Chapter 3 -- SYSTEM MANAGEMENT

System management is the art and science of preventing other people from crashing your computer system. It also has a well-deserved reputation for being difficult. This document is not intended to teach UNIX. It assumes that you will find that training elsewhere. When you feel moderately comfortable with the basics of UNIX, review the remainder of this chapter to learn how to customize your LTPlus environment and keep people from trashing, or otherwise degrading, the files generated by and for LTPlus.

TOLERANCE

There are three files, stored under **/u[sr]/ltp/config**, which contain information which may be modified to alter the LTPlus processing environment. Two of the files are discussed in this chapter, while the third one, **header**, is detailed in *Chapter 5, Map Information Operations.*

The **tolerance** file has a restricted set of read/write/execute permissions which preclude modification by anyone without root or superuser, privileges. This file contains a single value which represents the amount of deviation allowed during the map registration process. Any time that a user attempts to proceed past an inferior registration result, the LTPlus process will be halted and a message mailed to the system manager advising of the attempted impropriety. Prior to initial use of LTPlus, if a tolerance restriction is desired, the system manager will have to create the **tolerance** file and, using **vi** or some other system editor, make a one-line entry in the form:

tolerance = n

where **n** is the maximum allowable deviation from a true ground position in ground feet. If no tolerance restriction is desired, simply do not create the file or create it with **n** equal to a very large number!

THE CONFIG FILE

The **config** file is the location for much of the LTPlus operating parameters. It may be modified by anyone via the **config** command (or by editing the file with any system ascii editor). A set of standard default parameters in a **config** file will be packaged with the LTPlus software. The system manager will have to review and modify any of the **config** file parameters which could prevent start up of LTPlus. Once the software can be implemented properly, any user may customize the LTPlus processing environment by executing a **config** command which allows modification of the following elements:

The following **config** elements are not currently used, and live here only as future possibilities.

prtr_adr	(not used)
prtr_type	(not used)
crt_adr	(not used)
crt_type	(not used)

The map file name will be sandwiched between the bkup11 and bkup12 or bkup21 and bkup22 strings to perform a backup (or archive) of the active map (see **backup** function).

bkup11	string command prefix for backup
bkup12	string command suffix for backup
bkup21	string command prefix for backup
bkup22	string command suffis for backup

The print path is linked with the system's standard printer definition which has been defined by the system administrator. It is used for standard printer output from some LTPlus functions like **report**. Up to two printers may be attached to the system (**print1** and **print2**).

print1 prtr1 output path [def=**lp**]
print2 printer 2 output path/instructions

The edit path is linked to a user-designated system editor. The most common is the **vi** editor. The editor is used by some LTPlus functions for file display and editing (i.e., **edit**).

edit1 first choice text editor [def=vi]
edit2 second choice text editor

The **cursor_file** element identifies the file containing the cursor or mouse button mapping scheme. It may be interactively changed with the **ckeys_get** command once in LTPlus.

cursor_file file containing cursor/mouse keys

The **mouse_adr** element defines the port to which the mouse is physically connected and accessed. The **mouse_type** element advises LTPlus as to what type of mouse is connected so that the proper mouse driver may be utilized.

mouse_adr **/dev/**... [def=**/dev/tty1a**]
mouse_type mouse type [def=**ltsmse**]
(Logitech, MicroSoft: serial, bus)
(**ltsmse, mssmse, attmse**)

Up to two digitizers may be attached to the system's serial ports. To validate a connection, LTPlus must know the physical port (**dig1_adr** and **dig2_adr**) and the digitizer type (**dig1_type** and **dig2_type**). The type designation is actually the name of a device driver file found under the **/u[sr]/ltp/digitizers** directory. Several drivers are supplied with LTPlus for some of the more common digitizer types. Any digitizer may be connected to the system and an associated driver created by the user. Instructions for writing the driver are found in the appendices of this manual.

dig1_adr **/dev/**... [**def=/dev/tty2a**]
dig1_type cc9000, cc9100 (actual file names in **config** directory)
dig2_adr **/dev/**...
dig2_type cc9000, cc9100 (actual filenames in **config** directory)

LTPlus can generate an HPGL (Hewlett Packard Graphics Language) format plot file and transmit it to a system plotter which is physically connected to up to two different ports (**pltr1_adr** and **pltr2_adr**) on the system. The **pltr_type** element(s) are critical in defining the plotter origin(s). Any **pltr_type** which begins with the letter 'L' advises LTPlus that the plotter origin is the lower-left corner of the media. All other device type specifiers imply that the plotter's origin is the center of the plotting media.

plt1_adr **/dev/**...
plt1_type cnnnn, hpnnnn
plt2_adr **/dev/**...
plt2_type cnnnn, hpnnnn

The **maps_path** identifies that directory underwhich LTPlus map data will be stored.

maps_path [def=**/u[sr]/ltp/maps**]

The **bkup_path** is the physical storage media designation for the **backup** command. Typically, this string should represent the device name of the system backup tape cartridge drive.

bkup_path [def=**/dev/rdsk0**]

Some more unused, and therefore undefined elements:

data3_path (not used)
data4_path (not used)

The **export_** and **import_path** names identify the corresponding directories under which **import**ed and **export**ed ascii files are located.

