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HEWLETT PACKARD

COMMUNICATOR 3000
Version G.03.00 of MPE V/E (V–MIT)

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HP 3000 Computer Systems

COMMUNICATOR 3000

Version G.03.00 of MPE V/E (V-MIT)

HEWLETT PACKARD
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CONVENTIONS USED IN THIS MANUAL

NOTATION	DESCRIPTION
nonitalics	Words in syntax statements which are not in italics must be entered exactly as shown. Punctuation characters other than brackets, braces and ellipses must also be entered exactly as shown. For example: EXIT;
italics	Words in syntax statements which are in italics denote a parameter which must be replaced by a user-supplied variable. For example: CLOSE *filename*
[ ]	An element inside brackets in a syntax statement is optional. Several elements stacked inside brackets means the user may select any one or none of these elements. For example: [A B] User *may* select A or B or neither.
{ }	When several elements are stacked within braces in a syntax statement, the user must select one of those elements. For example: {A B C} User *must* select A or B or C.
. . .	A horizontal ellipsis in a syntax statement indicates that a previous element may be repeated. For example: [,*itemname*]. . . ; In addition, vertical and horizontal ellipses may be used in examples to indicate that portions of the example have been omitted.
,	A shaded delimiter preceding a parameter in a syntax statement indicates that the delimiter *must* be supplied whenever (a) that parameter is included or (b) that parameter is omitted and any *other* parameter which follows is included. For example: *itema*[,*itemb*][,*itemc*] means that the following are allowed: *itema* *itema*,*itemb* *itema*,*itemb*,*itemc* *itema*,,*itemc*

CONVENTIONS (continued)

Δ — When necessary for clarity, the symbol Δ may be used in a syntax statement to indicate a required blank or an exact number of blanks. For example:

```
SET[(modifier)]Δ(variable);
```

underlining — When necessary for clarity in an example, user input may be underlined. For example:

```
NEW NAME? ALPHA
```

In addition, brackets, braces or ellipses appearing in syntax or format statements which must be entered as shown will be underlined. For example:

```
LET var[[subscript]] = value
```

shading — Shading represents the terminal's screen or key portions of an example.

[ ] — The symbol [ ] may be used to indicate a key on the terminal's keyboard. For example, [RETURN] indicates the carriage return key.

[CONTROL]*char* — Control characters are indicated by [CONTROL] followed by the character. For example, [CONTROL]Y means the user presses the control key and the character Y simultaneously.

CONTENTS

INTRODUCTION

SECTION 1

V-MIT Overview

by Korak Mitra
Computer Systems Division

This release of MPE V/E G.03.00 (V-MIT) delivers the following new system software products: HP Security Monitor and TurboSTORE. In addition, V-MIT supports the new HP7979 and HP7980 tape drives, and it also includes all of the enhancements added to UB-DELTA-2 and UB-DELTA-3.

HP SECURITY MONITOR

HP Security Monitor is a new operating system security product. Through a number of optional and individually enabled features it allows Improved Password Protection, Tighter Terminal Security, and Stronger Audit Trails. This helps protect system resources and sensitive data from unauthorized access.

TURBOSTORE

TurboSTORE is a new fast backup software product that provides the ability to back up to multiple tape drives simultaneously. This cuts backup time in half, significantly increasing system availability. Being an evolutionary extension of STORE/RESTORE, TurboSTORE is easy to learn how to use and operate. In addition, TurboSTORE reduces the time required to recover files.

NEW TAPE DRIVES

The HP7979A and HP7980A are 1/2 inch reel-to-reel tape drives that are designed to be high performance plug compatible upgrades to the HP7974A and HP7978B drives, respectively. These new tape drives feature automatic loading, compact packaging, improved reliability, higher performance, and lower pricing.

Both the HP7980A and the HP7979A offer high performance read/write speed at 125 inches-per-second. The HP7980A is a 6250/1600 bpi drive, while the HP7979A is a 1600 bpi drive. The HP7979A is upgradeable to the HP7980A.

UB-DELTA-2 AND UB-DELTA-3

V-MIT also includes support for all of the enhancements introduced on UB-DELTA-2 and UB-DELTA-3. These include support for HPEasyTime and enhancements to NS/3000, the FORTRAN 77 compiler, and the Office Productivity Services of HP. See the UB-DELTA-2 and UB-DELTA-3 Communicators for more details.

Enhanced Audit Trail Security

by Alice Hong
Computer Systems Division

To allow more security-relevant information to be logged, two new types of system logging have been implemented on this release of MPE V/E G.03.00 (V-MIT). These are Command Logging (LOG45) and FOPEN Logging (LOG44), and are used to support the product HP Security Monitor (HP 30392).

CONFIGURABLE COMMAND LOGGING

Command logging helps the system manager monitor "after-the-fact" security violations. A command-access record provides the system manager with enough information to identify the user who caused the violation, and when the violation occurred. In addition, the system manager can specify which MPE commands to log through the security configurator program, SECCONF.PUB.SYS.

A command-access record logs the following information:

- The user (user.account.group) who executed the command.
- The input device where the command was issued.
- The CIERR number of errors or warnings found by the command executor.
- The CIPARM to identify any parameters in error.
- The filename of the program that issued the command. If the command was not issued from a program, "Command interpreter" will be entered in place of the program file name.
- The length of the entire command image presented in bytes.
- The image of the command.

For example:

```
  USER    *ACCOUNT  *  GROUP    *INLDEV*CIERR*CIPARM*PGM *  COMMAND
MANAGER    SYS         PUB         20     0        0      N    COMMAND
EXECUTED FROM:  *CMDLEN
INTERPRETER        139
** COMMAND IMAGE: TELL OPERATOR.SYS this is a typical example of
the output of a log record when LISTLOG5 is run.
```

FOPEN LOGGING

FOPEN logging enables the system manager to locate security breaches in the file access area. Upon inspection of the log file, the system manager can identify the user who accessed a file, the time of access and the device from which the access occurred. The system managers can specify, on a system wide basis, whether to log all FOPEN calls or only FOPEN calls that fail.

Information retained by FOPEN logging includes:

- The user who accessed the file (user.group.account).
- The input device where the file was accessed.
- The device where the FOPEN was issued.
- The fully-qualified file name (file.group.account).
- The file characteristics (FOPTIONS).
- The access options permitted during file access (AOPTIONS).
- The size of logical records in the file.
- The maximum file capacity.
- The number of the device containing the opened file.
- The file code.
- The file number.
- The condition code returns by the FOPEN intrinsic.

For example:

```
USER     *ACCOUNT *GROUP    *INLDEV*FNAME    *FGROUP   *FACCOUNT
MANAGER  .SYS      ,PUB       20      COMMAND  .PUB      .SYS
* FOPT   * AOPT   *REC    *FILESIZE    *DEV    *FCODE  *FNUM   *FERR
 %000001 %000346  40       100           1       0       3       0
```

New logging types are enabled or disabled with SYSDUMP followed by a cold start. After enabling Command Logging, the system manager can select the commands to be logged using the security configurator program, SECCONF. The system manager will also use SECCONF to select the preferred FOPEN option.

LISTEQ5 Utility Obsolescence

by Alice Hong
Computer Systems Division

Starting with the release of G.03.00, the utility LISTEQ5.PUB.SYS will be replaced with the MPE commands :LISTEQ and :LISTFTEMP.

Together, these new utilities provide features beyond the functionality of LISTEQ5. Both commands, for example, are available in break mode, are breakable, and are programmatically executable. In addition, :LISTEQ lets you specify a temporary file for storing output and LISTFTEMP permits special characters (#,? and @) in the fileset definition.

For further information, refer to the *MPE V Commands Reference Manual* (P/N 32033-90006).

Changes To The MPE V Manual Set

by Lisa Schultz Caras
Information Technology Group

The release of MPE V/E G.03.00 (V-MIT) introduces three new manuals for the System Manager, System Supervisor, and System Operator. They are:

- *MPE V Storing and Restoring Files* (P/N 32033-90133)
- *MPE V Backup and Recovery* (P/N 32033-90134)
- *MPE V Account Structure and Security* (P/N 32033-90136)

These manuals document: the major new products and features of MPE V/E G.03.00 (V-MIT); the new products, TurboSTORE and HP Security Monitor; the enhanced :STORE and :RESTORE commands; and the new system security provisions. This change in the MPE manual set is a direct response to users' requests for more task-oriented manuals. Task-oriented manuals explain "how to" perform particular tasks. Some of the benefits of task-oriented manuals are:

- All the information you need to perform a certain task is in one manual.
- Tasks are broken down into steps that are easy to follow.
- Task-oriented manuals contain many examples.
- Manual titles are task-oriented, so that you know which manual contains the information you need.

STORING AND RESTORING FILES

MPE V Storing and Restoring Files (P/N 32033-90133) contains instructions for using the STORE and RESTORE programs to copy files to and from backup media. In particular, it describes how to:

- Manage your backup devices.
- Copy files to backup media with the STORE program.
- Copy files from backup media with the RESTORE program.
- Help other users copy their own files to and from backup media.

BACKUP AND RECOVERY

MPE V Backup and Recovery (P/N 32033-90134) describes how to protect your system from system failures and natural disasters by performing regular system backups and how to implement recovery plans. It includes instructions for:

- Managing backups.
- Preparing your system for a backup.
- Performing backups with the STORE Program.
- Performing backups with the SYSDUMP Program.
- Using backup media to recover from system failures.
- Preparing and implementing a disaster recovery plan.

