



## **OV/Fax**

### **Version 2 Release 4.2**

# **Reference and Problem Determination Guide**

## **OV/Fax Reference and Problem Determination Guide**

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# Chapter 1. Introduction

## Purpose of this manual

This manual provides reference information for version 2 release 4.x of OV/Fax. It provides a product overview, plus detailed information on the host and PC components, together with information about the features of the product, and how to resolve problems with the product. The reference information is intended to supplement that found in the other manuals supplied with the product.

## Audience for this manual

This manual is designed for use by the following people:

- host technical support personnel, who may need the information on file layouts and sizes; transaction and program lists; and recovery details.
- host OV/Fax administrators, for details on how the various host components work together; for the hints and tips on using the product; and for help in resolving problems.
- OV/Fax server administrators, for details on how the server interfaces to the 3270 emulation and GammaFax software; and for details on the conversions between different file formats.

This manual assumes prior knowledge of the host and server environments in which the product operates, and in addition, some familiarity with installing and using the product.

## How this manual is organised

The manual begins with this introduction and chapters providing a product overview and a list of pre-requisites. It is then divided into four parts:

**Host Reference**, which describes the files used on the host, describes the transactions and programs used by the various host components, and illustrates how the important transactions and programs work together.

**Server Reference**, which describes the programs used by the server, describes the protocol between the server and host components, describes the interface to the GammaFax software, and illustrates how the server converts between the various file formats supported.

**Additional Features**, which describes the software needed to handle inbound faxes, and gives hints and tips on how to use the product more effectively.

**Problem Determination**, which describes how to identify problems with the product, lists the error and abend codes that may be seen, and lists common problems with the product.

## Other manuals you may need

The following is a list of manuals that contain additional information which may be useful in the installation, customisation and use of OV/Fax:

- the other manuals supplied with OV/Fax: *Installation and Customisation Guide*, *Administration Guide*, *User Guide*, *Server Guide* and *Application Fax Guide*.
- the manuals supplied with OfficePath (*Installation and Administration Guide*, *Programming Interfaces Guide*, *Reference and Diagnosis Guide*) or RAPID (*Installation and Administration Guide*, *User Guide*, *Problem Determination Guide*).

- the *GammaFax Reference Manual* supplied with the board and software.
- the *PostFAX Installation and User's Guide* if the optional Keyword PostFAX software is installed on the servers.

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## Chapter 2. Product Overview

This chapter provides an overview of the components in OV/Fax.

### Product Components

OV/Fax consists of five main components:

- batch update and cleandown programs, used by an administrator for system-wide configuration and maintenance.
- CICS-based on-line enquiry and maintenance transactions, used by administrators for day-to-day monitoring and maintenance of the system. A subset of these transactions is available to users to allow them to enquire on their own faxes and maintain their personal address books.
- background CICS-based transactions, used to route and schedule faxes, and to pass fax and status information between the host and server components. These transactions use OfficePath or RAPID (with DISOSS) to interface to other host applications.
- batch AUTOFAX program, used to format existing report files into fax-format files.
- DOS-based PC fax servers, used to send and receive faxes, converting between the fax and host file formats as needed. There may be more than one server installed, and each server can support more than one telephone connection.

Figure 1 overleaf shows how these components are related.

Application/Fax consists of the five components listed above, together with OfficePath. OfficePath is used as the interface between OV/Fax and the CICS or batch applications.

There are four main groups of files used by the host components of OV/Fax:

- control files. **FAXCNTL** contains system configuration details, whilst **FAXSERV** contains a list of fax servers and their statuses.
- address books file. **FAXSCOD** contains the personal and shared fax address books, maintained by users and administrators respectively. Alternatively, the EAB or another directory may be used instead.
- fax and status information. **FAXLOGS** contains three types of record: one for every outbound fax; one for every recipient of each outbound fax; and one for every inbound fax. **FAXOT** contains a record for every fax currently being processed by the servers, together with the document text for every outbound fax. **FAXIN** contains a record for every outstanding inbound fax, together with the associated RFT documents for those faxes.
- OfficePath or RAPID interface files. **FAXOUTP** contains details of outbound faxes being passed to OV/Fax. **FAXOUTC** contains confirmations for inbound faxes.

**FAXIN** and **FAXOUTC** are not needed if the inbound component of OV/Fax is not being used.

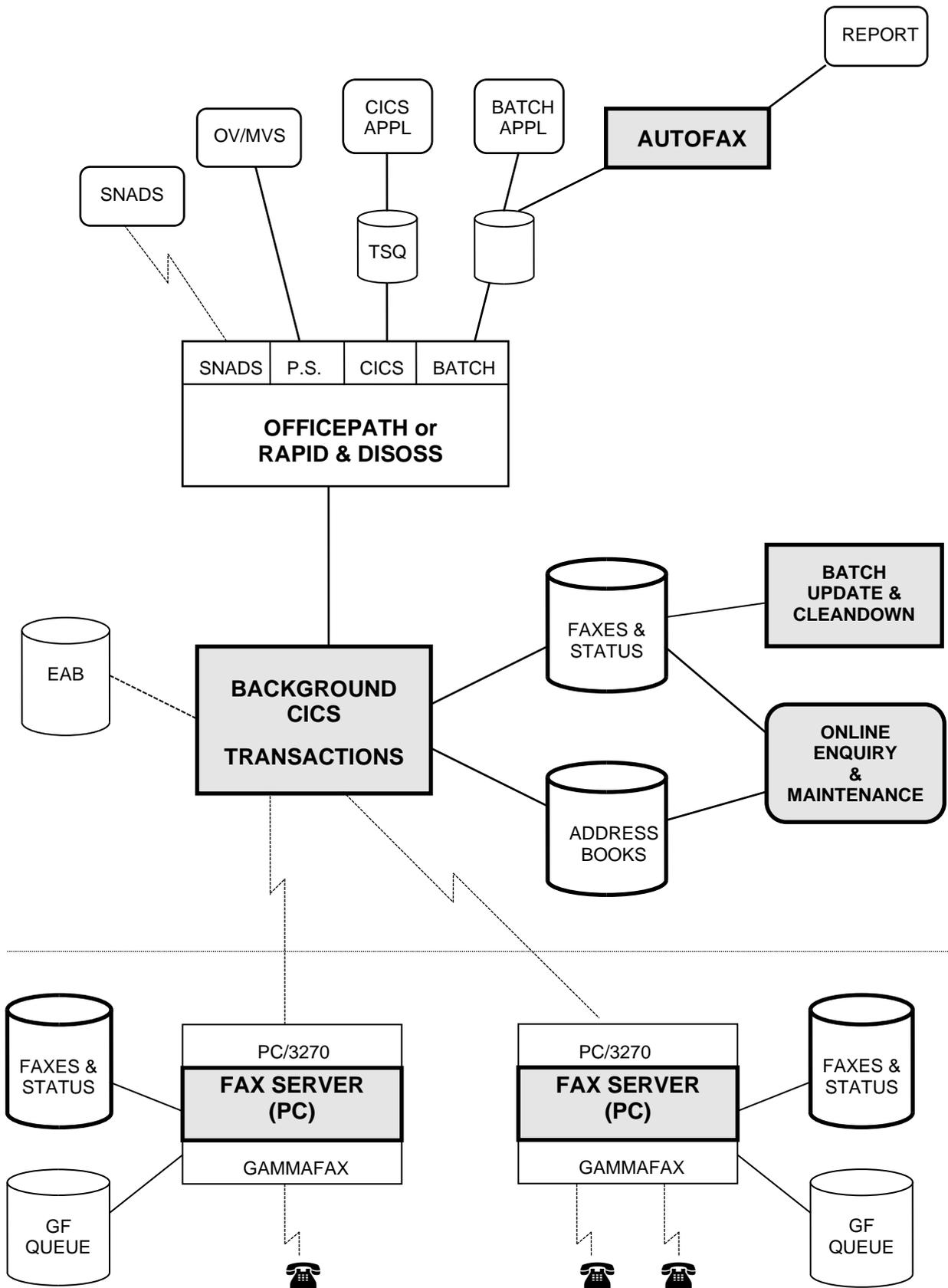


Figure 1. Overview of OV/Fax Components

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## Chapter 3. Pre-requisites

### Software

The host components of OV/Fax require the following minimum levels of software:

- CICS Transaction Server Version 1.3
- Either
  - ◆ DISOSS Version 3.3, together with RAPID Version 3.3, or
  - ◆ OfficePath Version 1.1 (together with DisplayWrite/370 for CICS Release 2, if RFT conversions are to be performed on the host)

The server components of OV/Fax require the following minimum levels of software:

Server version 2.4.0

- IBM PC DOS Version 3.3 or MS-DOS equivalent
- GammaFax Version 4.2.2, as supplied with the board
- 3270 emulation software such as IBM Personal Communications/3270 Version 1.1 supporting EHLLAPI (together with the IBM LAN Support Program, if a Token-Ring connection is being used)

Server version 3.2.0

- Windows NT 3.5
- GammaLink GDK Release 5
- 3270 emulation software such as IBM Personal Communications supporting EHLLAPI.

### Hardware

The OV/Fax server requires the following hardware:

- Intel Architecture PC capable of running MS-DOS or PC-DOS or Windows NT 3.5 or later
- Either
  - ◆ Ethernet or
  - ◆ a Token-Ring card (if that type of connection to the host is being used)
  - ◆ one or more GammaFax boards (CP-type, such as CP, CPi, or DTI)

If Direct Inward Dialling is being used, a GammaFax CPD board will be required (together with CP-type boards for outbound capability).

### Image Scanning Requirements

The OV/Fax Server may be used to scan in images for use by the server, such as logos, signatures and cover sheets. The following IBM products may be used for this purpose:

- IBM PC Image Document Utility Version 1.4.1
- IBM Image Support Facility 2 Version 1.1
- IBM scanner compatible with the above software, such as IBM 3118.

Alternative scanners and software may be used. For example, GammaFax support a variety of scanners, whose TIFF output could be converted to the required OV/Fax image format.

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## PART ONE - HOST REFERENCE

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## Chapter 4. Files

OV/Fax uses, at most, eight files. You may not need to define and create all the files; for example, two of the files are only needed if you are using the inbound fax feature. This chapter describes each of the files used, including the record types and contents, where the records are used and what needs to be considered when estimating file sizes.

### FAXCNTL - Control File

The *FAXCNTL* file contains static system configuration details, including the operating parameters, the number routing tables, the user authorisation profiles and all the language-dependent message and screen details.

The records on the file are maintained using the batch update program **FAXCNTL**. This takes as input a series of control cards that specify additions, modifications and deletions to the file. The user authorisation profiles can also be maintained by administrators by using the on-line User Profile Maintenance menu option.

The file has a 17 byte key at the start of each record. The first record on the file contains low-values. The following records then start with a single character record type followed by the key. This key may include a language code if the particular records are language specific. The following record types may be seen on the file.

Record Type	Language-Dependent	Description
A	No	EBCDIC to ASCII conversion tables. The values are held in FAXCTL1.
C0	Yes, code in byte 17	PF-key usage. The values are held in the CONF0 entries of FAXCTL2.
C1	No	Menu options when calling from Personal Services or Application Services. The values are held in the CONF1 entry of FAXCTL2.
C2	Yes, code in byte 17	Status descriptions for faxes and servers. The values are held in the CONF2 entries of FAXCTL2.
C3	Yes, code in byte 17	Command-line strings for the on-line transactions. The values are held in the CONF3 entries of FAXCTL2.
C4	No	Operating parameters to control how OV/Fax works. The values are held in the CONF4 entry of FAXCTL2.
C5	No	Default country and area telephone codes, and the reschedule delay intervals. The values are held in the CONF5 entry of FAXCTL2.
C6	No	Enterprise Address Book (EAB) interface parameters. The values are held in the CONF6 entry of FAXCTL2.
C7	No	Document scanning parameters. The values are held in the CONF7 entry of FAXCTL2.
C8	Yes, code in byte 17	Signature string and 'To:' strings for use in document scanning. The values are held in the CONF8 entry of FAXCTL2.
C9	No	GIL URR parameter field and GIL dataset names. The values

		are held in the CONF9 entry of FAXCTL2.
D	Yes, code in byte 2	Status message text. These messages may be sent to fax originators or administrators. The values are held in FAXCTL7.
E	Yes, code in byte 2	System error message text. These messages may be sent to the CICS log or the system console. The values are held in FAXCTL6.
H	Yes, code in byte 2	Help text for the on-line transactions. The values are held in FAXCTL5.
I	No	DID routing entries. These values are held in FAXCTLB.
K	Yes, code in byte 17	PF-key text for the on-line transactions. The values are held in FAXCTL3.
M	Yes, code in byte 2	Message text for the on-line transactions. The values are held in FAXCTL8.
O	Yes, code in byte 2	Transmission error messages and rescheduling actions. The values are held in FAXCTL7.
P	Yes, code in byte 3	Map text for the on-line transactions. The values are held in FAXCTL4.
R	Yes, code in byte 2	Text for the batch cleandown reports. The values are held in FAXCTL9.
S	No	Fax number (least-cost) routing entries. The values are held in FAXCTLA.
T	No	Deferred fax user ids and time windows. The values are held in FAXCTLC.
U	No	User authorisation profiles. The values are held in FAXCTLB, and may also be maintained on-line by administrators.

If the file needs to be recreated, the **FAXCNTL** job should be run, specifying all the control file members in the JCL library. The user authorisation profiles will also need to be added.

## FAXSERV - Server File

The *FAXSERV* file contains a list of servers in the system, including the **ERROR** and **QUEUE** servers, together with the status and activity counts of each server. Servers can be added, amended or deleted by administrators by using the on-line server information transactions **FAXA** and **FAXB**. New servers may also be added by the background server interface transactions **FAXR** and **FAXS**, when a new server polls the host for the first time. The **ERROR** and **QUEUE** servers will be created automatically if they do not exist when needed.

The server activity counts are used in the scheduling of faxes. The server names are also used in the validation of fax numbers, when specific servers are included. The CICS startup transaction **FAXL** regenerates the activity counts based on the records on the *FAXOT* file.

The file is keyed on a record type (always “**S**”) and the server name; there is one record per server. The file has the following layout:

```

01 FS-REC.
05 FS-KEY.
    10 FS-TYPE          PIC X VALUE 'S'.
    10 FS-SERVER        PIC X(8) .
*
05 FS-FLAG             PIC X.
    88 FS-88-OPEN      VALUE 'O'.
    88 FS-88-CLOSED   VALUE 'C'.
    88 FS-88-PAUSED    VALUE 'P'.
05 FS-LAST-ALERT-DATE PIC S9(7) COMP-3.
05 FS-LAST-ALERT-TIME PIC S9(7) COMP-3.
05 FS-VOLUME-COUNT    PIC S9(8) COMP.
05 FS-STATUS          PIC X.
    88 FS-88-SCHEDULED VALUE 'S'.
    88 FS-88-RECEIVING VALUE 'R'.
    88 FS-88-WAITING   VALUE 'W'.
05 FS-COMMON-DATE     PIC S9(7) COMP-3.
05 FS-COMMON-TIME     PIC S9(7) COMP-3.
05 FS-COMMON-SEQNO    PIC S9(4) COMP.
05 FS-FAXOT-DATE      PIC S9(7) COMP-3.
05 FS-FAXOT-TIME      PIC S9(7) COMP-3.
05 FS-FAXOT-SEQNO     PIC S9(4) COMP.
05 FS-FAX-ID          PIC S9(7) COMP-3.
05 FS-TOTAL-QUEUED    PIC S9(4) COMP.
05 FS-ACTIVE-FAXES    PIC S9(4) COMP.
05 FS-LAST-POLL-DATE  PIC S9(7) COMP-3.
05 FS-LAST-POLL-TIME  PIC S9(7) COMP-3.
05 FS-Q-SIZE          PIC S9(16) COMP.
05 FS-RATING          PIC S9(4) COMP.
05 FS-SPILL.
    10 FS-SPILL-DATA OCCURS 4.
        15 FS-SPILL-NODE          PIC X(8) .
        15 FS-SPILL-USERID        PIC X(8) .
05 FILLER                PIC X(42) .
*
01 FS-KEY-LEN             PIC S9(4) COMP VALUE +9.
01 FS-REC-LEN            PIC S9(4) COMP VALUE +175.

```

If the file needs to be recreated, the individual servers should be added manually using the on-line transactions. FAXL should then be started from a CICS screen, to restore the activity counts. Alternatively, the servers can be added when each fax server polls the host, but the activity counts will not be correct until FAXL has been run. The server rating and inbound recipients will also need to be updated manually.

## FAXSCOD - Address Books File

The *FAXSCOD* file contains the shared and personal fax address books. Entries are maintained using the on-line transaction (FAX4). Users may maintain their own personal address book and view the shared address book. Administrators may also maintain the shared address book. The address books are used by the outbound fax processor FAXO to expand a fax nickname (shortcode) into the fax number and description. Entries in personal address books take precedence over entries in the shared address book.

The file is keyed on the node and user id, nickname and priority (25 bytes in total). The priority may take the values '1' (primary number) and '2' (optional alternate number). Entries in the shared address book use spaces for the node and user id. The file has the following layout:

01	SC-REC.		
05	SC-KEY.		
	10 SC-NODE		PIC X(8).
	10 SC-USER		PIC X(8).
	10 SC-SHORTCODE		PIC X(8).
	10 SC-PRIORITY		PIC X.
*			
05	SC-DATA.		
	10 SC-FAX-NO.		
	15 SC-FAX-CHAR	PIC X	OCCURS 30.
	10 SC-DESCRIPTION.		
	15 SC-DESC-CHAR	PIC X	OCCURS 30.
*			
01	SC-KEY-LEN	PIC S9(4)	COMP VALUE +25.
01	SC-REC-LEN	PIC S9(4)	COMP VALUE +85.

The file can only be recreated by manually adding the records using the on-line transaction. Fax numbers are validated for format, and for specific servers (if included).

## FAXLOGS - Log File

The *FAXLOGS* file contains long term information about inbound and outbound faxes. Details of inbound faxes can be viewed by administrators using the on-line inbound fax status transactions. These details are maintained by the background transactions, and deleted by the batch cleandown job. Details of outbound faxes can be viewed by both administrators and the fax originators. Again, the details are maintained by the background transactions, and deleted by the batch cleandown job.

There are three types of record on the *FAXLOGS* file:

- type 1 (**LOGOT**) records. There is one record for every outbound request in the system; they include details of the originator, the number of recipients and the overall status of the request. The records are added by the FAXO transaction and updated by FAXJ. The batch cleandown job deletes the records. The details may be viewed by using the on-line status information transactions (FAX7 and FAX8).
- type 2 (**ADROT**) records. There is one record for every outbound fax recipient. (Each LOGOT record will therefore have one or more corresponding ADROT records). The records include the fax number to call, the status of the request, and any error details. The records are added by the FAXO transaction and updated by FAXJ. The batch cleandown job deletes the records. The details may be viewed by using the on-line status information transactions (FAX9 and FAXG).
- type 3 (**LOGIN**) records. There is one record for every inbound fax in the system; they include details of the inbound recipients, the status of each, and the number the fax was received from. The records are added by the FAXR transaction, and updated by the FAXI and FAXK transactions. The batch cleandown job deletes the records. The details may be viewed by using the on-line inbound fax status information transactions (FAXE, FAXM and FAXN).

The file is keyed on the record type, followed by a date/time stamp (complemented) and sequence number, plus a record number for ADROT records (13 bytes in total). The LOGOT record has the following layout:

```

01 LG-REC.
  05 LG-KEY.
    10 LG-TYPE          PIC X.
      88 LG-88-LOGOT    VALUE '1'.
*
* DATE TIME AND SEQNO ARE COMPLEMENTED
*
    10 LG-DATE          PIC S9(7)    COMP-3.
    10 LG-TIME          PIC S9(7)    COMP-3.
    10 LG-SEQNO        PIC S9(4)    COMP.
*
* INCREMENTED FROM 1 BY 1 FOR EACH ADROT IN A SET
*
    10 LG-RECNO        PIC S9(4)    COMP.
*
  05 LG-ALT-KEY.
    10 LG-ORIG.
      15 LG-ORIG-NODE   PIC X(8).
      15 LG-ORIG-USER   PIC X(8).
*
* MATCH THE DATE, TIME, AND NUMBER OF REAL KEY
*
    10 LG-ALT-DATE     PIC S9(7)    COMP-3.
    10 LG-ALT-TIME     PIC S9(7)    COMP-3.
    10 LG-ALT-SEQ      PIC S9(4)    COMP.
*
  05 LG-DATA          PIC X(410).
*
  05 LG-LOGOT REDEFINES LG-DATA.
    ONE LOGOT RECORD PER DOCUMENT SENT.
*
* SET TO 'D' ON COMPLETION IF REQUIRED BY PARAMETER TABLE
* WILL NOT THEN APPEAR ON BROWSE SCREEN
*
    10 LG-LOGICAL-DELETE PIC X.
      88 LG-88-DELETED   VALUE 'D'.
      88 LG-88-PRESENT  VALUE 'P'.
*
* OVERALL STATUS OF FAX TRANSMISSION
*
    10 LG-LOG-STATUS    PIC X.
      88 LG-88-LOG-PENDING VALUE 'P'.
      88 LG-88-LOG-ERROR  VALUE 'E'.
      88 LG-88-LOG-COMPLETE VALUE 'C'.
      88 LG-88-LOG-REQUEUE VALUE 'R'.
*
* FOLLOWING SUPPLIED FROM RAPID OUT-TRAY
*
    10 LG-SENT-DATE     PIC S9(7)    COMP-3.
    10 LG-SENT-TIME     PIC S9(7)    COMP-3.
    10 LG-DOC-NAME      PIC X(44).
    10 LG-DOC-SUBJECT   PIC X(60).
    10 LG-MESSAGE.
      15 LG-MESS-LINE    PIC X(64)    OCCURS 4.
*
* NUMBER OF FAX ADDRESSES IN TOTAL, COMPLETE AND IN ERROR
*
    10 LG-ADR-COUNT     PIC S9(4)    COMP.
    10 LG-ADR-COMPLETE  PIC S9(4)    COMP.
    10 LG-ADR-ERROR     PIC S9(4)    COMP.
*
* DOCUMENT SIZE IN BYTES
*
    10 LG-DOC-SIZE      PIC S9(8)    COMP.
*
* ADDRESS OF THE FIRST FAX RECIPIENT.
*
    10 LG-ADDRESS1     PIC X(30).
*
01 LG-KEY-LEN          PIC S9(4)    VALUE +13 COMP.
01 LG-REC-LEN          PIC S9(4)    VALUE +449 COMP.

```

The ADROT record has the following layout:

```
01 LG-REC.
  05 LG-KEY.
    10 LG-TYPE          PIC X.
      88 LG-88-ADROT   VALUE '2'.
*
* DATE TIME AND SEQNO ARE COMPLEMENTED
*
    10 LG-DATE          PIC S9(7)    COMP-3.
    10 LG-TIME          PIC S9(7)    COMP-3.
    10 LG-SEQNO        PIC S9(4)    COMP.
*
* INCREMENTED FROM 1 BY 1 FOR EACH ADROT IN A SET
*
    10 LG-RECNO        PIC S9(4)    COMP.
*
  05 LG-ALT-KEY.
    10 LG-ORIG.
      15 LG-ORIG-NODE   PIC X(8).
      15 LG-ORIG-USER   PIC X(8).
*
* MATCH THE DATE, TIME, AND NUMBER OF REAL KEY
*
    10 LG-ALT-DATE     PIC S9(7)    COMP-3.
    10 LG-ALT-TIME     PIC S9(7)    COMP-3.
    10 LG-ALT-SEQ      PIC S9(4)    COMP.
*
  05 LG-DATA           PIC X(410).
*
  05 LG-ADROT REDEFINES LG-DATA.
  ONE ADROT REDEFINES PER RECIPIENT/FAX NUMBER
  10 LG-RECIP.
*
* DISOSS RECIPIENT OF OUTBOUND FAX
*
      15 LG-RECIP-NODE  PIC X(8).
      15 LG-RECIP-USER  PIC X(8).
*
* FAX NUMBER FOR THIS FAX ADDRESS
*
    10 LG-FAXNO        PIC X(30).
*
* STATUS OF THE FAX ADDRESS
*
    10 LG-STATUS       PIC X.
      88 LG-88-PENDING  VALUE 'P'.
      88 LG-88-TRANSMITTING VALUE 'T'.
      88 LG-88-DIALLING   VALUE 'D'.
      88 LG-88-ERROR     VALUE 'E'.
      88 LG-88-COMPLETE  VALUE 'C'.
      88 LG-88-REQUEUE   VALUE 'R'.
*
* UNIQUE ID FOR FAX ADDRESS
*
    10 LG-FAX-ID       PIC S9(7) COMP-3.
*
* BRIEF DIAGNOSIS OF FAX IN ERROR, FROM DISOSS MESSAGE
*
    10 LG-ERROR-REASON  PIC X(30).
*
* TIME TAKEN TO COMPLETE SUCCESSFUL TRANSMISSION
*
    10 LG-CALL-DURATION  PIC S9(7) COMP-3.
*
* ID OF SERVER CONFIRMING DELIVERY
*
    10 LG-CALL-CSID     PIC X(30).
```

```

*
* TIME FAX TRANSMISSION WAS COMPLETED
*
    10 LG-COMPLETE-DATE PIC S9(7) COMP-3.
    10 LG-COMPLETE-TIME PIC S9(7) COMP-3.
*
* SERVER ON WHICH FAX IS SCHEDULED/WENT OUT
*
    10 LG-SERVER-ID PIC X(8) .
*
    10 LG-COVER-SHEET PIC X(5) .
*
    10 LG-TRANSMIT-CSID PIC X(30) .
*
    10 LG-FROM-ID PIC X(45) .
*
    10 LG-NUMBER-DIALLED PIC X(42) .
    10 LG-PAGES PIC XXX.
*
    10 LG-OVFAX-ERROR PIC XXX.
*
    10 LG-SCHEDULE-COUNT PIC S9(4) COMP.
*
    10 LG-INVALID-FILE PIC X(12) .
*
    10 LG-IDURET PIC X(4) .
*
    10 LG-IDUPRG PIC X(8) .
*
    10 LG-GAMMA.
    15 LG-GAMMA-1-4 PIC X(4) .
    15 FILLER PIC X(8) .
*
    10 LG-FULL-NAME PIC X(64) .
*
    10 LG-DCA-LEVEL PIC X(5) .
*
* THE PROTECT FLAG IS SET TO ENSURE THAT CERTAIN ITEMS MAY NOT BE
* 'RESENT' ON-LINE (E.G. SENT BY AN UNAUTHORISED USER) .
*
    10 LG-PROTECT-FLAG PIC X.
    88 LG-88-PROTECT VALUE 'Y' .
*
01 LG-KEY-LEN PIC S9(4) VALUE +13 COMP.
01 LG-REC-LEN PIC S9(4) VALUE +449 COMP.

