

FOCUS for S/390

OS/390 and MVS Installation Guide
Version 7.2

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Preface

This documentation describes how to install Version 7.2 of FOCUS for S/390® on OS/390®, z/OS™, or MVS™. It defines operating system configurations required for operating and maintaining FOCUS® and provides a step-by-step description of the installation process. Intended for the OS/390 or MVS user support group, rather than the community of FOCUS end users, it is available in the following formats: printed manual, Adobe® PDF, HTML, and HTMLHelp.

How This Manual Is Organized

This manual includes the following chapters:

Chapter/Appendix		Contents
1	<i>Features and Components</i>	A brief description of components you can install and the environments required for their execution.
2	<i>Basic Installation Steps</i>	Step-by-step installation procedures.
3	<i>Customizing FOCUS</i>	FOCUS customization issues.
4	<i>User Exits</i>	The use and installation of User Exits.
5	<i>Interface Installation</i>	Installation procedures for certain interfaces.
6	<i>Maintenance</i>	Various maintenance topics.
A	<i>Subsystem Sample JCL and Zaps</i>	Listings of sample IBI Subsystem JCL and Zaps
B	<i>Subsystem Error Messages</i>	Subsystem error messages.

Each FOCUS tape comes with an *OS/390 and MVS Installation Guide*, identified by a version and release number on the cover. Please note that new versions are published only as additions or corrections are needed and the document does not necessarily change with each new release or version of FOCUS.

Documentation Conventions

The following conventions are used to describe command syntax in this manual:

<code>THIS TYPEFACE</code>	Denotes a command that you must enter in uppercase, exactly as shown.
<code>this typeface</code>	Denotes a value that you must supply.
<code><u>underscore</u></code>	Indicates a default setting.
Punctuation	Required as shown.
{ }	Indicates two choices from which you must choose one. You type one of these choices, not the braces.
[]	Indicates a group of optional parameters. None are required, but you may select one. Type only the information within the brackets, not the brackets.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices, not the symbol.
...	Indicates that you can enter a parameter multiple times. Type only the information, not the ellipsis points (. . .).
. . .	Indicates that there are (or could be) intervening or additional commands.

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Customer Support

Do you have questions about FOCUS?

Call Information Builders Customer Support Services (CSS) at (800) 736-6130 or (212) 736-6130. Customer Support Consultants are available Monday through Friday between 9:00 a.m. and 8:00 p.m. EST to address all your FOCUS questions. Information Builders consultants can also give you general guidance regarding product capabilities and documentation. Please be ready to provide your six-digit site code number (xxxx.xx) when you call.

You can also access support services electronically, 24 hours a day, with InfoResponse Online. InfoResponse Online is accessible through our World Wide Web site, <http://www.informationbuilders.com>. It connects you to the tracking system and known-problem database at the Information Builders support center. Registered users can open, update, and view the status of cases in the tracking system, and read descriptions of reported software issues. New users can register immediately for this service. The technical support section of www.informationbuilders.com also provides usage techniques, diagnostic tips, and answers to frequently asked questions.

To learn about the full range of available support services, ask your Information Builders representative about InfoResponse Online, or call (800) 969-INFO.

Information You Should Have

To help our consultants answer your questions most effectively, please be ready to provide the following information when you call:

- Your six-digit site code number (xxxx.xx).
- The FOCEXEC procedure (preferably with line numbers).
- Master file with picture (provided by CHECK FILE).
- Run sheet (beginning at login, including call to FOCUS), containing the following information:
 - ? RELEASE
 - ? FDT
 - ? LET
 - ? LOAD
 - ? COMBINE
 - ? JOIN
 - ? DEFINE
 - ? STAT
 - ? SET/? SET GRAPH
 - ? USE
 - ? TSO DDNAME or CMS QFI

- The exact nature of the problem:
 - Are the results or the format incorrect; are the text or calculations missing or misplaced?
 - The error message and code, if applicable.
 - Is this related to any other problem?
- Has the procedure or query ever worked in its present form? Has it been changed recently? How often does the problem occur?
- What release of the operating system are you using? Has it, FOCUS, your security system, or an interface system changed?
- Is this problem reproducible? If so, how?
- Have you tried to reproduce your problem in the simplest form possible? For example, if you are having problems joining two databases, have you tried executing a query containing just the code to access the database?
- Do you have a trace file?
- How is the problem affecting your business? Is it halting development or production? Do you just have questions about functionality or documentation?
- Have any PTFs or patches been installed? This can be determined by issuing the `? PTF` command.

User Feedback

In an effort to produce effective documentation, the Documentation Services staff at Information Builders welcomes any opinion you can offer regarding this manual. Please use the Reader Comments form at the end of this manual to relay suggestions for improving the publication or to alert us to corrections. You can also use the Document Enhancement Request Form on our Web site, <http://www.informationbuilders.com>.

Our thanks, in advance, for your comments.

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CHAPTER 1

Features and Components

Topics:

- Mainframes and Operating Systems
- Installed Features
- The FOCUS Libraries
- Data Set Naming Conventions
- Virtual Storage Requirements for FOCUS and SU

This chapter describes the installation options and operating system configurations required for the installation and execution of FOCUS under OS/390, z/OS, or MVS. Installation steps are described in Chapter 2, *Basic Installation Steps*.

Mainframes and Operating Systems

Version 7.2 of FOCUS for S/390 runs on any IBM or plug-compatible computer that supports OS/390 z/OS, or MVS.

Note for MVS and z/OS users:

Assume that references to OS/390 throughout this manual apply equally to MVS and z/OS unless otherwise indicated in the text. Please contact the Information Builders Customer Support Services Department in New York for details.

FOCUS is configured to take maximum advantage of the IBM OS/390 Extended Link Pack Area (XLP). Installing the re-entrant part of FOCUS in XLP allows more sharing of FOCUS code among users and requires a smaller logon region size.

Installed Features

To simplify installation, most commonly used FOCUS features supported under OS/390 are delivered fully enabled and installed as part of the basic system. Installation of several optional features requires additional steps, also covered in this manual, but installation of the major interfaces is covered in the install guides for those products.

This manual describes installation of the following components:

- The basic FOCUS system.
- High-resolution graphics on IBM 3270 type terminals, including the ICU Interface.
- Link-edited user exits.
- Changing FOCUS defaults.
- Re-entrant modules.
- The IBI Subsystem.
- Simultaneous Usage (SU) for making simultaneous updates to FOCUS data sources.

Installation of the following data adapters and products is covered in separate manuals:

ADABAS [®]	IDMS/SQL	MSO*
CA-Datacom [®]	IMS/DB	Oracle [®]
DB2 [®]	IMS/DC	SYSTEM 2000 (S2K)
FOCCALC [®]	MILLENIUM	Teradata [®]
CA-IDMS [®]	MODEL 204 [®]	TOTAL [®]

- * The FOCUS Multi-Session Option (MSO) is an operating environment that runs under OS/390 and provides complete FOCUS functionality while enabling multiple users to share access services in a single address space. Refer to the *Multi-Session Option Installation and Technical Reference Guide* for installation instructions.

The basic FOCUS system contains all of the FOCUS features needed for the majority of applications and its installation requires only user-level knowledge of common OS/390 utilities. All other installation steps are optional and can be deferred until you have installed the basic system and become familiar with it.

The Basic FOCUS System

From an installation standpoint, you install the basic FOCUS system in one step. The basic system contains everything except the graphics support for IBM 3270 type terminals, interfaces to complex databases from other database vendors, and the optional Simultaneous Usage (SU) facility that enables concurrent users to update FOCUS data sources simultaneously. The basic system contains FOCUS data-management functions, the FOCUS full-screen data entry facility (FIDEL) and the FOCUS query language and report writer. The report writer works with FOCUS data sources and with sequential, ISAM, and VSAM data sources. The basic system includes high-resolution graphics for a limited set of ASCII graphics terminals, but does not support IBM 3270 type terminals.

