4

Installing and Using ATM Solaris Software

This chapter describes how to install and use ATM Solaris software. For installing and using ATM SunOS software, see Chapter 5, *Installing and Using ATM SunOS Software*. Make sure the adapter is already installed in the workstation before installing the software (see Chapter 3, *Installing the Adapter*).

Note: You must be a superuser to install and use ATM Solaris software.

Installation Overview

The instructions in this chapter are in order. The sections are explained below:

- *Installation Overview*—explains the software files and the directories where they will reside after installation is complete. This section explains database files and how they are used with ATM software. This section helps you determine your ATM and workstation software needs and explains how to set up an ATM server.
- *Installing ATM Solaris Software*—ATM drivers must be set up on each computer with an installed ATM adapter. This section describes which drivers are needed and which are optional.

- *Removing ATM Solaris Drivers*—ATM drivers must be removed before being reinstalled.
- *Using ATM Solaris Software*—explains how to start and stop ATM Solaris drivers, set up environment variables, edit the IP hosts file, and other tasks for using ATM.

Solaris Files and Directories

During installation the following files are copied and, if necessary, the directories are created.

Default Directories	File	Description
/kernel/drv	*aarp*	The ARP driver for the ARP server
	aarp.conf	The ARP driver configuration file
	acip	The Classical IP (CIP) driver
	acip.conf	The CIP driver configuration file
	alane	The LAN Emulation Client (LEC) driver
	alane.conf	The LEC driver configuration file
	aatm	The ATM driver for the adapter
/etc/rc2.d	*S681aatminit*	The bootup file for *aatm*
	S682aarpinit	The bootup file for *aarp*
	S683acipinit	The bootup file for *acip*
	S684alaneinit	The bootup file for *alane*
/etc/rc3.d	*S35atmsnmp*	The bootup file for *aatmsnmpd*
/etc/opt/ADPT	*release.notes*	Release notes
/etc/opt/ADPT/aarp/bin (may include hidden files)	*aarpcnfg*	The *aarp* configuration program
	aarp_1.db	Default database file for *aarp*
	aarp.db[1]	Your workstation database file for *aarp*
	mkaarpdb[2]	File used by *pkgadd* during installation
	.aarplink	File needed for stopping *aarp*
/etc/opt/ADPT/acip/bin (may include hidden files)	*acipcnfg*	The *acip* configuration program
	acip_1.db	Default database file for *acip*
	acip.db[1]	Your workstation database file for *acip*
	mkacipdb[2]	File used by *pkgadd* during installation
	.aciplink	File needed for stopping *acip*
/etc/opt/ADPT/lane/bin (may include hidden files)	*alanecnfg*	The *alane* configuration program
	alane_1.db	Default database file for *alane*

Default Directories	File	Description
	alane0.db[1] *alane1.db*[1] *alane2.db*[1] *alane3.db*[1]	Your workstation database files for *alane*, logical interfaces 1 through 4
	alane_ip_unlink	Unlinks IP from the driver (for advanced users only)
	mkalanedb	File used by *pkgadd* during installation
/etc/opt/ADPT/aatm/bin (may include hidden files)	*aatmcnfg*	The *aatm* configuration program
	base_1.db	Default database file for *aatm*
	base.db[1]	Your workstation database file for *aatm*
	mkaatmdb [2]	File used by *pkgadd* during installation
	aatmdiag	ATM diagnostic program
	aatmsnmpd	SNMP agent driver
	aatmsnmpd.conf	SNMP agent driver configuration file
	ilmi.hpov.mib	MIB file for HP OpenView
	ilmi.netview.mib	MIB file for IBM NetView
	ilmi.snm.mib	MIB file for SunNet Managers
	sigconf	Signalling configuration program
	umedebug	Debug trace program for the console
/etc/opt/ADPT/man/man8	*aarpcnfg.8c*	Manual pages for *aarpcnfg*
	aatmcnfg.8c	Manual pages for *aatmcnfg*
	acipcnfg.8c	Manual pages for *acipcnfg*
	alanecnfg.8c	Manual pages for *alanecnfg*

[1] This file must always reside in the */etc/opt/ADPT/aatm/bin* directory.
[2] *Do not* use this file to create your database file. It is used by *pkgadd* during installation only.