```

The LOGIN record has the following layout:

```

01 LG-REC.
    05 LG-KEY.
        10 LG-TYPE PIC X.
        88 LG-88-LOGIN VALUE '3' .
*
* DATE TIME AND SEQNO ARE COMPLEMENTED
*
    10 LG-DATE PIC S9(7) COMP-3.
    10 LG-TIME PIC S9(7) COMP-3.
    10 LG-SEQNO PIC S9(4) COMP.
*
* INCREMENTED FROM 1 BY 1 FOR EACH ADROT IN A SET
*
    10 LG-RECNO PIC S9(4) COMP.
*
    05 LG-ALT-KEY.
        10 LG-ORIG.
            15 LG-ORIG-NODE PIC X(8) .

```

```

15 LG-ORIG-USER PIC X(8).
*
* MATCH THE DATE, TIME, AND NUMBER OF REAL KEY
*
10 LG-ALT-DATE PIC S9(7) COMP-3.
10 LG-ALT-TIME PIC S9(7) COMP-3.
10 LG-ALT-SEQ PIC S9(4) COMP.
*
05 LG-DATA PIC X(410).
*
05 LG-LOGIN REDEFINES LG-DATA.
ONE LOGIN RECORD PER INCOMING FAX
*
DURATION OF RECEIPT OF FAX
*
10 LG-REC-DURATION PIC S9(7) COMP-3.
*
ID OF SERVER SENDING FAX
*
10 LG-REC-CSID PIC X(30).
*
INBOUND TRANSMISSION NUMBER
*
10 LG-REC-ID PIC X(8).
*
INBOUND USER (SPILL OP) IDENTITY
*
10 LG-SPILLOP OCCURS 4.
15 LG-SPILL-NODE PIC X(8).
15 LG-SPILL-ID PIC X(8).
15 LG-SPILL-STAT PIC X.
88 LG-88-SPILL-PEND VALUE 'P'.
88 LG-88-SPILL-DELV VALUE 'D'.
88 LG-88-SPILL-INVR VALUE 'I'.
88 LG-88-SPILL-UNDE VALUE 'U'.
*
OVERALL STATUS OF INCOMING FAX
*
10 LG-LOGIN-STAT PIC X.
88 LG-88-LOGIN-PEND VALUE 'P'.
88 LG-88-LOGIN-QUEUED VALUE 'Q'.
88 LG-88-LOGIN-COMP VALUE 'C'.
88 LG-88-LOGIN-ERROR VALUE 'E'.
10 LG-LOGIN-NAK PIC X(9).
*
OVERALL STATUS OF INCOMING FAX
*
10 LG-LOGIN-NAME PIC X(44).
10 LG-LOGIN-SUBJECT PIC X(60).
*
10 LG-LOGIN-DID PIC X(16).
*
01 LG-KEY-LEN PIC S9(4) VALUE +13 COMP.
01 LG-REC-LEN PIC S9(4) VALUE +449 COMP.

```

Recreating the file is not feasible. The individual requests would need to be sent again.

## FAXIN - Inbound Faxes File

The *FAXIN* file contains details of every outstanding inbound fax request, together with the associated document text (in RFT/E format, where each page of the fax is a separate image in the document). All the details are maintained by the background transactions.

There are two types of record on the *FAXIN* file:

- type 1 (**FAXIN**) records. There is one record for every inbound fax being processed (awaiting confirmations from all the inbound recipients of the fax). The record contains the overall status of the fax, together with inbound details such as the number the fax was received from. The records are added by the FAXR transaction, and deleted by the FAXK transaction when all the confirmations have been received.
- type 2 (**DOCIN**) records. These records contain the inbound fax document. Each FAXIN record will therefore have one or more DOCIN records for its fax. The records are added by the FAXR transaction and deleted by the batch cleanup job.

The file is keyed on the record type, followed by a date/time stamp and sequence number, plus a record number for DOCIN records (13 bytes in total). The FAXIN record has the following layout:

```

01  FI-REC.
    05  FI-KEY.
        10  FI-TYPE                      PIC X.
            88  FI-88-FAXIN              VALUE '1'.
        10  FI-DATMSQ.
            15  FI-DATE                   PIC S9(7) COMP-3.
            15  FI-TIME                   PIC S9(7) COMP-3.
            15  FI-SEQNO                  PIC S9(4) COMP.
        10  FI-RECNO                      PIC S9(4) COMP.
*
    05  FI-DATA                          PIC X(8988).
    05  FI-FAXIN-DATA                    REDEFINES FI-DATA.
        10  FI-DISSOS-STATUS             PIC X.
            88  FI-88-PENDING            VALUE 'P'.
            88  FI-88-DISTRIBUTED        VALUE 'D'.
        10  FI-COMMON-KEY.
            15  FI-COMMON-DATE           PIC S9(7) COMP-3.
            15  FI-COMMON-TIME          PIC S9(7) COMP-3.
            15  FI-COMMON-SEQNO         PIC S9(4) COMP.
        10  FI-RECEIVE-DURATION          PIC S9(7) COMP-3.
        10  FI-CSID                      PIC X(30).
        10  FI-RECEIVE-ID                PIC X(8).
        10  FILLER                       PIC X(8935).
*
01  FI-KEY-LEN                          PIC S9(4) COMP VALUE +13.
01  FI-REC-LEN                          PIC S9(4) COMP VALUE +9001.

```

The DOCIN record has the following layout:

```

01  FI-REC.
    05  FI-KEY.
        10  FI-TYPE                      PIC X.
            88  FI-88-DOCIN              VALUE '2'.
        10  FI-DATMSQ.
            15  FI-DATE                   PIC S9(7) COMP-3.
            15  FI-TIME                   PIC S9(7) COMP-3.
            15  FI-SEQNO                  PIC S9(4) COMP.
        10  FI-RECNO                      PIC S9(4) COMP.
*
    05  FI-DATA                          PIC X(8988).
    05  FI-DOCIN-DATA                    REDEFINES FI-DATA.
        10  FI-DOCIN-CHAR                PIC X OCCURS 8988.
*
01  FI-KEY-LEN                          PIC S9(4) COMP VALUE +13.
01  FI-REC-LEN                          PIC S9(4) COMP VALUE +9001.
01  FI-TEXT-LEN                         PIC S9(4) COMP VALUE +8988.

```

Recreating the file is not feasible. The individual requests would need to be sent again. The *FAXIN* file does not need to be defined or created, if the inbound feature of OV/Fax is not being used.

## FAXOT - Outbound Faxes File

The *FAXOT* file contains details of every outstanding outbound fax request, together with the associated document text (in RFT or print-image format). Document text for all the processed faxes on the *FAXLOGS* file may also present if the resend facility is configured. The details are maintained by the background transactions, but can be viewed by administrators using the on-line transactions.

There are three types of record on the *FAXOT* file:

- header record. There is only one of these records, with a key of all low values. The record stores the reference number to be allocated to the next fax.
- type 1 (**FAXOT**) records. There is one record for every outbound fax being processed (currently being sent or awaiting rescheduling). The record includes the unique reference number and overall status of the fax, together with outbound details such as the fax number to send to, the details for the cover sheet, and the number of attempts so far. The records are added by the FAXO transaction, updated by FAXS and deleted by the FAXJ transaction when processing is complete. Records may also be rescheduled (deleted and rewritten with a new key) by FAXP, FAXQ and FAXS, or added by the on-line transaction FAXX.
- type 2 (**DOCOT**) records. These records contain the outbound fax documents. If the fax request is a Personal Services message there will be no associated DOCOT records as all the details will be in the FAXOT record. All other requests will have one or more DOCOT records (each LOGOT record on the *FAXLOGS* file will have a set of records, which are then shared by all the individual recipients on that request). The records are added by the FAXO transaction, and may be deleted by FAXJ (if resending is disabled and all recipients have been processed) or by the batch cleanup job.

The file is keyed on the record type, followed by the server name, a date/time stamp and sequence number, plus a record number for DOCOT records (21 bytes in total). The header record has the following layout:

```
01  FO-REC.
    05  FO-KEY.
        10  FO-TYPE                                PIC X.
*
*  SERVER ON WHICH THE FAX REQUEST IS QUEUED TO GO OUT.
*
        10  FO-SERVER                                PIC X(8) .
*
*  DATE AND TIME ARE SCHEDULE DATE AND TIME (UNCOMPLEMENTED)
*
        10  FO-DATE                                PIC S9(7) COMP-3.
        10  FO-TIME                                PIC S9(7) COMP-3.
*
*  ENSURES A UNIQUE KEY
*
        10  FO-SEQNO                                PIC S9(4) COMP.
*
*  INCREMENTED FROM 1 BY 1 FOR SETS OF DOCOT RECORDS.
*
        10  FO-RECNO                                PIC S9(4) COMP.
*
    05  FO-DATA                                    PIC X(9004) .
*
```

```

* APPEARS ON THE FAXOT HEADER (KEY LOW-VALUES) AND ASSIGNS
* A UNIQUE NUMBER TO EACH OUTBOUND FAX ADDRESS
*
05 FO-FAXOT-HEADER REDEFINES FO-DATA.
10 FO-NEXT-FAX-ID PIC S9(7) COMP-3.
*
01 FO-KEY-LEN PIC S9(4) COMP VALUE +21.
01 FO-REC-LEN PIC S9(4) COMP VALUE +9025.

```

The FAXOT record has the following layout:

```

01 FO-REC.
05 FO-KEY.
10 FO-TYPE PIC X.
88 FO-88-FAXOT VALUE '1'.
*
* SERVER ON WHICH THE FAX REQUEST IS QUEUED TO GO OUT.
*
10 FO-SERVER PIC X(8).
*
* DATE AND TIME ARE SCHEDULE DATE AND TIME (UNCOMPLEMENTED)
*
10 FO-DATE PIC S9(7) COMP-3.
10 FO-TIME PIC S9(7) COMP-3.
*
* ENSURES A UNIQUE KEY
*
10 FO-SEQNO PIC S9(4) COMP.
*
* INCREMENTED FROM 1 BY 1 FOR SETS OF DOCOT RECORDS.
*
10 FO-RECNO PIC S9(4) COMP.
*
05 FO-DATA PIC X(9004).
*
05 FO-FAXOT-DATA REDEFINES FO-DATA.
*
* COMMON FIELDS CORRELATE WITH LOGOT, ADROT AND DOCOT KEY
* (COMPLEMENTED, EXCEPT FOR RECNO).
*
10 FO-COMMON-KEY.
15 FO-COMMON-DATE PIC S9(7) COMP-3.
15 FO-COMMON-TIME PIC S9(7) COMP-3.
15 FO-COMMON-SEQNO PIC S9(4) COMP.
15 FO-COMMON-RECNO PIC S9(4) COMP.
*
* UNIQUE NUMBER ASSIGNED TO THE INDIVIDUAL FAX REQUEST
*
10 FO-FAX-ID PIC S9(7) COMP-3.
*
* FOLLOWING FIELDS SUPPLIED FROM THE RAPID OUT-TRAY
*
10 FO-SENT-DATE PIC S9(7) COMP-3.
10 FO-SENT-TIME PIC S9(7) COMP-3.
10 FO-UPDATE-FLAG PIC X.
10 FO-ORIGINATOR.
15 FO-ORIGINATOR-NODE PIC X(8).
15 FO-ORIGINATOR-USERID PIC X(8).
10 FO-DOC-NAME PIC X(44).
10 FO-SUBJECT PIC X(60).
10 FO-DCA-LEVEL PIC X(5).
88 FO-88-PRINT-IMAGE VALUE '01403'.
10 FO-MESSAGE.
15 FO-MESSAGE-LINE PIC X(64) OCCURS 4.

```

```

*
* SIZE OF THE DOCUMENT CALCULATED IN BYTES.
*
*       10 FO-DOC-SIZE                PIC S9(8) COMP.
*
* DISOSS RECIPIENT ADDRESS OF OUTGOING FAX
*
*       10 FO-RECIPIENT.
*           15 FO-RECIPIENT-NODE      PIC X(8) .
*           15 FO-RECIPIENT-USERID   PIC X(8) .
*
* SPECIFIC SERVER AS REQUESTED BY SHORTCODE OR MESSAGE LINE
*
*       10 FO-SPECIFIC-SERVER        PIC X(8) .
*
* FAX NUMBER AS REQUESTED BY SHORTCODE OR MESSAGE LINE
*
*       10 FO-FAX-NO                 PIC X(30) .
*
* INDICATES WHETHER A PAIR OF LITERAL MARKS ' WAS FOUND AROUND
* THE ORIGINAL FAX NUMBER SPECIFIED BY THE USER
*
*       10 FO-LITERAL-FLAG           PIC X.
*           88 FO-88-LITERAL         VALUE 'Y'.
*
* CURRENT STATUS OF THIS REQUEST
*
*       10 FO-STATUS                 PIC X.
*           88 FO-88-PENDING         VALUE 'P'.
*           88 FO-88-TRANSMITTING   VALUE 'T'.
*           88 FO-88-DIALLING       VALUE 'D'.
*           88 FO-88-ERROR          VALUE 'E'.
*           88 FO-88-COMplete       VALUE 'C'.
*           88 FO-88-REQUEUE        VALUE 'R'.
*           88 FO-88-CANCELLED      VALUE 'X'.
*
* SET TO 'P' WHEN A MESSAGE IS DISTRIBUTED TO DISOSS, TO 'D' ON
* DELIVERY (DEPENDS ON CONFIRMATIONS PROCESSING)
*
*       10 FO-DISSOSS-STATUS         PIC X.
*           88 FO-88-D-PENDING      VALUE 'P'.
*           88 FO-88-DISTRIBUTED    VALUE 'D'.
*
* SHORT DIAGNOSIS OF FAX IN ERROR - OBTAINED FROM DISOSS MESSAGE
*
*       10 FO-ERROR-REASON          PIC X(30) .
*
* LENGTH OF SUCCESSFUL TRANSMISSION AS RETURNED BY SERVER
*
*       10 FO-CALL-DURATION          PIC S9(7) COMP-3.
*
* ID OF SERVER CONFIRMING DELIVERY
*
*       10 FO-CSID                  PIC X(30) .
*
* NUMBER OF TIMES SOFTWARE HAS SCHEDULED THIS FAX
*
*       10 FO-SCHEDULE-COUNT        PIC S9(4) COMP.
*
* NB. FOLLOWING DATES OYMMDD TIMES OHMMSS
*
* TIME AT WHICH THE SYSTEM MOST RECENTLY SCHEDULED THE FAX (NOTE
* THIS MAY NOT EQUAL THE KEY DATE AND TIME SINCE TRANSMISSION
* MIGHT BE DEFERRED
*
*       10 FO-SCHEDULE-DATE         PIC S9(7) COMP-3.
*       10 FO-SCHEDULE-TIME        PIC S9(7) COMP-3.
*

```

```

*   TIME AT WHICH SYSTEM SHOULD ALERT ORIGINATOR TO THE FACT
*   THAT HIS FAX IS STILL IN PROGRESS
*
      10  FO-ALERT-DATE                PIC S9(7) COMP-3.
      10  FO-ALERT-TIME                PIC S9(7) COMP-3.
*
*   TIME WHEN FAX TRANSMISSION WAS COMPLETED, ACCORDING TO
*   THE SERVER
*
      10  FO-COMPLETE-DATE            PIC S9(7) COMP-3.
      10  FO-COMPLETE-TIME            PIC S9(7) COMP-3.
      10  FO-DESCRIPTION              PIC X(30) .
*
*   HERE THE ORIGINAL NUMBER AS ENTERED BY THE USER IS STORED. THIS
*   MAY BE THE FAX NUMBER FROM THE SHORTCODE OR IT MAY BE THE
*   ATTACHED MESSAGE, OR A STRING FROM THE 'TO' LINE OF A NOTE
*
      10  FO-INPUT-NUMBER              PIC X(256) .
      10  FO-COVER-SHEET              PIC X(5) .
      10  FO-TRANSMIT-CSID            PIC X(30) .
*
      10  FO-FROM-ID                  PIC X(45) .
*
*   FOLLOWING FORMERLY FO-TO-ID. NOW REPLACED BY FO-FULL-NAME,
*   WHICH IS USED TO CATER FOR THE GREATER LENGTH (64) OF ENJFULLN
*   WHEN THE EAB IS USED.
*
      10  FILLER                      PIC X(45) .
      10  FO-REQUEUE-REPORT            PIC X.
          88 FO-88-REPORTED            VALUE 'Y' .
      10  FO-OVFAX-ERROR              PIC XXX.
      10  FO-SERVER-LIST              PIC X.
          88 FO-88-SERVER-LIST        VALUE 'Y' .
      10  FO-IDURET                   PIC X(4) .
      10  FO-IDUPRG                   PIC X(12) .
      10  FO-GAMMA                    PIC X(12) .
      10  FO-INVALID-FILE             PIC X(12) .
      10  FO-FULL-NAME                PIC X(64) .
      10  FO-NUMBER-DIALLED           PIC X(50) .
      10  FO-PAGES                    PIC XXX.
*
*   FOLLOWING ADDED TO ALLOW NLS SUPPORT FOR SIGNATURE IDENTIFIER
*
      10  FO-SIGNATURE                 PIC X(12) .
*
*   FOLLOWING ADDED TO ALLOW ALTERNATIVE NUMBER SUPPORT
*
      10  FO-ALTERNATE-NUM-FLAG        PIC X.
          88 FO-88-ALTERNATE-USED     VALUE 'Y' .
*
      10  FILLER                      PIC X(7861) .
*
01  FO-KEY-LEN                       PIC S9(4) COMP VALUE +21.
01  FO-REC-LEN                       PIC S9(4) COMP VALUE +9025.

```

The DOCOT record has the following layout:

```

01  FO-REC.
    05  FO-KEY.
        10  FO-TYPE                    PIC X.
            88 FO-88-DOCOT              VALUE '2' .
*
*   SERVER ON WHICH THE FAX REQUEST IS QUEUED TO GO OUT.
*
      10  FO-SERVER                    PIC X(8) .
*

```

```

* DATE AND TIME ARE SCHEDULE DATE AND TIME (UNCOMPLEMENTED)
*
      10 FO-DATE                      PIC S9(7) COMP-3.
      10 FO-TIME                      PIC S9(7) COMP-3.
*
* ENSURES A UNIQUE KEY
*
      10 FO-SEQNO                      PIC S9(4) COMP.
*
* INCREMENTED FROM 1 BY 1 FOR SETS OF DOCOT RECORDS.
*
      10 FO-RECNO                      PIC S9(4) COMP.
*
      05 FO-DATA                      PIC X(9004).
*
* DATA AREA FOR DOCOT RECORDS CONTAINING TEXT AND IMAGE
*
      05 FO-DOCOT-DATA                REDEFINES FO-DATA.
      10 FO-DOCOT-CHAR                PIC X OCCURS 9004.
*
01 FO-KEY-LEN                        PIC S9(4) COMP VALUE +21.
01 FO-REC-LEN                        PIC S9(4) COMP VALUE +9025.
01 FO-TEXT-LEN                       PIC S9(4) COMP VALUE +9004.

```

Recreating the file is not feasible. The individual requests would need to be sent again.

## FAXOUTC - Outtray for Inbound Fax Confirmations

The *FAXOUTC* file contains confirmations from inbound fax recipients. These confirmations are used by the FAXK transaction to update the LOGIN records on the *FAXLOGS* file, and delete the FAXIN records from the *FAXIN* file. Confirmations are placed on the file by OfficePath or RAPID. The file is not accessed directly. Instead, the FAXK program calls the PIPGT3 program (for OfficePath) or APIGT3 program (for RAPID) to retrieve individual requests onto a TSQ. The requests only remain on *FAXOUTC* until FAXK runs. FAXK is normally started by OfficePath or RAPID, when a request has been written to the outtray.

The *FAXOUTC* file does not need to be defined or created, if the inbound feature of OV/Fax is not being used.

## FAXOUTP - Outtray for Outbound Faxes

The *FAXOUTP* file contains outbound fax requests. These requests are processed by the FAXO transaction, which writes LOGOT and ADROT records to the *FAXLOGS* file, and FAXOT and DOCOT records to the *FAXOT* file. Requests are placed on the file by OfficePath or RAPID. The file is not accessed directly. Instead, the FAXO program calls the PIPGT3 program (for OfficePath) or APIGT3 program (for RAPID) to retrieve individual requests onto a TSQ. The requests only remain on *FAXOUTP* until FAXO runs. FAXO is normally started by OfficePath or RAPID, when a request has been written to the outtray.

## Estimating File Sizes

If high volumes of fax traffic are anticipated, consideration should be given to the likely sizes of files. The following guidelines should assist you in this process.

- the *FAXCNTL* file should not change size, unless language records or user authorisation profiles are maintained by administrators. Data records are variable length, up to 2048 bytes long, the key fields for the index are 17 bytes long (there is only one index).
- the *FAXSERV* file should not change size, unless servers are added or removed. Data records are 175 bytes long, the key fields for the index are 9 bytes long (there is only one index).

- the *FAXSCOD* file should only change size if users or administrators maintain short code entries. Data records are 85 bytes long, the key fields for the index are 25 bytes long (there is only one index).
- The *FAXLOGS* file will increase in size as more inbound or outbound fax requests are processed. Data records are up to 449 bytes in size. There will be one LOGOT record for every outbound fax, plus one ADROT record for every outbound fax recipient, plus one LOGIN record for every inbound fax. These records remain on file until the batch cleanup job deletes records older than a specified age. The key fields for the index are 13 bytes long (there is only one index).
- The *FAXIN* file will increase in size as more inbound fax requests are processed. Data records are 9001 bytes long. There will be a FAXIN record for every fax currently being processed, plus one or more DOCIN records each containing up to 8988 bytes of the fax document. FAXIN records are deleted once all the confirmations for the inbound recipients are received. DOCIN records remain on file until the batch cleanup job runs. The key fields for the index are 13 bytes long (there is only one index).
- The *FAXOT* file will increase in size as more outbound fax requests are processed. Data records are 9025 bytes long. There will be a FAXOT record for every fax currently being processed, including those awaiting rescheduling and those on the REQUEUE server. There will also be one or more DOCOT records each containing up to 9004 bytes of the fax document (unless the request is a Personal Services message) for every fax request on the *FAXLOGS* file with outstanding fax recipients, and for every complete request if the resend facility is configured. FAXOT records are deleted once the recipient is processed. DOCOT records will be deleted once all recipients of the fax request have been processed, unless the resend facility is configured, in which case the batch cleanup job will delete the records.

The key fields for the index are 21 bytes long (there is only one index). The *FAXOT* file can potentially get very large, if the resend facility is configured and the batch cleanup job does not run frequently enough or keeps records for a long time.

- The *FAXOUTC* file contains transient data; records will only remain on file until FAXK runs.
- The *FAXOUTP* file contains transient data; records will only remain on file until FAXO runs.

*FAXLOGS* and *FAXOT* are therefore the two most important files to consider. In addition, the *FAXIN* and *FAXOUTC* files are not needed if the inbound feature is not being used.

## Emergency Clean Down Procedure

The *FAXLOGS*, *FAXIN* and *FAXOT* files, and to a lesser extent the *FAXSERV* file, are closely related. In the event of corruption of one of these files, it may be necessary to clean down the system and process new faxes, before attempting to recover the old data. The following actions should be taken to clean down the files. Note that the *FAXIN* file may not be present if the inbound feature is not being used.

1. Shut down each of the fax servers, or disable the FAXR and FAXS transactions in CICS to prevent polling.
2. Disable the FAXI, FAXJ, FAXP and FAXQ transactions in CICS to prevent further file updates.

3. Disable the FAXO and FAXK transactions in CICS to prevent further requests or confirmations being processed. Alternatively, amend the OfficePath destination records (using PIPX) or RAPID interface records (using ZAPX) to remove the transaction names.
4. Back-up the existing *FAXSERV*, *FAXLOGS*, *FAXIN* and *FAXOT* files.
5. Use the JCL provided to create an empty *FAXSERV* file, if this corrupt. Manually add the new server records.
6. Use the JCL provided to create empty *FAXLOGS*, *FAXIN* and *FAXOT* files.
7. Start the FAXL transaction from a CICS screen, to update the server activity counts.
8. Clean down each of the fax servers: delete all files from the FAXOUT subdirectory; purge all records from the GammaFax pending and sent queues; use the **FAXADMIN** program to recreate the status file; and reboot the server PC.
9. Enable the FAXO and FAXK transactions in CICS, or amend the OfficePath or RAPID records.
10. Send a new fax. Ensure that FAXO processes the request, by using the on-line transactions to check the fax status and server status.
11. Enable the remaining transaction and restart the servers.

