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HP 3000 APPLICATION NOTE #40

HP 250 / 260 TO HP 3000
COMMUNICATIONS GUIDELINES

RESPONSE CENTER APPLICATION NOTES

HP 3000 APPLICATION NOTES *are published by the North American Response Center twice a month and are distributed with the Software Status Bulletin. These notes address topics where the volume of calls received at the Center indicates a need for addition to or consolidation of information available through HP support services.*

Following this publication you will find a list of previously published notes and a Reader Comment Sheet. You may use the Reader Comment Sheet to comment on the note, suggest improvements or future topics, or to order back issues. We encourage you to return this form; we'd like to hear from you.

HP 250/260 TO HP3000 COMMUNICATIONS GUIDELINES

INTRODUCTION

The HP250 and HP260 are an integral part of Hewlett-Packard small systems strategy. There is currently a migration path from these systems to the HP3000 through the use of data communications and Buisness Basic/3000. This article discusses the synchronous and asynchronous data communications configurations used to connect these systems. The synchronous data communications program is Distributed Systems (DS/260) and the asynchronous data communications program is TRNSFR.

WHAT IS DS/260?

DS/260 is a program which provides virtual terminal access to the HP3000 and file transfer capabilities between the HP250/260 and the HP3000 via DS/3000 facilities.

WHAT IS TRNSFR?

TRNSFR is a program which allows the HP250/260 to emulate an interactive terminal and transfer files between the HP3000 and HP250/260 with asynchronous data communications.

WHAT ARE THE CAPABILITIES OF DS/260/TRNSFR?

- Allows HP3000 MPE command execution
- Allows execution of a subset of HP250/HP260 local
  commands while signed on to the HP3000
- Data file transfer between the HP250/HP260 and the HP3000
- Archive file transfer between the HP250/HP260 and the HP3000

SHOULD YOU USE DS/260 OR TRNSFR?

DS/260 will provide data communications at a higher speed and more complete error checking than TRNSFR.

TRNSFR is less expensive and the initial configuration of the hardware and software is simpler than DS/260.

DS/260 to DS/3000 SYNCHRONOUS DATA COMMUNICATIONS

To run DS (Distributed Systems) on the HP250/HP260 to an HP3000, both systems must have the proper Data Communications hardware and software. This section will describe the necessary hardware and software needed along with their configurations.

DS/260 to DS/3000 (SYNCHRONOUS COMMUNICATIONS)

1. HARDWARE FOR HP3000 - A Synchronous Single Line Controller (SSLC) or an Intellegent Network Processor (INP) is required on the HP3000. The SSLC would be used on an HP3000 Series II or Series III and an INP would be used on all model HP3000's.

2. SOFTWARE FOR HP3000 - You need to have DS/3000 installed on your HP3000. Once this is installed you need to set up the appropriate configuration on the HP3000. There are three items which need to be configured.

    1. The INP or SSLC (Table A-1 and A-2)
    2. The INP communications driver (Table A-3)
    3. The Pseudo INP Terminals (Table A-4)

In table A-1 the part numbers, driver names, types, subtypes, and record widths are listed for the INP configuration. Table A-2 lists the other configuration values for configuring the INP. Table A-3 describes the configuration for the INP communications driver and Table A-4 lists the configuration for the Pseudo Terminals.

3. HARDWARE FOR HP250/HP260 - A Intellegent Network Processor (INP) is required on the HP250/HP260. This INP will provide connections for direct, modem or auto-call unit interfaces.

4. SOFTWARE FOR HP250/HP260 - DS/260 needs to be installed on the system and the CS250 DROM must be loaded. The user running DS/260 must have a 64K user partition. There is also a configuration program to generate a configuration file for DS/260. This program is called CSFIG. CSFIG is documented in the DSN/DS 260 manual (Part no. 45124-90000).

Below is a list of the values which should be set in the configuration file for DS/260:

General Information

```
Configuration File Type ..........................[ DS/260 ]
Default INP Channel Number .......................[ 1 ]
Communications Line Protocol .....................[ BISYNC ]
Number of Input/Output Control Blocks ( ICOB's ) .[ 4 ]
Number of System Buffers .........................[ 1 ]
System Buffer Length ( in WORDS ) ................[ 1024 ]
```

INP Hardware Initialization

    Use the default values for these settings.

