

2. UNIX Survival Skills

This chapter describes how to configure your UNIX system for running IRIS.

2.1 Setting up the Login Environment

There are two files that are important for setting up the **ksh** environment:

- **.profile** — Whenever you log on, the UNIX system executes this file if it is in your login directory. The **.profile** file contains definitions of environment variables, such as **\$PATH**, which defines the directories to search when executing a command.
- **\$ENV** — Whenever you start up a shell, the system looks for this environment variable, which points to a file to be executed when the shell is invoked. This file is often called **.kshrc**. It contains alias definitions that you want to make available to subprocesses and subshells.

Figure 2–1 shows a sample **.profile** file for an IRIS user. It executes the profile file supplied by IRIS which defines environment variables required for running the IRIS menus and utilities. Developers who are compiling and linking iris code will need to also execute the **/install/profile.sigmet** file.

The other commands in the sample **.profile** file are not specifically needed for running IRIS. The **\$ENV** environment variable tells the system to run **.kshrc** whenever a shell is started, and the **\$EDITOR** environment variable defines EMACS as the default text editor.

Figure 2–1: Sample .profile File

```
# Set up the IRIS environment
. /usr/sigmet/config/profile

# Set up the shell environment
set -u
trap "echo 'logout'" 0

ENV=$HOME/.kshrc
export ENV

# Set up the shell variables
EDITOR=emacs
export EDITOR
```

2.2 Running IRIS Utilities from a Remote Node

IRIS systems running on one node can run utilities from another node if the systems are set up properly. This is useful, for example, if you are doing diagnostics and need to run an IRIS utility on a remote system. You can log onto the remote system across the network and display the product output on your local workstation, as follows:

1. Enter the following command on your workstation to allow other nodes to display windows on it:

```
$ xhost +
```

This command must be entered by someone logged on directly to the system (not by someone who has done a remote login), and the command cannot be run from a login file. If this is impractical, create a file called **/etc/X0.hosts** on the system. In the file, list the names of each of the nodes on the network that should be given access to the display of the system. For example, in a network consisting of three nodes “host”, “prod”, an “wsl”, **etc/X0.hosts** would contain the following three entries:

```
host  
prod  
wsl
```

When the **/etc/X0.hosts** file is present on a workstation, all nodes in the list are authorized to display windows on that workstation at any time. There is a bug in HP-UX 10.20 which causes it to miss its own node name from this file.

Under CDE, you can also configure this with a file in the **/etc/td/config/Xsession.d** directory. Place commands like “xhost +host” in a file called 090xhost in this directory, set protection to 555, owner and group to bin. For just one user, place the command in the file **~/.dt/config/sessions/sessionetc**.

2. From the local workstation, log on to the remote system and set the display to the local workstation. For example, to log onto the **host** system from **prod**, type the following commands from the **prod** system:

```
All Shells:  $ rlogin host  
  
Korn shell:  $ DISPLAY=prod:0.0  
             $ export $DISPLAY  
  
C Shell:     $ setenv DISPLAY prod:0.0
```

3. Run the IRIS utility from the remote system. All output from the utility is displayed on the local workstation
4. When you are done, exit from the utility, then log off of the remote system.

2.3 Managing an IRIS System

This section describes some commands provided by the UNIX operating system that you may find helpful in managing the IRIS system after it is installed. IRIS provides some commands for system management purposes, as well. These commands, described in Chapter 3, are the same across all platforms.