Database Files

When you install ATM software, database files are created from default settings. Your specific configuration parameters entered during installation (such as IP address, the ATMARP server address, and any PVCs created) are logged into these database files. The database files for your workstation are accessed by the drivers when the drivers start. Default database files (*aarp_1.db, acip_1.db, alane0.db,* and *base_1.db*) are copied onto your workstation during installation; keep these as backup files.

Determining Your ATM Needs

You may find it difficult to determine which ATM software drivers you should use for your application. Understanding what you need before you install ATM software is essential to an easy and accurate configuration of the ATM drivers and your workstation. See *Classical IP, LAN Emulation, or Both?* below for using either Classical IP or LAN Emulation. See *PVCs or SVCs for Classical IP?* below for using PVCs or SVCs. See *Determining Workstation Hard Disk Space* on page 4-5 to determine available hard disk space for installing ATM drivers.

Classical IP, LAN Emulation, or Both?

If you are only using TCP/IP for your network protocol and you will not have any bridges in the network, use Classical IP for optimal performance. Classical IP allows you to setup PVCs as well as SVCs between endpoints in your network.

If you are using any upper level protocols with bridges, use LAN Emulation. Some ATM switches are very convenient by having the LAN Emulation Server (LES) software internally supported. LAN Emulation uses SVCs and *does not* use PVCs. LAN Emulation allows you to have up to four logical interfaces of the driver running at the same time, so you can directly connect to multiple networks at once. The driver automatically sets up a different hardware MAC address for each logical interface. However, you must set up a unique IP address for each logical interface.

You can use both Classical IP and LAN Emulation on the same workstation at the same time. The Classical IP driver and each logical interface of the LAN Emulation driver must have a separate IP address and a separate MAC address.

PVCs or SVCs for Classical IP?

Permanent virtual connections (PVCs) establish a permanent connection between two endpoints on your ATM network using a VPI/VCI number. If you *do not* have an ATM switch or if you are connecting two workstations back-to-back, you *must* set up a PVC between the endpoints. To do this, set up the same VPI/VCI number for the *aatm* driver for the endpoints; to use Classical IP, specify this number for *acip* also. In addition, if you have an ATM switch and are using PVCs, specify this VPI/VCI number on the switch so that the endpoints can communicate via the switch. (See *Installing ATM Solaris Software* on page 4-8 to set up PVCs during ATM driver installation; see *Adding or Deleting PVCs in Solaris* on page 4-21 to set up or delete PVCs after the drivers are already installed).

If you have an ATM switch, however, it is better *not* to use PVCs because it requires less user intervention. SVCs are set up automatically by the ATM switch when the endpoints want to communicate with each other. SVCs are temporarily set up and automatically torn down when they are no longer needed, so that bandwidth can be reallocated to other channels. If PVCs are set up on the network, the amount of bandwidth left for SVCs decreases because the PVCs are constantly using it.

Determining Workstation Hard Disk Space

Since ATM software must be installed on each workstation, use the command `df -k` to display the workstation's available hard disk space. Determine if the root filesystem (or directory) has at least 10 MBytes of available space. If it does not, locate another filesystem that has 10 MBytes free and use it to install ATM software. The database files, however, will be installed into */etc/opt/ADPT/aatm/bin*.

Guidelines to Setting Up an ATM Server

This section provides an overview and general guidelines to setting up an ATM server. If you will be using Classical IP and SVCs, set up an ATMARP server; see *ATMARP Server* below. If you will be using LAN Emulation, set up an LES; see *LAN Emulation Server* on page 4-8.

ATMARP Server

This section provides an overview and general guidelines to setting up the ATMARP server and the clients in its logical IP subnet (LIS).

To use Classical IP and SVCs, a LIS must be set up and one station must be configured as an ATMARP server. The ATMARP server must have the *aarp* driver installed on it. This driver responds to the ARP queries from the ATM nodes and resolves IP to ATM addressing within the LIS. Only one ATMARP server is needed per LIS.

The workstation may be both an ATMARP server and a Classical IP client. The table below shows the trade-off between number of simultaneous ATMARP connections and Classical IP client connections possible.