Communications Line Initialization

```
Communication Line Type .......................[         ]*
Line Transmission Mode ........................[ FULL-DUPLEX ]
Communications Line Speed .....................[         ]**
Maximum Number of Error-Recovery Retries ......[ 6 ]
```

* If the 3000 INP (Driver IOINP0) has a SUBTYPE of 0 this
should be SWITCHED.

If it is SUBTYPE 1 or 3 on the HP3000 this should be
NON-SWITCHED.

** This communications Line Speed should match the
transmission speed on the 3000.

Communications Line Initialization

```
Communications Line Transmission Code .............[ ASCII ]
Primary/Secondary Contentions Station ............[ PRIMARY ]
Number of Leading Synchronization Characters ......[ 4 ]
Character Sequence to be Transmitted on Disconnect.[ EOT ]
Allow Local/Remote ID Sequences ...................[ NO ]
```

Communications Line Time-Out Values (in SECONDS)

Use the default values for these settings.

Commnications Line Trace Initialization

Use the default values for these settings.

Communications Line Trace Item Selection

Use the default values for these settings.

5. If you have difficulties there is a TRACE facility which will dump information regarding the connection to a file. This file can be looked at by a program called CSDUMP. If you decide to use the TRACE facility you must have the CSDUMP and TRACE DROMS loaded. Also the values in the configuration file under these two sections Communications Line Trace Initialization and Communications Line Trace Item Selection may need altering. The TRACE facility is documented in detail in the DSN/INP 260 Reference Manual (Part No. 45122-90010).

6. The synchronous cable configurations are shown in Table A-5. You will need different cables depending on the HP3000 and if over a modem or direct connect.

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Table A-1

Software & Hardware for HP3000 Synchronous Data Communications

DEVICE	PART NO	DRIVER NAME	TYPE	SUB-TYPE	RECORD WIDTH (decimal words)
DS/3000	32190A				
SSLC	30055A	CSSBSC0	18		N/A
Switched line (dialup) with modem				0	
Nonswitched (leased) with modem; or a hardwired SSLC to INP				1	
DS/3000					
INP	30010A	IOINP0	17		N/A
Switched line (dialup) with modem				0	
Nonswitched (leased) with modem; or a hardwired SSLC to INP				1	
Hardwired INP to INP				3	

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Table A-2

INTELLEGENT NETWORK PROCESSOR DRIVER (IOINPO)

CONFIGURATOR STEP NO.	CONFIGURATOR OUTPUT	USER RESPONSE
8	LOGICAL DEVICE #?	User's choice
10	UNIT #?	0
11	SOFTWARE CHANNEL #?	0
12	TYPE ?	17
*13	SUBTYPE?	0, 1, OR 3
16	RECEIVE TIMEOUT?	0-32000 or return (default - 20 seconds)
17	LOCAL TIMEOUT?	0-32000 or return (default - 20 seconds)
18	CONNECT TIMEOUT?	0-32000 or return (300 recommended for DS default - 900 seconds)
19	DIAL FACILITY?	**YES or NO
20	ANSWER FACILITY?	**YES or NO
21	AUTOMATIC ANSWER?	**YES or NO
22	DUAL SPEED?	YES or NO
23	HALF SPEED?	YES or NO (asked if DUAL SPEED? was YES)
24	SPEED CHANGABLE?	YES or NO (asked if DUAL SPEED was NO)
25	TRANSMISSION SPEED?	250, 300, 600,1200, 3600 4800, 7000, characters per second
*26	TRANSMISSION MODE?	***(0=Full Duplex, 1= Half Duplex)
27	PREFERRED BUFFER SIZE?	0-1024 (1024 for DS)
28	DRIVER CHANGEABLE?	NO
29	DRIVER OPTIONS?	0
38	DRIVER NAME?	IOINPO
39	PHONE LIST?	** YES or NO
41	LOCAL ID SEQUENCE?	ID or RETURN
42	REMOTE ID SEQUENCE?	**ID or RETURN
43	DEVICE CLASSES?	Classname list or return

* For hardwired INP to SSLC connections, use subtype 1 and transmission mode 1.
  For hardwired INP to INP connections, use subtype 3 and transmission mode 0.
** Asked for subtype 0 only.
*** If using a leased line use transmission mode 0.
    If using a dial up line use transmission mode 1.