2.3.1 Checking the IRIS Environment

If you have questions about the environment variables that are defined for your session, use the **env** and **grep** commands, as follows:

```
$ env | grep IRIS | sort

IRIS_ANTSIM=/dev/tty01
IRIS_APP_DEFAULTS=/usr/sigmet/bin/app-defaults/
IRIS_BIN=/usr/sigmet/bin/
IRIS_BIN_ACROBAT=/usr/sigmet/acrobat/bin/
IRIS_BITMAPS=/usr/sigmet/dt/icons/
IRIS_CONFIG=/usr/sigmet/config/
IRIS_DICTIONARY=/usr/sigmet/config/dict/
IRIS_INGEST=/usr/iris_data/ingest/
IRIS_INIT=/usr/sigmet/config/init/
IRIS_KEYS=/usr/sigmet/bin/keys/
IRIS_LOG=/usr/iris_data/log/
IRIS_MANUALS_INST=/usr/sigjoe/manuals/IrisInstall.ilcab/instapdf/install/
IRIS_MANUALS_IRIS=/usr/sigjoe/manuals/IrisUsers.ilcab/irisupdf/irisug/
IRIS_MANUALS_NOTE=/usr/sigjoe/manuals/relnotes.ilcab/relnopdf/relnotes/
IRIS_MANUALS_PROG=/usr/sigjoe/manuals/IrisProgram.ilcab/irisppdf/program/
IRIS_MANUALS_RCP02=/usr/sigjoe/manuals/rcp02_ug.ilcab/rcp02pdf/rcp02/
IRIS_MANUALS_RVP6=/usr/sigjoe/manuals/rvp6_ug.ilcab/rvp6updf/rvp6user/
IRIS_MANUALS_RVP7=/usr/sigjoe/manuals/rvp7_ug.ilcab/rvp7updf/rvp7user/
IRIS_MANUALS_RXNET7=/usr/sigjoe/manuals/rxnet7.ilcab/rxnetpdf/rxnet7/
IRIS_MANUALS_UTIL=/usr/sigjoe/manuals/IrisUtils.ilcab/irisupdf/irisutl/
IRIS_MENU=/usr/sigmet/config/menu/
IRIS_NETRCV=TCPIP 30725
IRIS_NLS=/usr/sigmet/bin/nls/C/
IRIS_OBSERVERS=observer
IRIS_OPERATORS=joe alan doug operator rich
IRIS_OVERLAY=/usr/sigmet/config/overlay/
IRIS_PIPES=/usr/sigmet/config/pipes/
IRIS_PRODUCT=/usr/iris_data/product/
IRIS_PRODUCT_RAW=/usr/iris_data/product_raw/
IRIS_ROOT=/usr/sigmet
IRIS_SCRIPT=/usr/sigjoe/script/
IRIS_SOUNDS=/usr/sigjoe/dt/sounds/
IRIS_TAPE_INV=/usr/iris_data/tape_inv/
IRIS_TEMP=/usr/iris_data/temp/
```

Together, these commands return all the environment variables containing the string “IRIS.” If you have some question whether your definitions are correct, compare the results of this command to the definitions in the file **/config/profile**.

2.3.2 Reporting the Free Blocks on a Disk

IRIS is always gathering data, producing many ingest and product files. When there is not enough space for the new data coming in, the Watchdog process makes room for it, deleting the oldest files first. You need to make sure there is enough space allocated on the disk partition to hold at least three volume scans for the periodic configuration that IRIS is running.

The **df** command returns the number of free 512-byte blocks and free inodes available on each mounted disk, including disks mounted over the network. This command can tell you whether enough space is available for your data. For more information on these commands, type **man df**.

2.3.3 File Ownership and Protection

Sometimes there are problems after an installation with access to some of the SIGMET files. Typically, this is evidenced by an error message saying that the user does not have privilege to do an operation. This can happen when starting a program or when calibration files are accessed. If you should have this problem, log in as **root** and run the **install_iris** script as shown below:

```
# install_iris -setown
```

This procedure goes through the **/usr/sigmet** directory tree, changing the owner of all files to **operator** and setting the protection, as follows:

- Directories — **rw-rw-r-x**
- All files, except executable files — **rw-rw-r--**
- Executable files — **rw-rw-r-x**

Always use **install_iris -setown** to fix the protection of your IRIS files. Do not try to change the protection of these files with the **chown** command.