ACCOUNT STRUCTURE AND SECURITY

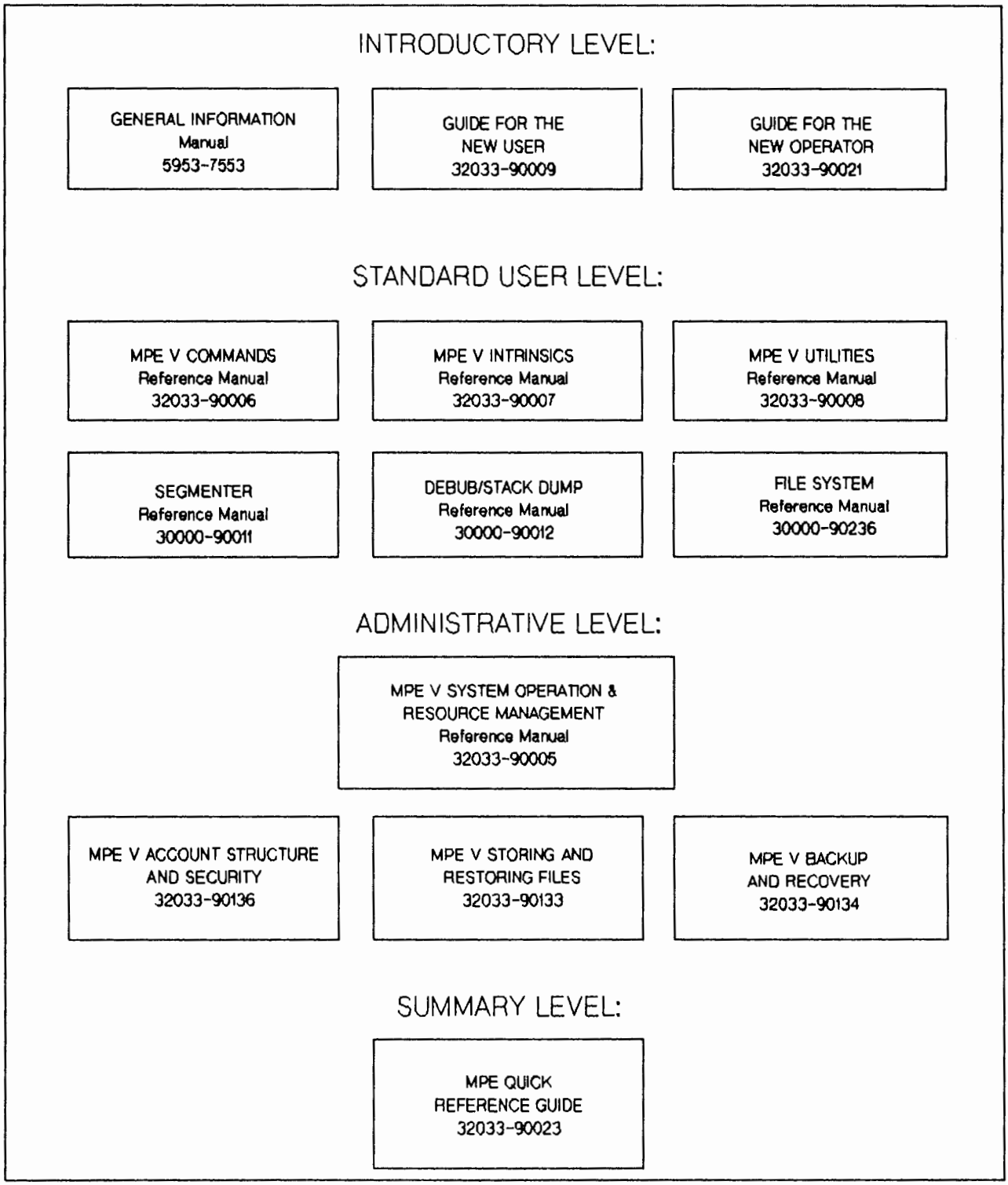
MPE V Account Structure and Security (P/N 32033-90136) describes MPE security features and its account structure. It describes the accounting and security responsibilities of:

- System Managers.
- Account Managers.
- General Users.

MPE G.03.00 DOCUMENTATION MAP

The Documentation Map on the following page illustrates the MPE V manual set for release G.03.00.

MPE V MANUAL PLAN



MPE Stack Size Requirements

by Jan Helmbolt
Computer Systems Division

The stack space for the file system intrinsics have increased from MPE G.02.03 (UB-Delta-3) to MPE G.03.00 (V-MIT). Two new system log types, Command Logging and FOPEN Logging, introduced with HP Security Monitor, may cause stack space to be increased when enabled. The following tables compare the stack size requirements for file system intrinsics for UB-Delta-3 (OLD), V-MIT, with or without HP Security Monitor installed, with new log types disabled (NEW), and V-MIT with new log types enabled and HP Security Monitor installed (NEW LOG).

	New Disc File: Save			Old Disc File			Dev = LP No Environment		
FILE SYSTEM INTRINSICS	OLD	NEW	NEW LOG	OLD	NEW	NEW LOG	OLD	NEW	NEW LOG
FOPEN	1176	1181	1300	1150	1152	1152	1313	1315	1315
PRINTFILEINFO	676	678	678	676	678	678	448	486	486
FFILEINFO	399	399	399	399	399	399	423	423	423
FGETINFO	229	229	229	229	229	229	253	253	253
FWRITE	526	528	528	526	528	528	222	222	222
FREADDIR	251	251	251	251	251	251	---	---	---
FWRITEDIR	532	565	565	565	565	565	---	---	---
FCONTROL	226	226	226	226	226	226	---	---	---
FREAD	554	557	557	554	557	557	---	---	---
FCLOSE	935	935	935	935	935	935	935	935	935

	Dev = Epoc Environment			Old File On Private Volume			Remote File (NS/3000)		
FILE SYSTEM INTRINSICS	OLD	NEW	NEW LOG	OLD	NEW	NEW LOG	OLD	NEW	NEW LOG
FOPEN	2409	2411	2411	1629	1630	1630	2290	2249	2249
PRINTFILEINFO	448	486	486	676	678	678	1247	1233	1233
FFILEINFO	423	423	423	399	399	399	1160	1146	1146
FGETINFO	253	253	253	229	229	229	1110	1096	1096
FWRITE	222	222	222	526	524	524	1092	1078	1078
FREADDIR	---	---	---	251	251	251	1098	1084	1084
FWRITEDIR	---	---	---	565	561	561	1098	1084	1084
FCONTROL	---	---	---	226	226	226	1153	1139	1139
FREAD	---	---	---	554	553	553	1094	1081	1081
FCLOSE	935	935	935	1499	1497	1497	1182	1180	1180

COBOL 'C' Obsolescence

by John Pavone
Information Technology Group

May 1, 1987 marked the completion of the five year obsolescence cycle of the Hewlett-Packard ANSI'68 COBOL standard, the HP32213 COBOL 'C' compiler.

If you wish to continue using the product after its obsolescence, make a store tape of the following files:

File Name	Contents
COBOL.PUB.SYS	COBOL compiler, HP32212, version C.02.12
COB68LIB.PUB.SYS	COBOL 68 Library procedures

CAUTION

All users are advised to take ownership of these COBOL files. A store tape should be archived to permit installation of the product as needed, following future MIT releases.

TurboSTORE

by Sunil Bhandarkar
Computer Systems Division

TurboSTORE is a high speed backup software product that provides the ability to back up to multiple tape drives simultaneously. This ability significantly cuts backup time, increases system availability, reduces operator intervention, and reduces the time required to recover.

MULTIPLE SERIAL DEVICES

TurboSTORE can reduce inactive time for backup devices by automatically switching to a second tape drive. Specifically, when the first reel has been written, TurboSTORE will immediately switch to a second device, after activating the rewind, and continue writing. While TurboSTORE is writing to the second device, the operator can reload the first device. The process continues until the backup or restore process is completed. However, the devices must be the same device class (i.e., disc or tape) and model number.

FILE INTERLEAVING

Disc access is a common problem limiting backup performance. File interleaving is a technique used to increase effective disc access rates over conventional software. Data transfers from multiple discs are merged into a single, high volume, data stream. This higher data volume can maximize the potential of a high speed tape drive. If the tape drive potential is already utilized, this higher data volume can be used to run multiple drives in parallel. File interleaving will result in a new tape storage format.

MULTIPLE PARALLEL DEVICES

For customers limited by the speed of their backup device, TurboSTORE offers the capability of simultaneously writing to more than one tape drive. Up to four parallel output paths are permitted. Multiple parallel devices will result in a new tape storage format.

COMBINED CAPABILITIES

TurboSTORE can combine any of the above capabilities. For maximum effect, file interleaving can be used to increase effective disc access and multiple tape drives can be used in parallel and sequentially. (e.g., TurboSTORE can operate two drives in parallel and automatically switch to a second set of two drives when tapes on the first set of two drives have been written to.)

INTEGRATED WITH STORE/RESTORE

The TurboSTORE user-interfaces are an evolutionary extension of the STORE/RESTORE capability provided by MPE V/E. As a result, minimal customer training is required to use the powerful functionality provided by TurboSTORE. The TurboSTORE documentation is incorporated in the STORE/RESTORE documentation to ensure all information required to operate backup and recovery exists in one place. For further information, refer to *Storing and Restoring Files* (P/N 32033-90133) and *MPE V/E Backup and Disaster Recovery* (P/N 32033-90134).

COMPATIBILITY

TurboSTORE can also read tapes generated by the MPE V/E STORE/RESTORE facility. TurboSTORE tapes can be read by MPE V/E systems without TurboSTORE if, the PARALLEL and/or INTERLEAVE options are not used. Tapes generated, using only the SERIAL devices option or the default option (i.e., no interleaving, serial, or parallel devices), will produce a backward and forward compatible set of tapes.

PERFORMANCE

HP estimates that most customers who use the full power of TurboSTORE will see a 50 percent reduction in backup time, when two tape drives are used. The precise reduction of backup time is dependent on several factors including: available CPU, tape drive speed, number of tape drives used, number and size of disc files, and the distribution of files across disc.

:RECALL Messages for STORE/RESTORE

by Silvia Gheorghiu
Information Software Operation

The use of multiple serial devices in TurboSTORE reduces the inactive time for backup devices, but introduces complexity for the operator. More attention is required to mount the correct reels on the correct devices and to determine that a drive is allocated before replying to a tape request. The operator uses the **:RECALL** command to determine the actions required. The mount requests are recallable so that the operator can determine the specific reels to mount on the drive. This functionality to **:RECALL** mount requests is also available for the original STORE/RESTORE.

The following example shows the use of the **:RECALL** feature and actions required by the operator. In this example the STORE command specifies four autoallocated devices to be used as two device pools of two devices each. The device pools are accessed in parallel. Within the pools, the devices are accessed sequentially. (A device pool is a set of output devices with similar characteristics). Note that for autoallocated devices no **REPLY** is required to allocate the device. The device allocation occurs when the tape is mounted and pressed ONLINE.

