H892TV Print File Transfer (PFX™)

for Stratus OpenVOS Systems

Release 2.1

Software Reference Manual

MAN-REF-H892TV-01

Revision Record

Revision	Description
01 (02/2012)	Manual released.

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Preface

This manual describes the user interface to Network Executive Software's (NetEx Software) H892TV Print File Transfer (PFX™) utility. PFX is an extension of NetEx Software's Bulk File Transfer (BFX™) utility.

BFX and PFX are used in conjunction with NetEx Software's NETwork Executive (NetEx®) family of products.

This document contains the following sections:

- "Introduction" on page ix describes PFX and currently supported configurations.
- "Using PFX" on page 3 explains how to setup the various files needed by the PFX Transmitter Utility.
- "Initiating PFX" on page 9 explains how to submit remote PFX jobs and a description of Control Statements and Parameters.
- "Submitting a File to a Remote Printer" on page 13 explains use of the Stratus print command in conjunction with PFX and describes the sample command macros accompanying the release
- "Operator Interface" on page 17 explains how to invoke the PFX operator interface and a description of operator requests and parameters.
- "Internal Operation" on page 23 describes the internal operation the PFX Utility on the Stratus OpenVOS host. Understanding this section will be of use in understanding the logical process of PFX, but is not required for proper operation.
- "Technical Data" on page 25 describes the protocol used in framing PFX data images.
- "Appendix A. PFX Messages" on page 29 lists the PFX Utility error messages for Stratus OpenVOS.

Reference Material

The following manuals contain related information.

Number	Title and Description
man-cnet-conf-mgr	*“C” Configuration Manager and NetEx Alternate Path Retry (APR) User Guide*
man-ref-h897ipv	*H897IPV NetEx/IP® Requester for Stratus OpenVOS Operating Systems Software Reference Manual*
460427	*H891 Bulk File Transfer Utility (BFX) for Stratus, IBM Systems/88 and Olivetti CPS Computers Software Reference Manual*

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These references are made for informational purposes only.

The diagnostic tools and programs described in this manual are **not** part of the products described.

Notice to the Customer

The installation information supplied in this document is intended for use by experienced System Programmers.

Software Modification Policy

Modifications to H892TV that are not specifically authorized by NetEx Software are prohibited.

Any unauthorized modifications to H892TV may affect its operation and/or obstruct NetEx Software's ability to diagnose problems and provide corrections. Any work resulting from unauthorized modifications shall be paid by the customer at NetEx Software's then-current support rates and may result in the immediate termination of warranty/support coverage.

Document Conventions

The following notational conventions are used in this document.

Format	Description
`displayed information`	Information displayed on a CRT (or printed) is shown in `this font`.
`user entry`	*`This font`* is used to indicate the information to be entered by the user.
UPPERCASE	The exact form of a keyword that is not case-sensitive or is issued in uppercase.
MIXedcase	The exact form of a keyword that is not case-sensitive or is issued in uppercase, with the minimum spelling shown in uppercase.
bold	The exact form of a keyword that is case-sensitive and all or part of it must be issued in lowercase.
lowercase	A user-supplied name or string.
Value	Underlined parameters or options are defaults.
<label>	The label of a key appearing on a keyboard. If “label” is in uppercase, it matches the label on the key (for example: <ENTER>). If “label” is in lowercase, it describes the label on the key (for example: <up-arrow>).
<key1><key2>	Two keys to be pressed simultaneously.
No delimiter	Required keyword/parameter.

Glossary

asynchronous: A class of data transmission service whereby all requests for service contend for a pool of dynamically allocated ring bandwidth and response time.

ASCII: Acronym for American National Standard Code for Information Interchange.

buffer: A contiguous block of memory allocated for temporary storage of information in performing I/O operations. Data is saved in a predetermined format. Data may be written into or read from the buffers.

code conversion: An optional feature in the adapter that dynamically converts the host data from one character set to another. An adapter configured with the code conversion has a special 1K RAM that is used for code conversion. This RAM can be loaded with any type of code (for example, ASCII, EBCDIC, et cetera).

Configuration Manager: A utility that parses a text NCT file into a PAM file.

header: A collection of control information transmitted at the beginning of a message, segment, datagram, packet, or block of data.

host: A data processing system that is connected to the network and with which devices on the network communicate. In the context of Internet Protocol (IP), a host is any addressable node on the network; an IP router has more than one host address.

Internet Protocol (IP): A protocol suite operating within the Internet as defined by the *Requests For Comment* (RFC). This may also refer to the network layer (level 3) of this protocol stack (the layer concerned with routing datagrams from network to network).

ISO: Acronym for International Standards Organization.

Network Configuration Table (NCT): An internal data structure that is used by the NetEx configuration manager program to store all the information describing the network.

NETwork EXecutive (NetEx): A family of software designed to enable two or more application programs on heterogeneous host systems to communicate. NetEx is tailored to each supported operating system, but can communicate with any other supported NetEx, regardless of operating system.

NetEx can reside on the host, as an offloaded process (NESiGate-LAN Offload), or as a hosted offload process (NetEx/IP TNP). The latter two cases use host-resident drivers as interfaces.

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Open Systems Interconnection (OSI): A seven-layer protocol stack defining a model for communications among components (computers, devices, people, and et cetera) of a distributed network. OSI was defined by the ISO.

path: A route that can reach a specific host or group of devices.

TCP/IP: An acronym for Transmission Control Protocol/Internet Protocol. These communication protocols provide the mechanism for inter-network communications, especially on the Internet. The protocols are hardware-independent. They are described and updated through *Requests For Comment* (RFC). IP corresponds to the OSI network layer 3, TCP to layers 4 and 5.

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Introduction

General

The NetEx Software's Print File Transfer (PFX™) is a utility software package that allows users of NetEx Software's NETwork EXecutive (NetEx®) communications software to transfer print files between similar and dissimilar types of processors on supported networks. PFX contains the facilities to select the transfer files and to make the file format conversions necessary for proper printing on the receiving host. Once introduced to the system, PFX operates completely independent of any user.

PFX allows print transfers between mainframe operating systems from different manufacturers. NetEx software handles all communication considerations between different mainframes.

The PFX utility is actually made up of two separate units: the transfer utility (identified as Hxx2T) and the receiver utility (identified as Hxx2R). This manual describes the H892TV PFX Transfer Utility for Stratus.

PFX Advantages

PFX provides the following advantages for its host network:

Improved Printer Utilization: PFX allows printers to be concentrated on one host. In this way, multiple hosts have direct access to a group of printers. This results in higher printer utilization rates and may decrease the number of printers needed.

High-Cost Printer Justification: PFX may justify the cost a very high speed printer (for example, a laser printer) when it serves more than one host. Multiple hosts ensure sufficient printing is available to keep the device busy.

Specialty Printer Justification: A printer with special capabilities can be shared by multiple hosts. PFX removes special operational problems in getting a print file from the point of origin to a host that can do the printing.

Low Operations Costs: PFX allows many printers to be concentrated in one area, so the operator's time can be used more efficiently.

Increased Network Accessibility Print files can be directed to any destination that can be reached by the secondary host. This makes the entire network of the receiving host available to the originating host.

Print Load Balancing PFX can be used to balance the printing load. An operator can redirect output files for transmission to other hosts when an excessive load develops.

Printer Resource Backup A printer on one host can serve as a backup resource for a printer on another host. If problems develop with a printer, the operator can move the print to the backup device.

Description of Operation

PFX uses a transfer utility and a server utility to accomplish print file transfers. Under OpenVOS, the transfer utility obtains the names of files from PFX serviced print queues on the Stratus machine, then formats the files and transfers them to the receiving host. Any print files to be transferred by PFX must exist on the Stratus machine, and must have a print request placed on a PFX serviced print queue. The server utility takes in the formatted files and places them on the receiving host's print spool.