2.4 Command Summary

Here is the location of the system log file:

HP-UXs: **`/var/adm/syslog/syslog.log`**

Linux: **`/var/log/messages`**

Table 2-1: UNIX Commands

Command	HP-UX	Linux
Display status of interprocess communication.	<code>ipcs</code>	<code>ipcs</code>
Remove a message queue, semaphore set, or shared memory ID.	<code>ipcrm</code>	<code>ipcrm</code>
Scan the I/O system and report the hardware that is found.	<code>ioscan</code>	–
Display information about system swap space.	<code>swapinfo -t</code>	<code>top</code>
Report the number of free disk blocks.	<code>df</code>	<code>df</code>
Display on-line help for UNIX commands.	<code>man</code>	<code>man, . . .</code>
Backup/restore files from tape.	<code>tar</code>	<code>tar</code>
Configure network interface parameters.	<code>ifconfig</code>	<code>ifconfig</code>
Show network status.	<code>netstat</code>	<code>netstat</code>
List all clients with remotely mounted disks.	<code>showmount</code>	<code>showmount</code>
List all exported directories, or update the list.	<code>exportfs</code> <code>exportfs -a</code>	<code>exportfs</code> <code>exportfs -a</code>
Mount an NFS directory	<code>mount</code>	<code>mount</code>
List all mounted directories.	<code>mount -p</code>	<code>mount -p</code>
Display NFS statistics.	<code>nfsstat</code>	–
Verify network connections.	<code>ping</code>	<code>ping</code>

2.5 CDE Front Panel Configuration

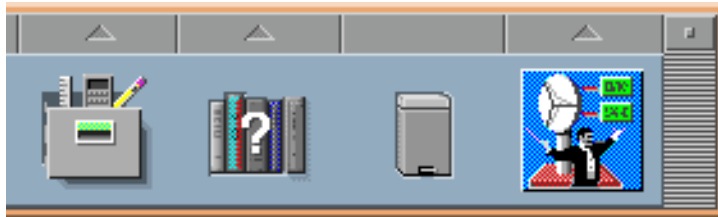
This section describes how to install the sigmet utilities into the front panel of your CDE workstation. Before doing this, please complete the normal IRIS installation and the changes to the .dtprofile file as discussed in section 1.4.6.1.

2.5.1 Installing the IRIS Utilities Icon

To add the IRIS utilities icon on the front panel copy the file `${IRIS_ROOT}/dt/types/sigmet.fp` to your `HomeDirectory/.dt/types`. For example you could use the following commands:

```
$ cd /usr/sigmet/dt/types
$ cp sigmet.fp /home/operator/.dt/types/
```

Next restart the workspace manager by holding down the right mouse button and selecting “Restart Workspace Manager”. Your front panel menubar should look like the figure below. If the icon is drawn incorrectly, see section 2.5.3.

