TECHGAP SOFTWARE

UNIX
Training Workbook

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Chapter 1

Getting Started With UNIX

Learn the UNIX basics.

Understanding UNIX and the environment in which your software runs will help increase your understanding of how TechGAP works. The scope of UNIX is enormous. The UNIX Answer Book will not teach you to be UNIX literate. It will, however, provide you with the commands necessary to address solutions to problems that are directly related to TechGAP.

UNIX OPERATING SYSTEM

UNIX Operating System

The UNIX operating system is best described as a multi–user, multi–tasking operating system. Several people can use the system at the same time and perform various tasks. The operating system serves as an interface between the hardware and the user.

The UNIX operating system was (and continues to be) developed at AT&T's Bell Labs. "Born" in 1969, UNIX is used today in over 80% of our universities and in many large businesses. Only recently have inexpensive computers become powerful enough to offer the UNIX world to small business. Today there are many "versions" of UNIX, all sharing certain fundamental properties. The most common is UNIX System V, developed by AT&T and supported by many major computer vendors.

An operating system is the software that breathes life into the computer. UNIX is an “open” operating system in that any user can add new commands and alter old ones. UNIX is constantly being “ported” to new machines and processors, and new uses are always being discovered. This is what makes UNIX so attractive to developers and those that are concerned with future capabilities.

Characteristics of the UNIX Operating System

- Interfaces between hardware and the user
- Controls memory
- Controls input/output (I/O)
- Controls execution of programs
- Optimizes use of memory and peripheral devices

Benefits of the UNIX Operating System

- Multi-user
- Multi-tasking
- Portability
- Hardware independence
- Many applications written for it

UNIX Operating System Layers

The UNIX operating system consists of several main parts. The kernel is generally unique to the specific machine, but the shells and utilities are basically the same.

- The kernel is the program in the UNIX operating system that is responsible for most operating system functions. It schedules and manages all the work done by the computer and maintains the file system. It is always running.
- The shell is the UNIX operating system program responsible for handling all interaction between users and the computer. It

includes a powerful command language called shell language. The "shells" represent the environment that the user sees. They serve as the "prompt" (**$** or **#**) seen on the screen.

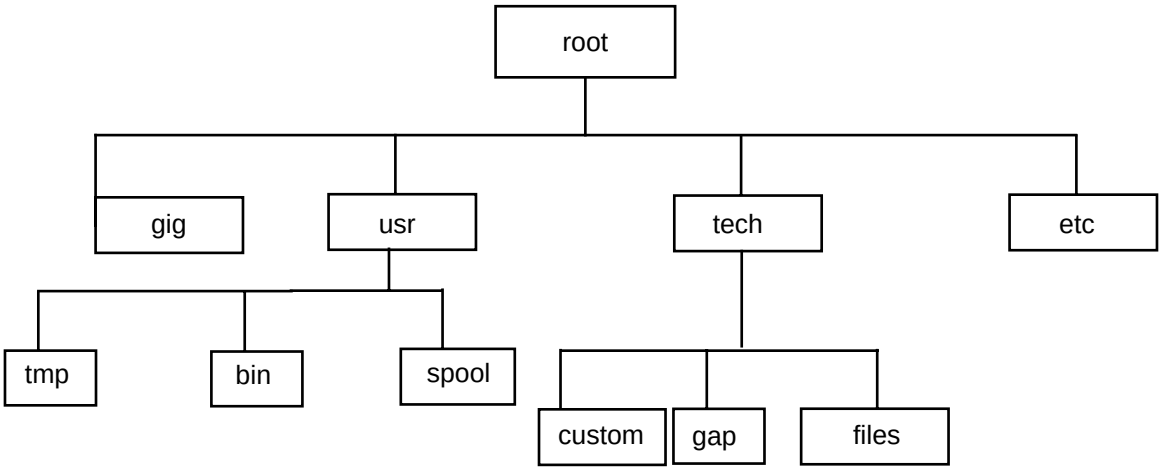
KERNEL	Manages memory Allocates computer time Controls input/output resources Keeps statistics on system Controls user access to system
SHELL	Interprets commands Passes commands to kernel for execution Transmits results of command's execution back to user Prompts user for another action or command
COMMANDS/ UTILITIES	What you type to retrieve information from the system (for example, ls, who, ps, lpstat, mkdir)
APPLICATIONS	Text processing Office automation Communications Database Financial/accounting
USERS	

UNIX File Structure

Disk drives are purchased with each computer system. These drives are then partitioned by the UNIX operating system. Partitioning is the

splitting up of available disk area and assigning a name to that area. Once partitioned, these areas may be accessed by the user.

The structure of the UNIX file system is that of a tree. The main trunk of the tree is called “root” and is referenced by /. Branches off of the root / trunk are called directories and subdirectories. These directories and subdirectories contain utilities and programs which are available to the user.



UNIX Conventions

With the flexibility of the operating system, there are very few restrictions in what can be done. Over the years, however, certain ideas and conditions have become the norm. Most of the information in this section can be changed, but standard UNIX systems will be set up using the guidelines below.

Login Names

Login names are usually the user’s first name and first initial of the last name. There are no spaces in the name and the entire name is in lower case.

Command Names

Commands are generally whole words with vowels taken out. You will find, however, that this rule is broken regularly. Commands are usually in lower case and are always one word. For example, **cp** is the command for "copy." Standard UNIX commands are stored in /bin. Added commands to your system will be stored in either /usr/bin or /etc.

Home Directories

Every user should have a home directory. The home directory will be the directory accessed when the user first logs in. Generally, the home directory is the first name of the user. If the user runs nothing but GAP, then /tech/gap may be the user's home directory. With the exception of /tech/gap, there should only be one user assigned to any one particular directory.

File Naming

When users create their own files, some standard naming conventions should be used. Usually, a dot or dash is used to separate parts of a file name. Standard naming might be:

.-save	file which has been saved to another name
.sh	shell script
.INT	Cobol programs
.idx	index for GAP data file
.dat	GAP data file

Network file names may be as follows:

.doc	Microsoft Word Documents
.ppt	Microsoft Power Point Documents
.xls	Microsoft Excel Spreadsheet Documents

File Locations

Certain directories are traditionally used to store specific types of information. For example:

/bin	standard binary commands
/usr/bin	additional binary commands
/etc	executable shell scripts and configuration files
/dev	devices
/usr	user directories
/usr/tmp	temporary print files created through TechGAP
/tech/gap	TechGAP application programs
/tech/custom	TechGAP custom application programs

Root or Super User

Logging in as “root” allows you “super user” privileges. This login should always be password protected. The super user has the privileges and responsibilities needed to care for the administration of the system. Misuse of super user privileges can be very damaging to the system and to other users. Never give the root password to casual users, do not use the root login for everyday use, and never walk away from a terminal logged in as “root.” A root login can always be identified by the **#** prompt (as opposed to the usual **$**).

UNIX in Use

UNIX supports a “community” of users. Certain procedures should be followed to ensure the harmony and security of the community.

- The “Super User” has the overall responsibility for the integrity of the system and should not treat this responsibility lightly. The super user can delete any files, remove any users, and eliminate any password. The super user can “kill” any process or terminal, and can “see” into anyone’s work.

- Keep your work in your own territory. While it is possible to limit access to directories and files, most users don’t. Do not remove

other people's files or directories.

- Do not leave an unattended terminal "logged in." It takes only one keystroke to log out. An unattended "live" terminal is open access to the system. It would take only minutes to create total havoc.
- Remember, all of the users are working on the same file structure and the same processor. Be considerate of others. Don't leave unneeded files on the system and don't start long, processor intensive jobs without checking with other users first.

UMENU SOLUTION

UNIX Menu Module (UMENU)

The UNIX Menu module provides a simple interface to the UNIX operating system. The user can execute UNIX functions using menus and keystrokes with the same operating system qualities as TechGAP, thus eliminating keystroke and typing errors.

Figure 1.1: UNIX Menu Module menu screen.

To ensure the successful execution of commands found in the UNIX Menu module, log on as **root** at your terminal or the main console. At the **#** prompt enter **umenu.sh** and press **RETURN**.

In this Answer Book solutions using both the UNIX Menu module and the UNIX OS are presented. If you have purchased the UNIX

Menu module, you are encouraged to use the UMENU solutions.

WARNING

Solutions to the issues discussed in this Answer Book may vary according to the operating system and software you have purchased.

UNIXWARE OPERATING SYSTEMS

All UNIX and UMENU solutions are for the UNIXWARE operating system software.

Most solutions that involve UMENU or a UNIX command will work for all brands of UNIX. While Tech Systems qualifies older levels of SCO to run the software, today's systems are installed with the latest versions of UNIXWARE.

The UNIX Answer Book presents solutions that work for UNIXWARE only.

If you require a solution for a brand of UNIX other than UNIXWARE, contact your TechGAP Support Representative and a copy of that solution will be provided for you.

COMMAND LINE

What is the command line or prompt?

Any time you are at one of the three prompts—**#**, **$**, or **TechGAP>** you are at a command line.

IN THIS ANSWER BOOK ALL UNIX COMMANDS USE A ^ TO DENOTE A SPACE IN ANY FORMULA OR EXAMPLE GIVEN

- The pound sign (#) signifies that you are logged into the system as root.
- The dollar sign (**$**) is a prompt for normal user logins. This prompt subjects each command entered to permission tests against files that the user is trying to manipulate.
- The **TechGAP>** prompt behaves the same as the dollar sign prompt. This prompt is invoked using the TechGAP runtime feature of **CTRL–B** from anywhere inside of TechGAP.

On the command line you type an instruction on which the system should act.

UPPER CASE VS LOWER CASE

Does it matter if I use lower case or upper case letters when typing commands?

Yes. UNIX is case sensitive. Commands or options entered in upper case could have a completely different meaning or no meaning at all, causing possible mishandling of files or error messages. Using the correct case for your data files and reports is also important for successful command execution.

Correct use of upper and lower case is important for both UNIX Menu Module users and UNIX OS users.

WILD CARD

What is a wild card?

The symbol for a wild card is an asterisk (*****). It is instrumental in collecting files or programs with similar name characteristics for the execution of certain UNIX commands.

For example, if you want to gather all of your Accounts Payable files for a backup, you would need to include APMAST.dat, APMAST.idx, APHIST.dat, APHIST.idx, APCHECKS01.dat, APCHECKS01.idx, APNOTE.dat, APNOTE.idx, and APAUTO.

The command might look something like this:

```
  #ls^APMAST.dat^APMAST.idx^APHIST.dat^APHIST.idx^
APCHECKS01.dat^APCHECKS01.idx^APNOTE.dat^APNOTE.idx
      ^APAUTO^|^cpio^–ocuBvd^>^/dev/rmt/ctape1
```

This command would be too time consuming to type and would be frustrating to retype if you discover an error.

All of these files have a common feature. They start with the letters **AP**. To collect all files using a single naming convention, ask for **AP***. The asterisk says “give me all files that start with AP and have some other combination of characters that follow, and I don’t care what that combination is.”

From the example above, the command would be shortened to:

```
# ls^AP*^|^cpio^-ocuBvd^>^/dev/rmt/ctape1
```

To collect only your .dat Accounts Payable files use **AP*.dat**.

```
# ls^AP*.dat^|^cpio^-ocuBvd^>^/dev/rmt/ctape1
```

You could list all of your Report Writer specs by listing out *.REP only. A command to do this might look like this:

```
# ls^*.REP
```

You can use the wild card multiple times in one listing. For example, if you wanted your Accounts Payable and Accounts Receivable master files only, you could use A*MAST*. A command to copy these files from one location to another might look like this:

```
# cp^/tech/files/A*MAST*^/usr/tmp/
```

PIPE SIGN

What is the 'pipe' sign?

The pipe sign is a vertical line (|). It will appear on keyboards as a vertical line or a segmented vertical line. It is used to string together a series of UNIX commands.