1. The operator enters the following equations:

```
:FILE MPEA;DEV=7
:FILE MPEB;DEV=8
:FILE MPEC;DEV=9
:FILE MPED;DEV=10
:STORE @.@.@;STORESET=(*MPEA,*MPEB),(*MPEC,*MPED)
```

2. The interactive dialog begins:

   The operator mounts reel A1 on LDEV 7 and puts the tape drive online. The console displays the following messages:

```
1:29/9/Vol (unlabeled) mounted on LDEV# 7
1:29/#S9/58/LDEV 7 is allocated to the STORE process
```

   The operator mounts reel A2 on LDEV 8 and puts the tape drive online. The console displays the following messages:

```
1:29/9/Vol (unlabeled) mounted on LDEV# 8
1:29/#S9/58/LDEV 8 is allocated to the STORE process
```

   The operator mounts reel B1 on LDEV 9 and puts the tape drive online. The console displays the following messages:

```
1:29/9/Vol (unlabeled) mounted on LDEV# 9
1:29/#S9/58/LDEV 9 is allocated to the STORE process
```

The operator mounts reel B2 on LDEV 10 and puts the tape drive online. The console displays the following messages:

```
1:29/9/Vol (unlabeled) mounted on LDEV# 10
1:29/#S9/58/LDEV 10 is allocated to the STORE process
```

3. STORE writes to A1 and B1, and the console displays the following messages:

```
1:31/#S9/58/Please mount Reel A1 on LDEV 7 if not already mounted
1:31/#S9/58/Please mount Reel B1 on LDEV 9 if not already mounted
```

The operator checks for outstanding mount requests (there are none because reels A1 and B1 are mounted) by entering:

```
:RECALL
```

and the console displays:

```
NO REPLIES PENDING (CIWARN 3020)
```

4. When reels A1 and B1 reach the end of the tape they rewind and reels A2 and B2 begin the STORE process. STORE displays the following messages on the console:

```
1:34/#S9/58/Reel A1 finished and dismounted on LDEV 7
1:34/#S9/58/Reel B1 finished and dismounted on LDEV 9
1:34/#S9/58/Please mount reel A2 on LDEV 8 if not already mounted
1:34/#S9/58/Please mount reel B2 on LDEV 10 if not already mounted
```

The operator checks for outstanding mount requests (there are none because reels A2 and B2 are mounted) by entering:

```
:RECALL
```

and the console displays:

```
NO REPLIES PENDING (CIWARN 3020)
```

5. When reels A2 and B2 reach the end of the tape they rewind and the console displays the following messages:

```
1:38/#S9/58/Reel A2 finished and dismounted on LDEV 8
1:38/#S9/58/Reel B2 finished and dismounted on LDEV 10
```

6. The STORE process determines it needs a third reel to complete the STORE. For reels A3 and B3, the console displays the the following messages:

```
1:38/#S9/59/Please mount Reel A3 on LDEV 7 if not already mounted
1:38/9/LDEV# 7 NOT READY
1:38/#S9/60/Please mount Reel B3 on LDEV 9 if not already mounted
1:38/9/LDEV# 9 NOT READY
```

The operator checks for outstanding mount requests (there are two because reels A3 and B3 are not mounted) by entering:

```
:RECALL
```

and the console displays:

```
1:38/#S9/59/Please mount Reel A3 on LDEV 7 if not already mounted
1:38/#S9/60/Please mount Reel B3 on LDEV 9 if not already mounted
```

7. The operator mounts reel A3 on LDEV 7 and puts the tape drive online. The console displays the following messages:

```
1:39/9/Vol (unlabeled) mounted on LDEV# 7
```

STORE will begin writing to reel A3.

8. The operator checks for outstanding mount requests (there is one because reel B3 is not mounted) by entering:

```
:RECALL
```

and the console displays:

```
1:38/#S9/60/Please mount Reel B3 on LDEV 9 if not already mounted
```

9. The operator mounts reel B3 on LDEV 9 and puts the tape drive online. The console displays the following message:

```
1:39/9/Vol (unlabeled) mounted on LDEV# 9
```

STORE begins writing to reel B3.

10. The operator checks for outstanding mount requests (there are none because reel B3 is mounted) by entering:

```
:RECALL
```

and the console displays:

```
NO REPLIES PENDING (CIWARN 3020)
1:44/#S9/59/Reel A3 finished and dismounted on LDEV 7
1:44/#S9/60/Reel B3 finished and dismounted on LDEV 9
```

The STORE is complete.

TurboSTORE: Special Considerations

by Korak Mitra
Computer Systems Division

TurboSTORE is a high speed backup product that provides the ability to back up to multiple tape drives simultaneously. This cuts backup time significantly, increases system availability, reduces operator intervention, and reduces the time required to recover files.

When using these advanced capabilities of TurboSTORE, please keep the following special considerations in mind:

TAPE FORMATS

TurboSTORE can operate in a number of different modes depending on the performance and compatibility desired: Multiple Sequential Devices, File Interleaving, Multiple Parallel Devices, and Compatibility (STORE/RESTORE) modes. In addition, TurboSTORE allows mixed modes combining File Interleaving with Parallel Devices and/or Sequential Devices.

Tapes produced through any of the file interleaving modes must be restored through TurboSTORE. This is because the tapes are written in a high performance format.

Backup Methods / Recovery Methods

	STORE/ RESTORE Single Device	TurboSTORE Single Device	TurboSTORE Multiple Sequential Devices
Single Device (Compatability)	Yes	Yes	No
Sequential Devices	Yes	Yes	Yes
Sequential Devices with Interleaving	No	Yes	Yes
Parallel Devices	Yes	Yes	Yes
Parallel Devices with Interleaving	No	Yes	Yes
Mixed Parallel/Sequential Devices	Yes	Yes	Yes
Mixed Parallel/Sequential Devices with Interleaving	No	Yes	Yes

Tapes produced through the Compatibility mode can be restored either through STORE/RESTORE or through TurboSTORE with a single tape drive. In addition, tapes produced through any of the other modes can be restored through STORE/RESTORE, TurboSTORE with one tape drive, or through TurboSTORE with multiple sequential tape drives. This ensures maximum flexibility to meet different system environment needs. (See matrix on the previous page.)

REMOTE BACKUP OPERATIONS

Through STORE/RESTORE, HP supports remote backup operations, i.e., writing data through NS to or from a tape drive operating on a remote system. While TurboSTORE supports this same functionality, it is important to understand that TurboSTORE will not significantly increase backup speed when performing remote backup operations. This is because backup speed is limited by the speed of the communications link. As a result, HP does not support TurboSTORE's high performance functionality, which is writing to multiple parallel tape drives, when performing remote backup operations. (See matrix below).

	RESTORE	RESTORE	STORE	STORE
Operating Modes	Remote	Local	Remote	Local
Single Device (Compatability)	Yes	Yes	Yes	Yes
Sequential Devices	Yes	Yes	Yes	Yes
Sequential Devices with Interleaving	Yes	Yes	Yes	Yes
Parallel Devices	Yes	No	No	No
Parallel Devices with Interleaving	Yes	No	No	No
Mixed Parallel /Sequential Devices	Yes	No	No	No
Mixed Parallel/Sequential Devices with Interleaving	Yes	No	No	No

FULLBACKUP AND PARTBACKUP

TurboSTORE has been designed as a replacement for STORE/RESTORE. It does not yet completely replace SYSDUMP, in that it does not back up the system environment and configuration files. If a customer wishes to use TurboSTORE for full system and file backup, HP recommends using a jobstream. using a jobstream This jobstream should use TurboSTORE for full backup and SYSDUMP to cut a coldload tape. tape. This procedure is clearly outlined in the *MPE V Backup and Recovery Manual* (P/N 32033-90134). The manual also outlines the procedure for using TurboSTORE in a jobstream to back up all files modified since the full backup.

CARTRIDGE TAPE AS BACKUP DEVICE

Cartridge tapes are normally initialized with the VINIT utility prior to their first usage. When using the file interleaving modes of TurboSTORE, cartridge tapes must be re-initialized with the V-MIT version of VINIT. These cartridge tapes are then backwards compatible with STORE/RESTORE and they can be used to store data through any of the operating modes of TurboSTORE.

If file interleaving will not be used, cartridge tapes do not have to be re-initialized.

LIMITED SUPPORT FOR OBSOLETE DEVICES

TurboSTORE will only support the Compatibility (STORE/RESTORE) mode for the following obsolete devices: 7976 tape drive, 7906 disc drive, 9140 cartridge tape drive, and 9895 dual 8 inch disc drive. This means that when backing up to these devices, TurboSTORE will function exactly like STORE/RESTORE.

HP Security Monitor

by Korak Mitra
Computer Systems Division

HP Security Monitor is the new security product available on this release of MPE V/E G.03.00 (V-MIT), which substantially increases system security for security-conscious customers. It provides improved password protection, stronger audit trails, and tighter terminal security. This improved security protects both system resources and sensitive data from unauthorized access.

PASSWORD PROTECTION

Passwords provide the first line of defense against unauthorized access to system resources and data. HP Security Monitor has improved password protection through a combination of methods including password aging and password length requirements. HP Security Monitor allows the Security Administrator to require require user passwords at both the account and the system level.

AUDIT TRAILS

Audit trails allow security-conscious customers to monitor and correct security breaches in the system. HP Security Monitor has improved audit trails by giving the Security Administrator the ability to log a wide variety of security-relevant events. HP Security Monitor also allows the Security Administrator to selectively disable specified MPE commands.

TERMINAL SECURITY

Terminal security allows customers to secure their systems against unauthorized bypassing of the logon precautions. HP Security Monitor has substantially tightened terminal security by: limiting the number of invalid logon attempts, terminating idle commander interpreter sessions, and assigning passwords to individual terminals. HP Security Monitor also allows the Security Administrator to eliminate any logon assistance in the case of an invalid logon attempt.

IMPLEMENTATION

Building on the strong security features of the base HP 3000, HP Security Monitor can be gracefully integrated on an "as needed" basis. All of its security features are optional and each feature can be enabled individually. HP Security Monitor is also designed to "phase in" features, thereby easing the transition from the old to the new security practices on the system. This design gives customers wide latitude to tailor the security enhancements to meet their particular needs, while at the same time providing a smooth implementation.

MPE System Security Enhanced

by Tom Shem
Computer Systems Division

The release of MPE V/E G.03.00 (V-MIT) introduces the new product HP Security Monitor (HP30392) which provides several security enhancements on the HP 3000. HP Security Monitor (A.00.00) addresses four major areas of concern: logon, access to the command interpreter, password maintenance, and system logging. With these enhancements, the system manager will be able to concentrate on security and maintain greater control over system integrity.

The new security features are enabled, in most cases, through the new security configurator utility, SECCONF. The security configurator is the focal point for system security activity. It may be used by the system manager to activate and configure all of the globally related security features.

The following describes each new feature, grouped by its area of concern.

LOGON

The features grouped into the logon area prevent unauthorized persons from gaining use of system resources.