Number ATMARP connections	Number Client connections
400	0
350	5
250	10
125	18
0	26

Follow these *guidelines* to set up an ATMARP server and its Classical IP clients:

1. Establish an IP network mask for the LIS and a unique IP address for each client. See the Sun documentation for networking details.
2. Set up the ATMARP server by following this general overview:
   a. Install the adapter in the workstation that will function as the ATMARP server and make sure the adapter is connected to the ATM switch. See Chapter 3, *Installing the Adapter*.
   b. Install at least the *aatm* and *aarp* drivers on the ATMARP server following the instructions in *Installing ATM Solaris Software* on page 4-8.

      Do not worry about entering the right ATMARP server address on the ATMARP server. This address is used by the Classical IP clients for communicating with the ATMARP server.
   c. Start the *aatm* and *aarp* drivers by entering the following commands at the command line:

      ```
      aatmcnfg
      aarpcnfg
      ```
3. Since you need the ATMARP server address when you install Classical IP software for each client, obtain this 20-byte ATMARP server address by following these steps:

a Enter the command aatmcnfg -p on the ATMARP server from the directory where the ATM software was installed. The ATM address for the ATMARP server appears, e.g., 39.11.22.11.22.11.22.00.00.11.22.11.22.00.00.d1.00.04.45.00.

b Write this address down, but replace the 20th byte (the final byte, which is 00) with 03, then use this altered address as the ATMARP server address when installing the *acip* driver on all Classical IP clients in the LIS.

Note: The ATMARP server address consists of the following:

1. The first 13 bytes are from the ATM switch; see the switch documentation.
2. The next 6 bytes are the MAC address (ESI address) of the adapter installed in the ATMARP server.
3. The 20th byte (the ATMARP selector) must be unique from the Classical IP client selector and the ATM selector. These ATM driver packages primarily use the following default selectors:

   ATMARP selector (*aarp*): 03
   Classical IP client selector (*acip*): 02
   ATM selector (*aatm*): 00

---

4 Set up the Classical IP clients by following this general overview:

a Install the adapters in the workstations that will function as clients and make sure the adapters are connected to the ATM switch. See Chapter 3, *Installing the Adapter*.

b Install at least the *aatm* and *acip* driver packages on each workstation in your subnetwork. See *Installing ATM Solaris Software* on page 4-8.

LAN Emulation Server

LAN Emulation communicates with other higher level protocols, such as IP or IPX, by emulating an Ethernet driver. So your LAN applications communicate with the ATM adapter as if it were an Ethernet adapter.

To use LAN Emulation Client (LEC), obtain LAN Emulation Server (LES) from your ATM switch vendor. The LES receives and sends responses to the ARP queries from the LECs and resolves higher level protocol addressing within the subnetwork. The LECs in the subnetwork communicate with the LES through their installed *alane* driver. The LES must be correctly configured and running before installing the LEC software on the workstations in your subnetwork. If your LES requires the setup and use of an LECS, set it up also before installing LEC software on the workstations in your subnetwork.

Installing ATM Solaris Software

This section explains how to install ATM driver packages. To install the driver packages, follow these steps:

1. Make sure you have set up the appropriate server for your sub-network and determined which software you will need on your workstation. See *Guidelines to Setting Up an ATM Server* on page 4-5 and *Determining Your ATM Needs* on page 4-4.
2. Login as superuser on the workstation where you want to install ATM software.

> **Note:** If you have previously installed any of the drivers, be sure to use pkgrm to remove them before installing the new drivers. See *Removing ATM Solaris Drivers* on page 4-16 for more details.

3. Copy the software to the workstation's hard disk or to a central location to save you installation time. Perform these steps for each driver package you want to install:

   a. Insert the diskette.

b Enter the following commands from the command line (make sure File Manager is not running, *volcheck* does not operate correctly with File Manager running):

```
volcheck
cp /vol/dev/aliases/floppy0   /directory/diskX
eject
```

Where:

directory is the directory where the software will be copied.
diskX is the name you give to contents of the diskette. Make sure to use a different name for each package you copy; for example, *disk0, disk1, disk2,* etc.

Note: Always use /vol/dev/aliases/floppy0. If you replace it with /vol/dev/aliases/floppy1 or /vol/dev/aliases/floppy2, the installation *does not* work.

