the caddy into the drive slot. (Make sure the CD drive is powered on, as shown in Figure 3-2.)**

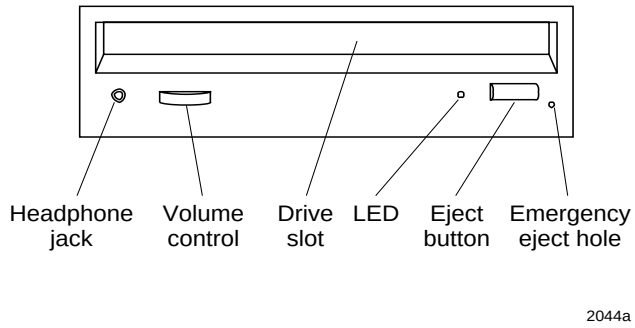

Figure 3-2 CD Device Showing Drive Slot

3.3 *Accessing the CD-ROM*

Proceed to the following section if you are accessing a locally installed CD drive. Go to the "To Mount the CD-ROM from a Remote CD Drive" section if you are accessing a remotely installed CD drive.

Note – Unless noted otherwise, you must log in as or become `root` to perform all of the following procedures.

▼ To Mount the CD-ROM from a Local CD Drive

There is no explicit mounting of the CD-ROM filesystem for a locally-attached CD drive under Solaris 2.2 or later. When you insert the CD into the drive, the CD-ROM filesystem is automatically mounted.

Note – As a default, volume management is *en*abled for Solaris 2.2 or later. A system administrator would have to kill the `vold` process or modify the `/etc/vold.conf` file to disable this feature.

In the unlikely event that volume management—the feature that provides this automatic mounting—is disabled, you must enter the following commands as `root`:

1. **Make the directory to mount the CD-ROM, if it does not already exist.**

```
# mkdir /cd
```

2. **Mount the CD-ROM.**

```
# mount -r /dev/dsk/c0t6d0s0 /cd
```

3. **Go to Chapter 5, "Installing the Software."**

▼ To Mount the CD-ROM from a Remote CD Drive

To install the software on a machine that does not have its own CD drive, you must perform some activities on the remote machine (the machine with the CD-ROM device) and some on the local machine (the machine onto which you are installing the software). Be sure you follow the directions carefully. The instructions specify on which machine you must perform the steps.

▼ To Export or Share from the Remote Machine

Because you are mounting the software from a remote CD-ROM, you must first export or share it from the remote machine. The methods are slightly different for remote SunOS 4.1.x, SunOS 5.1 (Solaris 5.1), and SunOS 5.2 or later (Solaris 5.2 or later) systems and are described in separate procedures.

Exporting from a Remote SunOS 4.1.x System

Perform the following steps on the *remote* machine:

1. **Make a directory on which to mount the CD-ROM if it does not already exist.**

```
# mkdir /cd
```

2. **Mount the CD-ROM on the remote machine.**

```
# mount -r /dev/sr0 /cd
```

3. **If the entry is not already present, edit the `/etc/exports` file by adding the following line:**

```
/cd -ro
```

4. **Export the directory from the remote machine.**

```
# exportfs /cd
```

5. **If they are not already running, start the NFS mount daemons by entering the following commands:**

```
# nfsd 8
# rpc.mountd &
```

6. **Check to see that the machine is exporting the directory by entering the `exportfs` command. The screen should show the `/cd` directory.**

```
# exportfs
. . .
/cd
```

7. **Go to the "To Mount the Remote CD-ROM on the Local Machine" section.**

Sharing From a Remote SunOS 5.1 System

Perform the following steps on the *remote* machine:

1. **On the remote machine, make a directory on which to mount the CD-ROM, if it does not already exist.**

```
# mkdir /cd
```

2. **Mount the CD-ROM on the remote machine:**

```
# mount -r /dev/dsk/c0t6d0s0 /cd
```

3. **If they are not already running, start the NFS daemons by entering the following commands:**

```
# /usr/lib/nfs/nfsd 8
# /usr/lib/nfs/mountd
```

4. **Share the directory from the remote machine.**

```
# share -F nfs -o ro /cd
```

5. **Check to see that the machine is exporting the directory by entering the `share` command. The screen should show the `/cd` directory.**

```
# share
. . .
-       /cd       ro      " "
. . .
```

It takes a few minutes for this shared directory to become available over the network.

Sharing From a Remote SunOS 5.2 System

Perform the following steps on the *remote* machine:

1. **If they are not already running, start the NFS daemons by entering the following commands:**

```
# /usr/lib/nfs/nfsd 8
# /usr/lib/nfs/mountd
```

2. **Share the directory from the remote machine by entering the command:**

```
# share -F nfs -o ro /cdrom/solstice_em_2_0
```

3. **Ensure that the machine is exporting the directory by entering the `share` command. The screen should show the `/cdrom/`<*product_name_dir*> directory:**

```
# share
. . .
-       /cdrom/solstice_em_2_0      ro     " "
. . .
```

It takes a few minutes for this shared directory to become available over the network.

▼ To Mount the Remote CD-ROM on the Local Machine

Having exported or shared the remote CD-ROM, you can now mount it on your local machine. Perform the following step on the local machine:

1. **Use the automounter to automatically mount the exported or shared filesystem.**
   For remote SunOS 4.1.x and SunOS 5.1 systems enter:

```
# cd /net/<remote_machine>/cd
```

   For remote Solaris 2.2 or later systems enter:

```
# cd /net/<remote_machine>/cdrom/solstice_em_2_0
```

2. **If the automounter is not running on your machine, do the following on your local machine:**

   a. **Make a directory on which to mount the CD-ROM if it does not already exist:**

```
# mkdir /cd
```

b. Mount the remote directory on `/cd`:
For remote SunOS 4.1.x and SunOS 5.1 systems enter:

```
# mount -r -F nfs <remote_machine>:/cd /cd
```

For SunOS 5.2 systems enter:

```
# mount -r -F nfs <remote_machine>:/cdrom/solstice_em_2_0 /cd
```

Installing AnswerBook 4

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

4.1 Overview

The Solstice EM 2.0 AnswerBook provides online access to the following documents:

- *Solstice Enterprise Manager Installation Guide* (this document)
- *Cooperative Consoles Administration Guide*
- *Site/SunNet/Domain Manager Application and Agent Development Guide*
- *Site/SunNet/Domain Manager Reference Manual*
- *Solstice Enterprise Manager Administration Guide*
- *Solstice Enterprise Manager API Syntax Manual*
- *Solstice Enterprise Manager Application Development Guide*

- *Solstice Enterprise Manager Reference Manual*
- *Solstice Enterprise Manager Troubleshooting Guide*

If you do not have access to a hard copy Solstice EM documentation set, you might want to install the AnswerBook package (`SUNWabem`) before you install any of the other packages. Installation of the Solstice EM 2.0 AnswerBook requires some planning. This chapter provides the information you need to plan your installation.

Installing the AnswerBook package is entirely optional. You can choose to install it at the same time you install the other Solstice EM software packages, or you can install it at a later time. You can also choose not to install the AnswerBook package.

If you choose to install the AnswerBook package, you must select one of two installation options. If you choose the *heavy* installation, you can merge the Solstice EM 2.0 AnswerBook with the Solaris 2.2 or later AnswerBook and others already installed on your system. For information about merging the two AnswerBooks, see the Solaris 2.3 or later documentation.

4.2 Planning for AnswerBook Installation

Before installing the AnswerBook package, you should be able to specify:

- The mount point (location from where the software is read). This should be the path to the CD-ROM.
- The parent directory for the AnswerBook installation. By default, the parent directory is `/opt`, meaning that the AnswerBook package is installed in `/opt/SUNWconn/em`.

- Whether you want to install the *heavy* version or the *nil* version (see Table 4-1). Make sure that the directory where you want to install the AnswerBook package has enough space for the option you select.

Table 4-1 AnswerBook Installation Options

Option	Description	Disk Space (Mbytes)	Installation Time
nil	Leave all files on CD-ROM. Performance is slow, but adequate for occasional use.	Less than 1	1 minute
heavy	Store all files on hard disk. Performance is optimized. This configuration is recommended if the AnswerBook package is to be shared by multiple systems.	32.86 (estimated)	10 minutes

Note – If you do not specify the *heavy* installation option, you *must* leave the CD-ROM in the CD-ROM drive so that the AnswerBook is available.

The installation procedure creates a configuration file that contains the installation locations of the AnswerBook product. If your machine is rebooted in the future and you have chosen the *nil* installation option, you must make sure the CD-ROM is remounted on the same mount point you used during the initial installation.

Note – Some of the files used by the AnswerBook product are of a special type that are not recognized by the packaging tools, including `em_install`. If you choose the *heavy* installation option, the packaging tools might report a partial failure as the final installation status. *A partial failure does not mean that the installation has failed.*

For more information about AnswerBook, refer to the *Solaris 2.x System Administrator's Guide to AnswerBook.*

4.3 Installation Instructions

To install the Solstice EM 2.0 AnswerBook, perform the following steps as root:

1. **Change directories to the directory where the CD-ROM directory is mounted.**
   This is typically `/cdrom/solstice_em_2_0`.

```
# cd </cdrom/solstice_em_2_0>
```

2. **Enter the following command:**

```
# pkgadd -d . SUNWabem
```

After you press Return, you will see the copyright information for the AnswerBook package, then the question below.

```
The installation options are as follows:
Option: Description:
-----------------------------------------
1. nil:    less than 1 Megabyte disk space required [slowest performance].
2. heavy:   32.86 Megabytes disk space required [best performance].

Note: If the install option which you choose below fails
      due to lack of space, try another location, or
      choose a lower install option number.

Enter the number of an installation option from the list above (1 or 2).


Select an installation option:
```

3. **Enter your choice for AnswerBook, either `1` or `2`.**
   After you press Return, the question below appears.

```
The next request for input asks you to specify the parent directory of AnswerBook
Make sure to choose a parent directory on a file system big enough to
accommodate all the files to be moved for the INSTALL OPTION you selected.


Specify the parent of the AnswerBook home directory:
```

4. **Press return to accept the default parent, or enter one of your choice.**
   The AnswerBook package is installed in <*parent_dir*>/SUNWconn/em. The default parent directory is /opt.

   After you press Return, you will see the question below.

```
This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWabem> [y,n,?]
```

5. **Enter** y **to continue, or** n **to quit the installation.**
   Enter y to continue with the installation.

The installation should now proceed until its conclusion, where you should receive a message stating that the installation of the SUNWabem package was successful.

For instructions on installing the rest of the Solstice EM product, go to Chapter 5, “Installing the Software.”

Installing the Software 5

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

5.1 Overview

This chapter provides instructions for installing the Solstice EM software using the `em_install` program. This is an optional installation front-end to the `pkgadd` command that is designed to make the installation procedure simpler. It is based on the management function for which the product is to be used, rather than the feature that the product supports. None of the functionality of the pkgadd command is lost. If you want to install the Solstice EM software using the pkgadd command, go to Appendix A, “Installing Solstice EM Using pkgadd.”

The Solstice EM software is provided on a CD-ROM and is contained in 14 packages. All of the packages are listed in Chapter 2, “Customizing Solstice EM Software.” You can install the packages from the CD-ROM by using either `em_install` or `pkgadd`.

The `em_install` program gives you several installation options:

- Installing for both Internet Protocol (IP) and Common Management Information Protocol (CMIP) management
- Installing for IP management only
- Installing for CMIP management only

The `em_install` program also performs the following checks:

- Before the packages are installed, `em_install` checks to see that there is enough storage space in the destination directory you specify. If there is not enough space, you are asked to specify a different directory.
- If a previous installation exits, you will be warned and given the opportunity to abort the installation and save the previous data before any changes are made. If you continue, the existing database is moved to a backup location.

With the `em_install` program, you have the option of performing either a default installation, or a non-default installation. Each one is described in the following subsections.

5.1.1 Default Installation

For a default installation, you must answer a few basic questions at the beginning, but once the installation begins, you will not have to answer any additional questions about component selection or product configuration. The correct product components are installed and configured without additional interaction with the installation facility. In addition:

- The Management Information Server (MIS) is automatically started
- If you elect to leave access control turned on, the Access Manager is automatically started, enabling you to grant permissions to users and groups to use various features of Solstice EM
- You have the option of starting an IP discover to find devices on your local network and populate your topology database.

- You have the option of starting automatic management of routers, which creates an object that launches requests against all routers in the topology
- You have the options of starting automanagement of all devices for reachability, which creates an object that pings all devices in the topology
- The Application Launcher is automatically started

5.1.2 Non-Default Installation

If you chose to perform a non-default installation, then you must also answer some package-specific questions in addition to the basic installation questions. Regardless of which installation option you choose, all questions are asked before the packages are actually installed.