The basic system is required to use all other optional FOCUS features. FOCUS is sensitive to its operating environment and the basic system runs under TSO, or as an OS/390 batch job. It also runs under CICS, MSO, or IMS/DC with the appropriate front-end interfaces installed.

To install the basic system, simply unload the FOCUS distribution tape and create a TSO logon procedure or batch JCL. You can then test almost every FOCUS feature that you will use.

High-Resolution Graphics on IBM 3270 Type Terminals

FOCUS high-resolution graphics on IBM 3278, 3279, and compatible terminals require IBM's GDDM graphics support program. From the standpoint of GDDM, FOCUS is just another application-level program, so your success with 3270-type graphics will depend largely on the state of GDDM support at your site. GDDM hardware and software requirements are fairly complex, so those planning to use it extensively with FOCUS should make sure that it is properly installed. You can test it by writing a COBOL program that creates 3270-type graphics. Consult appropriate IBM manuals for the required hardware and software configurations.

To add GDDM support to FOCUS, simply link edit a GDDM stub from the GDDM library into the basic FOCUS system. You can do this at any time after installing the basic system.

The FOCUS/ICU Interface

FOCUS can also be used to generate graphs in conjunction with the IBM Interactive Chart Utility (ICU). Standard FOCUS GRAPH syntax is used, and all graphing capabilities are available. The ICU Interface can either place users directly in the ICU environment or can save their graph formats and data for subsequent ICU processing. To use the ICU Interface, FOCUS must first be installed with the High Resolution Graphics for 3270 Type Terminals option described in *High-Resolution Graphics on IBM 3270 Type Terminals* on page 1-3.

See Chapter 5, *Interface Installation*, for more information.

Link-edited User Exits

The following user exits can be link-edited to FOCUS:

- The Usage Accounting Exit (UACCT).
The Usage Accounting Exit can be used to capture FOCUS usage statistics, such as numbers of records retrieved and lines printed, aggregated at the FOCUS command level rather than at the job step or TSO session levels. The Usage Accounting Exit is alerted to log attempted violations of FOCUS security, and can also be used to limit access to FOCUS procedures and files.
- An External Password Security System (FOCUSID).
The user exit FOCUSID enables an external security system to set passwords automatically. This removes the need for users to know passwords for applications.
- The Data Set Naming Enforcement Exit (DSNCHK).
DSNCHK can be used to enforce strict data set naming conventions for FOCUS Master Files, FOCEXEC files, ERROR files, and FOCUS data sources.

The distributed version of FOCUS contains dummy routines for resolving these exit calls, so uninterested parties need do nothing. The exits are independent and can be added later, through a simple link edit.

Detailed information on user exits is provided in Chapter 4, *User Exits*.

Changing FOCUS Defaults

Installation options permit increasing the field buffer sizes and changing the default allocation table, as well as default naming conventions and the maximum allowable number of data exceptions. FOCUS defaults must be changed at installation time. See Chapter 3, *Customizing FOCUS* for instructions.

Simultaneous Usage (SU)

Simultaneous Usage allows concurrent TSO users or batch jobs to update the same FOCUS data source simultaneously. Database I/O for all users is performed by the FOCUS Database Server, which has exclusive control of the data source. It serializes I/O at the logical record level, rather than the database level. With this feature, users can update FOCUS data sources at any time, without concern about whether other users are also updating it. Without this feature, users would all have to allocate FOCUS data sources in their own address spaces, and the updates would be serialized by means of enqueues on the entire database. If several users attempted an update, one might have to wait or might have to try the update later.

Keep in mind, that even without this feature it is safe to allocate all FOCUS data sources in SHR mode because FOCUS serialization prevents destructive updates by concurrent online users. However, DISP=SHR does not protect against destructive updates by concurrent Host Language Interface (HLI) programs, so if concurrent HLI programs might make simultaneous updates, or if a single HLI program could update a data source concurrently with online TSO users, you must use the FOCUS Database Server.

The FOCUS Database Server can service all users on the same CPU. Simultaneous Usage requires use of the IBI Subsystem.

The FOCUS Libraries

The components described in this installation manual are all distributed in seven partitioned data sets:

FOCLIB.LOAD	The FOCUS load library.
FUSELIB.LOAD	Load library of user-written routines.
FUSELIB.DATA	The FUSELIB maintenance library
ERRORS.DATA	Text of FOCUS error messages.
FOCCTL.DATA	The FOCUS maintenance library.
MASTER.DATA	Library of sample file descriptions.
FOCEXEC.DATA	Library of sample FOCUS procedures.
WINFORMS.DATA	Library sample MAINTAIN procedures

In order to use the intelligent partitioning feature with 2-gigabyte FOCUS databases, users must first create an ACCESS.DATA PDS. This PDS has the same characteristics as the MASTER.DATA PDS. For detailed instructions, see the *Describing Data* manual.

Only the FOCLIB.LOAD and the ERRORS.DATA libraries are actually required for execution. FUSELIB.LOAD is optional, and the other four used only for testing and maintenance. Library space requirements and DCB attributes are provided in Chapter 2, *Basic Installation Steps*.

FOCLIB.LOAD

The FOCLIB.LOAD library contains all load modules needed to execute the basic FOCUS system. It contains both the re-entrant and the non-re-entrant modules, and the main load module, named FOCUS. All modules are delivered fully resolved and ready for execution.

Some of these modules have aliases, and it is critical that all names and aliases be retained if you move them from one load library to another. Aliases all have the same entry point as the member names of the corresponding modules. Should you lose an alias during a copy or a move operation, you can always reassign it with linkage editor.

Sample JCL for this follows:

```
//LINK      EXEC  PGM=IEWL,PARM='NCAL,LIST,LET,RENT,SIZE=1024K'
//SYSLMOD   DD    DISP=SHR,DSN=prefix.FOCLIB.LOAD
//MAINTAIN   DD    DISP=SHR,DSN=prefix.FOCCTL.DATA
//SYSUT1    DD    UNIT=SYSDA,SPACE=(CYL,(5,5))
//SYSPRINT  DD    SYSOUT=*
//SYSLIN    DD    *
             INCLUDE SYSLMOD(F$ROOT) < Re-entrant module
             INCLUDE MAINTAIN(F$ROOT) < Cntl for F$ROOT will assign alias FSROOT
             NAME F$ROOT(R)           < Output module
/*
```

FUSELIB.LOAD

The FUSELIB.LOAD library contains a number of small load modules that implement user-written functions that can be invoked from FOCUS computational expressions. These functions, contributed by users, expand the basic FOCUS computational facilities. We recommend making this library available to all FOCUS users. The FUSELIB.LOAD library functions are documented in the *Using Functions* manual.

FUSELIB.DATA

The FUSELIB.DATA library members contain the linkage editor control statements for the FUSELIB subroutines.

This library is only required when applying FOCUS maintenance to the user-written subroutines.

ERRORS.DATA

The ERRORS.DATA library contains the text of all error messages generated by the basic FOCUS system. This library is required. If the ERRORS PDS is not allocated, the following error is displayed:

```
ERROR READING FOCPARM INSTALL FILE
```

Several members of this library correspond to major FOCUS functional areas, and additional members are created when you install data adapters, such as the IMS/DB Data Adapter. An ERRORS.DATA library must be allocated to ddname ERRORS whenever FOCUS is started or FOCUS is terminated

Members of this partitioned data set are not numbered sequentially and if you copy a member or members from one PDS to another, make sure you specify NONUM. Do not add or delete records from the error-messages files—FOCUS error messages are accessed by relative record number, not by the error numbers displayed.

FOCCTL.DATA

The FOCCTL.DATA data set is called the maintenance library because, among other things, it contains the linkage editor control statements needed to maintain the load modules in FOCLIB.LOAD. It also contains other components you can install using this manual that are not part of the basic FOCUS system, as well as examples of batch JCL and TSO CLISTS. FOCCTL.DATA is thus an essential data set even though not actually needed to execute FOCUS. It contains the linkage editor control statements for each member of FOCLIB.LOAD, under the same membername.

