Introduction to MPE/XL for MPE V System Administrators

Series 900 HP 3000 Computer Systems

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Introduction to the MPE XL System

This chapter serves as a shorthand guide to information the experienced HP 3000 System Administrator will want to have available when becoming familiar with MPE XL. It lists, in tabular form, the following types of information:

■ New MPE XL system features

■ MPE XL features that are modified versions of MPE V/E features, or that replace similar MPE V/E features

■ MPE XL features unchanged from MPE V/E

■ MPE V/E features deleted from, or no longer supported in, MPE XL

Each table lists features, briefly describes them and, where applicable, lists the MPE V/E equivalent. The term "features" includes capabilities (such as the new volume management system), utilities, and commands. As a rule, MPE V/E features not listed here exist unchanged in MPE XL.

New MPE XL System Features

The following three tables list new MPE XL capabilities, utilities, and commands.

New MPE XL Capabilities

Table 1-1 lists capabilities that are new to MPE XL.

Table 1-1. New MPE XL Capabilities

CAPABILITY	FUNCTION	REFERENCE
Access Port (AP)	A Channel I/O (CIO) port used to connect local and remote System Consoles to the host computer.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Access Port commands	A set of commands executed from the local or remote System Console; used to control the Access Port.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)

Table 1-1. New MPE XL Capabilities (continued)

CAPABILITY	FUNCTION	REFERENCE
Autoboot file/Autoexec file	When present, allows Autoboot to start the system automatically during system installation, without pausing at the ISL prompt.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Autoboot flag	When set on, and with autoexec file present, automatically restarts the system after a system reset.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Autoinstall program	When run, automatically creates system account structure during system installation.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Boot path	One or more I/O paths that specify the device(s) on which system boot files are stored.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Boot path, alternate	Specifies a tape drive; when it is specified, the system boots from the boot tape.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Boot path, console	Specifies the System Console hardware path.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
boot path, primary	Specifies the System Disk; when it is specified, the system boots from the System Disk.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Command Files	Similar to UDC's, but are not cataloged; contain only one command definition; are easier to modify, but do not accept the *recursion*.	*Security and Account Structure* (32650-90041); *MPE XL Commands Reference Manual* (32650-90003)
Command line	Permits command lines to be recalled and reused, or recalled, modified, and reused.	*MPE XL Commands Reference Manual* (32650-90003)

Table 1-1. New MPE XL Capabilities (continued)

CAPABILITY	FUNCTION	REFERENCE
Command search path, modifiable	`HPPATH` permits modification of command search path; used with implied RUN and execution of Command Files.	*MPE XL Commands Reference Manual* (32650-90003)
Control Mode	The mode used when entering Access Port commands from the physical or remote System Console.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Console Mode	The mode used when entering (CTRL) (A) commands from the physical or remote System Console	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Dereferenced variables	Permits interactive substitution of variables in command lines.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Implied `:RUN`	Permits running programs from jobs and sessions simply by entering the program name. The `:RUN` command still works as on MPE V, and is used if options other than `;INFO=` and `;PARM=` need to be specified.	*MPE XL Commands Reference Manual* (32650-90003)
Multiple configuration groups	Permits storage of more than one configuration group and facilitates rapid configuration changes.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Programmatic command execution	Permits execution of programs and commands from within programs.	*MPE XL Commands Reference Manual* (32650-90003); *Command Interpreter Access and Variables Programmer's Guide* (32650-90011)
Recursive search for UDC	Permits searching for UDCs from the top of the catalog, regardless of the place in the catalog from which the search starts.	*MPE XL Commands Reference Manual* (32650-90003)

Table 1-1. New MPE XL Capabilities (continued)

CAPABILITY	FUNCTION	REFERENCE
Restore enhancements (new :`RESTORE` command parameters)	Capabilities are: restore a file system directory from a backup tape (`DIRECTORY` parameter); store sets of files by a range of filecodes (`FCRANGE`); display tape label and directory information for all or a subset of the files on a store tape (`LISTDIR`); specify disk volume, volume set, or volume class where files will be restored (`VOL, VOLSET, VOLCLASS`); new wildcarding ([ ] range).	*MPE XL Commands Reference Manual* (32650-90003); *Performing System Management Tasks* (32650-90004)
Scanner /parser	Provides increased flexibility in placement of positional and keyword parameters for new and modified MPE XL commands. Does not affect unchanged commands common to MPE V/E and MPE XL.	*MPE XL Commands Reference Manual* (32650-90003)
Storage enhancements (new :`STORE` parameters)	Store file system directory (`DIRECTORY`); store sets of files by a range of file codes (`FCRANGE`); store files, by *filelist* from a volume set (`ONVS`); store a volume set directory (`DIRECTORY;ONVS=`*volumeset*); specify consecutive (serial) or concurrent (parallel) backup devices (`STORESET`); produce tapes compatible with MPE V/E (`TRANSPORT`); read multiple files concurrently from disk and store to tape (`INTER`; new wildcarding ([ ] range).	*MPE XL Commands Reference Manual* (32650-90003); *Performing System Management Tasks* (32650-90004)
System backup enhancements	New SYSGEN utility backs up system configuration files independently of system, user, and directory files, which are backed up with the :`STORE` command.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042) *MPE XL Commands Reference Manual* (32650-90003) *Performing System Management Tasks* (32650-90004)

Table 1-1. New MPE XL Capabilities (continued)

CAPABILITY	FUNCTION	REFERENCE
System parameter management	New commands, executable from the Miscellaneous Configurator of the SYSGEN utility, provide control of session duration (`SESSION CITIMEOUT`), job CPU time usage (`JOB CPUTIME`),and session logon time (`SESSION LOGONTIMEOUT`).	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
System self-test	Automatically tests system hardware after a reset.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
System variables	Several MPE XL variables are predefined by the system. Some may be modified by:`SETVAR`.	*MPE XL Commands Reference Manual* (32650-90003); *Command Interpreter Access and Variables Programmer's Guide* (32650-90011)
Timed terminal reads	Permits user control of terminal read timeout with the `HPTIMEOUT` variable.	*MPE XL Commands Reference Manual* (32650-90003); *Command Interpreter Access and Variables Programmer's Guide* (32650-90011)
User-created prompt	Permits user to define own prompt with `HPPROMPT` variable.	*MPE XL Commands Reference Manual* (32650-90003); *Command Interpreter Access and Variables Programmer's Guide* (32650-90011)
Volume class	A category of disk storage that contains one or more related files; can reside on more than one volume in a volume set.	*Volume Management* (32650-90045)

New MPE XL Utilities

The general reference for MPE XL utilities is *MPE XL System Utilities Reference Manual* (32650-90081). Additional references are listed by utility.

Table 1-2. New MPE XL Utilities

UTILITY	FUNCTION	REFERENCE
CLKUTIL	Controls and displays time and date during system startup	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
DIRMIG	Utility used to migrate MPE V/E operating environment data to an MPE XL system.	*Migration Process Guide* (30367-90007)
ISL (Initial System Loader)	Provides user interface and command set to implement system load and startup utilities.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
NMMGR	Set of utilities used for configuring remote devices; SYSGEN references NMMGR to prevent conflicts between configurations for local and remote devices.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042); *NS3000/XL Network Manager's Reference Manual* (36920-90002)
NMMAINT	Displays version numbers of supplied Node Management Service (NMS) data communications software.	*NS3000/XL Network Manager's Reference Manual* (36920-90002)
OCA	Analyzes MPE V/E application software for problems which might arise when migrating them to MPE XL	*Migration Process Guide* (30367-90007)
SPFXFER	Transfers spoolfiles from the Classic HP3000 format to the MPE XL Native Mode Spooler format and back again.	*Native Mode Spooler Reference Manual* (32650-90166); *Introduction to MPE XL for MPE V/E System Administrators* (30367-90003)

New MPE XL Commands

The general reference for MPE XL commands is the *MPE XL Commands Reference Manual* (32650-90003)

Table 1-3. New MPE XL Commands

COMMAND	FUNCTION
CALC	Evaluates an expression.
CCXL	HP C/XL compiler. Available only when HP C/XL is installed.
CCXLGO	Compiles, links, and executes an HP C/XL program. Available only when HP C/XL is installed.
CCXLLK	Compiles and links an HP C/XL program. Available only when HP C/XL is installed.
CHGROUP	Changes the user's logon group.
COB74XL	Compiles a COBOL II/XL program (1974 ANSI).
COB74XLG	Compiles, links, and executes a COBOL II/XL program (1974 ANSI).
COB74XLK	Compiles and links a COBOL II/XL program (1974 ANSI).
COB85XL	Compiles a COBOL II/XL program (1985 ANSI).
COB85XLG	Compiles, links, and executes a COBOL II/XL program (1985 ANSI).
COB85XLK	Compiles and links a COBOL II/XL program (1985 ANSI).
COPY	Copies one disk file to another.
DELETEVAR	Deletes a specific MPE XL variable or set of variables.
DO	Reexecutes any command still retained in the command line history stack. Optionally, commands can be modified before reexecution.
ECHO	Echoes a message to the standard list device.
ENDWHILE	Ends a WHILE block.
ERRDUMP	Allows the user to dump either the process or the system error stack to whatever depth is specified.

Table 1-3. New MPE XL Commands (continued)

COMMAND	FUNCTION
EXIT	Terminates the Command Interpreter.
FTNXL	Compiles a FORTRAN 77/XL program.
FTNXLGO	Compiles, links, and executes a FORTRAN 77/XL program.
FTNXLLK	Compiles and links a FORTRAN 77/XL program.
INPUT	Permits interactive assignment to variables.
LINK	Merges relocatable object files to create an executable program file.
LISTREDO	Displays the contents of the command line history stack.
OCTCOMP	Translates MPE V/E compatible object code to MPE XL instructions.
OPTION	Now a command as well as a User Command header option. It modifies the environment of User Defined Commands and Command Files.
PASSWORD	Allows users to change passwords.
PASXL	Compiles an HP Pascal/XL program.
PASXLGO	Compiles, links, and executes an HP Pascal/XL program.
PASXLLK	Compiles and links an HP Pascal/XL program.
PRINT	Prints the contents of a file to the standard listing device or to a specified file.
RETURN	Exits a UDC or a Command File immediately.
SETVAR	Assigns a value to, or creates, an MPE XL variable.
SHOWVAR	Displays specific variables names and their values.
SYSGEN	Starts configuration dialog and/or installation tape creation. This takes the place of :SYSDUMP.
VSCLOSE	Instructs the system to close a volume set.

Table 1-3. New MPE XL Commands (continued)

COMMAND	FUNCTION
VSOPEN	Reopens a volume set that was closed with VSCLOSE.
VSRELEASE	Releases a volume set that was reserved with VSRESERVE.
VSRELEASESYS	Releases a volume set system-wide.
VSRESERVE	Requests the Operator to put a volume set on line and reserves the volume set for the user.
VSRESERVESYS	Reserves a volume set system-wide.
VSTORE	Verifies that tape files stored with :STORE are error-free.
WHILE	Controls job, UDC, or Command File execution flow with a looping structure.
XEQ	Executes a program or Command File and prevents MPE XL from executing a built-in command or UDC with the same name.

Modified or Replaced System Features

The following three tables list MPE V/E features that have been modified for use with MPE XL, or replaced by MPE XL features.

Modified or Replaced Capabilities

The following table lists modified or replaced capabilities.

Table 1-4. Modified or Replaced MPE V/E Capabilities

MPE XL MODIFICATION	REPLACES MPE V/E	REFERENCE
Backup of system directory no longer executed via system initiator but rather by :STORE with DIRECTORY option	SYSDUMP	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042); *Performing System Management Tasks* (32650-90004)
Command Interpreter (CI), new and changed capabilities, now a program	Command Interpreter	*MPE XL Commands Reference Manual* (32650-90003); *Command Interpreter Access and Variables Programmer's Guide* (32650-90011)
Enhanced global variables, 32-bit integers, string, and boolean	JCW variables	*MPE XL Commands Reference Manual* (32650-90003)
Extended command line	Command line	*MPE XL Commands Reference Manual* (32650-90003)
HELP subsystem now includes Command File and program file help	HELP subsystem	*MPE XL Commands Reference Manual* (32650-90003)
Input/Output (IO) paths now based on physical locations of devices	I/O Configuration Table entries based on arbitrary specifiers	*System Startup, Shutdown and Configuration Reference Manual* (32650-90042)
JSMAIN: processes that manage the system resources needed to execute jobs and sessions. Each job or session is assigned a JSMAIN when it is launched for processing	DEVREC	*Performing System Operation Tasks* (32650-90137); *Controlling System Activity Reference Manual* (32650-90155)
Nonsystem volume sets	Private volumes	*Volume Management* (32650-90045)
System volume set	System volumes	*Volume Management* (32650-90045)
UDCs, new and changed features provided	UDCs	*MPE XL Commands Reference Manual* (32650-90003)

Modified or Replaced Utilities

The general reference for MPE XL utilities is the *MPE XL System Utilities Reference Manual* (32650-90081). Additional references are listed by utility.

Table 1-5. Modified or Replaced MPE V/E Utilities

MPE XL UTILITY	FUNCTION	MPE V/E UTILITY	REFERENCE
ASOCTBL	Associates users with device classes.	ASOCTBL5	*Performing System Operation Tasks* (32650-90137); *Controlling System Activity Reference Manual* (32650-90155)
DEBUG	Display and manipulate contents of a disk.	DISKED5	*Using the MPE XL System Debugger* (32650-90013)
DISCFREE	Reports on available disk space.	FREE5	*Performing System Operation Tasks* (32650-90137)
DISCUTIL	Provides various disk operations. Used with VOLUTIL to save and recover files from a logically inoperative system.	SADUTIL	*Volume Management* (32650-90045)
INSTALL or INSTALL START	Boots from tape and invokes automatic system start.	RELOAD	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
INSTALL NOSTART	Boots from tape; prevents automatic system start.	RELOAD	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)

Table 1-5. Modified or Replaced MPE V/E Utilities (continued)

MPE XL UTILITY	FUNCTION	MPE V/E UTILITY	REFERENCE
`:LISTxxx` commands	New MPE XL commands list account, group, user, and file attributes; `VERSION.PUB.SYS` shows program file and library attributes.	LISTDIR5	*MPE XL Commands Reference Manual* (32650-90003)
LOGTOOL	Replaces three log file tools.	LISTLOG, MEMLOGAN, MEMTIMER	*User Logging* (32650-90027)
MSGUTIL	Displays error information when user enters an error code and date/time data when a time code is entered.	ERRUTIL	*MPE XL System Utilities Reference Manual* (32650-90081)
PATCH	Used to make simple changes to Compatibility Mode programs.	PATCH	*MPE XL System Utilities Reference Manual* (32650-90081)
RECOVER; VOLUTIL feature	Restores files from tape after a system crash.	RECOVER5	*Volume Management* (32650-90045)
SLPATCH	Used to display and modify a segmented library file.	SLPATCH	*MPE XL System Utilities Reference Manual* (32650-90081)
SORT/MERGE	Used to sort and merge data.	SORT/MERGE	*SORT-MERGE/XL General User's Guide* (32650-90082)

Table 1-5. Modified or Replaced MPE V/E Utilities (continued)

MPE XL UTILITY	FUNCTION	MPE V/E UTILITY	REFERENCE
START or START RECOVERY	Boots system from disk and restarts all normal system functions.	WARMSTART	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
START NORECOVERY	Boots system from disk; does not restart spoolfiles and jobs.	COOLSTART	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
SYSGEN	A command-driven utility used for creating and modifying system configuration files; also creates boot tape.	SYSDUMP	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
UPDATE or UPDATE NOCONFIG	Boots system from tape; loads configuration files from disk.	UPDATE	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
UPDATE CONFIG	Boots system from tape; replaces configuration files on disk with files from tape.	COLDSTART	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
VOLUTIL	Utility for creating and managing volume sets.	VINIT	*Volume Management* (32650-90045)

Modified Commands

The following list contains MPE V/E commands that have been modified with some combination of new keywords, parameters, and/or options. Essentially, these commands work much as they did in MPE V/E, and will be comfortably familiar to MPE XL users. The general reference for MPE XL commands is *MPE XL Commands Reference Manual* (32650-90003).

Table 1-6. MPE V/E Commands Modified For Use With MPE XL

COMMAND	ENHANCEMENT	FUNCTION
ALTACCT	Modified parameter.	Changes to the *volset* parameter.
ALTGROUP	Modified parameters.	Changes to the *volset* parameter.
DATA	Restricted use.	Available only in jobs.
DEBUG	New parameter.	User can now pass a command string to to the debugger.
EOD	Restricted use.	Available only in jobs.
HELLO	New parameters.	Controlling Command Interpreter.
HELP	Enhanced capacity.	Provides help on user commands and program files.
IF	Enhanced evaluation of expressions.	Controls execution with a conditional structure.
LISTACCT	New parameter; new display format.	Uses the LISTDIR format. Option to display password associated with account.
LISTF	New options.	Provides information formerly produced by LISTDIR5.
LISTFTEMP	New options.	New listing levels; -3 produces formatted listing of file label.

Table 1-6.
MPE V/E Commands Modified For Use With MPE XL (continued)

COMMAND	ENHANCEMENT	FUNCTION
LISTGROUP	New parameter; new display format.	Uses the LISTDIR format. Displays the password associated with the group.
LISTUSER	New parameter; new display format.	Uses the LISTDIR format. Displays the password associated with the user.
LOGOFF	New parameter.	Keeps one session/job logged on.
LOGON	Functionality modification with (CTRL) (A) LOGOFF.	(CTRL) (A) LOGOFF logs everyone off and disallows all logons. (CTRL) (A) LOGON reenables all logons.
NEWACCT	New parameters; changes to *volset* parameter.	Modification of *volset* parameter. Account specification.
NEWGROUP	New parameters; changes to *volset* parameter.	Modification of *volset* parameter. Account specification.
NEWUSER	New parameter.	Account specification.
PURGEACCT	New parameter.	Modification of *volset* parameter.
PURGEGROUP	New parameter.	Changes to *volset* parameter.
REDO	Functions expanded and enhanced; new parameters.	Allows editing and reexecution of any command still retained in the command line history stack.
REPORT	New parameter.	Changes to *volset* parameter.
RESETDUMP	Modified function.	Disarms the system debugger.
RESTORE	New parameters.	Volume sets. Enhanced wildcarding, directory, tape label and directory listing.
RUN	New and modified parameters.	Enhancements to security, mapping, stack control, and parameter passing.

Table 1-6.
MPE V/E Commands Modified For Use With MPE XL (continued)

COMMAND	ENHANCEMENT	FUNCTION
SET	New parameters.	Control terminal echoing, messages, and terminal speed.
	SET ECHO=OFF replaces ESC :.	Turns terminal echo OFF if ON.
	SET ECHO=ON replaces ESC :.	Turns terminal echo ON if OFF.
	SET MSG=OFF; SETMSG OFF still available.	Prevents display of TELL messages.
	SET MSG=ON; SETMSG ON still available.	Permits display of TELL messages.
	SET SPEED=*speed*; SPEED *oldspeed,newspeed* still available.	Sets terminal transmission speed (*baud rate*).
SETCATALOG	New parameters.	Permits the user to add UDCs or delete them from the catalog without having to recatalog the entire set of UDCs.
SETDUMP	Altered function; new parameter.	Arms system debugger. Accepts a command string.
SPEED	New parameter.	One parameter sets both input and output speeds of the terminal.
STARTSESS	New parameters.	Controlling Command Interpreter.
STORE	New parameters.	Volume sets. Enhanced wildcarding, concurrent/sequential backup, directory, file code ranges, file interleaving, multiple indirect files, multiple negative file sets.
TUNE	Included for compatibility.	Ignores *minclockcycle* (now a default value).

Replaced MPE V/E Commands

The commands listed in Table 1-7 replace former MPE V/E commands, but retain the functions of the commands they replace. The general reference for MPE XL commands is *MPE XL Commands Reference Manual* (32650-90003).

Table 1-7. Replaced MPE V/E Commands

NEW COMMAND	OLD COMMAND	PURPOSE	REFERENCE
VSRESERVE	MOUNT	Prevents specified volume set from being taken off line	*Volume Management* (32650-90045)
VSRELEASE	DISMOUNT	Releases volume set reserved with **VSRESERVE** command	*Volume Management* (32650-90045)
VSRESERVESYS	LMOUNT	System-wide command to prevent specified volume set from being taken off line	*Volume Management* (32650-90045)
VSRELEASESYS	LDISMOUNT	System-wide command to release volume set reserved with **VSRESERVESYS** command	*Volume Management* (32650-90045)

Unchanged System Features

The following two tables list utilities and commands that are the same in MPE V/E and MPE XL.

Unchanged System Utilities

The following table lists utilities that are the same in MPE V/E and MPE XL. The general reference for MPE XL utilities is *MPE XL System Utilities Reference Manual* (32650-90081). Additional references are listed by utility.