---

4 Install the desired driver package on the workstation (if you install several packages, install them in the order specified in this chapter). These steps must be performed for each driver package installed.

a Enter the following command from the command line to load the driver package (*do not* use the -R parameter with *pkgadd* to select a different installation directory; you can specify this when prompted during installation):

```
pkgadd -d /directory/diskX              (or use /dev/rdiskette)
```

Where:

directory is the directory where the software is copied (this is the same as in step 3).
diskX is the name of the file that contains the driver installation package (this is the same as in step 3).
/dev/rdiskette allows you to install from the floppy diskette if you did not copy the software to a location on your hard drive as suggested in step *3b*.

b Follow the instructions in the appropriate sections for information on the installation script:

– *Installing the Solaris aatm Driver* on page 4-10.
– *Installing the Solaris aarp Driver* on page 4-11.
– *Installing the Solaris acip Driver* on page 4-12.
– *Installing the Solaris alane Driver* on page 4-14.

Note: If you *do not* receive an Installation was Successful message when installing each of the driver packages, remove the package (see *Removing ATM Solaris Drivers* on page 4-16), then reinstall it.

c If you installed from a diskette, enter the command eject from the command line to remove the diskette.

5 Once you have installed the necessary driver packages, proceed to on page 4-23.

Installing the Solaris *aatm* Driver

The *aatm* driver package operates the adapter—it is needed on every workstation where an ATM adapter is installed. The following is the installation script for the *aatm* driver package. See *Installing ATM Solaris Software* on page 4-8 for instructions up to this point.

1 When prompted to select the package to install, press **Enter** to install the *aatm* driver package.

2 When prompted to enter the name of the directory where you want the software installed, enter a directory name or press **Enter** to accept the default of */etc/opt*. To exit, enter **q**.

3 When prompted to configure the ATM interface, enter **y**. If you enter **n**, you must create your own database file from the default database (*base_1.db*) provided.

Note: Unless you are an experienced user who knows how to create this file, you should enter **y**.

4 When prompted to configure any PVCs, enter **y** to configure them. If you *do not* want to configure a PVC, enter **n**:

Note: PVCs are permanent connections, while SVCs are temporary connections. If you *do not* set up PVCs, your system will configure SVCs dynamically when needed. However, you can still use SVCs even if you configure PVCs. To use SVCs, you must set up a server, see *Guidelines to Setting Up an ATM Server* on page 4-5.

5 If you entered *yes* to the above question, you are prompted to enter a VCI number for the PVC, enter the VCI number for each PVC. When you have finished, press **Enter**. Be careful not to press **Enter** until you are done. For example:

Please enter the VCI number,
If you are done with all PVCs, just press return: **75**

Please enter the VCI number,
If you are done with all PVCs, just press return: **<Enter>**

6 When prompted to install the package with superuser permissions, enter **y**. The installation completes by displaying the message Installation of <ADPTaatm> was successful.

Installing the Solaris *aarp* Driver

The *aarp* driver package must be installed if the workstation is to be used as the ATMARP server. If your subnetwork will use Classical IP, install the *aarp* driver and set up an ATMARP server before setting up other workstations. See *ATMARP Server* on page 4-5 for more information.

The following is the installation script for the *aarp* driver package. See *Installing ATM Solaris Software* on page 4-8 for installation instructions up to this point.

Note: See *ATMARP Server* on page 4-5 before installing the *aarp* driver package. You need the IP address for this ATMARP Server.

1 When prompted to select the package to install, press **Enter** to install the *aarp* driver package.

2 When prompted to enter the name of the directory where you want the software installed, enter a directory name or press **Enter** to accept the default of */etc/opt*. To exit, enter **q**.

3 When prompted to configure the ATMARP server, enter **y**. If you enter **n**, you must create your own database file from the default database (*aarp_1.db*) provided.

Note: Unless you are an experienced user who knows how to create this file, you should enter **y**.

4 When prompted to enter the IP subnetwork address of the ATMARP server, enter it as shown below:

```
Please enter the IP SubNet Number for this ARP Server in the following
format -- 162.62.41.0, ??
```

158.62.38.0

Note: The host ID field of the IP address (the last field) is 0.

5 When prompted for installing the package with superuser permissions, enter **y**. The installation completes by displaying the message Installation of <ADPTaarp> was successful.