The system operator can communicate with PFX to: determine the status of the file transfers, stop PFX after any or all files have been transmitted, or request transmission of a particular print queue of files. Communication with PFX is done through the host where the transfer utility resides. Operator commands affect only those print queues that are serviced by the transfer utility.

A one-to-one correspondence must exist between copies of PFX transfer and server utilities. For example, if two separate PFX transfer utilities send their print files to a remote host's single printer (or spooler), then two copies of the PFX server utility must exist on the receiving host for proper PFX operation. This matching principle allows the control of one transfer/server combination to operate totally independent of any other file transfers.

Using PFX

To set up service for a remote printer on the Stratus transmitting host, PFX requires the following:

- A configuration file, containing a description of the receiving host's required information for each print queue, must be created in the PFX directory.
- *(master_disk) > NetEx > pfx* is the default PFX directory.
- A parameter file, containing the PFX control parameters for the PFXTI process, must be created in the PFX directory.
- PFX serviced Stratus print queue(s) must be created using the `create_print_queue` command. The print queue(s) will reside in the *(master_disk) > system > queues > print* directory.
- If automatic job submission is desired, a job file containing the receiving host specific control statements to start the PFX receiver utility on the receiving host, must be created in the PFX directory.

The Configuration File

The configuration file (config_file) must contain the following information:

- The name of the operator queue to which the PFXTI process will attach itself.
- The name(s) of the PFX serviced print queue(s) to which the PFXTI process will attach itself.
- The open image and open-data image statements required by each of the remote printers on the receiving host.

The format of the config_file is as follows:

The first record must contain the name of the PFX operator queue, starting in column l. The maximum size of the name is 32 characters.

The second record must contain the name of the PFX serviced print queue to be associated with the first remote printer on the receiving host, starting in column position l. The maximum size of the name is 32 characters.

The third record must contain the open image associated with the first remote printer on the receiving host. The first two column positions must contain a right justified zero filled numeric value that is the number of open-data images to follow. Starting in column position 3 must be a dataname. The maximum size of this dataname is 8 characters. The use of this dataname, by the receiving host, is determined by the PFX receiver utility operating on the remote host. The description of the open image given in the "Technical Data" on page 25 section specifies that column position l contain the dollar sign ($) flag character. When an open image record is read this flag character is inserted before the open image is placed into memory.

The next record(s) contain the open-data image(s) if required. The contents of the open-data image(s) are determined by the requirements of the receiving host. The description of the open-data image given in the "Technical Data" on page 25 specifies that column position 1contain the percent sign (%) flag character. When an open-data image record is read this flag character is inserted before the open-data image is placed into memory.

If multiple remote printers are attached to the receiving host, the name of the PFX serviced print queue, the open image statements and open-data image statements for each remote printer are placed in the remaining records. Examples of config_files are given in Figure 1 and Figure 2. These examples show config_files that

describe multiple PFX serviced print queues being associated with multiple queues (in Figure 1), or multiple printers (in Figure 2). In Figure 1 there are three PFX serviced print queues: pfxRMTPNT, pfxMASER, and pfxPHASER. These are being associated with three print queues on the receiving host: LASER, MASER, and PHASER respectively. In Figure 2 there are two PFX serviced print queues: PRT_3800 and PRT_20. These two PFX serviced print queues are being associated with two printers on an IBM MVS remote host. These queues/printers on the remote hosts are presumably being serviced by spoolers or printer drivers of some kind.

```
mcvax_oper
pfxRMTPNT
01RMTPNT
/QUEUE=LASER
pfxMASER
01MASER
/QUEUE=MASER
pfxPHASER
01PHASER
/QUEUE=PHASER
```

Figure 1. Sample File mcvax.cfg (This is a configuration file for Digital VAX/VMS remote host.)

```
ibm_oper
01PRT_3800 (local print queue name)
01DEFAULT
//DEFAULT DD SYSOUT=G,DCB=(RECFM=FBA,LRECL=133,BLKSIZE=l330),CHARS=GT12
01PRT_U20
01DEFAULT
//DEFAULT DD SYSOUT=A,DCB=(RECFM=FBA,LRECL=133,BLKSIZE=l330),DEST=U20
```

Figure 2. Sample File IBM_HOST.cfg (This is a configuration file for IBM MVS remote host.)

The Parameter File

The parameter file (parm_file) contains PFX control parameters. These parameters control the operation of the PFXTI process on the Stratus host. A detailed description of the PFX control parameters is given in the “nitiating PFX” on page 9. Examples of parm_files are given in Figure 3 below and Figure 4 below.

```
JOBFILE = mcvax.remote_job -
MS 0 TIMESTAMP -
ID = PFXJOB –
TO = MVAX –
RMOD = PFXRCMD
```

Figure 3. Sample File mcvax.parm (This is a parameter file for Digital VAX/VMS remote host.)

```
TIMESTAMP MS 0 -
JOBFILE = IBM_HOST.remote_job –
ID = PFXJOB -
SEND TO = IBM –
RMOD = PFXRCMD
```

Figure 4. Sample File IBM_HOST.parm. (This is a parameter file for IBM MVS remote host.)

Creating PFX Serviced Stratus Print Queues

PFX serviced print queues are created by using the *create_print_queue* command. The print queue created using this command will reside in the *(master_disk) > system > queues > print* directory. Specify the name of the queue as the print queue name value found in the config_file associated with the remote host's printer. The create_print_queue command has several required fields. Only the name of the queue is required by PFX. The other required fields may contain any valid values as PFX ignores the other characteristics of the print queue except the -form_type. The -form_type field is used by PFX to determine if a banner/title page should be prefixed to the files requested to be printed on this queue. Figure 5 is a display form version of the create_print_queue command.

```
create_print_queue (display form)
----------------------- create_print_queue ----------------------
queue_name:      pfxRMTPNT
page_size:       66
line_length:     85
channels:        1,1
-device_type:    line_printer
-form_type:      standard
-page_density:   6_lines_per_inch
-1ine_density:   10_chars_per_inch
-separators:     yes
-module:
```

Figure 5. Example create_print_queue command (display form)

Parameters

queue_name This required parameter may be any valid 32 character identifier, unique to each print queue. This queue name will be used to specify the remote printer to which a file will be sent. (Refer to "Submitting a File to a Remote Printer" on page 13 for more information.)

page_size This required parameter is any number allowed by command. Currently ignored by PFX.

line_length This required parameter is any number allowed by command. Currently ignored by PFX.

channels This required parameter is any 2 numbers allowed by command. Currently ignored by PFX.

-device_type This parameter may be either *line_printer* or *letter_quality_printer*. Currently ignored by PFX.

-form_type This parameter may be any valid 32 character string. If the user enters the string "banner" or "BANNER", a banner page will be submitted in front of the rest of the file. The contents of this banner page are controlled by the user's Stratus login information and parameters to the PRINT command. For more information about banner page contents, refer to "Submitting a File to a Remote Printer" on page 13.

If any other string is placed in -form_type, the banner page will not be generated. This parameter has no other effects.

A remote printer may be set up to print with or without a PFX generated banner page. This will require setting up 2 print queues, one specifying "banner" as the -form_type parameter, the other not. The user must specify the proper queue when invoking the PRINT command. By defining both queues in a single configuration file (see above), a single PFXTI process may handle both queues.

-page_density This parameter is currently ignored by PFX.

-line_density This parameter is currently ignored by PFX.

The purpose of creating the print queue is to allow the use of the print command to send print files to the remote printers. To place a file on a PFX serviced print queue use the Stratus PRINT command and specify the name of the PFX serviced print queue as the "-queue" argument. For example:

```
print daily_report -queue pfxRMTPNT
```

The example would place a print request message on the PFX serviced print queue named pfxRMTPNT. The file, daily_report, would be sent to the receiving host to be printed by a remote printer.

For more information about using the PRINT command to manipulate the resulting file on the remote printer, refer to "Submitting a File to a Remote Printer" on page 13.