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Table A-3

DS/3000 Communicator Driver (ISDS0)

CONFIGURATOR STEP NO.	CONFIGURATOR OUTPUT	USER RESPONSE
8	LOGICAL DEVICE #?	User's choice
9	DRT #?	#ldev number for IOINP0
10	UNIT #?	0
11	SOFTWARE CHANNEL #?	0
12	TYPE ?	41
13	SUBTYPE?	0 No data compression
		1 data compression
30	REC WIDTH?	128
31	OUTPUT DEVICE?	0
32	ACCEPT JOBS/SESSION?	NO
33	ACCEPT DATA?	NO
34	INTERACTIVE?	NO
35	DUPLICATIVE?	NO
36	INITIALLY SPOOLED?	NO
38	DRIVER NAME?	IODS0

Table A-4

DS/3000 Pseudo Terminal (IODSTRM0)

CONFIGURATOR STEP NO.	CONFIGURATOR OUTPUT	USER RESPONSE
8	LOGICAL DEVICE #?	User's choice
9	DRT #?	#ldev number for IOINP0
10	UNIT #?	A unique number
11	SOFTWARE CHANNEL #?	0
12	TYPE ?	16
13	SUBTYPE?	0
14	TERMTYPE?	carriage return
15	SPEEK IN CHARACTERS PER SECOND?	carriage return
30	REC WIDTH?	36
31	OUTPUT DEVICE?	(ldn or class name of listing device)
32	ACCEPT JOBS/SESSION?	YES
33	ACCEPT DATA?	NO
34	INTERACTIVE?	YES
35	DUPLICATIVE?	YES
36	INITIALLY SPOOLED?	NO
38	DRIVER NAME?	IODSTRM0

HP 260 INP INTERFACE CONNECTIONS

```
                    45116A      30225B          ┌─────────┐
                    ◄───────    ◄──────┐        │ HP 3000 │
                     10M         5M    ┘        │  SSLC   │
                                                └─────────┘

                    45115A                       ┌─────────┐        ┌────────┐
                    ◄──────►                      │  MODEM  ├──┤├─┤├─┤ MODEM  ◄──── TO HP OR IBM
                     10M                          └─────────┘        └────────┘       INSTALLATION

┌────────┐          45116A      30221A          ┌─────────┐
│ HP 260 ├─         ◄───────    ◄──────┐        │HP 3000 INP│
└────────┘          10M         10M    ┘        │  SERIES   │
                                                │39/42/48/68│
ONE PORT                                        └─────────┘
  PLUS             45116A       30222A          ┌─────────┐
AUTOCALL          ◄───────     ◄──────┐        │HP 3000 INP│
                   10M          10M    ┘        │ SERIES III│
                                                └─────────┘

                  45115A                        ┌─────────┐
                  ◄──────►                       │ AUTO CALL│
                   10M                           │   UNIT   │
                                                └─────────┘

                  45116A       30244A/D         ┌─────────┐
                  ◄───────     ◄──────►         │HP 3000 INP│
                   10M          10M             │ SERIES 37 │
                                                └─────────┘
```