The package-specific questions are listed below:

*Solstice EM Daemons Package (*SUNWemdmn*)*

The following questions are asked except if you are installing for CMIP management only:

- Name of the MIS host(s) to receive notifications from SNMP traps (default is <*localhost*>)
- Name of the SNMP Management host(s) to which SNMP traps are forwarded
- RPC port number of the SNMP Management host (default is 162)

*Solstice EM CMIP MPA Package (*SUNWemcpa*)*

The following questions are asked except if you are installing for IP management only:

- Name of the MIS host (default is <*localhost*>)
- RPC Port number for CMIP MPA-to-MIS communications (default is 5557)

*Site/SunNet/Domain Manager SNMP Daemon (*SUNWsnmpd*)*

The following questions are asked except if you are installing for CMIP management only:

- SNMP read community string (default is “public”)
- SNMP write community string (default is “private”)
- System description

- System contact
- System location

Solstice EM MIS Package (*SUNWemmis*)

The following questions are asked if you elect to install the MIS component:

- Location of the runtime environment (default is /var/opt/SUNWconn/em)
- Name of the MIS host (default is <*localhost*>)
- RPC port number for CMIP MPA-to-MIS communications (default is 5557)

Site/SunNet/Domain Manager Agents & Libraries Package (*SUNWsnmag*)

The following question is asked if you elect to install the MIS component:

- Location of the SNM log files (default is /var/opt/SUNWconn/snm)

Solstice EM AnswerBook Package (*SUNWabem*)

The following questions are asked if you elect to install the AnswerBook:

- Mount point of the software
- Installation option (heavy or nil; default is heavy)
- Parent directory

After the packages are installed, you are asked if you want to start the MIS. If you start the MIS, you are asked if you want to start the Access Manager. If you start the Access Manager, you then have the same options as the default installation in terms of starting a discover process, and starting automatic management. If you do not start the MIS, or if you do not start the Access Manager, the installation stops. You must then manually start the MIS and other applications.

5.2 Summary of Installation Procedures

Below is a summary of the steps required to install the Solstice EM software.

1. **Make sure that you have verified the installation requirements as specified in Section 1.1, “Installation Requirements” in Chapter 1, “Pre-Installation Notes and Requirements.”**
2. **Insert the product CD-ROM in a local or remote CD drive as specified in Chapter 3, “Inserting and Accessing the CD-ROM.”**

3. **Install the Solstice EM software using** `em_install`**.**
   The installation procedure for Solstice EM can take 20 minutes for all packages when installing from a local CD-ROM player, or longer when installing from a remote CD-ROM player over a busy network.

4. **Perform post-installation procedures.**
   These post-installation procedures include:

   - Specifying the values of various environment variables. This is especially important if you intend to run Solstice EM applications on a machine remote from the product kernel.
   - Updating the Network Information Service (NIS/NIS+) maps/tables, if you are running NIS/NIS+ and want to use the SNM agents

5.3 *Installation Instructions*

The installation instructions cover the installation of all packages.

If you have previously installed the Solstice EM product, you must use either `em_install` or `pkgrm` to remove all packages from the previous release. Also, you must delete or rename the file `$HOME/.em_viewer.cf`. See Chapter 10, “Removing Solstice EM Software,” for more information.

If you intend to use Solstice EM with CMIP, you must have the version of SunLink CMIP specified in Chapter 1, “Pre-Installation Notes and Requirements.” Follow the instructions in your SunLink CMIP documentation to install the CMIP product.

To install the Solstice EM product, perform the following steps as `root`:

1. `cd` **to the directory where the CD-ROM directory is mounted.**
   Typically, this is `/cdrom/solstice_em_2_0`.

```
# cd </cdrom/solstice_em_2_0>
```

2. **Enter the** `em_install` **command.**

```
# ./em_install
```

After invoking `em_install`, you receive the main menu, shown below.

```
          Solstice Enterprise Manager Installation Menu

    1.  Install both IP and CMIP Management

    2.  Install Internet Protocol (IP) Management Only

   3.  Install Common Management Information Protocol (CMIP) Management Only

    4.  List what Solstice Enterprise Manager packages are installed

    5.  Remove Solstice Enterprise Manager packages


      Select one of the above, '?' for help, or 'q' to quit
```

3. **Select one of the first three options, then press Return.**
   The options are briefly described below:

   - Select option 1 to install for IP and CMIP management. The Solstice EM common libraries, Solstice EM daemons, Site/SunNet/Domain Manager SNMP daemon, and Solstice EM CMIP MPA are automatically installed. In addition, you also have the option of installing the Solstice EM MIS component, the Cooperative Consoles component, the Solstice EM applications and the Solstice EM AnswerBook.
   - Select option 2 to install for IP management only. The Solstice EM common libraries, Solstice EM daemons, and Site/SunNet/Domain Manager SNMP daemon are automatically installed. In addition, you also have the option of installing the Solstice EM MIS component, the Cooperative Consoles component, the Solstice EM applications and the Solstice EM AnswerBook.
   - Select option 3 to install for CMIP management only. The Solstice EM common libraries and Solstice EM CMIP MPA are automatically installed. In addition, you also have the option of installing the Solstice EM MIS component, the Solstice EM applications and the Solstice EM AnswerBook.

Select option 4 to see what Solstice EM packages are already installed, or option 5 to remove installed Solstice EM packages. Both of these are covered in Chapter 10, “Removing Solstice EM Software.”

After selecting one of the first three options, you will receive the question shown below.

```
        Solstice Enterprise Manager Installation

  You are about to install Solstice Enterprise Manager from CDROM
media on to your system.  You will be asked for a path to the product media
and the path to install to. You will also be asked if you want to install
the default configuration. If you select the default, all the product
components will be installed and default configuration options will be
used. If the default installation is not selected, questions for component
selection and configuration options will be asked.



Enter path to product media [/cdrom/solstice_em_2_0]:
```

1. **Press Return if the default path is correct, or enter the path from where the Solstice EM software will be read.**
   After you press Return, the question below appears.

```
Do you want to install in directory "/opt", the default location? [y]:
```

2. **Press Return to accept the default location, or enter the name of the directory where you want to install the Solstice EM software.**

Note – The default location is `/opt/SUNWconn/em`. If you specify a different location, for example, `/software`, then the packages are installed in `/software/SUNWconn/em`. This is the only structure available.

After you press Return, the question below appears.

```
Selecting the default installation will install the complete
Solstice Enterprise Manager Solution, using the default
configuration settings.

If you intend to install the complete Solstice Enterprise
Manager Solution and the default configuration values are
acceptable, selecting the default installation will eliminate
having to answer any more questions.

Do you want the default installation? [y]:
```

3. **Press Return to accept the default installation, or enter** n **to customize your installation.**
   After you press Return, the question below appears.

```
Access Control provides the ability to restrict access to the
management data and restrict use of the management applications.
Restrictions can be based on User ID or Group ID, and may be
set to full, limited, or read-only access.

Do you want Access Control? [y]:
```

4. **By default, Access Control is active. Press Return to leave Access Control turned on, or enter** n **to turn it off.**
   Leaving Access Control turned on means that you must use the Access Manager to grant each user permission to use the Solstice EM applications and functions. Turning it off means that any user can use the Solstice EM applications and functions.

   Answer either y or n, then press Return.

At this point, what you see on your screen will vary depending upon whether you are performing a default or non-default installation, and whether you are installing for both IP and CMIP management, IP management only, or CMIP management only.

If you are performing a non-default installation, you are asked a series of package-specific questions after you answer the Access Control question. These questions, the order in which they appear, and the instructions for answering them are listed below. If you are performing a default installation, skip to Section 5.3.7, "Geographical Map Data Component."

5.3.1 Questions for the Solstice EM Daemons Package

If you installing for CMIP management only, this package is not installed. Skip to Section 5.3.2, "Questions for the Solstice EM CMIP MPA Package."

To answer the questions for this package:

1. **Enter the Name of the MIS host(s) to receive notifications from SNMP traps.**
   Press Return to accept the default of <*localhost*>.

2. **Enter another MIS host to receive notifications from SNMP traps.**
   As many hosts as you want can be specified in this manner. When you are finished entering hostnames, press Return without entering a hostname.

3. **Enter the name of the SNMP Management host(s) to which SNMP traps are forwarded.**

4. **Enter the RPC port number of the SNMP Management host.**
   Press Return to accept the default of 162. After answering this question, you are returned to Step 3.

You can repeat Step 3 and Step 4 as many times as you want. When you are finished, press Return in response to the question in Step 3 without specifying a hostname.

5. **Verify your selections.**
   Press Return to accept your selections, or enter n to return to Step 1.

5.3.2 Questions for the Solstice EM CMIP MPA Package

If you are installing for IP management only, this package is not installed. Skip to Section 5.3.3, "Questions for the Site/SunNet/Domain Manager SNMP Daemon Package."

To answer the questions for this package:

1. **Enter the name of the MIS host.**
   Press return to accept the default of <*localhost*>.

2. **Enter the RPC Port number for CMIP MPA-to-MIS communications.**
   Press Return to accept the default of 5557.

Note – The port number specified here must match the port number specified when installing the Solstice EM MIS Package.

---

3. **Verify your selections.**
   Press Return to accept your selections, or enter n to return to Step 1.

5.3.3 *Questions for the Site/SunNet/Domain Manager SNMP Daemon Package*

If you installing for CMIP management only, this package is not installed. Skip to Section 5.3.4, “Solstice EM MIS Component.”

To answer the questions about this package:

1. **Enter any text string as the SNMP read community string.**
   Press Return to accept the default of “public”.

2. **Enter any text string as the SNMP write community string.**
   Press Return to accept the default of “private”.

3. **Enter any text string as the system description.**
   For example, “SPARCstation-5”.

4. **Enter any text string as the system contact.**
   This is usually the name of a system administrator.

5. **Enter any text string as the system location.**
   For example, “System Administrator’s Office”.

6. **Verify your selections.**
   Press Return to accept your selections, or enter n to return to Step 1.

5.3.4 Solstice EM MIS Component

After answering the questions listed above, you are asked if you want to install the Solstice EM MIS component. If you do, you are asked questions about the Solstice EM MIS package and the Site/SunNet/Domain Manager Agents and Libraries package.

If you elect not to install the MIS component, and you are installing for CMIP management only, skip to Section 5.3.6, "Solstice EM Applications Component." Otherwise, skip to Section 5.3.5, "Cooperative Consoles Component."

5.3.4.1 Questions for the Solstice EM MIS Package

To answer the questions for this package:

1. **Enter the location of the runtime environment.**
   Press Return if the default of `/var/opt/SUNWconn/em` is correct.

2. **Verify the location you specified in Step 1.**
   Press Return if correct, or enter `n` to specify another location.

3. **Enter the name of the MIS host.**
   Press Return to accept the default of <*localhost*>.

4. **Enter the RPC port number for CMIP MPA-to-MIS communications.**
   Press Return to accept the default of 5557.

Note – The port number specified here must match the port number specified when installing the Solstice EM CMIP MPA Package.

---

5. **Verify the MIS hostname and port number selections.**
   Press Return to accept your selections, or enter `n` to return to Step 3.

5.3.4.2 Questions for the Site/SunNet/Domain Manager Agents and Libraries Package

To answer the questions for this package:

1. **Specify the location of the SNM log files.**
   Press Return if the default of `/var/opt/SUNWconn/snm` is correct.

2. **Verify your selection.**
   Press Return to accept your selection, or enter `n` to specify another location.

5.3.5 Cooperative Consoles Component

If you installing for CMIP management only, this component is not installed. Skip to Section 5.3.6, "Solstice EM Applications Component."

You are asked if you want to install the Cooperative Consoles component. Enter `y` if you do, or `n` if you do not.

If you answer `y` to this question, the Cooperative Consoles Configuration Tool (`SUNWccfg`) and Cooperative Consoles Receiver Application (`SUNWccrcv`) are installed.

5.3.6 Solstice EM Applications Component

You are asked if you want to install the Solstice EM Applications. Enter `y` if you do, or `n` if you do not.

If you answer `y` to this question, the Solstice EM Core Applications package (`SUNWemapp`) is installed.

5.3.7 Geographical Map Data Component

You are asked if you want to install the Geographical Map Data component. Enter `y` if you do, or `n` if you do not.

If you answer `y` to this question, the Geographical Map Data package (`SUNWemmap`) is installed.

Note – The Geographical Map Data package requires 267Mb of disk space. Many customers choose to install this package in a non-default location, where more disk space is available. In order to do this, you must use the `pkgadd` command. For more information, see Chapter 8, "Installing the Geographical Map Data Package."