These default values are used by the **import** and commands and may be superceded by supplying a different path name as a command argument. LTPlus will 'look' under these directories unless the user specifies otherwise.

export_path [def=**/u[sr]/ltp/export**] **import_path** [def=**/u[sr]/ltp/import**]

The **malloc** value informs LTPlus as to the maximum allowable system memory which may be used by the application. It should be set to 3000000 less than the total system memory unless the user desires to execute background, batch LTPlus processing, in either multiple occurrences or in conjunction with an interactive LTPlus activity in the foreground.

malloc bytes [>=1000000]

The **menuset** element identifies the menuset to be used upon initiating an LTPlus session. It may be interactively changed with the **menuset_get** command.

menuset startup menuset name

The **ginput** element represents the graphics input device at the startup of an LTPlus session. It may be changed interactively with the **ginput** command. Choices are the mouse (mouse) and one of two possible digitizers (**dig1** and **dig2**).

ginput startup graphics input dev name [**mouse, dig1, dig2**]

Every map created in LTPlus exists within a raster with dimensions defined by the user. The default height and width dimensions are defined by the **rasterh** and **rasterw** equivalencies. These must be properly set prior to creating a map (using the **create** command) as the raster cannot be enlarged once created. The **reduce_res** command may be used to reduce (compress) the raster, thereby generalizing any map data placed in it. Scanned and imported map files do not use the **rasterh** and **rasterw** values; because a scan file is a raster, the raster size is pre-determined.

rasterh raster height in pixels [def=1024]
rasterw raster width in pixels [def=1024]

The **penN** values are used to define the colors associated with various elements of the LTPlus screen display. LTPlus allows use of pre-defined color names as well as user-calculated numeric values (in the range 0 to 63); the numeric values represent mixtures of red, green and blue in two different levels of intensity. These values may be calculated as follows:

More Intense			Less Intense		
R	G	B	r	g	b
32	16	8	4	2	1

Where:
R or r = red
G or g = green and
B or b = blue.

To derive a color value, determine the mixture of RGBrgb elements and add the corresponding numerical values together. For example, combining a more intense blue (B=8) with a less intense green (g=2) results in a summed color value of 10.

Each **penN** value also affects various portions of the LTPlus screen display area, as listed below:

pen0 (= map area bkgd)	[def=bright_black]
pen1 (= cursor)	[def=fishbelly_white]
pen2 (= raster)	[def=polar_blue]
pen3 (= vector)	[def=vampire_red]
pen4 (= text)	[def=glacier_cyan]
pen5 (= rstr/txt hi-lt	[def=dark_white]
pen6 (= vctr/txt hi-lt)	[def=lides_green]
pen7 (= rstr/vctr hi-lt)	[def=lumpy_brown]
pen8 (= rstr/vctr/txt hlt)	[def=cadaver_blue]

The pre-defined LTPlus color choices (which are recognized as valid equivalencies in the config file) include:

sickly_magenta	caribbean_cyan	ripe_magenta
lumpy_brown	fishbelly_white	infectious_yellow
dark_white	lides_green	cadaver_blue
canpea_green	polar_blue	bright_black
glacier_cyan	seattle_grey	vampire_red
redtape_red (a color you may never change)		

Command usage for the **config** function may be found in the *Command Language Reference* section of this manual.

SYSTEM COMMANDS

There are three useful functions designed to ease the user's experience in LTPlus--the **exit** function's sole and obvious purpose is to permit a graceful departure from the LTPlus processing environment. Graceful means that program and data files will be protected from the sorts of violent and aggressive actions which may occur during an ungraceful or unplanned exit. Using **exit** is a kinder and more gentle means of escape than what you would experience if some idiot were to trip over and unplug the cpu power cord. Should this occur, terminate the offending party, plug the computer back in, restart the system, clean the files and hope for the best.

UNIX is a multi-user, multi-tasking environment. LTPlus provides a tool which allows the user to escape temporarily from the program, perform other operations, and return to the exact point of departure with no detrimental effects. Executing the **shell** command compels LTPlus to suspend interactive operations temporarily and open another **shell**, or partition (**csh**, in this case), in which the user may interactively function. To leave the **shell** and return to the initial point of departure in LTPlus, press **Ctl-D**.

A similar command, **execute**, allows the user to execute a system command from within the LTPlus operating environment.

Command usage is detailed for these functions in the *Command Language Reference* of this manual.

DEMO DEVELOPMENT COMMANDS

Two additional commands are available for writing demo packages for displaying the capabilities of LTPlus. The **wait** and **pause** functions may be inserted into a macro set to cause the system to display information and either **pause** for designated time duration or **wait** until the **<Return>** key is depressed. Command usage is detailed for these functions in the Command Language Reference of this manual.