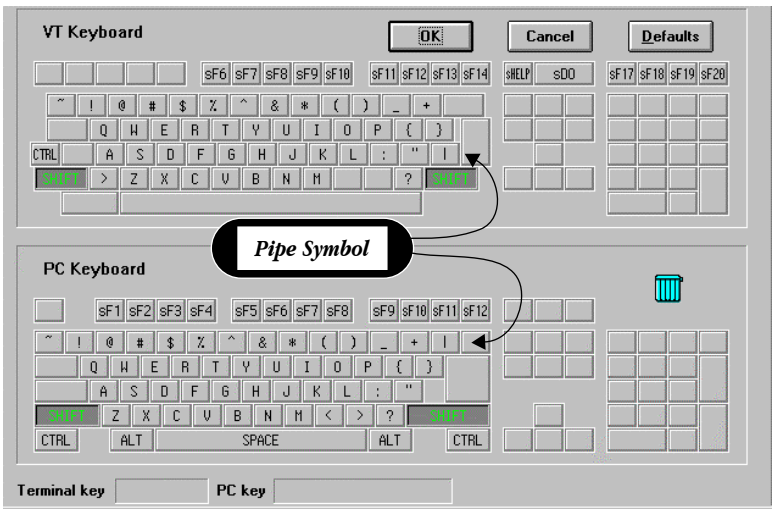


Figure 1.2: Location of the pipe symbol on a Wyse 185 keyboard (upper half). Location of the pipe symbol on a PC keyboard (lower half).

SLASH

I get confused. Which is the slash and which is the back slash?

The slash is /. It is mainly used for separating directories, subdirectories, and file names from one another.

The back slash is \ and is used for DOS commands.

What special keystrokes are available in UNIX and TechGAP?

CTRL-B Breaks out from TechGAP to UNIX. Enter **exit** to return to TechGAP.

CTRL-C Terminates a UNIX program. *Warning: **CTRL-C** is not an advisable keystroke; use it only as a final alternataive.*

CTRL-D Clears the field from the cursor position to the end of the field in TechGAP. At the UNIX prompt **CTRL-D** returns you to the login.

CTRL-E Erases the current character. The remainder of the field shifts to the left, adding a space at the end of the field. The **DELETE** key on a PC style keyboard or the **REMOVE** key on a vt220 style keyboard provides the same function as **CTRL-E** .

CTRL-F Positions the cursor to the first character in the field. The **HOME** key on PC keyboards or the **FIND** key on a vt220 style keyboard provides the same function as **CTRL-F** .

CTRL-H Back spaces at the UNIX prompt or in TechGAP.

CTRL-L Refreshes the TechGAP screen.

CTRL-O Supports inserting in TechGAP. When a field is first entered on the screen, the keyboard is in OVERTYPE mode. Pressing **CTRL-O** will cause the keyboard to switch from OVERTYPE mode to INSERT mode. While in INSERT mode, anything you type is inserted by shifting the characters to the right. If the field is full, the characters at the end are lost. To exit INSERT mode, use the **BACKSPACE** ,**LEFTARROW** ,or**RIGHTARROW** keys. You also exit INSERT mode when you go to the next field.

The **INSERT** key on a PC or vt220 style terminal provides the same function as the **CTRL-O** .

CTRL-R Recalls the previous value of a field in TechGAP. If a mistake is made, for example, in entering an address, use **CTRL-R** while still in the field to recall the old value.

CTRL-V Positions the cursor on the LAST non blank character in the field.

The **END** key on PC keyboards or the **SELECT** key on a vt220 style keyboard provides the same function as **CTRL-V** .

CTRL-P Pastes the buffer yanked by using a **CTRL-Y** into the current field.

CTRL-Y Copies the current field into a buffer (Yank).

CTRL-T Accesses a COBOL help screen in the TechGAP software. The help screen displays environment variables and the CTRL key functions described in this section.

Which Users are logged onto my UNIX Computer System?

COMMAND	OPTIONS	ARGUMENTS
who	none	none

UNIX is a time sharing system.This means that several people can use the system at the same time. As a System Administrator, you may want to check who is logged into the system before you perform a backup or halt the system. When you type **who**, UNIX allows you to view all users currently logged into the system.

How do I tell what directory I am in?

COMMAND	OPTIONS	ARGUMENTS
pwd	none	none

At times you may need to check your current location in the UNIX file structure. When you type **pwd** (print working directory), your current working directory displays. This command should be used before entering the “vi editor” to make sure that you are creating the document in your own directory.

How do I change directories?

COMMAND	OPTIONS	ARGUMENTS
cd	none	[dir desrd]

This command allows you to change from your current directory to the one specified. To move to another directory, first type cd and then enter the destination directory name. If a destination directory is not specified, the cd command will return you to your home directory.

Chapter 2

System & File Management

Use UNIX commands to manage your TechGAP files.

Learn how to set up new users on the system and assign passwords. Monitor your available hard drive space and understand when and how to shut down your system. Manage your TechGAP files using the list, remove, copy, and rename commands.

LISTING FILES IN A DIRECTORY

How do I list a directory?

UMENU : Select *File Utilities / Search Files* to display your file list in detail. If, for example, you wanted to list your Inventory Control data files in your /tech/files directory, you would enter the following information on the screen and then press **GO** .

Directory to Search: **/tech/files**
Files to Search For: **IC***
Printer: Leave blank to print to the screen

UNIX OS : The listing command in UNIX is **ls** . To list files in detail, the command is **ls -l** . When you list a file in detail, you will see the owner of the file, the permissions on the file, the size of the file in bytes, and when the file was last updated.

If, for example, you wanted to list all data files in your /tech/files/ directory, you would type the following: **# ls^/tech/files/IC***

Along with the file name, you will see the owner of the file, the group that can access the file, permissions on the file, size of the file in bytes, and when the file was last updated.

If you wanted to see how big your Inventory Control files on the /tech/files directory are, you would type: **# ls^-l^/tech/files/IC***

-rw-rw-rw-	1 mikeg	other	28081152	Sep 18	09:16	ICHIST.dat
-rw-rw-rw-	1 mikeg	other	21815296	Sep 18	09:22	ICHIST.idx
-rw-rw-rw-	1 mikeg	other	831488	Sep 18	14:49	ICMAST.dat
-rw-rw-rw-	1 mikeg	other	719872	Sep 18	14:50	ICMAST.idx
A	**B**	**C**	**D**	**E**		**F**

Figure 2.1: Detailed file listing

A: The file permissions: r = read, w = write, x = executable. If the file does not have the 'r' listed, TechGAP cannot read data from an existing data file. If the 'w' is not present, users cannot write information back to the data files (for example postings would not hit the data files). An 'x' is required only for programs and scripts that execute instructions for the computer and is not necessary for your data files. Refer to the Changing Permissions section of this chapter for more information.

B: The user of the file. The name found here usually represents the last person to update the file.

C: The group owner of the file. All logins are associated with the group. Given the example, all logins belonging to the group 'other' can access these files.

D: The size of your data file in bytes. To get block representation, take this number and divide by 512.

E: The date this file was last updated, posted to, or maintained.

F: The actual name of the file. The '.dat' files are the files that hold the actual data. The '.idx' files are index files that point to the different records stored in the '.dat' file.

I have 'temp' files in my data files directory. What are these?

When you rebuild indexes, the programs create 'temp' files from the old files that you are rebuilding. The last step of the rebuild indexes process is to replace your old files with the new 'temp' files.

These temp files generally have a number and a .dat and .idx suffix attached to them, for example, **temp0156.dat** and **temp0156.idx.** You will see these files in your data files directory any time you are rebuilding indexes. If you are not currently rebuilding indexes for any files and these 'temp' files exist, you may have broken out of the rebuild indexes function at some point, or the system may have gone down during the middle of rebuilding indexes.

If you can verify that nobody is rebuilding indexes and these files exist, remove them. They are only taking up space on your system.

What are these files beginning with PID on my temporary directory?

The PID (Pay Invoices Due) files are created when an Accounts Payable *Cash Requirements* report is generated. The temporary PID files are then used if you specify **Y** to the *Use the Parameters Entered During Cash Requirements?* option during the *Pay Invoices Due* function.

The PID naming convention can be illustrated with PIDKKH10222400 as an example:

PID	Pay Invoices Due
KKH	Initials of the operator who generated the *Cash Requirements* report
10222400	Process ID Number

If a *Cash Requirements* report is generated and then those particular parameters are never used during the *Pay Invoices Due* function, the PID file will be left out on the temporary directory.

The built–in overnight cleanup command will remove these files within three days.

LISTING REPORT WRITER & STATEMENT WRITER SPEC FILES

How would I get a list of my Report Writer and Statement Writer spec files?

First you need to determine the file location of your Sequence and Spec files. This information can be found in *System Administrator / Application Options / System Options*. (See Figure 2.2) Make note of the directory name listed in the *Sequence And Spec Files* field. Write the directory name down for use in the next step.

NOTE

If you have multiple companies, you may have multiple file locations. Check *System Administrator / Application Options / Systems Options* for each company for additional sequence and spec file locations.

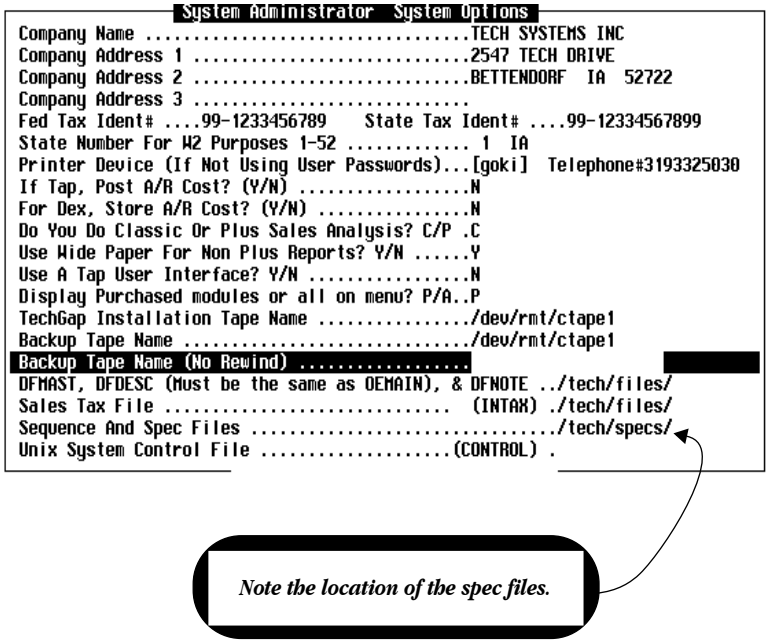


Figure 2.2: *System Administrator / Application Options / System Options*

UMENU: Select *File Utilities / Search Files*. If, for example, your Report Writer Specs are located under the /tech/specs/ directory, you would enter the following information on the screen and press **GO**.

Directory to Search: **/tech/specs/**
Files to Search For: ***.REP**
Printer: Leave blank to print to screen

To list all available Statement Writer Specs, substitute ***.SPEC** for ***.REP** in the above example.

UNIX OS : The listing command in UNIX is **ls**. If, for example, your files are located on /tech/specs/, you would type the following:

 # ls^/tech/specs/*.REP^|^pg

To list all available Statement Writer Specs, substitute ***.SPEC** for ***.REP** in the above example.

Because the list of possible Report Writer and Statement Writer specs might be longer than one screen, **|^pg** is added to the command so that you can page through the list of specs. If you are unfamiliar with the **pg** feature, refer to the PG, P132 section in Chapter 3—Printer Management.

Note: Press **RETURN** after each UNIX command.

If you want a hard copy printout of this list, refer to Chapter 3—Printer Management for further instructions.

How do I copy a file to a different directory?

UMENU: Select *File Utilities / Copy Files*. If, for example, you want to copy a file called SALES from the /usr/tmp directory to Kathy Smith's home directory /home/kathys, you would enter the following information on the screen and press **GO** .

