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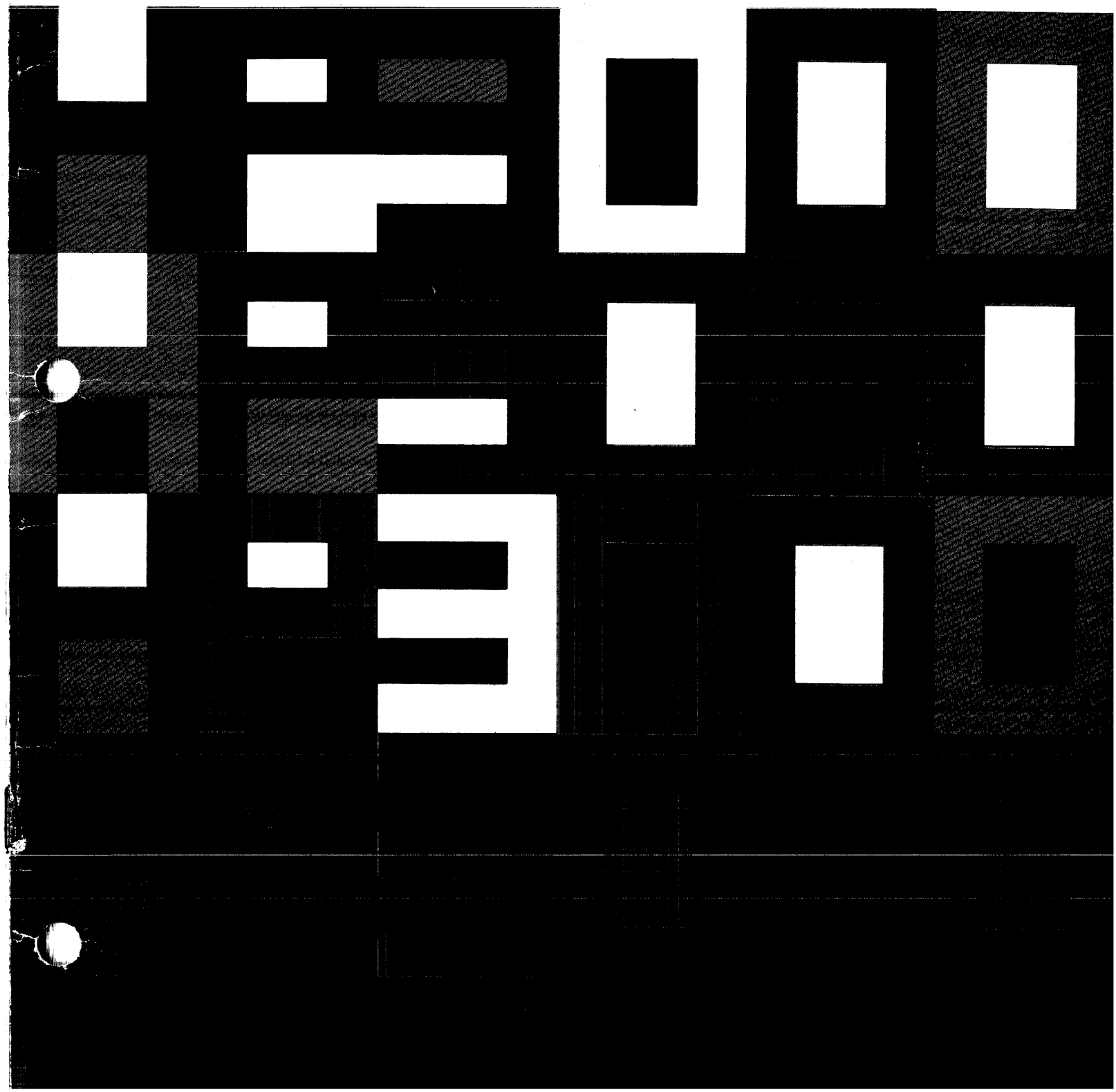

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Editor's Note

We're excited about a powerful, new product that will become the standard interface for all of our new and existing data communications subsystems. It's the Intelligent Network Processor (INP), and it's discussed in an article beginning on page 3.

The HP 3000 Series 30 and Series 33 have just become members of HP's Distributed Systems Network, giving them DS/3000 and RJE/3000 software capabilities. An article concerning this begins on page 5.

Among the other six articles in this issue of COMMUNICATOR 3000 is an excellent write-up that all HP VIEW/3000 users should read. Entitled "Hints for Using HP VIEW/3000", it begins on page 18.

Also included in this issue are the DataComm note files. These note files specify all of the enhancements which are on the DataComm Tape.

The DataComm Tape is a special release; it is not for general distribution. It can be installed for users requiring the enhancements specified in the DataComm note files and must be installed on systems using the INP. If you are interested in installing the DataComm Tape, contact your HP Sales Representative.

The Documentation section, which begins on page 44, discusses the latest documentation activity, including changes and additions made for the new HP 3000 Series 30 and the INP.

The latest Catalog of Customer Publications begins on page 52.

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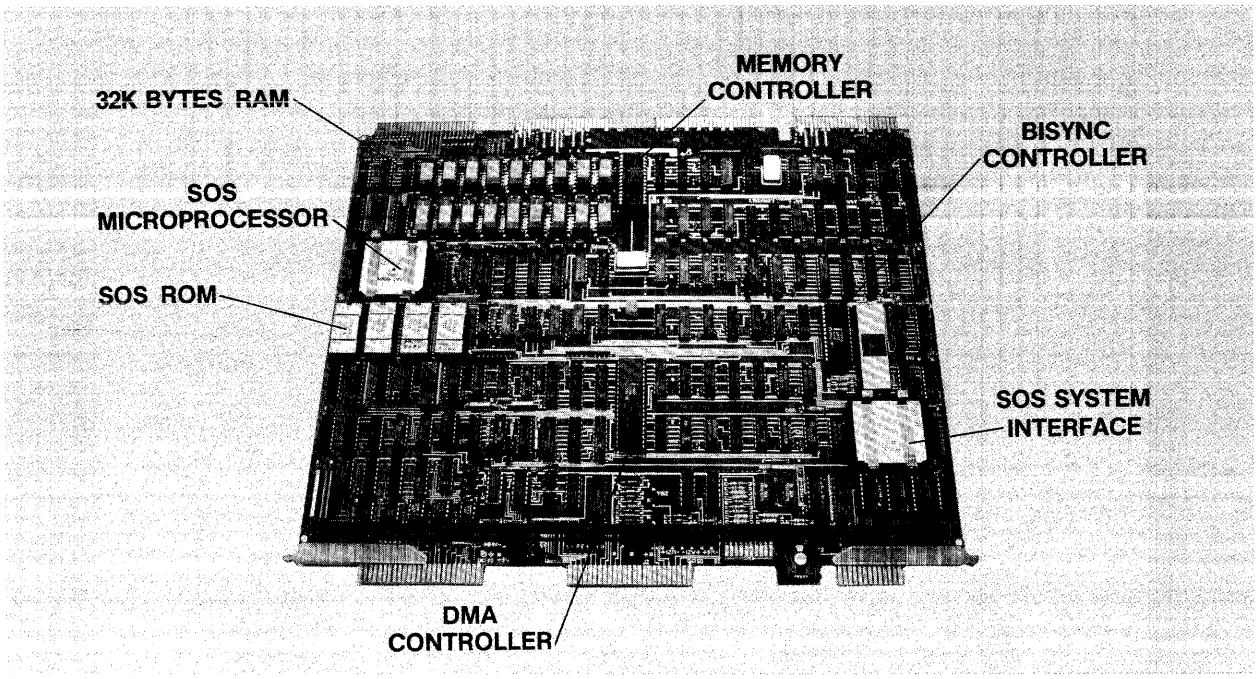
Introducing the Intelligent Network Processor

"A major new data communications enhancement for HP 3000 computers."

by Tom Black, General Systems Division

The Intelligent Network Processor, INP, is a major new data communications enhancement for the HP 3000 computers. It's a computer system in its own right, extending data communications capability to the Series 30 and 33 while also offering significant performance enhancements for the Series II and III. The INP will become the standard interface for all of our new and existing data communications subsystems.



Major Components of the HP 3000 Series 30/33 INP

The Silicon on Saphire (SOS) microprocessor is the heart of the INP. It uses the latest HP SOS technology, has a 16 bit word and executes between 500,000 and 700,000 instructions per second. Most of the data communications protocol handling is carried out by the INP, thus removing this load from the CPU.

The operating software is downloaded from the CPU into Random Access Memory (RAM) on the INP. This is the same type of RAM as is used for HP 3000 main memory, and it has automatic error detection. This RAM is also used for data buffering. Since the operating software is downloaded, new data communications subsystems can be accommodated in software rather than hardware, giving trememdous inherent flexibility for future growth. The operating software performs all of the data communication protocol manipulation, including adding and stripping protocol words.

Extensive use has been made of large scale integration for the INP. Examples are the data communication chips and Direct Memory Access (DMA) controller. These improve performance and reliability while remaining cost effective. For example, the Binary Synchronous Communications (BISYNC) chip performs serial to parallel conversion, bit and character synchronization, and indicates the start and end of data block.

The INP operates at up to 56 Kbps in half or full duplex mode. Modem and hardwired interfaces are standard and RS232C and V.35 interfaces can be used. A comprehensive self-test facility simplifies maintenance and troubleshooting, and buffered data is protected during a power failure.

INP was formally announced this past October 1st. DS/3000 and RJE/3000 are supported on INP at this time. Please contact your HP sales representative for price and availability.

DS/3000 Welcomes the Series 30 and Series 33 to HP-DSN

"The same DS/3000 application running on HP 3000 Series II and Series III computers will execute on connected Series 30's and Series 33's."

by Steve Zalewski, General Systems Division.

The two newest members of the HP 3000 family of compatible business systems, the Series 30 and Series 33, are now members of Hewlett-Packard's Distributed Systems Network. Distributed Systems/3000 (DS/3000) software capabilities are available on both the Series 33 and the brand new Series 30.

Your distributed processing needs can be met using any combination of HP 3000 systems, from the entry level Series 30 and mid-range Series 33, to the high performance Series III. This gives you a price range of from $49,500 to $250,000 from which to choose.

If you are a present DS/3000 user, you can expand your network using Series 30 and Series 33 computers without changing your distributed processing applications. Since all HP 3000 systems are software compatible, the same DS/3000 application running presently on your network of Series II and Series III computers, will execute on the connected Series 30's and Series 33's.

You may also want to use Series 30 and Series 33 computers in your network as "execute only" systems. An "execute only" system is a computer where no program development is done. The computer is equipped to only execute already compiled programs. The HP 3000 is perfect for this environment. Programs can be written and debugged on one HP 3000 and "downloaded " to "execute only" HP 3000 computers using the remote file access capability of DS/3000. Compilers are not needed on the execute only systems since the fundamental operating software (FOS) contains program run time libraries. FOS also includes the subsystems used by your applications: IMAGE/3000, QUERY/3000, and VIEW/3000. The Series 30 and 33 are especially attractive for "execute only" systems because of their low prices.