Note:

Each version of the FOCCTL.DATA data set differs significantly from prior versions, and the maintenance library of one release cannot be used to modify the load library of another.

The load modules in FOCLIB.LOAD and their linkage editor control statements in FOCCTL.DATA are associated by a common member name. For example, the ORDER statements for the re-entrant module F\$ROOT are contained in member F\$ROOT of FOCCTL.DATA. The linkage editor control statements always specify entry-point names that are not necessarily the same as the load module member names.

MASTER.DATA and FOCEXEC.DATA

These two data sets contain file descriptions (MASTER) and procedures (FOCEXEC) used to test FOCUS after it is installed, and the FOCUS TOOLKIT and FOCUS MENU components, which are not required by FOCUS for normal execution.

WINFORMS.DATA

This data set contains all sample Maintain application procedures and is not required.

Data Set Naming Conventions

The library data set names shown here are the names used on the distribution tape. We strongly urge the use of standard names as the lower level qualifiers for the data sets and adding high-level qualifiers appropriate for your installation. You can add high-level prefixes to differentiate between test and production libraries, or between different FOCUS releases.

The standard names are used in all of the documentation relating to the OS/390 version of FOCUS, and also in the JCL distributed with FOCUS maintenance tapes. You will find it easier to maintain FOCUS if you follow the suggested naming conventions.

The production versions of the execution time library FOCLIB.LOAD should be named

prefix.PROD.standardname

These names will be embedded in many JCL procedures and TSO CLISTs. You can switch releases without disturbing your users by renaming these data sets. Using this scheme, the production version of the FOCUS load library would be named

prefix.PROD.FOCLIB.LOAD

All other libraries, including test versions of the three execution time libraries, could be named

prefix.Vmm.Rnn.standardname

where:

mm

Version number

nn

Release number

For example, the maintenance library for FOCUS Version 7.2 Release 00 would be named

prefix.V72R00.FOCCTL.DATA

Virtual Storage Requirements for FOCUS and SU

This section describes virtual storage requirements for the basic FOCUS system and for the Simultaneous Usage facility.

FOCUS storage requirements include space for the SASC library, the runtime environment for compiled SASC programs. There are two options for installing this library, ALLRES and TRANSIENT:

- Running FOCUS with the ALLRES option ensures that other versions of SASC do not conflict with ours. The cost is 470K of below the line storage.

- Running FOCUS using the TRANSIENT option reduces below-the-line storage requirements by loading the SASC transient module, SASLIBTR, in above-the-line memory. To install the SASC transient module see FOCCTL.DATA(TRLIB).

Information Builders recommends that MSO customers use the ALLRES version of SASLIB in all MSO/CICS regions. This recommendation is based on possible conflicts between versions of SASC that can occur when using the TRANSIENT version of SASLIB. The conflicts occur when operating in an address space in conjunction with other software that uses SASC runtime routines and may produce the following messages on the JESLOG or OS/390console:

```
+LSCX048 Most recent C runtime library modules not available
+ Use version 93028C5E ( 6.50C) or later to avoid problems.
```

This table summarizes FOCUS storage requirements:

Type	Location	Module	FOCUS	FOCUS with MAINTAIN
Minimum	above 16 meg storage line		4700K	7500K
	below 16 meg storage line	ALLRES TRANSIENT	486K 310K	486K 310K
Recommended	above 16 meg storage line		5000K	8300K
	below 16 meg storage line	ALLRES TRANSIENT	486K 310K	486K 310K

Developers using the Maintain Winform Painter should add approximately 1M of storage. Larger regions will be required when:

- Using high-resolution graphics that require GDDM.
- Using FOCUS to access third-party data sources, such as: DB2, CA-IDMS, ADABAS, IMS™.

Storage Requirements for the Simultaneous Usage (SU) facility

The following discussion pertains to the FOCUS Database Server that performs all FOCUS data source I/O for the optional Simultaneous Usage (SU) facility.

The virtual storage requirements for this job consist of a fixed and a variable component. The fixed component is affected by the programs to be run under SU, and the variable component depends on the number of centrally controlled data sources and the number of TSO IDs or batch jobs to be serviced.

The fixed component is about 512K bytes. This accounts for all the programs that will be loaded, and for about 60 database buffers of 4096 bytes each. This is close to the default maximum of 64 database I/O buffers FOCUS can manage.

The variable component needs 72 bytes per field in each centrally controlled data source, plus a maximum of 16000 bytes for each TSO ID or batch job that communicates with the central database job. This is a worst-case figure. A more likely average is about 6000 bytes per active user. The maximum would be needed, for example, in an installation with 20 concurrent users who will access 10 FOCUS data sources that have 100 fields apiece. Taking the highest possible number of bytes per user (16000 bytes), we get:

Fixed component	512,000 bytes
10 databases, 100 fields each	72,000 bytes
20 users, 16000 bytes each	320,000 bytes
TOTAL	904,000 bytes

Without more detailed information, the minimum virtual region for this job would be 960K. The recommended region is 50% greater, or 1440K. This increase is based on efficiency considerations and activity on the central database job itself.

CHAPTER 2

Basic Installation Steps

Topics:

- Allocate Disk Space for FOCUS Libraries
- Unload the FOCUS Distribution Tape
- Install the FOCUS Site Code
- Select FOCUS Default Startup Options
- Test the Basic FOCUS System
- Install Link-Edited User Exits and Change Defaults
- Install the Re-entrant FOCUS Modules
- Re-block the FOCUS Modules
- Install High-Resolution Graphics for 3270 Type Terminals
- Install the IBI Subsystem
- Install the Simultaneous Usage (SU) Facility
- Create TSO Logon Procedures and Allocation CLISTS

Those installing the FOCUS Menu, the FOCUS ToolKit, and the FOCUS error messages, should refer to Chapter 3, *Customizing FOCUS*, for installation instructions.

Note:

The installation of FOCUS Version 7.2 under MVS/XA or earlier versions is not supported.

Allocate Disk Space for FOCUS Libraries

The following table shows the disk space requirements for the seven FOCUS libraries required to install the basic system. These must be catalogued with prefixed data set names on a permanently mounted pack. In choosing local data set names, remember that FOCLIB.LOAD, FUSELIB.LOAD, and ERRORS.DATA must be named so that all users can access them in read-only mode. If your site has RACF® or CA-ACF2® installed, you will have to establish a rule for each data set to be unloaded.

Space requirements are provided for 3390 disks, but you can use any CKD disk device with a track capacity of at least 13030 bytes. Load libraries on the FOCUS distribution tape are blocked at 13030 bytes. The DCB attributes of the other libraries are shown in the following table. You can vary the block sizes if you like, but not the RECFM or LRECL attributes. Do not alter the block size for FOCCTL.DATA, which contains linkage editor control statements. If you assign a block size that is too large, older versions of the linkage editor will not be able to open the data set.

Those planning to install the National Language Support ERRORS file, ERRNLS.DATA, who intend to copy ERRNLS.DATA members into ERRORS.DATA, will need substantially more space. See Chapter 3, *Customizing FOCUS*, for information about the ERRNLS.DATA data set and increase the space allocation for ERRORS.DATA accordingly.