5.3.8 AnswerBook Component

If you are performing a non-default installation, you are asked if you want to install the AnswerBook component. If you are performing a default installation, go to Section 5.3.9, “Disk Space Verification.”

Note – You will see this question even if you have already installed the Solstice EM 2.0 AnswerBook according to the instructions in Chapter 4, “Installing AnswerBook.” If you answer `y` to this question, `em_install` attempts to overwrite the existing version of AnswerBook.

Enter `y` if you want to install the AnswerBook component, or `n` if you do not. If you enter `y`, you are asked questions about installing the AnswerBook. To answer these questions:

1. **Specify the mount point of the software.**
   This should be the directory to the CD-ROM drive, which is typically `/cdrom/solstice_em_2_0`.

2. **Select an installation option (either `nil` or `heavy`).**

3. **Specify the parent of the AnswerBook home directory.**
   Press Return to accept the default parent directory, which is `/opt`.

For detailed information about installing the Solstice EM 2.0 AnswerBook, see Chapter 4, “Installing AnswerBook.”

5.3.9 Disk Space Verification

When you finish specifying the components you want or do not want to install, the `em_install` program checks the specified target directory to make sure that you have enough disk space. If there is not enough disk space to perform the installation as you have specified, you will see a message similar to the following:

```
WARNING:  /opt does not have enough space available for
installation.  354715 kilobytes of disk space is required and
only 222054 kilobytes are available.

 Do you want to continue with the installation in /opt? [n]:
```

If you answer y, the installation continues, but will most likely fail. If you answer n, you are asked if you want to specify a different location. Answer y to specify a different location, or n to return to the main menu.

5.3.10 Checking for Existing Data

Next, em_install checks to see if a previous version of Solstice EM exists on the machine. If one does, the message below appears.

```
WARNING: Management Server Data Repository exists.

The existing management data on this host will be
no longer available if you continue.

You may exit now and save your data or continue
with the installation.


 Do you want to continue with the installation? (y/n):
```

Enter y to continue, or n to exit the installation. If you choose to continue, you receive a message stating that the data in /var/opt/SUNWconn/em is now in /var/opt/SUNWconn/em.old.

5.3.11 The Installation Begins...

Before the installation of the software begins, you are asked to confirm your installation selections. Enter y to confirm your selections and begin the installation, or enter n to return to the main menu.

As the packages are installed, you will see a series of package lists, symbolic links, and copyright information scroll by on the screen. To see what a complete installation looks like, see Appendix B, “Sample Installation.”

5.4 The Next Step...

5.4.1 Finishing the Installation

After completing the installation, you should go to Chapter 6, “Finishing the Installation,” where instructions for the following post-installation tasks are provided:

- Specifying the values of various environment variables. This is especially important if you intend to run Solstice EM applications on a machine remote from the product kernel.
- Updating the Network Information Service (NIS / NIS+) maps / tables, if you are running NIS / NIS+ and want to use the SNM agents

5.4.2 Starting the MIS and Other Applications

Chapter 7, “Starting the MIS and Other Applications,” provides instructions for starting the MIS and various other applications. You should read this chapter if you are performing a non-default installation. If you are performing a default installation, the MIS and applications described in this chapter are all started automatically.

5.4.3 The Next Step

After you successfully start the MIS and various Solstice EM applications, proceed to the *Solstice Enterprise Manager Administration Guide* for more instructions on populating the MIS and performing other preliminary tasks. If you did not start up successfully, see the *Solstice Enterprise Manager Reference Manual* for instructions on how to start each application.

5

Finishing the Installation 6

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

6.1 Overview

Finishing installation includes:

- Specifying the values of various Solstice EM environment variables. This is especially important if you intend to run Solstice EM applications on a machine remote from the MIS machine.
- Updating NIS/NIS+ maps/tables or equivalent files if you intend to use SNM agents

6.2 Specifying Values for the Solstice EM Environment Variables

Before you start any Solstice EM applications, you should set the environment variables shown in Table 6-1, especially if you installed the MIS on a remote server, or if you installed the Solstice EM software in a non-default location. Users who intend to use Solstice EM should set these variables on their systems before starting. See the *Solstice Enterprise Manager Reference Manual* for a full list of Solstice EM environment variables.

Table 6-1 Environment Variables Used by Solstice EM

Environment Variable Name	Default Setting	Definition
DISPLAY	*localhost*:0	Set to your local machine when displaying an application from a remote machine.
LD_LIBRARY_PATH	`/opt/SUNWconn/em/lib`	Shared object library path.
OPENWINHOME	`/usr/openwin`	Directory where Open Windows is located.
PATH	`/opt/SUNWconn/bin`	Search path for executable files.
XFILESEARCHPATH	`/opt/SUNWconn/em/config`	Search path for X files.
EM_HOME	`/opt/SUNWconn/em`	Used by the applications to identify where the `SUNWemapp` package is installed.
EM_SERVER	*localhost*	Used by the applications to identify the name of the machine where the MIS is running.

For example, to allow access to Solstice EM executables, append the path of those executables to your `PATH` variable in your shell start-up file. The default is `/opt/SUNWconn/bin`.

For a C-shell, in your `$HOME/.cshrc` file enter:

```
setenv PATH /opt/SUNWconn/bin:${PATH}
```

For a Bourne or Korn shell, in your `$HOME/.profile` file enter:

```
PATH=/opt/SUNWconn/bin:${PATH}
export PATH
```

This example assumes you have installed Solstice EM in its default location. If you installed the product in a directory other than `/opt/SUNWconn/em`, specify the non-default directory when you assign a value to `PATH`.

6.3 Updating NIS Maps or NIS+ Tables for SNM Agents

If you intend to use the SNM agents and are running NIS/NIS+, you must manually update the NIS `services` and `rpc.bynumber` maps or the equivalent tables in NIS+.

To update the NIS/NIS+ maps/tables:

1. On the master NIS/NIS+ server, log in as or become superuser:

```
hostname% su
Password: enter your superuser password
```

2. Edit the `/etc/services` file by adding the following lines:

```
snmp       161/udp                # Simple Network Mgmt Protocol
snmp-trap  162/udp  snmptrap      # SNMP trap (event) messages
```

3. **Edit the `/etc/rpc` file by adding the following lines, if they do not already exist in the file:**

```
event       100101    na.event
logger      100102    na.logger
sync        100104    na.sync
diskinfo    100105    na.diskinfo
iostat      100106    na.iostat
hostperf    100107    na.hostperf
activity    100109    na.activity
lpstat      100111    na.lpstat
hostmem     100112    na.hostmem
sample      100113    na.sample
ping        100115    na.ping
rpcnfs      100116    na.rpcnfs
hostif      100117    na.hostif
etherif     100118    na.etherif
ippath      100119    na.ippath
iproutes    100120    na.iproutes
layers      100121    na.layers
snmp        100122    na.snmp
traffic     100123    na.traffic
layers2     100131    na.layers2
etherif2    100135    na.etherif2
iostat2     100136    na.iostat2
hostmem2    100137    na.hostmem2
```

4. **Make the changes effective:**

   a. **If you are running NIS, update the maps using the `ypmake` command, then push the maps out to the slave NIS servers using the `yppush` command.**

   b. **If you are running NIS+, update the tables using the `nisaddent` command.**

Note – Refer to your system administration documentation if you need additional information on these commands.

---

5. **Look for and send a signal to the `inetd` process by entering the following commands:**

```
# ps -ef | grep inetd
# kill -HUP <processnumber>
```

In the preceding command, <*processnumber*> is the `inetd` process number.

6

Starting the MIS and Other Applications

7

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

7.1 Overview

This chapter provides instructions for starting the Solstice EM Management Information Server (MIS), the Access Manager, as well as some other applications to help you get started using the product. If you performed a default installation, all of the components just mentioned should have been started automatically.

7.2 Starting the MIS

The Solstice EM MIS services are started through the `em_services` command. For first-time start-up, enter the command:

```
# /opt/SUNWconn/em/bin/em_services -r
```

Note – It is assumed that you have installed the Solstice EM software in the default directory. If this is not the case, substitute the appropriate path in place of `/opt/SUNWconn/em/bin` in all of the commands shown in this chapter. Also, rather than typing the entire path each time, you should append the appropriate path to the $PATH environment variable. See Chapter 6, "Finishing the Installation," for more information.

If you install the MIS on a machine where a previous version of Solstice EM had been installed, you must use the `-i` option to re-initialize the database when you invoke `em_services` for the first time after installation. For more information, see the "Management Information Server (MIS)" chapter in the *Solstice Enterprise Manager Reference Manual*.

7.3 Starting the Access Manager

Security to the Solstice EM applications and functions is provided via Password Authentication (the user must provide a password to use the system) and Access Control (the user must be given access to use Solstice EM applications and functions). If you installed the Solstice EM software using pkgadd, these features are active by default, meaning that each user must be granted access to use the Solstice EM applications and functions.

You can use the Access Manager to control access to the various Solstice EM applications and functions. The command shown below invokes the Access Manager.

```
hostname% /opt/SUNWconn/em/bin/em_accessmgr &
```

For more information on using the Access Manager, or turning password authentication and/or Access Control on or off, see the "Access Manager" chapter in the *Solstice Enterprise Manager Reference Manual*.

Note – For this and other applications, if you want to start the application and connect to a remote MIS, use the optional `-host <hostname>` parameter, where <*hostname*> is the name of the machine where the MIS is running. For example:

```
hostname% /opt/SUNWconn/em/bin/em_accessmgr -host augusta &
```

7.4 Starting the Applications

Solstice EM applications are started from the Application Launcher. The command shown below invokes the Application Launcher and causes applications to connect to an MIS on the local machine.

```
hostname% /opt/SUNWconn/em/bin/em &
```

For more information, see the "Application Launcher" chapter in the *Solstice Enterprise Manager Reference Manual*.

To add managed objects to the MIS database, you must use the Discover application. Shown below is the command to invoke the Discover application and connect it to the MIS on the local machine.

```
hostname% /opt/SUNWconn/em/bin/em_discover &
```

For more information, see the "Discover" chapter in the *Solstice Enterprise Manager Reference Manual*.

For help with any of the Solstice EM applications, you can invoke the Online Help application by using the `em_help` command, as shown below.

```
hostname% /opt/SUNWconn/em/bin/em_help &
```

Similarly, application developers can obtain help about API syntax requirements by invoking the Developer's Online Help application with the `em_dev_help` command, as shown below.

```
hostname% /opt/SUNWconn/em/bin/em_dev_help &
```

Installing the Geographical Map Data Package 8

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

8.1 Overview

This appendix contains instructions for installing the Geographical Map Data package (`SUNWemmap`) in a non-default directory, which is a popular option for many customers due to its large disk space requirement.

The Geographical Map Data package pre-supposes the existence of the Solstice EM Core Applications package (`SUNWemapp`) and the Solstice EM Common Libraries package (`SUNWemalb`). Make sure that these package already exist on your system before you install the Geographical Map Data package.

8.2 Installation Instructions

Below are the instructions for installing the `SUNWemmap` package in a non-default directory using `pkgadd`.

1. **Change directories to the directory where the CD-ROM directory is mounted.**

```
# cd <path_to_CD-ROM_dir>
```

2. **Enter the** pkgadd **command.**

```
# pkgadd -d . -R <base_path> SUNwemmap
```

The package will be installed in the following directory: <*base_path*>/opt/SUNWconn/em/mapdata. If the specified directory does not already exist, you will receive a message similar to the following:

```
The selected base directory </<base_path>/opt> must exist before installation
is attempted.

Do you want this directory created now [y,n,?,q]
```

3. **Enter** n **or** q **to exit the installation,** y **to continue, or** ? **for help.**
If you enter y and press Return, you see the copyright information. Then pkgadd checks to see if the target directory has enough space to install the package. If there is not enough space, a message similar to the one shown below appears.

```
WARNING:
    534330 free blocks are needed in the / filesystem,
    but only 108948 blocks are currently available.
    A minimum limit of 150 blocks is required.

Do you want to continue with the installation of <SUNWemmap> [y,n,?]
```

4. **Enter** y **to continue, or** n **to exit the installation.**

Note – If you choose to continue with the installation after receiving a warning message about disk space, there is a good chance that the installation will fail.

If you enter y and press Return, the question below appears.

```
This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWemmap> [y,n,?]
```

5. **Enter** y **to continue, or** n **to exit the installation.**
   If you enter y and press Return, the question below appears.

```
This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWemmap> [y,n,?]
```

6. **Enter** y **to continue, or** n **to exit the installation.**
   If you enter y and press Return, the SUNWemmap package is installed.