- Maximum Invalid Logon Attempts - sets a maximum number of logon attempts tolerated by interactive devices (terminals) before the device becomes unavailable.
- Terminal Logon Password - logical devices can be assigned a logon password.
- Minimal Assistance Logon Interface - when enabled, users will not be guided through the logon sequence; instead, a generic invalid message will be displayed.
- Password Prompt in Job Streams - the system will prompt for passwords when a job is streamed.
- Password Required Prompt - the operating system rejects any embedded passwords and prompts for required passwords (with echo suppressed).

ACCESS TO COMMAND INTERPRETER

These security features remove the user's ability to bypass system, account, and user UDCs that may have been created to control access to the Command Interpreter.

- UDC Failure Option - if the UDC initiation at the beginning of a job/session fails at the system (or account) UDC level, the affected job/session will be terminated.
- Command Disabling - commands will be disabled globally from execution via the command interpreter or the COMMAND intrinsic.
- Disable Programmatic Access to Commands - commands will be disabled globally from execution via the COMMAND intrinsic.
- Idle Session Timeout - idle CI sessions will be terminated after a predetermined amount of time.

PASSWORD MAINTENANCE

These features enable system managers and account managers greater control over user passwords. These enhancements make password maintenance simpler and easier to control.

- Password Encryption - the passwords on the user, group and account levels in the directory can be encrypted.
- :PASSWORD command - the PASSWORD command enables users to change their own user level passwords.
- User Password Required - the account manager will be able to specify whether user passwords within his account are required.
- User Password Expiration - the account manager will be able to expire a user's password. System managers will be able to expire all the required user passwords on the (same) global expiration date.
- Minimum Length Password - when enabled, passwords of a length less than the configured value are rejected.

SYSTEM LOGGING

These features allow the logging of more security-relevant information. The log files can then be analyzed to discover security breaches.

- File Open Logging - the system manager can specify whether to log all FOPENs or only FOPENs that have failed.
- Configurable Command Logging - the system manager can specify one or more commands to be logged.

Articles detailing each of these areas are included in this section of the Communicator 3000.

Enhanced Logon Security

by Tho Le
Computer Systems Divisions

The A.00.00 version of HP Security Monitor (HP 30392) includes several logon security enhancements which, as a part of total system security, increase protection against unauthorized logon access. These changes provide system managers with the flexibility to restrict terminal usage, limit the logon guidance messages (as well as the number of unsuccessful logon attempts), and to limit exposure of passwords to unauthorized users. The individual logon security features are:

- Maximum Invalid Logon Attempts
- Terminal Logon Password
- Minimum Assistance Logon Interface
- Password Prompt for Jobs and Startsess
- Required Password Prompt

MAXIMUM INVALID LOGON ATTEMPTS

This enhancement allows the system manager to configure, via the Security Configurator (SECCONF.PUB.SYS), the maximum number of invalid logon attempts that will be tolerated before a terminal becomes unavailable. The maximum number of attempts will be a system-wide value, with each device keeping track of its own number of invalid attempts.

Each time an error occurs that prevents a user from logging on, the invalid logon count for the corresponding device will be incremented. When a device reaches its limit, the device will be made unavailable to the system through the :DOWN functionality. The user will receive the message:

```
TOO MANY FAILED ATTEMPTS, THIS DEVICE IS NOW DISCONNECTED (CIERR 1408)
```

and the console displays:

```
LDEV #XXX IS DOWNED, FAILED LOGON ATTEMPTS EXCEEDS LIMIT.
```

The :SHOWDEV command shows a Security DOWNed device as follows:

```
    LDEV        OWNERSHIP
    26          DOWN  (SEC)
```

The device will become available again when the system operator (or anyone allowed by the :ALLOW, :ASSOCIATE commands) issues an :UP command for the device, or when the optional timeout configured by system manager has expired. When the device is made available to the system, the invalid logon attempt count will be reset to 0. Upon a successful logon to the device, the count is also reset to 0.

If the device is UPed automatically by the system due to the expiration of the timeout, the console displays the following message:

```
LDEV #XXX IS UP FROM DEVICE TIME-OUT.
```

This functionality is applicable to interactive devices (terminals) only. Tape drives and virtual devices (e.g. STREAM device) are excluded. In addition, the System Console LDEV is also exempted from this rule.

TERMINAL LOGON PASSWORD

Using the Security Configurator, the system manager will be able to configure the logon password for terminals, on a device-by-device basis. Here is how the Terminal Logon Password works once it is configured:

When a carriage return is entered on an available terminal (that has an associated logon password), the following prompt appears:

```
ENTER DEVICE PASSWORD:password
```

If the user responds with an incorrect password, the prompt is repeated, giving the user a chance to correct a typing error or spelling error. Upon the third incorrect password response, the following error messages are displayed on the terminal and the console, respectively:

```
WRONG DEVICE PASSWORD, ACCESS DENIED.
INVALID DEVICE PASSWORD ON LDEV #XXX.      (console message)
```

At this time, the attempt will be counted as an invalid logon attempt, and if the number reaches the maximum, the device will become unavailable (as per "Maximum Invalid Logon Attempts" enhancement discussed previously). Otherwise, the terminal again becomes a free device. On the other hand, if a correct password is entered, the ":" prompt will be displayed and the normal logon process may begin. Terminal logon passwords are for "regular" terminals only. They are not applicable to DS/NS pseudo-terminals. The assumption here is that the user has already satisfied the local terminal password when logging on locally, it is therefore not necessary to have the user enter a second terminal password on the same physical terminal. The same is true with relogon. If a user, already logged on at a terminal, enters a :HELLO command to cause an immediate logoff/logon sequence, the system will not prompt for the terminal password.

In addition, a terminal password is only requested when the user attempts to logon "directly" at the terminal. The Programmatic Creation of Session facility (:STARTSESS command, STARTSESS and DEVLOGON intrinsics) is immune from terminal passwords. Similarly, the use of a terminal as an input/output file for an application or a subsystem does not require the user to know the terminal password.

MINIMUM ASSISTANCE LOGON INTERFACE

The Minimum Logon Assistance Interface is a system-wide option, to be enabled or disabled by the system manager via the Security Configurator. When this feature is enabled, users will not be guided through the logon sequence as they currently are. If any logon error is encountered (in parsing the logon command), the message "* INVALID *" will be displayed at the user's terminal. The console, however, will still receive the appropriate message specifying the reason for failure.

This terse error message is only used for errors; warnings and password-related password messages (ENTER ACCOUNT PASSWORD:, INCORRECT PASSWORD) will still be displayed in their current forms. In addition, existing friendly messages will continue to be used when this feature is not explicitly enabled.

All logon errors (CIERR 1400 through 1450) will be replaced when this feature is enabled. They are not actually taken out of the message catalog, but merely not used. Some examples of these messages are:

```
1402 EXPECTED HELLO, :JOB, :DATA, OR (CMD) AS LOGON.  (CIERR 1402)
1423 EXPECTED JOB NAME.  (CIERR 1423)
1424 EXPECTED [SESSION NAME,] USER.ACCT [,GROUP]   (CIERR 1424)
1425 EXPECTED USER PASSWORD.  (CIERR 1425)
1426 EXPECTED ACCOUNT NAME.  (CIERR 1426)
1427 EXPECTED ACCOUNT PASSWORD.  (CIERR 1427)
1428 EXPECTED FILE NAME.  (CIERR 1428)
1429 EXPECTED GROUP NAME.  (CIERR 1429)
1430 EXPECTED GROUP PASSWORD.  (CIERR 1430)
```

Replacing these "hand-holding" messages can prevent unauthorized users from penetrating the system by guessing what the system expects, where they are at on the system, or what system they are on, etc.

After the logon string (e.g. HELLO SESSION,USER.ACCOUNT,GROUP) has been successfully parsed and verified, any subsequent errors, (such as: account out of CPU time, no IA/BA capability, out of system resources, etc.) will be displayed on the affected user's terminal in their normal forms.

PASSWORD PROMPT FOR JOB AND STARTSESS

The :STREAM and :STARTSESS commands have been enhanced to check for missing passwords in the logon string and prompt for them, if the STREAM or STARTSESS is done on an interactive device. The following examples illustrate this enhancement:

```
:STREAM
>!JOB TOM.MPELAB;OUTCLASS=LP,2
ENTER ACCOUNT (MPELAB) PASSWORD:password
ENTER USER (TOM) PASSWORD:password
>!...
>!EOJ
 #J391

:STREAM COMPILEJ
ENTER ACCOUNT (MPELAB) PASSWORD:password
ENTER USER (TOM) PASSWORD:password
 #J392

:STARTSESS 31; ALICE/UPASS.MPELAB,VMIT
ENTER ACCOUNT (MPELAB) PASSWORD:password
ENTER GROUP (VMIT) PASSWORD:password

:JOB DENNIS,MANAGER.SYS
ENTER ACCOUNT (SYS) PASSWORD:password
ENTER USER (MANAGER) PASSWORD:password
JOB NUMBER = #J408
```

Note that the password prompts now include the USER, ACCOUNT or GROUP name where appropriate.

The prompts and verification of passwords follow the same rules as in the :HELLO command. That is, users will be prompted a maximum of three times for each password level; any incorrect response will cause an error message to be sent to the console, telling the operator the LDEV and the USER.ACCOUNT of the password offender. After three failures, the message INCORRECT PASSWORD will be displayed on the terminal and the job/session will not be initiated.

If a user does not want to be prompted for passwords, (s)he can still supply passwords within the JOB card. In addition, if a "/" is supplied in the JOB card without a password, it will be interpreted as having a "null" password, and the user will not be prompted for password input. Finally, prompting is not available for jobs that are streamed from other jobs (nested jobstreams), tape drives, or card readers.

REQUIRED PASSWORD PROMPT

To prevent logon passwords from being seen by unauthorized people when the password is being entered (or afterwards by scrolling down the terminal), a system manager can enable this Password Required Prompt functionality, using the Security Configurator. When this option is enabled, all interactive attempts to initiate a job or a session must not have embedded passwords in the logon string. If passwords are present, the logon will be rejected regardless of the password validity.

Interactive logons include: :HELLO and :JOB, which is started on terminals; :STREAM, which is done within sessions; and :STARTSESS command, which is issued from terminals. These logon types are subject to the required prompt feature when it is enabled. Nevertheless, exceptions are provided for (i.e., required prompt is not applied to) the following interactive logon cases:

- Jobs streamed from a file. The password is not displayed in this case, even if the :STREAM is done on a terminal.

- Programmatic session creation within a user program (using the STARTSESS, DEVLOGON, or COMMAND intrinsic). It is assumed that in most cases, the logon string comes from the program's internal storage, which means it is not displayed on the terminal.