The Job File

The job file contains the control statements required by the remote host to initiate the PFX receiver utility. This allows Automatic Job Submission from the Stratus. A job file is specified using the JOBFILE control parameter within the parameter file. When specified the job file is sent to the BFXJS module that must be running on the receiving host. BFXJS then submits the job file to the receiving host. This should result in the PFX receiver utility connecting back to the PFXTI process. Figure 6 below and Figure 7 below are examples of job files. More information about Automatic Job Submission can be found in the “nitiating PFX” on page 9.

```
$JOB/NOPRINT SYSTEM
$PASSWORD NSCSYSTEM
$SET VERIFY
$DEFINE PFXR_ROOT SYS$SYSDEVICE:[NSC.PFXR]
$SET DEFAULT PFXR_ROOT
$RUN PFXRCV
MSGLEVEL=0
HOST=STRATUS2
ID=PFXJOB
$EXIT
```

Figure 6. Sample job file for Digital VAX/VMS remote host

```
//*
//* THIS JCL IS USED TO START PFX RECEIVER ON IBM HOST
//*
//*
//*
//SYST88 JOB (LG,RECV),'SAMPLE JOB',CLASS=3,
//       MSGCLASS=X,REGION=3M,TIME=99
//*LOGONID  SYST88
//*PASSWORD SYST88
//RESPOND EXEC PGM=PXRTR,
//             PARM='RECEIVE FROM=KPC1 ID=PFXJOB,MSGLVL=0'
//STEPLIB DD   DSN=NSC.PXR.PXRLOAD,DISP=SHR
//SYSPRINT DD  SYSOUT=*,DCB=BUFNO=01
/*
```

Figure 7. Sample job file for IBM MVS remote host

Initiating PFX

When the PFX transmitter (PFXTI) is started, it will (optionally) send the PFX receiver job to the remote host. Figure 8 is a sample job, and it is explained in the paragraphs following the figure. This example is for a Stratus system sending print to a Digital VAX VMS system.

Example PFX Job

This example uses automatic job submission, which assumes that BFXJS is running on the remote host.

Command to start PFXTI on the Stratus host (Issue this command from the PFX directory):

```
start_process 'pfxti  mcvax.parm  mcvax.cfg PFX_mcvax.log'
```

IMPORTANT: All Stratus OpenVOS commands given in this section should be in lower case, as they are shown in the format. OpenVOS and some other operating systems allow mixed cases. To be sure of correctness, enter commands in the exact case given in the examples.

```
THE PARAMETER FILE mcvax.parm:

      JOBFILE = mcvax.remote job -
      MS 0 TIMESTAMP -
      ID = PFXJOB –
      TO = MVAX –
      RMOD = PFXRCMD

THE JOB FILE mcvax.remote_job:

      $JOB/NOPRINT SYSTEM
      $PASSWORD NSCSYSTEM
      $SET VERIFY
      $DEFINE PFXR_ROOT SYS$SYSDEVICE:[NSC.PFXR]
      $SET DEFAULT PFXR_ROOT
      $RUN PFXRCV
      MSGLEVEL=0
      HOST=STRATUS2
      ID=PFXJOB
      $EXIT
```

Figure 8. Example of Automatic Job Submission

In the example above PFXTI is invoked stipulating the parameter file as *mcvax.parm*, the configuration file as *mcvax.cfg*, and the log file as *PFX_mcvax.log*. The configuration file and the log file are not specific to the discussion of Automatic Job Submission. The configuration file is discussed in “Using PFX” on page 3. The log file will contain the various messages PFX produces during operation. If a log file name is specified the log file will be opened using implicit locking. This will allow the log file to be viewed using the Stratus DISPLAY command while the PFXTI process is running on the Stratus host. If a log file name is not specified the log file will be named pfxti.out.

Control Statements and Parameters

The file transfer is handled by a modified BFXTI module called PFXTI. When the PFXTI process is started a parameter file (parm_file) is specified. The JOBFILE control parameter found in the parm_file tells which file is to be sent to BFXJS on the remote host. In the example above the job file is mcvax.remote_job.

The PFXTI module uses many of same control statements as BFXTI with some exceptions. Several BFXTI parameters should not be used since they do apply to the transfer of print files. Table 1 below lists the parameters for the H892TV PFX transmitter. The paragraphs following the Table 1 describe all the parameters in detail.

[BLOCK xxxxx]	size of block to send
ID xxx	PFX application name
[JBLOCK xxx]	size of block during remote job transfer
[JID xxx]	offered name of BFXJS job
[JOBFILE xxx]	name of remote job input file to send
[MSGLVL xx]	severity of messages to be logged
[NOSUBMIT]	manual submission of PFX receiver job
[NOTIME]	do not print timestamp on messages
[SEND]	send a file (improves readability)
TO xxx	destination host
[TIMEOUT]	maximum time for job to be offered
[TIMESTAMP]	print timestamp on messages
RMOD	PFXRCMD

Table 1. Summary of PFXTI Control Parameters

BLOCK This optional parameter specifies the maximum size of the buffers of data to be sent to the remote host. Normally this will be specified as a fairly large value. Use the default value. The default is 8192 bytes.

The value specified for the BLOCK control parameter (or the default value) is not necessarily the block size that is used during file transfer. The minimum of the block sizes requested by the PFX transfer/server pair in a transfer is the size actually used. However, the block size requested by the PFX transfer program can be greater than was specified by the user's BLOCK control parameter.

ID This required parameter specifies a unique identifier for the program in the remote host. The application name specified by the ID parameter may be any uppercase alphanumeric string, one to eight characters in length. This parameter must agree with the destination host job.

JBLOCK(JB) This optional parameter specifies the block size to use in exchanging the job file with the remote host. Use the default value. The default is 800 bytes.

JID This optional parameter specifies the offer id of the BFXJS component on the remote host. Use the default value BFXJS.

JOBFILE This optional parameter is not used if NOSUBMIT is specified. Specifies the name of the job file. Used for Automatic Job Submission of the PFX receiver job on the remote host.

MSGLVL(MS) This optional parameter specifies the type of messages that the user wants to see in the PFX output file. This parameter has the following values.

- **0** This value indicates all messages will be shown.
- **4** This value indicates only the file start/end messages will be shown.
- **8** This value indicates only the important messages will be shown.

NOSUBMIT(NOSUB) This optional parameter specifies manual submission of the PFX receiver job on the remote host.

NOTIME This optional parameter specifies that no timestamp be printed with the PFX messages. If this parameter is not supplied, a timestamp may or may not appear, depending on the selected default value.

SEND This optional parameter indicates that the file transfer will be from the local host to the remote host. This is a required parameter on some versions of PFX. The Stratus version allows this for readability, but it is not required.

TO This required parameter is the destination host name as defined in the local NetEx.

TIMEOUT This parameter is only required if NOSUBMIT specified. This parameter specifies the maximum amount of time (in seconds) that PFXTI will wait for the PFX receiver job to be initiated on the remote host.

TIMESTAMP This optional parameter selects the printing of a timestamp on the PFX messages. The timestamp will give the time of day that the message was sent to the print file. If this parameter is not supplied, a timestamp may or may not appear, depending on the selected default value.

RMOD This required parameter must be specified as PFXRCMD.

Stratus Parameters Example

The following is an example of the parameters for the Stratus host.

```
MS 0 SEND TO IBM ID PFXJOB RMOD PFXRCMD
```

This set of parameters instructs PFXTI to print all messages about each file transferred, send to host IBM, offered as PFXJOB.

Note that in most examples of parm_files in this manual that two devices are used to improve readability. The first is the equal sign (=), it may be omitted. The second is the minus sign (-), which is used as a continuation symbol. Placed at the end of a control statement line, it directs PFXTI to examine the next record of the parm_file for more control parameters.

Job Submission

There are two methods by which the PFX receiver job may be initiated on the host which is to receive the print files from the Stratus host; Automatic Job Submission and Manual Job Submission.