Table 1-8. Unchanged Utilities

UTILITY	FUNCTION	REFERENCE
DUMP or DUMP START	Copies system main memory and swapped data on disk to tape and reboots system from disk.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
DUMP NOSTART	Copies system main memory and swapped data on disk to tape; does not reboot system.	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
GENCAT	Creates and modifies message catalogs.	*Message Catalog Programmer's Guide* (32650-90021)
LANGINST	Allows the System Manager to configure native languages on the system.	*Localizing and Customizing System Information* (32650-90046)
MAKECAT	Creates and modifies message and help catalogs.	*Message Catalog Programmer's Guide* (32650-90021)
NLUTIL	Displays a list of the native languages available on the system.	*Localizing and Customizing System Information* (32650-90046)

Unchanged System Commands

The following table lists commands that are the same in MPE V/E and MPE XL. The general reference for MPE XL commands is *MPE XL Commands Reference Manual* (32650-90003)

Table 1-9.
Unchanged Commands Common to MPE V/E and MPE XL

ABORT	ABORTIO (=ABORTIO)	ABORTJOB (=ABORTJOB)
ACCEPT	ALLOCATE	ALLOW
ALTJOB	ALTLOG *	ALTSEC
ALTSPOOLFILE	ASSOCIATE	BASIC
BASICGO	BASICOMP	BASICPREP
BBASIC	BBASICGO	BBASICOMP
BBASICPREP	BREAKJOB	BUILD
BYE	CHANGELOG *	COBOLII
COBOLIIGO	COBOLIIPREP	COMMENT
CONSOLE	CONTINUE	DEALLOCATE
DELETESPOOLFILE	DISALLOW	DISASSOCIATE
DISMOUNT	DOWN	DOWNLOAD
EDITOR	ELSE	ENDIF
EOJ	FCOPY	FILE
FREERIN	GETLOG *	GETRIN
HEADOFF	HEADON	JOB
JOBFENCE	JOBPRI	JOBSECURITY
LDISMOUNT	LIMIT	LISTEQ
LISTLOG	LOG *	=LOGON
OPENQ	OUTFENCE	PASCAL
PASCALGO	PASCALPREP	PREP
PREPRUN	PURGE	RECALL (=RECALL)
REFUSE	RELEASE	RELLOG
RENAME	REPLY (=REPLY)	RESET
RESETACCT	RESUME	RESUMEJOB
RESUMELOG	RESUMESPOOL	RPG
RPGGO	RPGPREP	SAVE
SECURE	SEGMENTER	SETJCW
SETMSG	SHOWALLOW	SHOWCATALOG
SHOWCOM	SHOWDEV	SHOWIN
SHOWJCW	SHOWJOB	SHOWLOG
SHOWLOGSTATUS	SHOWME	SHOWOUT
SHOWQ	SHOWTIME	=SHUTDOWN
SHUTQ	SPL	SPLGO
SPOOLF	STARTSPOOL	STOPSPOOL
STREAM	STREAMS	SUSPENDSPOOL
SWITCHLOG	TELLOP	TELL
UP	VMOUNT	VSUSER
WARN	WELCOME	

*These commands do not support SDISC or CTAPE in the early releases.

Deleted or Unsupported System Features

The following three tables list capabilities, utilities, and commands that either have not been included in MPE XL, or are not supported.

Deleted or Unsupported System Capabilities

The following MPE V/E capabilities either are not included or are unsupported.

Table 1-10. Deleted or Unsupported MPE V/E Capabilities

FUNCTION	STATUS	REFERENCE
Batch processing for unspooled output, supporting "hot" printers	Deleted	*Controlling System Activity* (32650-90155); *Native Mode Spooler Reference Manual* (32650-90166)
Cartridge Tape	Deleted	none

Deleted or Unsupported System Utilities

The following MPE V/E capabilities either are not included or are unsupported.

Table 1-11. Deleted or Unsupported MPE V/E Utilities

FUNCTION	MPE V/E UTILITY	REFERENCE
Displays security data	LISTDIR5; replaced by several new commands	*Controlling System Activity Reference Manual* (32650-90155)
Stores DRT numbers	SYSDUMP; Device Reference Table eliminated	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Configure system during initiator stage	SYSDUMP; replaced by SYSGEN	*System Startup, Configuration and Shutdown Reference Manual* (32650-90042)
Manage spoolfiles	SPOOK/SPOOK5; replaced by Native Mode Spooler Subsystem on A.40.00 and later MPE XL versions	*Native Mode Spooler Reference Manual* (32650-90166); *Introduction to MPE XL for MPE V/E System Administrators* (30367-90003)

Unsupported Commands

Most of the commands in the following list are concerned with optimizing system performance. These functions now reside in the background of the MPE XL system. In effect, their functions have been been automated.

These commands are no longer supported. Their use may cause errors.

Table 1-12. Unsupported MPE V/E Commands

COMMAND	REPLACEMENT
APL	No replacement
()COMMAND LOGON	INFO= parameter of :HELLO with PARM=1.
ALTVSET	Function in VOLUTIL: refer to *Volume Management* (32560-90045)
CACHECONTROL	No Replacement
COBOL	COBOLII
COBOLGO	COBOLIIGO
COBOLPREP	COBOLIIPREP
DATA	Supported in jobs only; not available in sessions
DOWN	Supported for device management; not supported for volume sets
EOD	Supported in jobs only; not available in sessions
EOF	No replacement
FOREIGN	Not available

Table 1-12. Unsupported MPE V/E Commands (continued)

COMMAND	REPLACEMENT
FULLBACKUP	Not available
GIVE	No replacement
LISTVS	Function in VOLUTIL: refer to *Volume Management* (32560-00045)
MIODISABLE	No replacement
MIOENABLE	No replacement
MOFF	No replacement
MON	No replacement
MPLINE	No replacement
NEWVSET	Function in VOLUTIL: refer to *Volume Management* (32560-00045)
PARTBACKUP	Not available
PTAPE	No replacement
PURGEVSET	Function in VOLUTIL: refer to *Volume Management* (32560-00045)
QUANTUM	TUNE
SHOWCACHE	No replacement
SHOWCOM	No replacement
STARTCACHE	No replacement

Table 1-12. Unsupported MPE V/E Commands (continued)

COMMAND	REPLACEMENT
STOPCACHE	No replacement
SYSDUMP	SYSGEN
TAKE	No replacement
UP	Supported for device management; not supported for volume sets
VINIT	VOLUTIL commands: refer to *Volume Management* (32560-00045)

Helpful Information

Reference to certain levels of system administrator capabilities are referred to throughout this manual. The following information defines these capabilities.

System Administrator Capabilities Defined

Table 1-13. MPE XL System Administrator Capabilities

OP	System Supervisor. A user whose account and user name have been assigned OP capability. The System Supervisor is responsible for optimizing the performance of the system, and may execute commands like `:TUNE` and `:ALLOCATE` or log on with `;HIPRI`. OP commands should not be confused with Operator commands, which are explained below.
SM	System Manager. A user whose account and user name have been assigned SM capability. The System Manager creates the accounting structure and assigns appropriate capabilities and initial security provisions to each account. The System Manager also works with the Hewlett-Packard Applications Engineer (AE) and the System Supervisor to develop the MPE XL configuration which best suits the needs of the users at their installation.
AM	Account Manager. A user, selected by the System Manager, whose user name has been assigned AM capability. The Account Manager establishes groups and users within a particular account and assigns capabilities, passwords, and attributes to them.
CV	Allows assigned account and user to create mountable volume sets.
UV	Allows assigned account and user to use mountable volume sets.
PS	Programmatic Sessions. A user who is allowed to execute the `:STARTSESS` command and call to the `STARTSESS` and `ABORTSESS` intrinsics.
NM	Node Manager. A user, selected by the System Manager, who is assigned to manage the data communication subsystem at a specified location.
NA	Network Administrator. A user, selected by the System Manager, who has been assigned the capability to perform comprehensive diagnostics on an entire communications network. Executing the commands in this manual does not require NM or NA capability. They are included to present a complete listing of the user capability list. Refer to *NS3000/XL User/Programmer Reference* (36920-90001).

System Operator and System Operator Commands Defined

The System Operator is the user who is logged on to the System Console. The System Operator may have no capabilities other than those conferred by control of the System Console. The System Operator also may have any of the capabilities listed in Table 1-13, above.

System Operator commands are commands that, normally, can be executed only from the System Console. With the exception of commands preceded by the prompt "=" the use of System Operator commands can be assigned to other users with the `:ALLOW` and `:ASSOCIATE` commands.

2

System Startup

This chapter provides a brief overview of MPE XL system startup, and how it differs from MPE V/E. For more information, refer to *MPE XL System Startup, Configuration and Shutdown Reference Manual* (32650-90045).

Overview

MPE XL provides six system load and start utilities. Referring to Table 2-3, below, note that they are directly comparable to the six MPE V/E load and start utilities. The utilities and their options are described in Table 2-4, Table 2-5, and Table 2-6.

MPE XL also can access system hardware directly from the hard-wired System Console. The interface is the Access Port and attendant commands (see Table 2-1) which act directly on the system hardware.

MPE XL differs from MPE V/E by providing an interactive user interface through which you can, if you choose, manually control the selection of system startup options. This interface is called the Initial System Loader utility (ISL). The ISL utility is one of several programs called when a hard or soft system reset is executed.

Features

System startup features new to MPE XL are:

- Access Port (AP)

- Access Port commands

- Autoboot facility

- Autoexecute file

- Initial System Hardware self test

- Initial System Loader (ISL)

- Input/output path name formats

- ISL commands and utilities

Initial Startup Procedures

The first step in starting or restarting MPE XL is the execution of a hard or soft system reset. A hard reset executes a series of hardware diagnostics before resetting the system, and resets system memory. A soft reset does not reset system memory.

Executing Hard and Soft System Resets

You can execute a hard reset by pressing the RESET button on the control panel of the CPU. You also can execute either a hard or soft reset from the System Console, but the system must first be placed in Control Mode. The system also will reset automatically when powered up.

Placing the System in Control Mode

The system is placed in Control Mode when you enter (CTRL) (B) at the keyboard of the System Console. In Control Mode, the System Console communicates with the system hardware directly through the Console's own hardware port (called the Access Port).

Controlling System Hardware Via the Access Port

The System Operator (also referred to as the Console Operator) controls the system hardware through the Access Port, using a set of Access Port Commands. This command set (described in Table 2-1) includes the hard (RS) and soft (TC) reset commands.

Summary of MPE XL System Startup Procedures

The system can be started automatically, or with operator intervention (manual startup). A manual startup lets you modify boot paths, select a different startup utility, and run certain utilities from the Initial System Loader (ISL).

Automatic System Startup

In brief, the automatic system startup sequence looks like this:

With system power switched on, either

- Execute a hard system reset by pressing the RESET button on the front
  panel of the system, or enter [CTRL] [B] and RS at the hard-wired System
  Console.

    OR

- Execute a soft system reset by entering [CTRL] [B] and TC at the hard-wired
  System Console.

- ROM-based Processor Dependent Code (PDC) and I/O Dependent Code
  (IODC) are loaded into main memory during initialization, and read and
  initialize the boot paths.

- The operating system automatically loads and starts, and the system comes
  up ready for use if the following conditions are true:

  - The AUTOBOOT flag is on,

  - The AUTOEXECUTE file is installed,

  - The System Operator does not respond to an override prompt.

System Startup With Operator Intervention

In brief, the manual system startup sequence looks like this:

With system power switched on, either

- Execute a hard system reset by pressing the RESET button on the control
  panel of the system, or enter [CTRL] [B] and RS at the hard-wired System
  Console.

    OR

- Execute a soft system reset by entering [CTRL] [B] and TC at the hard wired
  System Console.

- ROM-based Processor Dependent Code (PDC) and I/O Dependent Code
  (IODC) are loaded into main memory during initialization, and read and
  initialize the boot paths.

- The boot sequence pauses or stops to permit boot path selection or modification, then stops again at the Initial System Loader (`ISL>`) prompt, if the following conditions are true:

  □ The AUTOBOOT flag is OFF,

    OR

  □ The AUTOBOOT flag is ON but no AUTOEXECUTE file is installed,

    OR

  □ The AUTOBOOT flag is ON and an AUTOEXECUTE file is installed, but the System Operator responds to the override prompt by pressing any key within 10 seconds.

Following a manual boot sequence, the System Operator starts the system by entering (at the `ISL>` prompt) one of the start utilities listed in Table 2-3.

Regardless of the status of the AUTOBOOT flag, if an AUTOEXECUTE file does not exist, the PDC, IODC, and Initial Program Loader (IPL) boot the system and load the Initial System Loader (ISL). At this point, the System Operator has manual control over the startup procedure and starts the system by entering (at the `ISL>` prompt) one of the start utilities described in Table 2-3 and Table 2-4.

System Control via System Console and Access Port (AP)

The System Console communicates with the host system hardware through the Access Port (AP), an interface card located in the Channel I/O (CIB) section of the system card cage. The System Console is cabled to the AP card, letting you enter commands which directly affect the hardware. Table 2-1 outlines the AP commands and their functions.

Table 2-1. Access Port Commands

COMMAND	ACCESS PORT FUNCTION
CA	Configure system remote support modem.
CO	Enter Console Mode (return from Control Mode).
DI	Disconnect line to remote Console.
DR	Disable access by a remote Console.
DS	Disable display of system status line during Console Mode.
ER	Enable access by a remote Console terminal.
ES	Enable display of system status line during Console Mode.
HE	Display Help Screen.
RS	Stop all processing, initiate SPU self test, load software from load device if enabled for autoboot. (Hard reset.)
SE	Transfer remote terminal from Console Mode to Session Mode.
TA	Initiate Access Port self test.
TC	Transfer processor execution to operating system specific routine. (Transfer of Control soft reset)
TE	Send messages between local and remote Consoles.

Access the System Hardware

To access the system hardware through the Access Port (AP):

1. Enter:

   :CTRL B at the System Console.

   This places the Console in Control Mode. Note that the Control Mode prompt (CM>) is displayed.

2. Enter the desired two character AP command, followed by Return, at the prompt.

3. Return the Console to Console Mode. Enter:

   CM> CO Return

Note	Some commands, such as RS and TC, do not require entry of the CO command to return the Console to Console Mode. The system automatically returns to Console Mode after these commands have completed their functions.

Reset and Boot the System

There are three ways to reset and boot up the system:

- Power up the system by switching it on.

- Reset the system from the front panel by pressing the RESET button.

- Perform a hard or soft reset from the hardwired System Console or enabled remote Console.

Refer to *System Startup, Shutdown and Configuration Reference Manual* (32650-90042) for information on the characteristics of each type of reset.

System Self Test

The system undergoes a self test upon a hard reset. In Series 930 systems, the self test checks:

- Central Processing Unit (CPU)

- Instruction Unit

- Execution Unit

- Floating point Coprocessor

- Register File

- Translation Look-aside Buffer (TLB)

- Cache boards

- Memory controllers and arrays

- All I/O cards that have a built-in, executable test routine.

The self test also initializes the Channel Adapter (CA) and Device Adapter (DA) boards. The first memory controller is initialized on a hard reset, but not on a soft reset.

In Series 950 systems, the self test verifies that enough hardware is functioning to load and execute extended diagnostics from the Initial Program Loader (IPL). This involves testing the processor, first memory controller, the console, boot devices, and I/O paths to the Console and boot devices. If the initial test is successful, the code performs a full test of Nonvolatile Memory (NVM), stable storage, the Central Processor Unit (CPU), the System Interface Unit (SIU), the cache, and the Translation Look-aside Buffer (TLB).

Defining Input/Output (I/O) Path Names

An I/O path is the physical chain that connects external hardware, such as terminals, disk drives, and printers to the host system. The I/O path name identifies the various components in the chain, and is the hardware address of the connected device. In MPE V/E, I/O paths were defined (arbitrarily relative to the hardware) in an I/O Configuration Table. In MPE XL, I/O paths are defined by the hardware itself.

I/O paths are constructed "top down" from where a device is physically attached to the system. In the Series 930, the chain consists of the Mid-Bus (CTB), Channel Adapter (CA), Channel Input/Output Bus (CIO), Device Adapter (DA), and the device itself.

The components that are identified in the path name are: the Channel Adapter (CA) module number, the Device Adapter (DA) slot number, and a device address.

In the Series 950, the path is similar, except the 950 provides an additional, high speed, bus, called the System Main Bus. Bus Converters form the interface between the System Main Bus and the Mid-Bus, Channel Adapters, and Channel I/O Buses. This results in a difference in the I/O path name format, as illustrated below.

Construct an I/O Path Name

The I/O path name in the Series 930 consists of:

■ CA Module Number. This is the address, on the Mid-Bus, of a Channel Adapter (CA). The CA Module Number is the number of the card slot on the Mid-Bus Bus in which the CA is inserted, multiplied by 4. The number is either 8, 16, or 24.

■ DA Slot Number. The first CIO Bus contains 14 Device Adapter (DA) slots, numbered 0-13. The first eight of these (#0 through #7) are used for Device Adapters. The 13th and 14th slots (#12 and #13) are used for the Access Port and CIO Buffer card. The 9th through 12th slots are not supported at this time.

An additional CIO is located in an extender, and a third, containing 8 slots, can be installed. The I/O Bay can contain a total of 16 card slots. The second and third CIO cards contain eight slots each.

■ Device Address Number. This is the HP-IB address or port number of a device.

The format of a Series 930 I/O path name is:

    CA Module Number.DA Slot Number.Device Address

For example, a typical I/O path number for a disk device in a Series 930 might be:

    8.0.2

The first number, 8, specifies the second Mid-Bus card slot. The second number, 0, specifies the first DA slot in the CIO Bus. The third number, 2, is the number that was assigned to the disk device when it was installed (HP-IB address).

A 950 Series I/O path is specified as follows:

```
BUS CONV/CA Module Number.DA Slot Number.Device Address
```

The Bus Converter (`BUS CONV`) specifies the number, either 2 or 6, of the interface slot which contains the adapter boards for the SMB and the Central Bus. The CA module specifies the number of the interface slot that contain the adapter boards for the Central Bus and the CIO Bus. The CA module number is assigned a numerical value of 4, 8, 16, 20, or 24. DA CIO section slot number range from 0 to 4. The address of the device itself depends on the adapter. In addition, data communications devices may have an additional logical or virtual device number in the I/O path specification.

For example, a typical I/O path number for a disk device in Series 950 might be:

```
2/4.0.2
```

Default I/O Paths and Logical Device (LDEV) Numbers

The default paths for a basic MPE XL system reside in hardware. That means that the hardware addresses for the System Console, tape drive, and system disk are always available, so the system can be started even if the configuration is bad.

When an MPE XL system is powered up or reset, two hardware routines (Processor Dependent Code (PDC), and I/O Dependent Code (IODC)) read the hardware resident paths and initialize the I/O paths used for booting or rebooting the system. Paths that define the addresses of devices that contain system boot files are referred to as boot paths.

These boot paths consist of the primary boot path (for booting from disk resident software), the alternate boot path (for booting from a boot tape), and the console boot path, (for specifying an autoboot without operator intervention).

The default boot paths for a Series 925 computer are:

- Console Boot Path: `4.2.0.0.0.0.0`
- Primary Boot Path: `4.1.0.0.0.0.0`
- Alternate Boot Path: `4.5.0.0.0.0.0`

Note   The extra zeros on the default I/O paths are reserved for future use.

The default boot paths for a Series 930 computer are:

- Console Boot Path: `8.1.0.0.0.0.0`
- Primary Boot Path: `8.0.0.0.0.0.0`
- Alternate Boot Path: `16.3.0.0.0.0.0`

The default boot paths for a Series 950 computer are:

- Console Boot Path: `2/4.1.0.0.0.0.0`
- Primary Boot Path: `2/4.0.0.0.0.0.0`
- Alternate Boot Path: `6/4.3.0.0.0.0.0`

For both Series 930 and Series 950 systems, each configured boot path device has a preassigned ldev number. The disk drive on which the System Master Volume is mounted will be defined as ldev 1. The System Console will be defined as ldev 20.

For more information on configuring I/O paths and LDEV numbers, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042)

Features of The Initial System Loader (ISL)

ISL provides a convenient user interface for loading the utilities used to create, start, update, and dump the MPE XL operating system. ISL provides its own online help for ISL commands. It also provides the ability to load certain MPE XL utilities from the ISL prompt, These include DISCUTIL, IOMAP, SADPATCH, CLKUTIL, and SAT. These utilities are used mainly for administering and maintaining the system. For a complete list of these utilities, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90045). For more information on each utility, refer to *MPE XL System Utilities Reference Manual* (32650-90081).

When loaded, ISL displays its revision number (the number and date may differ from the following example) and prompts for input:

```
ISL Revision 2634  August, 1986


ISL>
```

On tape boots, ISL is loaded directly by the Processor Dependent Code (PDC). ISL reads a directory of files called the Logical Interface Format (LIF) directory from tape and uses this directory to find other files on the tapes.

On disk boots, the PDC and I/O Dependent Code (IODC) routines boot the utility Main Memory Save (MMSAVE), which in turn boots ISL:

- PDC and IODC read the first record or sector of the boot device, which is the LIF label. The LIF label contains a pointer to the MMSAVE boot image.

- PDC reads and launches MMSAVE.

- MMSAVE writes 8 or more megabytes of main memory to the `DUMPAREA` file, whose address is found in the LIF Directory. This allows memory space for the ISL and DUMP utilities to be loaded.

- MMSAVE loads ISL and transfers control to it.

- ISL then uses the LIF Label to find the LIF Directory and reads it. ISL uses the directory to find other files that it needs.

ISL Commands

ISL commands provide information on, or modify, the configurations for system startup parameters, nonvolatile memory, and stable storage. These commands are described in Table 2-2, below. Do not confuse the ISL commands with the system load and start utilities that are run at the ISL prompt, and described in Table 2-4.