The price of DS/3000 will remain at $3000 regardless for which HP 3000 system it is purchased. Present DS/3000 users receive the ability to communicate with Series 30 and Series 33 systems without any additional cost.

Users of DS/3000 on the Series 30 and 33 will have the same broad range of capabilities that present DS/3000 customers enjoy. These include:

- Remote command execution - Any command may be executed on the remote system across the DS link.

  This is useful for the network manager to start up data entry applications on the remote systems or do network management functions such as adding user accounts. Programmers at a central HP 3000 also use this capability to test application program features on remote systems.

- Remote file access - You can access files located on remote systems just like local files.

  Present DS/3000 customers make use of this to access data on a remote HP 3000 and also in "downloading" compiled programs from a central HP 3000 to remote HP 3000 systems.

- Remote peripheral access - In like manner, peripherals can be accessed and hence shared between computers.

  One use made of this capability is to share a high speed line printer between two commonly located HP 3000 systems. The users on the HP 3000 computer without the line printer only occassionally have need for a line printer. The cost of buying a second line printer is saved.

- Remote data base access - You can use IMAGE/3000 statements and QUERY/3000 to retrieve information on remote data bases in the same manner used in accessing a local data base.

  One customer uses this capability to search warehouse inventories at remote sites when the needed items are not at the local warehouse. The HP 3000 at each site has a finished goods data base that contains the information on its local warehouse.

- Program-to-program communications - PTOP allows you to have programs on two different HP 3000 systems active at the same time, each handling different parts of the same application.

This capability is especially useful where a large volume of data from a remote HP 3000 is needed. A program on the local system can initiate a program on the remote system that efficiently blocks the data for transmission across the DS/3000 link where it is received by the local program. This allows you to make optimum use of the link and thus lower the time needed to transfer the data.

Consistent with other HP 3000 features, all of these capabilities are extremely easy to use and do not require communications expertise.

The key to communications on the Series 30 and Series 33 is the Intelligent Network Processor (INP), HP's new hardware interface board. The INP uses HP's Silicon-on-Sapphire (SOS) technology to lower communications overhead and give added flexibility. The INP offloads the CPU by performing some of the protocol handling directly on the INP using an HP proprietary SOS microprocessor. There is also added flexibility in configuring network connections. The INP can connect to another INP over modems or directly (hardwired). The INP can also connect to your present Synchronous Single Line Controllers (SSLC) over modems or directly using a modem eliminator cable. The INP cannot connect to a hardwired serial interface (HSI). INP to INP links can support a data rate of up to 56,000 bits/sec data rate. An INP to SSLC link supports a maximum data rate of 9600 bits/sec.

Presently, there are no connections between a Series 30 or Series 33 and an HP 1000.

DS/3000 ordering remains unchanged. The standard product number is 32190A; the RIGHT-TO-COPY product number is 32190R.

MRJE Enhancements

Job output routing is now compatible with JES 3.

by John Chisholm, General Systems Division

The DataComm Tape provides a number of important enhancements to MRJE (Multileaving Remote Job Entry), over and above those enhancements in 1918. Here are the most noteworthy enhancements to MRJE in the DataComm Tape:

* Automatic job output routing with JES 3 job entry subsystem
* Greater flexibility in recognizing JES 2 and HASP print banners
* Improved recovery from incorrectly specified output files
* MRJE Jobnames can now handle nonalphanumeric characters
* Host Messages no longer write over host console commands

Job Output Routing with JES 3

JES 3 (and ASP) now join JES 2 and HASP II as job entry subsystems with which MRJE's automatic job output routing (job management) capability is compatible.

MRJE uses a different method of recognizing job output with JES 3 and ASP than it does with JES 2 and HASP. With JES 2 and HASP, MRJE recognizes the one-line header which includes the job name and number. With JES 3 and ASP, MRJE decodes the large block letters at the beginning of job output which JES 3 and ASP provide as a standard default. (If you are using JES 3 or ASP and have selected, on the host, an output header option other than the standard default option, MRJE may not be able to recognize your host's output. In this case, the output is sent to the unsolicited output device.)

MRJE can, of course, still be used with other job entry subsystems, such as JES/RES used with the OS/VS1 operating system. However, automatic job output routing cannot be used: all output is treated as unsolicited output.

Greater Flexibility in Handling JES 2 and HASP Print Banners

MRJE will now recognize a JES 2 or HASP print banner line of any length. Previously any line of length less than 132 bytes has been disregarded as a print banner.

Improved Recovery from Incorrectly Specified Output Files

MRJE now notifies the operator in the events that either 1) the physical bounds of a user's output file have been exceeded, or 2) MRJEOUT was unsuccessful in attempting to open the unsolicited output file fof a user. When this occurs, the operator must respond with either "Retry" or "Flush", to indicate whether the failed operation is to be re-attempted, or the remaining user output is to be flushed.

Nonalphanumeric characters can be used in Jobnames

MRJE will now properly handle IBM jobnames that contain nonalphanumeric characters. When opening output files with the IBM jobname, all such characters are replaced with the letter "X".

Host Console Commands No Longer Over-written by Host Messages

The MRJE Console has been modified to postpone display of host messages until any host console commands that are being entered are completely input by the MRJE Console user. This means greater convenience to users of the MRJE Console. fewer commands having to be re-entered.

. . . . .

The enhancements on the DataComm Tape are in addition to those on 1918. All of the enhancements of the 1918 IT are included in the DataComm Tape. 1918 enhancements to MRJE include:

* Improved recovery from bad transmissions (increasing the number of retries from seven to 255)

* Greater flexibility in handling JOB cards (they can now be ignored in ##FD files, if desired)

* Enhancements to the spooler that let you spool other output to a printer which is being used as a "hot" (unspooled) printer for MRJE (these spooler enhancements are not specific to MRJE)

MTS Installation Notes

by Steve Bitondo, General Systems Division

There are two items to be aware of before installing the DataComm Release at sites that use MTS/3000.

1. The configured Maximum Code Segment Size must be set to 8500 (decimal) or larger for MTS to run. This is larger than the 8192 (8K) recommendataion in the System Manager/System Supervisor Reference Manual.

2. All terminals on Async MTS lines must have a strap changed. The V strap on the Keyboard Interface PCA provides for SYN character insertion. Previous versions of MTS required this strap to be open, inserting SYN characters in terminal-to-CPU transmissions and requiring SYN characters in CPU-to-terminal transmissions. MTS version A.01.00 and above (DataComm MIT is version A.01.03) requires strap V to be closed.

WORKAROUND: This requirement for strap V to be CLOSED can be ignored if the SSLC preferred Buffer Size is set to 250 words and the line speed is 9600 bps. There need not be a corresponding change downward in the terminal buffer size.

Of course, slightly better line utilization results (for relatively noise free local lines) if the SSLC Preferred Buffer Size is set to 1000 words (with terminal buffer size set to 4000 bytes) as per MTS Reference Manual instructions. However, for DataComm Release and later, buffer sizes that take longer than one second to transmit must have strap V closed. Again, this applies to Async MTS lines only. Sync MTS lines have no terminal strap changes.

IMAGE Logging and Recovery: Questions and Answers

by Jim Francis, General Systems Division

1. If a system failure occurs, can you start logging and database modifications without performing a recovery first?

No, unless you are sure that the database was NOT open for update access at the time of the system failure. Otherwise it is necessary to run the DBRECOV program and then choose one of the three post-recovery procedures described in the new IMAGE manual.

2. What happens if a disc logfile runs out of space?

MPE User logging does not automatically switch to a new disc file, but instead causes the associated log process to terminate when the logfile is filled to capacity. Subsequent calls to IMAGE intrinsics which require log records to be written will therefore fail. If this event occurs in the middle of a transaction, the database will be left in an inconsistent state. It will then be necessary to restore a backup copy of the database and run the recovery program. Reaching the end of disc logfile is therefore similar in effect to a system failure and should be avoided. Disc logfiles should be built with a total capacity far exceeding their required size and consisting of many extents (up to 32) with only one or two extents initially allocated.

CAUTION: Each file extent requires contiguous disc sectors so the user must insure that there are adequate blocks of disc storage since the extents may require several sectors of storage.

3. What happens when a tape logfile reaches the end-of-tape?

A message will be issued to the System Console to mount another tape. If this message is ignored for several minutes, the processes, which are being logged, will suspend. A message to each individual user will not be issued.

4. Is it possible to start a logging process from a job or session, or does it have to be from the console?

The console operator must initiate the logging process from the console using the :LOG command.

NOTE: With the new console interface, the master operator may :ALLOW other users to use the :LOG command.

5. Can all transactions be recovered in the event of a system failure?

In the event of a system failure and subsequent WARMSTART, MPE will attempt to "clean-up" any log files which were open at the time of the failure. The clean-up procedure involves writing any records left in the log system disc buffer file to the end of the logfile. Records left in the memory buffer, however, will be lost.

6. Can existing applications use IMAGE logging without modifications ?

Yes, however the recovery process may be more difficult. The user will have to analyze the end of the logfile and use various options of the DBRECOV program to suppress partial transactions. If the application is revised to use the new IMAGE intrinsics, DBBEGIN and DBEND to indicate the beginning and end of each transaction, the modifications that belong to transactions that failed to complete due to a system failure can easily be suppressed by the DBRECOV program.

Additionally, in order to maximize the extent of recovery, locking should be employed in order to eliminate concurrent transaction interdependence. See the IMAGE manual for further detail.

7. What steps are necessary to recover a database after a system failure?

a. WARMSTART the system if possible, otherwise COOLSTART.
b. Purge and DBRESTOR the backup copy of the database or use MPE's RESTORE command (:RESTORE *T;DB@;SHOW).
c. Use DBUTIL's SHOW command to verify that the status of the database is as follows:

```
ACCESS     IS DISABLED
RECOVERY   IS ENABLED
LOGGING    IS ENABLED
```

d. Run DBRECOV to recover the database.

8. Are the actual disc modifications logged, or only the procedure calling information?

IMAGE does not log the actual disc blocks modified by each call. IMAGE does, however, log all information passed to the IMAGE procedures in addition to other information.

9. Can non-IMAGE applications log to the same logfile?

Yes, if the log-id and password are known.

10. Can a single database log to both TAPE and DISC?

No. A single database may log to only one logfile at a time. Two databases may log to different logfiles simultaneously (one of which is tape, and one of which is disc), but a single logfile cannot be both tape and disc.

11. Can multiple databases log to the same logfile?

Yes, several databases can log to the same logfile unambiguously since each call to DBOPEN logs out the fully qualified name of the database.

12. Can an application program declare a transaction which spans two or more databases?

There is currently no mechanism within IMAGE to provide for the declaration of multi-database transactions. Programmers may be tempted to call DBBEGIN twice (once for each database), update both databases, and then call DBEND twice in an attempt to implement this capability. However a system failure during the 'window' between the two final calls to DBEND may result in the recovery of the transaction for one database, and its suppression on the other. Consequently, an application which uses this strategy should also have the capability to examine the recovery files to determine if this problem occurred, and if so, back out one of the databases as needed.