SYMBOL KEY

MALE DTE ──────►

FEMALE DTE ────◄

PC EDGE
CONNECTOR ─────□
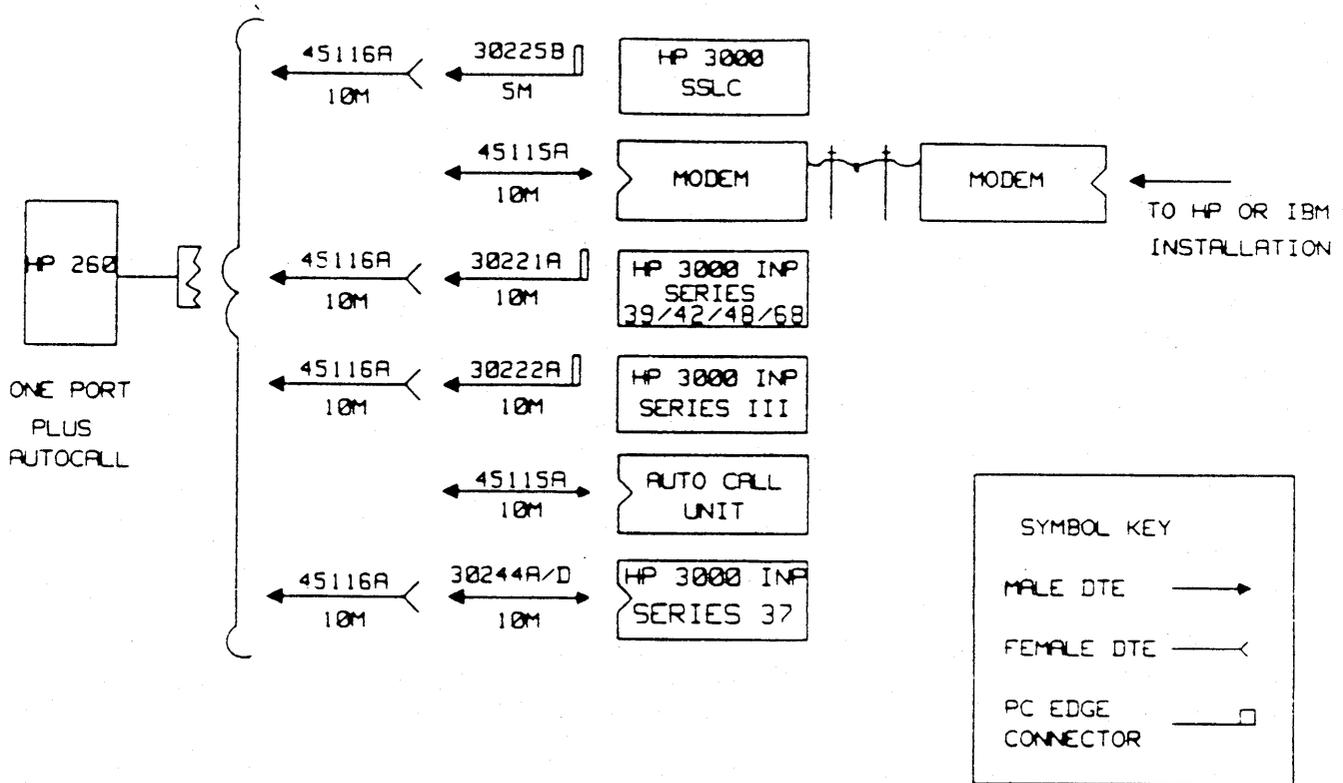
TRNSFR (ASYNCHRONOUS COMMUNICATIONS)

The TRNSFR program is a modified version of LK3000 which was made generally available on B. 08. LK3000 is documented in the 260/Utilities manual (Part no. 45261-90061) and in the 260/TIO manual (Part no. 45120-90006). TRNSFR gives asynchronous communications between the 250 or 260 and the 3000.

With TRNSFR you can send Programs, Data files, Schema files, Forms and Datasets. For more instructions on how to transfer these refer to the BASIC/260 to Buisness BASIC/3000 conversion guide (Part no. 32115-90005).

1. HP3000 HARDWARE AND SOFTWARE: An asynchronous port configured as a terminal on the HP3000.

2. HP250/260 HARDWARE AND SOFTWARE: You must have an Asynchronous Interface board in the system (ASI). Select an asynchronous port to use and follow the steps listed below to configure the port for use with TRNSFR.

1. Power off the HP250 or HP260.

2. Connect the appropriate cable to the desired port on the ASI. Refer to Table B-5 for details on cables.

3. There are two different ways to configure the port interface. One is One is with the CONFIG program and the other is by setting dip switches. Depending on which type of system you have this port interface is set differently. Below is an explanation for each system.

   a) HP260 SERIES 30 and SERIES 40 - The port interface is configured in the CONFIG program under ASYNCHRONOUS PORT CONFIGURATION. It is refered to as SWCONF. This is documented in more detail in the Utility/260 manual (part no. 45261-90061).

   b) On the HP250 Models 20, 25, 26,30, 40, or 50 there are two banks of switches for each port. These switches are located to the left of the actual Asynchronous ports. Table B-2 lists the settings for these switches.

   c) On the HP260 Models 16, 20, 24, or 55 you also have two banks of switches for each port. These switches are located at the back of the ASI (Asynchronous Interface) board. When you unscrew the two thumbscrews, located on the back of the HP260 on the left and right of the ASI board you will be able to pull the board out. Pull the board out approximately 3 inches and look down on it, you will see the switches. The settings for these switches are listed in Table B-3.