Table 2-2. ISL Commands

COMMAND	FUNCTION
HELP	Lists ISL commands and definitions, along with the ISL utilities available through the selected boot media.
?	The abbreviated command for the HELP facility. Performs the same function as HELP.
LISTF	Lists the ISL utilities available through the selected boot media.
LS	The abbreviated command for LISTF. Performs the same function as LISTF.
AUTOBOOT	Sets or clears the autoboot flag in stable storage.
AUTOSEARCH	Sets or clears the autosearch flag in stable storage.
PRIMPATH	Modifies the primary boot path in stable storage.
ALTPATH	Modifies the alternate boot path in stable storage.
CONSPATH	Modifies the system Console path in stable storage.
DISPLAY	Displays the current paths in stable storage for the primary and alternate boot paths, the Console path, and the status of the autoboot and autosearch flags.
READNVM	Displays the contents of one word (four bytes) of nonvolatile memory (NVM) in standard hexadecimal format. You may specify the word address in either decimal or hexadecimal.
READSS	Displays the contents of one word (four bytes) of stable storage. You may specify the word address in either decimal or hexadecimal. The display will be in standard hexadecimal format.

For information on using these commands, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042)

Features of The ISL Utilities

MPE XL uses the ISL utilities and their options to load the system from tape, start up the system from disk, or dump portions of the memory for diagnostic purposes. The current boot utilities are START, UPDATE, INSTALL and DUMP.

Table 2-3 provides a general comparison of MPE V/E versus MPE XL startup procedures.

Table 2-3.
Comparison: MPE V/E vs MPE XL Load and Start Utilities

MPE V/E	MPE XL
RELOAD	INSTALL
UPDATE	UPDATE NOCONFIG
COLDSTART	UPDATE CONFIG
COOLSTART	START NORECOVERY
WARMSTART	START RECOVERY
DUMP	DUMP

Note   MPE XL does not use the RELOAD, COLDSTART, COOLSTART, and WARMSTART load and startup utility commands. While the command for UPDATE is the same, it is specified through a command-driven software interface and provides a variety of new options. Also, MPE XL does not allow system reconfiguration while booting up.

The following table summarizes the different attributes of the various MPE XL system startup utilities. The listings include the source from which the system is booted, whether or not configuration changes are allowed, whether or not spoolfiles are recovered and permanent user files retained, and the source (system load tape or system disk) of system files, configuration, directory structure, and account structure. Table 2-5 provides a more detailed look at each utility.

Table 2-4. Summary of System Startup Functions and Tasks

Startup Utility Task	Boots From	Allows Config Change?	Recover Spoolfiles?	Keeps User Files	Information Sources
INSTALL Initial System Installation	TAPE	Yes	No	No	TAPE: All; SYSTEM DISK: None
UPDATE NOCONFIG Update from tape. Config from disk.	TAPE	No	No	Yes	TAPE: System Files; Boot Files; SYSTEM DISK: Con-figuration, Directory, Account Structure
UPDATE CONFIG Update from tape. Config from tape.	TAPE	Yes	No	Yes	TAPE: System Files, Con-figuration; Boot Files; SYSTEM DISK: Directory, Account Structure
START NO-RECOVERY Boot from disk with new config from disk.	SYSTEM DISK	Yes	No	Yes	TAPE: None; SYSTEM DISK: All
START RECOVERY Start from disk; no changes to system.	SYSTEM DISK	No	Yes	Yes	TAPE: None; SYSTEM DISK: All

Table 2-5. Features of the System Load and Start Utilities

UTILITY	FUNCTION
DUMP	Equivalent to MPE V/E DUMP. Copies the current system main memory and secondary (disk) storage to tape. Usually executed when an analysis of memory is desired. May be executed with a **START** option to automatically reboot the system on completion of the DUMP.
INSTALL or INSTALL START	Equivalent to MPE V/E RELOAD. Boots from tape and instructs system to reboot when it is done. INSTALL initializes ldev 1, rebuilds the OS structure, and completely replaces the contents of the disk boot files with those on the tape, including base operating system files and system configuration files. INSTALL initializes ldev 1 as a member of the system volume set. After running INSTALL and START, use the VOLUTIL utility to add additional members of the system volume set, and nonsystem volumes (Refer to Chapter 5 of this manual, or *Volume Management* (32650-90045).
INSTALL NOSTART	Boots from tape; prevents automatic execution of START.
START or START RECOVERY Used when configuration unchanged.	Equivalent to MPE V/E WARMSTART. Boots system from disk and restarts all normal system functions. Recovers jobs and spoolfiles; Do not use if system configuration has been changed.
START or START NORECOVERY Used when configuration is changed. In such case, START forces NORECOVERY	Equivalent to MPE V/E COOLSTART. Boots system from disk; does not recover spoolfiles and jobs.
UPDATE or UPDATE NOCONFIG	Equivalent to MPE V/E UPDATE. Boots system from tape; loads configuration files from disk. Does not recover spoolfiles.
UPDATE CONFIG	Equivalent to MPE V/E COLDSTART. Boots system from tape; replaces configuration files on disk with those from tape. Does not recover spoolfiles.

Note	Before using INSTALL to install a new factory supplied UPDATE tape, copy all system directory files, subsystem files, and user files to a STORE tape, using MPE XL's STORE/RESTORE facility. After completion of the installation, use the same facility to restore the files.

ISL Utility Options

The currently available commands and options are:

Table 2-6. ISL Load and Start Utility Options

OPTIONS	FUNCTIONS

`CONFIG`
`NOCONFIG`
 	
Default: `NOCONFIG`
	During an UPDATE, if `CONFIG` is specified, the `CONFIG.SYS` group on tape replaces the one on disk. If the option is not specified, the default is `NOCONFIG`.

`GROUP="cgn"` Default: `GROUP=CONFIG`	When performing an UPDATE, INSTALL, or DUMP, and `START` is specified or defaulted, `"cgn"` is the source of con- figuration information. When a `START` command is entered (or defaulted), the group specified for it overrides the default group previously specified. Since configuration groups reside only in the SYS account, do not specify the account name (Specify `CONFIG`, not `CONFIG.SYS`).
`LOGON="acct"` Default: `LOGON=OPERATOR.SYS`	The logon *acct* has the syntax: $user[/password].account[[/password,group[/password]]]$ When the system is booted, the account specified after `LOGON=` is used to initiate a session. If `SINGLE-USER` (see `SINGLE-USER`, `MULTI-USER` option, below) is specified, the account specified in `LOGON` is used as the "single-user." If `LOGON` is not entered in the command line, the logon defaults to `OPERATOR.SYS`.

Table 2-6. ISL Load and Start Utility Options (continued)

OPTIONS	FUNCTIONS
`RECOVERY`	During a START or automatic start after a DUMP, this option
`NORECOVERY`	indicates whether or not restartable jobs and spoolfiles
	are restarted. If `RECOVERY` is specified, jobs and spoolfiles
	are restarted. On DUMP, this option is only in effect if
	`START` is specified or defaulted. If this option is not
	specified, the default is `RECOVERY`.
	On INSTALL or UPDATE, jobs and spool files cannot be
Default: Depends on previous	restarted. Thus, the next `START` defaults to `NORECOVERY`.
command	Do not use `RECOVERY` if the NMMGR configuration has
	been changed. Instead, use `NORECOVERY`, which makes the
	change take effect.
`SINGLE-DISC`	This option determines whether or not the system initiates
`MULTI-DISC`	with all the volumes mounted (`MULTI-DISC`) or with only
	the system master volume mounted (`SINGLE-DISC`). If
(Primarily Used for Diagnostics)	neither is specified, `MULTI-DISC` is the default.
	`SINGLE-DISC` may be specified only if `SINGLE-USER` has
	also been selected. The system issues a warning message, if
	the `SINGLE-DISC` option is selected with `MULTI-USER`, and
	changes the `SINGLE-DISC` option to `MULTI-DISC`. If the
Default: MULTI-DISC	START parameter is not specified or defaulted on an INSTALL, UPDATE, or DUMP, the SINGLE-DISC
	parameter is ignored.

Table 2-6. ISL Load and Start Utility Options (continued)

OPTIONS	FUNCTIONS
SINGLE-USER	This boot option limits the system to a single-user capability,
MULTI-USER	
	or permits use by multiple users, with all
	configured terminals available. MULTI-USER is the default.
(Primarily Used for Diagnostics)	Single-user mode is used primarily for diagnostic support.
	For the INSTALL, UPDATE, and DUMP utilities, the
Default: MULTI-USER	SINGLE-USER/MULTI-USER option is available only if
	START is specified or defaulted as an option.
START	This option instructs UPDATE, INSTALL, or DUMP
NOSTART	whether or not to autoboot after the utility has
	completed its job. The system autoboots if START is
Default: START	specified. If neither START nor NOSTART is specified,
	START is the default.
SUBSET=	During a DUMP, this option specifies whether the
"All"	contents of main memory, or both main memory and
"Memory"	secondary storage, is dumped to tape for later analysis. If
	the subset is not specified, it defaults to "ALL" (both main
Default: SUBSET=ALL	memory and secondary storage).
SYSSTART	On an INSTALL, UPDATE, START, or DUMP, this
NOSYSSTART	option determines whether the system start up
	(SYSSTART) file is used during the current boot. If neither
	is specified, SYSSTART (use the system start up file) is the
2-24 System Startup	default. If the START parameter is not specified **DRAFT**
Default: SYSSTART	defaulted on an INSTALL, UPDA**2/14/100**UM**09:37**
	the
	SYSSTART/NOSYSSTART parameter is ignored.

Example Start Procedure

This example illustrates one of several possible Series 930 boot sequences. It shows the system booted from the Access Port with the autoboot flag enabled. The same type of sequence executed on the Series 950 differs only in the format of the boot path names.

To initiate the boot sequence, enter CTRL B to place the System Console in Control Mode. This displays the Control Mode prompt (CM>).

```
:CTRL B

CM>RS
```

```
Execution of this command irrecoverably halts all system
processing and I/O activity and restarts the computer system.

Type Y to confirm your intention to restart the system (Y/N): Ⓨ
SPU hardware was successfully reset.

Processor Dependent Code (PDC) revision 3

Console path = 8.1.0.0.0.0.0
Primary boot path = 8.0.0.0.0.0.0
Alternate boot path = 16.3.0.0.0.0.0

Autoboot from primary boot path enabled.
To override, press any key within 10 seconds.

10 seconds expired.

Booting.

Console IO Dependent Code (IODC) revision 2
Boot IO Dependent Code (IODC) revision 2

Booted.
MMSAVE Version n.nn
DUMPAREA found, save main memory to disk
ISL loaded

ISL Revision nnnn  October, 1987

ISL booting START AUTO
.
.
```

Example 2-1. Example Start Procedure

Additional Information

For additional information on MPE XL system starts, refer to:

- *System Startup, Shutdown and Configuration Reference Manual* (32650-90042)

3

System Configuration

This chapter provides an overview of the new MPE XL system configuration utility SYSGEN (SYStem GENerator). SYSGEN replaces the MPE V/E system configuration utility, SYSDUMP. The material describes the features and capabilities of SYSGEN, and how it differs from SYSDUMP.

Overview

SYSGEN provides a powerful set of tools for creating MPE XL system configuration groups. A configuration group consists of several files, each containing a set of configuration data created in one of four SYSGEN subsystems called "configurators." The four configurators are IO, LOG, MISC, and SYSFILE. The configurators are described in Table 3-2, below.

The configuration group name for which the system looks when loading system files defaults to the group `CONFIG.SYS`. SYSGEN makes it easy to modify the existing `CONFIG.SYS` group, create and store duplicate copies of the `CONFIG.SYS` group (under different group names), and create, store, and use different versions of configuration groups (also under different group names).

Features

SYSGEN lets you add, replace, and delete program files, boot files, and system libraries on a system load (boot) tape. SYSGEN can be used to create a whole series of boot tapes that will each load and start a different, fully configured MPE XL system. These functions are executed through the SYSFILE Configurator.

The IO Configurator lets you add, modify, list, and delete device configuration information. The LOG Configurator controls user logging files, and is used to turn logging on and off. The MISC Configurator lets you set various system values and limits that control access to system resources.

System Manager (SM) capability is required to exercise these functions. System Supervisor capability (OP) is required to view system configuration data.

SYSGEN differs from SYSDUMP in that it does not support system configuration during system initialization. This new feature offers greater flexibility and convenience for developing system configurations.

How MPE XL Stores Configuration Data

MPE XL stores configuration data in several files which, together, are stored in a group. The primary group, known as the basegroup, is by default named CONFIG.SYS.

When running SYSGEN, if the parameter *basegroup* is specified, SYSGEN looks for a group name in the account .SYS. If *basegroup* is not specified, the default is the group used to bring up the system (usually CONFIG.SYS).

The files in the CONFIG.SYS group are stored on the system disk, and also may be stored on a system backup tape or a system load tape. Unless instructed to look for a different .SYS group name, the system looks for the CONFIG.SYS group during any boot process that specifies a boot from disk.

MPE XL also can store configuration data in other groups in the .SYS account. If the group does not exist, SYSGEN will create it.

This ability to store configuration files in different groups makes it possible to create and store, either on disk or tape, multiple copies of your current configuration. It also lets you create and store as many different versions of configurations as space allows.

For example, you can modify an existing basegroup to create a different system configuration. You can store the new configuration on disk, under its own name, by specifying its name as the *newgroup* parameter of the SYSGEN KEEP command.

How SYSGEN Works

The SYSGEN utility is used to create, modify and operate on MPE XL configuration groups. It does so through several sets, or levels, of commands.

The first level of SYSGEN commands contains four commands that access four subsystems, known as "configurators." These are the IO, LOG, MISC, and SYSFILE configurators.

The first level also contains a set of global commands. The global commands are used to change or display configurations, save changes, clear changes, generate system load tapes, and set and display global parameters.

All of the global commands operate at the first level, that is, at the SYSGEN> prompt. Several commands (CLEAR, EXIT, HELP, OCLOSE, and REDO) also

operate at the second level of commands, that is, from within the four configurators.

In addition to the global commands named above, each configurator contains a set of commands (second level) which are used to create and modify the data in the files in a configuration group.

The SYSGEN first level and second level commands and their functions are described in Table 3-1. Although the commands that access the configurator subsystems are first level commands, they are not included in Table 3-1. The configurator subsystems, their functions, and a command used only at the subsystem level (`HOLD`), are described in Table 3-2.

Entering the SYSGEN Utility

The SYSGEN utility is accessed by entering the following command at the MPE XL system prompt:

```
:SYSGEN
```

The full syntax of the SYSGEN command is:

```
:SYSGEN [basegroup][,newgroup][,inputfile][,outputfile]
```

   or

```
:RUN SYSGEN.PUB.SYS;INFO="[basegroup][,newgroup]
                               [,inputfile][,outputfile]"
```

The parameter `INFO=` can be used (optionally) when specifying the basegroup, newgroup, input, and output file options.

After entering the `:SYSGEN` command, the following prompt is displayed:

```
SYSGEN>
```

SYSGEN Utility First Level Command Syntax

After entering the SYSGEN utility, you can enter various configurators and build configuration data files, and you can execute the first and second level commands described in Table 3-1 and Table 3-2. The syntax of the SYSGEN utility first level commands is displayed after you enter the `:SYSGEN` command at the MPE XL prompt.

```
SYSGEN version B.06.00 : catalog version B.06.00 THU, SEP 17, 1987,  3:01 PM
Copyright 1987 Hewlett-Packard Co.  All Rights Reserved

        **warning** no NMCONFIG file in this configuration.
        **warning** NMCONFIG.PUB.SYSTEM is now the NMCONFIG file

 ** First level command **

  io                 log (lo)      misc (mi)      sysfile (sy)


  basegroup (ba)    keep(ke)      permyes (pe)   show (sh)
  tape (ta)


  clear (cl)(c)     exit (ex)(e)  help (he)(h)   oclose (oc)
  redo

sysgen>
```

Example 3-1. SYSGEN First Level Commands

The Difference Between SYSGEN and :SYSGEN

SYSGEN is the name of the MPE XL system configuration utility. :SYSGEN is
the MPE XL command you use to run the SYSGEN utility. A possible source
of confusion between the two is the use by each of the term "basegroup."

basegroup is a parameter that is used with the MPE XL command :SYSGEN, to
specify the configuration on which the SYSGEN utility is to act. BASEGROUP is
a SYSGEN Utility command. It does, within SYSGEN, what *basegroup* does
when used with :SYSGEN. A configuration group specified by BASEGROUP will
replace the one specified by *basegroup*.

For example if, at the MPE XL prompt (:), you enter:

```
SYSGEN NUFIG
```

the system will load the SYSGEN utility and act on the configuration group `NUFIG.SYS`.

Then if, at the prompt `SYSGEN>`, you enter:

```
SYSGEN>BASEGROUP OLDFIG
```

the system will act on the group `OLDFIG.SYS` instead.

The SYSGEN Utility Commands

Table 3-1 and Table 3-2 describe the first-level and second-level SYSGEN commands. Table 3-1 describes all SYSGEN commands except those used to access the configurators. Table 3-2 describes the configurator access commands and the `HOLD` command.

Table 3-1. The SYSGEN Commands

COMMAND	FUNCTION
BASEGROUP	BASEGROUP is both a parameter of the :SYSGEN command and a first level command in the SYSGEN utility. In both cases, it specifies the default configuration group CONFIG.SYS unless otherwise specified.
CLEAR	Operates at both first and second levels. When used as a first level command, CLEAR deletes all changes made in all configurators, providing the changes have been temporarily saved with a HOLD command, but not saved with a KEEP command. The HOLD command is described in Table 3-2.
EXIT	Operates at both first and second levels. Used to return to the SYSGEN> prompt from a configurator, or to the MPE XL prompt from SYSGEN.
HELP	Operates at both first and second levels. Displays command HELP at either level, and parameter help for a specified command.
KEEP	Operates only at the first level. Saves changes made to configuration. Can save changes made in one group to a different group using the parameter *groupname*, which will override *newgroup*. The configuration group name under which the modified configurator file is saved depends on the group name specified when SYSGEN is entered, and/or when the KEEP command is executed. If no group name is specified at either time, the group modified is the basegroup. If basegroup is not specified, it is the current system configuration. In such case, you will have to reboot the system to make this new configuration effective. For more information, see the examples at the end of this chapter.

Table 3-1. The SYSGEN Commands (continued)

COMMAND	FUNCTION
OCLOSE	Operates at both first and second levels. When entered following a command to list offline, OCLOSE sends output to list device (a printer, for example) immediately. When OCLOSE is not used, a command to list offline does not send output to the list device until you exit SYSGEN.
PERMYES	First level command only. Determines whether or not a potentially "dangerous" command will execute without question. For example, if PERMYES is ON, entering an EXIT command before a KEEP command will require your permission before the EXIT command will execute. The default for PERMYES is ON.
REDO	Operates at both first and second levels. This command recalls and lets you edit the last used command.
SHOW	First level command only. Displays base and new configuration groups, version of SYSGEN, configurator modifications, and status of PERMYES.
TAPE	First level command. Creates a boot tape based on a specified configuration group. Regardless of the original group name specified, the group on the boot tape will always be named CONFIG.SYS.

Table 3-2. The SYSGEN Configurators

CONFIGURATOR	FUNCTION
IO	Used to add, modify, display, and delete I/O paths (device hardware addresses), devices, and device classes. IO is used to make changes in the configuration file that reflect physical modifications to system equipment.
LOG	Used to control user log files and enable and disable system logging.
MISC	Used to control job and session, process, program, spooling, stack, global resource identification numbers (RINs), and other system limits and values. Essentially, MISC is used to control access to system resources.
SYSFILE	Used to add, modify, display, and delete system boot files, system programs and libraries, and the system message catalog. SYSFILE is used to make changes in the system configuration that reflect changes in the system software.
HOLD	HOLD is not a configurator, but is included in this table because it is the only global command that operates only on the second level. HOLD temporarily saves changes made to a configuration file. You execute HOLD before you exit the configurator and return to the first command level (the `SYSGEN>` prompt). You may enter other configurators and make changes, HOLD them, and return to the first level. You now have several choices of action. You can exit from the SYSGEN utility, in which cases all changes will be lost. You can enter the command CLEAR, which will delete all changes but leave you in SYSGEN. Or you can enter the command KEEP, which will save all of your changes.

Entering a Configurator Subsystem

To access any of the four configurator subsystems, enter the appropriate command at the `SYSGEN>` prompt. For example, to access the IO Configurator, enter:

```
SYSGEN>IO
```

The prompt `IO>` is displayed.

How the SYSGEN Configurators Work

The configurators operate on the information contained in the current basegroup.

The various configurator files contain information on device classes, I/O paths, ldev numbers, current volume names, and similar data. Even after changes are made in one or more configurator files, the current configuration remains valid until the new information is saved using the `SYSGEN KEEP` command, and until the system is rebooted using the new configuration.