8.3 *Finishing the Installation*

The filenames that are used in the SUNWemmap package can be kind of long, especially if you specify a long pathname as the <*base_path*>. To make things easier, you can:

- Create a symbolic link that has a shorter pathname. For example:

```
hostname% ln -s <base_path>/opt/SUNWconn/em/mapdata /usr/home/maps
```

- Set the *EM_MAPPATH* environment variable, which is the default directory of the file browser when you select a file in the Viewer's Background Properties window.

  For a C-shell, use the command show below.

```
hostname% setenv EM_MAPPATH <base_path>/opt/SUNWconn/em/mapdata
```

For a Bourne or Korn shell, in the commands shown below.

```
hostname$ EM_MAPPATH=<base_path>/opt/SUNWconn/em/mapdata
hostname$ export EM_MAPPATH
```

For more detailed instructions on the installation of the entire Solstice EM product, see Chapter 5, “Installing the Software,” or Appendix A, “Installing Solstice EM Using pkgadd.”

Installing SNM Agents on Remote Machines

9

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

This chapter provides instructions for installing the SunNet Manager (SNM) agents that are shipped with Solstice EM on remote systems.

9.1 Overview of Agent Installation

The workstation running the Solstice EM MIS is the focal point for collecting and analyzing information. It receives the information from data collection programs (*agents*), which usually run on remote machines.

Solstice EM provides SNM RPC agents that run on:

- Solaris 2.x systems
- Solaris 2.x systems on an x86 platform
- SunOS 4.x systems.

You install these agents on remote Solaris 2.x systems by running the `pkgadd` program. You install agents on remote SunOS 4.x systems by running `getagents`.

Solstice EM provides tools (the Viewer and the Object Configuration tool) that allow you to configure machines as SNM RPC agents. With this configuration performed and with SNM agents installed, you can manage SNM agents in a way similar to the way you use Solstice EM to manage CMIP or SNMP objects.

Note – Throughout this chapter, we use the term "MIS machine" to designate the machine on which the SNM agents package is installed. In fact, you need not have installed the agents package on the same machine as the MIS. If you did not, when performing the procedures here, substitute the name of the machine where the agents package is installed for the name of the MIS machine.

9.2 *Using* pkgadd *to Install Agents on Solaris 2.x Systems*

The SNM agents are contained in the Site/SunNet/Domain Agents and Libraries package (`SUNWsnmag`). You can also install the SNMP agent, the SNMP daemon, which is contained in the Site/SunNet/Domain Manager SNMP Daemon package (`SUNWsnmpd`).

You have already installed the `SUNWsnmag` package if you:

- Elected to install the Site/SunNet/Domain Manager Connectivity and Agents component using the `em_install` program.
- Selected this package during installation using the `pkgadd` command

You have already installed the `SUNWsnmpd` package if you:

- Elected to install either the IP Management or Both IP and CMIP Management components from the `em_install` main menu.
- Selected this package during installation using the `pkgadd` command

This section describes how to install the `SUNWsnmag` and `SUNWsnmpd` packages using `pkgadd` if you have not already done so.

When you run the pkgadd program to install agents, you follow the same instructions as you did to install the Solstice EM software, except that you select only the SUNWsnmag and, if you want to install the SNMP agent, the SUNWsnmpd package.

To install agents using the pkgadd program:

1. **Go to the machine on which you want to install the agents.**
2. **Obtain access to the CD-ROM, as described in Chapter 3, "Inserting and Accessing the CD-ROM."**
3. **Invoke the** pkgadd **command.**
   a. **If you want to install the packages in the default directory,** /opt**, enter the following command:**

```
# /usr/sbin/pkgadd -d <cd_rom_dir>
```

   b. **If you want to install the packages in a directory other than the default, enter the following command:**

```
# /usr/sbin/pkgadd -d <cd_rom_dir> -a none
```

With the latter command, pkgadd prompts you for the destination directory prior to installing each package. Be sure to enter the same base directory for both of the packages you will install (if you install both). If you install in other than /opt, see Chapter 6, "Finishing the Installation," for instructions on what to do following package installation.

After invoking either of the above commands, you receive the following list of packages available for installation:

```
The following packages are available:
  1  SUNWabem      Solstice Enterprise Manager 1.2 AnswerBook
                   (all) 65.3.4
  2  SUNWccfg      Cooperative Consoles Configuration Tool
                   (sparc) 1.2
  3  SUNWccrcv     Cooperative Consoles Receiver Application
                   (sparc) 1.2
  4  SUNWemalb     Solstice Enterprise Manager Common Libraries
                   (sparc) 2.0 Beta
  5  SUNWemapp     Solstice Enterprise Manager Core Applications
                   (sparc) 2.0 Beta
  6  SUNWembc      Solstice Enterprise Manager SNM Compatibility
                   (sparc) 2.0 Beta
  7  SUNWemcpa     Solstice Enterprise Manager CMIP Management Protocol Adapter
                   (sparc) 2.0 Beta
  8  SUNWemdmn     Solstice Enterprise Manager Daemons
                   (sparc) 2.0 Beta
  9  SUNWemlog     Solstice Enterprise Manager Export Log Data to Relational Database
                   (sparc) 2.0 Beta
 10  SUNWemmap     Solstice Enterprise Manager GIS Content
                   (sparc) 1.1

... 4 more menu choices to follow;
<RETURN> for more choices, <CTRL-D> to stop display:
```

4. **Because neither the** SUNWsnmag **nor the** SUNWsnmpd **package appears in this display, press Return to see more choices.**
   After you press Return, the display shown below appears.

```
 11  SUNWemmis    Solstice Enterprise Manager Management Information Server
                    (sparc) 2.0 Beta
 12  SUNWemobj     Solstice Enterprise Manager Object Development Tools
                    (sparc) 2.0 Beta
 13  SUNWsnmag     Site/SunNet/Domain Manager Agents & Libraries
                    (sparc) 2.3
 14  SUNWsnmpd     Site/SunNet/Domain Manager SNMP daemon
                    (sparc) 2.3

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

5. **Enter** 13 **and** 14 **to install both the SNM agents and the SNM SNMP daemon.**
   After you press Return, installation of the SUNWsnmag package begins. Shown below is the first question for installation of this package.

```
Please Hit Return to continue..... (Press Return)

You will now need to answer a few questions to configure
SunNet Manager for your workstation.


Some of the SNM daemons create log files which can grow to over 1 Meg
each in size (depending on the number of nodes being managed). The
directory where they reside should allow for appropriate free space.


Please enter the location for the SNM log files [/var/opt/SUNWconn/snm]:
```

Note – On an x86 platform, the SUNWsnmag package is be referred to as SUNW86nma, and the SUNWsnmpd package is referred to as SUNW86nmp. These package names appear only inside the actual script text.

6. **Press Return to accept the default location (`/var/opt/SUNWconn/snm`) for Solstice EM log files or enter an absolute pathname if you do not want the default.**
   The installation script responds:

```
You have entered the following values:

    SNM Log File location: /var/opt/snm (or your own choice)

Is this correct (y/n) [y]:
```

7. **Press Return to accept the log file location as displayed by the script or enter `n` and enter the log file location you want.**
   After you accept or enter a log file location, the script proceeds:

```
## Processing package information.
## Processing system information.
   3 package pathnames are already properly installed.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.

The following files are already installed on the system and are being
used by another package:
    /etc/inet/inetd.conf
    /etc/inet/services
    /etc/rpc

Do you want to install these conflicting files [y,n,?,q] y
```

8. **Enter `y` to install the specified files.**
   To run correctly, the script needs to modify the files specified by the script.

   After you install the "conflicting" files, the script proceeds:

```
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of this package [y,n,?] y
```

9. **Enter** `y` **to continue with installation.**
   After answering this question, the installation of the `SUNWsnmag` package will proceed until its conclusion.

   If you elected to install only the `SUNWsnmag` package, the `pkgadd` script terminates. Skip to Step 14.

   If you elected to install both the `SUNWsnmag` and `SUNWsnmpd` packages, the script continues as shown below.

```
Please Hit Return to continue..... (Press Return)

You will now need to answer a few questions to configure
the SNMP agent for your workstation.


Access to SNMP devices is controlled via community names.
The default community names for this SNMP agent installation will be:
     read: public
    write: private

You should change the write community name to a site specific
name to control access to this system via the SNMP agent.
You may also modify the read community name if desired.

New read community name? [public]:
```

10. **Press Return to accept the default read community name (public), or enter a new read community name.**
    The script proceeds:

```
New write community name? [private]:
```

11. **Press Return to accept the default write community name (private), or enter a new write community name.**
    After accepting read/write community name defaults or entering names that you want, you receive the message shown below.

```
You should also change the system specific information.
The discover tool uses the description information when
creating icons. (ex. sparcstation 10, ipx, sun3, sc2000)

New system description? [Sun SNMP Agent, SPARCStation 10]:
```

The pkgadd script attempts to find out your machine architecture. Most customers can press Return to accept the default.

The script proceeds:

```
New system contact? [System administrator]:

New system location? [System administrator's office]:
```

12. **Enter a name and location for the preceding two prompts.**
    The values you specify here are for your own use and for the use of other network administrators. Enter names and locations according to the conventions followed in your network. If you have no conventions, enter information that is meaningful on your network.

After entering a contact and location, you receive:

```
You have entered the following values:

    SNMP read community name: public
    SNMP write community name: private
    SNMP system description: Sun SNMP Agent, SPARCStation 10
    SNMP system contact: System administrator
    SNMP system location: System administrator's office

Is this correct (y/n) [y]:
```

13. **Enter** `y` **to continue with installation.**
    After answering this question, the installation of the `SUNWsnmpd` package will proceed until its conclusion.

14. **Exit the** `pkgadd` **program.**
    When `pkgadd` is finished, it returns to its initial display of packages. Enter `q` to exit the command.

If you are running NIS/NIS+, you must manually add the agent entries to `/etc/rpc` and `/etc/services` on the NIS/NIS+ master. To update the `rpc.bynumber` and `services` maps on both the master and the server, see Section 6.3, "Updating NIS Maps or NIS+ Tables for SNM Agents," in Chapter 6, "Finishing the Installation," for instructions.

You have installed the agents; they are ready to run and be managed on this system.

9.3 *Using* `getagents` *to Install Agents on 4.x Systems*

This section contains an overview of the `getagents` script, information on copying scenarios, and the following procedures:

- Running the `getagents` script using an NFS mount (page 9-11)
- Running the `getagents` script using `rcp` (page 9-15)

9.3.1 *Overview of the* `getagents` *Script*

The `getagents` script allows a Sun machine to run SNM agents and proxy agents by editing system files (similar to what the installation script does) and copying agents, libraries, and the SNMP proxy agent schema from the MIS machine to another machine. The script makes backups of all system files that are modified.

Specifically, the `getagents` script:

- Copies the agents, schema files, libraries, and native SNMP agent files from the MIS machine
- Under SunOS 4.x, creates symbolic links from the `libnetmgt.sa.2.0` and `libnetmgt.so.2.0` shared library files to `/usr/lib`. These files are used by SNM agent and manager applications. If the link creation fails, an error message is printed, and you need to make the links yourself.

Note – Shared library files (or links to them) should be placed in `/usr/lib`. If you put them somewhere else, run `ldconfig(8)` with the library path names.

- Adds SNM agent entries to `/etc/rpc`—see `rpc(5)`
- Adds SNMP definitions to the `/etc/services` file for SunOS 4.x systems

  If you are running NIS/NIS+, you must manually add the agent entries to `/etc/rpc` and `/etc/services` on the NIS/NIS+ master. To update the `rpc.bynumber` and `services` maps on both the master and the server, see Section 6.3, "Updating NIS Maps or NIS+ Tables for SNM Agents," in Chapter 6, "Finishing the Installation," for instructions.
- Updates `/etc/inetd.conf` under SunOS 4.x and asks `inetd(8C)` to reread its configuration file. See the `inetd.conf(5)` man page.
- Creates a sample database file you can add to your management database on an SNM Console machine (if you are running SNM somewhere on your network).
- Creates the `/var/adm/snm/snmp.hosts` file as well as the `/var/adm/snm/snmp.traps` file for use by the SNMP proxy agent.

9.3.2 *Copying Scenarios*

The MIS machine can make files available to other machines in several ways. Two common approaches are NFS and `rcp(1)`. NFS is the recommended method, but an option that does not exist at every site. If `rcp` is used, the `/.rhosts` file on the MIS machine must contain the name of the remote (agent) machine, allowing the agent machine root access to the MIS machine. After you have installed the agents, you can remove the agent machine name from the MIS machine's `/.rhosts` file to restore security.

Because the `getagents` script copies files across the network, it needs to know what access method is going to be used for the copy. The three basic scenarios are:

- The system has the Solstice EM distribution NFS mounted from the MIS machine. You do not want to copy the agents because you're going to run the agents over the mount.

- The system has the Solstice EM distribution NFS mounted from the MIS machine. You *want* to copy the agents because you're going to run the agents from a different file system.
- The Solstice EM distribution is not NFS mounted, so `rcp` is needed to copy the agents.

The programs do not use copy methods such as `tftp(1)`.

9.3.3 *Running* `getagents` *Using an NFS Mount*

In the following procedure, the local machine (`agenthost`) has the Solstice EM distribution files NFS mounted from the manager (`mgrhost`) station.

To run the `getagents` script using an NFS mount:

1. **Log in as `root` on the MIS machine. Enter the following commands to export the filesystem and start the NFS daemons, if they are not already running:**

```
# share -F nfs -o ro /opt/SUNWconn/snm
# /usr/lib/nfs/nfsd 8
# /usr/lib/nfs/mountd
```

2. **Log in as `root` to the machine that runs the agents (this machine will is referred to as the "local machine").**
3. **Create a mountpoint on the local machine.**
4. **Mount the Solstice EM software on your local machine from the MIS machine (by default, in `/opt/SUNWconn/snm`):**

```
# mount mgrhost:/opt/SUNWconn/snm/4.x <mountpoint>
```

5. **Run the** `getagents` **script from the** `bin` **directory under the mountpoint you created on the local machine.**
   The `getagents` script starts and asks for the name of the directory where you are installing the agents.