4. If you have an HP250, set the baud rate switch on the ASI board in the card cage for the appropriate port to the position corresponding to the baud rate you intend to use. It is recommended to use 4800 baud or less. Refer to Table B-1 for the list of numbers and their corresponding baud rates. If you are not familiar with changing these settings you may want to have your CE (Customer Engineer) set the baud rate.

   If you have an HP260, set the baud rate in the ASYNCHRONOUS PORT CONFIGURATION in step 6a, which follows.

5. Power on the HP250.

6. Run "CONFIG"

a) Select ASYNCHRONOUS PORT CONFIGURATION and configure
in the 3000 on the appropriate port as:

Class: COMPUTER
Type: 3000
Format: 8N1
Baud Rate: HRDWR   if using an HP250
4800 or lower if using an HP260.

Then record the configuration.

b) Select DROM EDIT and configure in the following DROMS:

TIO

Then record the configuration.

7. Power off the HP250, then power it back on. This is
necessary for the new configuration to take effect.

Table B-4 is a listing of the above steps for each type of
HP250/260 system.

Table B-1

BAUD RATE SWITCH SETTINGS

SWITCH SETTING	BAUD RATE
0	110
1	200
2	300
3	600
4	1200
5	1800
6	2400
7	4800
8	9600
9	Not used

Table B-2

HP250 RS-232 CONNECTOR BOARD
SWITCH CONFIGURATIONS

```
                        BANK A                    BANK B
                  ------------------        ------------------
UNUSED            |  |X|X|X|  |  |  |  |     |  |  |  |  |  |  |  |  |   0*
PORT              |X|  |  |  |X|X|X|X|       |X|X|X|X|X|X|X|X|           1**
                  ------------------        ------------------

                  ------------------        ------------------
DIRECT            |X|X|X|X|  |  |  |  |       |  |  |  |  |  |  |  |  |   0
RS-232C           |  |  |  |  |X|X|X|X|       |X|X|X|X|X|X|X|X|          1
                  ------------------        ------------------

                  ------------------        ------------------
CURRENT           |X|X|X|X|  |  |  |  |       |  |  |  |X|X|X|X|X|       0
LOOP              |  |  |  |  |X|X|X|X|       |X|X|X|  |  |  |  |  |     1
                  ------------------        ------------------

                  ------------------        ------------------
MODEM SW          |X|  |  |  |X|  |  |        |X|X|X|  |  |  |  |  |     0
MONITOR           |  |X|X|X|X|  |X|X|         |  |  |  |X|X|X|X|X|       1
CTS (US)          ------------------        ------------------

                  ------------------        ------------------
MODEM SW          |X|  |  |X|  |  |  |        |X|X|X|  |  |  |  |  |     0
MONITOR           |  |X|X|X|  |X|X|X|         |  |  |  |X|X|X|X|X|       1
CF (EUR)          ------------------        ------------------

                  ------------------        ------------------
MODEM             |X|  |X|  |X|  |  |X|       |X|  |X|  |  |  |  |  |    0
LEASED            |  |X|  |X|  |X|X|          |  |X|  |X|X|X|X|X|        1
DRS=+12V          ------------------        ------------------

                  ------------------        ------------------
MODEM             |X|  |X|  |X|  |X|  |       |X|  |X|  |  |  |  |  |    0
LEASED            |  |X|  |X|  |X|  |X|       |  |X|  |X|X|X|X|X|        1
DRS=-12V          ------------------        ------------------
```