This completes the clean down procedure. The fax system should now be able to continue processing new fax requests,

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## Chapter 5. Batch Update and Cleandown Programs

Batch programs and appropriate JCL are supplied to allow you to install and configure the host components of OV/Fax, and to cleandown files on a periodic basis.

### Installation Programs

Five programs are supplied for use during the installation and migration of the host components of OV/Fax, in addition to the control file update program described later.

- Program **IMIUTIL1** is used to customise the jobs used for creating the OV/Fax files. It takes as input a cardfile containing replacement strings, which are then applied to each of the members in the JCL library.
- Program **APISETUP** is used in the jobs to create the OV/Fax files, and uses supplied cardfiles to generally add a low-values record to the beginning of each of the empty files it is used with.
- Program **FAXSERVM** is used to migrate the *FAXSERV* file from versions 2.1.0 and below of OV/Fax. The file was extended in version 2.2.0.
- Program **FAXMIG1** is used to migrate the *FAXOT* file from versions 2.3.0 and below of OV/Fax. The FAXOT record layout was changed in version 2.4.0.
- Program **FAXMIG2** is used to migrate the *FAXSCODE* file from versions 2.3.0 and below of OV/Fax. The file was extended in version 2.4.0.

### Batch Update Program

Program **FAXCNTL**, which runs as part of the **FAXCNTL** JCL member, builds the fax control file *FAXCNTL* from a series of input control cards. Once the file has been built, you may customise the job to update or replace details as appropriate. The input control cards are supplied on a series of members in the JCL library:

Member	Contents
FAXCTL1	ASCII / EBCDIC conversion tables, used to convert between host multilingual code page 256 and PC multilingual code page 850
FAXCTL2	parameters for the main configuration records
FAXCTL3	text of the PF keys for the on-line transactions
FAXCTL4	map text for the on-line transactions
FAXCTL5	help text for the on-line transactions
FAXCTL6	text of the system error messages
FAXCTL7	text of the status messages sent to administrators and fax originators, together with the transmission error messages and the action to take for each type of error
FAXCTL8	message text for the on-line transactions
FAXCTL9	text for the batch cleandown reports
FAXCTLA	least-cost routing table entries
FAXCTLB	user profile details and the list of direct inward dialling (DID) recipients.

	The user profile details can also be maintained on-line by an administrator
FAXCTLC	names of the deferred fax users and the allowed times for each

Members FAXCTL1 through to FAXCTLA are also supplied containing German-language equivalent records. These members have the same name but with a suffix of '1', for example FAXCTL21 and FAXCTLA1.

## Cleandown Programs

Program **FAXBJLG1** processes the FAXLOGS file, removing outbound records older than the specified age. Details of the removed records are written to an archive file. Any outstanding records on the FAXOT file that correspond to the removed records, will also be removed. The program will also, optionally, remove records for inbound faxes, again writing details to the archive file. Corresponding records on the FAXIN file will be removed.

Three parameters are passed to the program when run. The first specifies the maximum age (in days) of the records to be kept. The second parameter specifies which records are to be processed: 'B' will process both inbound and outbound records, 'O' will only process outbound records. The third parameter specifies which status of outbound records will be processed: 'A' will process all records, 'C' will only process Complete records.

Program **FAXBJLG2** processes the archive file to produce reports and summary reports of the inbound and outbound faxes deleted by FAXBJLG1. (You may write your own batch program to process the archive file if required.) Three parameters are passed to the program when it runs. The first specifies the language code to be used for the report text; specifying a space will cause the default records to be used. The second parameter specifies whether lower-case characters may be included in the report: 'U' means upper-case only, 'L' means upper- and lower-case are supported. The third parameter specifies which report to produce: 'R' will produce a detail report, 'S' will produce a summary report, 'B' will produce both reports.

Two batch jobs are supplied which back-up the relevant files, run the cleandown, delete and redefine new files, and copy the remaining records into the new files. **FAXBJLG** cleans down both inbound and outbound records, while **FAXBJLGO** only processes outbound records. You will need to customise these jobs for the location and names of the files, and for the age and language parameters describe above.

## Chapter 6. On-line Enquiry and Maintenance Transactions

OV/Fax is supplied with CICS-based on-line transactions, giving administrators and users access to various parts of the system. You will normally choose the required option from a menu. If you are using OV/MVS however, it is possible to configure fastpaths to take you straight into particular options. Without OV/MVS you will need to log on to OV/Fax, so that it can determine if you are a user or an administrator.

User or administrator status is determined from records on the control file. These can be maintained from batch, or on-line by administrators. Users have a restricted set of transactions available to them.

### On-line Transactions

The following on-line transactions are supplied

Transaction (Program/Map )	User Access	Description
<b>FAX0</b> (FAX0010)	Y	<b>(OV/Fax Personal Services User Exit).</b> Validates the fastpath, if entered, against the <i>FAXCNTL</i> file. Transfers control to FAX1.
<b>FAX1</b> (FAX1010 / FAX101A)	Y	<b>OV/FAX Menu.</b> Checks the user's authority against the <i>FAXCNTL</i> file, and processes the user or administrator menu as appropriate. Transfers control to any of FAX3, FAX4, FAX5, FAXA or FAXE, or returns to CICS or Personal Services.
<b>FAX2</b> (FAX2010 / FAX201A)	Y	<b>OV/FAX User Sign-On.</b> Allows entry to OV/Fax from native CICS. Validates the user's authority against the <i>FAXCNTL</i> file and transfers control to FAX1.
<b>FAX3</b> (FAX3010 / FAX301A)		<b>User Profile Maintenance.</b> Allows administrators to define cover sheets, CSIDs and other details for individual users and for nodes. Details are held on the <i>FAXCNTL</i> file.
<b>FAX4</b> (FAX4010 / FAX401A)	Y	<b>Edit/View Personal/Shared Fax Address Book.</b> Allows users to maintain their personal address book and view the shared address book. Administrators can also maintain the shared address book. The address books are held on the <i>FAXSCOD</i> file. The <i>FAXSERV</i> file is used to validate specific servers in fax numbers.
<b>FAX5</b> (FAX5010 / FAX501A)	Y	<b>Fax Status Information Selection.</b> Allows users and administrators to optionally select the status and date/time range of faxes to enquire on. Administrators can also choose the fax originator. Validates that there are matching LOGOT records on the <i>FAXLOGS</i> file before transferring control to FAX7.
<b>FAX7</b> (FAX7010 / FAX701A)	Y	<b>Status of Fax Requests.</b> Displays a list of faxes (LOGOT records on the <i>FAXLOGS</i> file) sent since the last batch cleardown. Administrators can see all faxes (unless they specified an originator in FAX5). Users will only see their own faxes. Transfers control to FAX8 if a specific fax is selected.
<b>FAX8</b> (FAX8010 /	Y	<b>Results of Send Request.</b> Displays details of the fax request, including the overall status, document name, subject and

FAX801A)		originator, taken from the LOGOT record on the <i>FAXLOGS</i> file, together with the first four recipients (ADROT records on the <i>FAXLOGS</i> file). Users may (logically) delete records so that they do not appear in the list. Transfers control to FAX9 if the recipient status list is to be viewed.
<b>FAX9</b> (FAX9010 / FAX901A)	Y	<b>Fax Recipient Status.</b> Lists the individual recipients for a fax request, together with their status, fax number and fax server used. The details are taken from ADROT records on the <i>FAXLOGS</i> file. The total number of faxes sent is read from the associated LOGOT record. Transfers control to FAXG if an individual recipient is selected or cancelled.
<b>FAXA</b> (FAXA010 / FAXA01A)		<b>Server List.</b> Displays a list of servers in OV/Fax, together with their current statuses. The ERROR and REQUEUE servers will also be listed. The details are read from the <i>FAXSERV</i> file. Transfers control to FAXB if an individual server is selected or deleted, or an ADD command is issued.
<b>FAXB</b> (FAXB010 / FAXB01A)		<b>Server Information.</b> Allows a server's status, rating and inbound recipient list to be maintained. (These details are held on the <i>FAXSERV</i> file). Also displays details of a server's current workload. Servers with no queued faxes (no FAXOT records on the <i>FAXOT</i> file) may be deleted from the <i>FAXSERV</i> file.  Closing a server will result in outstanding faxes being requested to other servers where possible. In this case, new FAXOT records will be created on the <i>FAXOT</i> file, and the associated ADROT records on the <i>FAXLOGS</i> file will be updated to reflect the changes. (If the REQUEUE server is closed, the FAXQ transaction will be started to perform the requeuing in background.) Viewing the server's queue will transfer control to FAXC if there are FAXOT records for this server on the <i>FAXOT</i> file.
<b>FAXC</b> (FAXC010 / FAXC01A)		<b>List Server Queue.</b> Displays a list of all faxes currently being processed by the server (FAXOT records on the <i>FAXOT</i> file), including those awaiting rescheduling. Transfers control to FAXD if an individual fax is selected or cancelled.
<b>FAXD</b> (FAXD010 / FAXD01A)		<b>Fax Information.</b> Displays the details for an individual fax, including the document type, number of attempts, and the next time a waiting fax will be scheduled. The details are taken from a FAXOT record on the <i>FAXOT</i> file. In-progress faxes may be cancelled. In this case, the FAXX transaction will be started in background to perform the cancellation.
<b>FAXE</b> (FAXE010 / FAXE01A)		<b>Status of Inbound Faxes.</b> Displays a list of faxes (LOGIN records on the <i>FAXLOGS</i> file) received since the last batch cleanup. Transfers control to FAXM if a specific fax is selected.
<b>FAXG</b> (FAXG010 / FAXG01A)	Y	<b>Status of Fax Address.</b> Displays the details for an individual fax recipient, including the number of pages and transmission time for a successful fax, or error details if there was a problem. The details are taken from an ADROT record on the <i>FAXLOGS</i> file. In-progress faxes may be cancelled. In this case, the outstanding FAXOT record on the <i>FAXOT</i> file will be located,

		and the FAXX transaction will be started in background to perform the cancellation. The fax may also be resent to a different recipient name or fax number. In this case, the FAXX transaction will be started in background to perform the resend.
<b>FAXH</b> (FAXHELP / FAXH01A)	Y	<b>(Help Screen Processor)</b> . The program is called directly from the on-line programs. It handles the display of help screens, reading the help details from the <i>FAXCNTL</i> file. The transaction should not be entered directly.
<b>FAXM</b> (FAXM010 / FAXM01A)		<b>Inbound Fax Description</b> . Displays details of the received fax, including the overall status, the document name and subject, and the list of recipients. The details are taken from a LOGIN record on the <i>FAXLOGS</i> file. Transfers control to FAXN if the recipient status is to be viewed.
<b>FAXN</b> (FAXN010 / FAXN01A)		<b>Inbound Fax Recipient Status</b> . Displays a detailed list of inbound fax recipients, including their telephone extension for Direct Inward Dialling installations. The details are taken from a LOGIN record on the <i>FAXLOGS</i> file.
<b>FAXT</b> (FAXT010)		<b>(Test Fax Generator)</b> . This standalone transaction is run from native CICS. It generates a simple fax and passes it on a TSQ to the OfficePath program PIPGS3, which writes the request to the ZPMAILSK. The fax is sent from DEMOUSER to TESTREC at FAX. TESTREC will be replaced by 'nickname' if the transaction is started with 'FAXT nickname'.
<b>FAXX</b> (FAXX010)	Y	<b>(Background Cancel / Resend Processor)</b> . Started by FAXD and FAXG to cancel or resend faxes. The transaction runs in background. If a fax is cancelled, the FAXOT record on the <i>FAXLOGS</i> file is set to a status of CANCELLED, the activity counts for the server on the <i>FAXSERV</i> file are updated, and the background FAXJ transaction may be started to send a message back to the originator. FAXJ is only started if OV/Fax is not configured to run FAXJ on a timer.  If a fax is resent, the FAXVAL program will be called to determine the server to use, a new ADROT record will be generated on the <i>FAXLOGS</i> file, and the counts on the associated LOGOT record will be updated. The FAXQUE program will be called to add a new FAXOT record to the <i>FAXOT</i> file.

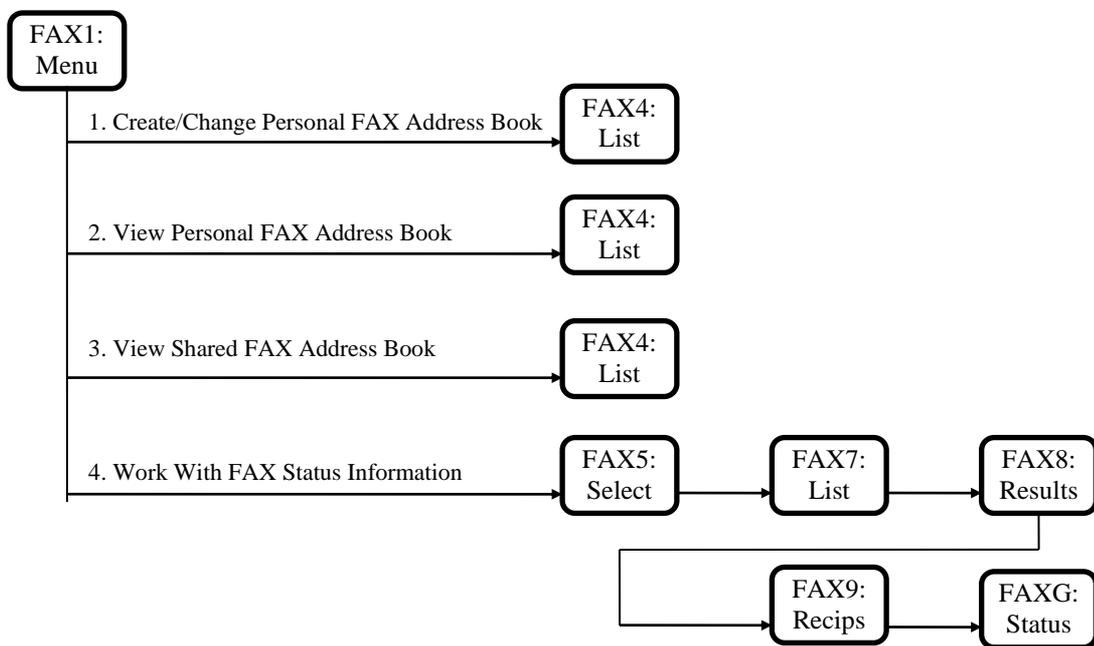
The following programs are also used by the on-line transactions:

<b>Program</b>	<b>Description</b>
FAX2EXIT	<b>User / Password Validation Module</b> . This is a user exit program called from FAX2010. It currently validates the node, user ID and password against the DISOSS HUP dataset.
FAXCDATE	<b>Date Conversion Module</b> . Converts between DDMMYY and Julian format dates.
FAXCTIME	<b>Date / Time Generator Module</b> . Generates a new date and time from an existing date and time, plus a time interval. Used for rescheduling faxes and generating alert times.
FAXMSG	<b>Message Build Module</b> . Reads and formats status, error and screen

	messages from the <i>FAXCNTL</i> file. Error messages may be written to an error TDQ, such as CSMT, or sent to the operator's console. Status and screen messages are returned to the calling program.
FAXMWTO	<b>Operator Console Message Module.</b> Called by FAXMSG to send error messages to the operator's console.
FAXQUE	<b>Fax Scheduling Module.</b> Writes a new FAXOT request to the <i>FAXOT</i> file, having read through the available servers on the <i>FAXSERV</i> file to determine the most suitable (least-busy) one.
FAXVAL	<b>Fax Number Validation Module.</b> Validates the format of a fax number, reformatting if necessary, and uses the least-cost routing details on the <i>FAXCNTL</i> file to determine the list of suitable servers. If the fax number includes a specific server, it will be validated against the <i>FAXSERV</i> file.

## User Options

A user will have the following menu structure:

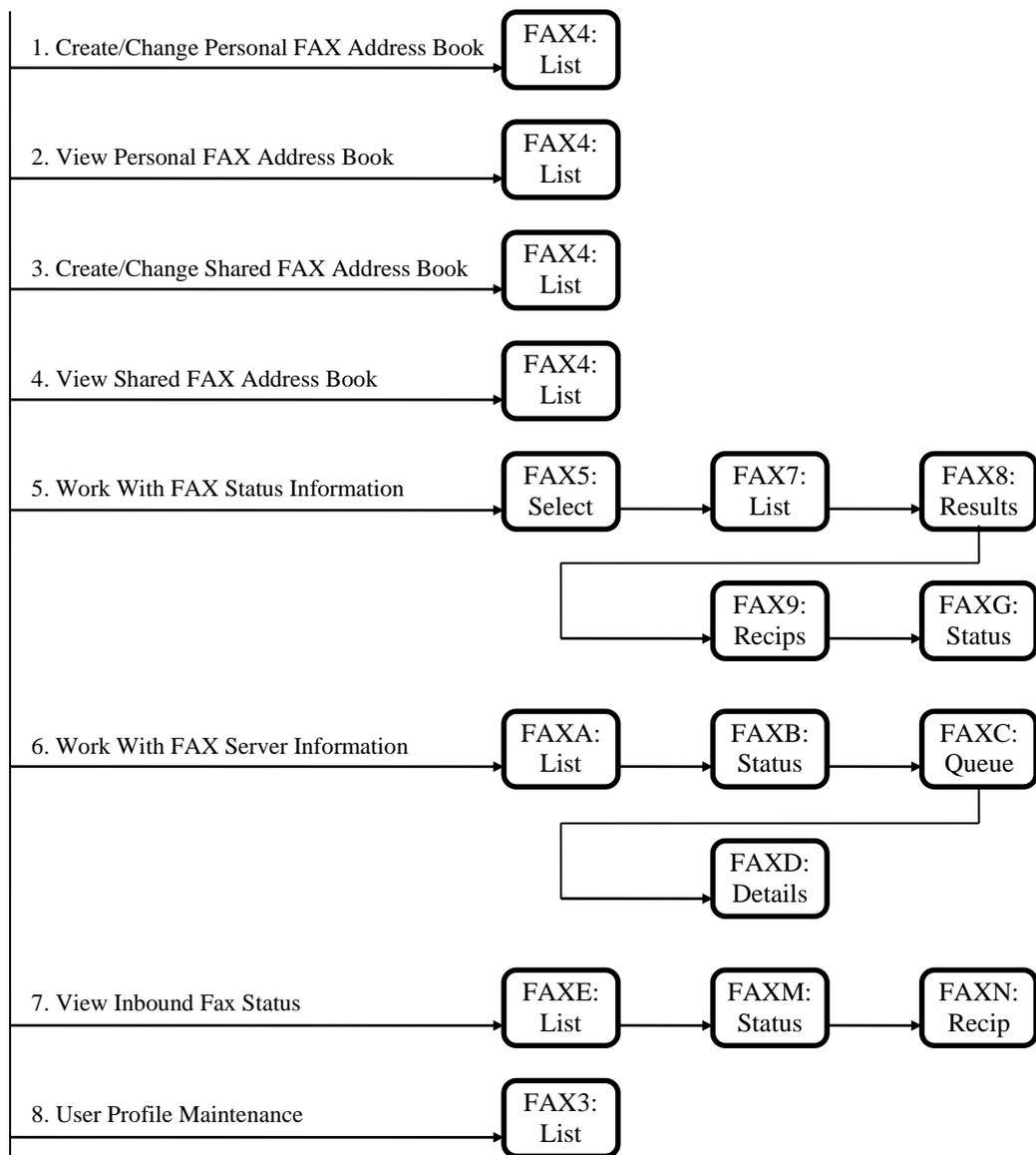


**Figure 2. On-line Menu Structure for OV/Fax Users**

## Administrator Options

An administrator will have the following menu structure:





**Figure 3. On-line Menu Structure for OV/Fax Administrators**



## Chapter 7. Background CICS Transactions

The background transactions supplied with OV/Fax perform the routing and scheduling of faxes, and interface to the fax servers via 3270 emulation sessions. They also use the RAPID or OfficePath API programs to send and receive faxes and status information to and from other host applications.

### Background Transactions

The following background transactions are supplied

Transaction (Program)	Inbound / Outbound	Description
<b>FAX6</b> (FAX6010)		<b>Message Sender.</b> Builds a TSQ with details of a message and calls the OfficePath or RAPID API program (PIPGS3 or APIGS3 respectively) to send the message. (The message may be either a Personal Services message, note or editable document, depending on the NOTES parameter on the CONF4 record of the <i>FAXCNTL</i> file). The program is called directly from FAXJ, FAXP, FAXR and FAXS. The transaction should not be entered directly. It calls FAXMSG and abends if it fails to send the message.
<b>FAXI</b> (FAXI010)	I	<b>Inbound Fax Distributor.</b> Processes all outstanding inbound fax requests (FAXIN records) on the <i>FAXIN</i> file. Obtains the status and inbound recipient details from the associated LOGIN record on the <i>FAXLOGS</i> file, builds a TSQ with the fax details and document text (from DOCIN records on the <i>FAXIN</i> file), and calls the OfficePath or RAPID API program (PIPGS3 or APIGS3 respectively) to send the distribution. The LOGIN record is then updated to a status of QUEUED.  If fax distributions have been generated, the program starts the OfficePath or RAPID transaction to process the requests. FAXI itself is either started by the FAXR transaction (if DISTRIB on the CONF4 record of the <i>FAXCNTL</i> file is N) or restarts itself on a timer (using the interval in DISTINCT on the CONF4 record). It may also be run manually if required.
<b>FAXJ</b> (FAXJ010)	O	<b>Outbound Fax Journal Processor.</b> Processes all FAXOT records on the <i>FAXOT</i> file, updating the <i>FAXLOGS</i> file and generating messages to originators as appropriate. Language details for each fax originator are obtained from the <i>FAXCNTL</i> file.  <ul style="list-style-type: none"> <li>• If a fax is PENDING, DIALLING or TRANSMITTING then the ADROT record on the <i>FAXLOGS</i> file is updated with the status and details. If the fax has exceeded its alert time, FAXMSG and FAX6010 are called to notify the originator, before a new alert time is generated.</li> <li>• If a fax is COMPLETE or in ERROR, the ADROT record on the <i>FAXLOGS</i> file is updated; the counts and status of the associated LOGOT record are updated; the DOCOT records on the <i>FAXOT</i> file are deleted if all the recipients have been processed and the resend option is disabled;</li> </ul>

		<p>FAXMSG and FAX6010 are called to notify the originator; the FAXOT record is deleted and the activity counts on the <i>FAXSERV</i> file are updated.</p> <ul style="list-style-type: none"> <li>• If a fax is <b>REQUEUED</b>, FAXMSG and FAX6010 will be called to send a message back to the originator, if they have not already been notified. <b>CANCELLED</b> faxes are ignored.</li> </ul> <p>If messages to originators have been generated, the program starts the OfficePath or RAPID transaction to process the requests. FAXJ itself is either started by the FAXS transaction (if FAXJ on the CONF4 record of the <i>FAXCNTL</i> file is N) or restarts itself on a timer (using the interval in CHKSTAT on the CONF4 record). It may also be run manually if required.</p>
<b>FAXK</b> (FAXK010)	I	<p><b>Inbound Confirmation Processor.</b> Processes confirmations (and NAKs) from recipients of inbound faxes. The transaction is started by OfficePath or RAPID, and uses the PIPGT3 or APIGT3 program respectively to retrieve the details from the <i>FAXOUTC</i> file. For each request, it reads the FAXIN record from the <i>FAXIN</i> file, and the associated LOGIN record from the <i>FAXLOGS</i> file.</p> <ul style="list-style-type: none"> <li>• For confirmation requests, the status of the individual recipients on the LOGIN record are set to <b>DELIVERED</b>, <b>UNDELIVERED</b> or <b>INVALID</b> as appropriate. If all recipients have been processed, the FAXIN record is deleted from the <i>FAXIN</i> file. The overall LOGIN status is then set to <b>COMPLETE</b> or <b>ERROR</b> depending on the number of successful recipients.</li> <li>• For NAK requests, all the <b>PENDING</b> recipients on the LOGIN record are set to <b>UNDELIVERED</b>; the overall LOGIN status is set to <b>ERROR</b>; and the FAXIN record is deleted from the <i>FAXIN</i> file.</li> </ul>
<b>FAXL</b> (FAXL010, FAXLTABP, FAXL020)		<p><b>OV/Fax Startup Transaction.</b> Performs the CICS startup processing for OV/Fax. FAXL010 is a PLT program to start the FAXL transaction (FAXL010 includes FAXLTABP). FAXL points to the FAXL020 program.</p> <p>For each server on the <i>FAXSERV</i> file, the number of faxes queued to that server on the <i>FAXOT</i> file is counted and the <i>FAXSERV</i> record updated. It then starts the FAXI transaction if this is set to run on a timer (DISTRIB on the CONF4 record of the <i>FAXCNTL</i> file is Y). Transaction FAXJ is started. Transactions FAXQ and FAXP are started on a timer, using the POLLINT value from the CONF4 record of the <i>FAXCNTL</i> file.</p>
<b>FAXO</b> (FAXO010)	O	<p><b>Outbound Fax Processor.</b> Processes fax requests from originators of outbound faxes. The transaction is started by OfficePath or RAPID (or may be run manually), and uses the PIPGT3 or APIGT3 program respectively to retrieve the details for each request from the <i>FAXOUTP</i> file:</p> <ul style="list-style-type: none"> <li>• for print image documents, FAXNOTSC and, if appropriate, FAXPRISC are called, to scan for originator,</li> </ul>