13. Are transactions which fail to complete due to program aborts backed out?

The IMAGE logging and recovery system is not intended to be a solution for transactions which fail to complete in real time due to a program abort. Since subsequent transactions may be dependent on a transaction interrupted by a program abort, the recovery system will not normally suppress transactions which fail in real time. IMAGE however, does log a special DBEND to the logfile so that the transaction can be recovered. This mechanism can be overridden with the NOABORTS control option in DBRECOV as long as all processes are stopped immediately after a program abort and if the database is restored and recovered. Any delay in executing recovery with the NOABORTS option could result in erroneous data or recovery

failure due to transaction interdependence. Alternatively the STOPTIME or EOF option could be used to restore transactions that logged up to a time preceeding the program abort.

14. How can you tell if you have restored the proper backup database?

The IMAGE logging and recovery system depends upon the exact correspondence between the stored backup database copy and the working database on disc at the time logging was initiated. The DBSTORE flag and timestamp, when properly used, will enforce this condition. Therefore, it is strongly recommended that the Database Administrator always use DBSTORE to generate backup copies. For flexibility, in the event that the Database Administrator might use :STORE or :SYSDUMP to store the backup, the capability exists to defeat the timestamp and DBSTORE flag mechanism using the NOSTAMP and NOSTORE options of the CONTROL command. In this case, the Database Administrator must assume the responsibility for maintaining the correspondence between backup copy and the logfile.

WARNING: A database recovered with the wrong logfile may cause DBRECOV to generate erroneous data in the database and this condition cannot always be detected.

15. Is it possible to find out what databases and processes are logged onto a logfile without attempting a recovery?

Yes, DBRECOV's CONTROL command (STATS option) will printout information regarding the logfile without actually recovering the database(s).

16. Is it possible to find out whether a specific transaction was sucessfully recovered?

Yes, DBRECOV's FILE command with the rmode parameter set to 1,2, or 3 will return log records which were successfully recovered. Note: If the user's program has not been modified to block transactions using DBBEGIN and DBEND, a transaction defaults to a single call to DBPUT, DBUPDATE, or DBDELETE.

17. Is it possible to tell if all of a process' transactions were recovered by looking at the DBRECOV printout?

Yes, an asterisk ("*") on the far right side of the process statistics indicates that one of the following two conditions occured:

1. A DBCLOSE was not found or,
2. All of the transactions could not be recovered.

If the asterisk is missing, all of that process' transactions were recovered.

18. Is it possible to suppress all of the transactions of a particular process during recovery ?

No.

19. Where do the log records go when using a remote database-- the local or remote site?

The local system; the system which has the database.

20. Are QUERY modifications logged?

Yes.

21. Can you declare transactions from QUERY?

No, QUERY currently does not have the equivalent of DBBEGIN and DBEND. A transaction therefore defaults to a single call to DBPUT, DBUPDATE, or DBDELETE.

22. Does IMAGE log before or after the actual database is updated?

The WRITELOG Intrinsic is used to log information when the IMAGE intrinsics DBPUT, DBDELETE, and DBUPDATE are called. WRITELOG is called after all the IMAGE error checks are made, but before the actual disc modifictions are made to the database. Consequently, a log record is not written until the IMAGE procedure has committed itself to succeed, with the exception of file system or similar failures.

23. Is there a backout facility?

No, only forward recovery.

24. Does MPE's :STORE command set the flag in the database root file (flag used to indicate that the database has been stored at a particular time)?

No, only DBSTORE.

25. Since user logging files do not have privileged file codes, doesn't this mean that there are fewer security restrictions to its access than the database itself?

No, a user is granted logging access to the logfile by the LOGID and PASSWORD, but this does not give him read, write, or update access. Privileged file codes were used by IMAGE primarily because the MPE file security was not adequate to provide item-level security for many different users. Logfiles, however, are not intended to be read by the database users. Only the Database Administrator (or person running the DBRECOV program) or a userwritten program need have read access to the logfile. Note: The logfile can be built with a lockword and MPE's ALTSEC command can be used to specify that only the

creator of the logfile has acccess. In addition the logfile could be protected by account, group, and user security.

26. Are there any special intrinsics for reading logfiles ?

No, however, MPE's FREAD Intrinsic can be used if the user can supply the necessary MPE security (i.e. lockword, logid, password, user access such as CR for Creating User).

27. If a Database Administrator forgets the password of a particular log process is there a way to determine what it is?

Yes, the :LISTLOG logid;PASS MPE Command can be used. Note: The user must be the creator of the logid and have LG capability.

28. Can a logfile be on a serial disc ?

No, because there is no "labeling" on a serial disc.

Hints for Using HP VIEW/3000

Recovery, strapping the terminal, the terminal communications area, modulus 11 check digits, changes to the HP VIEW/3000 reference manual and ENTRY program changes are discussed in this article.

by Joan Martin, General Systems Division

New information on using HP VIEW has become available since the HP VIEW/3000 reference manual was printed. In addition, there are a number of corrections to the manual. All of this information will be included in an update to the manual, but this update will not be available until the next Installation Tape is released. In the meantime, here is a summary of some of the more critical corrections and some useful hints on using HP VIEW.

Recovery

If you are executing FORMSPEC or ENTRY and you press the BREAK key accidentally, or if your program aborts, you can recover with the following steps:

1. Press RESET TERMINAL (twice on a 2645). On a 2640B, you must unlatch the BLOCK MODE key to return to line mode.

2. Press RETURN to get the MPE colon prompt.

3. Press the ESC key and then press the colon (:) key so that echo is turned on.

4. Type RESUME and press RETURN. The message READ PENDING is displayed on the screen. (On a 2640B, press the BLOCK MODE key.)

5. Press REFRESH (function key f4) to redisplay the form or menu on which you were working when the program was interrupted.

A power failure will simply interrupt execution of your program, but a full system failure will log you off the system. After a power failure, you can resume execution using the steps outlined above. If the system has failed and you attempt to resume in this manner, a system message will ask you to log on when you type RESUME.

If you were running FORMSPEC, first log on and then try to run FORMSPEC again with the same files. If the forms file was not affected by the system failure, you can continue forms design where you left off. However, if FORMSPEC cannot open the KSAM forms file, you must use the KSAMUTIL crash recovery routines before continuing.

If you were using ENTRY when the system failed, your batch file will not contain any data entered in the current session. If it was a new file, you must start over; if it was an existing file, you must reenter any data that you entered in the current session.

Strapping the Terminal

If you are using a 2640B terminal, you can use the function keys without the CNTL key by strapping your terminal for this purpose. You do this by opening the E switch on the KEYBD I/F PCA panel inside the terminal. (Note that the D, F, and G switches must also be open for BLOCK MODE/PAGE operation.) The A, C, and H straps must be closed.

The HP2645, 2641, 2647, and 2648 terminals are automatically configured by HP VIEW/3000. The following table summarizes the strapping for the 2640B and for the 2644A terminals:

Switch	2640B	2644A
A	closed	closed
B	-	-
C	closed	closed
D	open	open
E	open	-
F	open	-
G	open	open
H	closed	closed

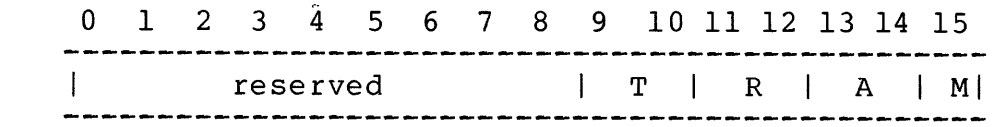
Terminal Communications Area

Words 49 through 58 (relative to 1) of the communications area contain information about the terminal. This information includes the terminal file number, terminal type, terminal allocation and error logging, and terminal options. Most users

will never use this area. However, in case you want to know the MPE file number of your terminal, how to suppress messages, read data automatically, or specify a timeout value for reading keys, the terminal communications area words that perform these functions are outlined below.

Word 49 - TERM'FILEN - contains the MPE file number of your terminal.

Word 56 - TERM'OPTIONS -allows you to suppress mode messages in VOPENTERM and VCLOSETERM, enable an AUTOREAD function in VREADFIELDS, suppress the TERMINAL RESET key in VOPENTERM, and enable ENTER and function key timeouts in VREADFIELDS. The bit layout of word 56 is:



T: 01 = Enable ENTER key or function key timeout in VREADFIELDS. Wait the number of seconds specified in word 58 (see below), for an ENTER key or function key to be read by VREADFIELDS. If a key is not read within the specified time, VREADFIELDS sets the status word (word 1 of the communications area to the value 160.

00 = Disable ENTER key timeout in VREADFIELDS (default). No time limit for reading the ENTER or function keys.

R: 01 = Suppress TERMINAL RESET in VOPENTERM. When VOPENTERM is executed, the RESET TERMINAL function is not performed.

00 = Allow TERMINAL RESET IN VOPENTERM (default). The TERMINAL RESET function is performed when VOPENTERM is executed.

A: 01 = Enable AUTOREAD in VREADFIELDS. The AUTOREAD feature causes VREADFIELDS to send an "ESC d" to the terminal instead of waiting for the operator to press the ENTER key. This automatic ENTER is useful for measuring performance.

00 = Disable AUTOREAD in VREADFIELDS (default). The ENTER key must be pressed to read data with VREADFIELDS.

M: 1 = Suppress mode messages in VOPENTERM and VCLOSETERM. Do not issue block mode warning messages when the terminal is opened or closed.

0 = Display mode message in VOPENTERM (default). The mode message for VOPENTERM is "BLOCK MODE/PAGE IS SET"; for VCLOSETERM, the mode message is "REMEMBER TO UNLATCH THE BLOCK MODE KEY".

Set the entire word 56 to zero to specify the default values. (The first 8 bits should always be zero.)

Word 58 - TERM'TIMEOUT - If the "T" bits in word 56 are set to 01 to enable an ENTER or function key timeout, the value in word 58 indicates the number of seconds to wait for the key to be pressed. The maximum timeout value is 5 minutes (300 seconds).

Using Modulus 11 Check Digit

If a check digit is generated using modulus 11 calculations and the result is 10, the check digit cannot be used and an error is returned. Modulus 11 check digits are the remainder from dividing the product of the calculations by 11 (refer to appendix D of the reference manual). Thus, if check digits are being generated for a continuous series of numbers, every eleventh number must be skipped to avoid this error.

If the product generated through the modulus 11 calculation is evenly divided by 11 (no remainder), the resulting check digit is 11. In this case, the digit 0 is appended to the basic number.

When you attempt to add a modulus 11 check digit that evaluates to 10, the reformat program REFSPEC issues the message: "Check digit is invalid for modulus 11 calculation." If ENTRY checks a field that contains the FORMSPEC statement CDIGIT 11 and that field contains a value with check digit that evaluates to 10, the same message is issued.

Corrections and Additions to Reference Manual

Page

4-14 (MINLEN) - Under Meaning, it should say: "Checks that field data has at least the number of characters specified by value* (excluding leading and trailing blanks)."

4-18/4-19 The syntax for Table Checks and Range Checks (in the black boxes) should be reversed.

4-19 (Range Checks) - Add the following paragraph:

"The low value must not be greater than the high value. If it is, an error is diagnosed when the forms file is executed - not when it is compiled."