Installing the Solaris *acip* Driver

The *acip* driver package is needed on each workstation that will use Classical IP. The following is the installation script for the *acip* driver package. See *Installing ATM Solaris Software* on page 4-8 for instructions up to this point.

Note: You need the ATMARP server address and the IP address for your workstation (ATM node). See *ATMARP Server* on page 4-5.

1 When prompted to select the package to install, press **Enter** to install the *acip* driver package.

2 When prompted to enter the name of the directory where you want the software installed, enter a directory name or press **Enter** to accept the default of */etc/opt*. To exit, enter **q**.

3 When prompted to configure Classical IP, enter **y**. If you enter **n**, you must create your own database file from the default database (*acip_1.db*) provided.

> **Note:** Unless you are an experienced user who knows how to create this file, you should enter **y**.

4 When prompted to enter the IP address of this workstation, enter it as shown below:

```
Please enter the IP address of the ATM interface in the following
format [xx.xx.xx.xx] where xx is in decimal, e.g. 162.62.41.138
```

158.62.42.38

> **Note:** This IP address must be unique from any other workstation's IP address.

5 When prompted to enter the ATMARP server address, enter it as shown below (see *ATMARP Server* on page 4-5 for details):

```
Please enter the ATM address of the ARP Server in the following format
[xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx] where xx is
in hexadecimal, and the last number is the selector e.g.
35.11.22.11.22.11.22.0.0.11.22.11.22.0.20.EA.0.4.38.3
```

78.11.22.11.22.11.22.0.0.11.22.11.22.0.20.EA.0.2.55.3

6 When prompted to enter the name of the database configuration file for the *aatm* driver, enter the name and location of this file or press **Enter** for the default. For example,

Please enter the config file for your ATM interface.
The default is "/etc/opt/ADPTaatm/bin/base.db".
[filename, q,?] ?? **<Enter>**

7 If you want any of the PVCs that were setup in the *aatm* driver installation to be used for Classical IP, enter **y** at the following question. Otherwise, enter **n**.

```
This is the list of PVCs defined in your ATM config file.
75

Do you want to use any of them in Classic IP ??
If you are not sure, Press return to take the default action.
The default action is "n". [y, n] ?? y
```

You are prompted with the VCI numbers set up in the *aatm* driver installation. Select **y** if you want the PVC associated with the VCI number to run Classical IP; otherwise, enter **n**. When you are done, or if you want to quit going through the VCI numbers, enter **q**:

8. When prompted for installing the package with superuser permissions, enter **y**. The installation completes by displaying the message Installation of <ADPTacip> was successful.

Installing the Solaris *alane* Driver

The *alane* driver package is needed on each workstation that will use LAN Emulation. The following is the installation script for the *alane* driver package. See *Installing ATM Solaris Software* on page 4-8 for instructions up to this point.

1. When prompted to select the package to install, press **Enter** to install the *alane* driver package.
2. When prompted to enter the name of the directory where you want the software installed, enter a directory name or press **Enter** to accept the default of */etc/opt*. To exit, enter **q**.
3. When prompted to configure the ATM LEC interface, enter **y**. If you enter **n**, you must create your own database file from the default database (*alane_1.db*) provided.

> **Note:** Unless you are an experienced user who knows how to create this file, you should enter **y**.

4. When prompted to enter the LEC logical index, enter the number that will represent this logical interface of the driver. Up to four logical interfaces of the driver are allowed. Enter 0, 1, 2, or 3.
5. When prompted for the type of LEC, enter **les** for LAN Emulation Server or **lecs** for LAN Emulation Configure Server. Your LES documentation should specify this type. The default is *lecs*.

6 When prompted for the LES address, enter it in hex. If you selected *lecs* at step 5, the ATM Forum standard default address is listed, select the default.

Please enter the ATM address of the LES Server in the following format [xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx.xx] where xx is in hexadecimal, and the last number is the selector e.g. 47.0.79.0.0.0.0.0.0.0.0.0.0.0.0.a0.3e.0.0.1.3

47.0.79.0.0.0.0.0.0.0.0.0.0.0.0.a0.3e.0.0.1.3

7 When prompted to enter the IP address of this workstation, enter it as shown below:

Please enter the IP address of the ATM interface in the following format [xx.xx.xx.xx] where xx is in decimal, e.g. 162.62.41.138

158.62.42.38

Note: This IP address must be unique from any other workstation's IP address.

