Worldwide Response Center

HP 3000 APPLICATION NOTE #98

File Transfer

HEWLETT
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RESPONSE CENTER APPLICATION NOTES

HP 3000 APPLICATION NOTES *are published by the Worldwide Response Center 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.*

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HP 3000 Application Note # 98

File Transfer

Transferring Files between HP 3000 and Other Computers.

Transferring files in the HP 3000 mode is provided by the NFT service (service NS : NETWORK FILE TRANSFER), better known as DSCOPY. This utility has the advantage of having been developed by Hewlett-Packard for the HP 3000. The protocol provides for all types of existing MPE files since the files are transferable from one system to another without modification of status (size, type, code, etc.). The drawback is that it can only be used in the Hewlett-Packard environment (except for PCs, HP 9000 and VAX VMS).

If the transfer has taken place between two different systems, it is difficult to find an association between the specific type of MPE file and the corresponding type on the other system. It is for this reason that not all file transfer options are available.

Frequent questions:

- What is the HP 3000 file type?
- What is the file type on the other computer?
- Is it possible to associate these two types through file transfer software or is there a workaround?
- Does the file transfer software have read and/or write access rights on both computers?
- Is this software compatible with access control rules and with the access security software already installed?
- Is the content of the file compatible from one system to another?
  - For ASCII/EBCDIC/etc. codes and in the same code, are the hexadecimal/representation code associations all the same?
  - Is the arrangement of bytes identical (are the leading and trailing bytes in the same order)?
  - Are there "invisible" fields (length of data, control codes, etc.) that are transferred as data?

The answers to these questions will help you find a viable solution for transferring certain files. However, it is always preferable to perform tests on the transfer itself as well as to check the actual content of received files.

The Hewlett-Packard solutions for transferring files in open system environments are FTP and FTAM in the IBMRJE and NRJE environments and ADVLINK in the DOS environment. Other solutions are possible (computer service and engineering companies, contributed libraries, specific applications).

FTP

```
FTP:  FILE TRANSFER PROTOCOL
(ARPA, de facto standard)
```

This product is used for transfers between HP 3000 and the UNIX environment or a computer having FTP.

In UNIX a file is a sequence of characters. The concept of a record can be simulated by line separators (CR/LF).

FTP provides for only two types of transfers:

- ASCII, in which lines of standard characters are separated by CR/LFs.
- BINARY, which consists of a continuous sequence of bytes.

The protocol is very simple, and each manufacturer has implemented its own rules for transfers between FTP and its FILE SYSTEM.

HP 3000 behaves in the following ways depending on the type of transfer (ASCII or BINARY) and the direction of the transfer:

- Transmission
  - ASCII: HP 3000 sends the records one after another with CR/LFs between them.
  - BINARY: HP 3000 sends the records one after another without separators. If the file is protected with a password, FTP will request it. It is the FILE SYSTEM that generates the request. However, FTP cannot open a file that is read-protected or of the PRIV type (privileged mode).
- Reception
  - ASCII: In the data received, HP 3000 searches for CR/LFs to separate the records. Lines that are too long are truncated with a message displayed.
    - The default is:

      ```
      REC= -80,,F,ASCII;DISC=1024
      ```

  - BINARY: HP 3000 writes the records by using the length of the destination file to make separations.
    - The default is:

      ```
      REC=126,,V,BINARY;DISC=1024
      ```

    The structure of the file can be redefined by the parameters passed at the same time as the name of the file.

    Example

    ```
    >PUT xxx TOTO;
    REC=-132,40,F,ASCII;DISC=1000
    ```

    TOTO is the file name. The command does not have any spaces. The file must be write-accessible and "saveable" (CAP SF).

□ FTAM: FILE TRANSFER ACCESS AND MANAGEMENT

(ISO standard 8571)

FTAM is used for transfers between an HP 3000 and another computer also having FTAM. There are many more extant types of file structures than types of computers.

FTAM classifies files by type. Three file types are supported on HP 3000:

- FTAM1 - unformatted text and a sequence of characters without any particular structure
- FTAM2 - sequential text and a sequence of records of variable length
- FTAM3 - unformatted binary and a sequence of unstructures bytes

The protocol is very complex. The standard provides for many optional fields. Each manufacturer has a certain degree of freedom of interpretation. It is important to verify that the systems are mutually compatible. You can contact the technical support center to find out whether a given computer has already been tested.

The list of implementation choices for the HP 3000 is presented in thorough detail in the FTAM documentation. These choices are not identical for the HP 9000.