A Detailed Look at the Configurator Commands

Each of the four configurators has its own set of commands and options, along with an online help facility. Configuration commands can be classified as either command only, or command with parameter(s). Configuration commands with parameters can be specified in one of the following ways:

```
COMMAND [positional-parameters]
        [keyword parameters    ]
        [options               ]
```

Most of the configurator commands have both required and optional parameters. For example, let's look at the syntax for `ADEV`, which is the command used to add a device to the configuration.

```
adev (ad)       ldev       = #/#,#,...
                path       = ca#.da#.d#
                id         = product id
                [rsize     = record size]
                [outdev    = output device]
                [mode      = JOB|DATA|INTERACTIVE|
                             DUPLICATIVE|INPUT|
                             OUTPUT|AUTOREPLY|NONE]
                [class     = classname,...]
                [cmode     = IN|OUT|CIO|NCIO|RANDOM|
                             DEFAULT]
                [pmgr      = physical manager name]
                [lmgr      = logical manager name]
                [pmgrpri   = physical manager priority]
                [mpetype   = comp. mode type]
                [mpesubtype= comp. mode subtype]
```

Example 3-2. The ADEV Command

You must supply the following required parameters: the ldev number, device
I/O path, and the device product identification number. In most cases,
SYSGEN supplies the rest of the information from a device default file,
IODFAULT.PUB.SYS.

The command can be specified in any of three ways:

```
IO>ADEV 21 16.0.0 HP7937  ** Other parameters supplied **

IO>ADEV 21 16.0.0 HP7937 CLASS=(DISK,SPOOL)** Keyword
value supplied **

IO>ADEV 21 16.0.0 HP7937,,,,SPOOL  **Value supplied as
positional parameter**
```

The Communications Interface, NMMGR

SYSGEN and its configurators are used to define and control the characteristics of the local system. An analogous program, NMMGR, performs a similar function for remote devices.

Since both SYSGEN and NMMGR use LDEV numbers, I/O classes, and I/O paths, there is a chance for duplication when configuring local and remote devices under two separate operations. SYSGEN issues a warning message whenever a conflict, such as a duplication, occurs. This feature also provides a cross-validation method for the NMMGR configuration.

If a conflict does occur and is not corrected, the SYSGEN configuration will be used and NMMGR will be unable to use a device in conflict with SYSGEN.

For more information on configuring remote devices and terminals, refer to the *NS3000/XL Network Manager's Reference Manual* (36920-90002).

Major Changes in Procedures

The following items describe significant differences in configuration
management between MPE XL and MPE V/E.

- System configuration is not supported during the system initiation stage, as
  it was with the MPE V/E SYSDUMP utility.

- MPE XL provides for multiple configuration groups, allowing them to reside
  concurrently on disk and tape.

- System configuration is accomplished through an interactive,
  command-driven, user interface.

- MPE XL uses I/O path specifications based on the actual physical location
  (hardware address) of the channel and device adapter, along with the I/O
  device address.

- System Volumes (other than the one mounted on ldev 1) and all nonsystem
  volumes (formerly known as private volumes) are added to the system with
  the VOLUTIL utility, rather than with SYSGEN.

MPE V/E Features Not Supported

MPE XL does not use the SYSDUMP utility or the backup commands
`:FULLBACKUP` and `:PARTBACKUP`. Additionally, type and subtype specifications
are transparent; the information is supplied automatically through a device
default file and is not displayed during I/O configuration.

Configuration of an I/O device no longer requires a DRT number.

An Example of SYSGEN in Use

A common use for SYSGEN is expanding or modifying the system
configuration. This is accomplished by building a new configuration on a copy
of the current configuration. The new configuration should then be saved under
a different name for testing. For example, from the MPE XL prompt (:), enter
`SYSGEN` and at the same time specify a newgroup as the destination of the
modified configuration:

```
SYSGEN ,NEWFIG
```

This command sequence calls the configuration used to boot the system as the
basegroup and specifies an output group named `NEWFIG`.

The next steps are to enter a configurator, make the desired changes, and
KEEP the group, which has the name `NEWFIG`.

```
SYSGEN>IO
```

Make changes as required (THE FOLLOWING ADDS A PATH NAME FOR
A DEVICE (HPxxxx); THIS IS AN EXAMPLE ONLY):

```
IO>APATH 16.0 HPxxxx
IO>HOLD
IO>EXIT
SYSGEN>KEEP
SYSGEN>EXIT
```

where `16.0` is the path name and `HPxxx` is the product ID of the device.

To look at the new group, enter:

```
:SYSGEN NEWFIG
SYSGEN>IO
IO>LPATH
IO>EXIT
SYSGEN>EXIT
```

To test the group, reboot the system, using the `GROUP=` option:

```
:CTRL B
CM>TC
ISL>START NORECOVERY GROUP=NEWFIG
```

Note	Before rebooting, warn all users off the system and set system limits to prevent any new user activity.

Additional Information

For more in-depth information, refer to *System Startup, Shutdown and Configuration Reference Manual* (32650-90042).

For information on configuring remote devices and terminals, refer to *NS3000/XL Network Manager Reference Manual* (36920-90002).

4

Localizing and Customizing System Information

This chapter briefly describes methods for tailoring the MPE XL operating system to meet the individualized needs of your organization. Customization of the system configuration is not included. For information on that subject, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).

Overview

MPE XL provides five different methods for tailoring a system:

- Modifying the user interface/system environment through the Command Interpreter.

- Creating and managing User Defined Commands (UDCs) and Command Files.

- Creating and modifying message catalogs.

- Modifying the HELP catalog and creating new ones.

- Using the Native Language Support feature to customize the system to local language conventions.

Features

MPE XL includes a variety of new and modified features for localizing and customizing system information. These features are listed and described in Table 4-1 and Table 4-2, below.

Modifying the User Interface (Command Interpreter)

The Command Interpreter (CI) provides and controls the user interface to MPE XL. It is the means by which commands are entered to the system, and it regulates many aspects of the system environment. The following material describes several ways in which the user interface can be modified by modifying the CI.

Customizing the Logon

There are three ways to tailor the logon: in the SYSGEN utility; in the WELCOME message; and with User Defined Commands (UDCs).

Use the SYSGEN utility to change the system and CI prompts. Refer to *Localizing and Customizing System Information* (32650-90046) for further details.

The WELCOME message is the first screen display a user sees after logging on. The message can be easily changed using the `:WELCOME` command. The command can be issued only from the Console unless distributed to other users with the `:ALLOW` command.

The WELCOME message is usually stored in an ASCII format file. To activate the message, enter

        `:WELCOME filename`

To create a message interactively, use `:WELCOME` with no parameters. You will then be prompted with a "#" to begin the first line of the message. The message terminates and the command ends when a (Return) is entered in response to the "#" prompt.

Changing the Prompt

The CI prompt value is stored in a predefined MPE XL variable called
`HPPROMPT`. At logon, `HPPROMPT` is initialized as ":", unless changed using the
SYSGEN utility. To temporarily change the prompt, use the `:SETVAR` command
to assign a new value to `HPPROMPT`. For example,

```
:SETVAR HPPROMPT ">"
>
```

Changing the Search Path for Command/Program Files

System files are searched in the following order: UDCs, MPE XL commands,
and Command Files and program files. The CI is capable of searching for the
command or program file name through specified groups, that is, of following
a search path. The value of the search path is stored within the predefined
variable `HPPATH`. The default value of `HPPATH` is `!HPGROUP,PUB,PUB.SYS`.

The user can control the process of Command File and program file searching
by redefining the `HPPATH` variable. For example, if the user has command and
program files in the home group, and the user is logged on to another group,
the default search path will fail to find the files. By resetting the search path
to include the home group, the proper files will be found. In this example, this
could be accomplished with the following command:

```
:SETVAR HPPATH HPPATH + ",!HPHGROUP"
```

The advantage of setting the search path to encompass the group(s) containing
your Command Files or program files is that if the filename by itself is entered,
it will automatically be executed without the need to qualify or explicitly
enter the `:RUN` command. This not only relieves the user of having to enter
the group and account names, it allows the entry to appear as though it is a
customized command.

If the user has a command or program file with the same file name as a UDC
or a MPE XL command, that file can only be executed by using the `:XEQ`
command.

Changing the Terminal Timeout Interval

The predefined `HPTIMEOUT` variable determines the number of minutes the CI will wait for new terminal input before terminating a session. The default value is zero, which is interpreted as no timeout. The user may alter the value to a positive number between 1 and 546 by using the `:SETVAR` command. For example,

        :SETVAR HPTIMEOUT 60

will terminate a session if the user does not enter a command over a period of 60 minutes.

Reissuing Commands

As you make entries at the prompt, the CI can save each entry to the command line history stack. The predefined variable, `HPREDOSIZE,` is used to control the number of previous entries that are retained by the system. The default value of `HPREDOSIZE` is 20. Use the `:SETVAR` command to change the default to any number between 0 and 1000.

The effect of using the history stack is that once a command is entered during a session, it need not be entered again. To reissue a command, use `:DO` or `:REDO`. The contents of the stack may be viewed by entering the `:LISTREDO` command.

Changing Other Predefined Variables

MPE XL initializes the values of certain predefined session variables upon logon. These variables include the predefined variables beginning with the letters "HP" and the two system Job Control Words, JCW and CIERROR These variables and their values may be diplayed by entering

        :SHOWVAR @

To assign a new value to a predefined variable, use the `:SETVAR` command. To do the same from within a program, use the intrinsic HPCIPUTVAR, or access `:SETVAR` from the `COMMAND` or `HPCICOMMAND` intrinsics.

Creating User Defined Variables

In addition to the predefined system variables, MPE XL lets the user create individualized session/job specific variables. MPE XL user-defined variables, as with predefined variables, can be defined as integers, Booleans, or strings (surrounded by quotes). These variables are set using the same commands and intrinsics used to modify the predefined READ/WRITE variables.

Command Interpreter Programming Features

Because the CI provides a "programming environment", MPE XL variables commands can be used to write customizing programs at the system level.

The programmatic and command options include

- Predefined and user defined variables.

- Expression evaluation (including FINFO and expression substitution).

- The :IF command for branching.

- The :WHILE command for looping.

- The :CALC command for expression evaluation.

- The :INPUT command for interactive assignment to variables.

- The :SETVAR, :SHOWVAR, and :DELETEVAR commands to manipulate variables.

- The :ECHO command for displaying a message.

- The :PRINT command for general purpose file copying.

- The :COPY command for fast disk file copying.

Creating and Customizing User Commands

User commands consist of user-defined commands (UDCs), and Command Files. These facilities can be used to construct entirely new commands. They also can be used to modify existing commands by overriding them with user created commands saved under the name of the existing command.

Creating User Defined Commands (UDCs)

As the term suggests, UDCs are commands that are specifically created by a user. They can provide a completely new command capability, or may be created for the purpose of modifying an existing command.

When provided globally for all users on the system, UDCs are referred to as system-level UDCs. When made available only to those users of a certain account, or only to an individual user, they are referred to as account-level or user-level UDCs.

System Manager (SM) capability is required to create UDCs at the system level.

Account Manager (AM) or SM capability is required to create UDCs at the account level.

General users can create UDCs for their use only. System Managers and Account Managers can also create user-level UDCs.

Creating a System-Level UDC

A UDC is created using an editor to produce a file that is subsequently saved to disk as an ASCII file.

UDC files must begin with a command name which will be used to invoke the command after cataloging, described below. They may contain multiple command definitions, each separated by asterisk delimiters.

Refer to Example 4-1 for a sample file containing two UDCs.

```
SC
OPTION LIST
SHOWCATALOG
*****
PROMPT
OPTION LOGON
SETVAR HPPROMPT '!HPUSER'
*****
```

Example 4-1. Sample File Containing Two UDCs.

After the creation of a UDC file, enter

       `:SETCATALOG filename ;SYSTEM`

to catalog the file.

The `:SETCATALOG` command is used to inform MPE XL that a specified file (or files) contains one or more UDCs, or, in the absence of a file name, to remove all entries from the catalog. The `;SYSTEM` parameter of the `:SETCATALOG` command must be used in order to catalog or uncatalog the file at the system level. Refer to the *MPE XL Commands Reference Manual* (32650-90003) for detailed instructions on using this command.

The file `COMMAND.PUB.SYS` must exist for the `:SETCATALOG` command to execute properly. If it does not exist on your system, you must build it after logging on as `MANAGER.PUB.SYS` and entering:

       `:BUILD COMMAND.PUB.SYS;REC=128,1,F,BINARY`

To change a cataloged system-level UDC file,

1. Remove the file from the catalog by entering

    `:SETCATALOG filename ;DELETE ;SYSTEM`

2. Re-edit and save the file.

3. Replace the file in the catalog by entering

    `:SETCATALOG filename ;APPEND ;SYSTEM`

Once any `:SETCATALOG` command is issued affecting other users of the system,
the affected user(s) must log on after the `:SETCATALOG` command has been
invoked in order to use the new or modified UDC(s). Thus, if a general user
is currently logged on, any change made in available UDCs by the System or
Account Manager will not be implemented until the user has logged on again.

Creating an Account-Level or User-Level UDC

These UDCs are created much the same as system-level UDCs. Use the
`;ACCOUNT` parameter to catalog at the account level. Use the `;USER=` parameter
to add to or delete from the catalog of an individual user. Cataloging done
without reference to these parameters will affect only the particular user
issuing the `:SETCATALOG` command.

Creating Command Files

Command Files are similar to UDCs in that they also allow the user to add to
the set of commands recognized by MPE XL. Command Files are simpler to
use than UDCs because they are not cataloged after being created.

For a complete discussion of the similarities and differences between Command
Files and UDCs, refer to the *MPE XL Commands Reference Manual*
(32650-90003).

A Command File is created or modified using an editor. Command Files,
unlike UDCs, can contain only one command definition per file. Each
command definition, however, may contain more than one command line.
Example 2 shows a simple Command File.

```
LISTREDO
ECHO THIS COMMAND FILE WAS SAVED UNDER THE FILE NAME
ECHO "L" AND IS INVOKED BY ENTERING "L" AT THE PROMPT.
```

Example 4-2. Command File "L" to execute :LISTREDO

A Command File is accessed according to the same guidelines as any other file. Therefore, in order for a Command File to be available system-wide, all users must be able to access the group where it resides and the file itself within that group. Usually, a system-wide Command File is created within the PUB.SYS group.

Likewise, to create a Command File for access account-wide, place the file so that all account users can access the group and the file. Usually, this is in the .PUB group of the account.

A Command File is invoked by entering the name the file has been saved under. For a complete discussion and examples of the uses of user commands, refer to *Localizing and Customizing System Information* (32650-90046).

| **Note** | Unlike UDCs, Command Files can not be used to substitute for a built-in command of the same name because they are searched for after, rather than before, MPE XL commands. To execute a Command File with the same name as a built-in command enter :XEQ *filename*. |

Modifying System Message Catalogs

System message catalogs are files that contain user interface messages, such as error messages, HELP messages and other displays.

System message catalogs are provided with the operating system. Application message catalogs can be created by programmers to output messages to users from applications programs. Both system and application message catalogs can be customized to reflect on-site needs and preferences, or translated into new native languages.

Note   System message catalogs may have already been translated into some foreign languages; contact a Hewlett-Packard Sales Office for further assistance.

System messages on MPE XL are contained in three catalogs: CATALOG, SYSCAT, and CICAT. These catalogs reside in the `PUB.SYS` group. Modification of CICAT is described below, in the section on the HELP Subsystem.

To modify system message catalogs, System Manager status is required.

Modifying CATALOG.PUB.SYS

To modify `CATALOG.PUB.SYS,` use the following steps:

1. Enter an editor and text in the catalog.

2. Make the necessary changes.

3. Keep the file under a new name and leave the editor.

4. Enter the file equation

        :FILE INPUT=newname

5. Now run the MAKECAT program to build the new catalog. Enter:

       :RUN MAKECAT.PUB.SYS,BUILD

6. If no errors are encountered, you will see this message:

       NEW CATALOG INSTALLED

7. Purge old catalog CAT*nn*, where *nn* is an archival number. For example, CAT1.

Note	The System Manager can make modifications to existing error messages, but if new messages are added, the programmer must make these messages available to the system by writing error trapping routines.

Modifying SYSCAT.PUB.SYS

To modify SYSCAT.PUB.SYS, use the following steps:

1. Run the GENCAT message catalog utility program by entering :GENCAT

2. Enter 4 (This option expands the formatted SYSCAT catalog back into an ASCII file.)

3. Enter SYSCAT.PUB.SYS as the name of the formatted catalog to expand.

4. Enter any file name not currently used for a permanent file as the name of the new source file.

5. If no errors are encountered, you will see this message:

   EXPANSION SUCCESSFULLY COMPLETED

6. Enter an editor and text in the file name of the new source file.

7. Make the necessary changes.

8. Keep the file and leave the editor.

9. Rerun GENCAT

10. Choose 3 to reformat the source file into a new formatted catalog.

11. Enter the name of the source file and a new name for the formatted catalog.

12. If no errors are encountered, you will see this message:

    FORMATTING SUCCESSFUL

13. Purge the unmodified catalog, SYSCAT.

14. Rename the new formatted catalog SYSCAT.

Creating a New System Message Catalog

To completely rewrite a system message catalog, as might be required to translate a catalog into a different language, follow the above steps for CATALOG or SYSCAT with the exception that you will write the message catalog from scratch rather than modifying the old file.

Creating and Modifying an Application Message Catalog

GENCAT utility is also used to create a new application message catalog. When messages are needed for users with a different native language or languages from the program itself, separate message catalogs for each user language can be written. This allows for localizing without changing the program code. Data manipulation can be done according to the rules of the particular language or local customs.

Application message catalogs are most often used for language localization, as described in this chapter under "Using Native Language Support."

Refer to *Message Catalogs Programmer's Guide (32650-90021)* for further details on message catalogs and how they are built and modified.

The HELP Subsystem

The HELP subsystem, including `CICAT.PUB.SYS,` is the facility that provides users with online help for all MPE XL commands. It is installed as part of the operating system software.

Modifying CICAT.PUB.SYS

To customize the HELP messages contained in `CICAT.PUB.SYS,` you must have System Manager capability. Use the following steps:

1. Call up an editor.

2. Load the `CICAT.PUB.SYS` file.

3. Make the necessary changes.

4. Keep the file under a new file name and exit the editor.

5. Enter the file equation

       :FILE INPUT=*newfile*

6. Since output from MAKECAT is saved under the filename `HELPCAT,` make sure that a file named `HELPCAT` does not already exist as a permanent file. If it does, or to designate an output file name other than `HELPCAT,` enter the file equation:

       :FILE HELPCAT=*filename*

7. Enter the command

       :RUN MAKECAT.PUB.SYS,HELP

8. Enter the file equation

       :FILE CICAT.PUB.SYS=HELPCAT

9. Check the modifications. If they are correct, purge the old CICAT and rename the new catalog CICAT.

Building a New HELP Message Catalog

If you wish to make extensive changes to the help message catalog, such as might be required to translate a catalog into a different language, follow the above steps for modifying CICAT with the exception that you will write the new message catalog file from scratch rather than modifying the existing CICAT file.

For information on using a HELP message catalog for an application program in addition to the system HELP message catalog, refer to Chapter 4, "Customizing the HELP Subsystem" in *Localizing and Customizing System Information* (32650-90046).

Using Native Language Support

Native Language Support, or NLS, is an MPE XL operating system feature that allows end users to interact with and process data in their native language.

The System Manager (SM) is responsible for configuring native languages on the system, and for modifying formats, such as for dates, times, and currency, associated with a given native language.

NLS Utilities

Two utilities are available for users of NLS. The LANGINST utility program is the tool which allows the System Manager to configure native languages on the system. The NLUTIL utility may be run by any user to display information on currently configured languages.

The LANGINST Utility

System Managers use LANGINST to select and configure native languages to be supported on their system, except for NATIVE-3000 which is always installed as the system default language. After a language has been installed, language-specific information available in NLS may be used by any application program requesting it.

A user with SM capability can also modify formats associated with a given native language. For example, the user could install German with a currency sign other than the default, for use in, say, Austria or Switzerland.

Note	All language configuration changes are effective only after a system startup; at that time, the language(s) will actually be installed.

To use LANGINST,

1. Log on as `MANAGER.SYS`.

2. Enter : `LANGINST`.

3. Select an option from the menu. These include:

    Adding a language.
    Deleting a language.
    Displaying and modifying local formats of a configured language.
    Displaying the languages supported by Hewlett-Packard.
    Replacing the system default language.
    Displaying the languages currently configured.
    Displaying translation tables.
    Exiting.

For further details, refer to Chapter 6, "Native Language Support" in *Localizing and Customizing System Information* (32650-90046).

The NLUTIL Utility

Use NLUTIL to list the languages and character sets installed on a system. Any user can call NLUTIL by entering:

```
:NLUTIL
```

This displays a table of configured languages and their character sets. The utility lets you print a formatted listing of all languages configured to your system. The output is written to the file `NLLIST` on device class `LP`. You also can print a listing for any single language configured to your system.

New MPE XL Localization Features

Table 4-1 summarizes new MPE XL localization and customization features.