```
# <mountpoint>/bin/getagents

-- SunNet Manager 2.2 agent installation --
Copyright (c) 1990-1993 by Sun Microsystems, Inc.

What is the name of the root directory where agents will be installed?
Agents will be installed into the 'agents' subdirectory of the directory
you specify. Type 'NFS' if you intend to run the agents via an NFS
mount. [/usr/snm]
```

6. **To run the agents over an NFS mount, enter** `NFS`**; to install the agents on the local system, press Return to accept the default,** `/usr/snm`**, or enter another path name.**

Note – If you enter `NFS`, the `getagents` script asks for the name of the root directory under which the Solstice EM agents and libraries are located. Go to Step 9.

   The `getagents` script asks if you want to create the `agents` directory.

```
/usr/snm/agents doesn't exist, should I create it? [y]
```

7. **Press Return to accept the default,** `y`**.**
   The `getagents` script asks for the name of the host where the agents are located.

```
OK, /usr/snm/agents was made.

What is the name of the host where the agents are? Type Return if you
have the directory NFS mounted: [localhost]
```

8. **Press Return to accept the default, localhost.**
   The `getagents` script asks for the name of the root directory under which the agents and libraries are located.

```
What is the name of the root directory under which the SunNet Manager
agents and libraries are located? []
```

9. **Enter the name of the mountpoint you created in Step 3.**
   The `getagents` script creates library links, then asks if you want to install the Sun SNMP agent.

```
Backing up old library links in /usr/lib ... done.
Creating library links into /usr/lib ... done.
Would you like to install the Sun SNMP agent? [y]
```

10. **Press Return to accept the default, `y`, to install the Sun SNMP agent, or enter `n` for no, if you do not want to install the Sun SNMP agent.**

Note – If you enter `n`, the `getagents` script creates the `/etc/snm.conf` file, then asks for the location of the database files. Go to Step 14.

The `getagents` script displays several messages and information about community names, then asks for the read community name.

```
Access to SNMP devices is controlled via community names.
The default community names for this SNMP agent installation will be:
     read: public
    write: private

You should change the write community name to a site specific
name to control access to this system via the SNMP agent.
You may also modify the read community name if desired.

New read community name? [public]
```

11. **Press Return to accept the default read community name, public, or enter a new read community name.**
    The `getagents` script asks if you want to change the default write community name.

```
New write community name? [private]
```

12. **Press Return to accept the default write community name, private, or enter a new write community name.**
    The `getagents` script displays lines that must be added to the `/etc/rc.local` file, and asks if you want them to be added now.

```
To run the Sun SNMP agent at each reboot, the following lines
need to be added to the end of /etc/rc.local:

  if [ -f /etc/snmpd.conf -a -x /usr/etc/snmpd ]; then
          /usr/etc/snmpd -c /etc/snmpd.conf && echo 'Starting snmpd.'
  fi

Would you like me to do this? [y]
```

13. **Press Return to accept the default, `y`, or enter `n` for no. If you enter `n`, be sure to manually update the file after the installation.**
    The `getagents` script creates the `/etc/snm.conf` file, then asks for the location of the database files.

```
Creating /etc/snm.conf ... done.

By default, SunNet Manager database and log files are placed under the
directory /var/adm/snm which will be created during this installation.
A minimum of 10Mb to 15Mb of free space in the default database
location is recommended. If you would like to put the databases in an
alternate directory by default, a link will be created from /var/adm/snm
to the new location. The current usage for /var/adm/snm is:
Filesystem            kbytes      used    avail   capacity   Mounted on
/dev/dsk/c0t3d0s0      20570      1139    17373       6%         /var

Would you like the databases to be written to a new default directory? [n]
```

14. **Press Return to accept the default location for the database files, `/var/adm/snm`, or enter `y` to specify a different location. If you enter `y`, you are prompted for the location for the database files.**
    The `getagents` script asks for the location of the log files.

```
Some of the SunNet Manager daemons create log files that can grow over
1 Mb each in size, depending on the number of nodes you are managing.
The default directory for these log files is /var/adm/snm. Here is the
current usage for /var/adm/snm:
Filesystem          kbytes      used    avail   capacity   Mounted on
/dev/dsk/c0t3d0s0    20570      1139    17373       6%         /var

Would you like the log files to be written somewhere else (like
/usr/snm/logs)? [n]
```

15. **Press Return to accept the default location for the log files, `/var/adm/snm`, or enter `y` to specify a different location. If you enter `y`, you will be prompted for the location for the log files.**
    The `getagents` script creates `snmp` files, updates other files, and displays a message that it has finished.

You have installed the agents, and they are ready to run and be managed on this system.

9.3.4 *Running* `getagents` *Using* `rcp`

The following procedure uses `rcp` to copy agents from `mgrhost` (the MIS machine) to `agenthost` (the "local host").

To run the `getagents` script using `rcp`, follow the steps below.

1. **Set up the MIS machine to allow root access across the network for the host(s) that will be running** `getagents` **(add** `agenthost` **to the list of trusted hosts).**

```
# cat >>/.rhosts
agenthost
^D
```

If `/.rhosts` does not exist, enter `touch /.rhosts` prior to the preceding command.

2. **Copy** `getagents` **from the MIS machine to the local machine.**

```
# rlogin agenthost
Password:
SunOS Release 4.1.1 (AGENTHOST) #1: Wed May 6 12:30:46 PDT 1992

# rcp mgrhost:/opt/SUNWconn/snm/bin/getagents /tmp
```

3. **Run the** `getagents` **script. (The following instructions assume that you have copied** `getagents` **to** `/tmp` **on the local host, although you can copy it to any directory.)**
The `getagents` script starts and asks for the name of the directory where the agents will be installed.

```
# /tmp/getagents

-- SunNet Manager 2.2 agent installation --
Copyright (c) 1990-1993 by Sun Microsystems, Inc

What is the name of the root directory where agents will be installed?
Agents will be installed into the 'agents' subdirectory of the directory
you specify. Type 'NFS' if you intend to run the agents via an NFS
mount. [/usr/snm]
```

4. **Press Return to accept the default,** `/usr/snm`**.**
The `getagents` script asks if you want to create this directory.

5. **Press Return to accept the default,** y **(for yes, create the directory).**
   The `getagents` script asks for the name of the host where the agents are located.

```
OK, /usr/snm/agents was made.

What is the name of the host where the agents are? Type Return if you
have the directory NFS mounted: [localhost]
```

6. **Enter the name of the MIS machine.**
   The `getagents` script asks for the name of the root directory on the MIS machine under which the agents and libraries are located.

```
What is the name of the root directory on mgrhost under which the
SunNet Manager agents and libraries are located? [opt/SUNWconn/snm]
```

7. **Press Return to accept the default,** `/opt/SUNWconn/snm`**.**
   The `getagents` script continues and installs the agents. The `getagents` script then asks if you want to install the Sun SNMP agent.

```
Getting the agents ... done.

Here are the agents now in agenthost:/usr/snm/agents -
na.activity   na.hostif    na.ippath   na.lpstat   na.snmp
na.diskinfo   na.hostmem   na.iproutes na.ping     na.snmp-trap
na.etherif    na.hostperf  na.layers   na.rpcnfs   na.sync
na.event      na.iostat    na.logger   na.sample   na.traffic

Getting the libraries ... done.

Creating library links into /usr/lib ... done.

Would you like to install the Sun SNMP agent? [y]
```

8. **Press Return to accept the default,** y**, to install the Sun SNMP agent, or enter** n **for no, if you do not want to install the Sun SNMP agent.**

Note – If you enter n, the `getagents` script creates the `/etc/snm.conf` file, then asks for the location of the database files. Go to Step 12.

The `getagents` script displays several messages and information about community names, then asks for the read community name.

```
Access to SNMP devices is controlled via community names.
The default community names for this SNMP agent installation will be:
     read: public
    write: private

You should change the write community name to a site specific
name to control access to this system via the SNMP agent.
You may also modify the read community name if desired.

New read community name? [public]
```

9. **Press Return to accept the default read community name, public, or enter a new read community name.**
   The `getagents` script asks if you want to change the default write community name.

```
New write community name? [private]
```

10. **Press Return to accept the default write community name, private, or enter a new write community name.**
    The `getagents` script displays lines that must be added to the `/etc/rc.local` file, and asks if you want them to be added now.

```
To run the Sun SNMP agent at each reboot, the following lines
need to be added to the end of /etc/rc.local:

  if [ -f /etc/snmpd.conf -a -x /usr/etc/snmpd ]; then
          /usr/etc/snmpd -c /etc/snmpd.conf && echo 'Starting snmpd.'
  fi

Would you like me to do this? [y]
```

11. **Press Return to accept the default, `y`, or enter `n` for no. If you enter `n`, be sure to manually update the file after the installation.**
    The `getagents` script creates the `/etc/snm.conf` file, then asks for the location of the database files.

```
Creating /etc/snm.conf ... done.

By default, SunNet Manager database and log files are placed under the
directory /var/adm/snm which will be created during this installation.
A minimum of 10Mb to 15Mb of free space in the default database
location is recommended. If you would like to put the databases in an
alternate directory by default, a link will be created from /var/adm/snm
to the new location. The current usage for /var/adm/snm is:
Filesystem            kbytes      used    avail   capacity   Mounted on
/dev/dsk/c0t3d0s0      20570      1139    17373       6%         /var

Would you like the databases to be written to a new default directory?
[n]
```

12. **Press Return to accept the default location for the database files, `/var/adm/snm`, or enter `y` to specify a different location. If you enter `y`, you will be prompted for the location for the database files.**
    The `getagents` script asks for the location of the log files.

```
Creating /var/adm/snm ... done.

Some of the SunNet Manager daemons create log files that can grow over
1 Mb each in size, depending on the number of nodes you are managing.
The default directory for these log files is /var/adm/snm. Here is the
current usage for /var/adm/snm:
Filesystem            kbytes      used    avail   capacity   Mounted on
/dev/dsk/c0t3d0s0      20570      1139    17373       6%         /var

Would you like the log files to be written somewhere else (like
/usr/snm/logs)? [n]
```

13. **Press Return to accept the default location for the log files, `/var/adm/snm`, or enter `y` to specify a different location. If you enter `y`, you are prompted for the location of the log files.**
    The `getagents` script creates `snmp` files, updates other files, and displays a message that it has finished.

You have now installed the agents, and they are ready to run and be managed on this system.

Note – If you previously modified the `/.rhosts` file on the MIS machine to temporarily allow root access to other hosts, you should now remove the entries to prevent future security breaches.

9.4 The Next Step...

After you have installed SNM agents, you can use Solstice EM tools to manage them. See the “Viewer” and “Object Configuration Tool” chapters in the *Solstice Enterprise Manager Reference Manual* and the “Managing SNM Objects” chapter in the *Solstice Enterprise Manager Administration Guide* for more information.

Removing Solstice EM Software 10

The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

10.1 Overview

This chapter tells you how to remove Solstice EM software from a local machine. If you have mounted Solstice EM via NFS, use the same command on the NFS server.

You might remove Solstice EM software if you need to free up some disk space on a particular system, or if you want to reinstall Solstice EM.

Note – In order to remove Solstice EM software, you must be logged in as `root`. All procedures in this chapter, unless otherwise noted, require that you access the system as `root`.

10.2 *Removing Solstice EM Software With the* `em_install` *Program*

Just as you used the `em_install` program to install the Solstice EM software, you can use this program to remove the Solstice EM software.

1. **The first step in removing the software is to insert the CD-ROM. For more information, refer to Chapter 3, "Inserting and Accessing the CD-ROM."**
2. **After the CD-ROM is in place, enter the following commands:**

```
# cd <path_to_CD-ROM_dir>
# ./em_install
```

You receive the main menu, shown below.