Automatic Job Submission is the method illustrated in the example in Figure 8 on page 9. The PFX receiving job is prepared as a file on the transmitting host (the job file) and sent to the remote host's BFXJS program. BFXJS is a component of BFX and would have to be executed on the remote host. BFXJS receives the job file and submits it for scheduling on the remote host's operating system. When the started job invokes the PFX receiver program, it connects to PFXTI and print transfer begins.

The manual submission method requires that the PFX receiver job on the remote host be started manually, after PFXTI is started on the local Stratus host. PFXTI should be started using the NOSUBMIT and TIMEOUT control parameters. No job file needs to be created.

More detailed description about file transfer can be found in the H891 BFX Utility for the Stratus, IBM System/88, and Olivetti CPS Computers Software Reference Manual. For PFX, The program PFXTI is substituted for the BFXTI program and functions in the same manner.

Invoking PFXTI on the Stratus

To start PFXTI on the Stratus a start_process command should be issued from the PFX directory:

```
start_process 'pfxti parm_file config_file log_file'
```

This command will start the PFXTI program using the parameter file, configuration file and log file specified. The log file will contain the PFX messages. If a log file name is specified the log file will be opened using implicit locking. This will allow the log file to be viewed using the Stratus DISPLAY command while the PFXTI process is running on the Stratus host. If a log file name is not specified the log file will be named pfxti.out.

Submitting a File to a Remote Printer

The following steps must be done to submit a file to a remote printer:

1. A configuration file, as described in “Using PFX” on page 3 must be created and properly named for the print queue servicing the remote printer to be used.
2. The user must decide whether to use automatic job submission from the Stratus to the remote host. If the user wishes to use automatic job submission, a file of JCL commands for the remote host must be created on the Stratus and referenced in the parameter file (see 3). Otherwise the remote host must run a PFX receiver job to accept the submitted job.
3. A parameter file for the PFX job to be submitted to the local PFXTI process must be created as specified in “Using PFX” on page 3.
4. A PFXTI process must be running, invoked with the proper configuration and parameters files. A job file must be supplied, if automatic job submission is used.
5. After steps 1 through 4 have been completed, the user may submit as many files to the printer as desired using the Stratus PRINT command.

As long as the PFXTI process initiated in step 4 continues to run, only the PRINT command is required to submit a file.

The PRINT Command

Figure 9 is a display form of a Stratus print command:

```
------------------------------ print ------------------------------
file_names:          submit_file.doc
-queue:              pfxRMTPNT
-title:              A title line. Maximum length is 132 characters.
-destination:        File destination key. Maximum length is 132 characters.
-module:
-header:
-footer:
-index:
-defer_until:
-interpret_tabs:
-exception_handling: replace
-copies:             1            -line_numbers:         no
-delete:             no           -raw:                  no
-page_breaks:        yes          -use_fortran_controls: no
-indentation:        0            -page_size:
-top_margin:         3            -bottom_margin:        3
-line_length:                     -wrap:                 no
-queue_priority:                  -single_sheet:         no
-notify:             no
```

Figure 9. Display Form of a Stratus Print Command

PRINT Parameters

file_names The relative or full path name of 1 or more existing disk files to be printed. Star names may be used. The print command will submit all files matching the path names or star names separately to PFXTI.

-queue The name of a remote print queue, previously defined using the “create_print_queue” command, as described in “Using PFX” on page 3.

-title If the queue designated in the “-queue” parameter was defined as a Banner queue, this line is submitted as the title line field of the banner page. This string may be up to 132 characters long. Note that this field may be left blank, even if the queue is declared as a Banner queue.

-destination If the queue designated in the *-queue* parameter was defined as a Banner queue, this line is submitted as the “Destination” field of the title page. This string may be up to 132 characters long. Note that this field may be left blank, even if the queue is declared as a Banner queue.

-module The Stratus module upon which the print queue exists. This allows submittal of files from sessions logged-in to Stratus modules other than the one on which the queue is defined (and the PFXTI process runs).

All other PRINT parameters are ignored.

Banner Page

If a queue is defined as having a Banner queue, the page as shown in Figure 10 below will be printed before any other lines of the file are printed.

```
--PFX PRINT FILE TRANSFER UTILITY FILE--PFX PRINT FILE TRANSFER UTILITY FILE--

 PPPPPP  FFFFFFFF XX    XX        HH    HH  888888   999999   22222   TTTTTTTT VV    VV
PP    PP FF       XX    XX        HH    HH 88    88 99    99 22   22     TT    VV    VV
PP    PP FF        XX  XX         HH    HH 88    88 99    99       22     TT    VV    VV
PP    PP FFFFFFF     XX           HHHHHHHH  888888   9999999     22      TT    VV    VV
PPPPPPP  FF          XX           HH    HH 88    88        99    22      TT    VV    VV
PP       FF        XX  XX         HH    HH 88    88        99   22       TT     VV  VV
PP       FF       XX    XX        HH    HH 88    88        99  22        TT     VV  VV
PP       FF       XX    XX        HH    HH  888888    99999  2222222     TT       VV

--PFX PRINT FILE TRANSFER UTILITY FILE--PFX PRINT FILE TRANSFER UTILITY FILE--




FILE NAME:
  submit name line
  (additional file name line, if needed)
  (additional file name line, if needed)
  (additional file name line, if needed)


PRINT REQUESTED BY:
  person_name.group_name


ROUTE TO:
  File destination key. Maximum length is 132 characters.
  (additional destination line, if needed)


  A title line. Maximum length is 132 characters.
  (additional title line, if needed)
```

Figure 10. Example of a Banner Page

This page is following by a “Top of Page” control record so that the submitted file will begin at the top of the form page.

Using the Command Macros

It is effective to set up command macros to perform functions tailored to your environment. Such command macros combine commands to select or create environment- and user-specific parameters, configuration and remote job startup files, as well as tailored input to the PRINT command. These macros may also start a PFXTI process or check to see if such a process is active.

Several files are included in the distribution in the sub-directory, **sample**. These include sample configuration (.cfg), parameter (.parm) and remote job submission (.remote_job) files for an IBM host machine running MVS (IBM_HOST) and a MicroVAX machine running VMS (mcvax). These files are used in the command macros *start_IBM_HOST* and *start_MCV AX* to start up a PFXTI processes.

The command macro, start_IBM_with_write, uses the Stratus Line Editor to write the configuration, parameters and remote job files and start the PFXTI process. This allows all parameter modifications for PFXTI to be done in this macro file, in any are needed. Note that this macro, if invoked very often, will create a number of temporary files.

The command macros, print_IBM and print_MCVAX send prints to the remote printers in IBM_HOST and MCVAX files. The same effect may be gained using a Stratus abbreviation. Use the command macro, print_3800, for printing to a remote printer with a PFXTI process begun using “start_IBM_with_write”.

Operator Interface

The operator interface is available after the connection with the receiving host has been established. The interface allows the operator to control the operation of PFXTI from the main console or other terminal session. The commands are detailed in this section.

The Operator Interface

Operator requests may display statuses and set various conditions.

To enter operator commands run the program pfx which, after running *pfx.install.cm*, resides in the PFX directory. The link that points to the PFX directory is: *(master_disk) > PFX*.

To run the program pfx, the name of the operator queue to which pfx is to attach itself must be supplied. The name of the operator queue may be given as a parameter. If it is not given as a parameter the pfx program will ask for it. This parameter should specify the operator queue to which the desired PFXTI program is attached.

The pfx program will also accept a command as the second parameter. If a command parameter is given the pfx program processes the command specified and terminates. If one wishes to issue more than one command do not specify the command parameter.

```
pfx operator_queue_name command_parameter
```

Examples

```
pfx mcvax_oper display all
```

or

```
pfx mcvax_oper
```

IMPORTANT: All commands given in this section should be in lower case, as they are shown in the format. In text the commands are given in upper case for editorial reasons.