Each manufacturer associates the FTAM types to the parameters of its FILE SYSTEM. The following choices have been made for the HP 3000:

- Transmission

  FTAM1 - The files have a 1091 code (FTAM1) and are of ASCII type.

  FTAM2 - The files have a 0 or 1092 code (FTAM2) and are of ASCII type.

  FTAM3 - All other files.

  The FTAM4 and FTAM5 files are not supported. As for FTP, the files must be read-accessible.

- Reception

```
FTAM1 - Code = 1091 (FTAM))
REC=-256,1,V,ASCII

FTAM2 - Code = 0
REC=-176,1,V,ASCII

FTAM3 - Code = 0
REC-= -256,1,V,BINARY
```

As for FTP, the files must be write-accessible and "saveable." They can be qualified by their MPE attributes.

Example of an FTAM file:

```
TOTO;REC--80,40,F,ASCII;DISC-258
```

HP 3000 File Transfer Utilities in the IBM Environment

RJE, NRJE, etc. (IBM protocol)

These utilities are used to simulate a BATCH type terminal (card punchers and reader and printers).

- Transmission

  The files sent must be part of a batch process (control cards) and broken down into card format by a program on the HP 3000 and then restored once they are transferred to the IBM. It is often necessary to provide for specific processing for each file (FCOPY on HP 3000 and IEBGENER on IBMs having limited functions).

  The EBCDIC/ASCII conversion can be requested at the time of transfer (ASCII file) or done prior to transfer.

- Reception

  The files are received as IBM SPOOL files. They must be broken down on the IBM and put back together on the HP 3000. NRJE options can be used to change the file attributes (routing table, the SUBMIT and USEREXIT command).

The HP 3000 Transfer Utilities for PCs (DOS)

ADVLINK (&DSCOPY)

The ADVLINK screen emulator contains a transfer utility for copying ASCII or BINARY files between an HP 3000 and a PC.

The LABELED option can be used to keep file attributes when transferring between HP 3000s and PCs.

Different configurations allow transfers by serial links: PAD, NS (VT) and TELNET.

Furthermore, HP 3000 has programmable network oriented interfaces that let you develop your own transfer utilities (NETTIPC, BSD, LU6.2, etc.). Several third-party computer service and engineering companies are offering software for transfers between HP 3000 and other types of computers.

The HP 3000 remains an "open" system as far as file transfers are concerned.

Published Application Notes

HP 3000

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 *Request Form* attached and indicate the number(s) of the note(s) you need, and the part number(s).

Note #	Part Number	Topic
1	5958-5824	Printer Configuration Guide - Version 1
2	5960-2841	Terminal types for HP 3000 HPIB Computers - Version 1
3	5960-2842	Plotter Configuration Guide
4	5960-2843	Printer Configuration Guide - Version 2
5	5960-2844	MPE System Logfile Record Formats
6	5960-2845	Stack Operation
7	5960-2846	COBOL II/300 Programs: Tracking Illegal Data
8	5960-2847	KSAM Topics: COBOL's Index I/O: File Data Integrity
9	5960-2848	Port Failures, Terminal Hangs, TERMDSM
10	5960-2849	Serial Printers - Configuration, Cabling, Muxes
11	5960-2850	System Configuration or System Table Related Errors
12	5960-2851	Pascal 3000 - Using Dynamic Variables
13	5960-2852	Terminal Types for HP 3000 HPIB Computers - Version 2
14	5960-2853	Laser Printers - A Software and Hardware Overview
15	5960-2854	FORTRAN Language Considerations - A Guide to Common Problems
16	5960-2855	IMAGE: Updating to TurboIMAGE & Improving Database Loads
17	5960-2856	Optimizing VPLUS Utilization
18	5960-2857	The Case of the Suspect Track for 792X Disc Drives
19	5960-2858	Stack Overflows: Causes & Cures for COBOL II Programs
20	5960-2859	Output Spooling
21	5960-2860	COBOLII and MPE Intrinsics
22	5960-2861	Asynchronous Modems