		<p>recipient and subject details; the document is then written to DOCOT records on the <i>FAXOT</i> file, validating image specifications in the process.</p> <ul style="list-style-type: none"> <li>• for RFT documents, FAXRFTSC is called, if available, to scan for originator, and recipient details; the document is then written to DOCOT records on the <i>FAXOT</i> file, validating image specifications in the process.</li> <li>• for PC files, the document is written to DOCOT records on the <i>FAXOT</i> file, without scanning.</li> </ul> <p>The fax originator is validated against the <i>FAXCNTL</i> file. The list of recipients is then validated: FAXPCSC is called to scan for wild numbers in the subject field; for each recipient, FAXCODEX or FAXEAB are called to expand any shortcode; FAXVAL is called to validate the number; FAXQUE is called to write the FAXOT record to the <i>FAXOT</i> file; and an ADROT record is written to the <i>FAXLOGS</i> file. A LOGOT record for the whole fax is then written to the <i>FAXLOGS</i> file.</p> <p>Finally, FAXJ is started if there were faxes in error or requeued, and FAXJ is not running on a timer (FAXJ on the CONF4 record of the <i>FAXCNTL</i> file is N).</p>
<b>FAXP</b> (FAXP010)	O	<p><b>Server Polling Monitor.</b> Processes all servers on the <i>FAXSERV</i> file (except ERROR and REQUEUE), checking that they have each polled the host within the time specified in POLLTIM on the CONF4 record of the <i>FAXCNTL</i> file. If the server has not polled, its status on <i>FAXSERV</i> is set to CLOSED and each FAXOT record on the <i>FAXOT</i> file queued to the server (but not specifically to this server) is requeued to another server: FAXVAL is called first, then FAXQUE to write a new FAXOT record; the existing FAXOT record is cancelled or deleted if possible, and the corresponding ADROT record on the <i>FAXLOGS</i> file is updated for the new FAXOT record.</p> <p>FAXP is started by FAXL at CICS startup. It then restarts itself on a timer (using the interval in POLLINT on the CONF4 record of the <i>FAXCNTL</i> file).</p>
<b>FAXQ</b> (FAXQ010)	O	<p><b>Requeue Processor.</b> Requeues faxes from the REQUEUE server to valid servers where possible. It processes all outstanding FAXOT records on the <i>FAXOT</i> file that are queued to the REQUEUE server. It firstly calls the FAXVAL program to determine the server to use, then calls the FAXQUE program to add a new FAXOT record to the <i>FAXOT</i> file. The ADROT record on the <i>FAXLOGS</i> file will be updated, the counts on the associated LOGOT record will also be updated. The FAXOT record for the REQUEUE server will be deleted and the counts on the <i>FAXSERV</i> file updated accordingly.</p> <p>FAXQ is started by FAXL at CICS startup. It is also started by FAXS when a new server is added or a closed server is reopened; and started by FAXB when the REQUEUE server is closed on-line. It may also be run manually if required.</p>

<p><b>FAXR</b> (FAXR010)</p>	<p>I</p>	<p><b>Fax Server Receive Module.</b> Started by the fax server on its 3270 emulation session, and used to send an individual inbound fax document and its profile to the host. If the server does not exist on the <i>FAXSERV</i> file, a new record will be added. Otherwise the server will be set to a status of RECEIVING.</p> <p>The profile is received from the server; the document is then received and written to DOCIN records on the <i>FAXIN</i> file; the corresponding FAXIN record is written, followed by a LOGIN record on the <i>FAXLOGS</i> file. The recipients for the LOGIN record are either obtained by matching a DID extension against the <i>FAXCNTL</i> file, or from the inbound recipient values on the <i>FAXSERV</i> file, or finally from the default recipient FAXID on the CONF4 record of the <i>FAXCNTL</i> file.</p> <p>Finally, FAXI is started if DISTRIB on the CONF4 record of the <i>FAXCNTL</i> file is N. The server's status on the <i>FAXSERV</i> file is then set to WAITING.</p>
<p><b>FAXS</b> (FAXS010)</p>	<p>O</p>	<p><b>Fax Server Send Module.</b> Started by the fax server on its 3270 emulation session, and used to send outbound fax documents and profiles to the server, and for the server to report the status of such faxes back to the host. If the server does not exist on the <i>FAXSERV</i> file, a new record will be added.</p> <p>All FAXOT records on the <i>FAXOT</i> file for this server are processed:</p> <ul style="list-style-type: none"> <li>• COMPLETE and ERROR records are ignored.</li> <li>• PENDING faxes that are now scheduled to go are added to a list for later (to a maximum of 15).</li> <li>• TRANSMITTING faxes have their status verified on the server. If the same, the FAXOT record will be updated to DIALLING and the server will be told to send the fax.</li> <li>• DIALLING faxes have their status verified on the server. If COMPLETE, the FAXOT record will be updated to a status of COMPLETE, the activity counts for the server on the <i>FAXSERV</i> file will be updated, and the server will be told to cancel the fax. If in ERROR, the fax may either be rescheduled (by writing a new FAXOT record with status PENDING, and deleting the old one) or CANCELLED (by updating the FAXOT record to status ERROR, telling the server to cancel the fax, and updating the activity counts for the server on the <i>FAXSERV</i> file).</li> <li>• CANCELLED faxes have their status verified on the server. If COMPLETE or ERROR, the files are updated as for a DIALLING fax. If not, the server is told to cancel the fax and the FAXOT record is updated with a status of ERROR.</li> </ul> <p>For each PENDING fax on the list created above: the FAXOT record is re-read; the server's record on the <i>FAXSERV</i> file is updated to SCHEDULED; the document profile is sent to the server, followed by the text from the DOCOT records (if this</p>

		<p>is the first attempt to send the fax, and the server has space); the status on the server is verified; the FAXOT record is updated to a status of DIALLING and the server is told to send the fax.</p> <p>The server's status is set to WAITING on the <i>FAXSERV</i> file if there are no DIALLING faxes. The server is also set to CLOSED if it is too full to process any more faxes. The actual server is informed that there are no more records to process.</p> <p>Finally, FAXJ is started if there is status information to report back to originators, and FAXJ is not running on a timer (FAXJ on the CONF4 record of the <i>FAXCNTL</i> file is N). FAXQ will also be started, if a new server has been added, or a closed server is reopened.</p>
<b>FAXU</b> (FAXU010)		<p><b>Fax Server Availability Module.</b> Started by the fax server on its 3270 emulation session, to verify that the host component is available. A screen containing "FAXU AVAILABLE" is returned to the server. The transaction is started before FAXR and FAXS are attempted.</p>

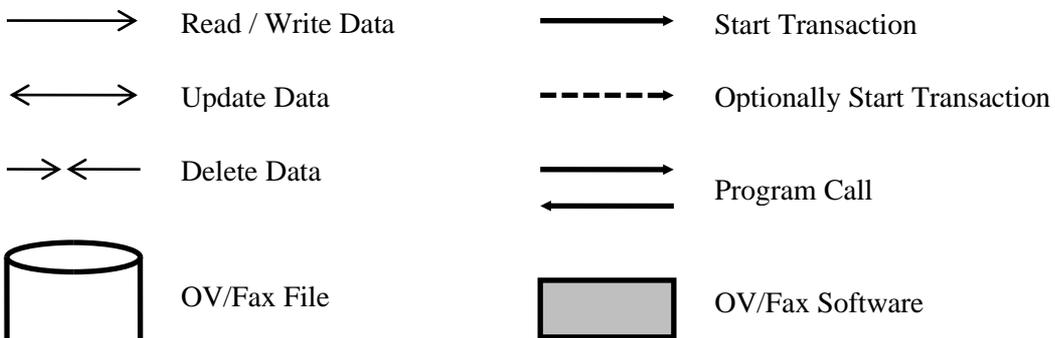
The following programs are also used by the background transactions:

<b>Program</b>	<b>Description</b>
FAXCDATE	<b>Date Conversion Module.</b> Converts between DDMMYY and Julian format dates.
FAXCODEX	<b>Shortcode Validation Module.</b> Checks the shortcode against the originator's Personal Fax Address Book, then the Shared Fax Address Book, in the <i>FAXSCOD</i> file. Returns the fax number and description if found.
FAXCTIME	<b>Date / Time Generator Module.</b> Generates a new date and time from an existing date and time, plus a time interval. Used for rescheduling faxes and generating alert times.
FAXEAB	<b>Enterprise Address Book Search Module.</b> Searches the shared and / or personal address books (depending on the EXPD parameter on the CONF7 record of the <i>FAXCNTL</i> file) to obtain the full name (ENJFULLN) and fax number (ENJFAX) fields for each of the fax recipients in the request. Performs the search by calling the EAB API program ENJ000P.
FAXMSG	<b>Message Build Module.</b> Reads and formats status, error and screen messages from the <i>FAXCNTL</i> file. Error messages may be written to an error TDQ, such as CSMT, or sent to the operator's console. Status and screen messages are returned to the calling program.
FAXMWTO	<b>Operator Console Message Module.</b> Called by FAXMSG to send error messages to the operator's console.
FAXNOTSC	<b>Note Scanning Module.</b> Scans through a print image fax document looking for a Personal Services-style header. If found, the originator, recipient and subject details are extracted. The recipient details could be in the form of a shortcode (in which the recipient's name will be extracted) or a wild-fax address (in which an optional server name, the fax number and

	recipient's name will be extracted).
FAXPCSC	<b>PC Scanning Module.</b> Scans through the subject field looking for predefined strings which identify a wild-fax address, consisting of an optional server name, followed by the fax number and the recipient's name. The module is called if OV/Fax is configured to support wild fax numbers in the subject field. This is the principal way of specifying fax numbers with PC files.
FAXPRISC	<b>Print Image Scanning Module.</b> Scans through a print image fax document looking for predefined strings which identify the originator and recipient details. The recipient details will be in the form of wild-fax addresses, consisting of an optional server name, followed by the fax number and the recipient's name. The module will be called if the FAXNOTSC module fails to extract details from a note header.
FAXQUE	<b>Fax Scheduling Module.</b> Writes a new FAXOT request to the <i>FAXOT</i> file, having read through the available servers on the <i>FAXSERV</i> file to determine the most suitable (least-busy) one.
FAXRFTSC	<b>RFT Scanning Module.</b> Scans through an RFT fax document looking for predefined strings which identify the originator and recipient details. The recipient details will be in the form of wild-fax addresses, consisting of an optional server name, followed by the fax number and the recipient's name.
FAXVAL	<b>Fax Number Validation Module.</b> Validates the format of a fax number, reformatting if necessary, and uses the least-cost routing details on the <i>FAXCNTL</i> file to determine the list of suitable servers. If the fax number includes a specific server, it will be validated against the <i>FAXSERV</i> file.

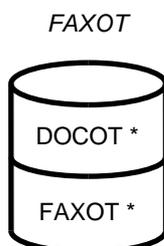
## Fax Processing

The following sections illustrate the successful processing of faxes. The following conventions are used:



## PLT Processing

The following diagram illustrates the processing performed at CICS startup by the PLT transaction.



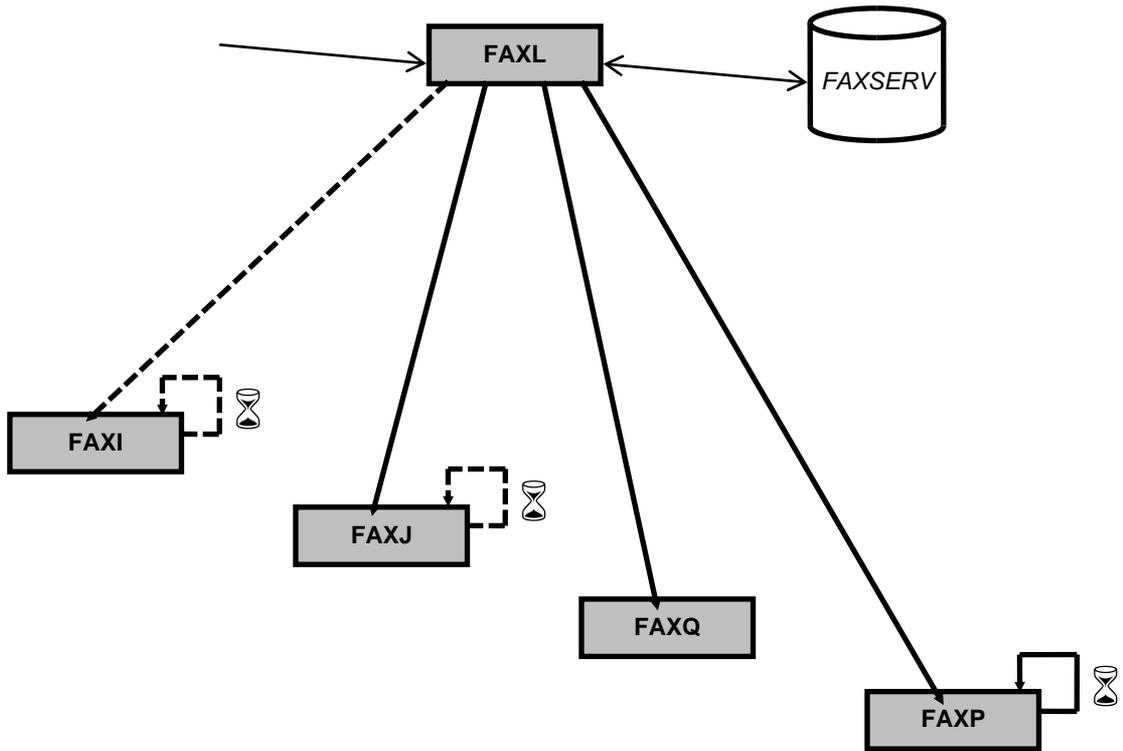
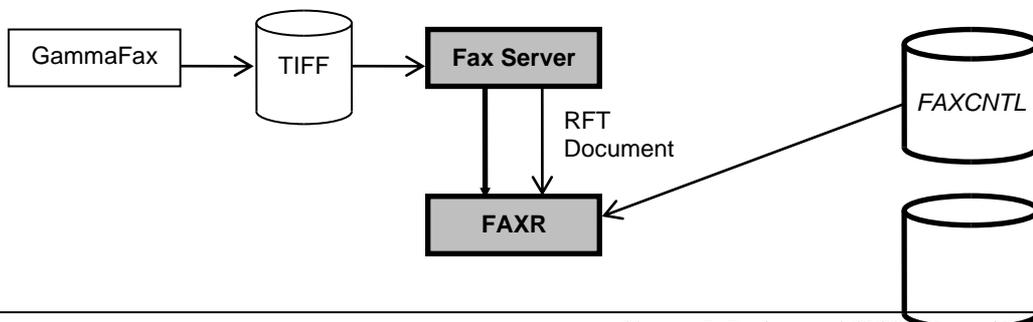


Figure 4. PLT Processing

## Inbound Fax Processing

The following diagram illustrates how inbound faxes are processed by the background transactions.



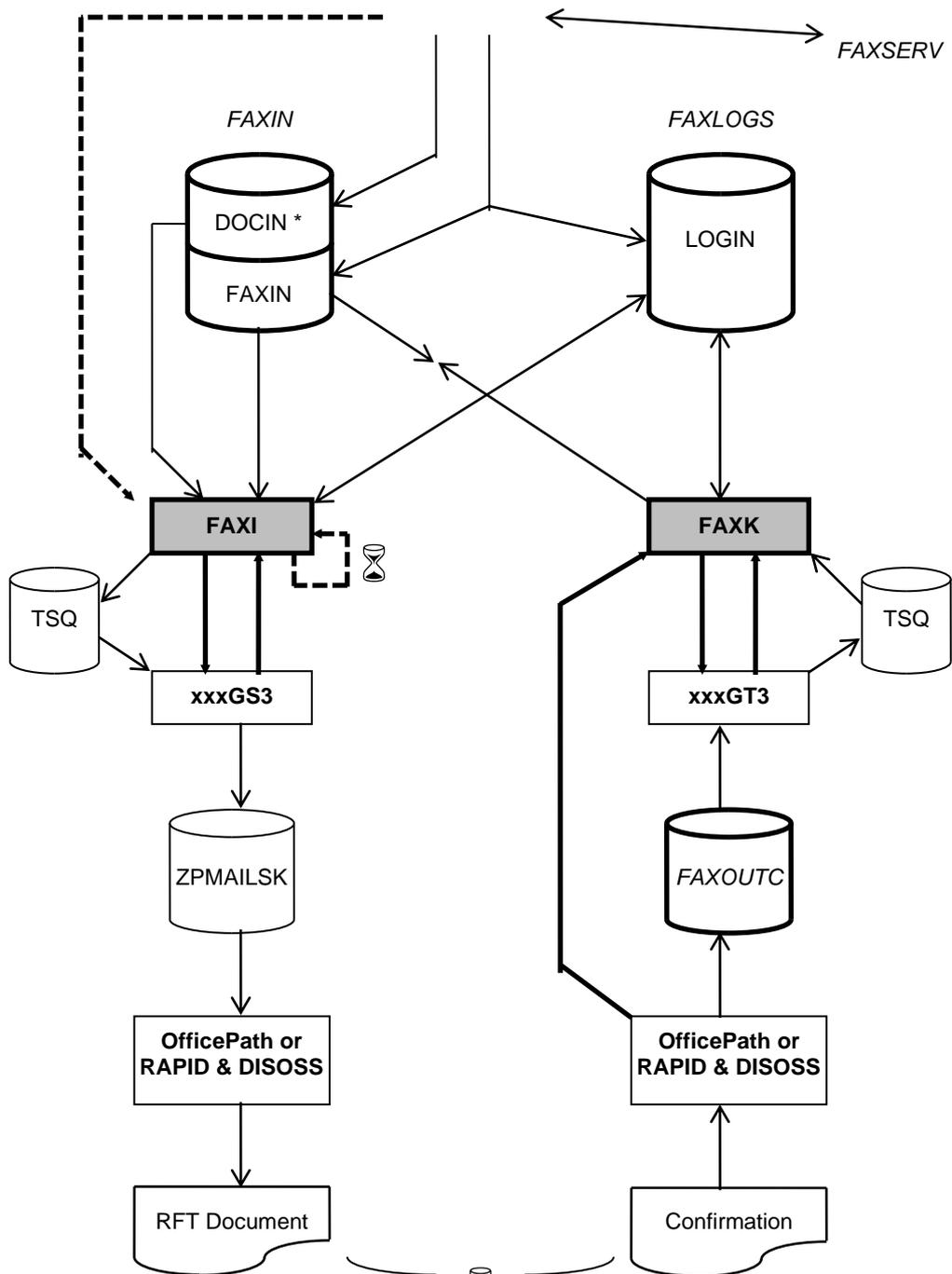
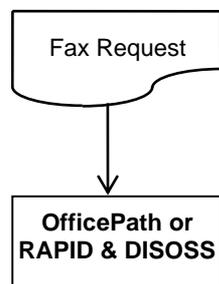
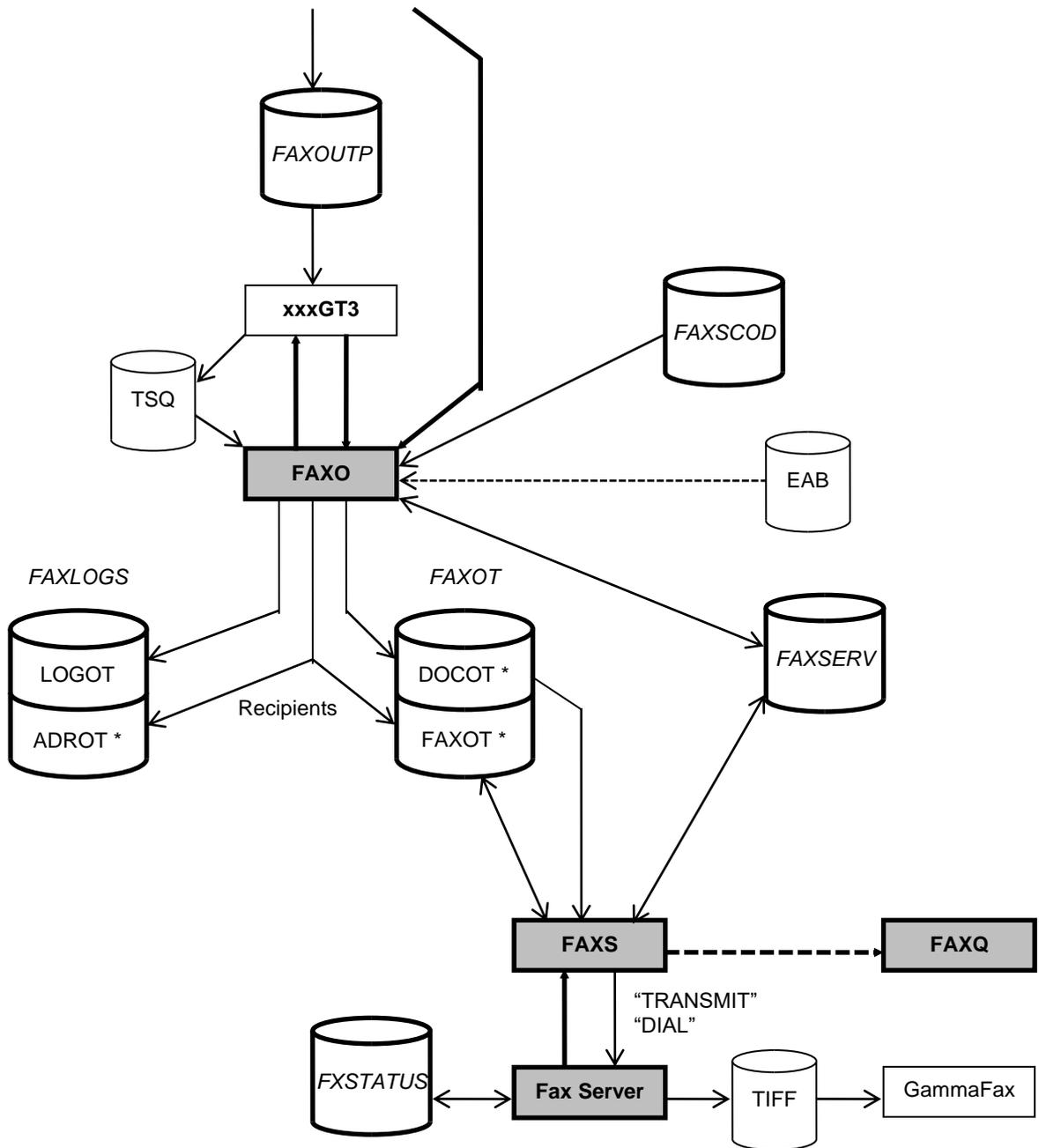


Figure 5. Inbound Fax Processing

## Outbound Fax Processing

The following diagram illustrates how outbound faxes are sent to the fax server.





**Figure 6. Outbound Fax Processing: Sending the Fax**

The following diagram illustrates how the status for outbound faxes is reported back to the originators.

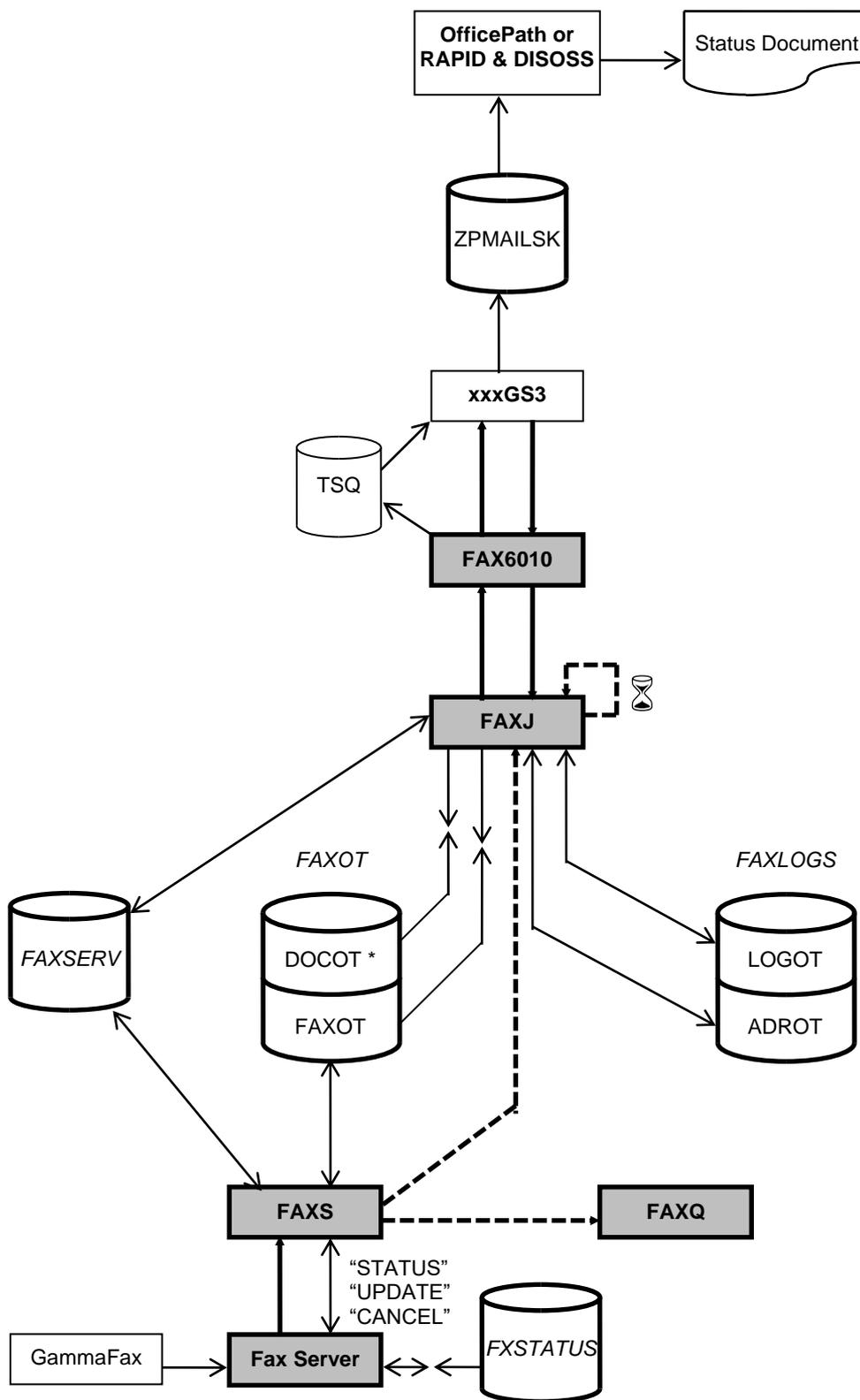


Figure 7. Outbound Fax Processing: Reporting Status Back

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## Chapter 8. Batch AUTOFAX Program

The AUTOFAX program **FAXBJAUT** is a batch program designed to take an existing print image dataset and generate a second dataset containing fax format information. The input dataset contains pre-formatted forms, such as invoices, which would normally be printed on pre-printed stationery. These forms are scanned for particular fields, such as fax number and recipient name, at defined locations within the form. The fields and the forms themselves are then used to generate the second dataset, which can be passed directly to the OfficePath or RAPID batch interface program (**PIPGS3B** or **RAPIDGS3** respectively). This second dataset contains multiple fax requests.