```
            Solstice Enterprise Manager Installation Menu

     1.  Install both IP and CMIP Management

     2.  Install Internet Protocol (IP) Management Only

    3.  Install Common Management Information Protocol (CMIP) Management Only

     4.  List what Solstice Enterprise Manager packages are installed

     5.  Remove Solstice Enterprise Manager packages


       Select one of the above, '?' for help, or 'q' to quit
```

3. **Select option 5 to remove Solstice EM packages.**
   You are asked to confirm the removal of the Solstice EM packages.

```
Do you want to remove Solstice Enterprise Manager from this host? [n]:
```

4. **Press Return or enter** `n` **to abort this operation, or enter** `y` **to continue.**
   If you continue, you receive a list of all installed Solstice EM packages, and are asked whether or not you want to remove all packages. For example:

```
The following Solstice Enterprise Manager packages are installed:

 Name          Description
-------------  ----------------------------------------------------
 SUNWemalb     Solstice Enterprise Manager Common Libraries
 SUNWemmis     Solstice Enterprise Manager Management Information Server
 SUNWemobj     Solstice Enterprise Manager Object Development Tools
 SUNWemlog     Solstice Enterprise Manager Export Log Data
 SUNWemdmn     Solstice Enterprise Manager Daemons
 SUNWemcpa     Solstice Enterprise Manager CMIP Management Protocol
 SUNWemapp     Solstice Enterprise Manager Core Applications
 SUNWembc      Solstice Enterprise Manager SNM Compatibility
 SUNWsnmag     Site/SunNet/Domain Manager Agents & Libraries
 SUNWsnmpd     Site/SunNet/Domain Manager SNMP daemon
 SUNWcccfg     Cooperative Consoles Configuration Tool
 SUNWccrcv     Cooperative Consoles Receiver Application
 SUNWabem      Solstice Enterprise Manager 2.0 AnswerBook


 Do you want to remove *ALL* Solstice Enterprise Manager packages? [n]:
```

If you answer `y` to this question, `em_install` removes all of the Solstice EM packages that are installed. You receive a message for each package that is successfully removed.

If you answer `n`, you are prompted to enter the name(s) of the package(s) you want to remove. Multiple package names can be entered, delimited by a space. After you are finished entering package names, press Return. The packages are removed one-by-one. Before each package is removed, you are asked to confirm the removal of the package. During the removal of the packages, you might be asked if you want to continue with the removal of the packages. For more information, see Section 10.3, “Removing Solstice EM Software With the pkgrm Command.”

The removal of the `SUNWsnmag` package produces one extra question. For more information, see Section 10.4, “Removing the SUNWsnmag Package.”

10.3 *Removing Solstice EM Software With the* `pkgrm` *Command*

To remove Solstice EM packages using the `pkgrm` command, enter the `pkgrm` command followed by the packages you want to remove. For example:

```
# pkgrm SUNWemalb SUNWemapp SUNWembc SUNWemcpa SUNWemlog SUNWemmis SUNWsnmag SUNWsnmpd
```

The packages are removed one-by-one. Before each package is removed, you are asked to confirm the removal of the package. During the removal of the packages, you might be asked if you want to continue because:

- The package contains scripts that will be executed with super-user permission.
- Another package(s) depends on the one you are trying to remove.

For any of these questions, enter `y` at the prompt to continue with package removal, `n` to skip this package and remove the next package, or `q` to quit and not remove any more packages.

The removal of the `SUNWsnmag` package produces one extra question. For more information, see Section 10.4, “Removing the SUNWsnmag Package.”

A given machine might have a subset of all the product packages. You must specify only those packages that are installed. If you specify uninstalled packages, the `pkgrm` command fails.

To determine which Solstice EM packages are installed on your machine, enter:

```
hostname% pkginfo | grep Manager
```

Note – You do not have to be `root` to use the `pkginfo` command.

The preceding command locates the existence of all Solstice EM packages, as well as the SunNet Manager packages `SUNWsnmag` and `SUNWsnmpd`, which are included with the Solstice EM product.

The Cooperative Consoles packages SUNWcccrv and SUNWccfg are also included with the Solstice EM product. To see if these packages are installed, enter:

```
hostname% pkginfo | grep Cooperative
```

10.4 *Removing the* SUNWsnmag *Package*

The removal of the Site/SunNet/Domain Manager Agents and Libraries package (SUNWsnmag) produces one extra question that you must answer:

```
Do you want to remove the SNM log files in /var/opt/SUNWconn/snm (y/n) [y]:
```

Press Return or enter y to this question if you want to remove the SunNet Manager log files, or enter n if you do not. Regardless of your answer to this question, the removal of the SUNWsnmag package continues. Only the SNM log files are affected by your answer to this question.

10

Installing Solstice EM Using pkgadd

A

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

A.1 Overview

This appendix provides instruction on how to install the Solstice EM software from a CD-ROM using the pkgadd command. The Solstice EM product has a total of 14 packages, which can be installed in a variety of places depending on how you want to customize the installation. For more information, see Chapter 2, “Customizing Solstice EM Software.”

A.2 Summary of Installation Procedures

Below is a summary of the steps required to install the Solstice EM software using pkgadd.

1. **Make sure that you have verified the installation requirements as specified in Section 1.1, "Installation Requirements" in Chapter 1, "Pre-Installation Notes and Requirements."**
2. **Insert the product CD-ROM in a local or remote CD drive as specified in Chapter 3, "Inserting and Accessing the CD-ROM."**
3. **Install the Solstice EM software using** `pkgadd`**.**
   The installation procedure for Solstice EM can take 20 minutes for all packages when installing from a local CD-ROM player, or longer when installing from a remote CD-ROM player over a busy network.
4. **Perform post-installation procedures.**
   These post-installation procedures include:
   - Specifying the value of some environment variables. This is particularly important if you intend to run Solstice EM applications on a machine remote from the product kernel.
   - Updating the Network Information Service (NIS / NIS+) maps / tables, if you are running NIS / NIS+ and want to use the SNM agents

A.3 Installation Instructions

The installation instructions cover the installation of all packages.

If you have previously installed the Solstice EM product, you must use either `em_install` or `pkgrm` to remove all packages from the previous release. Also, you must delete or rename the file `$HOME/.em_viewer.cf`. See Chapter 10, "Removing Solstice EM Software," for more information.

If you intend to use Solstice EM with CMIP, you must have the version of SunLink CMIP specified in Chapter 1, "Pre-Installation Notes and Requirements." Follow the instructions in your SunLink CMIP documentation to install the CMIP product.

To install the Solstice EM product, perform the following steps as `root`:

1. `cd` **to the directory where the CD-ROM directory is mounted.**
   Typically, this is `/cdrom/solstice_em_2_0`.

```
# cd </cdrom/solstice_em_2_0>
```

2. Enter the pkgadd **command.**

```
# pkgadd -d .
```

This command installs the software in the default directory `/opt/SUNWconn/em`. If you do not want to install the Solstice EM software in the default directory, you must use the following command:

```
# pkgadd -d . -a none
```

Many customers choose to install the packages in a non-default directory. One popular option is to install the Geographical Map Data Package (`SUNWemmap`) in a non-default location, where more disk space is available. For more information on how to do this, see Chapter 8, “Installing the Geographical Map Data Package.”

After invoking pkgadd, you receive the following display and prompt:

```
The following packages are available:
  1  SUNWabem      Solstice Enterprise Manager 1.2 AnswerBook
                   (all) 65.3.4
  2  SUNWccfg      Cooperative Consoles Configuration Tool
                   (sparc) 1.2
  3  SUNWccrcv     Cooperative Consoles Receiver Application
                   (sparc) 1.2
  4  SUNWemalb     Solstice Enterprise Manager Common Libraries
                   (sparc) 2.0 Beta
  5  SUNWemapp     Solstice Enterprise Manager Core Applications
                   (sparc) 2.0 Beta
  6  SUNWembc      Solstice Enterprise Manager SNM Compatibility
                   (sparc) 2.0 Beta
  7  SUNWemcpa     Solstice Enterprise Manager CMIP Management Protocol Adapter
                   (sparc) 2.0 Beta
  8  SUNWemdmn     Solstice Enterprise Manager Daemons
                   (sparc) 2.0 Beta
  9  SUNWemlog    Solstice Enterprise Manager Export Log Data to Relational Database
                   (sparc) 2.0 Beta
 10  SUNWemmap     Solstice Enterprise Manager GIS Content
                   (sparc) 1.1

... 4 more menu choices to follow;
<RETURN> for more choices, <CTRL-D> to stop display:
```

3. **Press Return to see the rest of the packages.**
   After you press Return, the display below appears.

```
 11  SUNWemmis     Solstice Enterprise Manager Management Information Server
                   (sparc) 2.0 Beta
 12  SUNWemobj     Solstice Enterprise Manager Object Development Tools
                   (sparc) 2.0 Beta
 13  SUNWsnmag     Site/SunNet/Domain Manager Agents & Libraries
                   (sparc) 2.3
 14  SUNWsnmpd     Site/SunNet/Domain Manager SNMP daemon
                   (sparc) 2.3

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

4. **Press Return to process all packages, or enter the packages you want to add.**
   Multiple packages are delimited by a comma.

Warning – The `pkgadd` utility installs packages one at a time, and only performs disk space verification prior to the installation of each package. This means that the installation will stop at the point where the package that does not fit is about to be installed. If you choose to continue with the installation, there is a good chance that it will fail. You should verify your disk space requirements before you begin the installation.

After you have specified the packages that you want to install, `pkgadd` adds the packages one by one, in alphabetical order.

For most of the packages, you receive questions regarding the following during installation:

- Executing scripts with super-user permissions
- Installing files with `setuid` and/or `setgid` permissions

For each of these questions, enter `y` if you want to continue, or `n` if you do not.

Several of the packages also have questions pertaining specifically to the installation of that package. Instructions on how to answer these questions are listed in the following subsections.

Note – If you are installing the packages in a non-default location, you are asked to specify the directory in which you want to install each package. You are asked this question once for each package. If you are running Solaris 2.4, this question precedes any of the package-specific questions. If you running Solaris 2.5, this question comes after the package-specific questions.

A.3.1 Questions for the AnswerBook Package

To answer the questions for this package:

Note – If you have already installed the Solstice EM 2.0 AnswerBook according to the instructions in Chapter 4, “Installing AnswerBook,” `pkgadd` attempts to overwrite the existing version of AnswerBook.

---

1. **Select an installation option (either `nil` or `heavy`).**

2. **Specify the parent of the AnswerBook home directory.**
   Press Return to accept the default parent directory, which is `/opt`.

For detailed information about installing the Solstice EM 2.0 AnswerBook, see Chapter 4, "Installing AnswerBook."

A.3.2 Questions for the Solstice EM CMIP MPA Package

To answer the questions for this package:

1. **Enter the name of the MIS host.**
   Press return to accept the default of <*localhost*>.

2. **Enter the RPC Port number for CMIP MPA-to-MIS communications.**
   Press Return to accept the default of 5557.

Note – The port number specified here must match the port number specified when installing the Solstice EM MIS Package.

---

3. **Verify your selections.**
   Press Return to accept your selections, or enter `n` to return to Step 1.

A.3.3 Questions for the Solstice EM Daemons Package

1. **Enter the Name of the MIS host(s) to receive notifications from SNMP traps.**
   Press Return to accept the default of <*localhost*>.

2. **Enter another MIS host to receive notifications from SNMP traps.**
   As many hosts as you want can be specified in this manner. When you are finished entering hostnames, press Return without entering a hostname.

3. **Enter the name of the SNMP Management host(s) to which SNMP traps are forwarded.**

4. **Enter the RPC port number of the SNMP Management host.**
   Press Return to accept the default of 162. After answering this question, you are returned to Step 3.

You can repeat Step 3 and Step 4 as many times as you want. When you are finished, press Return in response to the question in Step 3 without specifying a hostname.

5. **Verify your selections.**
   Press Return to accept your selections, or enter `n` to return to Step 1.

A.3.4 Questions for the Solstice EM MIS Package

To answer the questions for this package:

1. **Enter the location of the runtime environment.**
   Press Return if the default of `/var/opt/SUNWconn/em` is correct.