File From	**/usr/tmp/SALES**
File To	**/home/kathys/**
Overwrite	(user's option)
Confirm Each	(user's option)

The *Overwrite* and *Confirm Each* fields are optional. The *Overwrite* option prevents a user from accidentally copying over an existing file. The *Confirm Each* option will prompt the user with a yes / no question to confirm that the user does in fact want to execute this copy. The UNIX Menu Module Reference Manual covers these fields in further detail.

UNIX OS : The copy command in UNIX is **cp** .

If, for example, you want to copy a file called SALES from the /usr/tmp directory to Kathy Smith's home directory /home/kathys, you would type:

#p^/usr/tmp/SALES^/home/kathys/

Note: Press **RETURN** after each UNIX command.

RENAME A FILE

How do I rename a file?

UMENU: Select *File Utilities / Rename Files*. If, for example, you want to rename a file called SALES in the /usr/tmp directory and call it COMMReport, you would enter the following information on the screen and press **GO**.

File From	**/usr/tmp/SALES**
File To	**/usr/tmp/COMMReport**
Overwrite	(user's option)
Confirm Each	(user's option)

If you wanted to rename this file to Kathy Smith's home directory /home/kathys, you would enter the following information on the screen and press **GO**.

File From	**/usr/tmp/SALES**
File To	**/home/kathys/COMMReport**
Overwrite	(user's option)
Confirm Each	(user's option)

The *Overwrite* and *Confirm Each* fields are optional. The *Overwrite* option prevents a user from accidentally copying over an existing file. The *Confirm Each* option will prompt the user with a yes / no question to confirm that the user does in fact want to execute this rename. The UNIX Menu Module Reference Manual covers these fields in further detail.

UNIX OS : The rename or move command in UNIX is **mv**.

If, for example, you want to rename a file called SALES in the /usr/tmp directory and call it *COMMReport*, you would type:

mv^/usr/tmp/SALES^/usr/tmp/COMMReport

If you wanted to rename this file to Kathy Smith's home directory /home/kathys, you would type:

mv^/usr/tmp/SALES^/home/kathys/COMMReport

Note: Press **RETURN** after each UNIX command.

REMOVE A FILE

How do I remove files from the system?

UMENU: Select *File Utilities / Delete Files*. If, for example, you want to remove all 'temp' files from your data files directory /tech/files, you would enter the following information on the screen and press **GO** .

File List **/tech/files/temp***
Confirm Each **Y**

The *Confirm Each* option gives you a chance to review the file(s) that you want to delete one last time to make sure that you truly wish to remove the files from the system.

UNIX OS : The remove or delete command in UNIX is **rm** .

For example, if you want to remove all 'temp' files from your data files directory /tech/files, you would type the following:

 # rm^-i^/tech/files/temp*

The **-i** option gives you a chance to review the file(s) that you want to delete one last time to make sure that you truly wish to remove the files from the system.

Note: Press **RETURN** after each UNIX command.

CHANGING PERMISSIONS

How do I change permissions on files or directories?

COMMAND	OPTIONS	ARGUMENTS
chmod	0–7	filename

The permissions of the named files or directories are changed according to the mode. Permissions are described in three sequences– *User, Group,* and *Other,* each having three characters—r, w, and x.

User	*Group*	*Other*
rwx	rwx	rwx

0 = - - -
1 = - - x
2 = - w -
3 = - wx
4 = r - -
5 = r - x
6 = rw -
7 = rwx

The *User*, *Group*, and *Other* all assign **r**eading, **w**riting, and e**x**ecution permission to any given file. Use the following **chmod** command syntax to change the mode of a file or directory's permissions:
 # chmod 744 class.

The command makes the class file readable, writable, and executable for the *User*, but readable only for the *Group* and *Other*.

CHANGING OWNERSHIP

How do I change ownership on files or directories?

COMMAND	OPTIONS	ARGUMENTS
chgrp	group name or ID	file or directory

A group ID is a name or an integer that is assigned to a number of people by the System Administrator. A group ID is called a numeric group ID or group ID number when it is an integer. Each user's group ID is listed in the /etc/passwd and /etc/group files.

People who share a group ID are members of the same group. A single group ID is usually assigned to people who participate in related work. A common ID gives the group members the ability to use each other's files according to the group-level "access permissions" for each file. A group ID may be assigned arbitrarily if it is not important for an individual to share work with a group of people.

The **chgrp** command allows you to change the group ID assigned to a file. The group may be either a decimal group ID or a group name found in the group file (/etc/group). Only the owner of a file (or the super user) may change the owner or group of that specified file.

COMMAND	OPTIONS	ARGUMENTS
chown	owner name or ID	file or directory

The **chown** command allows you to change the owner of the files or directories to a new owner. The owner may be either a decimal user ID or a login name found in the password file.

ADDING A NEW USER IN UNIXWARE

How do I add a new user in UNIXWARE?

1. Log in as **root** and perform the following steps only at the main console.
2. Type **sysadm** and press **RETURN** . This will take you into the system administrator menu.
3. Choose users. You can do this by using the **DOWNARROW** key or pressing the letter **u**. Press **F3** .
4. Choose **add** and press **F3** .
5. Type **user** or press **F2** for choices and then select **user** . Press **F3** .
6. This will bring you to the **Add a User** screen where you will be asked to fill out the following information:

Comments: Put user's full name here. Example: Kathy Smith
Login: The user name goes here. Example: kathys
User ID: Unique number assigned by the system. Let this default.
Primary group: Leave the default of **other**.
Supplementary groups: Leave blank.
Create home directory: Press **F2** to change this option to **yes**.
Home Directory: Enter **/home/username** (if not already shown).
Example: **/home/kathys**
Shell: Let this default.
Login Inactivity: Leave blank.
Login Expiration Date: Leave blank.

Press **F3 to save**

7. Another box opens to **Add Audit Event Information**. Fill out the following information:

User audit event(s): Leave blank.

Press **F3 to save**

8. Another box opens to **Define User Password Information**. Fill out the following information:

Password Status: Press **F2** to view your choices and select **password**. This will allow you to enter the new user's password in the next step.
Max # of days user Password is valid: Enter **999999**.
Min # of days between password changes: Leave blank.
Number of days of warning message: Leave blank.

Press **F3 to save**

9. The screen will clear, and you will be prompted to enter the new user's password:

   New password : (Enter the new user's password, and press **RETURN**.)
   Re–enter new password : (Enter the new user's password again, and press **RETURN**.)

10. Press **F7** for the command menu and choose **Exit**. Press **RETURN**.

11. At the # sign, change your directory to /home.

    # cd^/home (press **RETURN**)

12. Copy an existing user's **.facet** and **.profile** from their home directory to the new user's home directory. Pick an existing user with the same number of Facetterm windows and access to TechGAP that you want the new user to have.

    For Example: The following commands would make the login for new user kathys work the same way as existing user carlac:

    # cp^carlac/.profile^kathys/ (press **RETURN**)
    # cp^carlac/.facet^kathys/ (press **RETURN**)

13. Change the permissions on the new directory and files.

    For Example: The commands would be as follows if the new user's login was kathys:

    # chmod^777^kathys (press **RETURN**)
    # chmod^777^kathys/.profile (press **RETURN**)
    # chmod^777^kathys/.facet (press **RETURN**)

DELETING A USER IN UNIXWARE

How do I delete a user in UNIXWARE?

1. Log in as **root** and perform the following steps only at the main console.

2. Type **sysadm** (press **RETURN**). This will take you into the system administrator menu.

3. Choose **users** .You can do this by using the **DOWNARROW** key or pressing the letter **u**. Press **F3** .

4. Choose **remove** and press **F3** .

5. This brings you to the **Remove Users or Groups** screen.

User or group: Enter **user** here if not already defaulting in. **Press **F3** to save**

6. This will open another box to **Remove User Login** .

User login to be removed: Enter **login** of user to be removed here. Example: If user's login is kathys, enter **kathys** **Press **F3** to save**

7. This will open another box with information about the login of the user being removed. One question requires an entry.

Remove home directory and all files?: Press **F2** to view choices and select **yes**. **Press **F3** to save**

8. A box with **Confirmation of Login Removal** will display confirming that the user login entered in step 6 was removed from the system.

9. Press **F7** for the command menu and choose **Exit** . Press **RETURN** .

How do I add or delete a user if I don't use UNIXWARE?

Other operating systems are qualified to run TechGAP, but UNIXWARE is currently the preferred OS. If you need to add new users or delete users in some other OS, contact a TechGAP Support Representative for modified instructions.

CHANGE ROOT PASSWORD

How do I change my root password?

Log in at the main console as root. From the pound sign (#), type the following: **# passwd**

You will then be prompted for a new password. Type the new password and press **RETURN**. You will then be asked to verify the password you just typed. This password will be in effect the next time you log on to the system as root.

WARNING

Write down the root password in a safe place. Many system administrative functions need to be performed as the root user. If you forget or lose the root password, the only way to reestablish root access on your system is to reinstall your operating system and reinitialize your drive. This is an arduous task requiring a lot of down time for your system. Recovery of programs and files would take place from your most recent backup.

CHANGE USER PASSWORD

How do I change a password for a user?

To change a password for a login name, you need to use the UNIX command **passwd**.

For example, if you needed to change Kathy Smith's password, and her login is kathys, you would type in the following:

 # passwd^kathys

You will then be prompted for a new password. Type the new password, and press **RETURN**. You will then be asked to verify the password you just typed. Retype the password, and press **RETURN**. This password will be in effect the next time Kathy Smith logs on to the system.

NOTE

The characters you enter for the password will not display on the screen, just as your password characters do not display when you log on to the system.

SYSTEM DATE

How do I display the system date?

To display the date and time, log in as **root**. On the command line enter:

 # date (Press **RETURN**)

The system date displays:

Thu June 19 14:08 CDT 2000

How do I change the system date?

To change the date and time, log in as **root**. Enter the date command and then the new month (MM), day (DD), hour (HH), minute (MM), and year (YYYY).

 # date^061914082000 (Press **RETURN**)

The new system date displays:

Thu June 19 14:08 CDT 2000

AVAILABLE HARD DRIVE SPACE

How can I find out how much space I have available on my hard drive?

To check the remaining disk space on your hard disk enter:

$ df^ -v (Press **RETURN**)

The system displays:

		blocks	used	avail	%used
/	(/dev/root):	3471360	3275632	195728	95%
/disk2	(/dev/dsk/c0b0t1d0s1):	4188160	2970368	1217792	71%

The *blocks* column lists the total size of your hard drive or disk. The *used* column lists the number of blocks in use. The *availabale* column lists the number of blocks remaining. The *%used* column lists the percentage of blocks in use.

I have a full disk. What can I do?

This might be the red flag that it is time to purge history from your data files. If your drive is too full to accomplish the *Remove Unwanted History* routine, use the following suggestions to first clear out those items which are cluttering up your hard drive.

Log in at the main console as **root** to execute any of the commands listed below. You can check your disk space availability after each step to see if you are making progress.