HELP Command

The HELP command displays a list of the PFX operator commands and a brief description of their functions.

HELP command format:

Command	Parameters
help	

help This required parameter specifies the command verb. There are no parameters for the HELP command.

HELP Command Results

If the operator issues the PFX command HELP, the following information is displayed:

```
Available PFX commands.
end ..................... quit PFX Operator Interface session
display <all> .......... display current status
halt <que> ............. halt specified queue
halt all ............... halt all queues
start <que> ............. start specified queue
start all .............. start all queues
drain ................... halt PFX after transfers
kill .................... abort PFX immediately
where: <all>- all ...... display open & opendata images also
       <que>- #tag ..... # followed by queue tag number
            - quename .. the queue name
```

Figure 11. Help Display

DISPLAY Command

The display command displays the current status of PFXTI and of each queue configured for PFXTI.

DISPLAY command format:

Command	Parameters
display	[all]

display This required parameter specifies the command verb.

all This optional parameter specifies that the open & opendata images for each queue configured be displayed.

DISPLAY Command Results

The information displayed by this command indicates the status of PFXTI. The general format for the information is shown in Figure 12 below and Figure 13 below.

```
Current PFX status to host MVAX
-Tag-  -Status-   -Reccnt-  -Queue-
   0    normal          0   pfxRMTPNT
   1    normal          0   pfxMASER
   2    normal          0   pfxPHASER
```

Figure 12. DISPLAY Command Display

```
 Current PFX status to host MVAX
 -Tag-  -Status-   -Reccnt-  -Queue-
    0    normal          0    pfxRMTPNT
 -(2) open & opendata image(s)-
$01RMTPNT
%/QUEUE=LASER
 -Tag-  -Status-   -Reccnt-  -Queue-
    1    normal          0    pfxMASER
 -(2) open & opendata image(s)-
$01MASER
%/QUEUE=MASER
 -Tag-  -Status-   -Reccnt-  -Queue-
    2    normal          0    pfxPHASER
 -(2) open & opendata image(s)-
$01PHASER
%/QUEUE=PHASER
```

Figure 13. DISPLAY ALL Command

Tag This is a number which relates to the sequence of the queue in the Group Configuration File.

Status This is the status of the specific queue:

normal This indicates PFX is waiting to send files. In the status field, NORMAL indicates the queue is ready to transfer print files when its turn in the round-robin selection arrives and a print request is in the named queue. This status does not indicate if any print requests are in the queue.

active This indicates PFX is sending files to remote host. The status of ACTIVE indicates that print is currently being transferred to the destination host from this queue.

halted This indicates PFX was halted by the operator. The status of HALTED indicates that print will not be transferred from this queue because the operator requested it via a HALT queue request. To restart transferring from this queue, the START queue request should be issued.

Reccnt This is the number of total records sent for this queue.

Queue This is the name of the print queue PFXTI services.

 # open & opendata image(s) The following (#) lines are the images sent to the PFX receiver on the destination host prior to transfer of the print files specified by the print requests in the queue.

DRAIN Command

The DRAIN command tells PFXTI to terminate the connection with the destination host and terminate the current run when the file being transferred from the active queue is sent. Print requests remaining in the configured queues will not be serviced. PFXTI will terminate when the file currently being transferred is completed. The PFX operator interface will also terminate after issuing a DRAIN command.

DRAIN command format:

Command	**Parameters**
`drain`	

drain This is the required verb for this command. There are no parameters for the DRAIN command.

END Command

The END command is used to end an operator interface session without issuing an operator command. Note: you may also use *`QUIT`* or by pressing the < Ctrl > and < D > keys simultaneously.

END command format:

Command	**Parameters**
`end`	

end This is the required verb for this command. There are no parameters for the END command.

HALT Command

The HALT command is used to stop servicing the print requests found in a specific queue or all queues. If the specified queue is active the HALT command will go into effect at the end of the file currently being transferred. The connection to the destination host remains active and the servicing of print requests (transfer of files) will restart when a START command is issued.

HALT command format:

Command	Parameters

`halt`	`|all      |`
	`|tagnumber|`
	`|quename  |`

halt This is the required verb for this command. The following values can be used when issuing the HALT command.

- **all** Halt all configured queues.
- **tagnumber** Halt the queue specified by the tag number.
- **quename** Halt the queue specified by the queue name.

KILL Command

The KILL command aborts PFXTI immediately. This is for emergency or debug use only. The PFX operator interface will also terminate after issuing a KILL command.

KILL command format:

Command	Parameters
`kill`	

kill This is the required verb for this command. There are no parameters for the KILL command.

START Command

The START command is used to resume servicing the print requests found in a specific queue or all queues. (previously HALTed)

START command format:

Command	Parameters
Start	|all | |tagnumber| |quename |

start This is the required verb for this command. The following parameters can be used when issuing the START command.

all Start all configured queues.

tagnumber Start the queue specified by the tag number.

quename Start the queue specified by the queue name.

Internal Operation

Introduction

When the PFXTI program is started on the Stratus host the following sequence of events occurs:

- The config_file and the parm_file are examined and external connections to the operator queue and print queues are made.
- The job file (if specified in the parm_file) is sent across to the destination host and the spawned job connects back to the initiator on the Stratus host.
- A print file is selected.
- Open processing occurs.
- The print images are sent.
- Close processing occurs.

Each of these will be discussed in the following sections.

Reading the Configuration File and the Parameter File

The configuration file (config_file) contains the names of the queues needed by PFXTI to operate in a Stratus environment. PFXTI gets the name of the operator queue from the first record in the config_file.

PFXTI gets the print queue name(s) from the queue name record(s) that precedes the open image record(s). At this time the open image(s) and the open-data image(s) are loaded into the appropriate array structures for use by PFXTI in communicating with the destination host. For more information on the config_file refer to “Using PFX” on page 3.

The parameter file (parm_file) is examined for the various PFX control parameters that may be specified by the user. For more information on the parm_file refer to “nitiating PFX” on page 9.

Job Transfer

If automatic job submission is desired, the job file specified in the parm_file is sent to the receiving host. PFXTI then waits until the job reaches the receiving host and connects back to PFXTI. Once the connection with the receiving host is open, PFXTI is ready to start sending files from the Stratus to the receiving host.

Sending Print Files

When the record module is called for the first record of a new file, it must determine which file to print and open that file to get the records. The record module determines which file to print by the messages on the configured print queues. The record module proceeds through its list of print queues in a round-robin fashion. Each of the queues that is not HALTed is examined for print requests. If there is a print request, the print request message is examined for the name of the file to print, and the file is opened. If there is no print request in the queue, the next queue in the list is examined. The record module services one print request from each configured print queue (that is not HALTed), and moves on to the next print queue in the list. If the print re-

quest is from a PFX serviced print queue with a form_type of “banner” or “BANNER”, the banner records to be prefixed to the requested print file are initialized. For more information on PFX serviced print queues, refer to the “Using PFX” on page 3.

Open Processing

When a file is obtained, the first record sent across to the receiving host is the open image. The image format is a dollar sign flag character (‘$’) followed by two fields. The first field of 2 characters is a right justified zero filled numeric value that is a count of the open-data images to follow. The second field is the dataname field. It has a maximum size of 8 characters. The value of this field is usually determined by the requirements of the receiving host. The open image has a BUFLEV of 14. The next records that are sent across to the receiving host are the open-data images. The number of open-data images is specified by the open image. The image format is a percent sign flag character (‘%’) followed by the open-data defined by the requirements of the receiving host. An open-data image has a BUFLEV of 12. When the last open-data image has been sent print image processing begins.

Print Image Processing

After the last open-data image is sent, the banner records are sent if appropriate. The banner records are sent as the first few records of the file to be printed. An ANSI page eject is sent with the last banner line. If a banner is sent the first actual record of the print file has an ANSI carriage suppression control character prefixed to the image.