8 When prompted to create another LEC interface, enter **y** to create another logical interface of the driver or **n** not to. If you select *y*, you loop back through the same questions (as shown in steps *3* to *7)* for each logical interface of the driver. Make sure you enter a separate LEC index and IP address for each logical interface of the driver.

9 When prompted to install the package with superuser permissions, enter **y**. The installation completes by displaying the message Installation of <ADPTalane> was successful.

Removing ATM Solaris Drivers

You must remove ATM driver packages before reinstalling them. To remove one or more ATM driver packages from your workstation, follow the steps below:

1. Stop *all* drivers as explained in *Stopping ATM Solaris Drivers* on page 4-19.
2. You may want to make backup copies of your database files so that when you reinstall ATM Solaris drivers, you still have your previous configuration.
3. Enter pkgrm from the command line. Select the package—*ADPTaatm*, *ADPTacip*, *ADPTaarp*, or *ADPTalane*—and follow the onscreen instructions. Remove each driver this way.
4. Reboot the workstation. Reinstall the driver packages you want as explained in *Installing ATM Solaris Software* on page 4-8.

Using ATM Solaris Software

This section describes how to use your ATM adapter and software. Some sections may not apply to your configuration. For first time installations, see *Setting Up Environment Variables for Solaris* below. When you want to use ATM, you must start the drivers; see *Starting ATM Solaris Drivers* on page 4-17. When you are finished using ATM or when running diagnostics on the adapter, stop the drivers; see *Stopping ATM Solaris Drivers* on page 4-19.

Setting Up Environment Variables for Solaris

When using ATM software set your environment and path to locate ATM drivers and library files before using ATM. This allows you to access your ATM drivers and manual pages from any directory and allows many of the features in ATM software to operate. SH and C Shell examples are shown here; see Solaris documentation for other shells.

To set up your environment for "SH", follow these steps:

1. Edit the *.profile* file located in your login directory to include the following lines (if one does not exist, create it). When you login, this file automatically loads.

   PATH = "/etc/opt/ADPT/aatm/bin:/etc/opt/ADPT/aarp/bin:/etc/opt/ADPT/acip/bin: /etc/opt/ADPT/lane/bin: $PATH"

```
MANPATH = "/etc/opt/ADPT/man/man8:/usr/share/man:
/usr/openwin/man:/apps/tran/man: $MANPATH"
export MANPATH
```

2 Log out and log back in.

To set up your environment for "CSH", follow these steps:

1 Edit the *.cshrc* file in your login directory to include the following lines (if one does not exist, create it). When you login, this file automatically loads.

```
set PATH = "/etc/opt/ADPTaatm/bin:/etc/opt/ADPT/aarp/bin:/etc/opt/
ADPT/acip/bin: /etc/opt/ADPT/lane/bin: $PATH"

setenv MANPATH = "/etc/opt/ADPT/man/man8:/usr/share/man:
/usr/openwin/man:/apps/tran/man: $MANPATH"
```

2 Log out and log back in.

Starting ATM Solaris Drivers

To use your ATM adapter and software, you must start the drivers. To start the drivers, follow these steps:

Note: You must stop the drivers before restarting them if you already started them or attempted to start them, because some part of the driver may have already started. If you had an old version of the drivers installed when you installed the ATM software, reboot the workstation to activate the new drivers, if you have not already done so.

---

1 Change to the directory where you installed the software (see *Solaris Files and Directories* on page 4-2 for the default directories) if it is not set up in your path.

2 Start the drivers you need to use by entering the appropriate command below and in the following order:

aatmcnfg — starts the *aatm* driver; use the -q option if you *do not* want to use SVCs and if you *do not* want to register with an ATM switch; use the -a option if your switch does not support address registration. When running diagnostics or setting up back-to-back connections, use -q.

aarpcnfg	starts the *aarp* driver on the ATMARP server.
acipcnfg	starts the *acip* driver; you must start this driver to transport data over Classical IP (using TCP/IP).
alanecnfg	starts the *alane* driver; you must start this driver to transport data over LAN Emulation. The default LEC index (logical interface of the driver) is 0. If you want to start another logical interface of the driver enter the LEC index after alanecnfg, for example, alanecnfg 1, alanecnfg 2, or alanecnfg 3.