The fields to scan for, and their locations within the form, are specified in the control parameters to the **FAXBJAUT** program. The program can operate in single or multi-page mode:

- in single page mode, the program assumes that every page in the input dataset is a new fax.
- in multi-page mode (specified by including the PAGE control parameter) the program uses the page number to identify where new faxes start, assuming that page “1” indicates the start of a new fax. The first page can optionally only contain fields for the fax, and be sent as part of the fax.

The fax number can be scanned directly from the form. Alternatively, an address book nickname may be included within the form instead. The control parameters determine which is used. An overlay, such as a copy of a pre-printed form, can be specified for inclusion on every fax page.

# AUTOFAX Processing

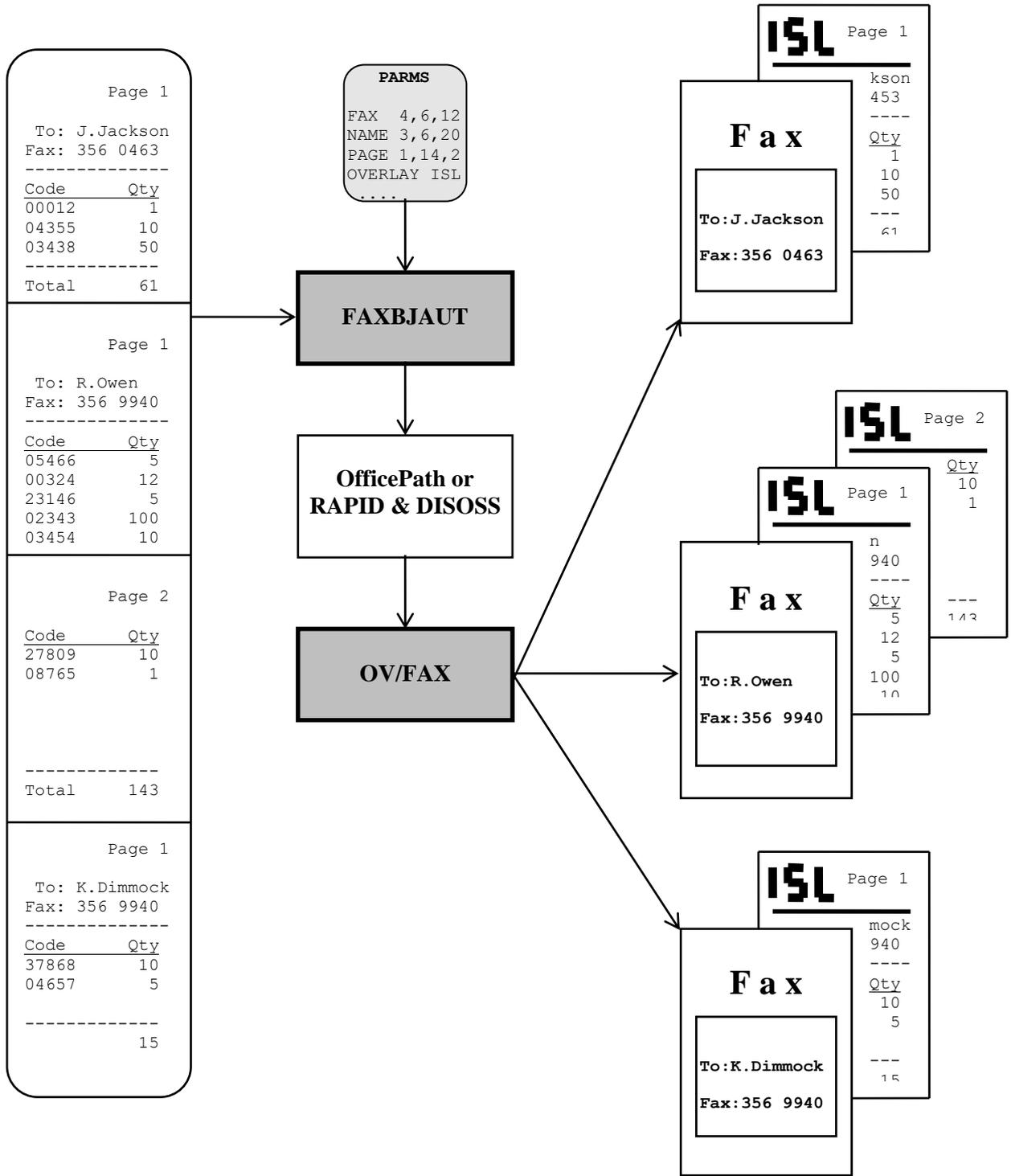


Figure 8. AUTOFAX Processing

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# PART TWO - SERVER REFERENCE

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## Chapter 9. Server Programs and Interfaces

### Server Programs

The fax server consists of the main administration and server programs, a number of conversion programs, a set of utility programs primarily for converting image files, and a sample number processing user exit. The main programs are held in the *OV-FAX* directory:

Program	Description
FAXADMIN	<b>Server Administration Program.</b> Allows the server to be configured and the outbound fax status details to be maintained.
FAXSERV	<b>Server Program.</b> This is the main server program, interfacing to the host via 3270 emulation, and interfacing to GammaFax via the GammaFax Command Language interpreter.

The following conversion programs are supplied in the *OV-FAX\CONV* directory:

Program	Description
BARCODE3	<b>'3 of 9' Bar Code Generator.</b> Called by the FAXOUT program to generate a '3 of 9' bar code bitmap.
BARCODEE	<b>European Article Number Bar Code Generator.</b> Called by the FAXOUT program to generate an EAN bar code bitmap.
BARCODEU	<b>Universal Product Code Bar Code Generator.</b> Called by the FAXOUT program to generate a UPC bar code bitmap.
FAXINIMG	<b>Inbound Fax Image Converter.</b> Converts a Fax Group III file into an IMDS .IMG file, as needed to build the RFT/E document.
FAXINRFT	<b>Inbound Fax RFT/E Document Generator.</b> Builds an RFT/E document from a list of IMDS .IMG files.
FAXOTIMG	<b>Outbound Fax Image Converter.</b> Converts an IMDS .IMG file into a raster file for embedding in the final fax files.
FAXOTRFT	<b>Outbound Fax RFT Document Splitter.</b> Breaks an RFT document down into an ASCII text file and a series of IMDS .IMG files. A number of RFT single and multibyte controls are supported.
FAXOUT	<b>Outbound Fax TIFF Generator.</b> Generates the final fax files from an ASCII print image document, which may contain image and overlay imbed commands.

The following utility programs are supplied in the *OV-FAX\UTILS* directory:

Program	Description
BMP2RAS	<b>Bitmap to Raster Converter.</b> Converts monochrome Windows bitmap files into raster files.
FONTCONV	<b>Font File Converter.</b> Converts Windows font files into OV/Fax font files. The Windows font files may be edited using the FONTEDIT sample program provided with the Windows SDK.
HLLDEBUG	<b>HLLAPI Trace Formatter.</b> Formats trace files generated by the

	HLLTRACE program.
HLLDELAY	<b>HLLAPI Delay Program.</b> Introduces a small delay into specific HLLAPI calls, for use on fast PCs.
HLLTRACE	<b>HLLAPI Trace Generator.</b> Generates trace files of all HLLAPI calls made by the fax server.
IMG2RAS	<b>IMDS to Raster Converter.</b> Converts IMDS .IMG files into raster files.
RAS2BMP	<b>Raster to Bitmap Converter.</b> Converts raster files into monochrome Windows bitmap files.
RAS2IMG	<b>Raster to IMDS Converter.</b> Converts raster files into IMDS .IMG files.
RAS2TIF	<b>Raster to TIFF Converter.</b> Converts raster files into Fax Group III TIFF files.
RASEDIT	<b>Raster File Editor.</b> Simple raster file editor, providing facilities to edit portions of an image, fill or invert boxes, and add text to the image.
RASPACK	<b>Raster File Compression Program.</b> Performs simple compression of a raster file, as used on the installation diskette.
RASSCALE	<b>Raster File Scaling Program.</b> Allows a raster image to be rescaled.
RASUNPCK	<b>Raster File Decompression Program.</b> Performs decompression of compressed raster files, as used by the installation program.
RASVIEW	<b>Raster File Viewer.</b> Simple raster file viewer, allowing images to be displayed at various resolutions.
TIF2RAS	<b>TIFF to Raster Converter.</b> Converts Fax Group III TIFF files into raster files.

The following user exit files are supplied in the *OV-FAX\SAMPLES* directory:

Program	Description
FAXNUM.C	<b>User Exit Source Code.</b> 'C' source code for the number processing user exit program.
FAXNUM.EXE	<b>User Exit Executable Program.</b> User exit program for processing supplied fax numbers against the number mapping table.
FAXNUM.MAP	<b>Sample Number Mapping Table.</b> Sample table to demonstrate the format of entries in the mapping table.

## 3270 Interface

The fax server communicates with the host transactions (**FAXR**, **FAXS** and **FAXU**) by using 3270 HLLAPI calls to access the 3270 emulation screen. Any 3270 emulation package that is supplied with a 100% compatible IBM HLLAPI should be suitable for use with the fax server. The fax server configuration panels (the **FAXADMIN** program) allow the 3270 session letter to be specified.

HLLAPI functions are called using the standard hex 7F interrupt. The following minimum set of HLLAPI functions should be implemented in the emulation package:

Function Number	Description
-----------------	-------------

1	Connect Presentation Space
3	Send Key
4	Wait
8	Copy Presentation Space to String
9	Set Session Parameters
15	Copy String to Presentation Space
20	Query System
21	Reset System

By using the HLLTRACE program, or by monitoring the 3270 terminal on the host using CEDF, for example, the protocol between the fax server and the host software may be investigated. For inbound faxes, the following steps will be seen:

Description	3270 session	Server	Host
1. Server starts the inbound fax transaction, specifying its name.	FAXR srvrname	*	
2. Host transaction responds with a profile request.	PROFILE 0 srvrname		*
3. Server sends back the profile information.	PROFILE 1 srvrname received-csid durn did-number	*	
4. Host responds by requesting the first screen of document data.	RECEIVE 0 srvrname 0001		*
5. Server sends the first screen of document data.	RECEIVE 1 srvrname 0001 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.. :	*	
6. Host responds by requesting the next screen of document data.	RECEIVE 0 srvrname 0002		*
7. Server sends next screen of document data and host responds. These steps are repeated until the server sends the last screen of data.	RECEIVE 2 srvrname 0002 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.. :	*	
8. Host responds with complete status. The transaction ends.	COMPLETE 0 srvrname		*
9. Server starts the FAXR transaction again for the next inbound document.		*	

For outbound faxes, the following steps will be seen:

Description	3270 session	Server	Host
1. Server starts the outbound fax transaction, specifying its name. The 'U' indicates that the server is V2.4.0 and capable of processing UPDATE requests from the host.	FAXSUsrvrname	*	
2a. A <b>V2.4.0</b> host responds with an initial update request if there are already faxes being processed by the server.	UPDATE 0 0000000		*
2b. Server sends status information back if a fax has changed status since the last time FAXS was run.	UPDATE 1 ref-num C 0000067 2 000 0001 0000 3 001 901712345678	*	
2c. For a complete fax, the host sends a cancel request to delete the files from the server.	CANCEL 0 ref-num		*
2d. Server acknowledges the cancel request.	CANCEL 1 ref-num	*	
2e. Host requests another update request.	UPDATE 0 old-ref		*
2f. Server replies with an "UPDATE 1" request if it has another updated fax, following which the host may issue a cancel request for a complete fax, before issuing another "UPDATE 0" request. Once the server has returned details of all updated faxes, it replies with an "UPDATE 9". New faxes are then processed, as from step 4.	UPDATE 9	*	
3a. A <b>V2.3.0</b> host responds with a status request.	STATUS 0 ref-num		*
3b. The server replies with the status information for the requested fax.	STATUS 1 ref-num C 0000067 2 000 0001 0000 3 001 901712345678	*	
3c. For a complete fax, the host sends a cancel request to delete the files from the server.	CANCEL 0 ref-num		*
3d. Server acknowledges the cancel request.	CANCEL 1 ref-num	*	
3e. Steps 3a to 3d are			

repeated until the host has obtained status information for all faxes being processed by the server. New faxes are then processed.			
4. The host transaction sends a transmit request containing the profile information for a new fax.	TRANSMIT 0 ref-num node userid fax-number :		*
5. The server acknowledges the transmit request.	TRANSMIT 1 ref-num :	*	
6. For a message, continue from step 12. Otherwise, the host sends the first screen of document data.	TRANSMIT 2 ref-num xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.. :		*
7. The server acknowledges the data. Steps 6 and 7 are repeated until all the document data has been passed to the server.	TRANSMIT 3 ref-num	*	
8. The host sends a complete message to confirm the end of the download.	COMPLETE 0 ref-num		*
9. The server acknowledges the complete message.	COMPLETE 1 ref-num	*	
10. The host sends a status request to the server to verify that it received the document.	STATUS 0 ref-num		*
11. The server replies to the status request.	STATUS 1 ref-num T 0000000 2 000 0000 0000 3 000 901712345678	*	
12. The host issues a dial request to tell the server to send the fax.	DIAL 0 ref-num key-field		*
13. The server acknowledges the dial request.	DIAL 1 ref-num	*	
14. Steps 4 to 13 are repeated until up to 15 new faxes have been passed to the server. The transaction then ends.			

A "TRANSMIT 0" screen contains the following data:

L.....1.....2.....3.....4.....5.....6.....7.....R
1 :TRANSMIT 0 ref-num :

```

2 :          node---- :
3 :          userid-- :
4 :          fax-number----- :
5 :          N :
6 :          message-line-1----- :
7 :          message-line-2----- :
8 :          message-line-3----- :
9 :          message-line-4----- :
10 :         DCA-- :
11 :         date-- :
12 :         time :
13 :         document-name----- :
14 :         subject----- :
15 :         shortcode-description----- :
16 :         cover :
17 :         user-CSID----- :
18 :         from-name----- :
19 :         to-name----- :
20 :         doc-size :
21 :         signature-id :
22 : :
23 : :
24 : :
L...:....1...:....2...:....3...:....4...:....5...:....6...:....7...:....R

```

On this screen, line 5 contains the literal flag.

A “STATUS 1” or “UPDATE 1” screen contains the following data:

```

L...:....1...:....2...:....3...:....4...:....5...:....6...:....7...:....R
1 :STATUS 1 ref-num S durn--- returned-CSID----- date---time---seq- :
2 :          2 err call gfax          conv conv-pgm image-name-- :
3 :          3 pag number-dialled----- :
4 : :
5 : :
6 : :
7 : :
8 : :
9 : :
10 : :
11 : :
12 : :
13 : :
14 : :
15 : :
16 : :
17 : :
18 : :
19 : :
20 : :
21 : :
22 : :
23 : :
24 : :
L...:....1...:....2...:....3...:....4...:....5...:....6...:....7...:....R

```

On this screen,

- **S** is the status of the fax.
- **durn** is the duration, in seconds, that it took to transmit the fax.
- **returned-CSID** is the number passed back by the receiving fax machine.
- **date-time-seq** is a key field originally supplied by the host and used by the UPDATE requests.
- **err** is the OV/Fax error code.
- **call** is the number of attempts made to send the fax.

- **gfax** is the GammaFax error code, if any.
- **conv** is the conversion error code, if any.
- **conv-pgm** is the name of the conversion program returning the error.
- **image-name** is the name of the missing image, if any.
- **pag** is the number of pages in the fax.
- **number-dialled** is the fax number, after processing by the server for number prefixes.

By using the details of the host - server protocol and screen details above, it is possible to emulate a server. This may be useful for testing the host software before a real server is available, or for identifying problems with the 3270 communications. Since the document data is passed in an encoded format, it is not practicable to emulate the processing of inbound faxes.

## GammaFax Interface

The fax server uses GammaFax boards to send and receive faxes. The following types of board are supported:

- the old Standard or NA boards, which send and receive faxes synchronously.
- the newer CP board and its derivatives, such as CPi, XPi and CP MC, all of which send and receive faxes asynchronously through the use of background GammaFax Queue Manager software. This significantly improves server throughput since the server can continue converting new faxes while others are being sent. In addition, multiple CP-type boards may be installed in the same server to further increase throughput.
- CPD boards, which are used for Direct Inward Dialling of inbound faxes, and also run asynchronously. They may be installed in the same server as CP-type boards, if outbound capability is also required.

The fax server interfaces to GammaFax by building a file of GammaFax Command Language commands, which is then passed to the GammaFax interpreter program.

- For Standard and NA boards, the interpreter program is called **GFB.EXE**. The server runs this, piping its output to the file **GFBOUT**. This is then scanned to determine the success of the commands, or to obtain additional information, such as details of received faxes. When sending a fax, the GFB program runs until the fax has been sent. When receiving faxes, the GFB program waits for a predetermined time (the server's *inbound wait* time) for a call, before ending. The fax server can then continue processing.
- For CP-type boards, the interpreter program is called **GCL.EXE**. The server runs this, checking the return code from the program. The program processes the commands immediately and then returns to the fax server. When sending a fax, the request is put onto the GammaFax *Pending* queue, from where the board and Queue Manager send it in a background task. The request then gets moved to the *Sent* queue. Faxes are received automatically in background, and a record is put on the *Received* queue once all the pages have been received.

The fax server obtains additional information from GammaFax by including commands to generate report files. The format of these report files is also determined by the server through the use of a report format file (**GCL.REP**). The server passes requests to GammaFax to send a fax by using a command file (**Oxxxx.CMD**); the fax then has a 'submitted' status. (If the server is configured to support fax numbers longer than 20

characters, then an additional file **Oxxxx.NUM** will be created in the configured directory to hold the long number). The server enquires on each submitted request each time around its processing cycle. The enquiry takes the form of a command file (**Oxxxx.CMD** again) to search through the *Pending* then *Sent* queues, for the specific fax document. A report file will be generated indicating whether the fax is still pending (**GCL.PND**) or has been sent (**GCL.SNT**), and if the latter, the report file includes details of the success or otherwise of the operation, including any GammaFax error code.

If the server is configured for inbound faxes, it will generate a command file in the INFAX directory (**INBOUND.CMD**) to extract details of faxes from the *Received* queue. Again, a report file contains the details (**GCL.RCV**).

- The server treats CPD boards in exactly the same way as CP-type boards, for inbound faxes. In both cases, the server attempts to extract the DID number from the report file details. If present, it will be stored and passed to the host with the fax document.

The GammaFax interpreter programs require additional configuration files in order to work correctly with the fax server. These configuration files supply details that are common to all faxes sent, and should be stored in the GammaFax directory.

- The **GFB** program uses the configuration file **GFAX.PRO**, which should contain the following lines:

```
CONTROL 40 1
CONTROL 63 20
```

The first line indicates that tone dialling is being used. The second line specifies the time the board waits for connection to the receiving fax machine, in units of 3 seconds. The **20** above therefore specifies a wait time of 60 seconds. The default time is only 30 seconds, which may be insufficient for international calls.

- The **GCL** program uses the configuration file **GCL.PRO**, which should contain the following lines:

```
CALLS 1
RETRY 0
CDTIME 60
```

The first line specifies that there should be no immediate retries to establish a connection to the receiving fax machine. The second line prevents GammaFax attempting delayed retries. These two lines should be present as all retries are controlled by the host software. The third line specifies the time the board waits for connection to the receiving fax machine, in units of seconds.

For further details of the commands available in the GammaFax command language, and all the parameters in the configuration files, please refer to the *GammaFax Reference Manual* supplied with the board.

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## Chapter 10. File Formats

OV/Fax uses six main formats of file during processing:

- TIFF (.TIF) - pages of inbound and outbound faxes.
- Raster (.RAS) - uncompressed embedded images and overlays.
- IMDS (.IMG) - intermediate compressed image files.
- RFT/E - inbound and outbound fax documents.
- Print Image - outbound text-based fax documents.
- PC files - outbound documents in PC word processor format.

Each of these is described in more detail below.

### Tagged Image File Format, TIFF files (.TIF)

Inbound and outbound faxes are held in TIFF 3 format, containing CCITT fax group III one-dimensional run-length image compression (also referred to as **Modified Huffman** encoding). This has a standard image width of 1728 pixels, with a resolution of approximately 200 pixels per inch. Vertically, the resolution of inbound faxes depends on the configuration of the GammaFax software. For outbound faxes, OV/Fax usually generates fine resolution faxes, with a vertical resolution of 200 pixels per inch. A normal A4 page will have 2178 pixels, or 2200 pixels for faxes sent using 8 lines per inch mode.

Individual faxes may be sent using standard resolution mode, which a few fax machines are only capable of receiving. These faxes have a vertical resolution of 100 pixels per inch, with alternate scan lines being skipped to give 1089 or 1100 pixels, as appropriate.

There are a number of versions of TIFF, and types of image compression within them. The GammaFax utility program **FAXC** can convert between various formats of file.

### Raster Files (.RAS)

Raster images are simple uncompressed monochrome bitmaps. They are used for embedded images (including signatures) and overlays (including landscape and cover sheet overlays). All raster images are multiples of 8 pixels wide. The first two bytes of each raster file contain the width, in bytes, of each scan line. The least significant byte is first (Intel format). Therefore, an image of width 1728 pixels contains (216,0 or x'D800') in its first two bytes. The width is followed by (width - 2) bytes to pad out to a full scan line width.

The image itself is held in scan line sequence, beginning with the top scan line of the image. In the image, a **0** bit represents a white pixel, a **1** bit represents a black pixel. Various utilities are supplied with OV/Fax for converting between raster and various other formats (TIFF, IMDS and Windows bitmaps).

### Image Data Stream, IMDS files (.IMG)

IMDS files store image data in a form used by most IBM image products, including Image Document Utility (PC-IDU), Image View Facility (IVF) and Scanmaster. (IMDS is now known as Image Object Content Architecture, IOCA). Each file begins with a header describing the image size, resolution and compression type. OV/Fax supports the usual compression type MMR (**Modified Modified Read**). This uses two-dimensional compression and is the basis of Group IV fax standards.

IMDS supports various resolutions, including 240×240, 120×120, 120×240 and 200×200 pixels per inch. Most images use 240×240 resolution and OV/Fax will automatically apply 6-to-5 scaling horizontally and vertically to reduce to the 200×200 format required for TIFF files. Inbound faxes are not scaled, and are held in IMDS files in 200×200 resolution. (IMDS files actually store the resolution as the number of pixels per 10 inches, and so typical resolutions are 2400×2400).

## Revisable Format Text / Extended files (RFT/E)

RFT/E documents may contain both revisable format text and embedded images. The text is in standard RFT format, including single and multibyte controls. OV/Fax supports a number of common controls in outbound faxes, including bold (emphasis), underline, tabs and indents. The images are basically in IMDS format, but may be split over fields within the RFT document, and may also be subject to further blocking within the fields. OV/Fax will automatically scale and imbed any RFT images in outbound faxes, in addition to including any OV/Fax format and image commands.

RFT/E documents are also used for inbound faxes. Each page of the fax (a separate TIFF file) is converted into an IMDS file. A list of these files is then used to generate an RFT/E document. Up to 99 image (pages) may be included in each document. Additional documents will be created if a fax has more than 99 pages.

## Print Image files

OV/Fax accepts outbound faxes in both RFT/E and print image format. Print image includes editable documents, and Personal Services notes. The first byte on each line of a print image document contains the ASA control character. OV/Fax recognises the following:

Character	Spacing
+	no line spacing (for bold, underline and overstrike)
space	single line spacing
0	double line spacing (inserts one blank line)
-	triple line spacing (inserts two blank lines)
1	form feed (starts a new page)

The host component of OV/Fax converts print image documents from EBCDIC to ASCII before passing to the fax server. Each line then ends in a CR/LF sequence (13,10 or x'0D0A'). In addition, three bytes are added to the start of each document to signify that ASA controls will be present; these three bytes being (3, 13, 10 or x'030D0A').