The basic flow of print processing is very simple. Each record is read and the proper ANSI control character is prefixed to the print image. In the case of Stratus sequential files a blank control character is used. A print image has a BUFLEV of 1. When an End of File (EOF) is encountered close processing begins.

Close Processing

When the EOF is encountered, a record with an image of “/EOF” and a BUFLEV of 13 is returned. This is a close image. This is accompanied by a message indicating the number of lines sent. The message forces the last buffer of data (including the EOF) to be sent to the receiving host.

Print File Received Acknowledgement

At the end of Close Processing for each print file, PFXTI will wait for an acknowledgement message from the receiving host. This indicates that the transfer actually took place. Only when this acknowledgement message is received will PFXTI continue processing files.

When No Print Files are Available

When no print files are available on any of the configured print queues, PFXTI waits for a short time, then examines the print queues again for print requests.

Technical Data

Overview

The protocol used by PFX is based on BFX protocol. In a sense it is a layer placed on top of BFX. The BUFFER LEVEL (BUFLEV) associated with the BFX header is used to determine the meaning of the associated images. The associated images fall into four classes; open, open-data, print-data, and close.

Each image is a flag or control character followed by data. Each of the image classes, except print-data, has a unique flag character which is used only for debug as discussed in “Use of Flag Characters” on page 27. The print images have an ANSI printer control character.

The basic flow for each file to be printed is to send an open image, send open-data images (if present), send the print-data images, and send a close image. Each of these images is discussed below.

The Open Image

The first image sent from the sending PFX to the destination PFX is an open image. It is also sent to open a new file after the previous file is closed. The image format is a dollar sign flag character (‘$’) followed by two fields. The first field of 2 characters is a count of the open-data images to follow. This is followed by the group or data set name.

BUF LEV	BUF LEN	IMAGE 1234.....11..... 81
14	81	$NNdataname

Column 1 This is the flag character of dollar sign ($).

Columns 2 and 3 This is a two character field that represent the count of open-data images to follow. This is a right-justified zero-filled numeric value. The value ‘00’ indicates no open-data images follow this image. The value is often limited by the destination host to a fairly small number (about 5).

Columns 4 to 11 This is the dataname. The dataname is an eight character parameter passed to the destination host.

Columns 12 to 81 These columns are currently undefined, and should be set to blanks to allow for future expansion. These may someday be used for passwords, userid, or other data.

Open-Data Images

Zero or more open-data images are passed after the open image. The content of these images is unspecified past the flag character. The meaning of these images depends on the host that processes them.

BUF LEV	BUF LEN	IMAGE 12..... 81
12	81	%OPEN-DATA

Where image is defined as follows:

Column 1 This is the flag character of percent sign (%).

Columns 2 to 81 These columns are defined by the receiving host. Refer to the PFX manual for the receiving host for details.

Print Images

The real data to be passed are the print-images. The print-images are in ANSI format. Column 1 has the print control character and the rest of the columns contain the print image. The total image may be from one to the maximum length print line (normally 128, 132, or 160 plus one for the control character). Note that in addition to the normal ANSI control characters, sometimes other characters must be sent.

BUF LEV	BUF LEN	IMAGE 12..... NN
1	NN	CPRINT-DATA

Where image is defined as follows:

Column 1 This is the print control character (C). It comes from the ANSI-DEFINED set of ‘ ‘, ‘0’, ‘-’, ‘+’, and ‘1’. Others in the range ‘2’ through ‘9’ are sometimes used.

Columns 2 to NN These columns contain the print image itself. The buffer length indicates how long the image is. A buffer length of one indicates there is only a control character and no image. This often occurs on a page eject (‘1’).

Close Image

The close image indicates the end of a print file. This image should initiate the close and perhaps the free process for the print file.

BUF LEV	BUF LEN	IMAGE 12.4..... 81
13	NN	/EOF

Where image is defined as follows:

Column 1 This is the flag character of slash (/).

Columns 2 to 4 These columns contain 'EOF'. This character string is passed more for documentation than anything else. It serves no real function.

Columns 5 to 81 These columns are currently undefined and will be set to blanks.

Termination Sequence

When a close is caused by a DRAIN command, the close image is followed by a termination sequence. This sequence has a BUFLEV of 15 and a BUFLEN of 0.

BUF LEV	BUF LEN	IMAGE 12.4..... 81
15	0	

The image itself is blank.

Use of Flag Characters

The flag characters on the open, open-data, and close images are defined to aid in testing. A new implementation may be tested without being directly connected to a current implementation. To test a new implementation, the current implementation should transfer several print files onto tape by specifying a normal record module as opposed to the special record module. This tape can then be input to the new implementation and sent across a BFX link to test the new implementation's receiving record module. The opposite can be used to test a sending module.

Once the implementation is debugged, these special characters can be ignored. Or, they can be left in to make saving of print files to tape easier.

The Total PFX Data Stream

An example of a total PFX transfer follows:

BUF LEV	BUF LEN	IMAGE 1..... 81
14	81	$01RMTPRT
12	56	%/QUEUE=LASER
1	37	This is the first image to be printed
1		\
1		/
1		\
1	37	To this is the last image to be printed
13	81	/EOF
		.
		.
		.
		.
		.
		(Repeat this until all transfers are done.)

Appendix A. PFX Messages

PFX generates a variety of messages during the course of execution. Shown below is a complete list of messages with the suggested response for each. Also shown is the severity of the message (as compared with the MSGLEVEL parameter to determine if the message should be logged) and the modules that may issue the message.

```
BFXnnns message text
```

BFX Indicates that this is a BFX/PFX message.

nnn Message number. The messages are listed in this order.

s Message severity. The following codes are used:

- **I** Informational
- **E** Error
- **S** Severe error
- **F** Fatal error

message text The message text.

The following are the messages issued by modules which are common to BFX and PFX. Messages numbered BFX9nn are unique to PFX.

BFX001F Job submission failed.

Message Level: 15 (Fatal error)

Explanation: Transfer initiate was unable to submit a job to the remote host. The BFX program will terminate.

Programmer Response: The reason for job submission failure will be indicated in a pre-vious message. Take the corrective action indicated by the previous message description.

BFX002F BFX execution aborted.

Message Level: 15 (Fatal error) in program BFXTI.

Explanation: The BFX program has detected a condition that makes it impossible to successfully continue execution. Generally, this is due to a failure to connect to the matching BFX program on the remote host. The BFX program will terminate.

Programmer Response: The reason for the terminal failure will be indicated in previous BFX messages. Take the corrective action indicated by the previous message description.

BFX006F “xxxxxxxx” not recognized in control statement.

Message Level: 15 (Fatal error)

Explanation: When processing the parameters specified in the PARM field or a SYSIN control file, an unrecognizable parameter was found. “xxxxxxxx” contains the eight characters including and following the parameter in error. Generally, BFX execution will stop as indicated in subsequent messages.

Programmer Response: Correct the syntax error and resubmit the BFX jobs.

BFX010F TO= or FROM= host name omitted.

Message Level: 15 (Fatal error)

Explanation: The control parameters for the first statement of either a BFXTI or BFXTR run did not specify the name of the opposite host to allow a connection to take place. Furthermore, a default host was not specified during installation of the BFX program.

Programmer Response: Supply the TO= or FROM= parameter required and rerun the job.

BFX011F ID = BFX identifier omitted.

Message Level: 15 (Fatal error)

Explanation: The ID parameter which uniquely identifies the BFX job on the initiating machine was not supplied. There is no default for this parameter.

Programmer Response: Supply the ID = parameter and rerun the job.

BFX012F Specified buffer size too large.

Message Level: 15 (Fatal error)

Explanation: The BLOCK= or JBLOCK = parameter specified a value greater than 60K bytes.

Programmer Response: Correct the BLOCK= or JBLOCK = parameter and resubmit the job.