* 0 = OFF or CLOSED
** 1 = ON or OPEN

Table B-3

HP260 RS-232 CONNECTOR BOARD
SWITCH CONFIGURATIONS

```
                 BANK  A                                    BANK  B

            -------------------                        -------------------
UNUSED      | | | | | |X| | |         UNUSED           | | | | | | | | |
PORT        |X|X|X|X|X| |X|X|         PORT             |X|X|X|X|X|X|X|X|      1**
            -------------------                        -------------------


            -------------------                        -------------------
RS-232C     | | | | | |X| | |         DIRECT           | |X| |X|X| | | |     0
            |X|X|X|X|X| |X|X|                          |X| |X| | |X|X|X|     1
            -------------------                        -------------------


            -------------------                        -------------------
CURRENT     |X|X|X|X|X|X| | |         EUROPE           |X| |X| | |X| |X|     0
LOOP        | | | | | | |X|X|         MODEM            | |X| |X|X| |X| |     1
            -------------------       SWITCHED         -------------------


            -------------------                        -------------------
RS424       |X|X|X|X|X| | | |         US MODEM         |X| |X| | | |X|X|     0
MONITOR     | | | | | |X|X|X|         SWITCHED         | |X| |X|X|X| | |     1
CTS (US)----------------------                         -------------------


            -------------------                        -------------------
MODEM       | | | | | | |X|X|         EUROPE &         |X| |X| | | |X|X|     0
LEASED      |X|X|X|X|X|X| | |         US MODEM         | |X| |X|X|X| | |     1
DRS-12V  ----------------------       LEASED           -------------------


            -------------------
MODEM       | | | | | |X| |X|
LEASED      |X|X|X|X|X| |X| |
DRS+12V  ----------------------
```

BANK A is the set of switches on the left side and BANK B is the set of switches on the right side. Choose the appropriate BANK A and the appropriate BANK B to set the port to. For example: for an RS-232 port with a modem over a leased line −12v in the US you would use BANK A for a MODEM LEASED DSR −12V and BANK B for EUROPE & US MODEM LEASED. Or for a US switched modem line using RS232 you would have BANK A as RS232C and BANK B as US MODEM SWITCHED.

* 0 = OFF or CLOSED ** 1 = ON or OPEN

Table B-4

HP250 and HP260 CONFIGURATION CROSSREFERENCE

SYSTEM TYPE	ASI PORT STANDARD?	SET BAUD RATE IN CONFIG?	CONFIGURE USE OF PORT IN CONFIG?
HP250 MODELS 20, 25, 26, 30, 40, 50	YES	NO Set with thumb-wheel switch on ASI board	NO Set with banks of switches on back of system
HP260 MODELS 16, 20, 24, 55	NO Must have ordered ASI board	YES	NO Set with banks of switches on ASI board
HP260 SERIES 30 and 40	*NO Must have ordered ASI board	YES	YES

* Currently ASI ports -1 and -2 on the processor board can not be configured as COMPUTER.