2. **Verify the location you specified in Step 1.**
   Press Return if correct, or enter `n` to specify another location.

3. **Enter the name of the MIS host.**
   Press Return to accept the default of <*localhost*>.

4. **Enter the RPC port number for CMIP MPA-to-MIS communications.**
   Press Return to accept the default of 5557.

Note – The port number specified here must match the port number specified when installing the Solstice EM CMIP MPA Package.

---

5. **Verify the MIS hostname and port number selections.**
   Press Return to accept your selections, or enter `n` to return to Step 3.

A.3.5 Questions for the Site/SunNet/Domain Manager Agents and Libraries Package

To answer the questions for this package:

1. **Specify the location of the SNM log files.**
   Press Return if the default of `/var/opt/SUNWconn/snm` is correct.

2. **Verify your selection.**
   Press Return to accept your selection, or enter `n` to specify another location.

A.3.6 Questions for the Site/SunNet/Domain Manager SNMP Daemon Package

To answer the questions for this package:

1. **Enter any text string as the SNMP read community string.**
   Press Return to accept the default of “public”.
2. **Enter any text string as the SNMP write community string.**
   Press Return to accept the default of “private”.
3. **Enter any text string as the system description.**
   For example, “SPARCstation-5”.
4. **Enter any text string as the system contact.**
   This is usually the name of a system administrator.
5. **Enter any text string as the system location.**
   For example, “System Administrator’s Office”.
6. **Verify your selections.**
   Press Return to accept your selections, or enter n to return to Step 1.

After all the packages you selected are installed, you will see the main menu. When you see the menu, the installation is complete.

A.4 The Next Step...

A.4.1 Finishing the Installation

After completing the installation, you should go to Chapter 6, “Finishing the Installation,” where instructions for the following post-installation tasks are provided:

- Specifying the values of various environment variables. This is especially important if you intend to run Solstice EM applications on a machine remote from the product kernel.
- Updating the Network Information Service (NIS/NIS+) maps/tables, if you are running NIS/NIS+ and want to use the SNM agents

A.4.2 Starting the MIS and Other Applications

Chapter 7, “Starting the MIS and Other Applications,” provides instructions for starting the MIS and various other applications. You should read this chapter after you have performed the post-installation tasks.

A.4.3 The Next Step

After you successfully start the MIS and various Solstice EM applications, proceed to the *Solstice Enterprise Manager Administration Guide* for more instructions on populating the MIS and performing other preliminary tasks. If you did not start up successfully, see the *Solstice Enterprise Manager Reference Manual* for instructions on how to start each application.

A

Sample Installation

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

B.1 Overview

This appendix provides the complete output of a sample installation, using the following parameters:

- Option 1 from the `em_install` main menu (install for both IP and CMIP management)
- All default values
- All packages except for the Geographical Map Data (`SUNWemmap`)

This sample represents a complete installation with only the following exceptions:

- All copyright information is replaced by the <*Copyright Information*> placeholder.

- The lists of file and symbolic links are replaced by the <*List of Files*> placeholder.

B.2 The Installation

Table B-1 Sample Installation

```
# ./em_install

        Solstice Enterprise Manager Installation Menu

    1. Install both IP and CMIP Management

    2. Install Internet Protocol (IP) Management Only

    3. Install Common Management Information Protocol (CMIP) Management Only

    4. List what Solstice Enterprise Manager packages are installed

    5. Remove Solstice Enterprise Manager packages


     Select one of the above, '?' for help, or 'q' to quit

1

        Solstice Enterprise Manager Installation

  You are about to install Solstice Enterprise Manager from CDROM
 media on to your system.  You will be asked for a path to the product media
 and the path to install to. You will also be asked if you want to install
 the default configuration. If you select the default, all the product
 components will be installed and default configuration options will be
```

Table B-1 Sample Installation

used. If the default installation is not selected, questions for component selection and configuration options will be asked.

Enter path to product media [/cdrom/solstice_em_2_0]: /net/sol/export/s5/em_nightly

Do you want to install in directory "/opt", the default location? [y]: y

Selecting the default installation will install the complete Solstice Enterprise Manager Solution, using the default configuration settings.

If you intend to install the complete Solstice Enterprise Manager Solution and the default configuration values are acceptable, selecting the default installation will eliminate having to answer any more questions.

Do you want the default installation? [y]: y

Access Control provides the ability to restrict access to the management data and restrict use of the management applications. Restrictions can be based on User ID or Group ID, and may be set to full, limited, or read-only access.

Do you want Access Control? [y]: y
Access Control will be enabled.

Table B-1 Sample Installation

Do you want to install the Geographical Map Data? (y/n/?) [y]: n

You have selected the following Solstice Enterprise Manager
components for installation:

-> IP Management
-> CMIP Management

Is this correct? [y]:

Processing package instance <SUNWemalb> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager Common Libraries
(sparc) 2.0
Copyright 1996 Sun Microsystems, Inc. All Rights Reserved.
Printed in the United States of America.
2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

<*Copyright Information*>
Using </opt> as the package base directory.
Processing package information.
Processing system information.
6 package pathnames are already properly installed.
Verifying disk space requirements.

Installing Solstice Enterprise Manager Common Libraries as <SUNWemalb>

Table B-1 Sample Installation

Installing part 1 of 1.
<List of Files>
[verifying class <none>]

Installation of <SUNWemalb> was successful.

Processing package instance <SUNWemmis> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager Management Information Server
(sparc) 2.0

2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

<Copyright Information>
Using </opt> as the package base directory.
Processing package information.
Processing system information.
6 package pathnames are already properly installed.
Verifying package dependencies.
Verifying disk space requirements.

Installing Solstice Enterprise Manager Management Information Server as <SUNWemmis>

Executing preinstall script.
Terminating any running MIS processes.
Installing part 1 of 1.

Table B-1 Sample Installation

<*List of Files*>

[verifying class <none>]

Executing postinstall script.

Installing CMIP MPA configuration...

Installation of <SUNWemmis> was successful.

Processing package instance <SUNWemobj> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager Object Development Tools

(sparc) 2.0

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<*Copyright Information*>

Using </opt> as the package base directory.

Processing package information.

Processing system information.

9 package pathnames are already properly installed.

Verifying package dependencies.

Verifying disk space requirements.

Installing Solstice Enterprise Manager Object Development Tools as <SUNWemobj>

Installing part 1 of 1.

<*List of Files*>

Table B-1 Sample Installation

```
[ verifying class <none> ]
## Executing postinstall script.
drwxr-xr-x   3 bin      other        512 Apr 26 14:21 /etc/opt/SUNWconn/em
drwxr-xr-x   3 root     other        512 Jun 17 08:45 /etc/opt/SUNWconn/em/conf
drwxrwxrwx   2 root     other        512 Apr 26 14:28 /etc/opt/SUNWconn/em/conf/odt
/opt/SUNWconn/em/build/acct/EM-obcodegen.cfg ->
/etc/opt/SUNWconn/em/conf/odt/EM-obcodegen.cfg
/opt/SUNWconn/em/build/acct/.em_obcodegen.tmpl ->
/etc/opt/SUNWconn/em/conf/odt/.em_obcodegen.tmpl

Installation of <SUNWemobj> was successful.

Processing package instance <SUNWemlog> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager Export Log Data to Relational Database
(sparc) 2.0
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        Printed in the United States of America.
2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

<Copyright Information>
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
  4 package pathnames are already properly installed.
## Verifying disk space requirements.

Installing Solstice Enterprise Manager Export Log Data to Relational Database as
<SUNWemlog>
```

Table B-1 Sample Installation

Executing preinstall script.

Terminating any running em_log2rdb processes.

Installing part 1 of 1.

<List of Files>

[verifying class <none>]

Installation of <SUNWemlog> was successful.

Processing package instance <SUNWemdmn> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager Daemons

(sparc) 2.0

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<Copyright Information>

Using </opt> as the package base directory.

Processing package information.

Processing system information.

5 package pathnames are already properly installed.

Verifying package dependencies.

Verifying disk space requirements.

Installing Solstice Enterprise Manager Daemons as <SUNWemdmn>

Executing preinstall script.

Table B-1 Sample Installation

Terminating any running Solstice Enterprise Manager Daemon processes.

Installing part 1 of 1.

<List of Files>

[verifying class <none>]

Executing postinstall script.

Installation of <SUNWemdmn> was successful.

Processing package instance <SUNWemcpa> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager CMIP Management Protocol Adapter

(sparc) 2.0

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<Copyright Information>

Using </opt> as the package base directory.

Processing package information.

Processing system information.

5 package pathnames are already properly installed.

Verifying package dependencies.

Verifying disk space requirements.

Installing Solstice Enterprise Manager CMIP Management Protocol Adapter as <SUNWemcpa>

Executing preinstall script.

Terminating any running Solstice Enterprise Manager CMIP MPA processes.

Table B-1 Sample Installation

```
## Installing part 1 of 1.
/etc/rc2.d/S98cmipmpa
/opt/SUNWconn/em/bin/em_cmip
[ verifying class <none> ]
## Executing postinstall script.

Installation of <SUNWemcpa> was successful.

Processing package instance <SUNWemapp> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager Core Applications
(sparc) 2.0
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<Copyright Information>
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
  6 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.

Installing Solstice Enterprise Manager Core Applications as <SUNWemapp>

## Executing preinstall script.
Terminating any running Solstice Enterprise Manager Core Application processes.
```

Table B-1 Sample Installation

```
## Installing part 1 of 1.
<List of Files>
[ verifying class <none> ]
## Executing postinstall script.

Installation of <SUNWemapp> was successful.

Processing package instance <SUNWembc> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager SNM Compatibility
(sparc) 2.0
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2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

<Copyright Information>
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
  14 package pathnames are already properly installed.
## Verifying disk space requirements.

Installing Solstice Enterprise Manager SNM Compatibility as <SUNWembc>

## Executing preinstall script.
Terminating the Solstice Enterprise Manager em_snmfwd process.
## Installing part 1 of 1.
<List of Files>
```

Table B-1 Sample Installation

```
[ verifying class <none> ]
## Executing postinstall script.

Installation of <SUNWembc> was successful.

Processing package instance <SUNWsnmag> from </net/sol/export/s5/em_nightly>

Site/SunNet/Domain Manager Agents & Libraries
(sparc) 2.3
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          Printed in the United States of America.
2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

<Copyright Information>
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
   2 package pathnames are already properly installed.
## Verifying disk space requirements.

Installing Site/SunNet/Domain Manager Agents & Libraries as <SUNWsnmag>

## Installing part 1 of 1.
<List of Files>
[ verifying class <none> ]
Modifying /etc/inet/inetd.conf
Modifying /etc/inet/services
Modifying /etc/rpc
```

Table B-1 Sample Installation

```
[ verifying class <sed> ]
## Executing postinstall script.
updating /etc/opt/SUNWconn/snm/snm.conf


Updating /etc/inet/inetd.conf to reflect SNM's installation directory


/var/opt/SUNWconn/snm already exists so it won't be re-created

Instructing inetd to re-read config file

If you're running NIS/NIS+, you need to update the services
 map/table.  See the SNM 2.3 Installation Guide, Chapter 3

Installation of <SUNWsnmag> was successful.

Processing package instance <SUNWsnmpd> from </net/sol/export/s5/em_nightly>

Site/SunNet/Domain Manager SNMP daemon
(sparc) 2.3
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2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

<Copyright Information>
Using </opt> as the package base directory.
## Processing package information.
```

Table B-1 Sample Installation

```
## Processing system information.
   40 package pathnames are already properly installed.
## Verifying disk space requirements.

Installing Site/SunNet/Domain Manager SNMP daemon as <SUNWsnmpd>

## Installing part 1 of 1.
<List of Files>
[ verifying class <none> ]
/etc/rc2.d/K25snmpd <linked pathname>
/etc/rc3.d/S25snmpd <linked pathname>
## Executing postinstall script.

Updating /etc/opt/SUNWconn/snm/snmpd.conf with community name information...


Updating /etc/init.d/init.snmpd with snmpd agent location...

Starting snmpd ...


Installation of <SUNWsnmpd> was successful.

Processing package instance <SUNWccfg> from </net/sol/export/s5/em_nightly>

Cooperative Consoles Configuration Tool
(sparc) 1.2
   Copyright 1996 Sun Microsystems, Inc. All Rights Reserved.
```

Table B-1 Sample Installation

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<*Copyright Information*>

Using </opt> as the package base directory.

Processing package information.

Processing system information.

12 package pathnames are already properly installed.

Verifying disk space requirements.

Installing Cooperative Consoles Configuration Tool as <SUNWccfg>

Installing part 1 of 1.

<*List of Files*>

[verifying class <none>]

Executing postinstall script.