Table 4-1. What is New to MPE XL

Feature	Classification	Function
CALC	Command	Evaluate an expression
DELETEVAR	Command	Delete an MPE XL variable
DO	Command	Execute a command in redo stack
ECHO	Command	Display a message
HPCICOMMAND	Intrinsic	Access the CI from a program
HPCI-DELETEVAR	Intrinsic	Delete an MPE XL variable from a program
HPCIGETVAR	Intrinsic	Display MPE XL variables and their values from a program
HPCIPUTVAR	Intrinsic	Assign a value to a MPE XL variable from a program
HPGROUP	Predefined variable	Contains current group name
HPHGROUP	Predefined variable	Contains home group name
HPPATH	Predefined variable	Modify search path for Command Files and program files
HPPROMPT	Predefined variable	Modify prompt value
HPREDOSIZE	Predefined variable	Modify number of entries in redo stack
HPTIMEOUT	Predefined variable	Modify terminal timeout interval
INPUT	Command	Interactive assignment to variable
LISTREDO	Command	Display contents of redo stack
SETVAR	Command	Assigns a value to a MPE XL variable
SHOWVAR	Command	Display MPE XL variables and their values

Table 4-1. What is New to MPE XL (continued)

Feature	Classification	Function
SYSCAT .PUB.SYS	System message catalog	Contains Native Mode system error messages
WHILE	Command	Control execution with looping structure
XEQ	Command	Execute Command File or program file with same name as built-in command or UDC file

Note   Refer to Appendix A of the *MPE XL Commands Reference Manual* (32650-90003) for a complete list of MPE XL predefined variables.

Changed Localization Features

Table 4-2 summarizes changed MPE XL localization and customization features.

Table 4-2. What is Changed in MPE XL

Feature	Classification	Change
IF	Command	Enhanced evaluation of expressions
REDO	Command	Edit and re-execute any command in redo stack
RUN	Command	May be used without typing :RUN
SETCATALOG	Command	Add or delete UDCs from the catalog without recataloging the entire set
User Defined Commands (UDCs)	User Command	New options for recursion and executing from a program

Unchanged Features

Table 4-3 summarizes unchanged MPE XL localization and customization
features.

Table 4-3. What is Unchanged in MPE XL

Feature	Classification	Function
ALLOW	Command	Gives user access to Operator command
CATALOG .PUB.SYS	System message catalog	Contains system error messages
CICAT .PUB.SYS	System message catalog	Contains system HELP catalog
CIERROR	Predefined variable	Stores last CI error number
GENCAT	Utility	Creates and changes message catalogs
JCW	Predefined variable	Stores value of Job Control Word
LANGINST	Utility	Configures native languages on the system
MAKECAT	Utility	Creates and changes message catalogs
NLUTIL	Utility	Displays information on currentlyconfigured language
WELCOME	Command	Defines the WELCOME message

5

Volume Management

This chapter discusses those MPE XL commands and the utility available for managing volumes. Volume management involves the management of storage space on disk media.

Overview

Volume management provides a way to partition disk storage space into three logical entities: volumes, volume sets, and volume classes. The volume itself is the initial entity; it is the basic building block in volume management. The most common operating entity, however, is the volume set, which comprises one or more volumes. The final entity is the volume class, which contains one or more related volumes. A volume class is a subset of the volume set.

Since MPE XL differentiates between media and devices, volume management controls disk media, or volumes, while device management controls devices.

The media contain files and information such as file labels and directories which control access to files.

Volume class and volume configuration information reside on the volume set. They are on the media, not in the system configuration.

The MPE XL volume management utility, VOLUTIL, provides routines for initializing volumes as well as for performing maintenance and inquiry functions.

Features

MPE XL introduces new and changed commands as well as a new utility and options for volume management, as compared to similar operations in MPE V/E. These features will be described in the following sections.

Commands

Two new volume management user commands, `:VSRELEASE` and `:VSRESERVE`, are available in MPE XL. Table 5-1 defines these commands:

Table 5-1. Volume Management User Commands

Command	Function
`:VSRESERVE`	Reserves a specified volume set for the user and ensures that it is not taken offline by the Operator for the duration of the session or until a `:VSRELEASE` is issued. Syntax: `:VSRESERVE [MPE XL volset]` `[GEN=gen_number]`
`:VSRELEASE`	Releases a volume set that the user has explicitly reserved. Syntax: `:VSRELEASE [MPE XL volset]`

Four new volume management Operator commands are available in MPE XL: `:VSCLOSE`, `:VSOPEN`, `:VSRELEASESYS`, and `:VSRESERVESYS`. Table 5-2 defines these commands:

Table 5-2. Volume Management Operator Commands

Command	Function
:VSCLOSE	Notifies the system that there is a close pending on a volume set in preparation for removing that volume set from the system. This command restricts access to the volume set to jobs/sessions that have done an explicit :VSRESERVE or :MOUNT on the volume set, or have files open on the volume set. Specifying ;NOW aborts all jobs and sessions with files open on the volume set. Syntax: :VSCLOSE MPE XL volset [;NOW]
:VSOPEN	Cancels a previously issued :VSCLOSE command. The volume set is accessible again. Syntax: :VSOPEN MPE XL volset
:VSRESERVESYS	Reserves a volume set at the system level. This command has no effect on the :VSRESERVE or :VSRELEASE user commands. Syntax: :VSRESERVESYS MPE XL volset [GEN=gen_number]

Table 5-2. Volume Management Operator Commands (continued)

Command	Function
`:VSRELEASESYS`	Negates a previously issued `:VSRESERVESYS` command issued by the Operator. If a `:VSRESERVESYS` command has been issued, `VSRELEASESYS` must be issued before the volume set can be removed. Syntax: `:VSRELEASESYS MPE XL volset`

The MPE V/E keyword `VS` has been removed from all MPE XL system commands. Replacing the `VS` keyword are the `ONVS` and `HOMEVS` keywords. The `ONVS` keyword specifies the volume where the action of the system command takes place. The `HOMEVS` keyword specifies the volume set where files in a particular group are to be built.

The following MPE XL commands (shown in Table 5-3) have the `ONVS` keyword. Only the `:ALTGROUP` and `:NEWGROUP` commands use both the `ONVS` and the `HOMEVS` keywords.

Refer to the *MPE XL Commands Reference Manual* (32650-90003) for detailed descriptions of these commands.

Table 5-3. MPE XL Commands With ONVS Keyword

Command	Function
:ALTACCT	Changes the attributes of an existing account. The user must have System Manager (SM) capability to use this command.
:ALTGROUP	Changes one or more attributes of a group. Also uses the HOMEVS keyword.
:NEWACCT	Creates a new account and an associated Account Manager and PUB group.
:NEWGROUP	Creates a new group within an account. Also uses the HOMEVS keyword.
:PURGEACCT	Removes an account and its groups and users from the directory of the specified volume set.

Table 5-3. MPE XL Commands With ONVS Keyword (continued)

Command	Function
`:PURGEGROUP`	Removes a group and its files from the system or from the directory of the specified volume set.
`:REPORT`	Displays accounting information for the logon account and group.
`:STORE`	Copies disk files onto a magnetic tape so that the files can be recovered with the `:RESTORE` command.

The following MPE V/E commands and VINIT Utility commands are not used for volume management in MPE XL:

Table 5-4. Commands and Utilities Not Used

Command	Function
`DOWN`	Used for device management only.
`UP`	Used for device management only.
VINIT Utility	Replaced with VOLUTIL

Volume Sets

MPE XL supports two types of volume sets: system volume sets and nonsystem (mountable) volume sets.

System Volume Sets

The system volume set is the only volume set needed to load and start the system. The system volume set contains the MPE XL operating system; these system volumes must be mounted on the disk drives at all times.

The system master volume set is located on ldev 1. The system master volume is initialized at system installation, when the INSTALL utility is run. It is the

only volume that exists on the system at that time. Additional system volumes are configured to the system using the volume management utility, VOLUTIL, rather than the system configuration utility, SYSGEN, although the I/O path to the devices must be configured in SYSGEN.

The name `MPEXL_SYSTEM_VOLUME_SET` is applied to all system volume sets.

Nonsystem Volume Sets

The nonsystem volume sets are analogous to Private Volumes on the MPE V/E system. Nonsystem volume sets do not need to be mounted for the operating system to run. You can remove (dismount) some or all of the volumes in a nonsystem volume set by using the VSCLOSE command.

Volume Set Status

The status of volume sets falls into five categories:

- MASTER: the volume that must be mounted in order for MPE to recognize the volume set.

- MEMBER: volume in a volume set whose master is mounted.

- LONER: volume in a volume set whose master is not mounted or volumes of a set that has been VSCLOSEd.

- SCRATCH: volume which may contain data which the user has indicated is no longer needed. It is available for initialization.

- UNKNOWN: a volume that does not have a label that the system can recognize. It is also available for initialization.

Volume Classes

A volume class is a subset of a volume set. A volume set can contain from one to 255 classes. A volume class can contain from one to 255 volumes. A volume can be a member of as many classes as there are in a volume set. A volume class cannot belong to more than one volume set.

For compatibility between MPE V and MPE XL, a volume class named "DISC" is created automatically whenever a volume set is created. By default,

all of the volumes in the volume set are members of the class "DISC," and all of the files on the disk, by default, also are restricted to the class "DISC."

Creating A Nonsystem Volume Set

Like additional system volumes, nonsystem volume sets are initialized and configured to the system with the system management utility, VOLUTIL. For more information on commands available with VOLUTIL, refer to "Volume Management Utility (VOLUTIL)" presented shortly.

To create and initialize a nonsystem volume set:

1. To see which volumes have been mounted and check whether the system has recognized them, enter:

   ```
   :DSTAT

    LDEV-TYPE     STATUS      VOLUME (VOLUME SET - GEN)
    -----------   ---------   ----------------------------
    21-079350     SCRATCH
    22-079350     SCRATCH
    23-079350     UNKNOWN
   ```

   Be sure the volumes are in the Scratch or Unknown state.

2. Run VOLUTIL. Enter:

   ```
   :RUN VOLUTIL.PUB.SYS
   ```

   or

   ```
   :VOLUTIL
   ```

Note   The system prompt will change to the VOLUTIL prompt (`volutil:`) indicating that VOLUTIL is running. The system prompt returns when VOLUTIL ceases.

---

3. Create a volume set by initializing the master volume. For example, to create the volume set, BSET, with a master volume named BVOL1 on ldev 21, enter:

   ```
   volutil: NEWSET sname=BSET master=BVOL1 ldev=21
   ```

```
*Verify: Initialize new volume set BSET:BVOL1 on ldev 21 [Y/N] ? y
*Note: New master volume has been initialized on ldev 21.
```

4. Now use the MPE XL :DSTAT command within VOLUTIL to verify that the system created the volume set and its master.

```
volutil: :DSTAT

 LDEV-TYPE     STATUS      VOLUME (VOLUME SET - GEN)
 -----------   ---------   ----------------------------
 21-079350     MASTER      BVOL1          (BSET- 0)
 22-079350     LONER
 23-079350     LONER
```

5. Use the volutil: NEWVOL command to add member volumes to the volume set. Note that NEWVOL will initialize the volume if the ldev number is supplied with the command. For example:

```
volutil: NEWVOL BSET:BVOL2 LDEV=22

*Verify: Initialize new member volume BSET:BVOL2 on ldev 22 [Y/N] ? y
*Note: New member volume has been initialized on ldev 22.
```

If no ldev number is supplied, the volume will be defined as a member of the volume set but it will not be initialized.

```
volutil: NEWVOL BSET:BVOL3

*Verify: Initialize new member volume BSET:BVOL3 [Y/N] ? y
*Warning: Volume only defined and not physically initialized.
```

6. The defined volume can be initialized using the INITVOL command.

```
volutil: INITVOL BSET:BVOL3 LDEV=23
```

7. Use :DSTAT again to verify that the volumes have been added with member status.

```
volutil: :DSTAT

 LDEV-TYPE     STATUS      VOLUME (VOLUME SET - GEN)
 -----------   ---------   ----------------------------
 21-079350     MASTER      BVOL1          (BSET- 0)
 22-079350     MEMBER      BVOL2          (BSET- 0)
 23-079350     MEMBER      BVOL3          (BSET- 0)
```

8. To exit VOLUTIL, enter:

    ```
    volutil:EXIT.
    ```

9. To create an account on the volume set, for example to create the account
   `MANUF` and user `MGR` on the system volume set and give the user particular
   capabilities, enter:

    ```
    :NEWACCT MANUF,MGR;CAP=AM,SF,ND,CS,PH,IA,BA
    ```

10. Now to create the same account on volume set `BSET`.

    ```
    :NEWACCT MANUF,MGR;ONVS=BSET
    ```

11. Log on to the new account.

    ```
    :HELLO MGR.MANUF
    ```

12. Create a new group, for example, `PROD`. You will have to create it twice,
    once on the system volume set and again on volume set `BSET`.

    ```
    :NEWGROUP PROD;HOMEVS=BSET
    :NEWGROUP PROD;ONVS=BSET
    ```

Volume Recognition

At system startup, all volumes spinning will be mounted automatically. After
the system is running, a pack may be spun up and, if previously initialized, will
be recognized and mounted automatically.

Data Availability

If a pack goes offline while the system is up and there are virtual pages open on
the pack, the Operator must mount the pack. I/Os are delayed until Volume
Management verifies that the pack is the same one that was mounted before.
Only the process accessing data on that pack will be affected. Other processes
will continue to run normally. This is a convenient feature in the unlikely event
of device failure.

Volume Management Utility (VOLUTIL)

The Volume Utility subsystem provides the commands for manipulating volume sets. You use these commands to manage and maintain individual volumes, volume sets, and volume classes and to make inquiries about their contents, availability, and status.

VOLUTIL Commands

VOLUTIL commands are organized into four groups based on the object they manipulate. All commands that operate on sets end with "SET". Those dealing with classes end with "CLASS". The commands that control volumes end with "VOL". The last group consists of miscellaneous commands. The VOLUTIL commands are listed below. The VOLUTIL prompt, `volutil:`, precedes each command as shown in the following example:

    volutil: ALTERVOL

Table 5-5. VOLUTIL Commands

VOLUTIL Command	Type of Command	Function
ALTERVOL	Volume	Changes the amount of disk space that is allocated for permanent and transient storage.
COPYVOL	Volume	Copies the contents of one volume to another volume.
DSECTORSVOL	Volume	Detects and recovers defective sectors.
FORMATVOL	Volume	Formats a volume.
INITVOL	Volume	Initializes a previously defined volume.
NEWVOL	Volume	Creates a new volume.
SCRATCHVOL	Volume	Places a volume in the SCRATCH state.
SHOWVOL	Volume	Displays information about a volume in a volume set.
UNSCRATCHVOL	Volume	Returns a previously scratched volume to the LONER state.
VERIFYVOL	Volume	Verifies that the data on a volume can be read.

Table 5-5. VOLUTIL Commands (continued)

VOLUTIL Command	Type of Command	Function
COPYSET	Set	Copies the contents of one volume set to another volume set.
NEWSET	Set	Creates a new volume set by defining and initializing the master volume.
SETDEFAULTSET	Set	Changes default volume set.
SHOWDEFAULTSET	Set	Shows default volume set.
SHOWSET	Set	Displays information about a volume set and its members and classes.
EXPANDCLASS	Class	Expands a volume class by adding new volumes.
NEWCLASS	Class	Creates a new volume class.
SHOWCLASS	Class	Displays information about a volume class.
DO	Miscellaneous	Re-executes commands from the command history stack.
EXIT	Miscellaneous	Exits VOLUTIL.
HELP	Miscellaneous	Displays information about VOLUTIL commands.
LISTREDO	Miscellaneous	Lists commands in the command history stack.
LOG	Miscellaneous	Logs user input and output to a log file.
RECOVER	Miscellaneous	Re-creates files from the output produced by the DISCUTIL utility.
REDO	Miscellaneous	Allows the user to edit and then redo a command from the command history stack.
USE	Miscellaneous	Processes VOLUTIL commands in an ASCII file.

Using VOLUTIL

To run VOLUTIL, enter:

```
:RUN VOLUTIL.PUB.SYS
```

or

```
:VOLUTIL
```

An `INFO=` parameter containing any valid VOLUTIL command may be added. For example:

```
:RUN VOLUTIL.PUB.SYS;INFO="SHOWDEFAULTSET"
```

Volume Management Planning

MPE XL volume management keeps as much data available as possible. The System Manager can partition data to minimize the loss of access if a volume goes down. The three levels of partitioning are:

- Volume Set Restriction
- Volume Class Restriction
- Volume Restriction

Volume Set Restriction

The default volume restriction is the volume set of the group where the file resides. File extents are placed on any volume within the volume set. This option offers the least protection for file access if a volume goes down. If the master volume of the set goes down, access to the entire volume set is denied for disk space allocation.

Note   The more specific the restrictions, the more likely that data will not be lost in the unlikely event of a device or media failure. However, there may be a performance penalty for being more restrictive. Use this feature wisely.

Volume Class Restriction

Volume class is the next level of restriction. With the exception of the volume class "DISC," volume class restriction must be specified at file creation time. A file is placed only on volumes within a volume class. If the volume class is a small subset of the volume set, it is less likely to prevent access to data if a disk goes down.

Volume Restriction

Volume restriction is the most effective level of protection. Volume restriction must be specified at file creation time. The file extents are placed only on one volume.

Nonsystem Volume Set Restriction

Nonsystem volume sets can serve as another type of restriction. It allows the volume class and volume restrictions. Multiple volume sets with few members provide the advantages of volume sets that can be moved to other systems and backed up separately. System managers are encouraged to have most of their accounting structure on nonsystem volume sets for higher data availability. There is little difference in the time to access nonsystem versus system volumes sets.

Additional Information

For additional information on volume management, refer to:

- *Volume Management* (32650-90045)

6

Account Structure and Security

This chapter describes the new and modified commands used in MPE XL to manage account structure and system security.

Overview

The System Administrator uses the account structure and security capabilities and features to establish account, group and user identities, to modify the accounting structure, and to control the use of system resources.

Features

MPE XL introduces new and changed features (when compared to similar operation in MPE V/E), including the use of Command Files, for managing account structure and security.

Command Files

Together with the familiar User Defined Commands (UDCs), Command Files make up the facility called user commands.

Like UDCs, they let the user define commands which can then be executed by entering the name of the Command File. Like UDCs, Command Files are created with text editors, and may be kept as numbered or unnumbered ASCII files.

Unlike UDCs, Command Files do not have to be cataloged with the
:SETCATALOG command.

New and Changed Commands

MPE XL introduces new or changed commands for accounting, billing, and security purposes. Table 6-1 lists the commands and their new or modified respective features. Refer to *MPE XL Commands Reference Manual* (32650-90003) for more detailed information on how these commands have changed.

Table 6-1. Commands for Account Structure and Security

Command	Function
:ALTACCT	Changes the attributes of an existing account. New parameters: [;ONVS]=[*volset*]]
:ALTGROUP	Changes one or more attributes of a group. New parameters: [;HOMEVS=[*volset*]] [;ONVS=[*volset*]]
:CHGROUP	Changes the user's current group. It provides the ability to change groups without having to log on again. Syntax: :CHGROUP [*groupname*] [/*grouppass*]
:JOB	Initiates a batch job. New parameters: [;TERM={*termtype*}/{*termname*}]
:LISTACCT	Displays information about one or more accounts. In the command syntax, password protection has been added.
:LISTF	Displays the description of one or more permanent files. In the command syntax, the *listlevel* range has been expanded.
:LISTGROUP	Displays information about one or more groups. In the command syntax, password protection is added.
:LISTUSER	Displays information about one or more users. In the command syntax, password protection is added.
:NEWACCT	Creates a new account, an Associated Manager, and a PUB group. New parameter: [;ONVS=[*volset*]]

Table 6-1.
Commands for Account Structure and Security (continued)

Command	Function
:NEWGROUP	Creates a new group within an account. New parameters: [;ONVS=[*volset*]] [;HOMEVS=[*volset*]
:NEWUSER	Defines a new user. New parameter: [.*acctname*]
:PURGEACCT	Removes an account and its groups and users from the system directory or from the specified volume set's directory. Modified parameter: [;ONVS=[*volumesetname*]]
:PURGEGROUP	Removes a group from the system, or from the specified volume set directory. New parameters: [.*acctname*] [;ONVS=*volumesetname*]
:PURGEUSER	Removes a user from an account. New parameter: [.*acctname*]
:REPORT	Displays accounting information for the current account and group. New parameter: [;ONVS=[*volsetname*]]

MPE V/E Features Not Supported

The utility LISTDIR5, which provided certain accounting, billing and security data, is gone. However, all of its information can be obtained through the use of modified commands such as `:LISTACCT`, `:LISTGROUP`, and `:LISTUSER`, and the new `:LISTF` options.

Additional Information

For additional information refer to:

■ *Controlling System Activity Reference Manual* (32650-90155).

7

Managing Jobs and Sessions

This chapter describes changes and additions made to the procedures
for managing jobs (batch data processing) and sessions (interactive data
processing) on the MPE XL system. For more information, refer to *Controlling
System Activity Reference Manual* (32650-90155).

Overview

Job and session managers control system resources and assure their effective
use. The responsibilities in these areas, of System Supervisors (OP Capability),
System Managers (SM capability), and those assigned System Operator
functions include:

- Gathering and maintaining information on sessions and jobs.

- Monitoring and interpreting session and job related System Console
  messages.

- Controlling system resources used in the execution of sessions and jobs.

- Using the MISC Configurator of the SYSGEN utility to configure parameters
  that define and control job and session activities and limits.

- Communicating with system users via the System Console, and at session
  logon.

Features

Additions and modifications to job and session management procedures have been made primarily in the areas of system resource control, system performance, and system configuration.

Additions and modifications include new parameters for the `:HELLO`, `:STARTSESS`, `:JOB`, and `=LOGOFF` commands. Among them are:

- Parameters that permit specifying, from `:HELLO` and `:STARTSESS`, the first command to be executed by the Command Interpreter (CI).

- MISC Configurator parameters that configure job and session related limits.