Table B-5

ASYNCHRONOUS CABLE CONFIGURATION

| HP 250 HP 260 | ←45111A→ 4.5m | Modem | ⚡ | Modem | ←30062B 8m | HP3000 |

| HP 250 HP 260 | ←300626-001→ 15m | HP3000 |

| HP 250 HP 260 | ←45113A (Optional)10.5m | ←45111A→ 4.5m | HP3000 |

Symbol Key

Male DTE

Female DTE

PC Edge
Connector
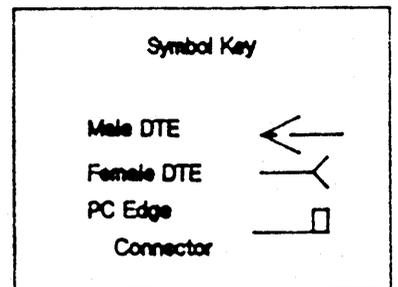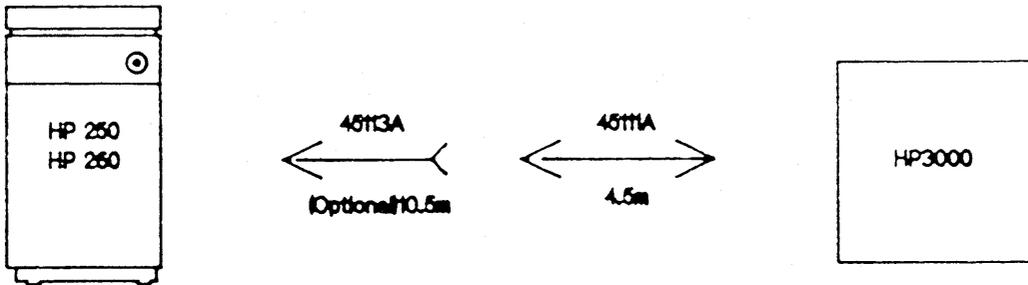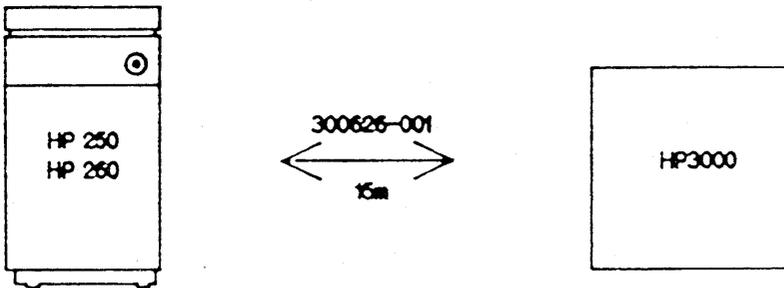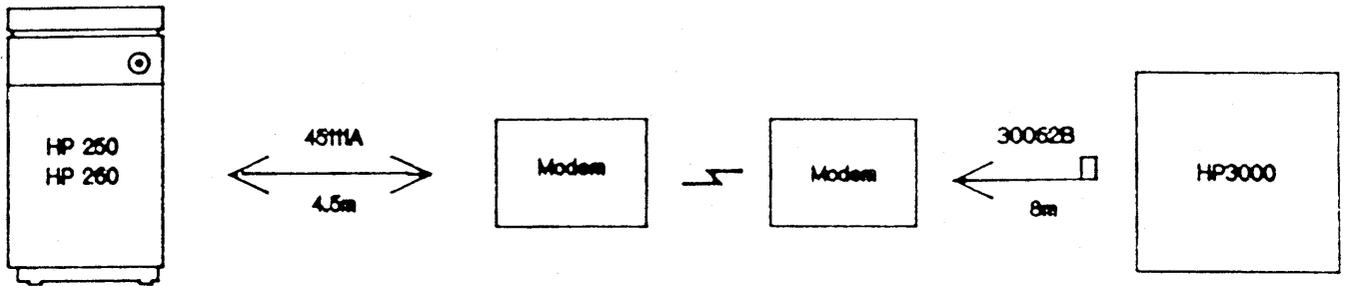
BACK ISSUE INFORMATION

Following is a list of the Application Notes published to date. If you would like to order single copies of back issues please use the *Reader Comment Sheet* attached and indicate the number(s) of the note(s) you need.

Note #	Published	Topic
1	2/21/85	Printer Configuration Guide (superseded by note #4)
2	10/15/85	Terminal types for HP 3000 HPIB Computers (superseded by note #13)
3	4/01/86	Plotter Configuration Guide
4	4/15/86	Printer Configuration Guide - Revised
5	5/01/86	MPE System Logfile Record Formats
6	5/15/86	Stack Operation
7	6/01/86	COBOL II/3000 Programs: Tracing Illegal Data
8	6/15/86	KSAM Topics: COBOL's Index I/O; File Data Integrity
9	7/01/86	Port Failures, Terminal Hangs, TERMDSM
10	7/15/86	Serial Printers - Configuration, Cabling, Muxes
11	8/01/86	System Configuration or System Table Related Errors
12	8/15/86	Pascal/3000 - Using Dynamic Variables
13	9/01/86	Terminal Types for HP 3000 HPIB Computers - Revised
14	9/15/86	Laser Printers - A Software and Hardware Overview
15	10/01/86	FORTRAN Language Considerations - A Guide to Common Problems
16	10/15/86	IMAGE: Updating to TurboIMAGE & Improving Data Base Loads
17	11/01/86	Optimizing VPLUS Utilization
18	11/15/86	The Case of the Suspect Track for 792X Disc Drives
19	12/01/86	Stack Overflows: Causes & Cures for COBOL II Programs
20	1/01/87	Output Spooling
21	1/15/87	COBOLII and MPE Intrinsics
22	2/15/87	Asynchronous Modems
23	3/01/87	VFC Files
24	3/15/87	Private Volumes
25	4/01/87	TurboIMAGE: Transaction Logging
26	4/15/87	HP 2680A, 2688A Error Trailers
27	5/01/87	HPTrend: An Installation and Problem Solving Guide
28	5/15/87	The Startup State Configurator
29	6/01/87	A Programmer's Guide to VPLUS/3000
30	6/15/87	Disc Cache
31	7/01/87	Calling the CREATEPROCESS Intrinsic
32	7/15/87	Configuring Terminal Buffers
33	8/15/87	Printer Configuration Guide
34	9/01/87	RIN Management (Using COBOLII Examples) (A)
34	10/01/87	Process Handling (Using COBOLII Examples) (B)
35	10/15/87	HPDESK IV (Script files, FSC, and Installation Considerations)
34	11/01/87	Extra Data Segments (Using COBOLII Examples) (C)
36	12/01/87	Tips for the DESK IV Adminstrators
37	12/15/87	AUTOINST: Trouble-free Updates
38	1/01/88	Store/Restore Errors
39	1/15/88	MRJE Emulates a HASP Workstation
40	2/01/88	HP 250 / 260 to HP 3000 Communications Guidelines