## PC Files

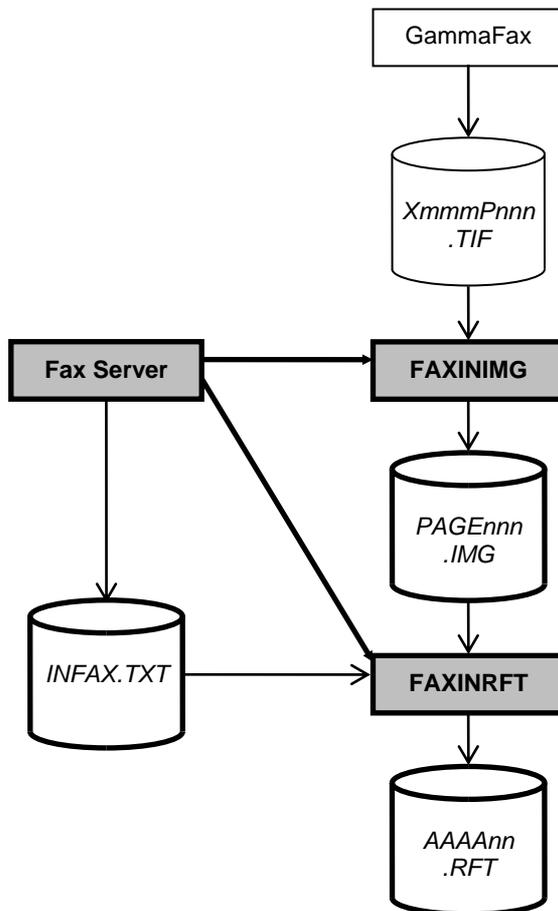
OV/Fax may accept outbound faxes in PC file format, if the optional Keyword PostFAX feature is installed on the fax servers. This feature converts many popular word processor format documents into TIFF 3 files. The server needs to be configured for the PostFAX directories. The host must also be configured to accept PC files.

## Inbound Fax Conversions

Inbound faxes are received by GammaFax and stored in the GammaFax directory as TIFF files with names of the format *XmmmPnnn.TIF*, where X corresponds to the GammaFax

board (board 1 equals A, board 2 equals B), *mmm* is the number of the fax, and *nnn* is the page number within the fax. New inbound faxes are eligible for processing by the fax server once the last page of the fax is more than five minutes old.

The fax server uses the **FAXINIMG** program to convert the TIFF file into IMDS files with the names *PAGE<sub>nnn</sub>.IMG*, also in the GammaFax directory. A list of these images is built up in the *INFAX.TXT* file in the server's INFAX directory. Once all the pages have been converted, the *INFAX.TXT* file is passed to the **FAXINRFT** program, to generate a new RFT document in the INFAX directory, with the name *AAAA<sub>nn</sub>.RFT*, where *AAAA* is a unique sequential name, and *nn* is the document number for faxes with more than 99 pages.



**Figure 9. Inbound Fax Conversion Sequence**

## Outbound Fax Conversions

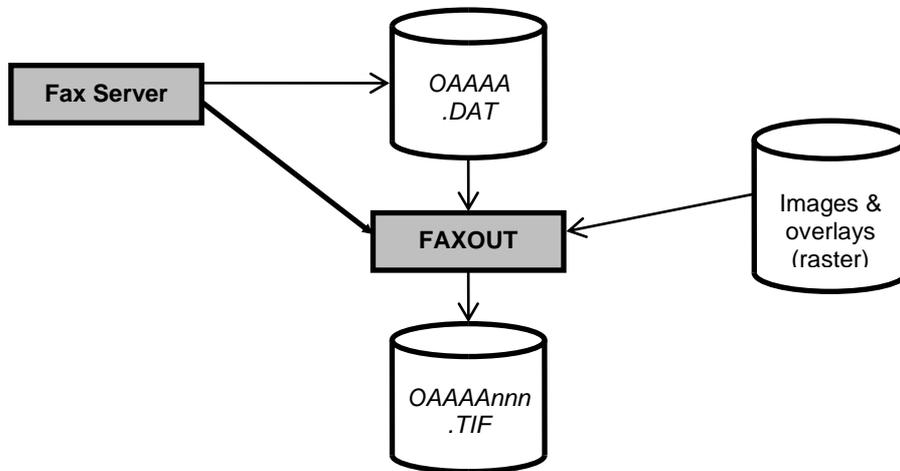
OV/Fax supports four types of outbound fax:

- Personal Services messages, which only generate a cover sheet, and have no corresponding document file.
- Print Image documents, converted from EBCDIC to ASCII by the host component before passing the fax server.
- RFT documents, which are passed to the server without conversion.

- PC files, which are passed to the server without conversion.

For any particular fax on the server, all its associated files are held in the server's OUTFAX directory and begin with a five character prefix: OAAAA, where AAAAA is a unique sequential name (the fax reference code). File OAAAA.DAT will contain the document passed from the host. Cover sheets can be suppressed for print image and RFT documents. If generated, they are created last, once the number of pages in the fax is known.

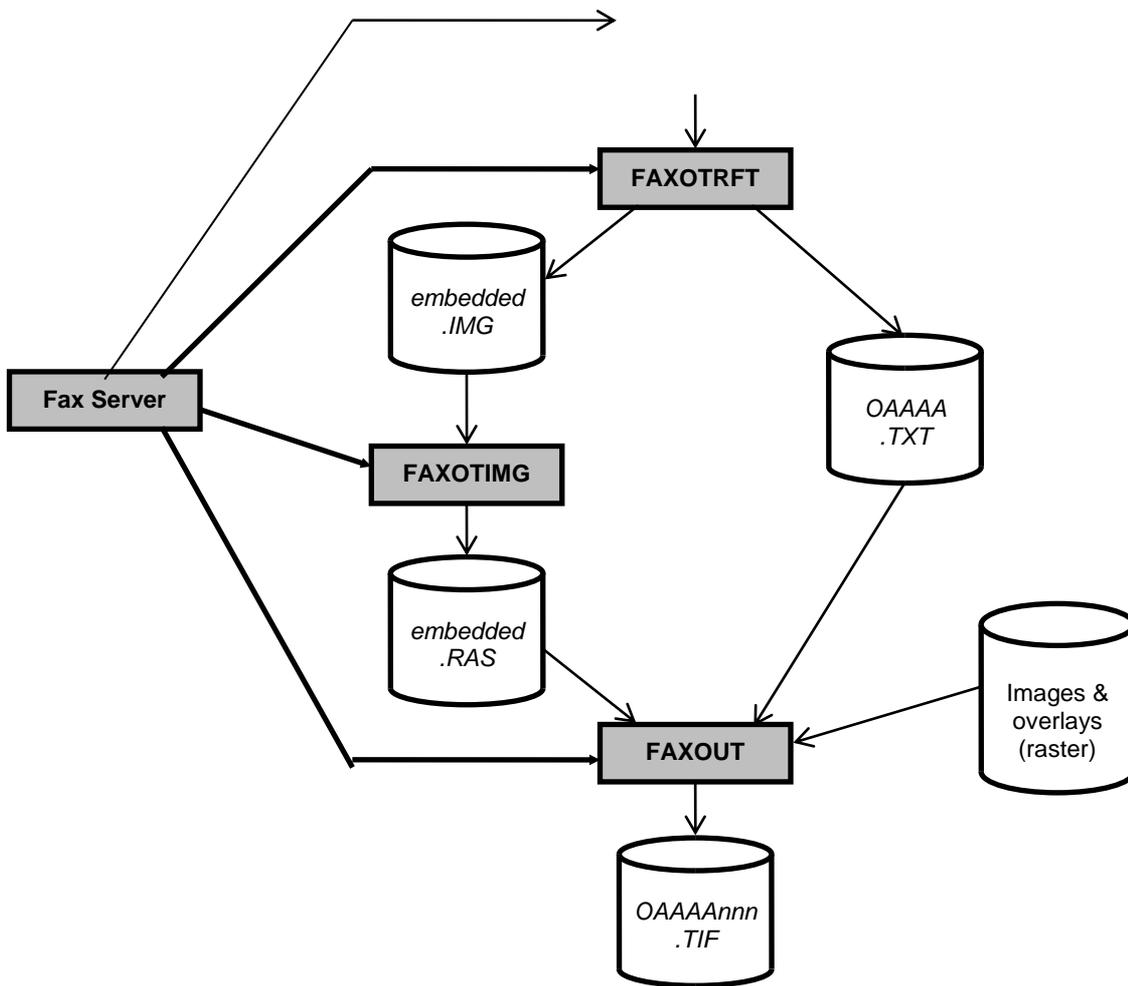
For Print Image documents, the conversion processing is as follow:



**Figure 10. Print Image Document Conversion Sequence**

For RFT documents, the conversion processing is as follows:

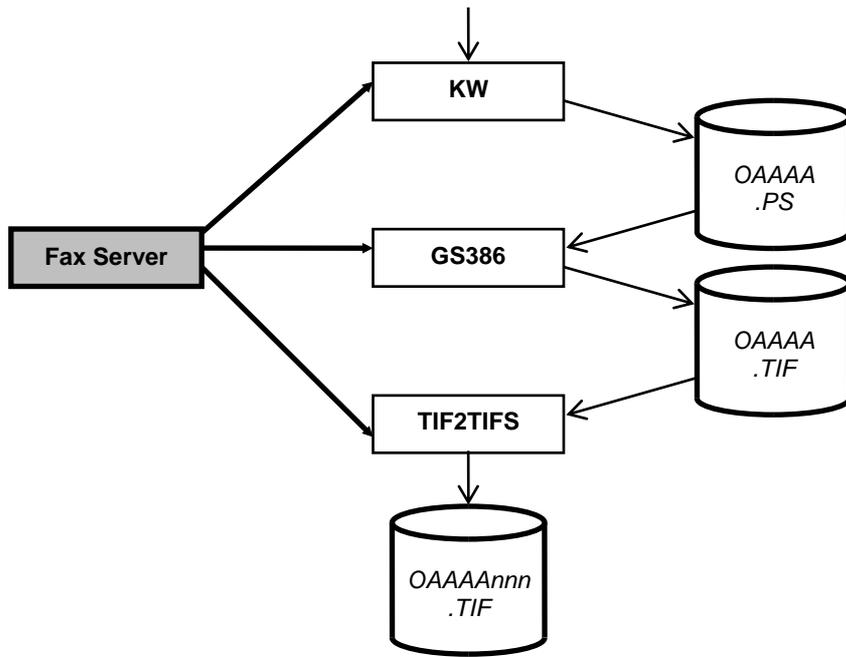




**Figure 11. RFT Document Conversion Sequence**

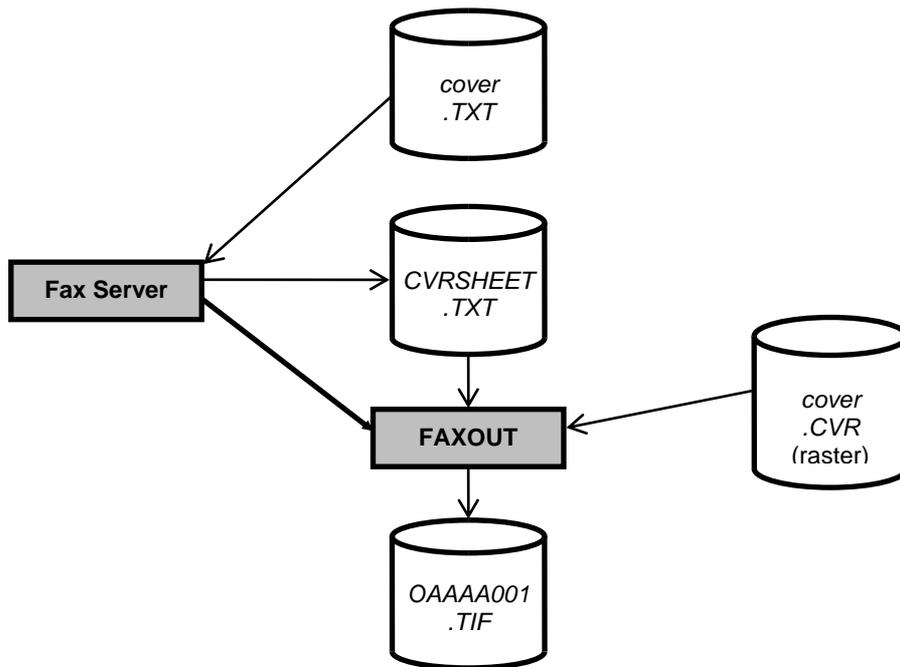
For PC files, the conversion processing is as follows:





**Figure 12. PC File Conversion Sequence**

If a cover sheet is required, the TIF files are renumbered to allow room for a page 001. The conversion is then as follows:



**Figure 13. Cover Sheet Conversion Sequence**

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## PART THREE - ADDITIONAL FEATURES

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## Chapter 11. Inbound Fax Handling

Inbound faxes received by the OV/Fax Server are converted into RFT documents containing embedded images, one for each page of the fax. These documents are then passed to the host software, which distributes them to the inbound recipients defined for the server. These recipients receive the documents simply as another item of mail, and would typically view them before sending on to the intended recipients of the fax. Different computer platforms require different products, in order to display and print the documents and their images.

### Viewing and Printing from an IBM Host

IBM DW/370 with *Image and Graphics* feature is required for both viewing and printing RFT documents. GDDM V2 R2 is also required for viewing images, and for use with certain types of printers. Viewing the images requires a graphics terminal, such as an IBM 3279, or an emulation package that supports graphics workstations, such as IBM Personal Communications/3270 V3.

For printing, the products used depend on the type of printer being used. In order to print image and graphics, DW/370 (I&G) needs to create a Page Printer Data Stream. A Page Printer Data Stream can be one of two types:

- AFPDS (Advanced Function Printing Data Stream). These can be processed by the Printer Services Facility (PSF) or by VM3812 (for 3812-1 printers in VM/CMS), to drive a variety of printers.
- CDPDS (Composite Document Presentation Data Stream). These can be processed by GDDM to create IPDS streams for some printers, or AFPDS streams to be processed by PSF or VM3812. AFPDS streams are used with documents containing images and graphics.

DW/370 supports the following page printers:

IBM 3800-3/6/8	This accepts AFPDS and is driven by PSF
IBM 3812-1	This accepts AFPDS and is driven by VM3812
IBM 3812-2	This accepts CDPDS and is driven by GDDM
IBM 3820	This accepts AFPDS and is driven by PSF
IBM 3827	This accepts AFPDS and is driven by PSF
IBM 3835	This accepts AFPDS and is driven by PSF
IBM 4224	This accepts CDPDS and is driven by GDDM

(This information is taken from the *DW/370 Release 2.1 Reference Manual*. More information on the actual printer facilities is in chapter 3 of the manual).

If GDDM is used, then Version 2 Release 2 is required (for which CICS 1.7 is a prerequisite).

If PSF is used, then the version depends on the printer:

- V1 R1.1 for 3800 and 3820.
- V1 R2.0 for 3827 and 3835.
- V1 R2.1 for 3812-2.

If OV/MVS is installed, the inbound fax recipients can be addressed using their e-mail address. The fax documents can then be viewed by invoking DW/370 directly from the Personal Services In-Basket.

If OV/MVS is not installed, then DW/370 can be invoked from CICS to view the document. In this case, the inbound recipients would need to be defined in OfficePath (or RAPID) with a destination (or interface) record type of 'OUTTRAY'. A CICS application then needs to retrieve the document by linking to the PIPGT3 (or APIGT3) program to get the document onto a TSQ. The profile records should be removed from the top of the TSQ. The first record on the TSQ should be a verification record if the appropriate DW/370 exit is installed. If not, the record contents are unimportant. The second and subsequent records on the TSQ are the document details.

DW/370 can then be invoked, for example, by entering the transaction 'DDDD' from a CICS screen. Once in a document, the GETTS CLIST can be invoked to retrieve the document from the TSQ.

Images in a document can be viewed by entering the command **SHOW** at the top of the DW/370 screen, and then pressing *Enter* after positioning the cursor on the required image marker. Alternatively, enter **SHOW PAGE<sub>nnn</sub>** to display the specified image directly. It will usually be necessary to scale the image, by using the command **IMAGE ZOOM**, which will allow horizontal and vertical scaling factors to be entered. The fastpath command **IMAGE ZOOM 0.4 0.5** will scale using the specified horizontal and vertical scaling factors.

## Viewing and Printing from an AS/400

OV/400 provides facilities to view and print RFT documents containing images. Viewing images requires a PC running *DOS PC Support* and *Organiser*. The Organiser provides the Text-Assist function which is used to display the images. (Text-Assist cannot be type 0, and only the DOS version of PC Support works). Any IPDS printer (such as a 3812 or 4224) is capable of printing images.

(This information is taken from the *AS/400 Using OV/400 Word Processing* manual).

## Viewing and Printing from a PC

The PC requires packages such as IBM's *DisplayWrite/5* word processor or *PC/IDU* (Image Document Utility) with *ISF2* (Image Support Facility 2) to display and print RFT documents containing images. Few, if any, non-IBM packages support the images within the documents. As an alternative, the fax server conversion programs and utilities may be used to view the faxes. For example, the following batch file could be used on the fax server, specifying the document name as the first parameter. (Please note the additional full stop at the end of the first line).

```
C:\OV-FAX\CONV\FAXOTRFT %1 INVIEW.TXT .
TYPE INVIEW.TXT | MORE
FOR %%c IN (PAGE*.IMG) DO C:\OV-FAX\CONV\FAXOTIMG %%c O%%c
FOR %%c IN (OPAGE*.IMG) DO D:\OV-FAX\UTILS\RASVIEW %%c
DEL INVIEW.TXT
DEL PAGE*.IMG
DEL OPAGE*.IMG
```

Line 1 extracts the document text to the ASCII file INVIEW.TXT, and the images to a series of IMDS images. For an OV/Fax inbound fax, these will have names of the form 'PAGE<sub>nnn</sub>.IMG'. Line 3 converts these to a series of raster files with names of the form 'OPAGE<sub>nnn</sub>.IMG'. Line 4 displays each of these files.

## Inbound Fax Recipients

Inbound faxes may be mailed to one of three types of recipient:

- the on-line host administration programs allow the status and details of each fax server to be maintained. These details include a list of up to four inbound recipients, each specified by node and userid. Each inbound fax will be sent to all recipients in the list. It is then the responsibility of these recipients (the 'spill' operators) to view the fax and determine who the correct recipient of the fax is.
- if there are no inbound recipients defined by the server, a default node and userid will be taken from the *FAXCNTL* file. These values are held in the **INFAX** field on the **CONF4** record.
- if Direct Inward Dialling (DID) is being used, the fax server should have extracted an extension number from the GammaFax details. This will be passed to the host along with the fax, and compared against the DID recipient records on the *FAXCNTL* file. (These records have a type of 'I' and are maintained by the batch update program, using the FAXCTLB member). These records assign a node and userid to each server / DID number combination defined. If a suitable record cannot be found, the fax will be sent to the server's inbound recipients, or the default node and userid from the **CONF4** record.



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## Chapter 12. Hints and Tips

This chapter provides a few ideas that may help you use OV/Fax more effectively.

### Coding Fax Numbers

Fax numbers need to be carefully coded to ensure that the host and server components are able to make any necessary changes to the number before dialling, and also to ensure that the host schedules the fax to the most appropriate server. The recommended way to code fax numbers is as follows:

- if the fax is to be sent from a specific server, then code the server name first, for example: **SERVER1**
- if the fax is being sent to another country, specify the country code followed by a full stop instead of the international dialling code, since servers in different countries may use different codes. Each server is configured with the local dialling codes and is able to add the correct international code itself. A server will also remove a country code if it is in the same country. If sending to the UK for example, code: **SERVER1 44 .**
- if the fax is being sent to another area code, and the full extent of the code is known, specify the area code followed by a hyphen or a slash (/). Alternatively, brackets may be placed around the number. The server will be able to remove the area code if it is in the same area. Note that many countries prefix the area code with a zero when dialled internally, but not when dialled from another country. For example, if sending to Birmingham from another UK area, code: **0121-** If sending from outside the UK, code: **SERVER1 44 .121-** or **SERVER1 44 . (121)**
- the remainder of the number can now be coded, using additional spaces or hyphens for clarity, for example: **SERVER1 44 .121-356 9940**

There are a number of ways in which the fax number may be specified for a particular fax:

- OV/Fax supplies personal and shared address books, which associate a fax number and description with a nickname (or shortcode). The description can then be included on the cover sheet. The address books also allow an alternate number to be specified; this will be tried if the normal number fails all its retries. Send your message, note, document or PC file to the required nickname at one of the fax addresses.
- OV/Fax can be configured instead to obtain fax numbers from the Enterprise Address Book. This does not support alternate numbers.
- fax numbers may be specified in the 'to' or 'cc' fields of a Personal Services note, or scanned from specific text strings within documents. This is referred to as 'wild addressing' and does not require an address book.
- fax numbers may be included in the subject or attached message field of a note, document or PC file (depending on the configuration of OV/Fax). The subject field may include specific text strings to identify the number. This is useful if you are sending a PC file from a remote mail system, since the subject field may have gained a prefix before arriving at OV/Fax. You can send a message on its own by just including the fax number at the top of the message.

There are a number of additional features that may be used when coding fax numbers:

- if you do not want the host and server components to process the fax number to add or remove codes, then specify single quotes around the number (this is referred to as a literal number). For example, when testing the server, you may want to send to an internal fax machine without the server adding prefixes for external lines: **SERVER1 '123'**
- when sending to particular numbers it may be necessary to introduce delays into the dialling process, for example, while waiting for an external line. A comma may be used to add a delay of 1.5 seconds, while a semicolon will wait for up to 15 seconds for a secondary dial tone. For example, the following literal number would wait for an external line before dialling the remainder of the number: **SERVER1 '9;0121-356 9940'**
- the fax server normally generates fine resolution faxes. However, a few machines are only capable of receiving standard resolution faxes. By including a percent sign in the fax number, the server will generate a standard resolution fax, for example: **0121-356 9940%**
- each server may be configured with a baud rate to use when sending faxes. A few fax machines are only capable of receiving at 2400 or 4800 baud, whereas the server will usually be configured at a higher rate, such as 9600 baud. The server's baud rate may be overridden for individual faxes by including a greater-than sign and a number from 1 to 6 in the fax number. The baud rate used will be 2400 times the number. For example, to send a fax at 4800 baud: **0121-356 9940>2**

If the standard number processing facilities of the host and server components are not sufficient for your installation, then each server can be configured to call a user exit program to process the number instead. A sample program for use in North America is supplied with the server.

## Sending Deferred Faxes

Faxes are normally sent as soon as the host and server are able to process them. It may however be beneficial to defer the sending of faxes until later, for example, to make use of off-peak telephone rates or to give lower priority to certain faxes. OV/Fax allows special fax addresses to be set up, each of which has a start and end time defined. Faxes sent to those addresses will only be passed to the server during the defined times.

The deferred fax addresses are held on the *FAXCNTL* file, with the original values on the **FAXCTL** JCL member. The supplied addresses are **FAXD1** to **FAXD10**, but the names may be customised if required, for example **AFTER6**. To send faxes to these addresses, specify the required address instead of the normal fax address, for example, send to **nickname** at **FAXD1** or use wild addressing and just send to a user of **FAXD1**. Note that the addresses will need to be defined in OfficePath or RAPID and DISOSS, for the faxes to be routed through to OV/Fax.

## Resending Faxes

OV/Fax may be configured to allow users or administrators to resend faxes. This can be useful if a fax has been sent to an incorrect number and has failed all its retries, or if an additional recipient has been identified. It may not be convenient for the originator to regenerate the fax, particularly if an application has created the request.

The option is controlled through the DELTXT field on the CONF4 record of the *FAXCNTL* file. Faxes may be resent from the 'Status of Fax Address' screen, from where a new fax number and recipient name can be entered.

## Rescheduling Faxes

If the fax server is unable to send a fax due to a non-fatal error, such as a busy number or a temporary line fault, the host will reschedule the fax so that it may be attempted again later. The number of retries and the time between each is configurable (there may be telephone company or legal restrictions on the number of retries that may be made to a particular number). OV/Fax allows a maximum of ten retries to be made.

The number of retries is defined in the MAXSCH field on the CONF4 record of the FAXCNTL file. The CONF5 record contains the times, in minutes, between each retry. Typically, these times increase with each retry. There should be at least as many retry times defined as the number specified in the MAXSCH fields. The two records are defined on the FAXCTL2 JCL member.

If a fax cannot be sent after all its retries, and the fax has been sent using a nickname from the fax address book, which has an alternate number defined, then OV/Fax will attempt to send using the alternate number. If a fax still cannot be sent, an error will be reported to the originator, and no further attempts will be made.

## Using Cover Sheets

Including a cover sheet with a fax makes it simpler to identify the originator and recipient of the fax, allows a small message to be sent with a document, and can indicate how many pages there are in the fax. Cover sheets are also used to send Personal Services messages, where only a single page fax is sent. A sample cover sheet, called **DUMMY**, is supplied with OV/Fax, but you may want to create your own to include company logos, addresses and telephone or fax numbers.