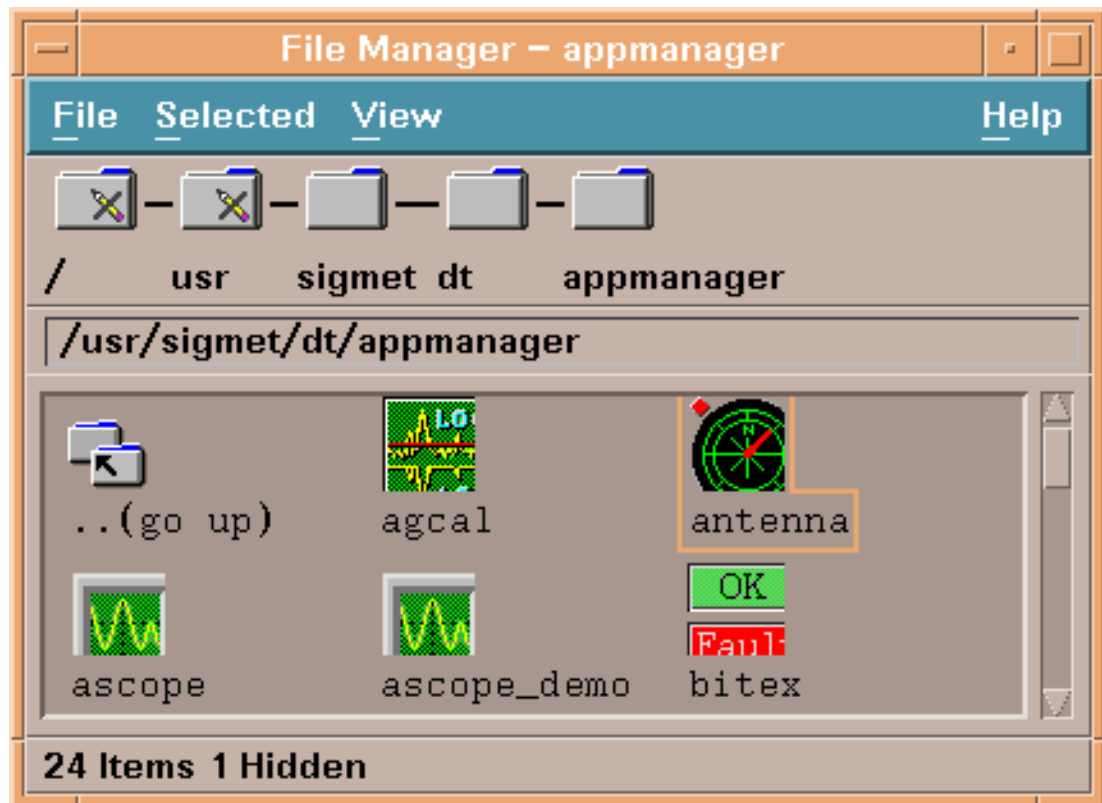


2.5.2 Installing the Utilities List



The IRIS utilities icon allows access to a list of IRIS utilities. Initially the list is empty, it is up to the user to install the utilities they want. To do this, go to the iris icon in the front panel. Hold down the right mouse button and select “Add Subpanel”. Now click on the up arrow above the iris icon. This will display the subpanel as shown at the left.

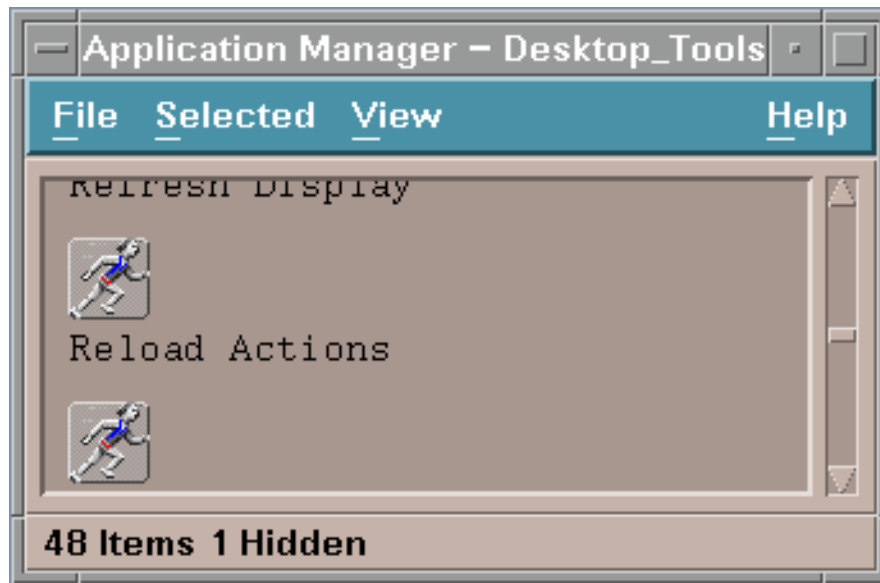
To add actions into the subpanel. Run the file manager. Go to the directory `${IRIS_ROOT}/dt/appmanager` (see below). Now drag icons from the File Manager to the iris subpanel “Install Icon” box. To run one of the utilities, simply click on the appropriate icon.



2.5.3 Getting the icons to display

If the icons do not display in either the front panel or the file manager, you may need to run "Reload Actions". To do this, select the "Application Manager", then the "Desktop_Tools". Then chose "Reload Actions" as shown below. If this does not work, check that there is a link as follows:

```
ln -s ${IRIS_ROOT}/dt/types/sigmet.dt /etc/dt/appconfig/types/C/sigmet.dt.
```



2.6 Automatic Windows Startup

In order for the X-window portion of IRIS to startup automatically, following a machine reboot, you need to make sure the local nodename is in the `/etc/X0.hosts` file.

Example: If the local hostname is `sleet`, make sure the string “`sleet`” exists in the file. If the `/etc/X0.hosts` file does not exist, then create it with a single line containing the local hostname.