BFX013F "xxxxxxxx" is not a SEND/RECV/SUBMIT command.

Message Level: 15 (Fatal error)

Explanation: The first operand in a control statement was not SEND, RECEIVE, SUBMIT or a suitable abbreviation. Processing is terminated.

Programmer Response: Correct the erroneous control statement and resubmit the job.

BFX020F NetEx Communications Subsystem is not running.

Message Level: 15 (Fatal error)

Explanation: When the BFX programs attempted to establish communications, they found that the NetEx subsystem was not running in the local host at the current time. Execution is terminated, as transfer of data is not possible at the current time.

Programmer Response: Consult with computer operations to determine if NetEx should have been active at the time of the BFX run. Resubmit the job when NetEx is active.

BFX021F NetEx Communications Subsystem is being shut down.

Message Level: 15 (Fatal error)

Explanation: During the connection process or in the middle of a job or file transfer, a BFX program received an indication that NetEx is abruptly terminating. This can be caused by operator cancellation of NetEx or internal NetEx software problems. Execution is terminated as no further data transfer will be possible until NetEx is restarted.

Programmer Response: Consult with operations to determine the cause of the NetEx shutdown. Resubmit the job when NetEx is once again active. File cleanup procedures may be needed if a file transfer was in progress at the time of the failure.

BFX022F NetEx systemwide capacity exceeded.

Message Level: 15 (Fatal error)

Explanation: During the process of establishing communications, NetEx returned an indication that it cannot handle a new connection because a limiting number of NETE connections are already in use. Processing is terminated as it is uncertain when the condition will clear up.

Programmer Response: Inform operations or the NetEx system programmer of the problem. If the problem is frequent, NetEx will have to be given more memory resources to handle the new connections.

BFX023F Remote BFX program did not start.

Message Level: 15 (Fatal error)

Explanation: The corresponding BFX program was not present when required. If a BFXTI program issued this message, then it waited for the TIMEOUT= interval without being connected to by the BFXTR program. If a BFXTR program issued the message, then the originating BFXTI program is no longer present to be connected to.

Programmer Response: This is the error that will commonly occur if errors are made in the BFX setup. The most frequent causes of this error are:

- Job Control Language errors in the BFXTR job prevented successful execution of the BFXTR program.
- The TIMEOUT= value of the BFXTI job did not allow sufficient time for the BFXTR job to progress through the execution queue and connect to the originating program.
- The ID = fields of the two jobs did not agree with one another.

BFX024F Remote host ceased communicating.

Message Level: 15 (Fatal error)

Explanation: During the transfer of a file or a job, the BFX program received an indication from NetEx that all communications with the other host have ceased. This is generally caused by a system crash on the remote host, abrupt failure or operator cancellation of NetEx on the remote host, or a hardware failure in the physical connection between the two hosts.

Programmer Response: Consult with operations to determine the cause of the failure. Resubmit the job when the connection is once again active. File cleanup procedures may be needed if a file transfer was in progress at the time of the failure.

BFX025F Remote BFX aborted execution.

Message Level: 15 (Fatal error)

Explanation: During the transfer of a file or a job, the BFX program received an indication from NetEx that the BFX program on the remote host abnormally terminated. Processing is terminated as no further transfer will be possible.

Programmer Response: Examine the output from the job on the remote host to determine the cause of the failure. Correct the error and resubmit the jobs.

BFX026F Remote host NetEx not present.

Message Level: 15 (Fatal error)

Explanation: When an attempt was made to connect to the corresponding BFX program, the NetEx subsystem on the local machine reported that no NetEx subsystem was present on the remote host. Processing is terminated as no data transfer is possible.

Programmer Response: Consult with operations to determine if NetEx should have been present on the remote host. Rerun the jobs when NetEx is available on both hosts.

BFX027F Specified host is not on the network.

Message Level: 15 (Fatal error)

Explanation: When BFXTI was attempting to submit a job, or BFXTR is attempting to connect back to the BFXTI program, NetEx reported that the name of the host processor specified is unknown.

Programmer Response: The probable cause of this error is due to an erroneous TO= or FROM= parameter. A second possibility is that the installation has changed the host names used by NetEx. Correct the error and resubmit the job.

BFX028F Access to specified host denied.

Message Level: 15 (Fatal error)

Explanation: When BFXTI was attempting to submit a job, or BFXTR is attempting to connect back to the initiating BFXTI program, NetEx informed the program that access to the specified host has been denied by the local computer operator. The run is terminated as communications between the two hosts cannot take place.

Programmer Response: Computer operations is using a feature of NetEx that can temporarily prohibit access to a host that is undergoing maintenance, performing classified or confidential work, and so on. Consult with operations to determine when communications with the specified host will once more be permitted. Resubmit the jobs at that time.

BFX029F Not authorized to use NetEx.

Message Level: 15 (Fatal error)

Explanation: When a BFX module attempted to contact NetEx, it was informed by NetEx that the BFX program or user account is not authorized to use NetEx.

Programmer Response: Consult with computer operations, systems, or accounting to determine if the restriction on NetEx can be removed. Resubmit the job when the restriction has been eliminated.

BFX030S NetEx error: NRBSTAT= ssss, NRBIND =iii.

Message Level: 12 (Severe error)

Explanation: NetEx has reported an error to the BFX program that is not an expected condition. “ssss” is the four digit status code returned by NetEx; “iii” is the data or event indication type. The transfer of this file will be aborted. If hatched execution is being used, BFX will attempt to transfer subsequent files.

Programmer Response: Refer to NetEx documentation to determine the cause of the error. Frequently this error may be caused by earlier, more comprehensible errors. If other BFX error messages precede this one, take the corrective action suggested by those messages.

BFX040F NetEx Communications Subsystem terminated.

Message Level: 15 (Fatal error)

Explanation: During the process of transferring a file or batch job, BFX discovered that the local NetEx Communications Subsystem is abruptly terminating. This could be caused by operator cancellation of NetEx or NetEx internal software problems.

Programmer Response: Consult with operations to determine when the local NetEx will once more be available. Resubmit the jobs when NetEx is running.

BFX042S BFX program timed out to NetEx.

Message Level: 15 (Severe error)

Explanation: The BFX program suspended execution for a sufficiently long time that NetEx terminated the connection between the two BFX programs. The transfer of this particular file is aborted. If hatched execution is being performed, then BFX will attempt to transfer the remaining files.

Programmer Response: This is generally due to difficulties in system tuning, or exceptionally long delays in such activities as mounting tape volumes other than the first in a multivolume file. If the problem was not caused by operational errors, the NetEx system programmer may have to adjust the NetEx READTO= parameter upward to accommodate the long delay.

BFX043S BFX Protocol error -- premature disconnect.

Message Level: 12 (Severe error)

Explanation: The remote BFX program terminated the connection at a time that was not anticipated by the local BFX program.

Programmer Response: This is an internal BFX error. It should be brought to the attention of installation BFX support personnel.

BFX044S Remote BFX program timed out.

Message Level: 15 (Severe error)

Explanation: The remote BFX program suspended execution for a sufficiently long time that the remote NetEx broke the connection between the two BFX programs. The transfer of this particular file is aborted. If hatched execution is being performed, then BFX will attempt to transfer the remaining files.

Programmer Response: This is generally due to difficulties in system tuning, or exceptionally long delays in such activities as mounting tape volumes other than the first in a multivolume file. If the problem was not caused by operational errors, the NetEx system programmer may have to adjust the NetEx READTO = parameter on the remote host to accommodate the long delay.

BFX050F BFX Protocol error -- run aborted.

Message Level: 15 (Fatal error)

Explanation: One of the two BFX control modules detected invalid protocol in the messages exchanged between themselves. The BFX program will abend.

Programmer Response: This is an internal BFX error that should be brought to the attention of BFX support personnel.

BFX101I File ffffffff done; nnnn records sent.