- The addition of two exception parameters to the `=LOGOFF` command.

The parameters that pertain to `:HELLO,` `:STARTSESS`, and `:JOB` are described in Table 7-3. The exception parameters for `=LOGOFF` are described in Table 7-4.

Controlling System Resources and Security

The parameters that control system resources and security, such as CPU, job and session, and logon timeouts, are controlled in the system configuration, and set at system startup. These parameters can be easily changed using the Miscellaneous Configurator of the SYSGEN Utility. Refer to Chapter 3 of this manual for an overview of the SYSGEN Utility and the various configurators.

Using SYSGEN's MISC Configurator, you can control the total duration of a session, the amount of CPU time a job may use, and the amount of time a user has in which to log on to the system. The commands are, respectively, `SESSION CITIMEOUT,` `JOB CPUTIMEOUT,` and `SESSION LOGONTIMEOUT`.

These and other MISC Configurator commands are described in Table 7-1. The limits of their parameters are described in Table 7-2. Several of these commands are also discussed in the section on Session-Related Parameters, below.

Table 7-1. MISC Configurator Command Summary

Command	Function
SH[ow] [JO[b]] [SE[ssion]]	Shows values of local configurable items

JO[b] [MAXLIMIT]
   [POOL]
   [CPUTIME]
	Configures job-related limits

SE[ssion] [MAXLIMIT]
  [POOL]
  [LOGONTIMEOUT]
  [CITIMEOUT]
	Configures session related items

Entering the MISC Configurator

To activate the MISC Configurator, enter:

```
:SYSGEN
SYSGEN>MISC
MISC>
```

Enter commands and parameters after the prompt `MISC>`.

The `SHOW` command displays the values of the current configurable items. If you include the `JOB` or `SESSION` parameter (by entering `SHOW JOB` or `SHOW SESSION,`) the currently defined limits for either parameter is displayed. If no parameter is entered, `SHOW` displays the values for all parameters.

Limits of MISC Configurator Parameters

Table 7-2 summarizes the minimum and maximum limits for the session and job parameters.

Table 7-2. MISC Parameter Limits

Parameter	Minimum	Maximum	Default
MAXLIMIT	1 job/session	500 jobs/sessions	60 jobs/sessions
POOL	1 jsmain	200 jsmains	1 jsmain
LOGONTIMEOUT	10 seconds	600 seconds	180 seconds
CITIMEOUT	0 minutes	546 minutes	0 minutes
CPUTIME	0 seconds	32767 seconds	Unlimited (0)

Defining and Altering Job and Session Parameters

The System Operator can alter the parameters of the JOB and SESSION
commands at any time, using the MISC Configurator. Two of these parameters
are the same for both jobs and sessions: MAXLIMIT and POOL. The others are
used specifically for either jobs or sessions.

MAXLIMIT: Limiting Number of Jobs and Sessions

The MAXLIMIT parameter defines the maximum session or job limit that can be
set by the System Operator with the MPE XL :LIMIT command. For example,
enter:

```
MISC>SESSION MAXLIMIT = 100 or
JOB MAXLIMIT = 10
```

POOL: Setting Number of JSMAINs

MPE XL maintains processes, called JSMAINs, that are used to allocate and deallocate system resources to and from jobs and sessions. Each job or session is assigned a JSMAIN when created. When a job or session is terminated, its JSMAIN process becomes available for use. Although several hundred JSMAINs can be in use concurrently, it is advisable to set the system for as few as possible to start with, checking the system for optimum performance as you raise or lower the number.

```
MI>SESSION POOL = 150 or
JOB POOL = 10
```

Defining and Altering Job-Related Parameters

Jobs have certain parameters that are not needed for sessions. These parameters monitor the CPU time, the maximum job execution priority, default priority, and the security for jobs.

Limiting Job CPU Time

The `CPUTIME` parameter defines the default CPU time limit in seconds for batch jobs. A value of 0 = unlimited time. For example, enter:

```
MISC>JOB CPUTIME = 10000
```

Note	Users can control maximum session length on their own terminals with the `HPTIMEOUT` variable of the `:SETVAR` command. At the end of the timed read, `:SETVAR` automatically ends the session or job, just as if the user had entered a `:BYE` or `:EOJ` command. For example, to set the timeout to two minutes, enter `:SETVAR HPTIMEOUT 2`. To disable `HPTIMEOUT,` set the variable to a negative number or 0.

Defining and Altering Session-Related Parameters

Sessions have certain parameters that are not needed for jobs. These parameters control the amount of time to log on, and automatic logoff.

Limiting Time Allowed to Log On

The `LOGONTIMEOUT` parameter sets the number of seconds that a user has to log on to the system. For example, enter:

```
MISC>SESSION LOGONTIMEOUT = 30
```

Setting Automatic Logoff Time

The `CITIMEOUT` parameter sets the default number of minutes of inactivity at the CI prompt, before a user is automatically logged off the system. For example, enter:

```
MISC>SESSION CITIMEOUT = 40
```

Entering a value of zero disables the automatic logoff feature. For example:

```
MISC>SESSION CITIMEOUT = 0
```

Controlling Job Execution

Unless otherwise assigned, the ability to control the execution of jobs is limited to the System Console Operator. The ability to execute jobs is controlled by the `:JOBSECURITY` command. The System Operator can set its value to `HIGH`, or `LOW`.

When set to `LOW`, any user can execute the commands `:ABORTJOB, :ALTJOB, :BREAKJOB,` and `:RESUMEJOB`.

For example, from the MPE XL prompt, enter:

```
JOBSECURITY = LOW
```

Changed Commands

New parameters have been added to the :HELLO and :STARTSESS, commands. The *termtype* parameter has been altered to support only types 10, 18, 20, and 21.

The parameters for :STARTSESS and :HELLO are described in Table 7-3.

Table 7-3. Changed Parameters for :HELLO and :STARTSESS

Parameter	Description
termtype	Type of terminal used for input. MPE XL uses this parameter to determine device-dependent characteristics such as delay factor for carriage returns. Must be 10, 18, 20, or 21 as follows: 10 All Hewlett-Packard (HP) terminals. Block mode is supported, but may be turned on/off by an escape sequence. DC1 (print buffer nearly empty) is sent. Default parity is none. Does not support ENQ/ACK. 18 All non-HP terminals and non-HP printers. It is the customer's responsibility to ensure compatibility with the Distributed Terminal Subsystem. Default parity is none. Block mode is not supported. DC1 is not sent. Enhanced XON/XOFF Protocol with non-HP printers. 20 HP 2934A. Has remote support. Printer status request is supported. Parity checking is supported. 21 HP 2934 and HP 2686A. Does not have remote support. Printer status request is supported. Parity checking is not supported.
ciinfo	The first command to be executed by the Command Interpreter. This parameter, with `;parm=1`, serves the same function performed by the MPE V/E :( ) `COMMAND LOGON` command and takes its place.

Table 7-3.
Changed Parameters for :HELLO and :STARTSESS (continued)

Parameter	Description
ciparm	The Command Interpreter number you wish to use; the numbers accepted are:
	1 The Command Interpreter terminates after processing the INFO=*ciinfo* parameter.
	-1 UDCs are not cataloged. The Command Interpreter banner and the welcome message are not displayed. (Use requires SM capability.)
	-2 Same as -1 except that the Command Interpreter terminates after processing the *info=* command. (Use requires SM capability.)

Emergency Abort for Sessions and Jobs

The `=LOGOFF` command aborts all executing sessions and jobs, and prevents any further logons. The System Operator may specify one job or one session (but not one of each) that is to remain logged on. Because the equal sign, invoked by entering (CTRL) (A), can be executed only at the System Console, only the System Operator has this capability. The `=LOGOFF` command has the following parameters:

Table 7-4. =LOGOFF Parameters

Syntax	Description
[#Snn]	The number of the session to remain logged on.
=LOGOFF	
[#Jnn]	The job number of the job to remain logged on.

To log off all users except the System Operator on **#S2**, enter:

```
      :CTRL  A
   =LOGOFF #S2
```

System Performance Improvements

The logon response time should be noticeably faster in MPE XL because
of two changes in the operating system. First, jobs and sessions are now
handled separately and in parallel. Sessions will not be dispatched before jobs.
Second, DEVREC has been replaced by the JSMAIN processes, which are
automatically created by job and session processes at system startup.

Now, instead of logging on and waiting for DEVREC to create a process, as in
MPE V/E, processes are immediately available from JSMAIN. These processes
are already initialized, so there is no waiting for system resources or setup
procedures.

If system resources are momentarily unavailable, the system will automatically
reschedule a job if it fails before $STDLIST is established. If a session fails, it
is not rescheduled. It must be re-entered.

MPE V/E Features Not Supported

The batch processing capability does not support unspooled output, such as interactive jobs or data devices. As a result, "HOT" printers are not allowed.

The :DATA command is not available on terminals. Punch cards and card readers are obsolete, so any :DATA parameters that pertain to them are not supported.

Additional Information

For more information, refer to:

■ *Controlling System Activity Reference Manual* (32650-90155)

8

Managing Peripherals

This chapter describes the differences in procedures between MPE V/E and MPE XL for managing MPE XL system peripherals.

Overview

The System Administrator is responsible for operating and managing system peripherals. These include devices, such as printers, tape drives, disk drives, and terminals. It also includes the files that are stored on them, such as spooled files and tapes. In addition, System Administrators also are responsible for configuring devices to the system.

Features

One of the most significant new features of MPE XL is the SYSGEN utility, with its various Configurator subsystems. Of these, the I/O Configurator is of immediate interest to System Administrators who will be responsible for the logical addition, modification, and deletion of peripherals.

Changes have been made to the way in which unspooled files, interactive jobs, and interactive data are handled. Procedures for transferring disk and tape resident spoolfiles from MPE XL to MPE V are provided.

The MPE V/E disk space reporting utility, FREE5, has been replaced by a new utility, DISCFREE.

A new command, `ECHO`, and several new parameters to the `:SET` command, have been added to provide increased flexibility in the management of terminal characteristics.

Configuring Peripherals to the System

Peripheral devices are configured to the system with the I/O Configurator subsystem of the new SYSGEN utility. (System volumes, other than the master system volume on ldev 1, and nonsystem volumes are configured with the volume management utility VOLUTIL.) For information on how the SYSGEN utility works, refer to Chapter 3 of this manual.

To enter the I/O Configurator from the MPE XL prompt enter:

```
:SYSGEN
```

then

```
SYSGEN>IO
```

The I/O Configurator provides a series of commands for adding, modifying, deleting, and listing devices and device classes. Each command includes a complete set of parameters for specifying the characteristics of the subject device or device class.

Modifying the System Configuration for a Device

The following describes the procedure for modifying a device. It is typical of the procedures used in the I/O Configurator.

The command to modify devices is MDEV. It is used with all devices. The syntax of the command and its parameters are displayed in Example 8-1 and Table 8-1.

```
     MDEV        ldev        = logical device #
                 [newldev    = logical device #]
                 [id         = device id]
                 [path       = device path]
                 [class      = class name]
                 [mode       = JOB|DATA|INTERACTIVE|
                               DUPLICATIVE|INPUT|
                               OUTPUT|AUTOREPLY|NONE]
                 [outdev     = output device]
                 [rsize      = record size]
                 [pmgr       = physical manager name]
                 [lmgr       = logical manager name]
                 [pmgrpri    = physical manager
                               priority]
                 [mpetype    = comp. mode type]
                 [mpesubtype = comp. mode subtype]
```

Example 8-1. MDEV Command Syntax

Table 8-1. >MDEV Parameters

Parameter	Description
ldev	Logical device (`LDEV`) number; one must be available before a device can be modified.
newldev	The new logical device number that will be assigned to the device.
id	The new Hewlett-Packard number by which the product is identified.
path	The new hardware address of the device; new devices are added to existing paths. Paths can accept eight devices, although HP-IB device adapters support six devices. The format of the path name is system dependent. Refer to Chapter 2 of this manual for a description of path names. For additional information, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).
class	The name of the class to which the device belongs.
mode	The new mode in which the device will operate where: `JOB` = job or session accepting device; `DATA` = data accepting device; `INTERACTIVE` = interactive device; input=output; `DUPLICATIVE` = a device that echos inputs to its output; `INPUT` = initially spooled for input; `OUTPUT` = initially spooled for output; `AUTOREPLY` = automatically allocates a device to a user without an intervening `:REPLY` command; `NONE` = none of the above apply. Multiple modes can be specified by separating them with commas and surrounding them by parentheses.

Table 8-1. >MDEV Parameters (continued)

Parameter	Description
outdev	The new logical device (`LDEV`) number or device class of the output device to which the device being added is assigned.
rsize	The new characteristic record size of the device.
pmgr	The new name of the physical device manager associated with the specified path; can be up to 32 alphanumeric characters long.
lmgr	The new name of the logical device manager associated with the specified path.
pmgrpri	The new priority level at which the physical device manager executes.
mpetype	Compatibility Mode type; obtained from the `IODFAULT.PUB.SYS` file for all Hewlett-Packard devices.
mpesubtype	Compatibility Mode subtype; obtained from the `IODFAULT.PUB.SYS` file for all Hewlett-Packard devices.

The syntax for all of the commands associated with adding, modifying, and deleting devices include required and optional parameters. Optional parameters are designated by brackets. If you choose one of the optional parameters, use commas as place holders for any required parameters before specifying the optional parameter.

Any parameter can be specified positionally or by keyword. If specified by keyword, a parameter cannot be specified ahead of any parameter that is specified positionally.

The symbol | in the syntax means you can choose any of the options that apply. These options are device dependent. For example, some devices, such as terminals, can be both input and output devices, but a printer can be an output device only. If more than one option is specified, enclose the parameters in parentheses and separate with commas.

Modify a Device with >**MDEV**

In the following example, the command is used to modify the configuration of a printer identified as LDEV 27.

Access the I/O Configuration program of SYSGEN by entering:

```
:SYSGEN
```

The screen displays:

```
SYSGEN>
```

Enter:

```
SYSGEN>IO
```

The screen displays:

```
IO>
```

Check the configuration for the printer device class (LP and PP) to verify the LDEV number of the device to be modified by entering:

```
IO>LCLASS CLASS= LP,PP
```

The following is displayed:

```
CLASSNAME    MODE     MIN MODE  DCC MODE  # DCC  LDEV
---------    -------  --------  --------  -----  ----
LP           default  out                 0      6, 19, 27,
PP           default  out                 0      19, 27,
```

To change printer LDEV 27 from the device class PP to FASTPP, enter either :

```
IO>MDEV 27 CLASS=FASTPP
```

or

```
IO>MDEV 27 ,,,,FASTPP
```

To verify the modification, enter:

```
IO>LDEV 27
```

The following list is displayed:.

```
LDEV              PATH                              DEVICE ID
```

```
----  --------------------------------  -----------------------------
 27  8.2.9                                  HP2680


LDEV   OUTDEV   DEV TYPE  JAID R xS  RSIZE   CLASS
----   --------  --------  ---- - --  -----   --------
 27  0          PP                OS    66  FASTPP
```

The basic device DEV TYPE remains PP, but device classes previously associated
with the device are replaced by the device class specified in the MDEV command.

Saving Configuration Changes

To save changes in the configuration enter the following, starting from the IO
Configurator:

```
        IO>HOLD
        IO>EXIT
        SYSGEN>KEEP
        SYSGEN>EXIT
```

To make the changes effective, the system must be rebooted, which forces
a START NORECOVERY. For more information refer to *System Startup,
Configuration and Shutdown Reference Manual* (32650-90042)

Note	Before rebooting the system, save or print all spoolfiles. If not, they will be lost.

Configuring Pseudo Devices

SYSGEN allows the System Administrator to configure pseudo devices
logically. These devices do not have to be attached physically to the system at
the time. The feature lets you configure devices which will be needed in the
future, while physically attaching only those needed or available now.

Printer Changes

MPE XL supports batch printing on spooled devices only.

Transferring Spoolfiles from MPE XL to MPE V/E

Please refer to Chapter 9 for information on transferring spoolfiles between MPE XL and MPE V/E.

Reporting on Disk Space Availability

On MPE XL, the MPE V/E disk space reporting utility FREE5 is replaced by a new utility, DISCFREE.

DISCFREE displays disk space in either a histogram or allocation format.

Managing Terminals

MPE XL provides several new parameters for the `:SET` command, and a new command, `:ECHO,`, which sends messages to the `$STDLIST` device. One of the new `:SET` command parameters also is `ECHO`. Be careful to avoid confusing the two.

Terminal Control with New :SET Command Parameters

The `:SET` command lets you change all terminal characteristics at once. The command syntax is:

```
                {DELETE}         {ON }         {ON }
  :SET [STDLIST=        ][;ECHO=     ] [;MSG=     ]
                {SAVE  }         {OFF}         {OFF}
```

300

```
                  1200
                  2400
     [;SPEED =    4800]
                  9600
                 19200
                 19.2K
```

Terminal speeds of 110, 600, and 1500 are no longer supported.

Table 8-2 shows the parameters for the :SET command:

Table 8-2. Parameters of the :SET Command

Parameter	Description
STDLIST	Flags the job's $STDLIST for deletion at job termination, or cancels the effect of a previous :SET STDLIST=DELETE command. Default is SAVE.
ECHO	Turns terminal echoing ON or OFF.
MSG	Specifies whether or not TELL messages are displayed on the user's terminal. MSG=OFF will prevent TELL messages from appearing on the terminal. However, WARN messages will override MSG=OFF and will appear on the terminal.
SPEED	Specifies the terminal's data transmission rate, within the upper and lower bounds outlined above. The user still must change the terminal's speed setting manually.
	When setting speed, both input and output speeds must be set to the same value.

Sending Messages to the $STDLIST Device

The new `:ECHO` command allows the `$STDLIST` device to display a message.
The syntax is :

    :ECHO [*message*]

where *message* is the message to be displayed to the `$STDLIST`.

MPE V/E Features Not Supported

The FREE5 utility is not implemented in MPE XL. Instead, MPE XL uses the DISCFREE utility.

The terminal speeds of 110, 600, 1500 are no longer supported.

Additional Information

For additional information, refer to:

■ *MPE XL Asynchronous Serial Communications System Administrator's Reference Manual* (32023-90001)

■ *Controlling System Activity Reference Manual* (32650-90155)

■ *MPE XL Commands Reference Manual* (32650-90003)

■ *System Startup, Configuration and Shutdown Reference Manual* (32650-90042)

9

Managing Printed Output—The Native Mode Spooler

Overview

The Native Mode Spooler (NMS) is an MPE XL facility designed to manage both input and output spoolfiles. Output spoolfiles go in the OUT group of the HPSPOOL account and input spoolfiles in the IN group of the HPSPOOL account. Consequently, most commands which can be used on other files can be used on spoolfiles.

NMS makes the `SPOOK` utility, used to manage spoolfiles on MPE V/E and on pre-A.40.00 versions of MPE XL, obsolete.

Three completely new commands for NMS are:

```
LISTSPF
SPOOLER
SPOOLF
```

Other commands from MPE V/E and/or MPE XL which may affect spoolfiles include:

```
BUILD           COPY
LISTF           LISTFILE
FILE            PURGE
JOB             RENAME
OPENQ           SHUTQ
OUTFENCE        LISTEQ
STARTSPOOL      ALTSPOOLFILE
STOPSPOOL       DELETESPOOLFILE
SUSPENDSPOOL    SHOWIN
RESUMESPOOL     SHOWOUT
HEADON          HEADOFF
```

For more information about MPE XL commands refer to the *MPE XL
Commands Reference Manual* (32650-90003). For more information about
NMS refer to the *Native Mode Spooler Reference Manual* (32650-90166).

Features

NMS allows you to start, stop, suspend and resume spooling; check spooler
status, obtain spooler information and print, alter and delete spoolfiles. The
`SPFXFER` utility allows you to transfer spoolfiles from the NMS format to
MPE V/E format and back again. The `PRINTSPF` utility allows you to print
spoolfiles.

Managing the Spooler Process

Use the `SPOOLER` command to start, stop, suspend, and resume spooler
processes, and release spoolfiles from a spooler process. The `SPOOLER` command
may be entered only at the master console unless and to users who have been
allowed it via the `ALLOW` command. Users who have been *associated* to a
spooled device with the `ASSOCIATE` command may issue the command for that
device.

Note	Any numbers or devices in the examples in this chapter are used for illustrative purposes only. You would use actual values from your environment.

Start Spooling

To create and activate a new spooler process on a spoolable device enter:

```
SPOOLER 6;START
```

Stop Spooling

To stop a spooler process enter:

```
SPOOLER 6;STOP
```

Suspend Spooling

When a spooler is suspended, spoolfiles may continue to be created but the spooler process will not continue to print files.

To suspend spooling enter:

```
SPOOLER 6;SUSPEND;NOW
```

Because `;NOW` is the default it may be omitted.

To suspend spooling but allow a spoolfile that is currently being printed to finish printing enter:

```
SPOOLER 6;SUSPEND;FINISH
```

Resume Spooling

To resume spooling enter:

```
SPOOLER 6;RESUME
```

To resume spooling and begin printing *back* three pages from the current page position enter:

```
SPOOLER 6;RESUME;OFFSET=-3
```

To resume spooling at the *first* page (beginning) of the spoolfile enter:

```
SPOOLER 6;RESUME;OFFSET=1
```

For complete `SPOOLER` command syntax, refer to the end of this chapter.