4-21 (Pattern Match) - The syntax for the MATCH statement should include an optional message: MATCH pattern ["message"]

4-24 (Pattern Match) - The second MATCH example should not have a leading blank. Change it to: MATCH [d+]

In the 5th MATCH example, the closing brace is misplaced. Change the example to: MATCH M [A,C,D]*

5-37 (STRIP option) - the specified characters to be stripped must be surrounded by quotes; for example STRIP ALL "ABC". (Note that the character in the FILL command is not within quotes; for example FILL ALL *)

5-40 (SIGN option) - The data type in the examples should be NUM0, not DIGIT.

5-44 (Run REFORMAT program) - In the first example, delete the word "RUN" from the first line; it should be simply :EDITOR. In the last line of the first example and in the next paragraph, SETCATALOG should be one word. In the last example, add a user and account name to the !JOB command; for example, !JOB USER.ACCOUNT. Also, add an !EOJ command as line 8 of the stream file.

5-45 (Run REFORMAT program) - Change the last two lines of the example to:

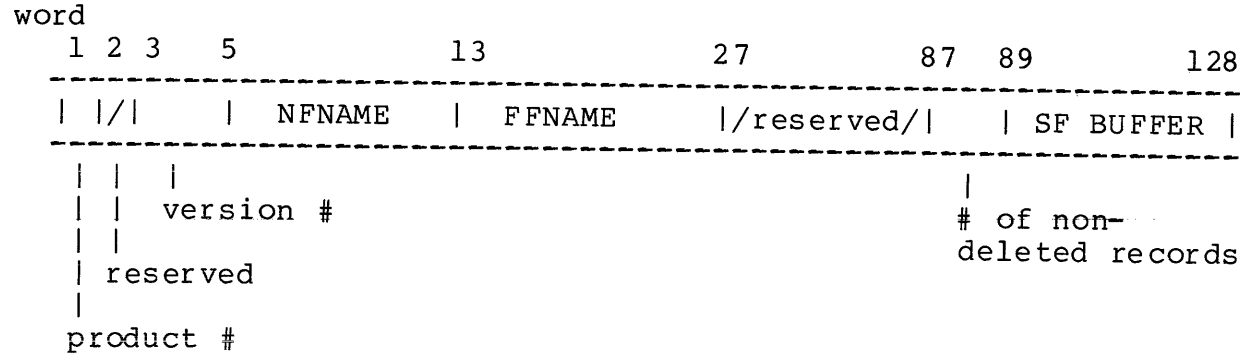
```
!SPLGO MYPROG
!EOJ
```

6-32 (Labels) - 88 words (not 86) are required for the collection environment and forms file version number. (See 1st paragraph under the Labels heading.)

6-33 (Labels) Add 1 word for the Product Number and change the Number of non-deleted records in the batch file from 1 word to 2 words. This causes the total number of words preceding the save file buffers to be 88 (rather than 86) and the total number of characters to be 176 (not 172).

Then, in the example, assume that the buffer requires 242 characters (not 246) and change the example as follows:

LABEL 0 - Contains first 40 words - 80 characters - of Save Fields buffer.



LABEL 1 (not LABEL 0) contains the remaining 81 words (162 characters) of the Save Fields buffer.

At the end of the Labels discussion, add the following paragraph: "Note that the length of the save fields buffer is determined by taking the number of characters in each save field, summing them together, and and then rounding up the total to an even number."

6-38 (VOPENTERM) - Change the COBOL example at the top of the page to:

```
03  CFNAME PIC X(15).
03  FILLER PIC X.
03  NFNAME PIC X(15).
03  FILLER PIC X.
03  FILLER PIC 9(4) COMP.
```

This insures that only 15 characters are used for the current form name and the next form name, and also that each name starts on a word boundary.

6-47 (VPUTWINDOW) - Delete the entire paragraph within parentheses that starts: "(Note that CSTATUS should not be set to zero ...)".

VPUTWINDOW does not check CSTATUS to determine an error message. Editing errors do not set CSTATUS; such errors are determined through VSETERROR which also performs the VPUTWINDOW function of moving the message to the window.

7-11 (RPG Output Record Formats) - Action code 50 has the wrong column numbers; the Next Form Name extends to column 21 (not 22), the Repeat/Append code is in column 22, and the Freeze/Append code is in column 23.

7-21 (RPG Sample Program) - Add a line number 475 to the Calculation Specification to contain a new instruction: READ TRANSFIL starting in column 28.

7-22 (RPG Action Code 50) - In conformance to the change on page 7-11, change the last three lines of the Output Specification to:

```
NXTFRM      21
RPTAPP      22
FRZAPP      23
```

7-25 (RPG Action Code 50) - Also, change the last 3 lines of the listing to:

```
NXTFRM      21
RPTAPP      22
FRZAPP      23
```

Changes to ENTRY Programs

Certain changes and corrections have been made to the ENTRY programs listed in appendix A of the manual. These changes are listed according to the manual page numbers.

Page

A-9 (COBOL program) - Delete the entire paragraph DISPLAY-MSG.

A-10 (COBOL program) - Change the following statements (under OPEN-BATCH):

```
ELSE                              to:       ELSE
    PERFORM WRITE-MSG                             PERFORM WRITE-MSG
    MOVE 0 TO BATCH.                              GO TO OPEN-TERM.
GO TO OPEN-TERM.
```

A-11 (COBOL program) - Change the first 7 lines of code on the page (following the comment lines) to:

```
OPEN-TERM.
    IF BATCH = 0 OR COM-STATUS = 0 THEN
       NEXT SENTENCE
    ELSE
       MOVE 0 TO COM-STATUS
       CALL "VCLOSEBATCH" USING COMAREA
       CALL "VCLOSEFORMF" USING COMAREA
       GO TO OPEN-FORM.
```

A-36 (BASIC program) - Change line 3410 to:

```
E$ = "THE DELETE KEY IS ONLY DEFINED FOR BROWSE MODE."
```

A-47 (FORTRAN program) - Add a call to VCLOSEFORMF so that the code starting at statement 70 is:

```
70  COMSTATUS = 0
    CALL VCLOSEBATCH (COMAREA)
    CALL VCLOSEFORMF (COMAREA)
    GOTO 10
    END
```

A-51 (FORTRAN program) - Following statement number 90, add the following line:

```
IF (.NOT. ERRORS) CALL FMTSTATUSLINE
```

COBOL Methods to Control Data Prompts and Accepts to the Same Line of a Terminal

Four COBOL examples.

By John Pavone, General Systems Division

Users frequently desire to handle I/O requirements from a terminal, so that the reply of a message prompt is entered on the same line, instead of the following line as is the current case when using COBOL "DISPLAY" AND "ACCEPT" statements.

The following table summarizes the MPE Intrinsics which COBOL uses for I/O functions and their effect on pre and post spacing of a terminal file:

MPE Intrinsic	COBOL Statement	Device Control	Default Spacing	COBOL Spacing
PRINT	DISPLAY	JOB/SESSION LIST	POST	POST
FWRITE	WRITE	FORMAL FILE	POST	PRE
READ	ACCEPT	JOB/SESSION INPUT	POST	POST
FREAD	READ	FORMAL FILE	POST	POST

You will note that DISPLAY and ACCEPT use the job/session device or system files $STDIN and $STDLIST and utilize post-spacing.

READ and WRITE, on the other hand, operate on a designated formal file and utilize post- and pre-spacing respectively. By assigning the formal file to $STDIN and $STDLIST, we can then control all spacing to the session terminal, as indicated within the table.

Exhibit I illustrates a sample program which issues READ, DISPLAY and ACCEPT commands against an input file assigned to $STDIN. All spacing of data displays and entries is controlled with post-spacing.

Exhibit II illustrates a sample program which issues READ, WRITE, DISPLAY and ACCEPT commands against an input and output file assigned to $STDIN and $STDLIST. By using the "WRITE AFTER ADVANCING" format followed by either a READ or ACCEPT, the spacing controls will permit the data entry to occur on the same line following the data displayed.

Exhibit III illustrates use of only a single file ($STDLIST) with the commands WRITE followed by ACCEPT to accomplish the same result.

Exhibit IV illustrates another example of Exhibit III with the main difference being the displaying of variable length messages without the printing of trailing blanks as in Exhibit III.

NOTE: When a file is assigned to $STDLISt at compile time, COBOL opens the file with "CCTL" enabled. This does not affect operations at the terminal but does alter output results if the file is destined for a line printer (automatic page ejects take place at the start and end of the program, and RFAD and ACCEPT statements suppress printer spacing functions).

For 3000 Series I systems this program does not occur as DISPLAY statements operate in Pre-space mode; therefore, the COBOL spacing for the Series I would be:

DISPLAY & WRITE	=	PRE-SPACE
ACCEPT & READ	=	POST-SPACE

EXHIBIT I

```
$CONTROL USLINIT
 IDENTIFICATION DIVISION.
 PROGRAM-10. COBTST.
 ENVIRONMENT DIVISION.
 INPUT-OUTPUT SECTION.
 FILE-CONTROL.
      SELECT LINP ASSIGN TO "$STDIN".
 DATA DIVISION.
 FILE SECTION.
 FD LINP
    LABEL RECORD IS OMITTED.
 01 REC PIC X(6).
 WORKING-STORAGE SECTION.
 01 P1 PIC X(6).
 01 P2 PIC X(6).
 01 P3 PIC X(6).
 PROCEDURE DIVISION.
*
*ALL SPACING CONTROL IS POST-SPACE
*
 START.
      OPEN INPUT LINP.
      DISPLAY "POST-SPACE".
      DISPLAY "ENTER MSG 1".
      READ LINP INTO P1 AT END STOP RUN.
      DISPLAY "ENTER MSG 2".
      READ LINP INTO P2 AT END STOP RUN.
      DISPLAY "ENTER MSG 3".
      ACCEPT P3.
      DISPLAY P1 P2 P3.
      CLOSE LINP.
      STOP RUN.
```

```
POST-SPACE
ENTER MSG 1
123456
ENTER MSG 2
ABCDEF
ENTER MSG 3
123456
123456ABCDEF123456
```

EXHIBIT II

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID. COBTST.
 ENVIRONMENT DIVISION.
 INPUT-OUTPUT SECTION.
 FILE-CONTROL.
      SECTION LINP ASSIGN TO "$STDIN".
      SECTION LOUT ASSIGN TO "$STDLIST".
 DATA DIVISION.
 FILE SECTION.
 FD LINP
    LABEL RECORD IS OMITTED.
 01 RECIN PIC X(6).
 FD LOUT
    LABEL RECORD IS OMITTED.
 01 RECOUT PIC X(25).
 WORKING-STORAGE SECTION.
 01 P1 PIC X(6).
 01 P2 PIC X(6).
 01 P3 PIC X(6).
 PROCEDURE DIVISION.
*
*SPACING CONTROL IS AS FOLLOWS:
*------------------------------