- Under the */tmp* directory, you can remove files with prefixes of *otape* and *tape*. To remove these files, use the following commands:

  # rm^/tmp/otape* (Press **RETURN**)
  # rm^/tmp/tape* (Press **RETURN**)

- Examine the */usr/tmp* directory for possible causes of your full disk. To examine this directory, print out the contents in detail. The following command uses the example of pr1 as the printer device name:

  # ls^-l^/usr/tmp/*^|^lp^-dpr1

  Review this printout for any unusually large files. (See Figure 2.3.) Using this example, you can remove any unnecessary files with the following command:

  # rm^/usr/tmp/prBAAa16728

```
-rw-rw-rw-   1 root     sys          61 Mar  2 13:30 LEVEL25352
-rw-rw-rw-   1 mikeg    other       300 Mar  4 08:52 PARAMS01
-rw-rw-rw-   1 mikeg    other        64 Mar  3 08:25 PIDmg082517
-rw-rw-rw-   1 mikeg    other       968 Mar  4 08:52 PJ01PT095
-rw-rw-rw-   1 root     sys         195 Mar  3 09:06 PJ01PT726
-rw-rw-rw-   1 kevinc   other        60 Mar  2 16:36 REC
-rw-rw-rw-   1 kevinc   other      1620 Mar  2 11:10 TEST35
drwxrwxrwx   2 root     sys          96 Mar  1 00:00 cjc
-rw-rw-rw-   1 root     sys        1797 Mar  3 09:06 disk1
-rw-rw-rw-   1 root     sys        2640 Mar  2 10:17 disk2
-rw-rw-rw-   1 root     sys         785 Mar  2 10:16 dsk1
-rw-rw-rw-   1 root     sys        1770 Mar  2 11:18 ki
-rw-rw-rw-   1 markf    other       335 Mar  2 10:47 mdf
-rw-rw-rw-   1 mikeg    other      1194 Mar  2 17:31 prAAAa00357
-rw-rw-rw-   1 kevinc   other      1024 Mar  3 10:23 prAAAa14549
-rw-rw-rw-   1 natep    other  16987099 Mar  4 09:27 prBAAa16728
-rw-rw-rw-   1 mikeg    other    179843 Mar  4 09:04 print_log
-rw-rw-rw-   1 howards  other    134605 Mar  4 08:02 rptlog
-rw-rw-rw-   1 root     sys          64 Mar  2 11:43 temp22453
-rw-rw-rw-   1 root     sys          70 Mar  2 15:29 temp27951
-rw-rw-rw-   1 root     sys          74 Mar  3 08:35 temp7928
-rw-rw-rw-   1 kevinc   other      1296 Mar  2 11:06 test33
-rw-rw-rw-   1 kevinc   other       521 Mar  2 11:08 test34
$
```

Remove large files.

Figure 2.3: Printout of the /usr/tmp directory

NOTE

Files that look like the one in the above example are print jobs that failed to spool (a common occurrence). You don't have to remove every unnecessary file. The system eventually cleans them out for you after they reach an age of three days. Remove enormous files to alleviate the full disk problem temporarily.

- If you use the UNIX Menu Module and the system executes an overnight backup, you can gain temporary relief by removing old backup logs by entering:

  # rm^/skurt/mn/bulog*

WARNING

Make sure that you have verified your most recent backup before executing this command.

- The system constantly tries to communicate various messages to the system's root user whenever there is operator intervention of a UNIX process (such as cancelling a print job). This mail file will continue to grow and could take up valuable disk space. (If the system tries to send a message to root and the mail file does not exist, the system automatically creates it.) Delete this file by using the following command:

  # rm^/usr/mail/root

- Review your data files directory for *temp* files. These files are created during the *Rebuild File Indexes* function. This function deletes these files when it finishes. If a rebuild does not finish successfully, possibly unusable temp files may be left in your data files directory. To remove these files, you need to know all directories for which your data files are located.

  For example, if your data files are located on /tech/files, you would execute the following command

  # rm^/tech/files/temp*

If after reviewing these trouble spots you are still struggling with a full disk drive issue, call a TechGAP Support Representative for more consultation.

SHUTTING DOWN THE SYSTEM

When should I shut down the system?

Your UNIX System needs to be shut down at least once a week.

How do I shut down the system?

WARNING Before shutting down the system, make sure everyone is logged off. The shutdown procedures should be performed at the main console.

1. Login: **root** (Press **RETURN**)
   Password: **XXXX** (Your password) (Press **RETURN**)

2. **# who** (Press **RETURN**)

   The system should display only your login id (root).

3. **# shutdown -g0 -y** (Press **RETURN**)

   The system displays several messages. When the message *OK to Reboot System* displays, shut the power off to the UNIX system.

   Wait until the fan stops running before you turn the system back on.

Chapter

3

Printer Management

Printing, troubleshooting, and alternative print options.

The ability to print hard copy information is an essential component of your TechGAP software system. TechGAP produces reports for the purposes of shared information or auditing. TechGAP also prints forms such as invoices, statements, checks, and purchase orders necessary for the day to day operation of your business.

This section focuses on managing your print issues both within the TechGAP software system and with the printer devices themselves. Alternative options for saving printed information are also presented. Most of the solutions offered in this section assume that you are using either a Serialized or Parallel printer device. If you are using a networked printer and are struggling with print issues, contact a TechGAP Support Representative for further assistance.

ME PRINTER

What is a ME printer?

Any printer device attached directly to your terminal or PC is an ME printer. Only users logged in at that terminal or PC can print to this printer.

When you use a ME printer, jobs are not spooled through the main console. They go directly to the printer.

The ME printer is invoked by entering **ME** in the *Printer Device* field for any report, listing, or journal.

NOTE: Since the print job is not spooled when you print to ME, the entire job must finish before control will be restored to your terminal or PC. If you need to continue working at the station to which the ME printer is attached, print long journals and reports to a spooled printer.

DISPLAY PRINT JOBS

How do I display print jobs queued up to my printer?

The **lpstat** command displays important information including queued print jobs, printer status (enabled or disabled), and the device associated with each printer.

To display all print jobs currently queued to the printer, type the following at the command line:

 # lpstat^-t (Press **RETURN**)

```
scheduler is running
system default destination: pr1
system for pr1: 128.1.1/150
device for pr1: /dev/term/109s
device for pr2: /dev/term/a10s
device for pr3: /dev/term/a11s
pr1 accepting requests since Fri Mar 28 14:34:37 CST 1998
pr1 accepting requests since Sat Apr 5 17:35:08 CST 1998
pr1 accepting requests since Sat Apr 5 17:35:38 CST 1998
printer pr1 now printing pr1-406. enabled since Thu Sep 11
12:51:19 CDT 1998.available.
printer pr2 is idle. enable since Mon June 30 11:28:47 CDT
19
                                                ne 12 12:19:50 CDT
1
pr1-406    kathys    580960      Sep 15   09:27:55  on pr1
pr1-407     bills     8240       Mar 15   09:28:30
pr1-408     maryp    11060       Mar 15   09:30:45
```

Printer Device Name *Job Number*

Figure 3.1: Display resulting from the UNIX lpstat ^ -t command. The queued jobs print at the end of the lpstat display. Use your login name to identify your print job.

CANCEL PRINT JOB

How do I cancel a print job?

If the report that you wish to cancel is currently printing, you may want to take the printer *Off Line* to avoid wasting paper.

UMENU : Select *Printer Control / Spooler*. Use the **ARROW** key to highlight the printer device to which you just printed. The jobs spooled to that printer display in the *Jobs* section of the screen. (See Figure 3.2.) Use your login name to identify the print job which belongs to you.

Enter **C** to pop up the *Cancel Print Jobs* screen. The printer device defaults in the *Printer* field. Enter the job number of your print job in the *Jobs* field and press **GO** .

For example, using Figure 3.2, **pr1** defaults in the *Printer* field. You would enter **406** in the *Jobs* field.

UNIX OS : From a command line, type the following: **# lpstat^-t**

All available printer devices and a list of all print jobs currently spooled for printing display. (See Figure 3.1.) Use your login name to identify the print job which belongs to you.

To cancel the print job, type the **cancel** command along with the printer device name and job number. For example, using Figure 3.1, you would type:

 # cancel^pr1-406

Note: Press **RETURN** after each UNIX command.

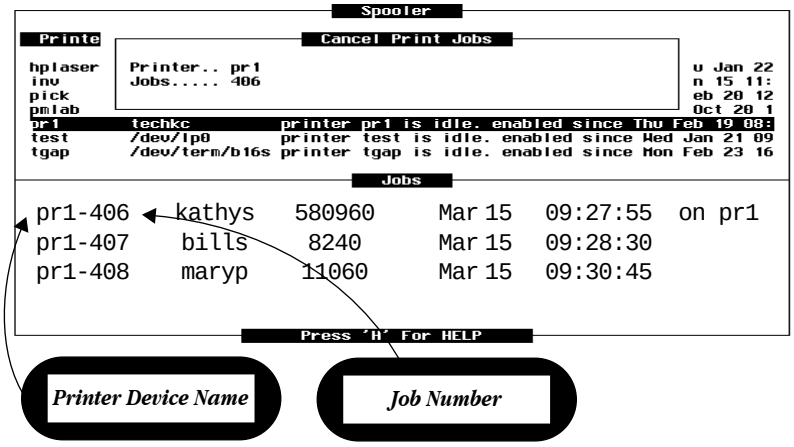


Figure 3.2: *UNIX Menu Module / Printer Control / Spooler* screen. Use your login name to identify your print job.

Bring the printer back *On Line*. Additional pages of the report may still be in the printer's buffer (memory). To clear the buffer and avoid printing additional pages, turn the printer's power off and then back on. Align the paper and bring the printer back *On Line* for any print jobs spooled up after yours.

SAVING REPORTS TO THE HARD DRIVE

How can I save a report to the computer's hard drive?

Any journal or report can be printed to disk and saved on your hard drive to be printed at a later time. Change the *Printer Device* field on any screen to a non printer device name. Suggestions are your name, initials, or what the report is.

WARNING

Do NOT use spaces between characters in the *Printer Device* field. Do NOT place the printer name in brackets.

Where do my reports go when I print them to the computer's memory?

A file will be created under the /usr/tmp/ directory with the same name that you entered in the *Printer Device* field. UNIX is case sensitive, so the file name will appear in either lower or upper case depending on how you typed the name.

The file can be reviewed at any time using the UNIX **pg** command or printed (multiple times if necessary) straight from the operating system.

NOTE

/usr/tmp is the common destination for creating print files from TechGAP. If upon review, you are not seeing your reports under the /usr/tmp directory, contact your TechGAP Support Representative to confirm the location of files printed to your hard drive.

WARNING

Most users have a cleanup command that their system performs every night. Among other things, this command will remove all files that are over three days old from the /usr/tmp directory. To avoid the loss of needed reports printed to disk, copy the file to a different directory on your system, for example, your home directory. Perform this function before your nightly backup. If your need assistance with copying files, see the Copy A File section of Chapter 2—System and File Management.

How do I print a text file from the Operating System?

To print from UMENU or the UNIX OS, you need to answer the following three questions: What is the name of the printer device that I am going to use? How many copies do I want? What is the directory and name of the file that I wish to print?

UMENU : Select *Printer Control / Print Files*.

If, for example, you wanted to print three copies of a report called SALES to the pr1 printer device and SALES is located on the /usr/tmp directory, enter the following information and press **GO** :

Files	**/usr/tmp/SALES**
Copies	**3**
Suppress Format	(leave this field blank)
Printer	**prl**

Warning : Do not use brackets ([]) or capitalize your printer device in the *Printer* field.

UNIX OS : The print command in UNIX is **lp** .

If, for example, you wanted to print three copies of a report called SALES to the pr1 printer device and SALES is located on the /usr/tmp directory, enter the following command.

lp^#dpr1^-n3^/usr/tmp/SALES

The **-n** option allows you to specify how many copies should be printed. If only one copy is to be printed, leave out the **-n** command. For example, to print one copy of the SALES report enter:

 # lp^-dpr1^/usr/tmp/SALES

Note: Press **RETURN** after each UNIX command.

How can I print a list of my available Report Writer or Statement Writer specs?

First you need to determine the file location of your Sequence and Spec files. This information can be found in *System Administrator / Application Options / System Options*. Make note of the directory name listed in the *Sequence And Spec Files* field. (See Figure 3.3.) Write the directory name down for use in the next step.

NOTE

If you have multiple companies, you may have multiple file locations. Check *System Administrator / Application Options / System Options* for each company for additional Sequence and Spec file locations.

UMENU : Select *File Utilities / Search Files*. If, for example, your Report Writer specs are located under the /tech/specs/ directory and you want to print this list to the pr1 printer, enter the following information on the screen and press **GO**:

Directory to search	**/tech/specs/**
Files to Search for	***.REP**
Printer	**prl**

Warning : Do not use ([]) or capitalize your printer device name in the *Printer* field.