2.7 HP-UX Issues

2.7.1 Backup Procedure

Backups are made to perform two functions: 1) Allow recovering an individual file or directory which was deleted by mistake. 2) Allow recovering an entire disk, or portion after a disk was broken and replaced. These needs are somewhat contradictory, so special attention is required to get a good backup.

The general procedure to make a backup is to: 1) Make a complete backup to tape. 2) Make a hard copy listing of the disk partitions. 3) Make a bootable media.

The general procedure for full recovering is: 1) Boot from bootable media. 2) Partition and mount the disks at a temporary mount points. 3) Restore from backup to that location.

In addition, SIGMET supplies a backup/restore utility called “`sigbru`” for Linux systems. This is described in Appendix D. `sigbru` is very convenient to use, but should only be used as a supplemental backup for HP systems since it does not create a bootable medium.

2.7.1.1 Backing up

SIGMET recommends that you make a bootable backup tape of your root volume group using the **`make_recovery`** program. Use the command “`make_recovery -CA`”. This program is not normally shipped with the 10.20 OS, but must be installed as part of a software package called “`ignite`”. In addition, make a full backup using the **`sam`** program. This is needed to backup file not on the root volume group, as well as allow recovering individual files quickly.

The partition table can be listed to a file that should be either printed out, or transcribed and saved. To make this listing do:

```
# vdisplay /dev/vg00 -l
# df -g
```

2.7.1.2 Restoring

To restore from a failure of the root volume group disk, simply replace the disk and boot from the recovery tape. To restore other file systems, use the **`frestore`** program interfaced via **`sam`**.

2.7.2 Controlling banner page printing

To change the default for banner page printing, look in the directory /usr/spool/lp/interface. There is a file for each printer. Edit the file to have the line:

```
banner="" #set to banner="yes" to automatically print banner page
```

2.7.3 Configure routing to another network

To configure routing to another network, you need to edit the /etc/rc.config.d/netconf file to have line like the following:

```
ROUTE_DESTINATION[0]="net 198.102.75"  
ROUTE_MASK[0]=""  
ROUTE_GATEWAY[0]=198.102.76.10  
ROUTE_COUNT[0]=1  
ROUTE_ARGS[0]=""
```

2.7.4 Booting in single user mode

There are two ways to boot into single user mode. First way:

```
$ su  
Password: #####  
# shutdown 0
```

Wait for the “#” prompt, ignore “Console Login:”.

The second way is to reset the computer, interrupt the boot when prompted. Then type:

```
Main Menu: Enter Command> boot  
Interact with IPL (Y, N, Q)?> Y  
ISL> hpux -is
```

When you are through with single user mode, type “reboot -s”.

2.7.5 Extending a logical volume

To extend a logical volume, first run sam, chose “Disks and File Systems”, chose “Logical Volumes”. Check the current size of the volume and volume group you want to enlarge, and note the device path. Try enlarging it here. If it fails to unmount, try the following. In this example we are enlarging lvol1 in vg00 to 400 megabytes.

Go to single user mode (discussed above).

```
# umount /dev/vg00/lvol1
```

It may already be unmounted, which is fine. If it still refuses to unmount then goto single user mode using reset as discussed above.

```
# lvextend -L 400 /dev/vg00/lvol1
# extendfs -F hfs /dev/vg00/rlvol1
# mount /dev/vg00/lvol1
# reboot -s
```

2.7.6 Using the floppy to read DOS disks

First stick the floppy in the HP machine. Then look in the directory `/dev/floppy`. You will see one file, called something like `"c0t1d0"`. You can reference the files on the floppy using a series of commands starting with `"dos"`. For example:

```
$ dosls /dev/floppy/c0t1d0:
```

will list the files on the floppy.

```
$ doscp /dev/floppy/c0t1d0:file /home/operator/file
```

will copy the file to the HP disk. You can see available commands by typing `"ls /usr/bin/dos*"`. Each of these commands has a man page. You may need to be root to run this, if so you can fix this by typing:

```
$ rootchmod 666 /dev/floppy/c0t1d0
```

2.7.7 Fix ClearLine warning message

When displaying a window on an HP X-server, but with a non-HP X-client, you may see the following warning message

```
Warning: translation table syntax error: Unknown keysym name: ClearLine
Warning: ... found while parsing '<Key>ClearLine: delete-to-end-of-line()'
Warning: String to TranslationTable conversion encountered errors
```