Suspending and Resuming - Additional Considerations

If you enter `SPOOLER` *dev*`;SUSPEND;NOW;KEEP` (`NOW` and `KEEP` are defaults) with no offset, the spooler suspends as soon as it processes the command. It reads no more data from the spoolfile, nor does it flush existing data from the file system or device buffers. Later, if you enter `SPOOLER` *dev*`;RESUME`, with no offset, the spooler continues from the point of interruption, and data in the buffer is printed in the normal course of operation. The output appears as though the spooler had never been suspended.

If you enter `SPOOLER` *dev*`;SUSPEND` with any other combination of different options (such as `NOKEEP` or a page offset) the spooler does *not* suspend immediately. Instead it prints all buffered data first, and then suspends. The buffer may contain a significant volume of data so there may be a time lag from when the command is issued to the time printing actually stops.

If you enter `SPOOLER` *dev*`;SUSPEND;NOW;KEEP` (or use `NOW` and/or `KEEP` by default) and later resume *with an offset specification*, the spooler flushes all buffered data to paper *before* carrying out the offset request. As a result, you may see *extra* output when you resume.

To avoid the extra output, enter your offset when you suspend (which prints buffered data then), *not* when you resume. For example:

```
SPOOLER 16;SUSPEND;OFFSET=1
  .
  .
  .
SPOOLER 16;RESUME
```

Obtaining Spooler Process Status

The `SPOOLER` command `;SHOW` parameter displays the status of the spooling process. To issue this command enter:

```
SPOOLER 6;SHOW
```

If a device class is specified status is displayed for all spooled devices in the class.

Printing Without Spooling

It is sometimes necessary for a print program to write directly to a printer (rather than writing a spoolfile which will later be written to the printer by the spooler). When a user process opens a printer and writes to it directly it is said to be printing *hot*.

Before release A.40.00 users could issue the following command:

    STOPSPOOL *ldev*

and print *hot* to the printer while spoolfiles were being created for the device classes associated with that LDEV. This is no longer possible because device classes are collections of logical devices.

If the device that you want to operate unspooled is part of a class that contains at least one other device that can remain spooled, there is no problem. If this is not the case, and you want to print *hot* the following two examples show how.

- Configure at least two devices in a particular device class. Suppose that LDEV 6 and nonexistent LDEV 19 are configured for device class LP. Make sure that the queue for LDEV 19 is open. One way to do this is to enter an OPENQ 19 command in your SYSSTART file. If LDEV 6 is usually spooled, you can also enter the STARTSPOOL 6 command or SPOOLER 6;START command in your SYSSTART file.

    Make sure that your applications generating spooled output direct that output to class LP. Enter:

        STOPSPOOL 6

    or

        SPOOLER 6;STOP

    Start the application which requires unspooled access to the printer. When it is finished, enter:

        STARTSPOOL 6

    or

        SPOOLER 6;START

to print the accumulated spoolfiles.

Output directed to class LP creates spoolfiles even while LDEV 6 is unspooled because the queue is open for at least one device (LDEV 19) in the class.

■ This workaround requires no dummy device. Enter:

    STOPSPOOL 6

or

    SPOOLER 6;STOP

Start the application requiring unspooled access to the printer. Then enter:

    OPENQ 6

In the second method, there is a period of time during which any process - even one that directs its output to class LP - can acquire the printer unspooled. If it is a process other than the intended one, you must either wait for that process to close the printer, or you must abort it.

This situation does not arise with the first method however, because there is always at least one device in class LP with its queues open. For this reason, the first method may be preferable.

Obtaining Information About Spoolfiles—the LISTSPF command

Use the `LISTSPF` command to obtain information about input and output spoolfiles.

Note	The `SPOOLID`'s provided in these examples are for illustrative purposes only. You would use actual `SPOOLID`'s from your environment.

Information by SPOOLID

To obtain information by `SPOOLID` for specific output spoolfiles, you would enter:

```
LISTSPF 357
```

or, for more than one spoolfile:

```
LISTSPF (357,375,458)
```

Information for All SPOOLIDS

To obtain information about *all* spoolfiles enter:

```
LISTSPF @
```

or, because the default is all spoolfiles enter:

```
LISTSPF
```

To obtain information about all *output* spoolfiles:

```
LISTSPF O@
```

To obtain information about *input* spoolfiles only enter:

```
LISTSPF I@
```

To obtain information about *all* users in a given account (in this example the MFG account) enter:

```
LISTSPF;SELEQ=[OWNER=@.MFG]
```

Note   In this form of the `LISTSPF` command you must use brackets as shown, not parentheses.

Altering, Printing and Deleting Spoolfiles—The SPOOLF Command

The `SPOOLF` command enables you to alter characteristics of spoolfiles such as the device, the output priority, the number of copies to print and whether or not the spoolfile should be saved or deferred. You may also use it to print or delete spoolfiles.

Altering Spoolfiles

You may use the `;ALTER` parameter of the `SPOOLF` command to alter the characteristics of spoolfiles.

To alter the print device (to device class `LP2`) for three spoolfiles enter:

```
SPOOLF (357,375,458);ALTER;DEV=LP2
```

You may specify a device class, as in the example, or you may specify a logical device number or device name.

To alter the output priority of all output spoolfiles of which you are the owner (or, if you are logged onto the console, or have OP or SM capability, all output spoolfiles on the system) enter:

```
SPOOLF O@;ALTER;PRI=12
```

To alter the number of copies for one or more output spoolfiles enter:

```
SPOOLF (357,375,458);ALTER;COPIES=3
```

To defer one or more spoolfiles enter:

```
SPOOLF (357,375,458);ALTER;DEFER
```

A *deferred* spoolfile will *not* print.

Note   When a spoolfile is deferred in this way, its priority is *not* changed. Instead, it is simply marked as deferred.

To undefer one or more spoolfiles enter:

```
SPOOLF (357,375,458);ALTER;UNDEFER
```

An *undeferred* output spoolfile will print if its output priority exceeds the *outfence* of the printer to which it has been sent.

The `;ALTER` parameter of the `SPOOLF` command has a *selection equation* option that enables you to specify a group or subset of spoolfiles on which to perform the alterations.

For example:

```
SPOOLF O@;ALTER;SELEQ=[OWNER=@.MFG];PRI=12
```

The DELPND State and ;ALTER - Additional Considerations

A spoolfile is put into the `DELPND` (delete pending) state by issuing the `PURGE` command, the `DELETESPOOLFILE` command, or the `SPOOLF` *nnn*`;DELETE` command on the spoolfile. The STORE subsystem with the `PURGE` option also puts a file into the `DELPND` state. `SPOOLF` *nnn*`;ALTER` changes the spoolfile state from `DELPND` to its previous state.

Altering an Actively Printing File

If a spooler is printing the spoolfile and has not yet closed the file, entering the command `SPOOLF` *nnn*`;ALTER` returns the file to the `PRINT` state. But first the spooler prints all data currently in the buffer and closes the file.

Because the spooler has been interrupted while printing a spoolfile, it marks the spoolfile as incompletely printed when it closes it. The spoolfile is put into the `READY` state, where it can be selected for printing once again.

A Spoolfile Opened by a User Process

A user process that has opened a spoolfile is not interrupted by the `SPOOLF` *nnn*`;DELETE` command nor by the a `SPOOLF` *nnn*`;ALTER` command. When the user process eventually closes the spoolfile, the file disposition used during the close determines the fate of the spoolfile. The spoolfile returns to the state it was in before the user opened it, if it continues to exist.

Printing Spoolfiles

You may use the `;PRINT` option of the `SPOOLF` command to print spoolfiles. For more information on printing spoolfiles refer to the `PRINTSPF` utility described later in this chapter.

Suppose you have copied a spoolfile from the `OUT` group of the `HPSPOOL` account into the `PUB` group of the `MFGRPTS` account and named it `MFGDATA`. To print this spoolfile, while you were logged onto that group and account, you would enter:

```
SPOOLF MFGDATA;PRINT;DEV=LP
```

To print `MFGDATA` from a different logon group and account you would add the spoolfile's group and account name as follows:

```
SPOOLF MFGDATA.PUB.MFGRPTS;PRINT;DEV=LP
```

```
SPOOLF @.PUB.MFG;PRINT;DEV=6
```

Deleting Spoolfiles with the SPOOLF Command

The `;DELETE` option of the `SPOOLF` command allows you to delete spoolfiles.

To delete one or more spoolfiles enter:

```
SPOOLF (357,375,458);DELETE;SHOW
```

Viewing Spoolfiles - the PRINTSPF Utility

All output spoolfiles are initially created in the OUT group of the HPSPOOL account and input spoolfiles in the IN group of that account. Consequently, you may use any standard text editor to view the contents of a spoolfile. However, to see the control characters of a spoolfile you must use the `PRINTSPF` utility. You may wish to view control characters when you are debugging a problem or communicating with a Hewlett-Packard support representative.

The general form of the `PRINTSPF` utility is:

```
PRINTSPF "[FILE=] filename
       [;START= startrec]
       [;END= endrec]
       [;WIDTH= linewidth]
       [;NUM]"
```

Note   If you use more than only the spoolfile name, parametric data following the word `PRINTSPF` *must* be enclosed in quotes as in the examples.

To examine an entire *output* spoolfile at your terminal screen enter:

```
PRINTSPF O357.OUT.HPSPOOL
```

To examine at your terminal screen the first twenty records of a spoolfile enter:

```
PRINTSPF "O357.OUT.HPSPOOL;END=20"
```

To examine at your terminal screen the last 15 records of a spoolfile enter:

```
PRINTSPF "O357.OUT.HPSPOOL;START=-15"
```

To examine records 40 through 50 at your terminal screen enter:

```
PRINTSPF "O357.OUT.HPSPOOL;START=40;END=50"
```

Note   In the above examples it is not required that you qualify the spoolfile name with the group and account (`.OUT.HPSPOOL` for *output* spoolfiles). However, if you don't, the system searches your logon group and account prior to searching the `IN` or

---

`OUT` group of the `HPSPOOL` account for the spoolfile. So if a
spoolfile with the same name exists both places a fully qualified
name guarantees you get the one you want. Also, using a fully
qualified spoolfile name is somewhat more efficient because
the system looks for the file in only the specified group and
account.

Storing and Restoring Spoolfiles

You may use the `STORE` and `RESTORE` commands to store spoolfiles to tape and to restore them to your system. It is recommended that you use these commands to move spoolfiles from one system to another so long as *both* systems have the Native Mode Spooler. For information on transferring spoolfiles to or from an unlike environment refer to the `SPFXFER` utility described later in this chapter.

Storing All Output Spoolfiles

To store all output spoolfiles to tape, enter:

```
FILE T;DEV=TAPE
STORE @.OUT.HPSPOOL;*T;SHOW
```

The `;SHOW` parameter produces a listing of files stored. You may enter `;SHOW=OFFLINE` for an offline listing.

Restoring All Output Spoolfiles

To restore all output spoolfiles to your system, enter:

```
FILE T;DEV=TAPE
RESTORE @.OUT.HPSPOOL;*T;SHOW
```

Note	*Input* spoolfiles are private and private spoolfiles may *not* be stored. However, because *input* spoolfiles are generally used and managed by the system there is seldom any reason to store them to tape or move them to another system.

Transferring Spoolfiles to and from Other Systems—the SPFXFER Utility

The recommended method of transferring output spoolfiles between systems with Native Mode Spooler is `STORE` and `RESTORE` as described elsewhere in this chapter. However, spoolfiles created in compatibility mode or on a classic HP3000 (MPE V/E based operating system) have a somewhat different internal structure so they must be converted or *transported* before they can be used in native mode. Similarly, native mode spoolfiles must be *transported* before being used in compatibility mode or on a classic HP3000. The `SPFXFER` utility allows you to transport spoolfiles back and forth between these different system types.

Transferring to Native Mode—the Input Command

The `INPUT` command allows you to move spoolfiles onto your native mode system that were output to tape (via the `SPOOK` utility) in compatibility mode or on a classic HP3000. It will also input spoolfiles previously output with the `SPFXFER` utility.

The general form of the `INPUT` command is:

$$\texttt{INPUT} \left\{ \begin{array}{l} [\,username[\,.\,acctname]\,] \\ dfid\,[\,,\,\ldots\,]\,] \end{array} \right\} \;;\ast tapefile$$

The `INPUT` and `OUTPUT` commands require a tape device back reference. So before running the utility, set up a file equation for a tape such as:

    FILE T;DEV=TAPE

To run the `SPFXFER` utility enter:

    SPFXFER

The prompt `>` will appear. To see all commands available in `SPFXFER` enter `HELP` at the prompt.

Input by User and Account Name

To input all spoolfiles created under a specific user and account name, enter:

    > INPUT USER.ACCT;*T

To input all spoolfiles created by all users in a specific account, enter:

> `INPUT @.ACCT;*T`

To input all spoolfiles created by all users in all accounts, enter:

> `INPUT @.@;*T`

The user name and account need not exist in the system directory nor will this command create them.

Input by DFID

The `DFID` is the identifier given to a spoolfile in compatibility mode or on a classic HP3000.

To input spoolfiles by `DFID` enter:

> `INPUT (357,375,458);*T`

Transferring Out of Native Mode—the OUTPUT Command

The `OUTPUT` command enables you to move spoolfiles from your native mode environment onto a tape in `SPOOK` format for use in compatibility mode or on a classic HP3000.

The general form of the `OUTPUT` command is:

$$\text{OUTPUT} \left\{ \begin{array}{l} [\, username [\, . acctname \,] \,] \\ [\, spoolid \,[\, , \, \ldots \,] \,] \end{array} \right\} \; ;*tapefile \; [\, ;\text{PURGE} \,]$$

Output by User and Account Name

To output all spoolfiles for a specific user and purge them, enter:

> `OUTPUT USER.ACCT;*T;PURGE`

The `;PURGE` parameter is optional and causes files to be purged from your system after being written to tape.

To output all spoolfiles for all users in a specific account, enter:

> `OUTPUT @.ACCT;*T`

Outputting by Spoolid

To output by spoolfile ID, enter:

> `OUTPUT 749822,37721,482943;*T`

Obtaining Help and Terminating

To terminate the SPFXFER utility, enter:

> <u>EXIT</u>

To obtain help (usage information), enter:

> <u>HELP</u>

LISTSPF

The syntax for the LISTSPF command is:

$$\text{LISTSPF} \left[\; [\text{IDNAME=}] \left\{ \begin{array}{l} spoolid \\ (spoolid\;[\,,spoolid]\;\ldots\;) \end{array} \right\} \right]$$

$$\left[\; [\text{;SELEQ=}] \left\{ \begin{array}{l} select\text{-}eq \\ \hat{}\,indirect\_file \end{array} \right\} \right] \left[\begin{array}{l} \text{;DETAIL} \\ \text{;STATUS} \end{array} \right]$$

For more information on this command refer to the *MPE XL Commands Reference Manual* (32650-90003) and the *Native Mode Spooler Reference Manual* (32650-90166).

SPOOLER

The syntax for the SPOOLER command is:

$$\text{SPOOLER }\ [\text{DEV=}]\ \left\{\begin{array}{l} ldev \\ devclass \\ devname \end{array}\right\}$$

$$\left\{\begin{array}{l} \text{;SHOW} \\ \text{;OPENQ }\ [\ \text{;SHOW}] \\ \text{;SHUTQ }\ [\ \text{;SHOW}] \\ \text{;START }\ \left[\begin{array}{l} \text{;OPENQ} \\ \text{;SHUTQ} \end{array}\right]\ [\ \text{;SHOW}] \\ \text{;STOP }\ \left[\begin{array}{l} \text{;FINISH} \\ \text{;NOW} \end{array}\right]\ \left[\begin{array}{l} \text{;OPENQ} \\ \text{;SHUTQ} \end{array}\right]\ [\ \text{;SHOW}] \\ \text{;SUSPEND }\ \left[\begin{array}{l} \left[\begin{array}{l} \text{;FINISH} \\ \text{;NOW} \end{array}\right]\ \left[\begin{array}{l} \text{;NOKEEP} \\ \text{;KEEP} \end{array}\right] \\ [\ \text{;OFFSET=}\ \left[\begin{array}{l} + \\ - \end{array}\right]\ page\ ] \\ \left[\begin{array}{l} \text{;OPENQ} \\ \text{;SHUTQ} \end{array}\right]\ [\ \text{;SHOW}] \end{array}\right] \\ \text{;RESUME }\ \left[\ \text{;OFFSET=}\ \left[\begin{array}{l} + \\ - \end{array}\right]\ page\ \right]\ \left[\begin{array}{l} \text{;OPENQ} \\ \text{;SHUTQ} \end{array}\right]\ [\ \text{;SHOW}] \\ \text{;RELEASE }\ \left[\ \text{;OFFSET=}\ \left[\begin{array}{l} + \\ - \end{array}\right]\ page\ \right]\ \left[\begin{array}{l} \text{;OPENQ} \\ \text{;SHUTQ} \end{array}\right]\ [\ \text{;SHOW}] \end{array}\right\}$$

For more information on this command refer to the *MPE XL Commands Reference Manual* (32650-90003) and the *Native Mode Spooler Reference Manual* (32650-90166).

SPOOLF

The syntax for the SPOOLF command is:

$$
\texttt{SPOOLF} \left\{
\begin{array}{l}
\left[
\begin{array}{l}
\left[\texttt{IDNAME=}\right] \left\{\begin{array}{l} spoolid \\ (spoolid\left[\,,spoolid\right]\,\ldots\,) \end{array}\right\} \\[4pt]
\left[\texttt{;ALTER}\right]\left[\texttt{;SELEQ=}\left\{\begin{array}{l}\left[select\text{-}eq\right] \\ \hat{}\,indirect\_file\end{array}\right\}\right] \\[6pt]
\left[\texttt{;DEV=}\left\{\begin{array}{l} ldev \\ devclass \\ devname \end{array}\right\}\right] \\[8pt]
\left[\texttt{;PRI=}\,outpri\right]\left[\texttt{;COPIES=}\,numcopies\right] \\[4pt]
\left[\texttt{;SPSAVE}\right]\left[\begin{array}{l}\texttt{;DEFER} \\ \texttt{;UNDEFER}\end{array}\right]\left[\texttt{;SHOW}\right]
\end{array}
\right] \\[40pt]
\left[
\begin{array}{l}
\left[\texttt{IDNAME=}\right]\left\{\begin{array}{l} fileset \\ (fileset\left[\,,fileset\right]\,\ldots\,) \end{array}\right\} \\[4pt]
\left[\texttt{;PRINT}\right]\left[\texttt{;DEV=}\left\{\begin{array}{l} ldev \\ devclass \\ devname \end{array}\right\}\right] \\[8pt]
\left[\texttt{;PRI=}\,outpri\right]\left[\texttt{;COPIES=}\,numcopies\right] \\[4pt]
\left[\texttt{;SPSAVE}\right]\left[\begin{array}{l}\texttt{;DEFER} \\ \texttt{;UNDEFER}\end{array}\right]\left[\texttt{;SHOW}\right]
\end{array}
\right] \\[40pt]
\left[
\begin{array}{l}
\left[\texttt{IDNAME=}\right]\left\{\begin{array}{l} spoolid \\ (spoolid\left[\,,spoolid\right]\,\ldots\,) \end{array}\right\} \\[4pt]
\left[\texttt{;DELETE}\right]\left[\texttt{;SELEQ=}\left\{\begin{array}{l} select\text{-}eq \\ \hat{}\,indirect\_file \end{array}\right\}\right] \\[6pt]
\left[\texttt{;SHOW}\right]
\end{array}
\right]
\end{array}
\right\}
$$

For more information on this command refer to the *MPE XL Commands Reference Manual* (32650-90003) and the *Native Mode Spooler Reference Manual* (32650-90166).

10

Storing and Restoring Files

This chapter describes the new and changed features of STORE and
RESTORE. STORE stores (backs up) system and user files from disk to tape.
RESTORE copies files from tape back to disk. Neither is used with spooled
files, which are stored and restored with the SPOOK utility.

Overview

The functions of MPE XL and MPE V/E STORE and RESTORE are similar.

Features

Unlike MPE V/E, MPE XL STORE and RESTORE let you specify a
`DIRECTORY` option for storing and restoring the entire accounting structure
along with specified files. This option replaces SYSDUMP directory backup.

In addition to the capabilities of MPE V/E STORE and RESTORE, the MPE
XL versions provide a number of new functions in the form of options to the
`:STORE` and `:RESTORE` commands.

Another difference between storing files in MPE V/E and MPE XL is that
MPE XL now supports a new command, `:VSTORE`, which provides a means to
verify the integrity of the media upon which the files have been stored.

New :STORE Parameters

New :STORE parameters are DIRECTORY, FCRANGE, ONVS, STORESET, INTER and TRANSPORT.

- Use the DIRECTORY parameter to store the accounting structure (requires System Manager (SM) or System Supervisor (OP) capability).

- Use the FCRANGE parameter to specify a set of file code ranges to store.

- Use ONVS to store files from a volume set.

- Use ONVS and DIRECTORY together to store volume set directories.

- Use STORESET to specify serial and parallel backup devices.

- Use the INTER parameter to specify that file interleaving is to be used.

- Use TRANSPORT to produce MPE V/E compatible tapes.

Note	MPE XL allows for file sizes which exceed the MPE V/E file size limit. If you attempt to store an incompatible file on MPE XL (one that exceeds the MPE V/E limit) using the TRANSPORT parameter, the file will not be stored and a warning message will be output.