*READ STATEMENTS = POST-SPACE
*WRITE STATEMENTS = PRE-SPACE
*DISPLAY STATEMENTS = POST-SPACE
*ACCEPT STATEMENTS = POST-SPACE
*
 START.
      OPEN INPUT LINP.
      OPEN OUTPUT LOUT.
      DISPLAY "POST-SPACE".
      MOVE "ENTER MSG 1 - PRE-SPACE =" TO RECOUT.
      WRITE RECOUT AFTER ADVANCING 1 LINES.
      ACCEPT P1.
      MOVE "ENTER MSG 2 - PRE-SPACE =" TO RECOUT.
      WRITE RECOUT AFTER ADVANCING 1 LINES.
      READ LINP INTO P2 AT END STOP RUN.
      MOVE "ENTER MSG 3 - PRE-SPACE =" TO RECOUT.
      WRITE RECOUT AFTER ADVANCING 1 LINES.
      ACCEPT P3.
      DISPLAY P1 P2 P3 " POST-SPACE".
      CLOSE LINP.
      CLOSE LOUT.
      STOP RUN.
```

```
POST-SPACE

ENTER MSG 1 - PRE-SPACE =123456

ENTER MSG 2 - PRE-SPACE =ABCDEF

ENTER MSG 3 - PRE-SPACE =123456
```

EXHIBIT III

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID. COBTST.
 ENVIRONMENT DIVISION.
 INPUT-OUTPUT SECTION.
 FILE-CONTROL.
      SELECT LOUT ASSIGN TO "$STDLIST".
 DATA DIVISION.
 FILE SECTION.
 FD LOUT
    LABEL RECORD IS OMITTED.
 01 REC PIC X(25).
 WORKING-STORAGE SECTION.
 01 P1 PIC X(6).
 01 P2 PIC X(6).
 01 P3 PIC X(6).
 PROCEDURE DIVISION.
*
*SPACING CONTROL IS AS FOLLOWS:
*------------------------------

*WRITE STATEMENTS = PRE-SPACE
*DISPLAY STATEMENTS = POST-SPACE
*ACCEPT STATEMENTS = POST-SPACE
*
**NOTE: USING THIS METHOD OF HANDLING VARIABLE LENGTH
*       MESSAGES CAUSES EACH MESSAGE TO CONTAIN TRAILING
*       BLANKS BEFORE THE REPLY IS ENTERED. IT CAN BE
*       USEFUL IF IT IS DESIRED TO KEEP ALL REPLIES TO
*       MESSAGES IDENTED FOR EASIER LOCATION & READABILITY.
*
 START.
      OPEN OUTPUT LOUT.
      DISPLAY "POST-SPACE".
      MOVE "ENTER MSG 1 - PRE-SPACE =" TO REC.
      WRITE REC AFTER ADVANCING 1 LINES.
      ACCEPT P1.
      MOVE "ENTER MSG 2 - PRE- =" TO REC.
      WRITE REC AFTER ADVANCING 1 LINES.
      ACCEPT P2.
      MOVE "ENTER MSG 3 =" TO REC.
      WRITE REC AFTER ADVANCING 1 LINES.
      ACCEPT P3.
      DISPLAY P1 P2 P3 " POST-SPACE"
      CLOSE LOUT.
      STOP RUN.
```

```
POST-SPACE

ENTER MSG 1 - PRE-SPACE = 123456


ENTER MSG 2 - PRE-SPACE = ABCDEF
```

EXHIBIT IV

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID. COBTST.
 INVIRONMENT DIVISION.
 INPUT-OUTPUT SECTION.
 FILE-CONTROL.
      SELECT LOUT ASSIGN TO "$STDLIST".
 DATA DIVISION.
 FILE SECTION.
 FD LOUT
    LABEL RECORD IS OMITTED.
 01 REC PIC X(25).
 01 REC1 PIC X(19).
 01 REC2 PIC X(13).
 WORKING-STORAGE SECTION.
 01 P1 PIC X(6).
 01 P2 PIC X(6).
 01 P3 PIC X(6).
 PROCEDURE DIVISION.
*
*SPACING CONTROL IS AS FOLLOWS:
*------------------------------

*WRITE STATEMENTS = PRE-SPACE
*DISPLAY STATEMENTS = POST-SPACE
*ACCEPT STATEMENTS = POST-SPACE
*
**NOTE: USING THIS METHOD OF HANDLING VARIABLE LENGTH
*       MESSAGES CAUSES EACH MESSAGE TO BE OUTPUT FOR
*       THE EXACT SIZE BEFORE THE REPLY IS ENTERED. IT CAN BE
*       USEFUL IF IT IS DESIRED TO KEEP ALL REPLIES TO
*       MESSAGES DIRECTLY FOLLOWING THE MESSAGE.
*
 START.
      OPEN OUTPUT LOUT.
      DISPLAY "POST-SPACE".
      MOVE "ENTER MSG 1 - PRE-SPACE =" TO REC.
      WRITE REC AFTER ADVANCING 1 LINES.
      ACCEPT P1.
      MOVE "ENTER MSG 2 - PRE =" TO REC1.
      WRITE REC1 AFTER ADVANCING 1 LINES.
      ACCEPT P2.
      MOVE "ENTER MSG 3 =" TO REC2.
      WRITE REC2 AFTER ADVANCING 1 LINES.
      ACCEPT P3.
      DISPLAY P1 P2 P3 " POST-SPACE".
      CLOSE LOUT.
      STOP RUN.
```

```
POST-SPACE

ENTER MSG 1 - PRE-SPACE = 123456

ENTER MSG 2 - PRE = ABCDEF

ENTER MSG 3 = 123456
123456ABCDEF123456 POST-SPACE
```

****

Interfacing RPG Calls to COBOL Subprograms

Using an SPL procedure to resolve parameter differences in RPG CALLS to COBOL subprograms.

by John Pavone, General Systems Division

Communication between RPG and COBOL subprograms is not possible directly due to the methods by which RPG passes parameters and by which COBOL accepts parameters. In order to accomplish a successful interface the user must write an SPL procedure to resolve these differences. An example of such a procedure is included to provide those users, who may not be knowledgeable in SPL, with the basic requirements needed to accomplish the interface.

RPG calls to external procedures can be accomplished by using the RPG commands EXIT and PARM. EXIT defines the external procedure name, while one or more uses of PARM defines the parameters which are to be passed to the procedure.

RPG passes such parameters as byte pointers by value. This means that a byte address is passed which references the DB relative address of the RPG data field. Since byte addresses are passed, it also means RPG can process data fields on a byte boundary.

COBOL expects and assumes parameters passed to it from external procedures to be word addresses of data located on a word boundary.

In order to resolve these differences users must:

(a) Ensure that RPG data fields to be passed to COBOL via the PARM command reside on a word boundary. This can be determined by referencing an RPG compile-time symbol table listing which indicates whether the data field is (L) or (R) synchronized. Word oriented data fields should be (L) synchronized. If they are not, they may be changed by adjusting the length of the prior field or by MOVEing the field to another appropriately sized field.

(b) Develop an SPL procedure which interfaces to the RPG EXIT, converts the byte addresses to word addresses and then CALLS the COBOL subprogram.

The following illustrates a simple solution to resolve this interface.

NOTE: RPG numeric data values are processed as packed decimal data types. COBOL should specify them as COMP-3 data types.

EXAMPLE

PROBLEM: It is desired to CALL a COBOL subprogram from an RPG main program and pass three parameters, two of which will contain RPG data field values, while the third parameter, upon return from the subprogram, will contain a calculated result of the two data values passed.

SOLUTION:

(a) Ensure that all RPG data fields to be used are on a word boundary.

(b) Develop an SPL procedure to handle the byte to word addressing conversion.

RPG MAIN PROGRAM

```
0001     H


0002     FTERMIN  IDE  V      14
0003     FOUTFLE  0    F  39  39          DISC
0004     *
0005     *TERMINAL INPUT FOR DATA FIELDS "FLD1 & FLD2"*
0006     *


0007     ITERMIN  AA   01  1  CO                  3   80FLD1
0008     I                                        9  140FLD2
0009     I


0010     C                    READ TERMIN                    LR
0011     *
0012     *CALL SPL INTERFACE PASSING 3 PARAMETERS*
0013     *
0014     C  NLR               EXIT PRMCVT
0015     C                    PARM           FLD1
0016     C                    PARM           FLD2
0017     C                    PARM           RESULT  70
0018     *
0019     *PRINT THE RESULTS OF THE COBOL SUBPROGRAM FUNCTION*
0020     *


0021     0OUTFILE  D       01                  5
0022     0                                     5 "FLD1="
0023     0                          FLD1      11
0024     0                                    17 "FLD2="
0025     0                          FLD2      23
0026     0                                    31 "RESULTS="
0027     0                          RESULT    38
0028     0                                    39 "*"
```

SYMBOL	SZ/TP	ADDR	SYMBOL	SZ/TP	ADDR
FLD1	6.0	00315(L)	FLD2	6.0	00317(L)

SYMBOL	SZ/TP	ADDR	SYMBOL	SZ/TP	ADDR
PRMCVT	SUBR		RESULT	7.0	00321(L)

SPL PROCEDURE

```
00001000  00000  0  $CONTROL  SUBPROGRAM
00002000  00000  0  BEGIN <<OB>>
00003000  00000  1     PROCEDURE PRMCVT(A,B,C):
00004000  00000  1     VALUE A,B,C;
00005000  00000  1     BYTE POINTER A,B,C;
00006000  00000  1     BEGIN <<PRMCVT>>
00008000  00000  2        PROCEDURE LNKRPG; <<COBOL SUBPROGRAM>>
00010000  00000  2        OPTION EXTERNAL:
00011000  00000  2         TOS:=@A&LSR(1); <<CONVERT BYTE ADDRESS
00012000  00002  2         TOS:=@B&LSR(1); <<TO WORD ADDRESSES AN
00013000  00004  2         TOS:=@C&LSR(1); <<LEAVE THEM ON THE ST
00014000  00006  2               LNKRPG; <<CALL THE COBOL SUBPROG
00015000  00007  2     END:
00016000  00000  1  END.
```

COBOL SUBPROGRAM

```
001000$CONTROL SUBPROGRAM
001100 IDENTIFICATION DIVISION.
001200 PROGRAM-ID. LNKPRG.
001300 ENVIRONMENT DIVISION.
001400 DATA DIVISION.
001500 LINKAGE SECTION.
001510*
001520*NUMERIC PARAMETER DATA TYPED AS COMP-3
001530*
001600 01 FLD-1  PIC S9(6) COMP-3.
001700 01 FLD-2  PIC S9(6) COMP-3.
001800 01 RESULT PIC S9(7) COMP-3.
001900 PROCEDURE DIVISION USING FLD-1 FLD-2 RESULT.
002000 START-LINK.
002200      ADD FLD-1 FLD-2 GIVING RESULT.
002210      DISPLAY "FLD1= " FLD-1 " FLD2= " FLD-2 " RESULT= " RE
002400      GOBACK.
```

STREAM FILE

```
!JOB RPGCOB,MGR.PAVONE
!COBOL COB
!SPL SPL
!RPG RPG
!PREP $OLDPASS,PGM
!FILE TERMIN=$SIDIN
!FILE OUTFIF
!RUN PGM
00000075000010
00000100000050
00000200000200
!EOJ
```

EXECUTION RESULTS