- Empty slashes ("/" without a password) supplied within logon string. These slashes signify the user does not want to be prompted for the passwords. The logon will be immune from the required prompt rule; however, if a password is required, the logon will fail.

When the Password Required Prompt is enabled, and if interactive logon does have an embedded password, the following error will be displayed:

```
PASSWORD PROMPTS ARE REQUIRED, EMBEDDED PASSWORDS ARE NOT ALLOWED.
(CIERR 1449)
```

Password Required Prompt is only applicable for logons that are on interactive devices. Therefore, JOBs initiated from within jobs or from tapes will not be affected.

On the other hand, a: REMOTE HELLO is always considered an interactive logon by the remote system. It is therefore subject to the Password Required Prompt (if enabled), even if it originates from a job on the local system.

Enhanced Command Interpreter Security

by Tom Shem
Computer Systems Division

HP Security Monitor (A.00.00) helps the system manager secure and restrict access to the command interpreter. These features are classified into three areas: user defined commands (UDC), MPE command access, and idle CI sessions. With these features the system manager will be able to globally increase security for the command interpreter.

USER DEFINED COMMANDS

The UDC facility is a powerful tool that prevents unrestricted access to the command interpreter. It can be used to disable CI access to a command, redefine the function of an existing MPE command, place users into a restricted environment, or initiate verifier programs during the logon process.

To protect this powerful facility, a global function has been added that terminates the logon process if a system or account logon UDC fails. If the system manager elects to activate this option, all logon IDs controlled by a logon UDC must execute before access to the CI is granted.

MPE COMMAND ACCESS

MPE commands are executed through the MPE command interpreter. These commands enable users to access and control HP 3000 resources. This MPE enhancement enables the system manager to globally disable access to an MPE command. The enhancement provides the system manager with two disabling options: disable command from programmatic access and disable command from general access. Disabling a command from programmatic access prevents MPE commands from being invoked via the COMMAND intrinsic. Disabling a command from general access prevents MPE commands from functioning via the MPE command interpreter and the COMMAND intrinsic.

The system manager selects the commands to disable via the configuration utility, SECCONF.PUB.SYS. This enhancement eliminates the need for system managers to create system UDCs to disable MPE commands.

IDLE CI SESSIONS

Unattended sessions constitute a major threat to system security. An active session on an unattended terminal has none of the normal security provisions -- since the system has no way of knowing the original user has left.

With HP Security Monitor the system manager will be able to configure the system to automatically terminate a user's CI session, if no activity occurs over a period of time. This timeout value will be assigned to the system via the security configurator. Retrieval of the value will be available to users through the new System Job Control Word (JCW), HPSYSTIMEOUT.

In addition, users will be able to configure their own individual timeout values through another JCW, HPTIMEOUT. This value will be limited to a value less than the system timeout.

Password Maintenance

by Dennis Lee
Computer Systems Division

The password facility is closely tied with overall computer system security: the more robust the password mechanism, the more secure the computer. In order to improve computer security on the HP 3000, HP Security Monitor enhances the areas of password protection and password control. In these two areas several features have been implemented:

Password Protection

- Password Encryption: passwords on the USER, GROUP and ACCOUNT levels in the directory can be encrypted.
- Minimum Length Password: passwords less than the minimum configured value are rejected.
- :PASSWORD Command: the:PASSWORD command enables users to change their own user-level passwords.

Password Control

- User Password Required: the account manager will be able to specify whether one user or all users within the account will have required passwords.
- User Password Expiration: the account manager will be able to expire a user's password. The system manager will be able to expire all the required user passwords on the (same) global expiration date.

PASSWORD PROTECTION

Password protection refers to methods used to keep passwords protected and private. It also includes measures to prevent passwords from being easily determined. Enhanced password protection is provided through password encryption, minimum length password, and the :PASSWORD command.

Password Encryption

Passwords must be protected when stored on the system, otherwise compromising the password would be as simple as knowing where to look. A level of password protection has been provided in addition to directory safeguards. Account, group, and user passwords can now be stored "one-way encrypted" in the directory. This encryption increases the level of password protection already existing on MPE. That is, even if the directory is compromised, the password information in it cannot be tampered with or revealed.

With this change, system users will not be able to obtain a password in "cleartext" (i.e. in unencrypted form). Thus, if passwords are encrypted, the commands LISTACCT, LISTGROUP, and LISTUSER can not be used to obtain account, group, and user passwords. In addition, the utility LISTDIR5.PUB.SYS will not display encrypted passwords.

Password encryption can be globally enabled via the new security configurator utility, SECCONF.PUB.SYS. The encryption process will be transparent to ordinary users (i.e. users will not be

able to tell whether password encryption is enabled). HP Security Monitor handles the necessary encryption details.

Minimum Length Password

Password protection also includes methods to prevent users from guessing passwords. If all passwords were only one character long, password penetration would be simple: an individual would simply try every one-character password. Forcing passwords to be greater than some length makes it more difficult to guess the password (i.e. more combinations must be tried). This functionality has been implemented through HP Security Monitor by minimum length passwords.

The system manager, using the new security configurator utility, will define a single minimum length for all account, group, and user passwords.

:PASSWORD Command

Password encryption and minimum length passwords provide password protection within the system. Passwords, however, can be compromised outside the system as well. The more people that know a password, the more likely that particular password will be compromised. Password protection and password privacy both contribute to a secure password system. HP Security Monitor makes user passwords more private with the new MPE :PASSWORD command. This command enables users to change their own passwords (rather than relying on the account managers). User password disclosure can be minimized since the user is the only one who knows his password. With the :PASSWORD command and password encryption, user passwords can truly be private and secure.

The :PASSWORD command is also user-friendly. It prompts for all the information from the user, thus no complicated syntax must be remembered.

PASSWORD CONTROL

Working hand in hand with the new functionality in password protection are enhancements in password control. Blank passwords or passwords that are never changed, provide minimum protection against password compromise. Enhancements have been implemented that address both these cases. These enhancements provide the system manager and account managers with greater control over user passwords.

User Password Required

Users without passwords make system penetration easy; only the logon name needs to be guessed. To minimize this possibility, systems should be able to implement password requirements. HP Security Monitor provides this capability. The system manager or account manager can insure that specific users have user passwords (i.e. their passwords cannot be blank). Additionally, the system manager can enforce password requirements on specific accounts.

To enact user password requirements, an additional keyword parameter has been added to the :ALTUSER and :NEWUSER commands. Using this new parameter, the system manager and account managers can specify whether a specific user's password is required or optional. Similarly, to ensure that all users in an account have passwords, the same keyword parameter has been added to the :ALTACCT and :NEWACCT commands. With this parameter, the system manager can again specify whether all user passwords in an

account are required or optional. For more information on the new parameter, refer to the *MPE V Commands Reference Manual* (P/N 32033-90006).

User Password Expiration

To support system security, passwords should be periodically changed. An old password provides little more security than a blank password. The longer a user maintains the same password, the greater chance for password compromise. HP Security Monitor provides a robust password expiration facility to control user password changes.

User passwords can be expired explicitly by the system manager or account managers. This capability is: implemented with the keyword, EXPIRED; used in the :ALTUSER command; and used in the :NEWUSER command. The expiration facility allows for explicit user password expiration, but required user passwords can be globally expired at a specific date, and every interval thereafter. Required user passwords can be globally expired via the new security configuration utility, SECCONF. When a user password is expired, a new password is requested at the next logon; the next logon is not successful until a new password is supplied. The global expiration facility provides a "friendly reminder" feature that allows users to change their own passwords during a warning period (before the passwords are globally expired). The warning period can be specified via the new security configuration utility. For more information about the password expiration facility refer to the *MPE V Commands Reference Manual* (P/N 32033-90006) and the *MPE V System Operation and Resource Management Reference Manual* (P/N 32033- 90005).

SUMMARY

In an effort to improve computer system security, the password facility has been enhanced in the areas of password protection and password control. Enhanced password protection is provided through password encryption, minimum length password, and the :PASSWORD command. Enhanced password control is provided through user password requirement and password expiration. HP Security Monitor makes the password facility more secure and more robust.

New HP 7979 and 7980 1/2 Inch Tape Drives

by Scott Petersen
Computer Systems Division

Hewlett-Packard is pleased to announce support for the HP 7979 and HP 7980 tape drives on MPE V/E HP 3000 systems. These new autoloading, 1/2 inch reel-to-reel tape drives are supported on the entire HP 3000 family.

The HP 7980 operates at both 6250 and 1600 cpi densities and replaces the HP 7978B. The HP 7979 is a single density, 1600 cpi drive, and replaces the the HP 7974, except where 800 cpi is needed.

The HP 7979 and HP 7980 tape drives are supported on G.02.03, G.03.00, and later. Software changes have been made to provide support consistent with other streaming tape drives (HP 7974, HP 7978A, and HP 7978B drives). A 512K Byte internal buffer, together with the advance streaming software features of Immediate Response and Read Ahead, provide maximum performance for all applications.

SUPPORT MATRICES

The HP 7979 and HP 7980 tape drives are supported per the following matrix:

MAXIMUM TAPE DRIVE CONFIGURATION

HP3000	HP 7974/7979	HP 7978/7980	TOTAL *
MICRO 3000	2	2	2
S/37/37XE	2	2	2
MICRO 3000 XE	4	4	4
S/39/40/42	4	4	4
S/44/48	4	4	8
S/42XP/52	4	4	4
S/58	4	4	8
S/64/68/70	4	4	8

* Total number of HP 797X tape drives supported per system.

CONFIGURATION

The MPE configuration for the HP 7979 and HP 7980 tape drives are as follows:

MPE CONFIGURATIONS

Configurator Dialogue	HP 7979	HP 7980
DEVICE NAME:	HP7979	HP7980
TYPE:	24	24
SUBTYPE:	4	5
RECORD WIDTH:	128	128
OUTPUT DEVICE:	0	0
ACCEPT JOBS/SESSIONS:	N	N
ACCEPT DATA:	N	N
INTERACTIVE:	N	N
DUPLICATIVE:	N	N
INITIALLY SPOOLED:	N	N
AUTO REPLY:	Y or N	Y or N
DRIVER NAME:	HIOTAPE3	HIOTAPE3
DEVICE CLASSES:	TAPE	TAPE

MPE Product Releases

The following table is a Historical/Current list of new products introduced for each MPE version release for the HP 3000 Computer System.