Cover sheets are held on each fax server, and each is made up of two files beginning with the same file name (up to 5 characters):

- a text file containing field markers which will be completed by the server when the cover sheet is created. The text file has the extension .TXT, such as **DUMMY.TXT**. The fields are described in the *OV/Fax Server Guide*.
- an image overlay, aligned with the text file fields. The file uses the standard raster file format, with an extension of .CVR, such as **DUMMY.CVR**.

The sample cover sheet is a full A4 page. This is not however mandatory; the combination of the text format file and overlay may be less than a full page. In this case, the Variable Length Cover Sheets parameter on the fax server determines if the cover sheet will be padded out to a full page, or whether it will instead be sent as a short page, reducing transmission time.

The default cover sheet used by the sender of a fax is defined by a host administrator, using the *User Profile Maintenance* screen. Cover sheets may be specified for each node, or for individual users. Users and nodes may also be configured so that, as a default, faxes are sent without cover sheets. To do this, specify '\*\*\*\*\*' as the name of the cover sheet. This will prevent Personal Services messages from being sent. To prevent users or nodes from sending faxes at all, specify all spaces for the cover sheet name. This is a useful value to use on the generic \*.\* user profile record.

For authorised users, the cover sheet used may be overridden by specifying the new cover sheet within the text of the document, for example, @/COVER@/. Faxes may also be sent without a cover sheet by including the command @/1@/ within the text of the document. (Images and commands cannot be specified in PC files since these are processed by PostFAX instead.)

## Using Images and Overlays in Faxes

You can use images and overlays within notes and documents (but not PC files) to enhance the appearance of a fax, for example, by including your company logo or your own signature in the fax. The following types of images and overlays are recognised by the server:

- inline images (.RAS files) are inserted into the fax between lines of text. They are included by using commands such as `@/LOGO@/` in the document. They may also be included in the fields that are put onto cover sheets.
- signature images (userid.SIG files) are also inserted inline, but are only available to the individual fax user. They are included by using commands such as `@/SIGNATURE@/`, where **SIGNATURE** is a pre-defined, language specific value.
- portrait overlays (.OVR files) are merged with the following text, inline and signature images when the fax is created. They can be used in a similar manner to pre-printed stationery in conventional printers. They are included within the document by using the same commands as for images, such as `@/INVOICE@/`.
- landscape overlays (.LND) are similar to portrait overlays, but automatically cause the text and images to be generated in landscape mode (without the need for an explicit `@/L@/` command). They are specified in exactly the same way, such as `@/LANDOVR@/`.

The fax server may be configured to indent inline and signature images by either a specific number of pixels, or to the same point as where the image command is within the line of the document. This allows you to control the exact placement of the image.

All the image, overlay and cover sheet files are held on each server, within a specific directory subtree. The subtree structure, based in node and user-id, can be used to control which users have access to which files. Files available to all users are held within the root directory of the subtree. Files available to users at a specific node can be held within the directory for that node. Files only available to individual users are held within the node\user-id directory. Inclusion and exclusion lists may also be used to further control access to global and node files.

One use for the node\user-id directory structure would be to give, for example, a secretary their own copy of a manager's signature, which would not ordinarily be available to them due to the built-in user-id naming convention of signatures.

## Creating Images, Overlays and Cover Sheets

All images and overlays use the same raster format of file, with only the file extension identifying their particular use. There are three main ways in which the raster files can be produced:

- scan in an existing image. If you use the IBM PC Image Document Utility (IDU) and IBM Image Support Facility 2, in conjunction with an IBM scanner, then the IMDS (.IMG) files produced can be converted directly into raster files, using IDU or OV/Fax utilities. Other packages may be used, such as the GammaFax **FAXS** program, and various makes of scanner. These packages can usually create a suitable TIFF file that can then be converted into a raster file.
- configure the fax server to accept incoming faxes, and fax an existing image to the server. The received TIFF file can then be converted into a raster file. The **RASEDIT** utility can be used to make small changes to the raster file if required.
- use a drawing package, such as the Windows Paint program. This will produce the best quality images, since there will be no scanning alignment errors. The program can also be

used instead of RASEDIT, by converting existing images from raster to Windows bitmap format (using the **RAS2BMP** utility).

The most frequent problems encountered when creating images are the scaling of images, and the alignment of overlays. For example, a full A4 image is much larger than the screen, when using the Windows Paint program. (Raster files have a resolution of 200×200 pixels per inch). The suggested technique is to take an existing full page raster image, such the supplied **DUMMY.CVR** file, convert this to a bitmap and then use the bitmap as the basis for the image. Alternatively, the **RASEDIT** program can create a new raster file of a specified size, which can then be converted.

The alignment of overlays usually requires some trial-and-error testing, which can often be carried out by using just the test facilities of the server. The nominal resolution of the faxes is 200×200 pixels per inch. However, due to the way in which characters are built by the **FAXOUT** program, the following points should be noted:

- horizontally, every 200 pixels can contain exactly 10, 12, 16 or 20 characters according to the pitch. The tab commands (@< and @>) move to the previous or next multiple of 100 pixels, relative to the left edge of the page.
- vertically, 6 lines-per-inch mode will use 198 pixels for every six lines, whilst 8 lines-per-inch mode will use exactly 200 pixels. Inline and signature images will take up their exact length, so lines of text before and after images may not have an exact number of lines spacing between them.

To assist in the creation of overlays, you could send a fax with just the required text. The TIFF file created by the server could then be converted to a raster file which can then be used as the basis for the overlay.

## GammaFax Error Code Mapping

The GammaFax hardware and software used to send faxes can generate well over one hundred different codes to indicate the success or otherwise of sending a fax. Since a number of codes may indicate similar conditions, such as poor line quality or the unavailability of a number, the fax server maps these codes to a more restricted set of OV/Fax codes. The mapping is performed by using a table on the server, that can be maintained from the administrator program, **FAXADMIN**. The OV/Fax codes are in the range 500 to 899, and currently only codes 500 to 565, in steps of 5, are implemented.

You may wish to consider changing these mappings. For example, in your installation, a particular GammaFax code may have a slightly different meaning to that in the supplied table. Alternatively, you may have a version of GammaFax that includes additional error codes not catered for in the supplied table. You may also want to expand the list of OV/Fax codes used. If you add new codes, then you should also add appropriate messages on the host. These are type 'O' messages, the source of which is on the **FAXCTL7** JCL member.

## Performance Tuning

There are a number of factors that influence the throughput and perceived performance of OV/Fax, including the volume and type of faxes sent, the number and type of fax servers installed, and the configuration of the host and server components. You may wish to consider the following points:

- OV/Fax obtains its fax requests from OfficePath or RAPID. These products normally only process requests from batch or CICS on a periodic basis, such as every minute (the SYSTEM record of each product defines the time interval). CICS applications can

however issue a START command for transaction **PIP5** (OfficePath) or **ZAPK** (RAPID) to have the requests processed immediately.

- Once the request has been processed, it will be placed on the OV/Fax outtray, and the **FAXO** transaction will be started to queue the fax to an appropriate server. **FAXO** however uses CICS ENQUEUEES to ensure the integrity of the files with other OV/Fax transactions, so may be delayed. If large numbers of faxes are being sent in batches, then it may be necessary to put the **FAXO** transaction in a TCLASS with MAXTASK=1 to prevent short-on-storage conditions.
- If multiple fax servers are installed, then their individual rating values, together with their current workloads, will be used to determine the least busy server on which to put a request. The rating values should therefore reflect the relative performance of the servers. The rating values are defined on the SERVER INFORMATION panel of the administrator programs on the host.
- The fax servers have individual polling intervals, defined using the administrator program **FAXADMIN** (the polling interval is the *Inbound Wait/Outbound Rest* field on the SYSTEM CONFIGURATION panel). There may therefore be a delay before the server is able to accept a new fax request from the host, either because of this polling interval, or because the server is already busy processing existing faxes. The server will only download a maximum of fifteen faxes from the host in each polling interval (this value is defined on the host, in the TOSERV field on the CONF4 record of *FAXCNTL*). If the server's disk space drops below the threshold value (the *Free Disk Space Threshold* on the SYSTEM CONFIGURATION panel) then it will stop downloading faxes until it has more space.
- In general, the slowest part of the fax processing is the actual transmission of the fax. The baud rate used to send faxes will obviously effect the time of the actual transmission. At 9600 baud, it typically takes about one minute to transmit each page. If the quality of the telephone line is poor, then the fax may need to be sent again at a slower speed; this will automatically be handled by OV/Fax. Particular numbers may also require slower speeds to be used; this can be controlled by specifying the baud rate in the fax number. The latest versions of GammaFax now support baud rates up to 14400, and other fax formats such as Group 4, which reduce transmission times.
- For faster PCs it is beneficial to have multiple GammaFax adapters installed, since the GammaFax software is able to send multiple faxes concurrently. The PC then only needs to be sufficiently fast to maintain a queue of faxes for GammaFax to send. For slower PCs, the conversion times become more significant, in which case multiple GammaFax adapters may not provide significant throughput improvements. Landscape faxes take substantially longer to convert because they may require an A4 image (approximately 4 Mbits) to be rotated.
- The fax server submits fax requests to GammaFax by placing a record on a GammaFax queue. GammaFax periodically checks this queue, and so there may be a delay between passing the request and the transmission attempt commencing. The fax server then checks the status of each fax submitted to GammaFax each time around its polling cycle. There may therefore be a further delay before the results of the transmission are detected. Once the checking has been completed, the server will report relevant changes to the host component. The polling cycle on the server therefore determines how frequently new requests can be obtained from the host, and how frequently updates can be sent back to the host.
- The *FAXOT* file on the host will be updated with the details of the transmission. However, the updating of the *FAXLOGS* file and the sending of reports back to the fax originator, is performed by the **FAXJ** transaction. This can either be STARTed as soon as

the *FAXOT* file is updated, or can run periodically on a timer (the *CHKSTAT* value on *CONF4* of the *FAXCNTL* file). Running periodically will delay the reporting of the transmission, but will reduce the number of times the transaction runs, since it will process a batch of requests at a time.

- The **FAXP** transaction runs periodically (the *POLLINT* value on *CONF4* of the *FAXCNTL* file) to check if servers are still operating. If a server has not polled the host within a specific time period (the *POLLTIM* value on *CONF4* of the *FAXCNTL* file), the server will be closed, and waiting faxes will be requeued to another server if available. The time period should not be set so low however, that a normally operating server, that has downloaded and is converting up to fifteen faxes, exceeds the time period of polling. This will result in the unnecessary rescheduling of faxes.

## Usage Statistics

The OV/Fax batch cleardown jobs produce reports with details of all the faxes processed since the last cleardown. If you wish to generate additional reports, then the following information may be of use:

- the batch cleardown jobs produce an archive file *FAXARC* containing a copy of the records deleted from the *FAXLOGS* file. The records have similar layouts, with the exception that the *LG-ALT-DATE*, *LG-ALT-TIME* and *LG-ALT-SEQ* fields are not included. The most useful records are the type 2 records, there being one for every fax recipient. The *OV/Fax Administration Guide* gives more information on processing the file.
- the fax server itself can be configured to produce two files which could be used to generate statistics. By using the administration program **FAXADMIN** you may configure the server to write a copy of all status file records to a sequential text file *FXSTATUS.ARC*. By starting the server with the **LOG** option, the log file **FAXSERV.LOG** records details of interactions with the host, including the status of requests, and could be used to monitor how long faxes took to process.

## Testing

If you wish to test OV/Fax, for example, after installation or when setting up new servers or images and overlays, then there are a number of facilities available:

- to send Personal Services messages, notes or editable documents all the way through OfficePath and OV/Fax, then the **PIPT** transaction can be used to generate a suitable request. If **RAPID** is installed then the **ZAPT** transaction may be available (depending on the version of **RAPID**) to do the equivalent.
- to just test the sending of a simple editable document through OV/Fax, use the **FAXT** transaction to generate the document.
- existing faxes can be sent again by using the resend facility within OV/Fax.
- on the fax server, the administrator program **FAXADMIN** has a number of options to generate files suitable for testing the GammaFax installation, and for testing the processing of inbound and outbound faxes.
- Starting the server with the **NOHOST** option allows the server to run without attempting to communicate with the host. Starting the server with the **NOGAMMA** option allows the server to generate but not actually send faxes.
- Starting the server with the **LOG** option will result in the server generating a *FAXSERV.LOG* file containing details of host communications, faxes submitted to

GammaFax, start and stop times of the server, and any error messages generated by the server. Starting the server with the **KEEP** option will stop the server from deleting all the files for a fax, once processing is complete. The pages of the fax can then be viewed to check formatting.

- Configuring the server to archive status file records will result in the *FXSTATUS.ARC* file keeping a copy of the information for each fax processed.
- A special fax number can be used to test the reporting of errors. Sending to a country code of zero followed by the OV/Fax error code, for example, **0.520** (for a busy number) will result in the fax being created on the server but not actually sent. Instead, it will be set to the specified error code and reported back to the host with this code.

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## PART FOUR - PROBLEM DETERMINATION

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## Chapter 13. Problem Identification

OV/Fax is a complex product, particularly since it has both host and PC components. Whilst it is difficult to identify all the errors that could possibly occur, the following categories may help in identifying whether it is a set-up problem, incorrect information from the fax originator, or a genuine error within the product.

### Outbound Fax Requests do not get to OV/Fax

All requests that get to OV/Fax should appear on the *FAXLOGS* file, irrespective of whether they subsequently contain errors. If requests do not get to OV/Fax, then possible items to check would be:

- the OfficePath or RAPID message log, to see if the requests actually got to OfficePath or RAPID.
- the OfficePath or RAPID / DISOSS routing tables, to see if requests can actually go through to the OV/Fax outtray, and that the OV/Fax transaction **FAXO** is specified as the transaction to start..
- the CICS logs for any OfficePath / RAPID or OV/Fax abends. One possible cause of abends would be running out of space on a dataset.

### Outbound Fax Requests are Rejected by OV/Fax

Once requests get to OV/Fax, they should appear on the *FAXLOGS* file, and then be routed to a suitable server. Requests may be rejected by OV/Fax at this stage because:

- the document type may not be supported. In particular, PC-Files cannot be handled. The request should be either a Personal Services message or note, or an editable or RFT document. OfficePath or RAPID / DISOSS can be set up to convert FFT documents to a suitable format.
- the user may not be authorised to send faxes. This is controlled by the User Profiles or GIL records.
- the fax number to send to may have been specified incorrectly, or not at all. For example, the country indicator (full stop) may have been specified twice, or a document may not contain appropriate recipient lines.
- the document may contain invalid image specifications, such as spaces in the name, or names longer than eight characters.

The fax originator should receive an error report indicating the type of error. The *FAXLOGS* file should also contain the relevant details. The CICS log should also be checked for any messages.

### Outbound Fax Requests do not get Routed to a Server Queue

A valid fax request should be routed to an appropriate server, generating records for each recipient on the *FAXOT* file. This routing may not take place because:

- all the servers are **CLOSED**, for a number of reasons. If very busy, they may not have polled recently, and the **FAXP** transaction has set them to a closed status. They may also all have run out of disk space, which should eventually be resolved once faxes have been processed. If the CICS system has been restarted, then the servers may not yet have done their automatic restart, which is often required to re-establish the host 3270 session.

- the servers may have been PAUSED by an administrator, preventing new faxes being scheduled to the server.
- the routing table (specified on the FAXCTLA JCL member) may not be configured correctly to route the fax to an appropriate server.

If faxes cannot be routed to a server, then they should be put in the REQUEUE server until a suitable server becomes available. If the faxes do not appear here, then check the CICS log for messages, particularly from transaction **FAXO**.

## Outbound Fax Requests do not get Downloaded to the Server

Once a fax request has been successfully routed to a server queue, the server should download and process the request. If the fax does not get downloaded (remaining in a PENDING status on the host, instead of DIALLING) then check the following:

- is the server still polling the host? The SERVER INFORMATION panel includes the time the server last polled the host. It may have stopped polling because it is very busy, or because it has lost the 3270 session. The server may also have been switched into **NOHOST** mode.
- fast PCs may have problems with sessions responding too soon, in which case the **HLLDELAY** program should be installed.
- does the server have enough disk space to process the fax? If not, the server should be set to a CLOSED status on the host.
- if a large number of faxes are sent to the server, then only a maximum of fifteen at a time will be downloaded. Requests will therefore be processed in small batches.
- has the fax request been sent to a deferred user, in which case the server will only download the fax during the defined time interval?

The CICS log should be checked for messages, particularly from the transaction **FAXS**. Also check the server for any messages on its screen, or in its *FAXSERV.LOG* file, if the server is running with the **LOG** option.

## Outbound Fax Requests are Rejected by the Server

Once a fax has been downloaded to the server it will be converted to fax format and submitted to GammaFax. This conversion process may identify errors, which should be reported back to the fax originator, and recorded on the *FAXLOGS* file. These errors will normally have error codes in the range 005 to 499, and could include:

- the conversion program could not be started, perhaps because default files are missing. The server's installation and configuration should be checked if this is the case.
- the document may have become corrupted, although it is only usually RFT documents that have a specific structure.
- the server may have run out of disk space.
- the document may specify images or a cover sheet that do not exist, or are in the originator's exclusion list. The document may also contain other format specifiers with invalid formats.

In addition to the FAXLOGS details, the server's FAXSERV.LOG file may include additional details about the error.

## Outbound Fax Requests are not Sent to the Fax Recipient

Once a fax request has been submitted to GammaFax, the fax board will attempt to transmit the fax (processing its queue in the order in which faxes were submitted). There may be many reasons why a fax cannot be sent, and the server maps the large number of GammaFax error codes to a smaller number of OV/Fax codes, in the range 500 to 899. The most common errors are:

Error Code	Description
520	<b>Number engaged.</b> OV/Fax should automatically reschedule the fax request for another attempt later.
525	<b>Invalid number.</b> The fax number could be incomplete, or simply specifies a number that does not exist.
530	<b>Poor line quality.</b> Particular numbers may only be satisfactory when sending at 2400 baud. The fax server will automatically retry at lower baud rates until 2400 is reached. The baud rate can be specified in the fax number if necessary.
550	<b>Voice answer.</b> The call has been answered, but not by a fax machine. Check that the number is correct.
555	<b>No answer.</b> The remote fax machine could be switched off, or out of paper, or the number could be incorrect.
560	<b>Error in the remote fax machine.</b> The fax machine may not be capable of accepting the faxes sent by the server, for example, it may not accept fine resolution faxes. In this case, resend the fax, specifying standard resolution in the fax number.

## Fax Status is not Reported Back to the Originator

The fax server will, on each polling cycle, check the status of all faxes submitted to GammaFax. Ones that have completed or generated an error will be reported back the host, storing the details in the *FAXOT* file. Once transaction **FAXJ** runs, the *FAXLOGS* file will be updated, and an appropriate report sent back to the fax originator. If the report is not sent, then check the following:

- has GammaFax finished sending the fax? Using the GammaFax **GF** command, check that the request is no longer on the Pending queue.
- has the server detected that GammaFax has processed the fax? If the server still has the fax with status Submitted, then the server may not be configured for the correct version of GammaFax.
- has the *FAXOT* file been updated on the host? If not, check that the server is still polling the host, and check the CICS log for messages, particularly from transaction **FAXS**.
- has the *FAXLOGS* file been updated? If not, does transaction **FAXJ** run on a timer, and if so, has it run since the *FAXOT* file was updated? If **FAXJ** should have run, check the CICS log for any messages from it.
- is OfficePath or RAPID / DISOSS configured correctly to send the reports back the fax originator. They may be configured to ignore the requests, or route them elsewhere, such as to a file instead.

- check the CICS log for any messages from OfficePath or RAPID, and check the OfficePath or RAPID message log to see if the requests actually arrived.

## GammaFax does not Receive Inbound Faxes

GammaFax saves received faxes as TIFF files in its own directory, recording details of each fax in its Received queue. If GammaFax is not receiving faxes, then check the following:

- is it possible to actually dial the number of the GammaFax adapter, for example, is it on an internal line?
- has GammaFax been configured to ignore incoming calls? In the *GFAX.\$DC* configuration file, the command GFXSHUTDOWN specifies what each adapter can do. If the setting for individual boards is '1' then they will not be able to accept incoming calls.

## Inbound Faxes are not Converted to RFT/E

The fax server uses the **FAXINIMG** program to convert received TIFF files into IMDS format, before using the **FAXINRFT** program to generate an RFT/E document. If these documents are not being generated, then check the following:

- is the fax server configured to use the same directory as GammaFax for received faxes? In particular, does the GammaFax Queue Manager start from the GammaFax directory or from another directory?
- does GammaFax save the TIFF files in a format acceptable to the **FAXINIMG** program (TIFF type 3 one-dimensional encoding)? It may be necessary to include a GFXFORM command in the *GFAX.\$DC* file for each adapter, specifying a value of '3'.

The conversion process can be tested by using the administrator program **FAXADMIN** to generate a sample inbound fax.

## Inbound Faxes are not Routed to the Correct Recipients

The fax server should upload the inbound fax RFT/E documents to the host using the **FAXR** transaction. This should put the details onto the *FAXIN* and *FAXLOGS* files. The **FAXI** transaction will run, sending the documents to the appropriate recipients. If the documents do not arrive, then check the following:

- have the documents been uploaded to the host? If not, check that the server is still polling the host, and check the CICS log for any messages, particularly from transaction **FAXR**.
- are any inbound recipients specified on the SERVER INFORMATION panel on the host? If so, any inbound faxes from that server should be sent to all the recipients specified. Check that they are valid recipient addresses.
- if no inbound recipients are specified, then the default recipient should be used (this is specified in the INFAX field on the CONF4 record of the *FAXCNTL* file). Check that this is a valid recipient address.
- if DID routing is being used, check that the appropriate routing records are defined on the *FAXCNTL* file (in the FAXCTLB JCL member).
- check that the **FAXI** transaction is running, either immediately **FAXR** runs, or on a timer. Check the CICS logs for any messages from **FAXI**.

- check that OfficePath or RAPID / DISOSS is configured correctly to send the documents to the inbound recipients. They may be configured to reject RFT documents, or to ignore the requests.
- check the CICS log for any messages from OfficePath or RAPID, and check the OfficePath or RAPID message log to see if the requests actually arrived.

## Reporting Errors to the OV/Fax Support Team

If you need to report errors to the Support Team, please have the following information available:

- the version of OV/Fax that you are running on the host and on the servers.
- the type of 3270 emulation being used.
- the versions of DOS and GammaFax used on the servers, and the number and type of adapters installed.
- details of any message on the CICS log and on the server if available.
- any relevant fax status information from the host and server files.
- if the host has abended producing a dump, then details of the abend code, program, program offsets and relevant messages from the dump. Please retain the dump in case it is needed for further investigation.



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## Chapter 14. Abend and Error Codes

This chapter lists the abend and error codes produced by the host components of OV/Fax.

### Batch Programs

The output from the batch programs will usually indicate the cause of any errors, listing VSAM return codes where appropriate. The control file batch update program FAXCNTL also returns the following codes:

Program	Return Code	Description
FAXCNTL	8	Some control file requests have not been processed.
	12	Language code is not 1 byte long.
	201	Missing record end parameter in input.
	202	Invalid data type in input.
	5nn	Error opening or closing the control file. 'nn' is the VSAM return code.
	6nn	Error opening or reading the cardfile. 'nn' is the VSAM return code.
	7nn	Error reading, writing, rewriting or deleting a record from the control file. 'nn' is the VSAM return code.
	8nn	Error reading the next record from the cardfile. 'nn' is the VSAM return code.

### CICS Programs

Program	Abend Code	Description
FAX0010	U014	Error STARTing the Personal Services transaction whilst exiting OV/Fax.
	U0MS	Error LINKing to the FAXMSG program to retrieve the details for a CICS error.

Program	Abend	Description
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	Code	
FAX1010	U002	Invalid commarea length received.
	U003	General purpose program abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 005 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 010 - error XCTLing to FAXHELP program.</li> <li>• 015 - error XCTLing back to the Personal Services program.</li> <li>• 040 - error XCTLing to the program for the chosen menu option.</li> </ul>

Program	Abend Code	Description
FAX2010	U003	Invalid commarea length received. Also the general purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error SENDing TEXT to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for a CICS error.

Program	Abend Code	Description
FAX2EXIT	U002	Invalid commarea length received.

Program	Abend Code	Description
FAX3010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend	Description
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	Code	
FAX4010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 003 - error LINKing to FAXVAL program.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAX5010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 004 - error XCTLing back to the menu program.</li> <li>• 005 - error XCTLing to FAX7010 program.</li> <li>• 006 - error linking to FAXCDATE program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAX6010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 008 - error LINKing to the PIPGS3 or APIGS3 program to submit the message to OfficePath or RAPID.</li> <li>• 018 - error writing the message details to the TSQ.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error. Also used for errors returned from LINKing to the PIPGS3 or APIGS3 program to submit the message to OfficePath or RAPID.

Program	Abend Code	Description
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FAX7010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 005 - error XCTLing to the next program or menu.</li> <li>• 020 - error SENDIng a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAX8010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 005 - error XCTLing back to the menu.</li> <li>• 006 - error XCTLing to the next program.</li> <li>• 020 - error SENDIng a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAX9010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 003 - error XCTLing to the next program or menu.</li> <li>• 020 - error SENDIng a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U008	Error linking to FAXCDATE program.

Program	Abend Code	Description
FAXA010	U002	Invalid commarea length received.