To print all available Statement Writer Specs, substitute ***.SPEC** for ***.REP** in the above example.

UNIX OS : The listing command for UNIX is **ls**. The print command for UNIX is **lp**. Both commands need to be under one executable command to generate the desired list.

For example, if your Report Writer specs are located on /tech/specs/ and you want to print this list to the pr1 printer, you would type the following command:

ls^/tech/specs/*.REP^|^lp^-dpr1

To print all available Statement Writer Specs, substitute ***.SPEC** for ***.REP** in the above example.

Note: Press **RETURN** after each UNIX command.

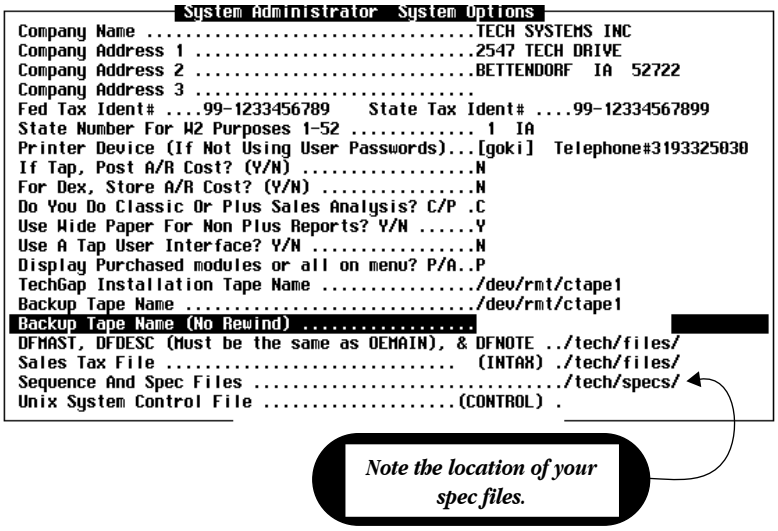


Figure 3.3: *System Administrator / Application Options / System Options*

PRINTER NOT PRINTING

My printer is down! I can't print anything from TechGAP!

Possible Solutions to Cure A Down Printer

- Check that the printer device is on-line.
- Try printing something from a different module in TechGAP to the same down printer device. If you are able to print, call a TechGAP Support Representative for more help.
- Try printing the same report to another printer device. If you can't get any TechGAP reports to print on other printers, call a TechGAP Support Representative.
- Check that the printer device has power. If it is not receiving power, try a different outlet. If the printer is dead, call your Hardware Support Representative.
- Check for loose cable connections at both ends of the cable plugged into the printing device.
- Try unplugging the power supply and/or the cable connection to the printer device.

- Unplug the serial/parallel cable connection from the printer and plug it back in. Perform the **enable** printer command.
- Call a TechGAP Support Representative if you get an error message on your screen when using a printer device or if you are getting bumped out of TechGAP or bumped back to the TechGAP license screen.
- Disable or enable the printer device. For example, if you are having problems printing to -pr1, take the following steps:

UMENU : Select *Printer Control / Disable Printers*. If, for example, you are having difficulties with the pr1 printer, enter **pr1** in the *Printer* field and press **GO**.

Select *Printer Control / Enable Printers*. Enter **pr1** in the *Printer* field and press **GO**.

Warning : Do not use brackets ([]) or capitalize your printer device in the *Printer* field.

Try printing from TechGAP again.

UNIX OS : The UNIX commands for disabling and enabling a print device are **disable** and **enable** .

For example, if you are having difficulties with the pr1 printer, type the following:

 # disable^pr1

 # enable^pr1

Try printing from TechGAP again.

Note: Press **RETURN** after each UNIX command.

- If the printer is a serial print device (does not plug directly into the back of the main console), print out the menu setups for your printer device. (See Figure 3.4.) Check for the following two lines:

```
Serial I/F    Protocol       X-ON/X-OFF
Serial I/F    DSR Signal     Invalid
```

If these lines are not set properly, reset them to display as above. Try printing from TechGAP again.

If you are unsure of how to print your menu settings or reset these options, consult the operating manual that came with your printer.

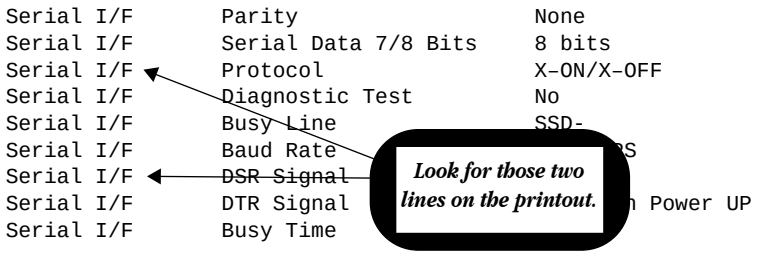


Figure 3.4: Partial printout of menu settings from an OKIDATA 321 Turbo printer. The printout may vary according to the model and/or maker. If this section does not print on your listing, your printer is probably a parallel printer. Your problem lies elsewhere.

If after reviewing the possible solutions listed above, you still cannot print to the printer device, contact a TechGAP Support Representative.

PRINTER IS PRINTING GARBAGE

My printer is printing garbage.

Take the following steps to try to correct a printer from printing garbage:

1. If the printer is a serial print device (does not plug into the back of the main console), print out the main setups for your printer device. Check for the following two lines:

   ```
   Serial I/F     Protocol       X-ON/X-OFF
   Serial I/F     DSR Signal     Invalid
   ```

   If these lines are not set properly, reset them to display as above. (See Figure 3.4.). Try printing from TechGAP again.

2. Try printing something different from another module in TechGAP to the printer device that is printing garbage. If you are able to print, call a TechGAP Support Representative for more help.

3. Try printing the same report to another printer device. If you can only print garbage on other printers as well, reboot your system now.

Warning : All users must be off the system when rebooting your system.

4. Disable and enable the printer device. For example, if you are having problems printing to pr1, take the following steps:

UMENU : Select *Printer Control / Disable Printers*. If, for example, you are having difficulties with the pr1 printer, enter **pr1** in the *Printer* field and press **GO**.

Select *Printer Control / Enable Printers*. Enter **pr1** in the *Printer* field and press **GO**.

Warning : Do not use brackets ([]) or capitalize your printer device in the *Printer* field.

Try printing from TechGAP again.

UNIX OS : The UNIX commands for disabling and enabling a print device are **disable** and **enable** .

For example, if you are having difficulties with the pr1 printer, type the following:

 # disable^pr1

 # enable^pr1

Try printing from TechGAP again.

Note: Press **RETURN** after each UNIX command.

5. If you are still printing garbage, swap a working printer with the printer device that is printing garbage. Try printing the report again using the name of the printer device that printed garbage. If successful, call your Hardware Support Representative about the down printer device.

6. If you are printing garbage after swapping in a working printer, call your contracted Hardware Support Representative about the ports and cabling.

PRINTING REPORTS TO SCREEN

How do I print my reports to screen?

You can enter three possible codes in the *Printer Device* field to print your reports to screen: **PG**, **P132**, and leaving the field blank.

- **PG**—80 column screen print with the ability to use UNIX paging commands

- **P132** —132 column screen print with the ability to use UNIX paging commands
- Blank—Leaving the *Printer Device* field blank will print your reports to screen in 80 column fashion. You cannot end the display early. You must press the **RETURN** key until you have paged through the entire report. You cannot return to the previous screen until you have paged through every report screen.

  Blanking out the *Printer Device* field works best for one–page reports when you print to the screen.

NOTE

When you use the **PG** or **P132** option, the page count refers to a full screen display of the report. If you want to determine the number of printed pages to move forward or backward in a report, you can estimate that as a little under three screen pages equals one printed page.

GIVE THIS A TRY

TechGAP reports display the page number in the header of each page. If you press **$**, you go to the end of the report. Pressing **–2** returns you to the header of the last page. The final page number should display on your screen to let you know the number of printed pages in the report.

PG, P132

How do I use PG and P132 options?

TechGAP will let you print reports to the screen. You can then page through the report backwards and forwards, jump to a specific point, jump to the end, or search for a particular character string (i.e., Account Number, Account Name, Invoice#, PO#, etc.). You can also write this report to disk after viewing and print it. This feature allows you to first view the report and then print it. Another benefit is that when you find the information you want and finish viewing the report, you can quit without paging to the end.

WARNING

Do not use this feature for posting journals.

When you run any report in TechGAP, change the *Printer Device* to **PG** or **P132**:

- **PG** = Use this option to display 80 columns (e.g. PCs)
- **P132** = Use this option to compress the screen display to 132 columns.

When the report appears on the screen, the following functions can be performed:

h	Help. Lists the available options.
q or Q	Quit. Use anywhere in the report to return to the menu.
\n	Next page
l	Next line
d or ^D	Display half page
. or ^L	Redisplay current page
f	Skip the next page forward
$	Last page
s savefile	Save to a filename for printing later (example: s /usr/tmp/ar1)
/pattern	Search forward for a pattern (e.g. /HOOVER SUPPLY takes you to the first occurrence of HOOVER SUPPLY)
^pattern	Search backward for a pattern
+10	Scroll forward 10 screens
–10	Scroll backward 10 screens

If **PG** or **P132** does not work, contact your TechGAP Support Representative to make sure you have the current shell scripts.

Chapter

4

Terminal & Other Hardware Management

Defining your hardware and trouble shooting terminal display problems

Correct identification of your hardware components is essential when you communicate with your TechGAP Support Representative or your Hardware Service Representative. This chapter will help you enhance the operation and management of your system by explaining the different pieces of equipment associated with your system.

Your terminals are the main source of interaction with the system. Follow the trouble shooting ideas provided in this chapter to manage your terminal display issues. Proper operation of your terminals will enhance the integrity of your operating system and data files.

HARDWARE TERMINOLOGY

What is the main console?

The main console is the computer that is driving your entire system. All peripheral devices are connected to the main console. When a TechGAP Support Representative or the instructions in this Answer Book direct you to log in at the main console, they are referring to the keyboard and monitor that are attached directly to the main server.

What is a digiboard?

The digiboard is the black device into which all cables are plugged. These cables could be running from printers, terminals, serial PCs, modems, multiplexors, or scales.

What is a hub?

The hub is similar to the digiboard. It is a small beige device that houses the ports to which the cables from all networked PCs are plugged.

What is a modular connector?

Modular connectors are the devices that plug into the back of your terminals, serial PCs, scales, and printers. The cable is plugged into the port on the back end of the modular connector to connect the device to the rest of the system.

What is a modem?

A modem is a device used to dial into your system from a remote location or dial out of your system to other devices, such as a fax machine. The modem is a small device which usually displays a series of lights in the front. It has a connection to a standard telephone line and a connection to the main console.

What is a multiplexor (mux)?

A mux is a cross between a modem and a digiboard. It has a phone line that connects to one end and a series of ports that allow for cable connections on the other end. It is used for bringing remote locations on line with the rest of the system. The mux provides a phone company specific direct line (without dialing), between a remote location and the home office.

TERMINAL LOCKED

My terminal is locked up / not working.

If all the terminals are locked up including the main console, reboot your system now. Otherwise, take the following steps to try to correct a locked up terminal.

1. Check if the terminal has power.
2. Check that no cable connections are loose. Check both ends of the cable plugged into the terminal.
3. Check the keyboard connection.
4. If your screen is blank, check that the brightness toggle is not turned down.
5. If you use facetterm windows, you might have frozen your screen by accidentally typing **Ctrl-s** (instead of **Ctrl-w**) to switch windows. To unfreeze the screen, try pressing **Ctrl-q** .
6. Wyse Terminal users: check that you haven't placed the terminal on HOLD by pressing the **F1** key, or that you haven't switched the terminal from LINE to LOCL by pressing the **F4** key. Set the terminal to LINE.
7. If the terminal still appears to be hung, clear all processes associated with the terminal.

How do I clear a terminal / kill all processes associated with a terminal?