MPE PRODUCT RELEASES

V.UU.FF.	NAME	RELEASE	PRODUCT(S) INTRODUCED
G.01.00	T-MIT	R2448	AUTOINST (HP32433) NLS (HP32414) Series 37 System
G.01.01	T-DELTA-1	R2510	HPTELEX II HPDeskManager III HP FORTRAN77/3000 (HP32116) HP Copycat/3000 (HP19550) PPC - Package (HP32123) PPC - Sec. WP Package (HP27516)
G.A1.02	T-DELTA-2	R2531	SNA IMF (HP30247) Business Basic (HP32115) HP MAP (HP32113) PC SERVER (HP36899) HP Convert/WPS (HP27500) PPC - Base (HP27510) PPC - Sec. Package (HP27511) PPC - Adv. Package (HP27513) PPC - Professional System (HP32452) PPC - Workgroup (HP32453)
G.01.03	T-DELTA-3	R2542	Silhouette/3000 (HP30302) Transparent Print (HP32595) Print Central S37 (HP36891) Print Central 4X/6X (HP36892) HPAcess S37 (HP36894) HPAccess 4X/6X (HP36895) HPAccess Remote (HP36896) Print Spooler (HP32345)

MPE PRODUCT RELEASES (Continued)

V.UU.FF.	NAME	RELEASE	PRODUCT(S) INTRODUCED
G.A2.00	U-MIT	R2543	Dictionary DBTools (DICTUTIL) ThinLAN Link (HP30240) LAN Link (HP30242) Network Transport (HP32343) Network Services (HP32344) TurboIMAGE (HP32215) Profiler (HP36914)
G.A1.04	T-DELTA-4	R2607	System Dictionary (HP32254) SD COBOL Extractor (HP32255) HPSQL Relational DBMS (HP36215) HP Graphics Curator/3000 (HP36926) HPTREND (HP35136) HPMessage (HP27504) HPConvert/DCA (HP27509) HPOffice Connect (HP27521) AWConvert (HP27526)
G.A2.A0	UA-MIT	R2612	Series 70 Microcode (HP32460)
G.A1.05	T-DELTA-5	R2617	HP Business Report Writer/V (HP36070)
G.A2.B0	UB-MIT	R2624	SNA Server Access (HP30255) DMI (HP30264)
G.01.06	T-DELTA-6	R2637	HPFile/Library (HP27520) HPSchedule (HP27522) HPDESK Plus (HP36570)
G.02.01	UB-DELTA-1	R2646	COBOLII Dev. Pkg. (HP31503) Pascal Pkg. (HP31505) HP Office Connect to DISOSS (HP27515) LU 6.2 BASE (HP30252) PROCMON (HP99941) Hebrew/NLS (HP30336) Resource Central (HP32348) Information Access (HP32596) Resource Sharing (HP32597) Micro 3000 Micro 3000XE
G.02.02	UB-DELTA-2	R2706	Advance Mail (HP27504) HPVisor (HP32425) DBchange (HP36020) Transform (HP99940)

MPE PRODUCT RELEASES (Continued)

V.UU.FF.	NAME	RELEASE	PRODUCT(S) INTRODUCED
G.02.03	UB-DELTA-3	R2719	NS Point-to-Point Link (HP30284 & HP30285) HP Easytime (HP35303)
G.03.00	V-MIT	R2715	HP Security Monitor (HP30392) TurboSTORE (HP30167)

Catalog of User Documentation

This section contains a comprehensive list of customer publications for the HP 3000 Computer System. The contents of the Subscription Services column indicates the update services provided for a particular manual:

FOS	=	Available with the Fundamental Operating Software (FOS) subscription service.
+	=	Available on all new subscription services (e.g. 32190A+S00).
Q	=	Available on the Manual Update Services (MUS) level of support (e.g. 32190Q,S,T).
S	=	Available on the Software Material Subscription (SMS) level of support (e.g. 32190Q,S,T).
T	=	Available on the Account Management Support (AMS) level of support (e.g. 32190Q,S,T).
99	=	Indicates availability on a specified category of the Manual Update Services (MUS) level of support (e.g. 99086B+Q00).

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services

DATA COMMUNICATIONS MANUALS

LAN Cabling and Accessories Installation Manual	5955-7680			
LAN Link Troubleshooting Manual	5955-7681			
LAN/3000 and OfficeShare LAN/3000 Design Guide	5955-7689			
Making the LAN Connection: A Local Area Network Primer	5957-4624			
Fundamental 3000 Data Communication Handbook	5957-4634	6/84		FOS
Connecting to Your Computer	5957-4645	12/84		5957Q,S,T
HP SNA Products: Managers Guide	5958-8542	11/86		
HP SNA Products: ACF/NCP & ACF/VTAM Guide	5958-8543	11/86		
HP SNA Products: Job Entry Subsystems Guide	5958-8544	11/86		
HP SNA Products: IMS Guide	5958-8545	11/86		
HP SNA Products: CICS Guide	5958-8546	11/86		
HP SNA Products: DISOSS Guide	5958-8547	11/86		
NET IPc 3000/V Programmer Reference Manual	5958-8581	5/87		
DSN/RJE 2780/3780 Emulator Reference Manual	30000-90047	2/82	7/83	30130Q,S,T 30130E+S00,W00 30248Q,S,T 30248A+S00,W00 99086B+Q00
Point-To-Point Workstation I/O Reference Manual	30000-90250	12/84	4/87	30239Q,S,T 30239A+S00,W00 99084B+Q00

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
ATP for Meridian SL-1 Interface Supplement to the ATP Installation Manual	30144-90016	4/86		
Workstation Configurator Reference Manual	30239-90001	2/84		30239Q,S,T 30239A+S00 99084B+Q00
Workstation Configurator Quick Reference (Sec. J)	30239-90006	6/84		30239Q,S,T 30239A+S00,W00
LANIC Installation and Service Manual (Series 39, 4X, or 6X)	30242-90001			
LANIC Installation and Service Manual (Series 37)	30242-90100			
SNA NRJE Network Remote Job Entry User/Programmer Reference Manual	30245-90001	1/86		30245Q,S,T 30245A+S00,W00
Installing and Troubleshooting SNA NRJE Node Manager's Guide	30245-90002	1/86		30245Q,S,T
SNA NRJE Quick Reference (Sec. H)	30245-90006	1/86		30245Q,S,T 30245A+S00,W00
Getting Started With SNA Node Management	30246-90002	11/86		30246Q,S,T
SNA Link Services Reference Manual	30246-90003	11/86	5/87	30246Q,S,T 30246A+S00,W00
SNA/LINK Node Quick Reference (Sec. I)	30246-90006	11/86		30246Q,S,T 30246A+S00,W00
SNA IMF Interactive Mainframe Facility User/Programmer's Reference Manual	30247-90001	2/87		30247Q,S,T
Installing and Troubleshooting SNA IMF Node Manager's Guide	30247-90002	1/85		30247Q,S,T
HP 3000 Computer DSN/IMF SNA IMF Interactive Mainframe Facility Section F	30247-90006	1/85		30247Q,S,T

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
RJE Quick Reference (Sec. A)	30248-90006	6/84		30248Q,S,T 30248A+S00,W00
MRJE User/Programmer's Reference Manual	30249-90001	8/84		30249Q,S,T 30249A+S00,W00
MRJE Quick Reference (Sec. B)	30249-90006	6/84		30249Q,S,T 30249A+S00,W00
IMF User/Programmer Reference Manual	30250-90001	5/87		32229Q,S,T 32229A+S00,W00 30250Q,S,T 30250A+S00,W00 99087B+Q00
IMF Quick Reference (Sec. F)	30250-90006	6/84		30250Q,S,T 30250A+S00,W00
Installing & Troubleshooting LU 6.2 Base	30252-90001	11/86		
LU 6.2 Base Datacomm Handbook	30252-90006	11/86		
Digital Multiplexed Interface (DMI) Reference Manual	30288-90001	6/86		
DS/3000 HP 3000 to HP 3000 User/Programmer Reference Manual	32185-90001	12/85		32189Q,S,T 32189A+S00,W00 99086B+Q00
DS/3000 HP 3000 to HP 3000 Network Administrator Manual	32185-90002	12/85		32189Q,S,T
DS/3000 Quick Reference (Sec. C)	32185-90003	12/85		32189Q,S,T 32189A+S00,W00
DS/3000 HP 3000 to HP 1000 User/Programmer Reference Manual	32185-90005	12/85		32189Q,S,T 32189A+S00,W00 99086B+Q00
X.25/Link for the HP 3000 Reference Manual	32187-90001	12/85		32191Q,S,T 32191A+S00,W00
X.25/3000 Quick Reference (Sec.G)	32187-90006	12/85		32191Q,S,T 32191A+S00,W00
DSN/DS HP 3000 to HP 3000 User/Programmer Reference Manual	32189-90001	4/84		32189Q,S,T 32189A+S00,W00 99086B+Q00

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
DS/3000 Network Administrator Manual	32189-90002	4/84		32189Q,S,T 32189A+S00,W00 99086B+Q00
DS/3000 Quick Reference (Sec. C)	32189-90003	6/84		32189Q,S,T 32189A+S00,W00
DSN/DS HP 3000 to HP 1000 Reference Manual for HP 3000 Users	32189-90005	2/84		32189Q,S,T 32189A+S00,W00 99086B+Q00
DS/3000 - 1000 Quick Reference (Sec. D)	32189-90006	6/84		32189Q,S,T 32189A+S00,W00
DSN/DS 3000 Reference Manual	32190-90001	9/82		32190Q,S,T 32190A+S00,W00
DSN/DS 3000 To 1000 Reference Manual	32190-90005	1/82		32190Q,S,T 32190A+S00,W00
DSN/X.25 For the HP 3000 Reference Manual	32191-90001	2/84		32191Q,S,T 32191A+S00,W00
X.25/3000 Quick Reference (Sec. G)	32191-90006	6/84		32191Q,S,T 32191A+S00,W00
DSN/MRJE Multileaving Remote Job Entry	32192-90001	8/84		32192Q,S,T 32192A+S00,W00 30249Q,S,T 30249A+S00,W00 99086B+Q00
DSN/MTS Multipoint Terminal Software Reference Manual	32193-90002	8/82	2/84	32193Q,S,T 32193A+S00,W00 99086B+Q00
MTS Quick Reference (Sec. E)	32193-90006	6/84		32193Q,S,T 32193A+S00,W00
NS3000/V User/Programmer Reference Manual	32344-90001	5/87		
NS3000/V Network Manager Reference Manual	32344-90002	5/87		
NS3000/V User/Programmer Services	32344-90003	5/87		
NS/3000 Error Messages and Recovery Manual	32344-90005	5/87		