Note: You may have to type **./** in front of all commands depending on how your environment is set up.

You can use the -f *ConfigFile* option to start the driver with a database file other than the default database file, for example, *trial.db*. See *Database Files* on page 4-3 for more explanation of the database files and Appendix B, *Using Utilities and Parameters*, for a complete description of the utilities.

3 Once the ATM drivers are installed and started issue the ifconfig command to ensure that the workstation lists the new adapter interface:

```
ifconfig -a
lo0: flags=849<UP, LOOPBACK, RUNNING, MULTICAST> mtu 8232
    inet 127.0.0.1 netmask ff000000
le0: flags=863<UP, BROADCAST, NOTRAILERS, RUNNING, MULTI
    CAST> mtu 1500 inet 158.62.42.31 netmask ffffff00 broadcast
    158.62.42.255 ether 8:0:20:1b:40:76
acip0: flags=863<UP, BROADCAST, NOTRAILERS, RUNNING, MULTI
    CAST> mtu 9180 inet 158.62.43.13 netmask ffffff00 broadcast
    158.62.43.255 ether ac:ac:a2:3e:1f:d
alane0: flags=863<UP, BROADCAST, NOTRAILERS, RUNNING,
    MULTI CAST> mtu 1500 inet 158.62.44.14 netmask ffffff00 broadcast
    158.62.44.255 ether ac:a0:a2:3e:1f:ba
```

Note: The number after ether under acip0 or alane0 *does not* represent the hardware MAC address.

Stopping ATM Solaris Drivers

You must stop the drivers if you started them, if you want to reset them with the database configuration parameters, or if you attempted to start them and received an error. To stop the drivers follow these steps:

1. Change to the directory where you installed the software (see *Solaris Files and Directories* on page 4-2 for the default directories) if it is not set up in your path.
2. Stop the driver using the appropriate command below and in the following order:

acipcnfg -s	stops the *acip* driver
aarpcnfg -s	stops the *aarp* driver
aatmcnfg -s	stops the *aatm* driver
alanecnfg -s	stops the *alane* driver. The default LEC index (logical interface of the driver) is 0. If you want to stop another logical interface of the driver enter the LEC index after alanecnfg, for example, alanecnfg 1 -s.

Automatically Loading ATM Solaris Drivers

Solaris executes files found in certain directories at bootup. The files *S681aatminit, S682aarpinit, S683acipinit,* and *S684alaneinit* in the */etc/rc2.d* directory are called at boot time and configure the *aatm, aarp, acip,* and *alane* drivers respectively. If you want to start ATM drivers automatically when you boot your workstation, remark out the first two lines of the desired file as shown below:

```
#echo Not Starting
#exit 0
```

The file *S35atmsnmp,* located in */etc/rc3.d,* is also called at boot time and configures the *aatmsnmpd* driver. If you want to automatically start SNMP when you boot your workstation, remark out the first two lines of the desired file as shown here:

```
#echo  Not starting ATM SNMP Daemon
#exit 0
```

Caution: You must test your configuration very carefully to make sure the addresses and other parameters are accurate, before remarking out this exit line. If any parameters are invalid, your system will hang.

Changing Solaris Traffic Shaping Parameters

The traffic shaping parameters for SVCs are stored in the *acip.db* file. The parameters, the default values, and valid range of values are shown below:

Parameter	Default Value	Valid Values
pcr	100% (ANA-5210)	0 - 100 %
	16% (ANA-5230/5240)	
traffic_class	ubr	ubr or cbr
qos	0	0,3,4

The *pcr* parameter is Peak Cell Rate. This is expressed in percent of the total available adapter bit rate. For example, 100% of a ANA-5230/5240 is 155 Mbits/sec. The *traffic_class* may be specified as either ubr (Unspecified Bit Rate) or cbr (Constant Bit Rate). The *qos* parameter is Quality of Service. The values (0, 3, 4) represent ATM Forum defined qualities of service (see latest ATM Forum UNI specification). These parameters apply to all SVCs.