This can be fixed on the client machine by editing the `/usr/lib/X11/XKeysymDB` file. Find the line

```
hpClearLine      :1000FF6F
```

Duplicate the line, remove the `"hp"` prefix so the file now reads:

```
hpClearLine      :1000FF6F
ClearLine        :1000FF6F
```

2.8 Linux Issues

2.8.1 Backup Procedure

SIGMET supplies a backup/restore utility called “sigbru” for Linux systems. This is described in Appendix D.

2.8.2 Time & Date

Here is a basic summary of how some of the time related programs work:

date – Just sets and displays the currently running date. The hardware clock is not changed.

hwclock – Just sets and displays the current hardware clock. The current system time is not changed.

redhat-config-time – Interactive GUI to set both the time and timezone. Sets both the current date and the hardware clock. IRIS can always be configured to record using UTC. If you wish to set the local time on the computer to UTC, see section A.3.2. You should never record using a timezone which switches to summer time.

timeconfig – This program sets the time zone. Appears to be just a link to the text version of the **redhat-config-time** timezone submenu.

/etc/localtime – This file is a symbolic link to a file containing the time zone information. The time zone definition files are usually kept in /usr/share/zoneinfo. Do not be surprised if this is a copy, not a link to one of those files. If the TZ environment variable is defined it will override the system default. This file is configured by **timeconfig**

tzselect – This program helps you select the name of the time zone you want. It does not change the computer’s setting.

rdate – Gets the date from a remote system. Can optionally set it also. SIGMET recommends that you use ntpdate for this purpose.

2.8.3 LINUX for experienced users of other OS’s

In this chapter, you can learn to avoid some of the usual traps when you start to use Linux after another OS.

In Linux files, the byte order is swapped compared to HP Unix (but similar to VMS). That means you can’t transfer binary files from Linux to Unix, and also you have to set the byte order in RVP7 if you change your radar computer from Linux to Unix. In the newest version, setup files are ASCII so you can copy them.

2.8.3.1 Unix to Linux

Linux is a unix, more or less. But now you are working with a PC so you have to mount and unmount disks (such as CD-ROM and floppy) more often than in the world of bigger machines. Remember to **umount /mnt/cdrom** before hitting the button in the drive.

2.8.3.2 DOS to Linux

It's rather different. Get a good book to learn the basics or follow the instructions in this manual very carefully. Remember that for Linux it matters if words are UPPERCASE or lowercase, and it doesn't really matter if filenames end with extension or not.

2.8.3.3 VAX/VMS to Linux

Remember that for Linux it matters if words are UPPERCASE or lowercase. There is no automatic version control so be careful when you save. For basic commands, here is a dictionary:

VAX/VMS	LINUX (or any UNIX)
DIR	ls
SET DEF	cd
SH DEF	pwd
TYPE	cat
COPY	cp
PRINT	lpr
HELP	man

2.8.4 Red Hat Configuration Utilities

The following list provides a brief description about graphical user interface (GUI) configuration utilities that must be run from within a windowed linux environment as root.

redhat-config-date – A GUI for modifying system date and time
redhat-config-httpd – Apache configuration tool
redhat-config-keyboard – A GUI for modifying the keyboard
redhat-config-language – A GUI for modifying the system language
redhat-config-mouse – A GUI for configuring mice
redhat-config-network – The Network Administration Tool for Red Hat Linux
redhat-config-nfs – NFS server configuration tool
redhat-config-packages – Package manager for RedHat
redhat-config-printer – A printer configuration backend/frontend combination
redhat-config-printer-gui – A GUI frontend for printconf
redhat-config-proc – A configuration tool for operating system tunable parameters
redhat-config-rootpassword – A GUI for modifying the root password
redhat-config-securitylevel – A GUI for modifying the system security level
redhat-config-services – redhat-config-services is an initscript and xinetd utility
redhat-config-soundcard – A GUI for detecting and configuring soundcards
redhat-config-users – A GUI for administering users and groups
redhat-config-xfree86 – A GUI for configuring XFree86