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
NS 3000/V Network Manager Reference Manual Volume II	32344-90012	5/87		
Repeater Installation Manual	92223-90002			

SYSTEM MANUALS

Using the HP 3000: An Introduction to Interactive Programming	03000-90121	4/79		FOS
MPE IV Commands Reference Manual	30000-90009	12/82		FOS
MPE IV Intrinsics Reference Manual	30000-90010	1/81	12/81	FOS
MPE Segmenter Reference Manual	30000-90011	11/82	8/86	FOS 30093Q
MPE V Debug/Stack Dump Reference Manual	30000-90012	9/76	8/86	FOS 30093Q 30093A+Q00
MPE IV System Manager/ System Supervisor Reference Manual	30000-90014	12/81	5/83	FOS
MPE IV System Utilities Reference Manual	30000-90044	11/82	5/83	FOS
Software Pocket Guide	30000-90049	12/86		FOS 30093Q 30093A+Q00
Using Files	30000-90102	4/78		FOS 30093Q 30093A+Q00
MPE File System Reference Manual	30000-90236	2/82		FOS 30093Q 30093A+Q00
HP Micro 3000XE Installation Manual	30474-90001			
Micro 3000XE Self Test and Maintenance Mode Reference Manual	30474-90003			

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
Micro 3000 Self Test and Maintenance Mode Reference Manual	30534-90001			
Micro 3000 Installation Manual	30534-90003			
MPE IV System Tables Guide	32002-90003	11/82		
MPE IV Console Operator's Guide	32002-90004	3/82	5/83	FOS
MPE V System Operation and Resource Management Reference Manual	32033-90005	2/86	8/86	FOS
MPE V Commands Reference Manual	32033-90006	2/86	8/86	FOS
MPE V Intrinsics Reference Manual	32033-90007	2/86	8/86	FOS
MPE V Utilities Reference Manual	32033-90008	2/86	8/86	FOS
HP3000 Guide for the New User	32033-90009	1/86		FOS
MPE V System Tables Reference Manual	32033-90010	9/84		
HP 3000 Guide for the New System Operator	32033-90021	4/86		FOS
MPE Quick Reference Guide	32033-90023	5/86	8/86	
MPE V T-MIT Tables Manual	32033-90040	1/85		
Native Language Support Reference Manual	32414-90001	9/84	8/86	FOS

SUBSYSTEM MANUALS

EDIT Reference Manual	03000-90012	8/80		FOS 30093Q 30093A+Q00

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
FCOPY Reference Manual	03000-90064	7/80		FOS 30093Q
APS/3000 Reference Manual	32180-90001	6/82		32180Q,S,T 32180A+S00,W00 99084B+Q00
APS/3000 Quick Reference Card	32180-90002	6/82		32180Q,S,T 32180A+S00,W00 99084B+Q00
APS/3000 Pocket Guide Insert	32180-90003	6/82		32180Q,S,T 32180A+S00,W00 99084B+Q00
Flexible Disccopy/3000	32199-90001	8/80		FOS
SORT-MERGE/3000 Reference Manual	32214-90002	9/81	9/84	FOS 30093Q 30093A+Q00
OPT/3000 Reference Manual	32238-90001	8/81		32238Q,S,T 32238A+S00,W00 99084B+Q00
OPT Pocket Guide	32238-90002	1981		32238Q,S,T 32238A+S00,W00 99084B+Q00
OPT Insert for MPE Pocket Guide	32238-90003	1981		32238Q,S,T 32238A+S00,W00 99084B+Q00

LANGUAGE MANUALS

BASIC for Beginners	03000-90025	11/72		32111Q,S,T 32111A+S00,W00 99081B+Q00
BASIC/3000 Pocket Guide	03000-90050	9/74		32111Q,S,T 32111A+S00,W00 90081B+Q00
FORTRAN 77 Reference Manual	5957-4685	3/87		32116Q,S,T 32116A+S00,W00 99081B+Q00
FORTRAN 77 Programmer's Guide	5957-4686	3/87		32116Q,S,T 32116A+S00,W00 99081B+Q00

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
FORTRAN 77 Quick Reference Guide	5957-4687	3/87		32116Q,S,T 32116A+S00,W00 99081B+Q00
FORTRAN/3000 to HP FORTRAN/77 Conversion Guide	5957-4690	3/87		32116Q,S,T 32116A+S00,W00 99081B+Q00
HP FORTRAN 77/V Reference Manual Supplement	30000-90294	3/87		
SPL Reference Manual	30000-90024	2/84		32100Q,S,T 32100A+S00,W00 99081B+Q00
SPL Language Textbook	30000-90025	6/76	9/77	32100Q,S,T 32100A+S00,W00 99081B+Q00
BASIC Interpreter Manual	30000-90026	6/76	11/78	32111Q,S,T 32111A+S00,W00 30098Q,S,T 30098A+S00,W00 99081B+Q00
Scientific Library Reference Manual	30000-90027	6/76	9/77	FOS 32205Q,S,T 32205A+S00,W00 99084B+Q00
Compiler Library Reference Manual	30000-90028	11/76		FOS 32205Q,S,T 32205A+S00,W00 99084B+Q00
FORTRAN Reference Manual	30000-90040	6/76	5/79	32102Q,S,T 32102A+S00,W00
HP FORTRAN 77/V Programmers Guide Supplement	31501-90005	3/87		
SPL Pocket Guide	32100-90001	11/76		32100Q,S,T 32100A+S00,W00
FORTRAN Pocket Guide	32102-90002	5/79		32102Q,S,T 32102A+S00,W00 99081B+Q00
BASIC Compiler Reference Manual	32103-90001	11/74	9/77	32111Q,S,T 32111A+S00,W00 99081B+Q00

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
RPG/3000 Reference Manual	32104-90001	8/86	4/87	32104Q,S,T 32104A+S00,W00 30100Q,S,T 30100A+S00,W00 99081B+Q00
RPG Listing Analyzer	32104-90003	2/84		32104Q,S,T 32104A+S00,W00 30100Q,S,T 30100A+S00,W00 99081B+Q00
RPG Utilities Reference Manual	32104-90006	11/81	1/87	32104Q,S,T 32104A+S00,W00 30100Q,S,T 30100A+S00,W00 99081B+Q00
Pascal Reference Manual	32106-90001	10/83		32106Q,S,T 32106A+S00,W00 99081B+Q00
Pascal Pocket Guide	32106-90002	10/83		32106Q,S,T 32106A+S00,W00 99081B+Q00
HP Business BASIC Reference Manual	32115-90001	8/86		
HP Business BASIC Quick Reference Guide	32115-90002	7/85		
HP Business BASIC Programmer's Guide	32115-90003	8/86		
BASIC/3000 to HP Business BASIC Conversion Guide	32115-90004	8/86		
BASIC/260 to HP Business BASIC Conversion Guide	32115-90005	8/86		
Using COBOL: A Guide for The COBOL Programmer	32213-90003	3/78		30096Q,S,T 30096A+S00,W00 32213Q,S,T 32213A+S00 90081B+Q00

Manual Title	Part Number	Latest Edition	Current Update	Subscription Services
COBOLII/3000 Reference Manual	32233-90001	12/85	3/86	32233Q,S,T 32233A+S00,W00 99081B+Q00
COBOL/3000 to COBOLII/3000 Conversion Guide	32233-90005	12/79		32233Q,S,T 32233A+S00,W00 32233T-068 99081B+Q00

SOFTWARE PRODUCT MANUALS

HPCopycat/3000 Reference Reference Manual	19550-90901	2/87		19550A+S00 19550A+W00 19550S,T,V
Administrator's Guide to HPConvert/WPS	27500-90001	1/85		27500Q,S,T 27500A+Q00,S00,W00
HPConvert/DCA Document Conversion Guide	27509-90001	12/85		
Administrator's Guide to HPOffice Connect to DISOSS	27515-90001	10/86		
Using HPDeskManager Connected to DISOSS	27515-90004	10/86		
Using DISOSS Connected to HPDeskManager	27515-90006	10/86		
Using HP File/Library	27520-90001	8/86		
HP File/Library Administration	27520-90002	8/86		
Administrator's Guide to HPOffice Connect to PROFS	27521-90001	1/86		
Using HPDeskManager Connected to the IBM Professional Office System	27521-90004	1/86		
Using the IBM Professional Office System Connected to HPDeskManager	27521-90005	1/86		
Using HP Schedule	27522-90001	9/86		
HP Schedule Administration	27522-90002	9/86		

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DEL Reference Manual	30000-90050	5/78		
SILHOUETTE/3000 Reference Manual	30302-90001	11/85		30302A+S00,W00 99083B+Q00
HPDRAW Reference Manual	32108-90001	12/83		32108Q,S,T 32108A+Q00,S00,W00 32110Q,S,T 32110A+Q00,S00,W00
HPEASYCHART Reference Manual	32109-90001	1/84		32109Q,S,T 32109A+Q00,S00,W00 32110Q,S,T 32110A+Q00,S00,W00 32112A+S00,Q00,W00 32114Q,S,T 32114A+Q00,S00,W00
HPMenu Reference Manual	32112-90000	1/83		32112Q,S,T 32114A+Q00,S00,W00
HPMenu Administrator's Manual	32112-90001	6/83		32112Q,S,T 32112A+Q00,S00,W00 32114Q,S,T 32114A+Q00,S00,W00
HPMenu Quick Reference Guide	32112-90002	6/83		32112Q,S,T 32112A+Q00,S00,W00 32114Q,S,T 32114A+Q00,S00,W00
HPMap/3000	32113-90001	7/85		99106B+H00,T00 32113V+Q00,S00
Mapping Applications Casebook	32113-90002	7/85		99106B+H00,T00 32113V+Q00,S00 32114Q,S,T
Programmatic Access to HPWORD Documents	32119-90001	9/86		32119Q,S,T 32119A+Q00,S00,W00
Getting Started With HPWORD	32120-90032	4/85		32114Q,S,T 32114A+Q00,S00,W00 32120Q,S,T 32120A+Q00,S00,W00
HPWORD Quick Reference Guide	32120-90033	4/85		32120Q,S,T 32120A+Q00,S00,W00 32114Q,S,T 32114A+Q00,S00,W00