```
FLD1= 000075 FLD2= 000010 RESULT=0000085
FLD1=000075 FLD2=000010 RESULT=0000085*
FLD1=000100  FLD2= 000050  RESULT= 000015
FLD1=000100 FLD2=000050 RESULT=0000150*
FLD1= 000200 FLD2= 000200 RESULT= 000040
FLD1=000200 FLD2=000200 RESULT=0000400*
```

****

DataComm Software Update

SUBSYSTEM HP30131A.03.00
DATE CODE DATACOMM, NOON131A.HP30131.SUPPORT

A. ENHANCEMENTS

This version of the software introduces support of the Intelligent Network Processor. Therefore, changes have been made in the CS intrinsics to interface with the INP. In addition, changes to the SSLC and HSI drivers allow them to coexist with INP software in a machine.

The SSLC driver has been enhanced to support the HP3075 data collection terminals as multipoint devices.

D. KNOWN PROBLEMS

When an INP is connected to an SSLC via a modem eliminator cable, both the INP and the SSLC devices should have transmission modes configured as half duplex. Full duplex transmission modes for this arrangement do no work properly at this time.

DS/3000 HP32190A.02.05

DATE CODE DATA COMM, N00N190A.HP32190.SUPPORT

A. ENHANCEMENTS.

1. The DS extra data segment structure has been changed from one extra data segment per each job using DS to a set of extra data segments for each DS job. This set includes one "Job" DS Extra Data Segment, which holds job-global control information for the job's access to remote systems, and one or more "DeviceProcess" DS Extra Data Segments, which hold control information and data buffers for each of the job's processes that are using DS.

   In this new scheme, each process within the job has its own Device-Process segment(s), so more than one process can concurrently use DS. With the single DS extra data segment of the previous structure, two processes could not share the data segment's buffers and System Failures 911 and 913 might result.

   Also, within each process this data segment structure allocates a separate Device-Process segment for each opened DS device (i. e, for each remote system). In particular, a process that is both a slave and a master in Program-to-Program communication (one that has both GETs/ACCEPTs and PREADs/PWRITEs, etc.) will have separate segments for master and slave activity. With previous releases, certain combinations of ACCEPTs and PREADs/PWRITEs could cause a confused data segment configuration, resulting in System Failure 913s. The new structure prevents this.

2. Certain enhancements have been added to facilitate the use of the Intellegent Network Processor (INP) as the communications interface for DS/3000. These include provisions for error reporting in cases where opens of the communications device fail (CS OPENs), and where the line buffer size of the INP has been configured too small (less than 304 bytes) for DS.

MRJE/3000 HP32192A.01.00

DATE CODE DATACOMM, N00N192A.HP32192.SUPPORT

A. Enhancements

1. JULY 30, 1978
   -Enhanced MRJE output routing to send recieved print/punch data to the unsolicited output device if the user specified file couldn't be opened succesfully.
   -Enhanced MRJE so that if the joblogger or output process terminate unexpectedly, the MRJE system will shutdown. Also added message: "MRJE(hostid) ERROR: SON PROCESS DEAD" if this event occurs.

2. AUGUST 31, 1978
   -Enhanced MRJE such that no console messages are lost if a user is in the console mode of the MRJE user subsystem.
   -Enhanced the MRJE user subsystem so that when one issues a DISPLAY JOB command with various job numbers and ranges of job numbers, only enough EOF messages are issued to make clear what happened instead of having one EOF message per violation.

3. NOVEMBER 1, 1978
   -Changed message resulting from purging all of the job log so that it no longer seems that the file itself is purged.
   -Added messages that indicate whether or not the spool file associated with a submitted job is purged as the result of a CANCEL command. Necessitates rebuilding of the config, directory, and joblog files with a NEW command.
   -Enhanced the CANCEL command and the joblog so that if a system failure occurs between the time that a job is submitted and the time that a CANCEL command is issued for it, the wrong spool file will be deleted. In fact no spool files are deleted in such a situation.

4. FEBRUARY 10, 1979
   -The number of retries upon recieving a bad transmission has been upped to 255.
   -FD files have been given a new option concerning the recognition of JOB cards. If the the word TRANSPARENT or just the letter T is placed in the parentheses where the NOTRANSLATE option is placed, all job cards will be ignored by the MRJE user subsystem. The proper JCL will still have to be arranged so that the host will also view them in this manner (i.e. use the proper DD card).

Examples:

```
##FD FILENAME(T)    **Ignore job cards**
##FD FILENAME(N,T)  **Ignore job cards and**
##FD FILENAME(T,N)  **do not translate**
```

Other than these changes the FD option operates just as it used to.

5. SEPTEMBER 17, 1979
   -On receiving output from the host, MRJE now searches the directory for a match of jobnames as well as host jobnumbers. This allows for rollover of host jobnumbers without misdirected output.
   -MRJE will now recognize a JES2 or HASP print banner line of any length. Previously any line of length less than 132 bytes had been disregarded as a print banner.
   -MRJE now notifies the operator in the events that
   1.) the physical bounds of a users output file have been exceeded or
   2.) MRJEOUT was unsuccessful in attempting to open the unsolicited output file for a user.
   The operator must then respond with "Retry" or or "Flush" to indicate whether the failed operation is to be re-attempted or the remaining user output is to be flushed.
   -MRJE will now open AFD files referenced by a ##FD card in infiles of submits as semi-exclusive read only to allow simultaneous submits to successfully open these files for reading and transmitting to the host. Level checking is still done to prevent a user from exceeding more than 2 levels of ##FD files in submits.
   -JES3 is now supported by MRJE/3000.

Numerous software changes have been implemented.

1) Items 11 and 17 of the configuration file are no longer used.

2) Item 10 of the configuration file reflects the width of a block letter in a JES3 banner. This is because JES3 uses block letters in its banner to display the job number and the job name for a printed output data set.

3) Item 14 of the configuration file now reflects the position of the jobname in a special forms message sent from the host. This is now the only reference made to the special forms message. The purpose of locating the job name is to allow our message parser to avoid being confused when searching for keywords in the message.

4) All other parts of the configuration file are the same. NOTE: The defaults used for JES3 may not be appropriate for your system. Please examine your configuration file and the messages and banners that it references before attempting to hook up to a JES3 system.

5) The parameters for generating a JES3 remote should reflect the same restrictions set for HASP and JES2 set in the MRJE/3000 manual.

-Preemptive I/O has now been introduced to the host console function. This means that console messages will no longer over-write console commands that one is currently trying to enter. There is one caveate in this enhancement. If a user tries to enter a console command in this manner (i.e. by jamming it in while data is being returned), the command will probably be refused because the console pseudo driver's buffers are filled with incoming traffic.

-MRJE/3000 will now properly handle IBM jobnames that contain nonalphanumeric characters. When opening output files with the IBM jobname, all such characters are replaced with the letter 'X'.

B. Corrective Software Changes

1. JUNE 13, 1978
-Corrected incorrect reply to a special forms message in HASP 3.1 hosts.
-Corrected incorrect print banner decoding in HASP 3.1 hosts.
-Corrected incorrect $S RM##.PR# console message generated in responce to a LOAD FORMS request.
-Corrected problem with display of user host command, if the command has imbedded blanks.
-Corrected problem with punch output being routed incorrectly if the jobnumber had an imbedded zero.
-Corrected problem with "NO 3000 JOB NUMBER FOR HOST JOB XXXX" whenever a job is on the JES2 reader and a $DA is entered on the JES2 console.
-Corrected potential protocol problem; MRJE sometimes responded with text to a host wait-a-bit message.
-Corrected a problem of writing to a KSAM file a record because trailing blanks were truncated.
-Corrected a problem with routing returned data to a spooled reader-punch.
-Corrected a problem with MRJE being active, but a kill insists the system is not active.

2. NOVEMBER 1, 1978
   -Corrected condition where the end of file record for an incoming punch file went unrecognized. (SR 6158)

3. JUNE 22, 1979

   -Corrected a situation where MRJE locks up the system by going into an infinite loop. (SR 7527)
   -Corrected a set of sitations which manifested themselves in locking out the host console. (SRs 7725,7432)

4. AUGUST 30, 1979

   -A problem where the pseudo reader refused to accept data has been corrected. (SR 9449)

   -A problem with changing from prespace to postspace on output has been corrected. Previously a spurious blank line appeared. It no longer does.

C. Documentation Changes

An MRJE/3000 Reference Manual is available (32192-90001).

An MRJE/3000 manual update is available (32192-90001 UPDATE).

D. Known Problems

1. It has been reported, but not verified, that occasionally a spool file containing a submitted job will hang. Please get a dump of this situation if it occurs.

1. There is one basic problem with the use of JES3. The job accepted message from the host no longer mentions what reader the job was submitted on. This created a problem with our internal queueing system. The result is that if two jobs are submitted at the same time with the same names on different readers, Their joblog entries may be assigned wrong. We do not anticipate that such an occurance will happen very often, but the user should be aware of the possibility.

MTS/3000 HP32193A.01.02

DATE CODE DATACOMM, NOON193A.HP32193.SUPPORT

A. ENHANCEMENTS

MTS/3000 has been substantially enhanced to include the following new features:

1. Support of the HP 3075 terminals.

2. Possibility to poll the terminals individually in addition to existing group polling facility.

3. A new buffering mechanism for situations when the terminal is busy or rejects data.

4. Possibility to open the line with special parameters contained in a user defined configuration file.

5. Possibility to reopen the line dynamically with or without the configuration file.

6. Enhancements to =MPLINE command including the capability to set the terminals UP or DOWN.

7. A new program (MPCONFIG) to create, modify, or list user defined configuartion files.

8. Enhancements to MPTEST to test the HP 3075 terminals and tell strap settings.

The new features are described in detail in the new edition of the MTS/3000 Reference Manual.

B. CORRECTIVE SOFTWARE CHANGES

All known problems have been solved.

C. DOCUMENTATION CHANGES

The new edition of the MTS/3000 Reference Manual contains description of the MTS/3000 enhancements.

Documentation

The catalog of customer publications at the end of this section lists the currently available customer manuals for HP 3000 Computer Systems products. This list supersedes the catalogs in previous issuses of the COMMUNICATOR.

Customers who wish to purchase copies of new manuals, new editions or manual updates may do so by placing orders through their local HP Sales and Service Office. The addresses and telephone numbers of these offices are listed in the back of all customer manuals. Prices of HP documentation are subject to change without notice.

Customers in the United States may also order manuals directly by mail. Simply list the name and part number of the manual(s) needed on the Parts and Supplies Order form found in the back of this publication.

To obtain a manual update, the customer must purchase the manual to which it pertains. The latest edition of the manual, along with the update, will then be sent to the customer.

TERMS

A few words about documentation terms and procedures.

NEW — The first printing of the first edition. When first printed, a manual is assigned a part number that is retained for the life of the manual.

UPDATE — A supplement to an existing manual which contains new or changed information. Manual updates, which are issued between editions, contain additional or replacement pages to be merged into the manual by the customer.

Updates are generally issued at the same time IT's are issued. However, THERE IS NO DIRECT CORRELATION BETWEEN SOFTWARE FIXES AND MANUAL UPDATES. Software enhancements that require documentation changes will be accompanied by manual updates, but software fixes and manual corrections may be made independently.

Updates are retroactively inclusive; that is, whenever successive updates are issued, the later update will contain the previous one(s). This means that you need obtain only the latest update to have all the information added or changed since the last printing of the manual.

Manual updates have no part numbers. They are numbered sequentially from the time the last edition was issued. (When ordering a manual update, use the part number of the applicable manual.)

NEW EDITION

A complete revision of a manual; obsoletes all previous editions of the manual and its updates.

A new edition is issued when, due to the scope of the changes involved, it is impractical to issue a manual update.

The date on the title page and back cover of every manual is the printing date of the current edition. This date changes only when a new edition is published. A list of the dates of the manual's previous editions and updates (if any) is kept on the Printing History page of every manual.

Publication of a new edition does not affect the part number of a manual.

If further updates are required, they are made to the new edition. The update numbers run sequentially, starting from the latest edition.

Using HP VIEW/3000
part number 32209-90004
August, 1979

"Using HP VIEW/3000", an introduction to forms design for non-programmers, is now available from Corporate Parts Center. The manual is intended for anyone who wants to learn how to design forms for data entry using the FORMSPEC program, or how to enter data into these forms with the ENTRY program. Although the primary purpose of the manual is as a self-teaching guide to forms design, it can also be used as a guide to particular features of the HP VIEW programs, FORMSPEC and ENTRY.

The manual starts with instructions for designing a simple form with no edits or special processing. It then proceeds step-by-step through the stages of forms design until you have a set of forms that use the highest level of processing. The final forms include automatic calculation of values, values passed between forms, conditional processing, and phases. The possible relations between forms are illustrated by frozen, repeating, and appended forms.

Each section illustrates a new feature of forms design by showing how the feature is actually used. Before going on to the next section, the manual shows how the new form appears to the data entry operator.

So, if you want to learn how to use HP VIEW/3000 in simple steps, this manual is invaluable. Even if you are a programmer, you may find it handy as a set of forms design examples.

With this new manual, the set of HP VIEW/3000 manuals is complete. The full set is:

HP VIEW/3000 Reference Manual	part number 32209-90001
HP VIEW/3000 Pocket Guide for Programmers/Designers	part number 32209-90002
HP VIEW/3000 ENTRY Program Operator's Quick Reference Guide	part number 32209-90003
Using HP VIEW/3000, an introduction to forms design for non-programmers	part number 32209-90004

NEW MANUALS

INP MANUALS

The Intelligent Network Processor (INP) is a new data communications subsystem that provides serial interface for modem or hardwired links. The INP also relieves the CPU by taking on the task of data communication protocol handling. The INP is available in two versions: The HP 30010A INP is for use with the HP 3000 Series II and Series III computers, and the HP 30020A INP is for use with the HP 3000 Series 30 and Series 33 computers.

The INP is a functionally flexible, single-channel data processor that provides I/O capability between the HP 3000 Series II or Series III Computer Systems and other systems via either modulator/demodulators (modems) and telephone lines or direct connection.

The documentation of the INP consists of three manuals. There is a separate installation and service manual for each version of INP. There is also a diagnostic procedures manual that describes the Online Diagnostic/Support Monitor (DSM) program that is used by both customer users and HP support personnel for trouble-shooting both versions of the INP. The three INP manuals are listed below:

HP 30010A Intelligent Network Processor (INP)
Installation and Service Manual
part number 30010-90001

HP 30020A Intelligent Network Processor (INP)
Installation and Service Manual
part number 30020-90001

These manuals contain installation and servicing information for the HP 30020A Intelligent Network Processor.

HP 30010A/30020A Intelligent Network Processor (INP)
Diagnostic Procedures Manual
part number 30010-90002

This manual contains information on the use of the Hewlett-Packard Intelligent Network Processor Online Diagnostic/Support Monitor (DSM). DSM is a software tool that can be used for both verification testing and for more detailed troubleshooting. Different levels or modes of interactive operation are provided to make DSM a useful aid to the computer user, as well as an installation tool and troubleshooting tool for the HP Customer Engineer (CE).