The solution provided here is for use from the UNIX Operating System only. The steps for clearing a terminal through the UNIX Menu Module can vary depending on the UNIX Operating System you are running. If you desire a UMENU solution, contact a TechGAP Support Representative for instructions based on the OS your system uses.

To examine the processes you run in UNIX, use the command **ps**. To clear these processes, the UNIX command is **kill**.

In the following example the login of the user whose terminal needs to be cleared is **kathys**.

1. To identify the processes by the last user logged in at that terminal, enter **# ps^-u^kathys** . Make sure that user is not logged in at any other station.

2. All the processes associated with that terminal will display. (See Figure 4.1.)

3. To clear the processes associated with that terminal, enter **# kill^-9^2489^3145^2167^3307**

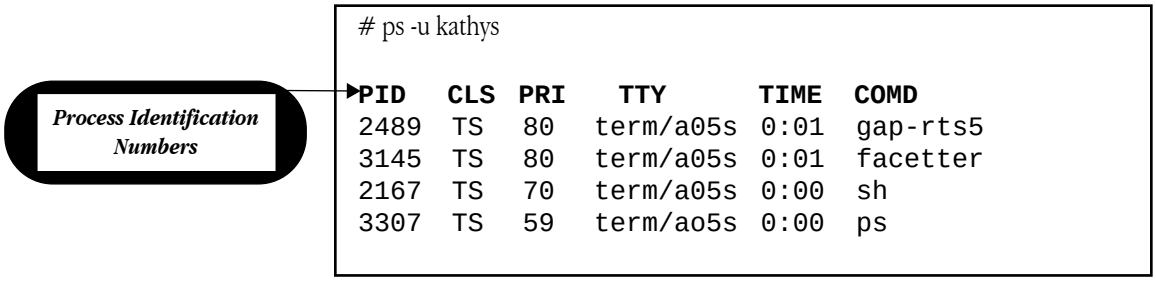


Figure 4.1: All processes for kathys associated with a terminal display when you use the **ps** command. Use the **kill** command to clear the processes associated with this terminal.

My terminal is still not responding.

Check the terminal's settings against a working terminal. If you are unsure of how to check the terminal settings for your brand of "dumb" terminal, call your Hardware Support Representative for help. If you can't invoke the settings on the hung terminal, contact your Hardware Support Representative to investigate repairs for the terminal.

My settings are correct, but the terminal won't respond.

Contact your Hardware Support Representative. An issue with one of the following hardware components needs to be investigated—keyboard, modular connection, port, cable, or terminal.

To isolate the problem, perform the following steps:

1. Remove the keyboard from a working terminal and plug it into the hung terminal. If you get a response, you have a bad keyboard.

2. Remove the modular connection from a working terminal and hook it up to the hung terminal using the cable of the hung terminal. If you get a response, you have a bad modular connection.

3. Unplug the cable from the port of the terminal that is hung, and swap it into a port associated with a working terminal. If you get a response, then you have a bad port.

4. Move the terminal to a different station that is working. Use that station's cable and port. If you get a response, then you have a bad cable at the other location.

5. Try rebooting.

6. Otherwise, you have a bad terminal.

My hung terminal is at a remote location. We are using a mux / modem.

Reset the multiplexors / modems at BOTH the remote site and the home office. (Turn them off and then on again.) If you don't get a response and have followed the steps for correcting a hung terminal, contact your Hardware Support Representative for more investigation.

LOCKED PC

I can't get into TechGAP on my PC.

1. Check your keyboard connection and cable connections.

2. If you are using facetterm windows, it is possible to freeze your screen by accidentally typing **CTRL-S** instead of **CTRL-W** to switch windows. To unfreeze the screen, try pressing **CTRL-Q** .

3. Check to make sure that you have not locked up your PC by pressing the PAUSE / BREAK key. Depress this key to see if it frees up your PC.

4. If the PC still appears to be hung, clear all processes associated with the hung person logged in at that PC.

5. Check to make sure that you are emulating a vt220 terminal at 19200 baud rate.

6. Shut down and reboot the PC.

7. If you still can't access TechGAP from your PC, contact your Techgap Support Representative.

GARBAGE ON SCREEN

I logged in at the main console as myself; now my screen is all "garbaged" up.

The only login name you should use from the main console is **root**.

Your own personal login along with all other user logins are set up to run a specific emulation when running from a terminal or PC. This emulation does not mix well when logging in at the main console. If your login takes you straight into TechGAP, your screen will have abnormal looking borders. The **GO** and **CANCEL** keys might not work. The only option is to break out, or kill the process from another location.

Chapter

5

Backup & Floppy Diskette Management

Saving your valuable information on alternative media

Backup procedures form an integral part of the use of a computer system. Usually the System Administrator's responsibility, backup involves more than performing the actual backup. The integrity of the backups must be verified, and the backup media should be stored safely.

Why are backup procedures so important? This article taken from the December 1993 issue of the Tech System's newsletter says it all:

FLOODS and FIRESCREEN: FIRE AND STANDARD GOLF
Make that backup!!

Custom Firescreen, Inc., in Des Moines, Iowa, survived the flooding of Summer '93 but almost suffered tragedy. The reason "almost suffered tragedy" was not replaced by "suffered tragedy" resulted from quick thinking and action at the right moment. All of their records were removed before the water engulfed the building.

What if the flood had occurred so suddenly those records had been lost? Brenna Beauchamp at Custom Firescreen, Inc., says everything would have been lost because they had no off-site backup.Thank goodness that was a lesson learned without tragic results. Of course, Custom Firescreen now maintains a current back-up tape off site.

Standard Golf has rebuilt "stronger than ever before" since their devastating fire of June 6, 1992. Their "new beginning" would not have occurred if Sara Gregory had not made and taken home a back-up tape on the Friday before the fire. She says, "We have always made a habit of backing up all of our files daily. We put the daily tape in the vault. **On Fridays we take a tape off site. We also take a month end tape and year end tapes off site.** Before our fire, there were times when I would leave those tapes on my desk. Not anymore. If I forget a back up tape, I go back and get it."

"The Monday after the fire, we had our tape loaded onto a system and generated reports and data we needed to get in touch with our customers and vendors and begin to get back in business. I can't imagine how devastating it would have been without the tape— no account information, no orders, no history, no customer/vendor names and addresses. All of our paper files were destroyed. Without our data files, we would have been lost."

ALL USERS SHOULD BE OUT OF THE SYSTEM

When backing up or restoring my files, can people be working on the system?

NO. To ensure a successful backup or restoration of your files and programs, you need to make sure all users are off the system.

Log in on the main console as **root**. Type **who** at the pound sign (#). The only listing that you should see is your own (root). If other login names are listed, do not proceed with backing up or restoring your files until all users have logged off the system.

DATAFILES LOCATIONS

Where are my datafiles located?

Typically, TechGAP data files are stored on the /tech/files directory, and Report Writer and Statement Writer specs are stored on the /tech/specs directory.

If you are not sure where your files are located, go to *System Administrator / Application Options*. The locations of the datafiles for each module are listed on the individual module screens. Otherwise, call your TechGAP Support Representative for help in determining your file locations.

How do I manually get a full system backup?

UMENU: Select *Backup Utilities / Backup Files*. Enter the following information and press **GO** .

File List: **/***
Verify: **Y**
Printer:
Tape Name: leave whatever information defaults into this field
Swap Bytes: leave this field blank

It is important to enter **Y** in the *Verify* field to make sure that the tape is readable after writing out your data files. Enter a printer device in the *Printer* field for a hard copy of the backup.

Warning : Do not use brackets ([ ]) or capitalize your printer device name in the *Printer* field.

Follow the directions that print on your screen to continue with the manual backup procedure.

UNIX OS : You need to pipe together two UNIX commands to execute a manual backup. The **find** command locates files under a directory. The **cpio** command copies files to and from a different medium (such as a tape) other than the hard drive. You also need to know the name of your tape device.

For example, if your tape device name is /dev/rmt/ctape1, type the following:

 # find^/*^-print^-depth^|^cpio^ -ocuBvd^>^/dev/rmt/ctape1

Verify that you had a successful backup.

How do I do a manual backup of my datafiles?

First determine what directory your data files are under. You need to collect any additional file locations if you have multiple directories due to multiple companies or for any other reason.

UMENU: Select *Backup Utilities / Backup Files*.

If, for example, your datafiles are located on /tech/files/ for company 1, /disk2/files/ for company 2, and /tech/specs for your sequence and spec files, enter the following information, and press **GO** .

File List:**/tech/files/*^/disk2/files/*^ /tech/specs/**
Verify: **Y**
Printer:
Tape Name**:** do not change the default name in this field
Swap Bytes**:** leave this field blank

It is important to enter **Y** in the *Verify* field to make sure that the tape is readable after writing out your data files. If you want a hard copy of what you backed up, enter a printer device in the *Printer* field.

Warning : Do not use Brackets ([ ]) or capitalize your printer device name in the *Printer* field.

Follow the directions that print on your screen to continue with the manual backup procedure.

UNIX OS : You need to pipe together two UNIX commands to execute a manual backup. The **find** command locates files under a directory. The **cpio** command copies files to and from a different medium (such as a tape) other than the hard drive. You also need to know the name of your tape device.

For example, if your files are located on /tech/files/ for company 1, /tech/files2/ for company 2, and /tech/specs/ for your sequence and spec files, and your tape device name is /dev/rmt/ctape1, type the following:

 # find^/tech/files/*^/tech/files2/*^ /tech/specs/^|^cpio^-ocuBvd^>^ /dev/rmt/ctape1

Verify that you had a successful backup.

How do I back up specific data files?

You need to incorporate the use of the wild card (*) with the directory name of the data files you wish to back up. If you don't know how to use the wild card, see Chapter 1—Getting Started with UNIX. For example, if you wish to back up Accounts Receivables files which reside on /tech/files, you will back up the list /tech/files/AR*.

UMENU: Select *Backup Utilities / Backup Files*.

Use the *File List* field to enter all file location directories and data files that you wish to back up. Put a space between each directory name.

For example, suppose you wish to back up GL files and your Report Writer specs. If GL data files are located on /tech/files/ and Report Writer data files on /tech/specs, enter the following information and press **GO** .

FileList:**/tech/files/GL*^/tech/specs/*.REP**
Verify: **Y**
Printer:
Tape Name: Accept defaults
Swap Bytes: Leave field blank

It is important to enter **Y** in the *Verify* field to make sure that the tape is readable after writing out your data files. If you want a hard copy of what you backed up, you can put the name of a printer device in the *Printer* field.

Warning : Do not use brackets ([ ]) or capitalize your printer device name in the *Printer* field.

UNIX OS : You need to pipe together two UNIX commands to execute a manual backup. The **find** command locates files under a directory. The **cpio** command copies files to and from a different medium (such as a tape) other than the hard drive. You also need to know the name of your tape device.

For example, if you wish to back up GL files and your Report Writer specs, and GL data files are located on /tech/files/ and Report Writer data files are located on /tech/specs, and your tape device name is /dev/rmt/ctape1, type the following:

 # find^/tech/files/GL*^/tech/specs/*.REP^|^cpio^-ocuBvd^>^/dev/rmt/ctape1

Verify that you had a successful backup.

Follow the directions that print on your screen to continue with the manual backup procedure.

If I back up just one file to a tape, do I lose all previous information on the tape?

Yes. Each time you place a tape in the tape drive, the tape rewinds to the beginning. When you write information to that tape, the program codes a starting and ending point based on the size of the data you are trying to write. The start and end point change each time you write to the tape. When reading the tape, you can not go beyond the ending point written to the tape. Therefore, you will be able to read only the most recent information written to the tape.

VERIFY A BACKUP

How do I verify a backup through the UNIX Operating System?

To verify a tape backup through UNIX, use the **cpio** command. You also need to know the name of your tape device.

To verify that your backup was successful, type in:

 # cpio^-icuBvt^<^/dev/rmt/ctape1

The **t** option in **icuBvt** is extremely important. This is the option that tells the computer to list the tape only. Without the **t** option, everything on the tape would restore to your hard drive.