READER COMMENT SHEET

World Response Center Support
HP 3000 Application Note #40: HP 250/260 to HP3000 COMMUNICATIONS GUIDELINES
RC Questions & Answers (February 1, 1988)

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	AppNote		RC Q&A	
Is this publication applicable to your site?	☐ Yes ☐ No		☐ Yes ☐ No	
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HEWLETT PACKARD Response Center Questions & Answers

HP 3000 Questions Commonly Received by the North American Response Centers

Q. Does Cobol have a debugging feature to help trace the execution of my program?

A. Cobol has a Debugging feature that can be used to help trace the execution of your program. The statements may remain in the source and object files and not affect the performance of your program.

Following is a sample listing of a program that contains the statements necessary to make this work.

These are the steps necessary to get the Cobol Debug feature to work:

1. Add Debug information to source code.

2. Recompile & Prep the source code.

3. Run PGM:PARM=1 << Parm=1 turns on Debug feature >>

4. To get output to the printer, issue the file
   equation: FILE LP;DEV=LP
            RUN PGM;PARM=1;STDLIST=*LP

The output of the Debug Trace will contain the current procedure being executed and how it came to be executed.

```
Current Procedure is:     << Name of current paragraph >>
Control Flow was:         << How we got to the current paragraph >>

The Control Flow (DEBUG-CONTENTS) will contain one of three
different values. The values are:

PERFORMED LOOP     <<If the paragraph was performed >>

FALL THROUGH       << The program encountered paragraph name
                      without a PERFORM or GOTO. >>
                   << If blank, then we did a GOTO to the
                      paragraph name >>
```

```
$CONTROL USLINIT
   IDENTIFICATION DIVISION.
   PROGRAM-ID. COBDEBUG.
   ENVIRONMENT DIVISION.
   CONFIGURATION SECTION.

   SOURCE-COMPUTER.  HP3000  WITH DEBUGGING MODE.
   OBJECT-COMPUTER.  HP3000.
   SPECIAL-NAMES.  CONDITION-CODE IS CC.
```

```
INPUT-OUTPUT SECTION.
DATA DIVISION.

WORKING-STORAGE SECTION.

PROCEDURE DIVISION.
DECLARATIVES.
DEBUG-SECTION                  SECTION 01.
    USE FOR DEBUGGING ON ALL PROCEDURES.
DEBUG-0000.
    DISPLAY SPACE.
    DISPLAY "Current Procedure is: " DEBUG-NAME.
    DISPLAY "Control Flow was:     "DEBUG-CONTENTS.
    DISPLAY SPACE.
END DECLARATIVES.

MAINLINE-CODE        SECTION 02.
    DISPLAY "START OF PROGRAM".
    PERFORM  1000-TEST-RTN  THRU 1000-EXIT.
PARA-2.
    STOP RUN.
1000-TEST-RTN.
    GO TO 1000-EXIT.
1000-EXIT.
    EXIT.
```

OUTPUT PRODUCED FROM SAMPLE PROGRAM

```
Current Procedure is: MAINLINE-CODE
Control Flow was:     START PROGRAM

START OF PROGRAM

Current Procedure is: 1000-TEST-RTN
Control Flow was:     PERFORM LOOP

Current Procedure is: 1000-EXIT.
Control Flow was:

Current Procedure is: PARA-2
Control Flow was:     FALL THROUGH
```