Installation of <SUNWccfg> was successful.

Processing package instance <SUNWccrcv> from </net/sol/export/s5/em_nightly>

Cooperative Consoles Receiver Application

(sparc) 1.2

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<*Copyright Information*>

Table B-1 Sample Installation

Using </opt> as the package base directory.

Processing package information.

Processing system information.

10 package pathnames are already properly installed.

Verifying package dependencies.

Verifying disk space requirements.

Installing Cooperative Consoles Receiver Application as <SUNWccrcv>

Executing preinstall script.

Terminating running Cooperative Consoles Receiver Application.

Installing part 1 of 1.

<List of Files>

[verifying class <none>]

Executing postinstall script.

Using /opt/SUNWconn/snm as base dir.

moved /opt/SUNWconn/snm/struct/elements.schema to
/opt/SUNWconn/snm/struct/elements.schema.5516

moved /opt/SUNWconn/snm/struct/netware_elements.schema to
/opt/SUNWconn/snm/struct/netware_elements.schema.5516

Installation of <SUNWccrcv> was successful.

Processing package instance <SUNWabem> from </net/sol/export/s5/em_nightly>

Solstice Enterprise Manager 2.0 AnswerBook

(all) 65.4.4

Manufactured in the United States of America.

Table B-1 Sample Installation

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<*Copyright Information*>
Using </opt> as the package base directory.
Processing package information.
Processing system information.
Verifying package dependencies.
Verifying disk space requirements.

Installing Solstice Enterprise Manager 2.0 AnswerBook as <SUNWabem>

Installing part 1 of 1.
<*List of Files*>
[verifying class <PostScript>]
Executing postinstall script.

Installation of <SUNWabem> was successful.

B.3 Starting the Applications

Table B-2 Starting the Applications

Starting the Management Information Server ...

Removing na.snmp-trap from /etc/inetd.conf for SNM compatibility
Instructing inetd to re-read config file

Warning: the platform will be reinitialized.

Table B-2 Starting the Applications

```
Do you want to continue (y/n)?  y
Terminating all Solstice EM daemons
Running reinitialization of platform
Compiling ASN.1 files .....
Compiling gdmo files ...
Parsing 3com.gdmo completed: 471/471 elements loaded successfully
Parsing anno.gdmo completed: 21/21 elements loaded successfully
Parsing cisco.gdmo completed: 737/737 elements loaded successfully
Parsing coll.gdmo completed: 14/14 elements loaded successfully
Parsing connect.gdmo completed: 18/18 elements loaded successfully
Parsing cooptoolsschema.gdmo completed: 10/10 elements loaded successfully
Parsing cpustat.gdmo completed: 13/13 elements loaded successfully
Parsing dalarm.gdmo completed: 19/19 elements loaded successfully
Parsing diskinfo.gdmo completed: 5/5 elements loaded successfully
Parsing dmi.gdmo completed: 236/236 elements loaded successfully
Parsing elementsschema.gdmo completed: 168/168 elements loaded successfully
Parsing em.gdmo completed: 116/116 elements loaded successfully
Parsing em_access.gdmo completed: 43/43 elements loaded successfully
Parsing em_apps_msg.gdmo completed: 59/59 elements loaded successfully
Parsing em_auto_mgmt.gdmo completed: 29/29 elements loaded successfully
Parsing em_data_collector.gdmo completed: 31/31 elements loaded successfully
Parsing emalarm.gdmo completed: 29/29 elements loaded successfully
Parsing etherif.gdmo completed: 9/9 elements loaded successfully
Parsing etherif2.gdmo completed: 9/9 elements loaded successfully
Parsing hostif.gdmo completed: 5/5 elements loaded successfully
Parsing hostmem.gdmo completed: 57/57 elements loaded successfully
Parsing hostmem2.gdmo completed: 29/29 elements loaded successfully
```

Table B-2 Starting the Applications

Parsing hostperf.gdmo completed: 25/25 elements loaded successfully
Parsing iimcIIMCProxy.gdmo completed: 54/54 elements loaded successfully
Parsing iimcManagementDoc-1.gdmo completed: 47/47 elements loaded successfully
Parsing iostat.gdmo completed: 17/17 elements loaded successfully
Parsing iostat2.gdmo completed: 17/17 elements loaded successfully
Parsing ippath.gdmo completed: 5/5 elements loaded successfully
Parsing iproutes.gdmo completed: 13/13 elements loaded successfully
Parsing layers.gdmo completed: 121/121 elements loaded successfully
Parsing layers2.gdmo completed: 80/80 elements loaded successfully
Parsing lpstat.gdmo completed: 13/13 elements loaded successfully
Parsing map.gdmo completed: 32/32 elements loaded successfully
Parsing mpa.gdmo completed: 38/38 elements loaded successfully
Parsing nc-em.gdmo completed: 6/6 elements loaded successfully
Parsing nc.gdmo completed: 151/151 elements loaded successfully
Parsing netwareelementsschema.gdmo completed: 89/89 elements loaded successfully
Parsing nllog.gdmo completed: 10/10 elements loaded successfully
Parsing nnname.gdmo completed: 10/10 elements loaded successfully
Parsing ping.gdmo completed: 18/18 elements loaded successfully
Parsing retix-remote-bridge.gdmo completed: 1042/1042 elements loaded successfully
Parsing rfc1155.gdmo completed: 1/1 elements loaded successfully
Parsing rfc1213.gdmo completed: 474/474 elements loaded successfully
Parsing rfc1514.gdmo completed: 263/263 elements loaded successfully
Parsing rpcnfs.gdmo completed: 39/39 elements loaded successfully
Parsing sample.gdmo completed: 15/15 elements loaded successfully
Parsing security.gdmo completed: 1/1 elements loaded successfully
Parsing snmp-mibII.gdmo completed: 194/194 elements loaded successfully
Parsing snmp_traps.gdmo completed: 15/15 elements loaded successfully
Parsing snmpv2-mibII.gdmo completed: 194/194 elements loaded successfully

Table B-2 Starting the Applications

```
Parsing snmpv2.gdmo completed: 43/43 elements loaded successfully
Parsing sun.gdmo completed: 92/92 elements loaded successfully
Parsing sync.gdmo completed: 9/9 elements loaded successfully
Parsing synoptics.gdmo completed: 789/789 elements loaded successfully
Parsing topo.gdmo completed: 166/166 elements loaded successfully
Parsing traffic.gdmo completed: 41/41 elements loaded successfully
Parsing vol1.gdmo completed: 294/294 elements loaded successfully
Parsing vol4.gdmo completed: 948/948 elements loaded successfully
Parsing x741.gdmo completed: 19/19 elements loaded successfully
reinitialization complete
Starting em_login em_mis em_snmp-trap em_ncam em_snmfwd em_nnmpa em_autod
em_datad

Solstice EM (TM) 2.0 Beta (Jun 10 1996) Management Information Server (MIS)

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Mapping, Inc., 3135 Kifer Road, Santa Clara, Ca., 95051, USA
(Obtain additional map data from Strategic Mapping Inc., 800-764-3228 in USA).

Initializing .....

em_services Start-up Complete.

The default access control configuration will only allow
"root" user to start EM applications and connect with the MIS.
If non-root users are to use EM applications they must be granted
```

Table B-2 Starting the Applications

permission to do so using the Access Manager Application.

Starting the Access Manager ...

Do you want to discover the local IP network? [y]: y

Starting network discovery ...

Do you want auto-management for router interfaces? [y]: y

Starting auto-management of router interfaces ...

Do you want auto-management of all devices for reachability? [y]: y

Starting auto-management of all devices ...

Starting em_panel ...

A log of the installation has been saved as /tmp/em_install.log.1610

Installation is now complete.

#

GDMO and ASN.1 File Usage

C

Note – The content in this Installation Guide may have changed since the AnswerBook build. Please refer to the hardcopy documentation for the most up-to-date information.

C.1 Overview

Solstice EM is shipped with GDMO and ASN.1 files that are the basis of the object definitions the Management Information Server (MIS) knows about. These files can be categorized as follows:

- Files required to run the "core" MIS
- Files that are extensions of the SNMP MIB-II or files for specific vendor's devices
- Files required to run the SunNet Manager (SNM) RPC agents

The files in the first two categories are part of the Solstice EM MIS package (`SUNWemmis`), while the files in the third category are part of the SNM Compatibility package (`SUNWembc`). The files in all three categories are listed in this appendix.

MIS startup is approximately twice as fast using only the required files as it is using all files. If you want to have less than the full complement of GDMO and ASN.1 files compiled into your MIS at start-up, you must move the unnecessary files to a different directory after the installation is complete. The GDMO and ASN.1 files are stored in `$EM_HOME/etc/gdmo` and `$EM_HOME/etc/asn1`, respectively.

A default installation automatically starts the MIS. Therefore, you must:

1. **Move the unecessary GDMO and ASN.1 files to a different directory**
2. **Restart the MIS using the** `em_services -r` **command, which:**

- Stops and restarts the MIS
- Removes existing object definitions, including the schema files associated with the GDMO and ASN.1 files you moved
- Instantiates the object definitions for objects described in `$EM_HOME/etc/gdmo`, `$EM_HOME/etc/asn1`, and `/var/$EM_HOME/data`.

If you perform a non-default installation where the MIS is not automatically started, you can:

1. **Move the unecessary GDMO and ASN.1 files to a different directory**
2. **Start the MIS using the** `em_services -i` **command.**
   The `em_services -i` command removes all previously existing data from the MIS.

C.2 Files Required for "Core" MIS

The GDMO documents required for the "core" MIS are listed below.

```
anno.gdmo
coll.gdmo
d3.gdmo
dmi.gdmo
iimcIIMCProxy.gdmo
iimcManagementDoc-1.gdmo
map.gdmo
mpa.gdmo
nc-d3.gdmo
nc.gdmo
rfc1213.gdmo
rfc1155.gdmo
security.gdmo
topo.gdmo
vol1.gdmo
vol4.gdmo
```

The ASN.1 files required for the “core” MIS are listed below.

```
IimcAssignedOIDs.asn1
IimcCommonDef.asn1
IimcProxyASN1.asn1
acse.asn1
anno.asn1
any.asn1
asn1.asn1
cnm.asn1
coll.asn1
d3.asn1
dmi.asn1
evr2oc.asn1
infofw.asn1
map.asn1
mpa.asn1
nc-d3.asn1
nc.asn1
rfc1213TYPE.asn1
security.asn1
topo.asn1
test.asn1
usefuldef.asn1
vol1.asn1
vol2.asn1
vol4.asn1
x711.asn1
```

C.3 Extensions to SNMP-MIB II and Vendor-specific Files

The GDMO documents listed below are extensions to MIB-II or are vendor-specific.

```
3com.gdmo
cisco.gdmo
retix-remote-bridge.gdmo
sun.gdmo
synoptics.gdmo
```

The ASN.1 files listed below are extensions to MIB-II or are vendor-specific.

```
3comTYPE.asn1
ciscoTYPE.asn1
retix-remote-bridgeTYPE.asn1
sunTYPE.asn1
synopticsTYPE.asn1
```

C.4 Files Required for SNM RPC Agents

The GDMO documents listed below are required if you plan to use the SNM RPC agents in the `SUNWsnmag` package.

```
diskinfo.gdmo
elementsschema.gdmo
etherif.gdmo
etherif2.gdmo
hostif.gdmo
hostmem.gdmo
hostmem2.gdmo
hostperf.gdmo
iostat.gdmo
iostat2.gdmo
ippath.gdmo
iproutes.gdmo
layers.gdmo
layers2.gdmo
lpstat.gdmo
ping.gdmo
rpcnfs.gdmo
sample.gdmo
snmp-mibII.gdmo
snmp.gdmo
snmpv2-mibII.gdmo
snmpv2.gdmo
sync.gdmo
traffic.gdmo
```

The ASN.1 files listed below are required if you plan to use the SNM RPC agents in the SUNWsnmag package.

```
RpcCommonDef.asn1
SNMPv2-SMI.asn1
diskinfo.asn1
elementsschema.asn1
etherif.asn1
etherif2.asn1
hostif.asn1
hostmem.asn1
hostmem2.asn1
hostperf.asn1
iostat.asn1
iostat2.asn1
ippath.asn1
iproutes.asn1
layers.asn1
layers2.asn1
lpstat.asn1
ping.asn1
rpcnfs.asn1
sample.asn1
snmp-mibII.asn1
snmp.asn1
snmpv2-mibII.asn1
snmpv2.asn1
sync.asn1
traffic.asn1
```

In the preceding lists, note that file names that contain the numeral 2 (except for snmpv2.*) are for agents that run on Solaris 2.x machines.

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