NOTE

When you are writing to a tape with a **cpio** command, you are using the **-o** option. When you want to read from a tape, use the **-i** option.

RESTORE FROM BACKUP

How do I do a full restore from a backup tape?

UMENU: Select *Backup Utilities / Restore Files*.

Leave the *File List* field blank. Leave the defaults in all other fields. Press **GO**.

By leaving the *File List* field blank, the program *will restore ALL contents of the tape back to the hard drive.*

UNIX OS : To restore through UNIX, use the **cpio** command. You need to know the name of your tape device.

If your tape device name is /dev /rmt/ctape1, type the following:

 # cpio^-icuBvd^<^/dev/rmt/ ctape1

How do I selectively restore files from a backup tape?

You need to incorporate the use of the wild card (*) with the directory name of the data files you want to restore. If you don't know how to use the wild card, see Chapter 1—Getting Started with UNIX. For example, if you want to restore your Accounts Receivable files which reside on /tech/files, the file list that you will restore will be /tech/files/ AR*.

UMENU: Select *Backup Utilities / Restore Files*.

In the *File List* field, enter the full directory and name of the files you want to restore. Using the above example, you would enter **/tech/ files/AR*** in the *File List* field.

Accept the defaults in all other fields. Press **GO**. This will restore only the selected files from the tape to the hard drive.

UNIX OS : To restore through UNIX, use the **cpio** command. You need to know the name of your tape device.

Using the above example and a tape device of /dev/rmt/ctape1, type the following:

 # cpio^-icuBvd^<^/dev/rmt/ ctape1^'/tech/files/AR*'

How do I list a tape to see what's on it?

UMENU: Select *Backup Utilities / Restore Files*. Enter the following information and press **GO** .

File List: leave this field blank to list the entire tape
*List Files: **Y**
Tape Blk#: leave blank
Printer:
Tape Name: leave the default
Tape Name (no rewind): leave the default)
Swap Bytes: leave blank

If you want a hard copy of what you backed up, enter a printer device in the *Printer* field.

Warning: Do not use brackets ([ ]) or capitalize your printer device name in the *Printer* field.

Follow the directions that print on your screen to continue with the manual backup procedure.

*Note: On older versions of the UNIX Menu Module, the field name can be *Directory* instead of *List Files*. They are the same field. Answer the question **Y** as if the field name was *List Files*.

UNIX OS : The UNIX procedures are the same as the Verify Backup procedures. To list a tape through UNIX, use the **cpio** command. You also need to know the name of your tape device.

To list a tape, type in:

 # cpio^-icuBvt^<^/dev/rmt/ctape1

The **t** option in **icuBvt** is extremely important. This is the option that tells the computer to list the tape only. Without the **t** option, everything on the tape would restore to your hard drive.

How do I get a hard copy printout of what is on a tape?

To get a hard copy printout of what is on a tape, you need to know the name of the printer device to which you wish to print.

UMENU: Follow the procedures outlined in the List Files On A Tape section. In the *Printer* field, enter the printer device name.

Warning : Do not use brackets ([ ]) or capitalize your printer device name in the *Printer* field.

UNIX OS : Use the procedures outlined in the List Files On A Tape section along with the UNIX **lp** command.

For example, if your tape device name is /dev/rmt/ctape1, and your printer device is pr1, you would type the following:

 # cpio^-icuBvt^<^/dev/rmt/ctape1^|^lp^-dpr1

UNIX Menu Module Users: Overnight Backups

VERIFY OVERNIGHT BACKUP

How do I verify my overnight backup?

To view the backup log, perform the following procedures:

1. From the UNIX Menu Module menu screen, select *Applications / View Backup Log*. Press **GO**. The following displays:

   ```
   Processing.........
   Enter Date in MMDDYY format:
   ```

2. Enter the date of the backup log you want to review. Remember the backup takes place at 2 a.m. every morning. The date is normally today's date except on Mondays. The backup date for a Monday will be the previous Saturday's date.

```
Begin Backup: Tue Mar  3 02:01:08 CST 1998

/&1
/CD-ROM_1
/Disk_A
/Disks-etc
/Disks-etc/CD-ROM_1
/Disks-etc/Cartridge_Tape
/Disks-etc/Disk_A
/Disks-etc/Tape_2
/bck
/bin
/cdrom
/config
/dev
/dev/NVT
/dev/NVT/nvt000
/dev/NVT/nvt001
/dev/NVT/nvt002
/dev/NVT/nvt003
/dev/NVT/nvt004
/dev/NVT/nvt005
/dev/NVT/nvt006
:/ blocks
```

Figure 5.1: Screen display after you enter the date.

3. At the colon (:), enter **/^blocks**, and press the **RETURN** key. There will be a pause. The system now begins to verify the tape. The following displays.

```
6869440 blocks

End Backup: Tue Mar  3 03:11:10 CST 1998

Begin Verify: Tue Mar  3 03:11:10 CST 1998

Tape/Diskette Contents:

-rw-rw-rw-   1 root     sys      0       Jun  9 10:01 1997, /&1
drwxrwxrwx   2 root     root     0       Apr 28 14:34 1997, /CD-ROM_1
drwxrwxrwx   2 root     root     0       Apr 28 14:34 1997, /Disk_A
drwxrwxrwx   2 root     root     0       Oct  9 13:37 1997, /Disks-etc
lrwxrwxrwx   1 root     root     20      Oct  9 13:37 1997, /Disks-etc/CD-ROM_1
-> /dev/rcdrom/c0b0t5l0
lrwxrwxrwx   1 root     root     17      Oct  9 13:37 1997, /Disks-etc/Cartridge
_Tape -> /dev/rmt/c0b0t2l0
lrwxrwxrwx   1 root     root     12      Oct  9 13:37 1997, /Disks-etc/Disk_A ->
 /dev/dsk/f0t
:
```

Note this number.

Figure 5.2: The number that precedes the word blocks is the amount of information that the program backed up to your tape drive. Compare this number to the number of blocks at the end of the backup routine.

4. You now need to determine if the number of blocks the system was actually capable of rereading matches the block figure you noted above. To find the second block number, at the colon (:), enter /^**blocks** and press **RETURN**. There will be a pause. The verified number of blocks now displays.

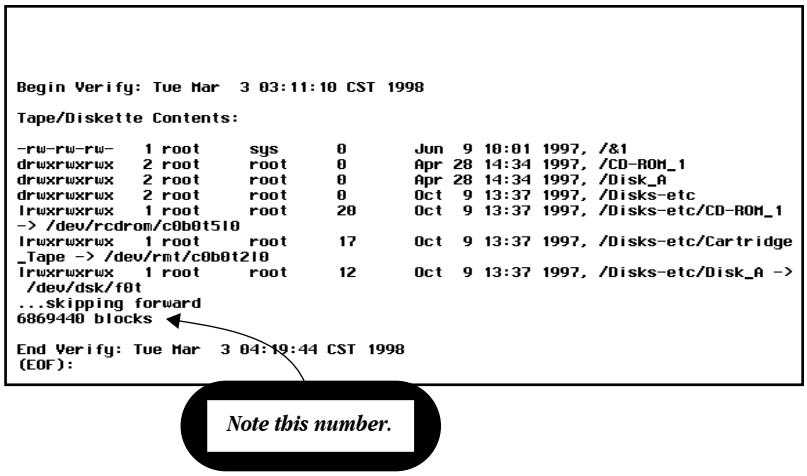


Figure 5.3: The number that precedes the word blocks is the amount of information verified. Compare this number to the number of blocks at the beginning of the backup routine.

5. After you have verified that both numbers are the same, press the **RETURN** key twice. Your cursor is then placed back in the Application Menu screen.

6. Press **CANCEL** to return to the main UNIX Menu Module screen.

I got the message 'Backup does not exist for that date.' What should I do?

Verify that you had the correct date entered. If necessary, cancel out of the *View Backup Log* screen and start over with the steps to verify your backup. Confirm that a backup exists for the date entered.

If it is Monday, remember you should enter Saturday's date to verify that your work from Friday was backed up successfully.

If a backup does not exist for that date, perform a manual backup of your data files only, following the steps outlined in the Manual Backup section of this chapter. Your data files are the most dynamic files in your system, and it is important that these be backed up on a daily basis. Use the tape that was put in the system from the night before.

Contact a TechGAP Support Representative immediately if you do not get a successful manual backup of your data files.

I typed '/ blocks' and got a 'Pattern not found' message. What should I do?

When you type in **/ blocks** the program looks for a line in the text file that matches the pattern **blocks**.

Verify the spelling and the use of lower case letters. If you still get the message, then you did not get a successful backup.

On the *View Backup Log* screen, type **$** and press **RETURN**. This command takes you to the end of the text file. An error message, which explains why you did not get a successful backup, displays.

If you see an error message that says *tape device not ready*, check that there was a tape in the drive from the previous night and that the write protection switch was not flipped to prevent writing to the tape.

Perform a manual backup of your system. *Make sure all operators are out of the system at this time.*

If the manual backup does not work or you receive a different type of error message, call your TechGAP Support Representative immediately.

To exit the *View Backup Log* screen, press **q** and **RETURN**.

My block count did not match.

The writing and reading process of the overnight backup can commonly vary from as much as 10 to 50 blocks. You still had a successful backup. Clean your tape drive with a head cleaning kit, and the problem should disappear.

Variances greater than 50 might imply the tape was bad. Execute a manual backup using a different tape. Verify the block count. If the block counts match, take the other tape out of the weekly rotation. Continue with the overnight backups. If the problem persists, call a TechGAP Support Representative for more investigation of the problem.

Can I use the same tape every night for backing up the system?

Do not use the same tape every night. If something happens to the tape and you mismanage your files or your drive goes down, you have no recovery other than to go to your next good tape. This tape might be a month end or year end tape. The worse case scenario is that no other tape exists.

FIVE TAPE ROTATION

We recommend a five–tape rotation, one for every day of the week (six if you back up on Saturdays). Rotate another tape for month ends. Use two tapes for year end back ups. For audit purposes, do not reuse year end tapes.

DID YOU KNOW?

The system is not typically installed to execute an overnight backup for work done on Saturday or Sunday. If you do work on these days, execute a manual backup of your data files using a different tape other than your weekly tapes.

WARNING

Your tapes are subject to extreme temperatures and magnetic fields. Do not leave tapes in cars or on the main console. Take the tapes you are not using off site and store them in a safe place.

How do I load a new TechGAP Installation Tape?

1. Make sure you have a verified backup before installing this tape.

2. Remove ALL media (i.e. tapes and diskettes) from your system.

3. Make sure everyone is out of the system and insert the TechGAP installation media (i.e., CDROM, diskette, or installation tape).

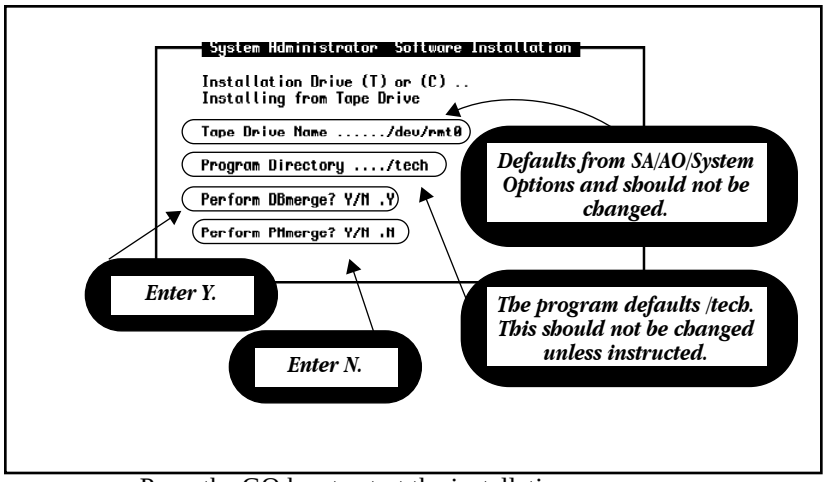
4. From the console log in as root

   Login: root (Press RETURN)
   Password: ##### (Enter your password and press RETURN)

5. At the # sign enter the TechGAP command:

   # gapp (Press RETURN)

6. Select (62) System Administrator / (11) Software Installation
   Press the GO Key at the warning screen.
   The following screen appears.