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Using HPWORD	32120-90035	4/85	9/86	32120Q,S,T 32120A+Q00,S00,W00 32114Q,S,T 32114A+Q00,S00,W00
Printing With HPWORD	32120-90060	9/86		32114Q,S,T 32114A+Q00,S00,W00 32120Q,S,T 32120A+Q00,S00,W00
HPWORD Administration	32120-90061	9/86		32120Q,S,T 32120A+Q00,S00,W00
HPListKeeper User's Guide/ Reference Manual	32132-90020	9/86		32132A+Q00,S00,W00 32132Q,S,T
VisiCalc Quick Reference Guide	32133-90001	12/84		
VisiCalc Reference Manual	32133-90002	3/84		
Deluxe VisiCalc Quick Reference Manual	32133-90010	12/84		32133Q,S,T
Deluxe VisiCalc Reference Manual	32133-90011	12/84		32133Q,S,T
HP INFORM/V User's Guide	32246-90001	6/86		32246Q,S,T 32246A+S00,W00 99082B+Q00
DSG/3000 Reference Manual	32250-90001	12/83		32250Q,S,T 32250A+Q00,S00,W00 32110Q,S,T 32110A+Q00,S00,W00
DSG/3000 Quick Reference Guide	32250-90002	2/84		32250Q,S,T 32250A+Q00,S00,W00 32110Q,S,T 32110A+Q00,S00,W00
Print Spooler Utility	32345-90001	8/86	12/86	36891A+S00,W00 36892A+S00,W00
HPToolset Reference Manual	32350-90001	1/84		32350Q,S,T 32350A+S00,W00 99082B+Q00
PRINT CENTRAL: PC User	32593-90002	12/86		

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Resource Sharing: System Management	32597-90001	8/86	12/86	36891A+S00,W00 36892A+S00,W00
Resource Sharing: Utilities	32597-90002	8/86		36891A+S00,W00 36892A+S00,W00
Resource Sharing: Host Diagnostics	32597-90003	8/86		36891A+S00,W00 36892A+S00,W00
HPTREND User's Guide	35136-90001		12/86	35136Q
HP Easytime Reference Manual	35303-90001	2/87		35303Q,S,T 35303A+Q00,S00,W00
HP Easytime Field Reference Manual	35303-98001	2/87		
HP Business Report Writer/V Reference Manual	36070-90001	3/86	8/86	36070Q,S,T 36070A+Q00,S00,W00
HPSPELL Administration	36561-90002	11/84		36561Q,S,T 36561A+Q00,S00,W00 36562Q,S,T 36562A+Q00,S00,W00
HPSPELL Quick Reference Guide	36561-90003	11/84		36561Q,S,T 36561A+Q00.S00,W00 36562Q,S,T 36562A+Q00,S00,W00
HPDeskManager Reference Card	36570-90039	11/84		
Using HPDeskManager	36570-90050	9/86		
HPDeskManager: 1 Administration Tasks Manual	36570-90051	8/86		36570Q,S,T 36570A+Q00,S00,W00 32114Q,S,T 32114A+Q00,S00,W00
HPDeskManager: 2 Administration Reference Manual	36570-90052	8/86		36570Q,S,T 36570A+Q00,S00,W00 32114Q,S,T 32114A+Q00,S00,W00
Programmatic Access to HPDeskManager	36570-90053	8/86		
Using HPTELEX II	36572-90012	9/84		
Administrator's Guide to HPTELEX II	36572-90013	9/84		

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HPTELEX II Reference Card	36572-90014	9/84		
Using HPSlate	36576-90030	11/84	5/86	
TDP/3000 Quick Reference Guide	36578-90003	11/80		36578Q,S,T 36578A+Q00,S00,W00
TDP/3000 Reference Manual	36578-90004	9/85		36578Q,S,T 36578A+Q00,S00,W00
Getting Started With TDP/3000	36578-90005	11/85		36578Q,S,T 36578A+Q00,S00,W00
IFS/3000 Reference Manual	36580-90001	1/84	9/84	36580Q,S,T 36580A+S00,W00 36583Q,S,T 36583A+S00,W00 36584Q,S,T 36584A+S00,W00 99082B+Q00
IDS/FORM Reference Manual	36581-90002	2/85		36581Q,S,T 36581A+S00,W00 36584Q,S,T 36584A+S00,W00 99082B+Q00
PRINT CENTRAL: System Management	36890-90003	12/86		36891A+S00,W00
Print Configuration and Attending Guide	36890-90008	3/87		36891A+S00,W00 36892A+S00,W00
TRANSFORM/3000 Reference Manual	99940-90001	11/86		
TRANSFORM/3000 IBM S/36 OCL Translation	99940-90002	11/86		
PROCMON/3000 Reference Manual	99941-90001	11/86		
Using DSG/3000	22833B	2/84		
Using HPDRAW	22840B	12/83		

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TRANSACTION PROCESSING MANUALS

TRACE Reference Manual	03000-90015	6/76		
QUERY/3000 Reference Manual	30000-90042	12/85	5/86	FOS 32235Q,S,T 32235A+S00 32215Q,S,T 30095Q,S,T 30095A+S00 22808Q 35053Q 99083B+Q00
KSAM Reference Manual	30000-90079	5/79	8/86	FOS 32208Q,S,T 32208A+S00 99083B+Q00
HP VPLUS/V Reference Manual	32209-90001	7/86		FOS 32209Q,S,T 32209A+S00 99083B+Q00
Using VPLUS/V	32209-90004	8/86		FOS 32209Q,S,T 32209A+S00 99083B+Q00
IMAGE/3000 Database Management System Reference Manual	32215-90003	9/85		FOS 32235Q,S,T 32235A+Q00 99083B+Q00
TurboIMAGE Database Management System Reference Manual	32215-90050	12/85		FOS
Database Utilities Reference Manual	32244-90001	4/85		
REPORT/3000 User's Guide	32245-90001	2/85		32245Q,S,T 32245A+S00,W00 32248Q,S,T 32248A+S00,W00 99082B+Q00
TRANSACT/3000 Reference Manual	32247-90001	2/86		32247Q,S,T 32247A+S00,W00 32248Q,S,T 99082B+Q00

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HP System Dictionary User's Guide	32254-90001	12/86		
HP System Dictionary Intrinsics Reference Manual	32254-90002	12/86		
HP System Dictionary Utilities Reference Manual	32254-90003	12/86		
HP System Dictionary General Reference Manual, Volume 1	32254-90004	12/86		
HP System Dictionary General Reference Manual, Volume 2	32254-90005	12/86		
HP System Dictionary COBOL Definition Extractor Reference Manual Manual	32255-90001	12/86		
HP VISOR/V: Introduction to HP VISOR	32425-91001	3/87		
HP VISOR/V: Using EZaccess	32425-91002	3/87		
HP VISOR/V: Using SQLaccess	32425-91003	3/87		
HP VISOR/V: Reporting with EZReport	32425-91004	3/87		
HP VISOR/V: Advanced Functions	32425-91005	3/87		
HP VISOR/V: Reference Appendices	32425-91006	3/87		
HP Access Central: Host Diagnostics	32596-90001	8/86		36894A+S00,W00 36895A+S00,W00 36896A+S00,W00
HP Access Central: PC Diagnostics	32596-90002	8/86		36894A+S00,W00 36895A+S00,W00 36896A+S00,W00
TURBOIMAGE DBchange/V User's Guide	36020-90001	1/87		

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HPSQL/V SQL Reference Manual	36215-90001	2/86		99083B+Q00
HPSQL/V ISQL Reference Manual	36215-90002	2/86		99083B+Q00
HPSQL/V Database Administration Guide	36215-90003	2/86		99083B+Q00
HPSQL/V COBOL Application Programming Guide	36215-90004	2/86		99083B+Q00
HPSQL/V Message Manual	36215-90005	2/86		99083B+Q00
HPSQL/V Quick Reference Guide	36215-90006	2/86		99083B+Q00
HPSQL/V Pascal Application Programming Guide	36215-90007	2/86		99083B+Q00
HP Access Central: Host Diagnostics	32596-90001	9/86	3/87	32596A+S00,W00
HP Access Central: PC Diagnostics	32596-90002	9/86	3/87	32596A+S00,W00
HP Access Central: System Manager's Guide	36899-90003	9/86	3/87	32596A+S00,W00
HP Access Central: Database Administration	36596-90011	9/86	3/87	32596A+S00,W00
HP Access Central: Planning and Configuration	32596-90012	9/86	3/87	32596A+S00,W00
HP Access Central: Learning the Administrator Utility	32596-90013	9/86	3/87	32596A+S00,W00
HP Access Central: Error Messages	32596-90014	9/86	3/87	32596A+S00,W00
TurboIMAGE Profiler User Guide	36914-91001	12/85		99075+50A

MAINTENANCE MANAGEMENT MANUALS

Managing Equipment, Parts and Work Orders User Reference Manual	32276-90001	10/85		

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Managing Equipment, Parts and Work Orders User Tutorial	32276-90002	10/85		
Managing Inventory and Purchase Orders User Reference Manual	32276-90003	3/84	10/85	
Managing Inventory and Purchase Orders User Tutorial	32276-90004	3/84	10/85	
System Reference Manual Volume 1	32276-90005	10/85		
System Reference Manual Volume 2	32276-90006	10/85		
System Reference Manual Volume 3	32276-90022	10/85		

MATERIALS MANAGEMENT MANUALS

Master Production Scheduling and Rough Cut Resource Planning	32260-90001	2/86		
Maintaining Parts and Bills of Material	32260-90002	2/86		
Maintaining Routings and Workcenters	32260-90003	2/86		
Material Requirements Planning	32260-90008	2/86		
Standard Product Costing	32260-90009	2/86		
System Reference Manual Volume 1	32260-90111	2/86	7/86	
Managing Inventory and Orders	32260-90113	2/86		
System Reference Manual Volume 2	32260-90116	2/86	7/86	
Getting Started with HP Materials Management	32260-90134	2/86		

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System Reference Manual Volume 3	32260-90135	7/86		
System Reference Manual Volume 4	32260-90136	2/86		
Factory Order Entry	32908-90001	2/86		
Managing Inventory and Orders with Lot Control	32909-90001	2/86		
Genealogy Reporting and Archive Management	32909-90002	2/86		
Maintaining Parts and Bills of Material with Lot Control	32909-90003	2/86		

PRODUCTION MANAGEMENT MANUALS

Defining the Shop	32270-90001	2/86		
Managing the Order	32270-90002	2/86		
Capacity Requirements Planning and I/O Analysis	32270-90003	2/86		
Data Capture Terminal	32270-90004	7/81		
System Reference Manual Volume 1	32270-90038	2/86		
HP 3081A Data Capture User Manual	32270-90040	10/83		
HP 3081A Template	32270-90041			
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