	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 003 - error XCTLing back to the menu.</li> <li>• 005 - error XCTLing to the FAXC010 program.</li> <li>• 006 - error SENDing a message to the screen.</li> <li>• 008 - error XCTLing to the FAXB010 program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXB010	U002	Invalid commarea length received.
	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 004 - error READing the next record from the <i>FAXOT</i> file.</li> <li>• 006 - error XCTLing to the FAXA010 or menu program.</li> <li>• 010 - error XCTLing to the FAXC010 program.</li> <li>• 010 - error READing for update from the <i>FAXLOGS</i> file.</li> <li>• 011 - error XCTLing to itself to display a message.</li> <li>• 011 - error REWRITing back to the <i>FAXLOGS</i> file.</li> <li>• 012 - error LINKing to the FAXVAL program.</li> <li>• 012 - error READing for update from the <i>FAXSERV</i> file.</li> <li>• 013 - error REWRITing back to the <i>FAXSERV</i> file.</li> <li>• 014 - error READing from the <i>FAXSERV</i> file.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U011	Error LINKing to the FAXQUE program to reschedule a fax.

Program	Abend Code	Description
FAXC010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have

		<p>been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 004 - error XCTLing to FAXHELP program.</li> <li>• 005 - error XCTLing to itself to display a message.</li> <li>• 008 - error XCTLing to the next program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXCDATE	U002	Invalid commarea length received.
	U012	No date value received.

Program	Abend Code	Description
FAXCODEX	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 008 - error READING shortcode from the <i>FAXSCOD</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXCTIME	U002	Invalid commarea length received.
	U012	No time value received.

Program	Abend Code	Description
FAXD010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:

	<ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 003 - error XCTLing to the FAXC010 program.</li> <li>• 004 - error READing the <i>FAXOT</i> file.</li> <li>• 005 - error XCTLing to the FAXC010 program.</li> <li>• 006 - error XCTLing to the next program.</li> <li>• 020 - error SENDing a message to the screen.</li> <li>• 091 - error STARTing the FAXX transaction.</li> </ul>
U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXE010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 005 - error XCTLing back to the menu program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXEAB	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error READing the C6 record from the <i>FAXCNTL</i> file.</li> <li>• 012 - error WRITing or REWRITing the header record to the EAB TSQ.</li> </ul>

	<ul style="list-style-type: none"> <li>• 012 - error WRITing the results to the FAXO TSQ.</li> <li>• 013 - error WRITing data records to the TSQ.</li> <li>• 014 - error returned from LINK to ENJ000P EAB API program.</li> <li>• 016 - error LINKing to the ENJ000P EAB API program.</li> <li>• 018 - error READing the TSQ.</li> </ul>
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	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
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Program	Abend Code	Description
FAXG010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 003 - error LINKing to the FAXVAL program.</li> <li>• 005 - error XCTLing back to the menu program.</li> <li>• 006 - error XCTLing to the next program.</li> <li>• 007 - error LINKing to the FAXCDATE program.</li> <li>• 020 - error SENDing a message to the screen.</li> <li>• 091 - error STARTing the FAXX transaction.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXHELP	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 003 - error XCTLing back to the calling program.</li> <li>• 005 - error XCTLing back to the calling program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXI010	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error LINKing to the PIPGS3 or APIGS3 program.</li> <li>• 002 - error WRITing profile records to the TSQ.</li> </ul>

	<ul style="list-style-type: none"> <li>• 003 - error READING the next record from the <i>FAXIN</i> file.</li> <li>• 004 - error READING the next document record from the <i>FAXIN</i> file.</li> <li>• 005 - error DELETing records from the <i>FAXIN</i> file.</li> <li>• 006 - error READING the C4 record from the <i>FAXCNTL</i> file.</li> <li>• 006 - error WRITing document records to the TSQ.</li> <li>• 007 - error READING for update from the <i>FAXLOGS</i> file.</li> <li>• 008 - error DELETing document records from the <i>FAXIN</i> file.</li> <li>• 010 - error REWRITing back to the <i>FAXLOGS</i> file.</li> </ul>
U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
U009	Error retrieving details from IMIPSDET. Error returned from the PIPGS3 or APIGS3 program while sending the inbound fax details.

Program	Abend Code	Description
FAXJ010	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error LINKing to the FAXCDATE program.</li> <li>• 002 - error LINKing to the FAXCTIME program.</li> <li>• 003 - error READING for update from the <i>FAXSERV</i> file.</li> <li>• 004 - error REWRITing back to the <i>FAXSERV</i> file.</li> <li>• 005 - error READING LOGOT records from the <i>FAXLOGS</i> file.</li> <li>• 006 - error READING the C4 record from the <i>FAXCNTL</i> file.</li> <li>• 006 - error READING the next FAXOT record from the <i>FAXOT</i> file.</li> <li>• 008 - error LINKing to the FAX6010 program to send a message.</li> <li>• 010 - error READING FAXOT record for update from the <i>FAXOT</i> file.</li> <li>• 011 - error REWRITing FAXOT record back to the <i>FAXOT</i> file.</li> <li>• 012 - error READING LOGOT record for update from the <i>FAXLOGS</i> file.</li> <li>• 013 - error REWRITing LOGOT record back to the <i>FAXLOGS</i> file..</li> </ul>

	<ul style="list-style-type: none"> <li>• 014 - error DELETing DOCOT records from the <i>FAXOT</i> file.</li> <li>• 015 - error DELETing FAXOT records from the <i>FAXOT</i> file.</li> <li>• 016 - error READING ADROT record for update from the <i>FAXLOGS</i> file.</li> <li>• 017 - error REWRITing ADROT record back to the <i>FAXLOGS</i> file.</li> </ul>
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	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
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Program	Abend Code	Description
FAXK010	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 004 - error retrieving details from IMIPSDet.</li> <li>• 005 - error READing FAXIN record from the <i>FAXIN</i> file.</li> <li>• 006 - error READing C4 record from the <i>FAXCNTL</i> file.</li> <li>• 010 - error READing LOGIN record for update from the <i>FAXLOGS</i> file.</li> <li>• 015 - error DELETing TSQ.</li> <li>• 020 - error LINKing to the PIPGT3 or APIGT3 program to retrieve the confirmation details.</li> <li>• 025 - error reading from the TSQ.</li> <li>• 030 - error DELETing FAXIN record from the <i>FAXIN</i> file.</li> <li>• 035 - error DELETing DOCIN records from the <i>FAXIN</i> file.</li> <li>• 040 - error REWRITing LOGIN record back to the <i>FAXLOGS</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U009	Error returned from the PIPGT3 or APIGT3 program while retrieving the confirmation details.

Program	Abend Code	Description
FAXL020	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - unspecific error performing startup processing.</li> <li>• 001 - error STARTing the FAXI transaction.</li> <li>• 002 - error STARTing the FAXJ transaction.</li> <li>• 003 - error STARTing the FAXQ transaction.</li> <li>• 004 - error STARTing the FAXP transaction.</li> <li>• 004 - error retrieving details from IMIPSDet.</li> </ul>

		<ul style="list-style-type: none"> <li>• 006 - error READing C4 record from the <i>FAXCNTL</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXM010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 005 - error XCTLing back to the menu program.</li> <li>• 006 - error XCTLing to the FAXE010 or FAXN010 program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXMSG	U002	Invalid commarea length received.
	U005	Error WRITing the error message to the TDQ.
	U006	Error calling the FAXMWTO program to send the message to the operator console.

Program	Abend Code	Description
FAXN010	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error returning to itself whilst awaiting for its map to be processed.</li> <li>• 002 - error XCTLing to FAXHELP program.</li> <li>• 003 - error XCTLing to the next program.</li> <li>• 020 - error SENDing a message to the screen.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXNOTSC	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error READing the C4 record from the <i>FAXCNTL</i> file.</li> </ul>

	<ul style="list-style-type: none"> <li>• 025 - error READING a server record from the <i>FAXSERV</i> file.</li> <li>• 035 - error READING deferred user ids from the <i>FAXCNTL</i> file.</li> <li>• 060 - error READING from or WRITING to a TSQ.</li> </ul>
U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXO010	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 005 - error LINKing to the FAXCDATE program.</li> <li>• 006 - error READING the C4, C6 or C7 records from the <i>FAXCNTL</i> file.</li> <li>• 010 - error READING LOGOT record from the <i>FAXLOGS</i> file.</li> <li>• 015 - error LINKing to the PIPGT3 or APIGT3 program while retrieving the outbound fax details.</li> <li>• 015 - error LINKing to the FAXPCSC program.</li> <li>• 020 - error LINKing to the document scanning module (FAXNOTSC, FAXPRISC or FAXRFTSC).</li> <li>• 025 - error READING TSQ.</li> <li>• 035 - error READING deferred times from the <i>FAXCNTL</i> file.</li> <li>• 035 - error READING user authorisation profiles from the <i>FAXCNTL</i> file.</li> <li>• 036 - default user authorisation profile not found on the <i>FAXCNTL</i> file.</li> <li>• 050 - error LINKing to the FAXCODEX program.</li> <li>• 055 - error LINKing to the FAXEAB program.</li> <li>• 060 - error LINKing to the FAXCODEX program.</li> <li>• 065 - error LINKing to the FAXEAB program.</li> <li>• 070 - error WRITing LOGOT record to the <i>FAXLOGS</i> file.</li> <li>• 075 - error READING TSQ.</li> <li>• 080 - error WRITing DOCOT record to the <i>FAXOT</i> file.</li> <li>• 085 - error WRITing FAXOT record to the <i>FAXOT</i> file.</li> <li>• 090 - error WRITing ADROT record to the <i>FAXLOGS</i> file.</li> </ul>

	<ul style="list-style-type: none"> <li>• 095 - error READING from the <i>FAXSCOD</i> file. - X5</li> <li>• 100 - error DELETing TSQ.</li> <li>• 105 - error READING header record for update from the <i>FAXOT</i> file.</li> <li>• 110 - error REWRITing header record back to the <i>FAXOT</i> file.</li> </ul>
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	<ul style="list-style-type: none"> <li>• 115 - error LINKing to the FAXVAL program.</li> <li>• 120 - error READing the ERROR server record for update from the <i>FAXSERV</i> file.</li> <li>• 125 - error REWRITing the ERROR server record back to the <i>FAXSERV</i> file.</li> <li>• 130 - error WRITing the ERROR server record to the <i>FAXSERV</i> file.</li> <li>• 135 - deferred start or end time invalid.</li> <li>• 140 - error LINKing to the FAXCDATE program.</li> <li>• 145 - error LINKing to the FAXCTIME program.</li> <li>• 150 - error READing the REQUEUE server record from the <i>FAXSERV</i> file.</li> <li>• 155 - error READing the REQUEUE server record for update from the <i>FAXSERV</i> file.</li> <li>• 160 - error REWRITing the REQUEUE server record back to the <i>FAXSERV</i> file.</li> <li>• 165 - error WRITing the REQUEUE server record to the <i>FAXSERV</i> file.</li> <li>• 170 - error reading TSQ from the FAXEAB program.</li> <li>• 175 - error READing TSQ from the document scanning module.</li> <li>• 180 - error READing the start of the TSQ.</li> </ul>
U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
U009	Error retrieving details from IMIPSDDET. Error returned from the PIPGT3 or APIGT3 program while retrieving the outbound fax details.
U010	Error retrieving the note key table details from IMIPSDDET.
U011	Error LINKing to the FAXQUE program.

Program	Abend Code	Description
FAXP010	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 004 - error retrieving details from IMIPSDDET.</li> <li>• 005 - error READing next FAXOT record from the <i>FAXOT</i> file.</li> <li>• 006 - error READing C4 record from the <i>FAXCNTL</i> file.</li> </ul>

	<ul style="list-style-type: none"> <li>• 006 - error READING FAXOT record for update from the <i>FAXOT</i> file.</li> <li>• 007 - error REWRITing FAXOT record back to the <i>FAXOT</i> file.</li> <li>• 008 - error READING next server record from the <i>FAXSERV</i> file.</li> <li>• 009 - error LINKing to the FAX6010 program to send a message.</li> <li>• 010 - error READING record for update from the <i>FAXLOGS</i> file.</li> <li>• 011 - error REWRITing record back to the <i>FAXLOGS</i> file.</li> <li>• 011 - error READING server record for update from the <i>FAXSERV</i> file.</li> <li>• 012 - error LINKing to the FAXVAL program.</li> <li>• 012 - error REWRITing server record back to the <i>FAXSERV</i> file.</li> <li>• 013 - error DELETing record from the <i>FAXOT</i> file.</li> </ul>
U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
U008	Error LINKing to the FAXCDATE program.
U011	Error LINKing to the FAXQUE program.

Program	Abend Code	Description
FAXPCSC	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 006 - error READING C8 record from the <i>FAXCNTL</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXPRISC	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 025 - error READING a server record from the <i>FAXSERV</i> file.</li> <li>• 060 - error READING from or WRITing to a TSQ.</li> </ul>

	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U008	Error LINKing to the FAXCDATE program.

Program	Abend Code	Description
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FAXQ010	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 004 - error retrieving details from IMIPSDDET.</li> <li>• 006 - error READING C4 record from the <i>FAXCNTL</i> file.</li> <li>• 010 - error DELETing FAXOT record from the <i>FAXOT</i> file.</li> <li>• 010 - error WRITing FAXOT record to the <i>FAXOT</i> file.</li> <li>• 010 - error READING the next FAXOT record from the <i>FAXOT</i> file.</li> <li>• 010 - error READING record for update from the <i>FAXLOGS</i> file.</li> <li>• 011 - error REWRITing record back to the <i>FAXLOGS</i> file.</li> <li>• 012 - error LINKing to the FAXVAL program.</li> <li>• 012 - error READING the REQUEUE server record for update from the <i>FAXSERV</i> file.</li> <li>• 013 - error READING server record for update from the <i>FAXSERV</i> file.</li> <li>• 013 - error REWRITing the REQUEUE server record back to the <i>FAXSERV</i> file.</li> <li>• 014 - error REWRITing server record back to the <i>FAXSERV</i> file.</li> <li>• 015 - error WRITing the ERROR server record to the <i>FAXSERV</i> file.</li> <li>• 019 - error LINKing to the FAXQUE program.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXQUE	U002	Invalid commarea length received.
	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error on STARTBR of the <i>FAXSERV</i> file.</li> <li>• 002 - error on ENDBR of the <i>FAXSERV</i> file.</li> <li>• 003 - error on READNEXT of the next server record from the <i>FAXSERV</i> file.</li> </ul>

		<ul style="list-style-type: none"> <li>• 004 - error WRITing FAXOT record to the <i>FAXOT</i> file.</li> <li>• 005 - error READING a server record for update from the <i>FAXSERV</i> file.</li> <li>• 006 - error REWRITing a server record back to the <i>FAXSERV</i> file.</li> <li>• 006 - error READING C4 record from the <i>FAXCNTL</i> file.007 - error READING a server record from the <i>FAXSERV</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an

		error.
	U008	Error LINKing to the FAXCDATE program.

Program	Abend Code	Description
FAXR010	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error WRITing a server record to the <i>FAXSERV</i> file.</li> <li>• 002 - error WRITing LOGIN record to the <i>FAXLOGS</i> file.</li> <li>• 003 - error READing server record for update from the <i>FAXSERV</i> file.</li> <li>• 004 - error CONVERSing with the fax server.</li> <li>• 005 - invalid AID key received from CONVERSE with the fax server.</li> <li>• 006 - error READing C4 record from the <i>FAXCNTL</i> file.</li> <li>• 006 - error READing server record for update from the <i>FAXSERV</i> file.</li> <li>• 007 - error WRITing FAXIN record to the <i>FAXIN</i> file.</li> <li>• 008 - error SENDing details to the fax server screen.</li> <li>• 009 - error READing DID recipient details from the <i>FAXCNTL</i> file.</li> <li>• 009 - error READing server record for update from the <i>FAXSERV</i> file.</li> <li>• 010 - error REWRITing server record back to the <i>FAXSERV</i> file.</li> <li>• 012 - error LINKing to the FAX6010 program.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U010	Error SENDing details to the fax server screen.

Program	Abend Code	Description
FAXRFTSC	U002	Invalid commarea length received.
	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 025 - error READing a server record from the <i>FAXSERV</i> file.</li> <li>• 060 - error READing from or WRITing to a TSQ.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
FAXS010	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 001 - error WRITing server record to the <i>FAXSERV</i> file.</li> <li>• 002 - error READing the EBCDIC to ASCII conversion table from the <i>FAXCNTL</i> file.</li> <li>• 003 - error READing the server record for update from the <i>FAXSERV</i> file.</li> <li>• 004 - error retrieving details from IMIPSDDET.</li> <li>• 005 - error READing the server record for update from the <i>FAXSERV</i> file.</li> <li>• 006 - error READing C4 or C5 record from the <i>FAXCNTL</i> file.</li> <li>• 006 - error CONVERSing with the fax server.</li> <li>• 007 - invalid AID key received from CONVERSE with the fax server.</li> <li>• 008 - error READing the server record for update from the <i>FAXSERV</i> file.</li> <li>• 009 - error LINKing to the FAXCTIME program.</li> <li>• 010 - error DELETing FAXOT record from the <i>FAXOT</i> file.</li> <li>• 011 - error WRITing FAXOT record to the <i>FAXOT</i> file.</li> <li>• 012 - error SENDing details to the fax server screen.</li> <li>• 013 - error READing the next FAXOT record from the <i>FAXOT</i> file.</li> <li>• 014 - error READing the FAXOT record for update from the <i>FAXOT</i> file.</li> <li>• 015 - error READing DOCOT record from the <i>FAXOT</i> file.</li> <li>• 016 - error REWRITing the FAXOT record back to the <i>FAXOT</i> file.</li> <li>• 017 - error READing the server record for update from the <i>FAXSERV</i> file.</li> </ul>

		<ul style="list-style-type: none"> <li>• 018 - error REWRITing the server record back to the <i>FAXSERV</i> file.</li> <li>• 019 - error LINKing to the FAXCDATE program.</li> <li>• 020 - error LINKing to the FAX6010 program.</li> <li>• 022 - error LINKing to the FAXMSG program.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U010	Error SENDing details to the fax server screen.

Program	Abend Code	Description
FAXT010	nnnn	Return code from LINK to the PIPGS3 program.

Program	Abend Code	Description
FAXU010		No abends issued.

Program	Abend Code	Description
FAXVAL	U002	Invalid commarea length received.
	U003	General purpose abend code. The FAXMSG program should have been called to output one of the following error codes: <ul style="list-style-type: none"> <li>• 001 - error READING server record from the <i>FAXSERV</i> file.</li> <li>• 002 - error READING number routing entries from the <i>FAXCNTL</i> file.</li> <li>• 003 - error READING default number routing entry from the <i>FAXCNTL</i> file.</li> <li>• 006 - error READING C5 record from the <i>FAXCNTL</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.

Program	Abend Code	Description
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FAXX010	U003	<p>General purpose abend code. The FAXMSG program should have been called to output one of the following error codes:</p> <ul style="list-style-type: none"> <li>• 005 - error REWRITing FAXOT record back to the <i>FAXOT</i> file.</li> <li>• 006 - error READing C4 record from the <i>FAXCNTL</i> file.</li> <li>• 010 - error READing the server record for update from the <i>FAXSERV</i> file.</li> <li>• 015 - error REWRITing the server record back to the <i>FAXSERV</i> file.</li> <li>• 020 - error LINKing to the FAXVAL program.</li> <li>• 025 - error READing ADROT record from the <i>FAXLOGS</i> file.</li> <li>• 030 - error READing the header record for update from the <i>FAXOT</i> file.</li> <li>• 035 - error REWRITing the header record back to the <i>FAXOT</i> file.</li> <li>• 040 - error LINKing to the FAXCDATE program.</li> <li>• 045 - error LINKing to the FAXCTIME program.</li> <li>• 050 - error READing the REQUEUE server record from the <i>FAXSERV</i> file.</li> <li>• 055 - error READing the REQUEUE server record for update from the <i>FAXSERV</i> file.</li> <li>• 060 - error REWRITing the REQUEUE server record back to the <i>FAXSERV</i> file.</li> <li>• 065 - error WRITing the REQUEUE server record to the <i>FAXSERV</i> file.</li> <li>• 070 - error WRITing ADROT record to the <i>FAXLOGS</i> file.</li> <li>• 075 - error LINKing to the FAXCDATE program.</li> <li>• 080 - error READing FAXOT record for update from the <i>FAXOT</i> file.</li> <li>• 085 - error READing LOGOT record for update from the <i>FAXLOGS</i> file.</li> <li>• 090 - error REWRITing LOGOT record back to the <i>FAXLOGS</i> file.</li> <li>• 100 - error WRITing FAXOT record to the <i>FAXOT</i> file.</li> </ul>
	U004	Error LINKing to the FAXMSG program to retrieve the details for an error.
	U010	Error RETRIEVing the start data.
	U011	Error LINKing to the FAXQUE program.



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## Chapter 15. Common Problems with the Host

### Problems with PLT Processing

#### **PLT transaction FAXL abends U005.**

Define a PRODUCT record for OV/Fax in the Keane utilities (IMIPSDET) using the IMIF transaction. All the parameters should be included on the record.

#### **PLT transaction FAXL abends U003, getting TRANSIDERR while starting FAXI.**

OV/Fax may be configured for Outbound use only, in which case the inbound transactions such as FAXI need not be defined. Change the DISTRIB parameter on the CONF4 record of the FAXCNTL file to N.

### AUTOFAX Problems

#### **AUTOFAX program FAXBJAUT fails with return code 12.**

Messages such as AUTO003 INVALID LENGTH FOUND FOR PARAMETER ... will also be issued, but the parameters appear to be correct. Ensure that the JCL is saved with the profile NUMBER OFF, and clear characters to the end of the line. FAXBJAUT is treating the number sequence as part of the parameters.

### Problems with Accepting Fax Requests

#### **Requests can be sent to OV/Fax but the recipients are not recognised.**

The faxes appear on the logs but without recipients. The originators receive no notification of the error. Check that the fax recipient ids (NORMFAX and WILDFAX on the CONF4 record of the FAXCNTL file) are defined correctly, and that the faxes are being sent to those ids.

#### **OV/Fax does not recognise requests from batch users.**

Check that the batch user is authorised to send faxes through an appropriate User Profile.

#### **OV/Fax does not receive requests sent to deferred users.**

Check that the deferred user ids (default FAXD1 to FAXD10) are defined in OfficePath (User records) or RAPID (User records) and the DISOSS HUP.

#### **Fax requests only result in a cover page being sent, with no other pages.**

Check if OfficePath or RAPID is configured to allow FFT and PC-Files through to OV/Fax. These formats are not supported by OV/Fax, which then assumes that only a Personal Services message is being sent.

#### **FAXEAB program abends U003, with an SQL return code -206.**

The EAB cannot find the column ENJUSERCCC. Reconfigure the EAB Shared Address Book options to say ENJUSERCCC=N).

## **Transaction FAXO gets a return code 2002 or 2003 from IMIPSDET.**

IMIPSDET is attempting to access the DMDGSI30 module (or language equivalent), but it is loaded above the 'line'. Reassemble the module with AMODE(24) RMODE(24).

## **Problems returning Status Information**

### **Status information is not being returned as soon as the fax has been sent.**

Status information is sent back to the fax originator by the FAXJ transaction. Check if OV/Fax is configured to run this on a timer (FAXJ = Y and CHKSTAT = time on the CONF4 record of the *FAXCNTL* file) instead of immediately.

### **Status information for application faxes is not being sent through DISOSS to another node.**

Unfortunately DISOSS ignores the node parameter and is unable to route the requests to the requested recipient.

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## Chapter 16. Common Problems with the Server

### Problems with 3270 Emulation

#### **The server gets communications errors using IBM Entry Level emulation.**

The emulation should be upgraded to use IBM Personal Communications/3270 instead.

#### **The 3270 emulation session locks on fast PCs.**

The server is detecting the brief but temporary disappearance of the clock and assumes that the host has finished processing. It starts to send its own data, locking the session. Install the **HLLDELAY** program on the server to perform extra checks for the clock.

### Problems with Fax Formatting

#### **Faxes contain blank pages, particularly after including an image or overlay.**

Set the Erase Blank Pages option to Yes on the FAX CONVERSION PARAMETERS panel of the **FAXADMIN** program.

#### **Cover sheets contain incorrect language characters.**

Define an EBCDIC to ASCII conversion table for each server giving the problem (see the FAXCTLA JCL member).

#### **Images and signatures are always left justified.**

Set the Indent to Command option to Yes on the FAX CONVERSION PARAMETERS panel of the **FAXADMIN** program.

#### **The server does not handle scanned images correctly.**

The images must be in raster format for the server to be able to use them. Use the supplied conversion utilities, in conjunction with GammaFax or other utilities if necessary, to generate the required format.

### Problems with GammaFax

#### **GammaFax returns error code 3301 for particular fax numbers or machines.**

GammaFax is attempting to transmit the fax faster than it can read and process it from disk. Add the following command to the *GFAX.\$DC* file to slow the transmission down a little: **GFCCONTROL b 32 96** where 'b' is the board number (one line is needed for each board).

#### **The server does not detect that GammaFax V5.1 or above has sent a fax.**

Set the parameter on the GAMMAFAX CONFIGURATION panel of the **FAXADMIN** program to indicate that version 5.1 or above is being used.

## **Faxes have a poor success rate sending to particular fax numbers or countries.**

Try sending the fax with a lower baud rate, either by reconfiguring the server, or by specifying the baud rate on individual fax numbers. If the calls time out before connecting, increase the CDTIME parameter in the GammaFax **GCL.PRO** file.

## **Problems with Cancelling Faxes**

### **The server hangs when cancelling faxes with a status of DIALING.**

Set the ACTCANC parameter on the CONF4 record of the *FAXCNTL* file to N to prevent cancellation of such requests.

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