   Press the GO key to start the installation.

7. The release number is displayed at the end of the installation. Verify that the release number on the screen and the release number on the distribution media match.

8. Loading the Current COBOL—Press the CANCEL key until your cursor is at the #. Type in the following:

   # sh /tech/install/cobolinstall.sh (press RETURN)

9. Remove the installation media from your system. If you received a tape, please return it to Tech Systems for Media Credit.

FLOPPY DISKETTE MANAGEMENT

What's the name of my floppy diskette drive?

If you don't know your drive name, contact your TechGAP Support Representative for this information.

How do you UNIX format a floppy diskette?

First you need to know the name of your floppy drive.

For example, if your floppy drive is /dev/rfd0, you would type the following: **# format^/dev/rfd0**

How do I selectively back up files to a floppy?

Use the selective backup steps outlined in the Manual Backup section of this chapter. Substitute your floppy device name for the tape device name.

UNIX Menu Module users: Override the default in the *Tape Name* field with your floppy device name.

How do I restore files from a floppy?

Use the restoration steps outlined in the Restore From Backup section of this chapter. Substitute your floppy device name for the tape device name.

UNIX Menu Module users: Override the default in the *Tape Name* and *Tape Name (No Rewind)* fields with your floppy device name.

How do I list out a floppy?

Use the steps outlined in the List Files On A Tape section of this chapter. Substitute your floppy device name for the tape device name.

UNIX Menu Module users: Override the default in the *Tape Name* and *Tape Name (No Rewind)* fields with your floppy device name.

EXTRACT DATA TO A DOS FORMATTED DISKETTE

How do I manipulate files between UNIX and DOS?

TechGAP Support Representatives are available to help you extract or place data on a DOS formatted diskette using the main server. They cannot, however, advise you on using your data files for DOS applications.

Because the DOS formatting and copying commands need to be executed from the UNIX Operating System prompt, users should log in at the main console as **root**. Generally, management of your DOS floppy diskettes is not available from the UNIX Menu Module.

WARNING

PC users: These solutions are not for the floppy drive in your own PC. The drive that needs to be used is the one on your main server.

How do I DOS format a floppy diskette?

First you need to know the name of your floppy drive. For example, if your floppy drive is /dev/rfd0, you would type the following:

 # dosformat^/dev/rfd0

How do I copy a file to a DOS formatted floppy diskette?

Use the **doscp** UNIX command.

For example, to copy the file /usr/tmp/report to floppy and rename it SLSREPORT, you would type the following:

 # doscp^-r^/usr/tmp/report^a:SLSREPORT

NOTE 

Use file names fewer than 9 characters in length.

If you have a second floppy drive, you need to verify if you are using the a drive or the b drive on your main console.

Chapter 6

VI Editor

Editing text files with the vi editor

The vi editor is a display oriented editor. Most of its commands are single keystrokes. “vi” is used for specific local changes. The two modes of operation are the **command** mode and the **text input** mode.

INVOKING THE VI EDITOR

To invoke the vi editor, type in: *vi filename* **RETURN**

When you first enter the vi editor, you are placed in the **command** mode. The **command** mode acts like a keyboard. Commands to position the cursor are made in this mode.

Commands may be cancelled with the **GO**, **ESC**, or **CTRL-3** keys. Press one of these keys and you will return to the **command** mode.

POSITIONING THE CURSOR

These command characters are performed in the **command** mode and will not put you into the **text input** mode. The command characters typed will not be echoed back to the screen; instead, only the result will be seen.

Space bar	*Moves cursor to the right one position at a time*
h	*Moves cursor to the left*
j	*Moves cursor down*
k	*Moves cursor up*
l	*Moves cursor to the right*

INSERTING TEXT

These command characters are performed in the **command** mode and will put you into the **text input** mode. The command characters typed will not be echoed back to the screen; instead, only the result will be seen.

a	*Adds text after cursor*
o	*Opens new line below cursor*
O	*Opens new line above cursor*
r	*Replaces one character*
R	*Replaces a series of characters until* **CTRL-3** *is pressed.*

DELETING TEXT

These commands will cause the described action at the current cursor position. No carriage return is necessary. The command characters typed will not be echoed back to the screen; instead, only the result will be seen. A number may precede any of the following commands and the command will be performed that number of times. For example, if you enter "6dd," six consecutive lines of text, starting at the cursor position, will be deleted.

x	*Deletes one character*
dd	*Deletes one line*

COPYING AND MOVING TEXT

These commands are invoked in the **command** mode. They will cause the described action at the current cursor potion. A number may precede the "yy" command. That number of lines will be stored in the buffer. For example, if you enter "6yy," six consecutive lines of text, starting at the cursor position, will be stored.

yy	*Yanks lines to the buffer*
P	*Puts the buffer contents before the cursor*

MISCELLANEOUS COMMANDS

The following commands must be entered in the **command** mode.

.	*Repeats the last command*
u	*Undoes the last function*

SAVE AND QUIT FILE

There are many different ways to end your vi session, depending on whether or not you wish to save your document.

:wq **RETURN**	*Saves your document and returns you to the* **$** *prompt*
:w **RETURN**	*Saves the changes you have made, but will keep you in the vi editor*
:q! **RETURN**	*Returns you to the* **$** *prompt without saving changes*
:wq! **RETURN**	*Saves your document and returns you to the* **$** *prompt. The "!" is needed for "r" permission files.*

VI Editor—Written Exercises

1. Create a document called: EDITOR.txt.

2. Open the document and type the following:
   The UNIX OS consists or several mane parts. The kernel is generally unique to the specific machine, but shells an utilities are basically the same. The “shells” represent the environment that the user sees. They serve as the “prompt” ($ or #) seen on the screen. The shells a utilities are separate entities.

3. Correct all spelling errors.

4. After the third line add this line:
   “interface” for the user and programmer as they move from one

5. Delete the second to last line.

6. Save the document.

7. Delete the last line.

8. Save and quit the document.

Vi Quick Reference Guide

Invoking vi

Invoke vi and load a new file	**vi**
Invoke vi and load a specified file	**vi** *filename*

Insert Mode

In insert mode, the keyboard behaves like a typewriter. Keystrokes appear as screen text after typing any of the following commands.

Insert text at the cursor	**i**
Append text at the end of the line	**A**
Append text after the cursor	**a**
Open a new line of text above the cursor	**O**
Open a new line of text below the cursor	**o**

Command Mode

In command mode, keystrokes perform functions such as moving the cursor, searching for patterns, or quitting from the document. All commands are referenced from the current cursor position.

Invoke command mode (from insert mode)	**<Esc>**

Cursor Movement

Move one space in any direction	**arrow keys**
Go to the last line in the file	**G**
Go to the first line in the file	**1G**
Move forward to the next word	**w**
Move backwards to the previous word	**b**
Move to the end of the line	**$**
Move to the beginning of the line	**0**
Scroll down 1/2 screen	**<Ctrl> d**
Scroll up 1/2 screen	**<Ctrl> u**

Searching

Search for a "string" (pattern) of characters	*/string*
Search for the next occurrence of the "string"	**n**
Search and replace	**:%s/***string***A/***string***B/g**

Deleting Text

Delete a single character	**x**
Delete a word	**dw**
Delete an entire line	**dd**
Delete an "n" number of lines	*n***dd**
Delete from the cursor to the end of the line	**d$**

Copying Text

Copy (yank) a line to the buffer	**yy**
Copy (yank) an "n" number of lines to the buffer	*n***yy**
Paste text from the buffer	**p**

Changing Text

Mark a single character for replacement	**r**
Mark a word for changing	**cw**
Mark a line for changing	**cc**

Miscellaneous Commands

Join a line with the one below it	**J**
Execute a XENIX/UNIX command	**:!***command*
Read a file into vi	**:r** *filename*
Repeat the last command	**.**
Undo the last command	**u**

Saving and Exiting

Write (save) the file	**:w**
Quit the file without saving changes	**:q!**
Write (save) the file and quit vi	**ZZ**

Chapter 7

BTOS to UNIX— Quick Reference Guide

BTOS Command	UNIX Command
Copy File from GAP.INT File to GAP.INT-SAVE [Overwrite ok?] Y [Confirm each?] Y	$ **cp** GAP.INT GAP.INT-SAVE Note: No overwrite or confirm options exist in UNIX.
Delete File list GAP.INT [Confirm each?] Y	$ **rm -i** GAP.INT Note: The -i option asks for confirmation on each file.
Rename File from GAP.INT File to GAP.INT-SAVE [Overwrite ok?] Y [Confirm each?] Y	$ **mv** GAP.INT GAP.INT-SAVE Note: No overwrite or confirm options exist in UNIX.
Files [File list] <GAP>* [Details] Y [Print file] DISKFILE	$ **ls -l** /tech/gap/* Note: The -l option lists the output in long form (date, size, etc.).
Type File list DISKFILE [Confirm each?] Y	$ **more** DISKFILE
Create Directory New directory name GAP	$ **mkdir** /tech/newdirectory

BTOS Command	UNIX Command
Path [Volume] SYS [Directory] GAP	$ **cd** /tech/gap
Volume Status Volume or device name SYS	$ **df -v**
Set Time Date/Time: March 14, 1994 12:21pm	$ **date** 0314122194 Note: Date is in month, day, hour, minute, year format.
BTOS displays the current directory in the upper left hand corner.	$ **pwd** Note: Stands for “print working directory”

UNIX—Quick Reference Guide

OBJECTIVE	COMMAND	SYNTAX—HOW TO USE
Keyboard Commands in GAP:		
Clear a field from the cursor on	**CTRL-d**	Hold the control key while pressing the letter “d”
Refresh the screen if garbage appears	**CTRL-l**	Hold the control key while pressing the letter “l”
Backspace one character at a time	**CTRL-h**	Hold the control key while pressing the letter “h”
UNIX Printer Commands:		
Enable the printer	**enable**	$ enable printername (press RETURN)
Show status of printer and queued files	**lpstat -t**	$ lpstat -t (press RETURN)
Cancel print requests	**cancel**	# cancel spl-queue # (press RETURN)
Print a disk file to the parallel printer	**lp**	$ lp filename (press RETURN)
Basic UNIX Commands:		
Display the date	**date**	$ date (press RETURN)
Change the date	**date**	# date mmddhhmmyy (press RETURN) month-day-hour-minute-year format
Find who is logged on the system	**who**	$ who (press RETURN)
Find the directory you are currently in	**pwd**	$ pwd (press RETURN)
Change your directory	**cd**	$ cd directoryname (press RETURN)
Get back to a login or get out of “#”	**exit**	$ exit (press RETURN)
Become a super user	**su**	$ su (press RETURN)

UNIX—Quick Reference Guide

OBJECTIVE	COMMAND	SYNTAX—HOW TO USE
Basic UNIX Commands (continued)		
Find out what processes are being performed on the system	**ps -e**	$ ps -e (press RETURN)
Cancel a process which does not finish completely	**kill -9**	# kill -9 1133 (press RETURN)
Find out how much space is available on the system	**df -v**	$ df -v (press RETURN)
Shut down the system	**shutdown**	# shutdown –g0 –y
Print names of all Report Writer specs on the disk	**ls, lp**	$ ls -l /tech/spec/* .REP | lp (press RETURN)
Copy from tape to hard drive (tape command)	**cpio -i**	$ cpio -icuBv < /dev/rmt0 (press RETURN)
Copy from hard drive to tape (tape command)	**cpio -o**	$ ls * | cpio -ocuBv > /dev/rmt0 (press RETURN)