Note #	Part Number	Topic
23	5960-2862	VFC Files
24	5960-2863	Private Volumes
25	5960-2864	TurboIMAGE: Transaction Logging
26	5960-2865	HP 2680A 2688A Error Trailers
27	5960-2866	HP Trend: An Installation and Problem Solving Guide
28	5960-2867	The Startup State Configurator
29	5960-2868	A Programmer's Guide to VPLUS 3000
30	5960-2869	Disc Cache
31	5960-2870	Calling the CREATEPROCESS Intrinsic
32	5960-2871	Configuring Terminal Buffers
33	5960-2871	Printer Configuration Guide - Version 3
34A	5960-2873	RIN Management (Using COBOLII Examples) (A)
34B	5960-2874	Process Handling (Using COBOLII Examples) (B)
34C	5960-2876	Extra Data Segments (Using COBOLII Examples) (C)
35	5960-2875	HPDESK IV (Script files, FSC, and Installation Considerations)
36	5960-2877	Tips for the DESK IV Administrators
37	5960-2878	AUTOINST: Trouble-free Updates
38	5960-2879	Store/Restore Errors
39	5960-2880	MRJE Emulates a HASP Workstation
40	5960-2881	HP 250 / 260 to HP 3000 Communications Guidelines
41	5960-2882	MPE File Label Revealed
42	5960-2883	System Interrupts
43	5960-2884	Run Time Aborts
44	5960-2885	HPPA Patching Conventions for HP3000 900 Series Processors - Version 1
45	5960-2886	Vplus & Multiplexers
46	5960-2887	Setting Up and HPDesk HPTelex for the First Time
47	5960-2900	Customizing Database Data Items & Changing Passwords in JCL Files
48	5959-9215	Printer Configuration - Version 4
49	5959-9227	Configuring DATACOMM Products Into MPE
50	5959-9228	VFC's for Serial Printers

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51	5959-9237	Terminal Types for the HP 3000 HPIB Computers
52	5959-9242	Configuring MRJE
53	5959-9245	Using Special Characters on the 700/9x Series Terminals
54	5959-9251	Improving Database Performance
55	5959-9258	Customized Message Catalogs and Help Facilities
56	5959-9266	BRW Tips for Beginners
57	5959-9270	Configuring the HP 2334A Plus & HP 2335A As a Statistical Multiplexer
58	5959-9274	HPPA Pathing Conventions for HP3000 900 Series Processors - Version 2
59	5959-9289	HP 2334A and HP 2334A Configuration Recipes
60	5959-9301	TurboIMAGE's I-FILES and J-FILES
61	5959-7385	HPDeskManager - Looking Behind the Scenes
62	5959-7803	Setting Up a System Dictionary
63	5959-7834	Configuring Telesupport Modems for MPE V/E Systems
64	5960-1816	Finding Solutions in HP SupportLine
65	5960-1817	Using the Electronic Call Feature of HP SupportLine
66	5960-1818	Using the Feedback Feature of HP SupportLine
67	5960-1819	Printing Documents from HP SupportLine
68	5960-1820	HP SupportLine Commands
69	5960-2901	Nonsystem Volume Sets and the Migration of Private Volumes to an S9000 HP 3000
70	5960-2907	Modem Links for Remote Console and Standard DTC Connections on Commercial XL HPPA Systems
71	5960-2918	Asynchronous Cabling
72	5960-2919	BRW Tips and Tricks
73	5960-2998	SNA NRJE Configuration
74	5960-2999	SNA IMF Configuration
75	5060-3000	XL NRJE Configuration

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76	5960-4301	XL IMF Configuration
77	5960-4302	Calling the BRW Intrinsics
78	5960-4303	PUB.SYS What Is Behind It?
79	5960-4625	Conquest of Disc Space
80	5960-4633	Looking Behind the Scenes of Resource Sharing
81	5960-4637	MPE/XL System Interrupt Recovery Procedures
82	5960-4347	Private Volumes
83	5960-4396	Serial Printer Configuration
84	5960-4334	How to Migrate FORTRAN Programs to Newer Compilers and XL Hardware
85	5960-4335	The Optimization of Programs in MPE/XL
86	5960-4643	IBM Labeled Tapes Questions and Answers
87	5960-4666	Image Logging for HP Financial Accounting Databases
88	5960-4672	Native Mode Spooler Questions and Answers
89	5960-4673	AUTOINST/XL Questions and Answers
90	5960-4701	The New Spooler
91	5960-6659	Using the Port Structure Under MPE/XL
92	5960-6696	SUBNET 3000
93	5960-6697	Native Mode Spooler Questions and Answers Version 2
94	5960-8223	RPG/XL Intrisic Interface
95	5961-1689	LaserRx Questions and Answers
96	5961-9647	Tape Labels Unlimited
97	5962-5255	POSIX A New Interface for MPE/iX
98	5963-3130	File Transfer

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