Message Level: 6 (Informational)

Explanation: The entire print file has been sent to the receiving PFX.

Programmer Response: None.

BFX102S File ffffffff permanent I/O error

Message Level: 12 (Severe error)

Explanation: A permanent I/O error reading or writing a file during transfer of the job or transfer of the file. Transfer of this file is aborted. If hatched transfer of files is being performed, BFX will attempt to transfer the rest of the specified files.

Programmer Response: Determine the cause of the I/O error. If the error can be corrected, rerun the BFX jobs.

BFX110S Cannot open input file ffffffff.

Message Level: 12 (Severe error)

Explanation: The standard sending record module attempted to open a file named “ffffffff”. The open did not succeed. Transfer of this file is aborted. If hatched transfer is used, then BFX will attempt to transfer the remaining files.

Programmer Response: Correct the reason for the open failure. Transfer the file that was unsuccessfully sent.

BFX121S BLOCK= too small for maximum logical record size.

Message Level: 12 (Severe error)

Explanation: When the two BFX programs established a connection with one another, the BLOCK= parameter as determined by the user-specified parameters was insufficient to hold the maximum logical record length specified by the other BFX. This message may also be issued if one of the two BFX programs failed to open its file and the other program had a maximum logical record length greater than 250 bytes. In that case, the real error message will follow the BFX121S message.

Programmer Response: Adjust the BLOCK= parameter in one of the two BFX programs so it is sufficient to transfer the file; or correct inability of one BFX program to open a file.

BFX124S MODE= parameters inconsistent for both BFX jobs.

Message Level: 12 (Severe error)

Explanation: In a BFX program pair, one side had MODE=BIT specified and the second had MODE= CHAR. The transfer of the file is aborted; if more files remain to be transferred in a hatched BFX run, BFX will attempt to transfer the subsequent files.

Programmer Response: Correct the erroneous specification and transfer the files that were not sent.

BFX206E File ffffffff transfer aborted; nnnn records sent.

Message Level: 10 (Error)

Explanation: The transfer of this file is aborted. The print file aborted remains in the backup directory so it may be transferred again later.

Programmer Response: Correct the error that caused the abort in the first place. Transfer the file again.

BFX220I Sending file ffffffff.

Message Level: 4 (Informational)

Explanation: The sending BFX has successfully opened the input file and is ready to begin transfer of data. Transmission will begin as soon as this message is issued.

Programmer Response: None.

BFX300I Offering ssssssss; Block out size nnnn.

Message Level: 2 (Diagnostic)

Explanation: The BFXTI transfer initiate program has issued a NetEx SOFFER to wait for the BFXTR program to connect to it. The name offered is “ssssssss,” which will be the specified ID = of the user’s input parameters. The expected transfer is a receive operation; the incoming block size that the receiving BFX would like to used is nnnn.

Programmer Response: None.

BFX303I Connecting to ssssssss on host hhhhhhhh; Block out size nnnn.

Message Level: 2 (Diagnostic)

Explanation: When BFXTI is submitting a job to BFXJS, or when BFXTR is connecting back to its starting BFXTI, the BFX program has issued a NetEx SCONNECT to establish communications. “ssssssss” is the name to connect to as specified in the ID = or JID = user parameters; “hhhhhhhh” is the host name specified in the TO= or FROM= parameters. The direction of file transfer will cause this program to send a file; the block size that is program is prepared to send is nnnn.

Programmer Response: None.

BFX304I Connect complete.

Message Level: 0 (Diagnostic)

Explanation: A previously issued NetEx SCONNECT (see messages BFX302I and BFX303I) has successfully completed.

Programmer Response: None.

BFX305W Connect failed; ssssssss busy.

Message Level: 1 (Diagnostic)

Explanation: A previously issued NetEx SCONNECT (see messages BFX302I and BFX303I) did not succeed because the OFFER'ed application (hopefully BFXJS) was currently in use by some other network application. NetEx will retry the connection a number of times and at intervals determined during BFX generation.

Programmer Response: None.

BFX306W Connect failed; ssssssss not offered.

Message Level: 1 (Diagnostic)

Explanation: A previously issued NetEx SCONNECT (see messages BFX302I and BFX303I) did not succeed because the OFFER'ed application was not currently available. This is not always a terminal error; it can be caused by connecting to BFXJS during a small window between batch job submissions; or by BFXTI if a job is submitted from a heavily overloaded machine to a very responsive one. NetEx will retry the connection a number of times and at intervals determined during BFX generation.

Programmer Response: None.

BFX307I Offer complete.

Message Level: 2 (Diagnostic)

Explanation: A previous NetEx SOFFER request (see messages BFX300I and BFX301I) has completed successfully.

Programmer Response: None.

BFX308I Confirm issued.

Message Level: 2 (Diagnostic)

Explanation: A NetEx SCONFIRM is being issued in response to a previously completed SOFFER.

Programmer Response: None.

BFX309I Confirm complete.

Message Level: 2 (Diagnostic)

Explanation: A previously issued NetEx SCONFIRM (see message BFX308I) has completed successfully.

Programmer Response: None.

BFX310J Connect confirm read issued.

Message Level: 2 (Diagnostic)

Explanation: Following a successful SCONNECT request, the BFX program has issued an SREAD to obtain the SCONFIRM response from the other program.

Programmer Response: None.

BFX311I Connect confirm complete.

Message Level: 2 (Diagnostic)

Explanation: The SREAD issued to accept a SCONFIRM message from the remote BFX has successfully completed. The NetEx session establishment process is now complete.

Programmer Response: None.

BFX312I Block size bbbb, datamode dddd, LCM ll.

Message Level: 2 (Diagnostic)

Explanation: This diagnostic message is issued by all BFX modules when the session negotiation process is complete. “bbbb” is the actual NetEx block size (in bytes) that will be used to transfer the file or job. “dddd” consists of four hexadecimal digits that give the NetEx DATAMODE to be used based on the requirements of the two BFX programs. “ll” is the least common multiple size negotiated, which contains a value other than one when data is being sent to non-Ultrix processors with more than one character per word.

Programmer Response: None.

BFX317W Offer failed; maximum sessions exceeded.

Message Level: 1 (Diagnostic)

Explanation: A previously issued NetEx SOFFER (see messages BFX300I and BFX301I) failed because the NetEx maximum sessions limit had already been reached. NetEx will retry the OFFER a number of times at intervals determined during BFX generation or at run time.

Programmer Response: None.

BFX318W Connect failed; maximum sessions exceeded.

Message Level: 1 (Diagnostic)

Explanation: A previously issued NetEx SCONNECT (see messages BFX302I and BFX303I) failed because the NetEx maximum sessions limit had already been reached. NetEx will retry the CONNECT a number of times at intervals determined during BFX generation or at run time.

Programmer Response: None.

BFX900F PFX Initialization Error. More Info Follows.

Message Level: 15 (Fatal error)

Explanation: Error occurred while setting up a PFXTI process.

Programmer Response: Using the additional information provided in subsequent message lines, check the configuration file, and check the installation/invocation of PFX

BFX905E PFX terminated by operator.

Message Level: 10 (Error)

Explanation: This message is issued by PFX when the file transfer process is aborted by operator command.

Programmer Response: None.

BFX907E Invalid Print Request. More Info Follows.

Message Level: 10 (Error)

Explanation: An invalid print request message was received from a PFX serviced print queue. The most common reason for this message is that the file requested to be printed has been deleted or moved before the print request was received by PFXTI.

Programmer Response: Using the additional information provided in subsequent message lines, check the specific print file requested. Make sure it is available. Try printing the file again.

BFX909E Print Request Disposal Error. More Info Follows.

Message Level: 10 (Error)

Explanation: An error occurred while attempting to dispose of a print request message.

Programmer Response: Using the additional information provided in subsequent message lines, check the PFX serviced print file queue. The print request message may be removed from the print queue using the Stratus cancel_print_request command.