Three New Hardware Manuals for the HP 3000 Series 30

HP 3000 Series 30 Installation Manual
part number 30080-90001
August, 1979

HP 3000 Series 30 Prepration Planning Guide
part number 30080-90002
August, 1979

HP 3000 Series 30 Planning Workbook
part number 30080-90003
August, 1979

Three new hardware manuals are available for the HP 3000 Series 30 Computer System. The Site Preparation Planning Guide and Site Planning Workbook may be ordered as of September, part number 30080-60050. These manuals contain information for preparing a site and subsequently installing the computer system.

NEW EDITIONS

General Information Manual
part number 30000-90008
September, 1979

Major changes were made to reflect the new Fundamental Operating System packaging and new products such as the HP 3000 Series 30 Computer System. Additional changes include revision of the reference sheets.

Guide to a Successful Installation -2nd Edition
part number 30000-90135
December, 1979

This new edition documents the new bug reporting system, STARS. There are expanded discussions of implementation and application planning. Also discussed are the new HP support services: Customer Support Service (CSS), Software Subscription Service (SSS) and Manual Update Service (MUS). Note: every computer site with either CSS or SSS will automatically receive a copy of this new edition.

RJE/3000 Remote Job Entry -3rd Edition
(2780/3780 Emulator) Reference Manual
part number 30000-90047
November, 1979

RJE/3000 is a new product name, and the manual's title reflects this change. The Intelligent Network Processor has been included into the RJE/3000 repertoire. There is a listing of CS irrecoverable errors included, as well as a new appendix showing steps for configuring RJE/3000 into MPE. And there are modified modem recommendations.

NEW EDITIONS

MTS/3000 Reference Manual -2nd Edition
part number 32193-90002
November, 1979

The second edition of the MT/3000 Reference Manual documents the 32193A.01.00 version of Multipoint Terminal Software. This new edition, which is available with the 1918 release of MPE, documents the extensive enhancements to MTS/3000 and provides a new overview of site preparation and network requirements.

MTS/3000 Site Preparation and Installation Manual -Obsoleted
part number 32193-90001
May, 1978

This manual is now obsolete and will soon be removed from the Catalog of Customer Publications. The information contained in the manual was expanded and reorganized for inclusion in the MTS/3000 Reference Manual (second edition, Nov. 1979). This was done so that information about MTS/3000 installation, verification, use, management and programming could be found in a single manual.

MRJE/3000 Reference Manual -2nd Edition
part number 32192-90001
December, 1979

This new edition documents the addition of JES3 and ASP job entry subsystems to MRJE's operating sphere. There are modifications in the dialogue for configuring MRJE into MPE. There also are modified file configuration format specifications, new FD card format possibilities, additional user messages, additional console operator messages and the addition of CS recoverable and irrecoverable error lists.

UPDATES

Series 30/33 Console Operator's Guide -Update #2
part number 30070-90025
November, 1979

MPE III Systems Utility Reference Manual -Update #4
part number 30000-90044
November, 1979

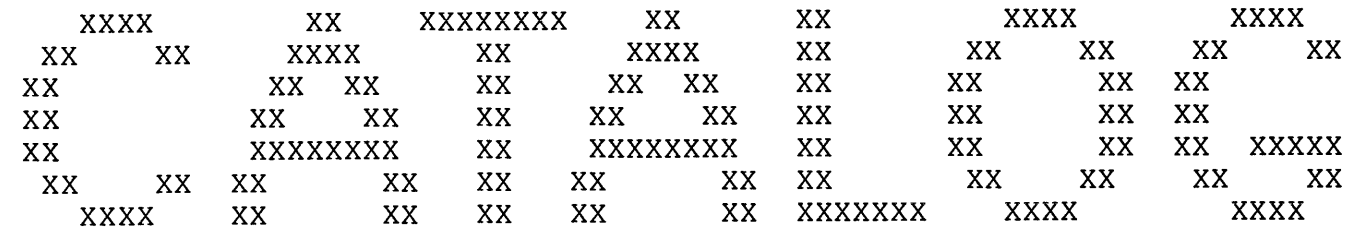
Both manuals have been updated to include use of the new HP 3000 Series 30 Computer System.

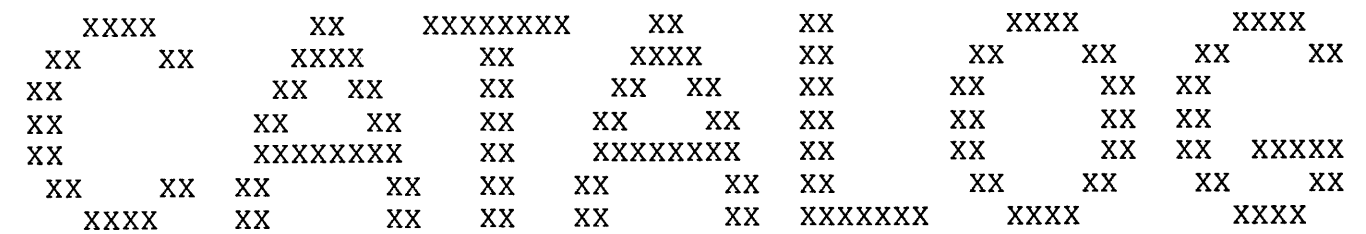
MPE III System Manager/System Supervisor Reference Manual -Update #1
part number 30000-90014
December, 1979

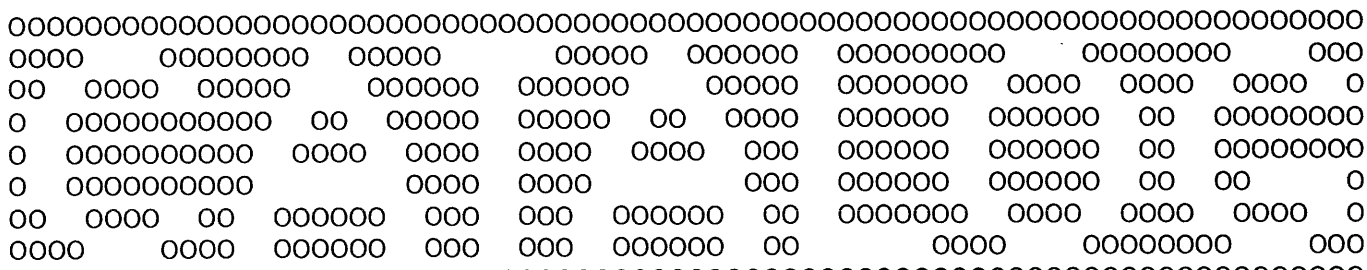
This update documents the Intelligent Network Processor as it relates to System Manager/System Supervisor functions. The INP is a single-channel data processor that provides data communication capabilities between the HP 3000 Series II/III and the HP 3000 Series 30/33 Computer Systems. Communication links may be via modems, telephone lines or direct connection.

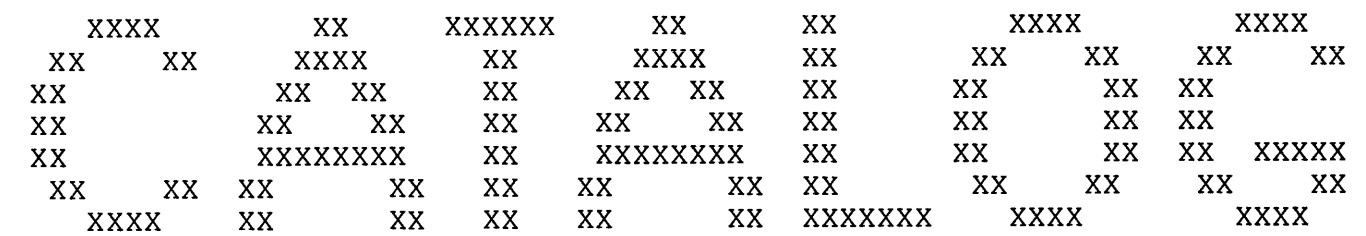
DS/3000 Reference Manual -Update #2
part number 32190-90001
November, 1979

This update documents the new Intelligent Network Processor as it applies to DS/3000. Also included in the update are a few minor corrections and an expanded index.









KEY

Manual entries noted by an asterisk (*) in the leftmost column have changed since the last edition of the catalog. An asterisk in the "Price" column indicates that the price of the manual was not available at catalog printing.

If the V (version) column contains a #, the manual is applicable to systems running MPE III and to those running MPE C. Manuals which apply to MPE C systems only are listed under "MPE C MANUALS".

HP 3000 COMPUTER SYSTEMS

SYSTEM MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	Using the HP 3000: An Introduction to Interactive Programming	#	03000-90121	6.50	4/79	
*	General Information Manual (Series II/III)		30000-90008	5.25	9/79	
	MPE Commands Reference Manual		30000-90009	14.75	7/79	
	MPE Intrinsics Reference Manual		30000-90010	16.50	4/78	7/79

SYSTEM MANUALS (continued)

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	MPE Segmenter Reference Manual	#	30000-90011	3.50	2/77	
	MPE Debug/Stack Dump Reference Manual	#	30000-90012	4.50	9/76	6/77
*	Series II/III Console Operator's Guide		30000-90013	13.50	7/79	12/79
*	System Manager/System Supervisor Manual		30000-90014	9.00	7/79	12/79
	Error Messages and Recovery Manual		30000-90015	18.50	6/76	5/78
	HP 3000 Series II/III System Reference Manual		30000-90020	8.25	7/78	1/79
*	HP 3000 Series II/III Machine Instruction Set		30000-90022	5.75	6/76	10/79
*	MPE III System Utilities Reference Manual		30000-90044	4.50	3/77	11/79
	Index to MPE Reference Documents		30000-90045	3.75	8/78	
	Software Pocket Guide		30000-90049	5.25	4/78	
	Instruction Decoding Pocket Guide		30000-90057	1.00	9/78	
	Using Files	#	30000-90102	4.50	4/78	
	Instruction Decoding Pocket Guide- Series 33		30070-90024	.75	9/78	
*	Series 30/33 Console Operator's Guide		30070-90025	12.75	7/79	10/79

LANGUAGE MANUALS

Manual Title	V	Part Number	Price	Print Date	Up-dated
BASIC for Beginners	#	03000-90025	6.00	11/72	
BASIC/3000 Pocket Guide	#	03000-90050	1.25	9/74	
System Programming Language Reference Manual	#	30000-90024	9.50	9/76	2/77
System Programming Language Textbook	#	30000-90025	7.50	6/76	1/77
BASIC Interpreter Manual		30000-90026	11.00	6/76	8/78
FORTRAN Reference Manual		30000-90040	8.50	6/76	5/79
SPL Pocket Guide	#	32100-90001	2.00	11/76	
FORTRAN Pocket Guide	#	32102-90002	2.50	5/79	
BASIC Compiler Reference Manual	#	32103-90001	3.00	11/74	6/76
RPG/3000 Compiler Reference Manual	#	32104-90001	22.00	2/77	11/78
RPG Listing Analyzer	#	32104-90003	.50	2/77	
APL Reference Manual		32105-90002	35.00	1/79	
APL Pocket Guide		32105-90003	4.50	11/76	
COBOL Reference Manual	#	32213-90001	12.00	7/75	2/79
Using COBOL: A Guide for the COBOL Programmer	#	32213-90003	6.50	3/78	

DATA COMMUNICATIONS MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	Guidebook to Data Communications		5955-1715	3.00	1/77	
*	RJE/3000 Remote Job Entry Reference Manual (2780/3780) Emulator)	#	30000-90047	7.50	11/79	
	Data Communications Handbook		30000-90105	10.00	10/78	
*	HP 30010A Intelligent Network Processor (INP) Instlallation & Service Manual		30010-90001	4.75	10/79	
*	HP 30010A/30020A Intelligent Network Processor Diagnostic Procedures Manual		30010-90002	4.25	10/79	
*	HP 30020A Intelligent Network Processor (INP) Installation & Service Manual		30020-90001	4.50	10/79	
	HP 30032B Asynchronous Terminal Controller Instl. & Serv. Manual		30032-90004	14.00	1/74	7/76
	HP 30055A Synchronous Single-line Controller (SSLC) Inst. & Serv. Manual	#	30055-90001	7.25	12/77	4/79
	HP 30055A Synchronous Single-line Controller Stand-alone Diagnostic Manual (D434)	#	30055-90008	1.55	4/79	
	Hardwired Serial Interface (HSI) Instl. & Service Manual		30360-90001	6.00	3/77	5/79

DATA COMMUNICATIONS MANUALS (continued)

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	Hardwired Serial Interface Stand-alone Diagnostic Mnl. (D432)		30360-90007	2.50	3/77	4/77
*	DS/3000 Reference Manual		32190-90001	19.00	3/77	11/79
	DS/3000 to DS/1000 Reference Manual		32190-90005	7.25	1/78	
*	MRJE/3000 Reference Mnl.		32192-90001	8.75	1/78	10/79
	MTS/3000 Site Preparation & Instl. Manual		32193-90001	7.00	5/78	9/78
*	MTS/3000 Reference Mnl.		32193-90002	6.50	11/79	

SUBSYSTEM MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	EDIT Reference Manual	#	03000-90012	6.00	8/75	2/79
	Trace Reference Manual	#	03000-90015	4.50	6/76	
	FCOPY Reference Manual	#	03000-90064	4.50	2/78	2/79
	Scientific Library Reference Manual		30000-90027	4.25	6/76	2/77
	Compiler Library Reference Manual		30000-90028	8.50	11/76	
	SORT Reference Manual	#	32214-90001	3.50	8/76	

MANUFACTURING APPLICATIONS MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	EDC/3000 User Reference Manual		32380-90001	20.00	3/78	4/78
	EDC/3000 System Admin. Reference Manual		32380-90002	8.50	3/78	4/78
	IOS/3000 User Reference Manual		32384-90001	25.00	3/78	
	IOS/3000 System Admin. Reference Manual		32384-90002	11.00	3/78	
	MRP/3000 User-Admin. Reference Manual		32388-90001	19.50	8/78	
	SPC/3000 User Reference Manual		32392-90001	11.00	4/79	

TRANSACTION PROCESSING MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	QUERY Reference Manual	#	30000-90042	7.50	6/76	5/79
	Data Entry Library Mnl	#	30000-90050	7.00	5/78	
	KSAM Reference Manual		30000-90079	12.50	5/79	
	HP VIEW/3000 Reference Manual		32209-90001	12.75	11/78	
	HP VIEW/3000 Programmer/ Designer Pocket Guide		32209-90002	1.00	2/79	
	HP VIEW/3000 ENTRY Program Operator's Quick Reference Guide		32209-90003	2.50	2/79	
*	Using HP View/3000		32209-90004	8.50	8/79	
	IMAGE Data Base Manage-ment Reference Manual		32215-90003	10.00	9/79	

EDUCATIONAL APPLICATION MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	Student Information System Reference Manual	#	32900-90001	13.00	9/74	8/76
	Student Information System Technical Mnl	#	32900-90005	32.00	3/75	
	Student Assignment System Reference Manual	#	32901-90001	15.50	8/78	8/76
	Student Assignment System Technical Manual	#	32901-90005	9.75	8/78	
	College Information System Reference Manual	#	32902-90003	13.00	1/78	
	College Information System Technical Mnl	#	32902-90005	10.50	2/78	

ADDITIONAL MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	HP 3000 Series System Support Log		03000-90117	17.50	10/78	1/79
	HP 3000 CX to HP 3000 Series II Program Conversion Guide		30000-90046	3.50	6/76	
	Site Preparation Manual Series II/III		30000-90082	7.00	9/78	
	Site Planning Workbook Series II/III		30000-90086	6.00	9/77	
*	Guide to a Successful Installation	#	30000-90135	3.25	12/79	

ADDITIONAL MANUALS (continued)

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	Series III(32435A) Site Preparation Manual		30000-90145	2.00	1/79	4/79
	Series III(32435A) Site Planning Workbook		30000-90146	5.50	1/79	4/79
	Technical Writer's Survival Kit		30000-90171	2.50	7/79	
	Series 33 Computer Systems Site Preparation Planning Guide		30070-90007	4.00	10/78	2/79
	Series 33 Installation Manual		30070-90021	5.25	10/78	
	Series 33 Computer Systems Site Planning Wkb		30070-90029	6.00	9/78	
	Series 33 Diagnostic Manual Set		30070-60068	50.00	9/78	
*	Series 30 Installation Manual		30080-90001	6.25	8/79	
*	Series 30 Site Preparation Guide		30080-90002	3.00	8/79	
*	Series 30 Site Planning Workbook		30080-90003	5.00	8/79	
*	Series 30 Site Planning Set		30080-60050	6.50	8/79	
	HP 2894A Card Reader Punch Operating Manual		30119-90009	11.50	10/76	
	Line Printer Operating and Programming Manual		30209-90008	6.75	6/76	
	IBM System/3 to HP 3000 Conversion Guide	#	32104-90004	10.75	7/78	

MPE C MANUALS

	Manual Title	V	Part Number	Price	Print Date	Up-dated
	BASIC Interpreter Reference Manual		03000-90008	9.75	7/75	
	Compiler Library Reference Manual		03000-90009	11.50	2/76	
	Scientific Library Reference Manual		03000-90010	5.75	7/75	
	System Ref Mnl Series I		03000-90019	24.00	9/73	3/77
	Software Pocket Guide		03000-90126	2.70	7/78	
	IMAGE Data Base Management Reference Manual		30000-90041	7.00	12/76	5/78
	MPE Intrinsics Reference Manual		30000-90087	20.00	4/77	4/78
	MPE Commands Ref Mnl		30000-90088	20.00	4/77	4/78
	System Manager/System Supervisor Manual		30000-90089	12.50	4/77	4/78
	Console Operator's Guide		30000-90090	11.00	4/77	4/78
	General Information Manual (Series I)		30000-90091	9.25	4/77	
	Site Preparation Manual Series I		30000-90096	5.25	4/77	
	INDEX/3000 Reference Mnl		30000-90095	10.50	6/77	4/78
	Site Planning Workbook Series I		30000-90100	6.00	4/77	5/78
	MPE System Utilities Reference Manual		32000-90008	2.05	10/75	
	FORTRAN Reference Manual		32102-90001	10.00	3/76	
	2780/3780 Emulator Subsystem Reference Mnl		30130-90001	9.00	12/74	2/76
*	IBM 1130/1800 to HP 3000 FORTRAN Conversion Gd		36995-90013	4.70	2/75	5/75

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Printed in U.S.A. 1/80
Part No. 5951-6113

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