New :RESTORE Parameters

New RESTORE parameters are: `DIRECTORY`, `FCRANGE`, `LISTDIR`, `VOL`, `VOLCLASS`, and `VOLSET`.

- Use `DIRECTORY` to restore the accounting structure from a backup STORE tape (requires SM or OP capability).

- Use the `LISTDIR` parameter to display information from the tape directory and tape label, without restoring any files. (`LISTDIR` works only with Native Mode STORE tapes and not with tapes created with the `TRANSPORT` parameter of the :`STORE` command.)

- Use `VOL` to specify the volume on which the files are to reside, `VOLCLASS` to specify the volume class on which the files are to reside, and `VOLSET` to specify the volume set on which the files are to reside.

- Use `FCRANGE` to restore files with specific file codes.

Both the :`STORE` and :`RESTORE` commands let you specify multiple subsets to exclude from a file set, and use new methods for specifying indirect file names.

MPE XL supports storing and restoring files to and from unlabeled volumes on magnetic tape devices only. If a labeled tape is specified in a file equation, RESTORE will invoke CMSTORE to read it.

STORE Syntax

The syntax for the :STORE command is:

```
:STORE [filesetlist] [;[storefile] [;option[;...]]]
       [;option[;...]]]
```

```
Where option is:
```

```
[;DIRECTORY]
[;FCRANGE=filecode/filecode[,filecode/filecode[,...]]]
[;FILES=maxfiles][;DATE<=accdate]
                        ;DATE>=moddate
[;ONERROR=recoverytype]
[;ONVS=volumesetname[,volumesetname[...]]]
[;PROGRESS [=minutes]]
[;PURGE]
[;SHOW[=showparmlist]]
[;STORESET=(device[,...])[,(device[,...])[,...]]
[;TRANSPORT]
[;INTER]
```

RESTORE Syntax

The syntax for the :RESTORE command is:

```
:RESTORE [restorefile] [;[filesetlist] [;option[;...]]]
         [;option[;...]]
```

Where *option* is:

```
[;DEV=device]
[;SHOW=[showoption[,showoption[,...]]]]
[;FILES=maxfiles]
[; {LOCAL}
   {GROUP=groupname}
   {ACC[OUN]T=accountname}
           {GROUP}
[;CREATE={ACCT   } [,..]]
           {CREATOR}
[;CREATOR[=username]]
[;{KEEP  }
  {NOKEEP}]
[;{OLDDATE}
  {NEWDATE}]
[;ONERR[OR]={QUIT}
             {SKIP}]
[;DIRECTORY]
[;LISTDIR]
[;FCRANGE=filecode/filecode[,filecode/filecode[,..]]]
[;VOL=volumename]
[;VOLCLASS=volumeclassname]
[;VOLSET=volumesetname]
```

Verifying STORE Files Using :VSTORE

To insure that the data written to tape using :STORE are valid, MPE XL
provides the :VSTORE command.

To use this command, first issue a :FILE command assigning a file name to the
tape drive. Then issue a :VSTORE command that backreferences the tape file
and includes the file or files you want to verify.

The user interface for :VSTORE is similar to that for :RESTORE. The syntax is:

```
:VSTORE [vstorefile] [;[filesetlist] [;option[;...]]]
          [;option[;...]]
```

Where *option* is:

```
[;SHOW=[showoption[,showoption[,...]]]]
[;ONERR[OR]={QUIT}
            {SKIP}]
[;LOCAL]
[;DIRECTORY]
```

MPE V/E Features Not Supported

MPE XL maintains all of the functions of the MPE V/E `:STORE` and `:RESTORE` commands with the exception of `:FULLBACKUP` and `:PARTBACKUP`.

Additional Information

For additional information, refer to the *MPE XL Commands Reference Manual* (32650-90003).

11

System Backup and Recovery

This chapter describes procedures for backing up your MPE XL system.

Overview

MPE XL introduces two new concepts for performing system backups. It
separates system backup from system configuration, and it separates backup
copies of your system configuration from backup copies of your file system.

Features

With MPE XL you use the SYSGEN utility program to back up your system
configuration onto a system load tape. You can then use the system load tape
to reload the system configuration. Because the system load tape is separate
from the rest of your backup, you need only back up your system configuration
when you change it.

You use the STORE program to back up system files, user files, and your
accounting structure onto STORE tapes. Using the STORE program to
back up your file system lets you take advantage of several new features for
reducing the time it takes to perform backups. These new STORE features are
described in this chapter.

Backing Up the System Configuration

MPE XL uses the SYSGEN Utility Program to create system load tapes that backup your system configuration.

SYSGEN can generate an exact image of the current system, or a new or modified image. From the image it can then create a system load tape. A system load tape contains the system load utilities and base system files.

SYSGEN requires that you have System Supervisor (OP) capability to view system configuration data and System Manager (SM) capability to save changes and create tapes.

SYSGEN provides a series of command-driven user interfaces, and online HELP facilities that describe the systems command syntax and options. Through the interfaces, referred to as configurators, you can build new system configurations and generate system load tapes that contain the new configurations.

SYSGEN stores configuration data in a group of files that are maintained by one or more of the four system configurators. Each configurator provides you with an interface to make changes to an independent portion of the configuration data. For example, there is an I/O Configurator that allows you to change the physical configuration of the system and a LOG configurator for making changes to the type and quantity of system and user log files.

The basegroup is the group selected to be read or modified by SYSGEN. The default group is the group that was specified (or defaulted to) when the system was started. If *basegroup* is not specified, the default group becomes the basegroup.

The default group will generally be `CONFIG.SYS`. `CONFIG.SYS` is a permanent file set containing information on device classes, assigned I/O paths, assigned ldev numbers, and various data in system files.

When changes are made to the system configuration, the existing configuration files remain valid until you formally keep the new information through the `SYSGEN >KEEP` command. Until you `>KEEP` the changes, you can always back out of them. You may `KEEP` to the basegroup or to a group you specify.

The configuration of the system itself remains unchanged until the new configuration is made effective by rebooting the system. If the new

configuration is saved under a name other than `CONFIG.SYS,` the new name must be specified when rebooting. Depending on the source from which the system is to be rebooted (tape or disk) use the UPDATE or INSTALL utilities, or specify the appropriate form of the START utility. (Refer to Chapter 2 of this manual, and *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).

Multiple configurations can be kept on disk and stored to tape through a full system backup. When you keep your changes to another group name (for example, `CFIGNEW`) a new group is created in the `SYS` account.

When a system load tape is generated, however, the current configuration data is always written to tape as `CONFIG.SYS` regardless of what your working name for the group is in the disk. This reduces confusion over which group is the current configuration or what its original name was if you suddenly have to regenerate a system. For information on changing or creating configurations groups, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).

Running SYSGEN

To run SYSGEN, enter:

> :SYSGEN *basegroup,newgroup,inputfile,outputfile*

All of the parameters are optional. The command optionally allows the `INFO` parameter specification to redirect input and output from and to alternate sources:

```
:RUN SYSGEN;INFO="basegroup,newgroup,inputfile,&
outputfile"
```

The *basegroup* is the group in the account `SYS` that contains the configuration data you will use or alter. The default is the group used to boot the system, usually `CONFIG.SYS`. If you specify a group that does not exist, an error occurs. You can change *basegroup* within SYSGEN with the global *basegroup* command.

The *newgroup* is the group to which you will store your data. If you do not specify this parameter, SYSGEN stores the changes to the *basegroup.* If the group you specify already exists, SYSGEN asks you whether you actually want the configuration data written to that group. To override the *newgroup,* specify an alternate group with the SYSGEN `>KEEP` command.

The *inputfile* is the actual file designator of the file for command input. The formal file designator is `SYSGIN`. The default is `$STDIN`. You also can use a file equation to change the command input file.

The *outputfile* is the actual file designator of the file for output requests. The formal file designator is `SYSGOUT`. The default is `$STDLIST`. You also can use a file equation to redirect output.

Use file equations to change input to a command input file and/or redirect output to the line printer:

```
:FILE NEWOUT;dev=lp
:SYSGEN ,MYGROUP,NEWIN,*NEWOUT
```

or

```
:FILE SYSGIN=NEWIN
:FILE NEWOUT;DEV=LP
:SYSGEN ,MYGROUP,,*NEWOUT
```

When you execute SYSGEN you receive a list of SYSGEN first level commands. The text of the title may not be identical to that illustrated below.

```
SYSGEN version B.06.00 : catalog version B.06.00 THU, SEP 17, 1987,  3:01 PM
Copyright 1987 Hewlett-Packard Co.  All Rights Reserved

        **warning** no NMCONFIG file in this configuration.
        **warning** NMCONFIG.PUB.SYSTEM is now the NMCONFIG fil


 ** First level command **

  io                 log (lo)     misc (mi)     sysfile (sy)

  basegroup (ba)   keep(ke)       permyes (pe)   show (sh)
  tape (ta)

  clear (cl)(c)    exit (ex)(e)  help (he)(h)   oclose (oc)
  redo

sysgen>
```

System Backup Commands

The global command you use to make a system backup is TAPE (TA).

To create a system load tape, enter the following command:

    sysgen>TAPE `Return`

 or

    sysgen>TA `Return`

At the end of the backup, you will receive the message:

       ** Boot tape generated successfully **

If an error occurs during the backup, a flashing `TAPE ERROR` message is issued to the Console, describing the error.

Creating a System Load Tape

To create a system load tape that contains a new configuration, follow the
example commands:

```
:SYSGEN ,NEWFIG
```

```
SYSGEN version B.06.00 : catalog version B.06.00 THU, SEP 17, 1987,  3:01 PM
Copyright 1987 Hewlett-Packard Co.  All Rights Reserved

        **warning** no NMCONFIG file in this configuration.
        **warning** NMCONFIG.PUB.SYSTEM is now the NMCONFIG fil

 ** First level command **

  io                 log (lo)      misc (mi)      sysfile (sy)

  basegroup (ba)     keep(ke)      permyes (pe)   show (sh)
  tape (ta)

  clear (cl)(c)      exit (ex)(e)  help (he)(h)   oclose (oc)
  redo

sysgen>
```

(The text of the title may not be identical to that displayed above.)

Make your system configuration changes through the configurator subsystems
and save them temporarily with the >HOLD command. For information, refer to
System Startup, Configuration and Shutdown Reference Manual (32650-90042).
Now return to the first-level SYSGEN menu and keep the changes:

```
sysgen>KEEP (Return)
```

or

```
sysgen>KE (Return)

Keeping to group NEWFIG.SYS
Purge old configuration (yes/no)?Y  ** Enter (Y) **
sysgen>
```

To this point, your configuration changes have been saved to disk under the configuration group `NEWFIG`. If you specify `NEWFIG` as the basegroup and then issue the `TAPE` command, `NEWFIG` is written to tape as `CONFIG.SYS`.

```
sysgen>BA NEWFIG
sysgen>TA
sysgen>EXIT
END OF SUBSYSTEM
  :
```

`SYSGEN` will take about 15 minutes to store the new MPE XL system to tape as `CONFIG.SYS`.

If you reboot the system from this tape, you will overwrite your current configuration and it will be lost. To avoid this, before rebooting, recall the original `CONFIG.SYS` and store it under a different group name:

```
sysgen>BASEGROUP CONFIG
```

or

```
sysgen>BA CONFIG

sysgen>KEEP OLDCFIG  ** Keeping to group OLDCFIG **
sysgen>
```

Reboot With the New Configuration

To boot from the disk, enter:

```
:(CTRL) (B)
CM>TC or CM>RS
```

When the ISL> prompt is displayed, enter:

```
ISL>START NORECOVERY GROUP=NEWFIG
```

If the system does not boot under the new group, you can use the `START GROUP=OLDFIG` option under the Initial System Loader (ISL) to boot the system under the original `CONFIG` group. For more information on the `START` command and options, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).

The STORE Program and New :VSTORE Command

A new :VSTORE command in MPE XL allows you to verify the integrity of the backup media upon which the files have been stored.

For a description of the new STORE features, as well as more information on :VSTORE, refer to Chapter 10, "Storing and Restoring Files".

MPE V/E and MPE XL Tape Compatibility

MPE V/E SYSDUMP tapes are migrated to MPE XL through DIRMIG. After migration, files are restored to disk through a RESTORE menu.

MPE V/E STORE tapes are fully compatible with MPE XL. You can migrate MPE V/E user files to an MPE XL host system and then include the files as part of the complete system backup. For more information on migrating files, refer to the *Migration Process Guide* (30367-90007). To transfer STORE files from MPE XL to MPE V/E, use the TRANSPORT option of the MPE XL :STORE command. Note, however, that MPE XL files that are not compatible with MPE V/E due to file/record size limitations in MPE V/E will not be stored using the TRANSPORT option

SPOOK tapes from either operating system are compatible.

Changed Features

SYSGEN provides command-driven user interfaces with online help rather than the interactive prompting under the MPE V/E SYSDUMP utility.

MPE XL also permits multiple configuration groups to reside on disk and tape. The system can be brought up under any valid configuration from the ISL user interface through the START command and GROUP=CONFIG option. For more information, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).

Unlike SYSDUMP, SYSGEN does not provide a backup utility. Also, System
Supervisor (OP) capability is required to view system configuration data, and
System Manager (SM) capability is required to save changes to a configuration
group.

MPE V/E Features Not Supported

MPE XL does not use the SYSDUMP utility or the `:FULLBACKUP` and `:PARTBACKUP` commands.

Additional Information

For additional information refer to:

- *System Startup, Configuration and Shutdown Reference Manual* (32650-90042)

- *Performing System Management Tasks* (32650-90004)

For an in-depth description of new MPE XL commands, refer to the *MPE XL Commands Reference Manual* (32650-90003).

12

System Shutdown

This chapter briefly discusses the MPE XL system shutdown procedures and provides an example shutdown sequence. For more information, refer to *System Startup, Configuration and Shutdown Reference Manual* (32650-90042).

Overview

SHUTDOWN shuts down the operating system in an orderly manner. If done properly, a SHUTDOWN preserves all system and user files. Before the SHUTDOWN occurs, backlogged reports can be allowed to print or can be saved to tape and replaced when the system is running again.

Shut down the system for maintenance, a physical move, or after changing system configuration.

Features

The shutdown procedure for an MPE XL system is identical to the procedure for an MPE V/E system.

Recommended Shutdown Procedure

The SHUTDOWN procedure consists of several steps, including:

- Telling users well in advance of a planned shutdown.

- Warning users a few minutes before the shutdown.

- Preventing anyone from starting a new job or session, or printing new reports.

- Clearing the backlog of reports before the shutdown.

- Shutting any communications lines on the system.

- Answering any console requests.

- Suspending or aborting any jobs, and aborting any remaining sessions.

- Typing the `=SHUTDOWN` command.

To shut down the system:

1. Include shutdown information in the WELCOME message. Remember to include information about the time of the shutdown and who a user should contact with questions. Erase the current WELCOME message and create a new one by entering:

   ```
   :WELCOME
   ```

   When the pound sign prompt (#) appears, enter the message line by line, terminating each line with $\boxed{\text{Return}}$. Enter $\boxed{\text{Return}}$ at the prompt to terminate the WELCOME message facility.

   You may also specify an ASCII file which contains the message by entering:

   ```
   :WELCOME filename
   ```

   When users log on to the computer, the message notifies them of the impending shutdown, so they can plan their schedule accordingly.

2. Tell users about the shutdown approximately 15 minutes beforehand. Enter:

   ```
   :TELL @S;Shutdown in 15 minutes.  Please log off.
   ```

   This message reaches all active terminals, except those in Quiet Mode.

3. Prevent new system activity. Enter:

   ```
   :LIMIT 0,0
   :JOBFENCE 14
   :LOGOFF #Snnn
   ```

   The command `LIMIT 0,0` limits the number of concurrently running jobs and sessions. The two parameters x,x define the allowed number of jobs and sessions, respectively.

   The command `JOBFENCE 14` defines the minimum input priority that a job or session must have to execute. The parameter, `14`, raises the jobfence to the highest level.

   The command `LOGOFF` #Snnn logs off everyone except the session from which you are working (#Snnn). It also makes it impossible to log on via the ;HIPRI parameter.

   Disable Network Services. Enter:

```
:NSCONTROL STOP
```

This prevents new users from initiating services. Existing users of the service (VT, VTR, NFT, etc.) can continue until they finish.

4. Check the printing activities. Enter:

```
:SHOWOUT SP
```

This lists the printing activities. The system responds with two possible results. If the system responds, `NO SUCH FILE(S)`, continue with Step 8.

On the other hand, the system may respond with a a list of every report waiting to be printed.

5. Shut down the spool queues to prevent users from sending reports to the printer. Enter:

```
:SHOWDEV nn
```

where `nn` is your printer's ldev number.

If the printer's status is `AVAIL`, enter:

```
:SHUTQ nn
```

(If the printer's status is `UNAVAIL`, proceed with Step 6.)

The command `:SHUTQ nn` closes the queue of the device named in `nn` and prevents new spoolfiles from being created.

If you were successful in closing the queue, the system responds with a message.

6. List the backlog of existing reports. Enter:

```
:SHOWOUT SP
```

This lists all spoolfiles.

Check the `RANK` column to see if any spoolfiles are listed as `D` (for deferred). If none are deferred, continue with

7. Reset the system outfence to allow jobs to pass. Enter:

```
:OUTFENCE 1
```

You may alter a reports priority or alter the jobfence of a particular printer. Refer to *Performing System Management Tasks* (32650-90004) for more information.

You may also create a tape containing the deferred reports and transfer these reports back to the system when it has been restarted. Refer to *Native Mode Spooler Reference Manual* (32650-90166) and Chapter 9 for more information.

8. WARN users two minutes before shutting down the system. Enter:

    ```
    :WARN @S;SYSTEM SHUTDOWN IN 2 MINUTES.
    PLEASE LOG OFF.
    ```

    A warning reaches all terminals in use.

9. Locate all jobs and sessions still in progress or scheduled. Enter:

    ```
    :SHOWJOB JOB=@S
    ```

    and

    ```
    :SHOWJOB JOB=@J
    ```

10. Suspend all jobs. Enter:

    ```
    :BREAKJOB #Jnnn
    ```

    where `nnn` is the job number, for each job you wish to suspend. When you've finished, list all jobs. Enter:

    ```
    :SHOWJOB
    ```

11. Abort all jobs, except the Console.

Note   Before you abort any scheduled jobs, write down their job name and the date and time it's scheduled to begin. This way you can correctly reschedule the jobs after you start the computer again.

Enter:

    ```
    :ABORTJOB #Jnnn
    ```

12. Decide what to do with remaining spool files. Enter:

```
:SHOWOUT SP
```

If there are no remaining spoolfiles or only a few small files (for example, files of less than 1000 sectors), continue with

If many spool files remain, store them to tape.

Prevent any more printing by raising the outfence. Enter:

```
:OUTFENCE 14
```

Create necessary file equations. Prepare and mount a tape on the drive. Enter:

```
:FILE T;DEV=TAPE
```

Use the SPOOK utility to store the spoolfiles to tape. Enter:

```
:SPOOK
```

Wait for the SPOOK utility prompt (**>**). Enter:

```
:OUTPUT @.@;*T;PURGE;SHOW=OFFLINE
```

Respond to the tape request. Enter:

```
:(CTRL) (A)
```

Note   The prompt changes to (=) to indicate that (CTRL) (A) mode is active. The MPE XL prompt returns when MPE XL is running.

Wait for the prompt. Enter:

```
=REPLY nn,n,Y
```

where **nn** is your PIN and **n** is the tape drive's ldev number.

Remove, label, and secure the finished tape.

Exit the SPOOK utility. Enter:

```
>EXIT
```

The system responds with the message:

```
END OF PROGRAM
```

13. Issue a warning one minute before the shutdown and warn users that they will be logged off if they are on the system at that time. Enter:

    ```
    :WARN @S;SYSTEM SHUTDOWN IN 1 MINUTE.  ALL USERS
    WILL BE LOGGED OFF AT THAT TIME.
    ```

    A warning reaches all terminals in use.

14. Check to make sure all users have logged off. Enter:

    ```
    :SHOWJOB
    ```

15. Abort any remaining sessions, except your own. Enter:

    ```
    :ABORTJOB #Snnn
    ```

    where #Snnn is the session number for each session you wish to abort.

16. Shut communications lines. Enter:

    ```
    :NSCONTROL STATUS=USERS
    :NSCONTROL STATUS=SERVERS
    ```

    These commands check to see if any network users or servers remain.

    Now enter:

    ```
    :NSCONTROL ABORT
    ```

    This will terminate any remaining servers and services.

    Finally, enter:

    ```
    :NETCONTROL STOP
    ```

Warning   If you are shutting down the computer to do a system backup, STOP HERE. Since everyone has logged off the computer and all job processing is suspended, you can safely duplicate any files.

---

17. Shut down the system. Enter:

    CTRL A

    Now enter:

    ```
    =SHUTDOWN to shut down the system.
    ```

The Console responds by listing shutdown messages similar to these:

```
Shutdown of operating system begins. (Shut 1)
Shutdown of user processes begins (Shut 2)
Shutdown of jobs & sessions begins. (Shut 3)
Spoolers notified of a shutdown. (Shut 16)
Shutdown of system processes begins. (Shut 4)
Shutdown of system managers begins. (Shut 5)
Shutdown of operating system complete. (Shut 6)
```