Note: Present ATM Forum specifications do not allow data rate negotiation. If a high speed adapter connects to a lower speed adapter and transmits at maximum speed, a large frame will likely overflow the switch buffers. If high speed adapters are set for a peak cell rate equal to the slowest adapters in a LIS, this problem will be avoided (for example, 16% of 155 Mbits/sec is 25 Mbits/sec).

To change any of these parameters from the default values, you must edit the *acip.db* file as shown in the following steps:

1 Change to the directory where the database file is located.

2 Edit the appropriate lines in the file *acip.db* (the default for ANA-5210 is shown below).

```
:= pcr 100%
# this is either cbr or ubr
:= traffic_class ubr
:= qos 0
```

Adding or Deleting PVCs in Solaris

There are two methods of adding or deleting PVCs. By executing *mkbasedb* command you re-run the configuration which was run when first installing the drivers. The other method is to edit the database file, and manually add or delete PVCs.

Method I

1 Change to the directory where the *mkbasedb* file is located (the default is */etc/opt/ADPT/aatm/bin*).

2 Enter **mkbasedb** at the command line.

3 Follow the installation script for *Installing the Solaris aatm Driver* on page 4-10.

4 Be sure to define all the PVCs you want (previously defined PVCs will not be automatically included).

If you plan to use PVCs in Classical IP:

5 Enter **mkbasedb** at the command line.

6 Follow the installation script for *Installing the Solaris acip Driver* on page 4-12.

7 Be sure to enable all the PVCs you want (previously defined PVCs will not be automatically included).

Method II

1 Change to the directory where the *base.db* file is located (the default is */etc/opt/ADPT/aatm/bin*).

2 Each PVC is defined in the *base.db* file. Below is an example from a *base.db* file with one PVC (77) defined.

```
:zone = pvc
```

```
:= portindex 0 vpi 0 vci 77 vcctype 0 appid null_app aaltype 2 ptimode 1
best 1 xmtqos 3 rcvqos 3 txpcr 56779 rxpcr 56779 txpdu 9216 rxpdu
9216 corrupt 0 txtraftype 3 rxtraftype 3

:.
```

3. To add a PVC, copy the three lines beginning with := portindex and change the vci 77 to vci XX where *XX* is the number of the new PVC you want to create.
4. To delete a PVC, delete the three lines beginning with

   ```
   := portindex
   ```

5. If you plan to use PVCs in Classic IP, you must edit *acip.db* file in a similar manner. For the previous example add:

   ```
   :zone = pvc
   := vpi 0 vci 77
   :.
   ```

Enabling IBM F4's

IBM concentrators and switches use F4 cells to enhance fault isolation. When connecting to an IBM concentrator or switch and using an ANA-5210, you may enable enhanced fault isolation by following these steps:

1. Change to the directory where the database file is located (the default is */etc/opt/ADPT/aatm/bin).*
2. Edit the database file with a text editor and change the value 0 to 1 after the parameter ibmoamstart as shown below:

   ```
   :zone=  oam
   :=  ibmoamstart  1
   ```

3. Add the line := saalversion 31 under the lines shown below:

   ```
   :zone=  signal
   :=  version  30
   :=  saalversion  31
   ```

Editing the IP *hosts* File

An IP *hosts* file should reside in your */etc* directory if you are using TCP/IP. If it does not exist, create it using a text editor. The *hosts* file should list the IP addresses and the accompanying names for each IP connection in the LIS as shown below. During ATM software installation, modifications were not made to include the ATM IP address of the workstation, or addresses for other workstations in the LIS. Include any necessary ATM IP addresses in this file.

```
162.62.31.4     wilmington
162.62.31.62    bunsky
```

Using *netstat -i*

When you use the command netstat -i, the numbers under the columns Oerrs, Collis, and Queue always appear as zeros for the *acip* driver. See the example below:

Name	Mtu	Net/Dest	Address	Ipkts	Ierrs	Opkts	Oerrs	Collis	Queue
lo0	8232	loopback	localhost	659	0	659	0	0	0
le0	1500	eng-lab2	iop03	594012	0	85423	2	1782	0
acip0	9180	162.62.43.0	iop03_atm	346400	0	254246	0	0	0
alane0	1500	162.62.44.0	iop04_atm	346400	0	254246	0	0	0

❐