Library/Format	Category	3390 cyl	3390 trks
FOCLIB.LOAD (RECFM=U, BLKSIZE=13030)	Primary Allocation	54	1200
	Secondary Allocation	6	90
	Directory Blocks	65	90
FUSELIB.LOAD (RECFM=U, BLKSIZE=13030)	Primary Allocation	2	30
	Secondary Allocation	1	5
	Directory Blocks	45	45
ERRORS.DATA (LRECL=80, BLKSIZE=1600, RECFM=FB)	Primary Allocation	16	240
	Secondary Allocation	1	5
	Directory Blocks	45	45
FOCCTL.DATA (LRECL=80, BLKSIZE=1600, RECFM=FB)	Primary Allocation	5	75
	Secondary Allocation	1	5
	Directory Blocks	45	45

Library/Format	Category	3390 cyl	3390 trks
FOCEXEC.DATA (LRECL=80, BLKSIZE=1600, RECFM=FB)	Primary Allocation	12	180
	Secondary Allocation	1	5
	Directory Blocks	45	45
MASTER.DATA (LRECL=80, BLKSIZE=1600, RECFM=FB)	Primary Allocation	2	30
	Secondary Allocation	1	5
	Directory Blocks	45	45
WINFORMS.DATA (LRECL=80, BLKSIZE=1600, RECFM=FB)	Primary Allocation	1	15
	Secondary Allocation	1	5
	Directory Blocks	45	45
IBISASC.C650.LINKLIB – allocated in blocks; approx. 82 tracks on a 3390 device (BLKSIZE=15476, RECFM=U)	Primary Allocation	300 blks	
	Secondary Allocation	30 blks	
	Directory Blocks	45 blks	
FUSELIB.DATA (LRECL=80, BLKSIZE=1600, RECFM=FB)	Primary Allocation	1	5
	Secondary Allocation	1	5
	Directory Blocks	45	45

Example JCL for Allocating Disk Space

```
//JOBNAME JOB (ACCT), 'FOCUS ALLOC' ,
//      CLASS=T,MSGCLASS=X
//*****
//STEP1 EXEC PGM=IEFBR14
//*****
//FOCLOAD DD DSN=prefix.FOCLIB.LOAD,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=U,BLKSIZE=13030)
//FUSELIB DD DSN=prefix.FUSELIB.LOAD,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=U,BLKSIZE=13030)
//FUSELIBD DD DSN=prefix.FUSELIB.DATA,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//ERRORS DD DSN=prefix.ERRORS.DATA,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//FOCCTL DD DSN=prefix.FOCCTL.DATA,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//FOCEXEC DD DSN=prefix.FOCEXEC.DATA,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//MASTER DD DSN=prefix.MASTER.DATA,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//WINFORMS DD DSN=prefix.WINFORMS.DATA,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//IBISASC DD DSN=prefix.IBISASC.C650.LINKLIB,DISP=(,CATLG,DELETE),
//      UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n),m),
//      DCB=(RECFM=U,BLKSIZE=15476)
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

xxx

Is either TRK or CYL.

n,n

Is the appropriate primary and secondary space allocation.

m

Is the number of directory blocks.

valid

Is a valid volume identifier.

Unload the FOCUS Distribution Tape

This step provides sample JCL for unloading FOCUS from the tape. FOCUS is distributed on a 9-track 6250 BPI standard label tape or on a 3480 cartridge. The volume serial number is on the external tape label.

Insert the actual VOLSER into DD statements I1 through I60 in the IEBCOPY JCL that follows, and modify DD statements O1 through O60 to reflect the actual data set names selected in *Allocate Disk Space for FOCUS Libraries* on page 2-2.

If your system has TMS (Tape Management System), change the LABEL keywords to LABEL=(n,SL,EXPDT=98000).

Example

JCL for Unloading FOCUS from the Tape

```
//FOCLOAD EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//I1 DD DSN=FOCLIB.LOAD,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(1,SL)
//I2 DD DSN=FUSELIB.LOAD,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(2,SL)
//I3 DD DSN=ERRORS.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(3,SL)
//I4 DD DSN=FOCCTL.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(4,SL)
//I5 DD DSN=FOCEXEC.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(5,SL)
//I6 DD DSN=MASTER.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(6,SL)
//I55 DD DSN=WINFORMS.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(55,SL)
//I59 DD DSN=IBISASC.C650.LINKLIB,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(59,SL)
//I60 DD DSN=FUSELIB.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=valid,LABEL=(60,SL)
//O1 DD DSN=prefix.FOCLIB.LOAD,DISP=OLD
//O2 DD DSN=prefix.FUSELIB.LOAD,DISP=OLD
//O3 DD DSN=prefix.ERRORS.DATA,DISP=OLD
//O4 DD DSN=prefix.FOCCTL.DATA,DISP=OLD
//O5 DD DSN=prefix.FOCEXEC.DATA,DISP=OLD
//O6 DD DSN=prefix.MASTER.DATA,DISP=OLD
//O55 DD DSN=prefix.WINFORMS.DATA,DISP=OLD
//O59 DD DSN=prefix.IBISASC.C650.LINKLIB,DISP=OLD
//O60 DD DSN=prefix.FUSELIB.DATA,DISP=OLD
```

```
//SYSIN DD *
COPY INDD=I1,OUTDD=O1
COPY INDD=I2,OUTDD=O2
COPY INDD=I3,OUTDD=O3
COPY INDD=I4,OUTDD=O4
COPY INDD=I5,OUTDD=O5
COPY INDD=I6,OUTDD=O6
COPY INDD=I55,OUTDD=O55
COPY INDD=I59,OUTDD=O59
COPY INDD=I60,OUTDD=O60
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

Example

Sample JCL for Complete Installation as a Batch Job

```
//JOBNAME JOB (ACCOUNTING INFOR), 'FOCUS BASE LOAD',MSGCLASS=A,
//      REGION=1024K,MSGLEVEL=(1,1)
//*****
//STEP1 EXEC PGM=IEBCOPY
//*****
//I1 DD DSN=FOCLIB.LOAD,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(1,SL)
//I2 DD DSN=FUSELIB.LOAD,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(2,SL)
//I3 DD DSN=ERRORS.DATA,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(3,SL)
//I4 DD DSN=FOCCTL.DATA,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(4,SL)
//I5 DD DSN=FOCEXEC.DATA,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(5,SL)
//I6 DD DSN=MASTER.DATA,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(6,SL)
//I55 DD DSN=WINFORMS.DATA,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(55,SL)
//I59 DD DSN=IBISASC.C650.LINKLIB,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(59,SL)
//I60 DD DSN=FUSELIB.DATA,DISP=(OLD,PASS),UNIT=TAPE,
//     VOL=SER=valid,LABEL=(60,SL)
//*****
//O1 DD DSN=prefix.FOCLIB.LOAD,DISP=(,CATLG,DELETE),
//     UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O2 DD DSN=prefix.FUSELIB.LOAD,DISP=(,CATLG,DELETE),
//     UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O3 DD DSN=prefix.ERRORS.DATA,DISP=(,CATLG,DELETE),
//     UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O4 DD DSN=prefix.FOCCTL.DATA,DISP=(,CATLG,DELETE),
//     UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O5 DD DSN=prefix.FOCEXEC.DATA,DISP=(,CATLG,DELETE),
//     UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
```

```
//O6 DD DSN=prefix.MASTER.DATA,DISP=(,CATLG,DELETE),
// UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O55 DD DSN=prefix.WINFORMS.DATA,DISP=(,CATLG,DELETE),
// UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O59 DD DSN=prefix.IBISASC.C650.LINKLIB,DISP=(,CATLG,DELETE),
// UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))
//O60 DD DSN=prefix.FUSELIB.DATA,DISP=(,CATLG,DELETE),
// UNIT=SYSDA,VOL=SER=valid,SPACE=(xxx,(n,n,m))

//SYSIN DD *
COPY INDD=I1,OUTDD=O1
COPY INDD=I2,OUTDD=O2
COPY INDD=I3,OUTDD=O3
COPY INDD=I4,OUTDD=O4
COPY INDD=I5,OUTDD=O5
COPY INDD=I6,OUTDD=O6
COPY INDD=I55,OUTDD=O55
COPY INDD=I59,OUTDD=O59
COPY INDD=I60,OUTDD=O60
/*

//SYSPRINT DD SYSOUT=*
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

xxx

Is either TRK or CYL.

n,n

Is the appropriate primary and secondary space allocation.

m

Is the number of directory blocks.

valid

Is a valid volume identifier.

Note:

When installing from a 3480 cartridge, you may have to change TAPE to your site-defined name for 3480 drives in DD statements I1 through I60 above.

When doing and IEBCOPY to a new data set, the DCB attributes are automatically copied from the input.

Install the FOCUS Site Code

A unique site code, of the form *nnnn.nn*, is assigned each site where FOCUS is installed. This code is displayed in the FOCUS release signature whenever FOCUS is started, and can also be displayed by issuing the ? RELEASE command. Users and installers must supply this when calling Information Builders concerning FOCUS service or maintenance, as the site code is the key to Information Builders' service and maintenance records.

Site codes must be embedded in FOCUS at installation time.

The site code for your installation appears on the packing list that accompanied the installation package. If you do not know it, you can always obtain it from the Customer Support Department in New York, at 1-800-736-6130.

To install the FOCUS site code, zap it into the FOCUS module using the JCL and instructions found in member FOCSITE of maintenance data set FOCCTL.DATA.

Reference

Usage Notes for Installing the FOCUS Site Code

- The distributed version of FOCUS does not contain a site code—each site must apply its own.
- You must zap your site code into FOCUS with each new release installed.
- It is not necessary, however, to re-zap the site code into FOCUS after applying an individual PTF, unless otherwise stated.

Select FOCUS Default Startup Options

Sites wishing to change FOCUS startup options have two options for implementing site-wide configuration parameters.

The FOCPARM member of ERRORS.DATA is a profile consisting only of SET commands that can be used to change default startup options.

The FOCPROF member of ERRORS.DATA is a system-wide profile for setting defaults that is executed once per session. It is similar to a user profile.

The FOCPARM assembler CSECT in FOCCTL.DATA that is used to create load module FOCINI, also contains additional startup options not modifiable through SET commands.

Note: These are all independent procedures—a change made to one does not require changes to the others.

Edit the FOCPARM SET Commands

Member FOCPARM in ERRORS.DATA is executed before FOCPROF and before each user's PROFILE FOCEXEC. It may only include SET commands. The FOCPARM file shipped with FOCUS follows:

```

-----*
-* THIS SECTION CONSISTS SOLELY OF SET COMMANDS USED TO CUSTOMIZE
-* THE BEHAVIOR OF FOCUS AT YOUR SITE. PLEASE NOTE THAT ONLY SET
-* COMMANDS ARE SUPPORTED, AND THAT ANY OTHER FOCUS COMMANDS ARE
-* NOT PERMITTED AND WILL FORCE YOU OUT OF FOCUS. THIS MEMBER MAY
-* NOT BE USED AS A PROFILE EXCEPT FOR SET COMMANDS.
-----*
SET EMPTYREPORT=OFF
SET BLKCALC=NEW
SET FIELDNAME=NEW
SET QUALCH= .
SET QUALTITL=OFF
SET HOLDSTAT=ON
SET HOTMENU=OFF
SET IMMEDIATE=OFF
SET AUTOPATH=ON
SET AUTOINDEX=ON

```

Note:

Only SET commands may be included. These are discussed in the *Developing Applications* manual.

There are two additional FOCPARM files: FOCPARMA and FOCPARMC, that provide additional options for customizing FOCUS behavior. FOCPARMA contains more aggressive settings that typically exploit new features and behavior, such as BLKCALC, AUTOPATH and AUTOINDEX, while the more conservative FOCPARMC settings do not exploit new features or behavior. Both files are members of the ERRORS.DATA PDS in OS/390. To use one, first rename FOCPARM and then rename either FOCPARMA or FOCPARMC as FOCPARM.

Reference

FOCPARMA Contents

```
-----*
-* FOCPARM MAY BE USED TO CUSTOMIZE FOCUS BEHAVIOR AT YOUR *
-* INSTALLATION. PLEASE NOTE THAT ONLY SET COMMANDS ARE SUPPORTED. *
-* INCLUDING ANY OTHER FOCUS COMMAND WILL YIELD AN ERROR WHICH WILL *
-* TERMINATE THE FOCUS SESSION *
-----*
SET EMPTYREPORT=OFF
SET BLKCALC=NEW
SET FIELDNAME=NEW
SET QUALCH=.
SET QUALTITL=ON
SET HOLDSTAT=ON
SET HOTMENU=ON
SET IMMEDIATE=ON
SET CACHE=256
SET AUTOPATH=ON
SET AUTOINDEX=ON
SET PRINTPLUS=ON
```

Reference

FOCPARMC Contents

```
-----*
-* THIS SECTION CONSISTS SOLELY OF SET COMMANDS, USED TO CUSTOMIZE *
-* FOCUS BEHAVIOR AT YOUR SITE. PLEASE NOTE THAT ONLY SET *
-* COMMANDS ARE SUPPORTED AND THAT ANY OTHER FOCUS COMMANDS ARE *
-* NOT PERMITTED AND WILL FORCE YOU OUT OF FOCUS. THIS MEMBER MAY *
-* NOT BE USED AS A PROFILE EXCEPT FOR SET COMMANDS. *
-----*
SET EMPTYREPORT=ON
SET BLKCALC=OLD
SET FIELDNAME=OLD
SET HOLDSTAT=OFF
SET HOTMENU=OFF
SET IMMEDIATE=OFF
SET AUTOPATH=OFF
SET AUTOINDEX=OFF
```

Create the System-Wide FOCPROF Profile

FOCPROF is a global profile for FOCUS. While the FOCPARM profile supports only FOCUS SET commands, FOCPROF can contain any command that is valid in a FOCEXEC, including: TABLE, MATCH, MODIFY, MAINTAIN, REBUILD, COMPILE, LOAD, Dialogue Manager commands, CMS commands, TSO commands and DYNAM commands.

With the addition of FOCPROF, there are now three FOCUS profiles: FOCPARM, FOCPROF, and PROFILE. The FOCPARM and FOCPROF files are members of the ERRORS PDS on OS/390. The PROFILE file is a member of the FOCEXEC PDS on OS/390. The order of execution of the three FOCUS profiles is:

1. FOCPARM, which can only contain FOCUS SET commands.
2. FOCPROF, the new global profile.
3. PROFILE.

For OS/390, create a new member of the ERRORS PDS named FOCPROF. Include in the FOCPROF file any commands you wish to have executed each time FOCUS is invoked.

MODIFY the FOCPARM Assembler CSECT

The assembly language program FOCPARM, provided in data set FOCCTL.DATA, enables sites to change startup default options, including several that cannot be specified in SET commands. Instructions are provided in this section for changing the following FOCUS startup options:

- Displaying the FOCUS banner (BANNER).
- Clearing the screen (CLRSCRN).
- National Language Support defaults (LANG).
- Selecting an alternative PROFILE or no PROFILE (PROFOPT).
- Continental Decimal Notation (CDN).

To change these, replace the old option settings with new ones and then assemble and link the options into FOCINI. The default FOCPARM values provided with FOCUS are shown below. Use the value '1' to enable an option and a value of '0' to disable one.

```
.
.
.
FOCPARM CSECT
BANNER          DC   F'1'          1. Indicates display banner
CLRSCRN         DC   F'1'          2. Indicates clear screen at startup
*
* NATIONAL LANGUAGE SUPPORT DEFAULTS
*
LANG            DC   F'1'          3. Indicates Language Number (INTLCM)
JTERM          DC   CL8'IBM3270'   4,5.Indicates J-Terminal (INTLCM)
              DC   F'0'          6. Available
              DC   F'0'          7. Available
              DC   F'0'          8. Available
*
PROFOPT        DC   F'1'          9. NOPROF/PROFILE 0=not allow,1=allow
CDN            DC   F'0'          10. CDN SETTING 0=OFF 1=ON
XDBSC         DC   CL4'@'        11. CHAR. FOR EXT.DB SECUR. (7975)
PCHOLD        DC   F'1'          12. PCHOLD FLAG (11108)
TTFEX         DC   CL4'PDS'      13. DSORG OF TABLTALK FOCCEXEC (11516)
DATTIM        DC   CL4'EDA'      14. DATE/TIME FORMAT (13619)
-----
* A value of '1' enables an option, a value of '0' disables an option
* Other values are defaults for the option.
*
* DO NOT ADD, DELETE, OR CHANGE ORDER OF THE OPTIONS ABOVE!
*
* DO NOT ALTER THE CODE BELOW IN ANY WAY!
*****
.
.
.
```

Note:

Since each installation of FOCUS generates its own version of the FOCPARM options, the following procedures must be performed each time you install a new version of FOCUS.

- Edit member FOCPARM of FOCCTL.DATA, revising the options as needed, and save the member back into data set FOCCTL.DATA.
- Assemble the member FOCPARM from FOCCTL.DATA, using the following sample JCL:

```
//ASSEM      EXEC PGM=IEV90 , PARM=' LIST , DECK , NOOBJ , NOALIGN '
//SYSLIB    DD   DISP=SHR , DSN=SYS1 . MACLIB
//SYSUT1    DD   UNIT=SYSDA , SPACE=( TRK , ( 30 , 10 ) )
//SYSUT2    DD   UNIT=SYSDA , SPACE=( TRK , ( 30 , 10 ) )
//SYSUT3    DD   UNIT=SYSDA , SPACE=( TRK , ( 30 , 10 ) )
//SYSPUNCH DD   DISP=SHR , DSN=prefix . OBJ ( FOCPARM )
//SYSPRINT DD   SYSOUT=*
//SYSLIN    DD   DUMMY
//SYSIN     DD   DISP=SHR , DSN=prefix . FOCCTL . DATA ( FOCPARM )
/*Link this new program into FOCINI. The following is sample JCL:
//LINKFOC   EXEC PGM=IEWL , PARM=' LET , NCAL , LIST , SIZE=1024K '
//SYSPRINT DD   SYSOUT=*
//SYSUT1    DD   UNIT=SYSDA , SPACE=( CYL , ( 10 , 1 ) )
//SYSLMOD   DD   DISP=OLD , DSN=prefix . FOCLIB . LOAD      <- FOCUS
//MAINTAIN  DD   DISP=SHR , DSN=prefix . FOCCTL . DATA    <- FOCCTL
//OBJECT    DD   DISP=SHR , DSN=prefix . OBJ              <- Assembled code
//SYSLIN    DD   *
INCLUDE OBJECT(FOCPARM) <----- Assembled FOCPARM
INCLUDE SYSLMOD(FOCINI) <----- Module to be Changed
INCLUDE MAINTAIN(FOCINI) <----- Linkedit Control Statements
NAME FOCINI(R)          <----- New Module
/*
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

Test the Basic FOCUS System

This step under TSO tests the basic system installed in *Unload the FOCUS Distribution Tape* on page 2-5.

Logon into a TSO Region

You can use any TSO ID from which the installed FOCUS libraries can be accessed. Any logon procedure will do.

Allocate Space for a Test FOCUS Database

```
ALLOC DA(CAR.FOCUS) SP(5,5) TRACKS LRECL(4096) BLKSIZE(4096) RECFM(F) NEW
```

This database will be allocated as ddname CAR and loaded with data in the next step. You can use it for any additional tests and experiments with FOCUS after the completion of *Execute the FOCUS Test Procedure CARTEST* on page 2-14.

Execute the TSOALLOC CLIST

This TSO CLIST allocates the FOCUS libraries and invokes FOCUS using the CALL command. The CLIST is member TSOALLOC of FOCCTL.DATA, as allocated in *Allocate Disk Space for FOCUS Libraries* on page 2-2. You will be prompted for the fully qualified data set names of FOCLIB.LOAD, ERRORS.DATA, MASTER.DATA, FOCEXEC.DATA, and of the test FOCUS database allocated in *Allocate Space for a Test FOCUS Database* on page 2-14. At the end of this step, you see the FOCUS release banner, which indicates that you are in FOCUS, and double caret (>>) indicating that FOCUS is ready to receive a command.

Execute the FOCUS Test Procedure CARTEST

After receiving the double caret from FOCUS, issue the following command and press Enter:

```
>>EX CARTEST
```

The CARTEST procedure, a member of FOCEXEC.DATA, will load data into the CAR database, as defined by member CCARS of MASTER.DATA, and test the major areas of FOCUS. The FOCEXEC and MASTER PDSs must be allocated for this procedure to work. Messages are displayed as each test completes and the end of all tests is signaled by the message:

```
AT END OF TEST MAJOR AREAS OK
```

This completes the installation of the basic FOCUS system. You can return to the TSO command level by issuing the FOCUS command FIN at the double caret command prompt after the above message.

If you receive any error messages during the test step, call your local Information Builders representative or the Information Builders Customer Support Department in New York at 1-800-736-6130.

The most common reasons for errors are failed allocations for ddnames CAR, CCARS, MASTER, FOCEXEC, HOLD, HOLDMAST, FOCSTACK, or FOCSML, all of which are allocated by TSO ALLOCATE commands issued by the TSOALLOC CLIST.

Example

Sample JCL for Executing CARTEST as a Batch Job

```
//CARTEST EXEC PGM=FOCUS,REGION=2048K
//STEPLIB DD DSN=prefix.FOCLIB.LOAD,DISP=SHR
//MASTER DD DSN=prefix.MASTER.DATA,DISP=SHR
//FOCEXEC DD DSN=prefix.FOCEXEC.DATA,DISP=SHR
//ERRORS DD DSN=prefix.ERRORS.DATA,DISP=SHR
//CCARS DD DSN=prefix.MASTER.DATA(CCARS),DISP=SHR
//CAR DD DSN=prefix.CAR.FOCUS,DISP=SHR
//SYSPRINT DD SYSOUT=*
//OFFLINE DD SYSOUT=*
//SYSIN DD *
EX CARTEST
FIN
/*
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

If you omit FIN as the last command to be executed, FOCUS will run properly but will terminate with condition code 8.

Online Release Information

Release statistics, installation and operation changes, program temporary fix (PTF) information, and release notes are available online. To view the online release information, issue the following command from the FOCUS prompt:

```
EX READMEF
```

This FOCEXEC allows you to choose to view several types of release information (for example, PTFs, installation information, new features). The ERRORS and MASTER PDSs must be allocated in order to run READMEF.

Install Link-Edited User Exits and Change Defaults

This step is optional and independent of all other installation steps. It can be performed any time after the basic FOCUS system is installed.

User exits, such as the Usage Accounting and Data Set Naming Enforcement Exits, are installed by writing your own code and link editing it into the basic FOCUS module. Chapter 4, *User Exits*, describes these exits and the required linkage editor instructions.

Certain FOCUS defaults can be changed, including:

- The default space allocation table for work files (IBITABLA).
- File naming conventions (DSNTAB).
- The list of commonly executed TSO commands (TSOTAB).

Chapter 3, *Customizing FOCUS*, contains detailed instructions for changing these defaults.

Install the Re-entrant FOCUS Modules

Performance can be improved for each TSO/FOCUS user by placing re-entrant and serially reusable FOCUS modules in the Extended Link Pack Area. All programs that are part of XLPA have corresponding entries in the LPA Directory, which is created at IPL. This significantly improves FOCUS performance and reduces total virtual storage required for each FOCUS user.

Sample JCL for performing this procedure resides in members JFSALLPA, JFSCPLPA, JFSDelpa, and JFSCPbck of the data set FOCCTL.DATA.

Re-block the FOCUS Modules

FOCUS load libraries are all distributed with block sizes of 13030 bytes so that they can be loaded onto any CKD disk device with a track capacity of at least 13030 bytes. Even if you allocate the load library on a pack with a larger track capacity, the largest single record in any load module would still only be 13030 bytes. To benefit from larger track capacities, you must re-link the modules; it is not enough to copy them from a library with a small block size to one with a larger block size. Alternatively, you may copy the modules to a load library with a larger block size using the IEBCOPY COPYMOD statement in place of the regular COPY statement.

Actual load module block sizes have no logical significance, but do have a small effect on efficiency. For 3390 devices, we recommend half-track blocking.

The following example illustrates how to re-link members FOCUS and F\$ROOT:

```

/* REBLOCKING FOCUS MODULES.
//LINK1 EXEC PGM=IEWL,PARM='NCAL,LET,LIST,SIZE=(2048K)'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(TRK,(30,10))
//OLDLIB DD DSN=prefix.FOCLIB.LOAD,DISP=OLD
//FOCCTL DD DSN=prefix.FOCCTL.DATA,DISP=SHR
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=OLD
//SYSLIN DD *
INCLUDE OLDLIB(FOCUS) <---membername
INCLUDE FOCCTL(FOCUS) <---same membername
NAME FOCUS(R) <---same membername
/*
//LINK2 EXEC PGM=IEWL,PARM='RENT,NCAL,LET,LIST,SIZE=(2048K)'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(TRK,(30,10))
//OLDLIB DD DSN=prefix.FOCLIB.LOAD,DISP=OLD
//FOCCTL DD DSN=prefix.FOCCTL.DATA,DISP=SHR
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=OLD
//SYSLIN DD *
INCLUDE OLDLIB(F$ROOT) <---membername
INCLUDE FOCCTL(F$ROOT) <---same membername
NAME F$ROOT(R) <---same membername
/*

```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

The other modules in FOCLIB.LOAD can be re-linked similarly. Only the larger modules are worth reblocking: FOCUS, F\$ROOT, FOCSAM, HLISNK, and HLI. The others are so small that reblocking would not reduce the actual number of module records. If a module has an alias, make sure it is not lost. (Aliases and member names always have the same entry point.)

Note:

The HLI module requires specifying the REUS option in the PARM field when you execute a link edit for this module. For example:

```

//LINKHLI EXEC PGM=IEWL,PARM='REUS,NCAL,LET,SIZE=(2048K)'

```

Install High-Resolution Graphics for 3270 Type Terminals

This step describes installation of FOCUS high-resolution graphics for IBM 3270 type terminals, which require the use of the IBM GDDM graphics support program. Omit this step if you are not installing high-resolution graphics or the ICU Interface. High-resolution graphics on ASCII terminals are part of the basic FOCUS system and do not require separate installation.

You can do the simple link edit to install this feature at any time after the basic FOCUS system is installed. The JCL for this is as follows:

```
//LINKGDDM EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'  
//SYSPRINT DD SYSOUT=*  
//SYSUT1 DD UNIT=SYSDA,SPACE=(TRK,(30,10))  
//GDDM DD DSN=gddmlibrary,DISP=SHR  
//FOCCTL DD DSN=prefix.FOCCTL.DATA,DISP=SHR  
//SYSLMOD DD DSN=prefix.FOCLIB.LOAD,DISP=OLD  
//SYSLIN DD *  
INCLUDE GDDM(ADMASNT) GDDM STUB  
REPLACE CHART  
INCLUDE SYSLMOD(FOCUS) BASIC FOCUS MODULE  
INCLUDE FOCCTL(FOCUS) LINK EDIT CONTROL STATEMENTS  
NAME FOCUS(R) FOCUS WITH GDDM STUB  
/*
```

Before running this link edit, make sure that the FOCLIB.LOAD library has at least 150 free tracks for the new FOCUS module. You can also create the new module in a scratch load library, delete FOCUS from FOCLIB.LOAD, compress the library to regain the deleted space, and copy the new FOCUS module back into FOCLIB.LOAD.

Note:

The GDDM library is often named SYS1.GDDMLOAD. Contact your System Administrator for the name of this library.

Install the IBI Subsystem

The IBI Subsystem provides communication between and coordination among address spaces running Information Builders products on OS/390 systems. The IBI Subsystem is also referred to as the subsystem in this document.

Products that Require the IBI Subsystem

The following Information Builders products use the IBI Subsystem:

- HiperFOCUS - The HiperBUDGET feature of HiperFOCUS uses the IBI Subsystem to regulate use of expanded storage on a system-wide basis.

- Multi-Session Option (MSO) - MSO uses the IBI Subsystem to communicate with CICS and TSO, and for improved error-recovery capabilities. MSO Load Balancing is also implemented through the IBI Subsystem.
- Simultaneous Usage (SU) - SU uses the IBI Subsystem to communicate between FOCUS users and the FOCUS Database Server.
- SmartMode - Since SmartMode is an SU-based service, it uses the IBI Subsystem through SU.
- IMS BMP - The IMS BMP uses the IBI Subsystem to communicate between FOCUS users and the BMP address space.

IBI Subsystem Technical Overview

The IBI Subsystem runs in the address space of the IBI product using its services. All subsystem modules are re-entrant and pageable, and reside in the Extended Common Storage Area (XCSA). Control blocks created by the subsystem also reside in the XCSA and are also pageable.

The subsystem uses 20K of XCSA for programs and control blocks, most of which is taken up by programs.

The subsystem is loaded and initialized by the SUBSYSI utility, which must be run from an APF-authorized library. SUBSYSI can also be used to stop, replace, and/or unload the subsystem modules.

When used for communications between address spaces, the subsystem can only use cross-memory services when the server address space (MSO server or SU sink machine) is defined as non-swappable. If cross-memory services cannot be used, then an 8K mailbox is allocated in XCSA for each communication path used by the server. MSO address spaces use two mailboxes, for a total of 16K; SU address spaces use one mailbox. The subsystem code is run whenever any of the following events occur:

- An Information Builders product requests subsystem services.
- An operator command is issued, which includes the 4-digit subsystem name as the first four characters of the command.
- A task-end or memterm event occurs in an IBI address space.
- The SUBSYSI utility program is run.

Note: Communication Data Sets FOCSU and FOCUSSU:

Communication data sets FOCSU and FOCUSSU are used with the IBI Subsystem. Since the data sets are never actually updated, it may be necessary to take action to prevent HSM or similar products from migrating them offline.

IBI Subsystem Installation Requirements

IBI Subsystem installation requirements:

- An APF-authorized library is required for the subsystem modules.
- Activate the subsystem by running the SUBSYSI utility program.
- Optionally, change SYS1.PARMLIB and IPL the operating system to activate the changes.

IBI Subsystem Features and Functionality

The IBI subsystem provides the following features:

- MSO Load Balancing.
- Basic inter-address space communications, for SU, MSO, and the IMS BMP.
- System-wide regulation of HiperSpace™ utilization, through HiperBUDGET.
- Use of cross-memory services for inter-address space communications.
- Operator controls, through system commands and through the SUBSYSI utility program.
- Better cleanup of CSA storage at task and address space failure.

IBI Subsystem Troubleshooting and Maintenance

With the IBI Subsystem:

- The SUBSYSI utility enables the installation of a new version of the subsystem without requiring an IPL of the system.
- Operator commands support basic troubleshooting of the subsystem.
- The subsystem must be updated when installing a new release of FOCUS.

IBI Subsystem Installation Planning

This section discusses the impact of installing the IBI Subsystem on your OS/390 system. Please read this and the following section, before starting the installation procedure.

When installing FOCUS on OS/390 you may optionally update IEFSSNxx in SYS1.PARMLIB.

Sample:

```
JES2   PRIMARY           JOB ENTRY SUBSYSTEM
RACF,IRRSSI00,#         RESOURCE ACCESS CONTROL FACILITY
CICS                    CUSTOMER INFORMATION CONTROL SYSTEM
IBIS                     IBI SUBSYSTEM
```

Even though you update IEFSSNxx with the subsystem name, you must still run the SUBSYSI utility with the START option to load and activate the IBI Subsystem. You can use a name in IEFSSNxx if it is currently unused. The sample job SUBSYSNM, in FOCCTL.DATA, demonstrates replacing the default subsystem name with your own.

The SUBSYSI utility requires an APF-authorized library. This may be an existing library, a member of your system's LNKLST, or a new library created just for SUBSYSI. Whichever option you choose, you may wish to protect SUBSYSI to permit only authorized personnel to run it.

IBI Subsystem Capacity and Performance

With the IBI Subsystem:

- 20K of XCSA is used to hold the subsystem modules and data. If the modules and data are deleted (by using the REMOVE option of SUBSYSI), 2K of XCSA is still used to hold items that may not be deleted. This storage is reclaimed if the subsystem is reactivated.
- If a server is running and is swappable, a mailbox must be allocated in XCSA.
- The subsystem uses Compare and Swap for serialization.
- The subsystem uses a PC routine and cross-memory services for moving data, as long as the server address space is non-swappable.
- The subsystem enables the HiperBUDGET feature of HiperFOCUS, which supports system-wide regulation of expanded storage use by Information Builders products.

IBI Subsystem Training

Appropriate operations and system support staff should be trained in the use of the SUBSYSI utility for starting and controlling the subsystem, and in the operator commands that the subsystem provides, DISPLAY and SET. It may also be necessary to update your system IPL procedures to ensure the subsystem is properly started after OS/390 is initialized.

IBI Subsystem Installation Steps

Perform these steps to install the IBI Subsystem. This procedure assumes that FOCUS is already installed and tested and that the data sets FOCLIB.LOAD and FOCCTL.DATA are loaded on your system.

All of the samples discussed herein are shipped in FOCCTL.DATA and are also reproduced for quick reference in Appendix D, *Subsystem Sample JCL and Zaps*.

1. Choose a subsystem name.

Choose a valid 4-character name for the subsystem. The default name is IBIS.

2. Choose an APF-authorized library.

SUBSYSI must be run from an APF-authorized library. You may copy SUBSYSI to a library in the LNKLST or to an existing authorized library, or you may create a new library for this purpose. As SUBSYSI should only be run by authorized personnel, we recommend placing it in a secure library protected from unauthorized access. (Note that while FOCLIB.LOAD is APF-authorized when MSO is installed, all FOCUS users have access to it in order to run FOCUS.)

3. Update SYS1.PARMLIB (optional).

Update IEFSSNxx member of SYS1.PARMLIB with the name of the subsystem.

If creating a new APF-authorized library, or adding non-swappable programs (SSCTL for MSO, HLISNK for SU), update SYS1.PARMLIB as needed to specify these changes.

4. Zap to change subsystem name (optional).

If you select a name other than IBIS for the IBI Subsystem, edit the JCL in SUBSYSNM with the appropriate name and run it to apply the zap.

5. Copy modules to an APF-authorized library and protect the library.

The JCL in SUBSYSCP will copy SUBSYSI and related modules from FOCLIB.LOAD into an APF-authorized library. This library can be a library dedicated to SUBSYSI, a member of the LNKLST, or any other library you choose. Since SUBSYSI is only for use by authorized personnel, ensure that the library is protected from unauthorized access.

6. Protect modules or delete them from FOCLIB.LOAD.

SUBSYSI and all other copied modules should be deleted from FOCLIB.LOAD or protected from unauthorized use.

7. Set up automatic start of the subsystem (optional).

If desired, set up JCL to run SUBSYSI and initialize the IBI Subsystem at system startup. This is especially useful if HiperFOCUS is installed, to ensure all users are subject to the HiperBUDGET controls established by the subsystem. Sample JCL to run SUBSYSI is found in members SUBSYSIJ and SUBSYSIH of FOCCTL.DATA.

8. Set up a SUBSYSI cataloged procedure (optional).

If desired, set up a cataloged procedure so SUBSYSI can be run as a started task. A sample procedure is delivered as member SUBSYSP in FOCCTL.DATA.

9. IPL the system (optional).

You must IPL the system to activate changes to SYS1.PARMLIB. If an authorized library was already available, the IPL is not necessary in order to use the subsystem, although some facilities, such as non-swappable servers, will not be available until after the IPL.

10. Start the IBI Subsystem.

Bring up the subsystem by running SUBSYSI with the START parameter. It is now ready to use.

The SUBSYSI program requires the allocation of a STEPLIB DD statement when performing the START function. If the load library used (FOCLIB.LOAD) is defined in the link list, it will still require APF authorization (IEAAPF00) so that it may be executed from STEPLIB with the proper APF authorization.

If SUBSYSI START is executed without a STEPLIB statement, the following message will occur:

```
SUBSYS003 UNABLE TO LOAD MODULES TO CSA.
```

To remedy this situation, simply allocate the load library to STEPLIB.

IBI Subsystem Product-related Installation Issues

- **HiperFOCUS**

The IBI Subsystem must be running in order for the HiperBUDGET feature to be activated. Confirm that the appropriate SET commands are issued before the first user accesses FOCUS.

It is recommended that the subsystem be initialized and the SET commands issued at OS/390 startup. See the JCL in member SUBSYSIH of FOCCTL.DATA for an example.

- **MSO, SU, SmartMode, IMS BMP**

No changes are required for MSO, SU, SmartMode (which uses SU), or the IMS BMP. Use of the subsystem is transparent for these products.

IBI Subsystem Maintenance Issues

- **Applying Maintenance**

After applying maintenance to FOCUS, be sure to re-run all appropriate zap and copy jobs, and then run SUBSYSI with the REPLACE parameter to load the new subsystem modules.

Make sure that no servers are using the subsystem when you perform the REPLACE operation.

- **Multiple FOCUS Releases**

The subsystem supports use by multiple versions of FOCUS. Releases prior to FOCUS Version 7.0 do not support use of the IBI Subsystem.

- **De-installing the IBI Subsystem**

To de-install the IBI Subsystem, run SUBSYSI with the REMOVE parameter. When doing so, make sure that no IBI server address spaces that use the IBI Subsystem are active.

Using the IBI Subsystem

To use the IBI Subsystem, you must be familiar with the SUBSYSI program, the operator controls, the display commands, and the SET commands.

The SUBSYSI Program

The SUBSYSI program is used to control the IBI Subsystem. Its basic function is to initialize the subsystem and it can also be used to stop, unload, and replace the subsystem modules in storage.

SUBSYSI can be run as a batch job or as a started task. JCL samples are provided in members SUBSYSIJ and SUBSYSJP, respectively, of FOCCTL.DATA.

Do not use SUBSYSI to STOP or REMOVE the subsystem while any IBI server address spaces are running. All servers must be stopped before you stop the subsystem. While HiperFOCUS users may continue to run, the HiperBUDGET feature is deactivated when the subsystem stops.

Valid SUBSYSI parameters are:

- **START:** Initializes the subsystem load modules into CSA. If the modules are already loaded but the subsystem is not active (STOP issued), RESTART is assumed and executed.
- **STOP:** Logically disables the subsystem without removing the modules from CSA. Do not do this while any IBI servers are running.
- **RESTART:** Restarts the subsystem following the STOP command. The modules already exist in CSA (that is, START has already been run).
- **REPLACE:** Reloads modules into CSA; this is used to upgrade without re-IPLing OS/390. Only run this after performing a STOP.
- **REMOVE:** Disables the subsystem and removes modules from CSA. This operation will leave the SSCT entry and small (2K) module, but the module will be inactive. Do not do this while any IBI servers are running.

When START or RESTART is specified, SUBSYSI reads commands from SYSIN, as if issued from the OS/390 console. This is useful for setting the HiperBUDGET limits from a batch job or started task. A sample is provided in member SUBSYSIH of FOCCTL.DATA.

IBI Subsystem Operator Controls

To issue operator commands to the subsystem, prefix them with the IBI Subsystem name. Leading blanks are not permitted in the command itself but blanks are permitted in the command text. For example, assuming the subsystem has been installed as IBIS, the following commands are all valid:

```
IBIS D SUBSYSTEM
IBIS DISPLAY IBIPROD
IBIS D IBIPROD
IBIS SET MVSLIM=500
IBIS T FILELIM=300, MVSLIM=500
```

You can also control the subsystem with the SUBSYSI program, by submitting commands from SYSIN DD. In this case, do not specify the PARM parameter on the EXEC card. The following example illustrates supplying several commands in this manner. The output of these commands will be in the job log.

```
//SUBSYSI EXEC PGM=SUBSYSI,REGION=4096K,  
//STEPLIB DD DSN=*****.SUBSYS.LOAD,DISP=SHR  
//SYSIN DD *  
D SUBSYSTEM  
D IBIPROD  
D HIPERBUDGET  
/*
```

IBI Subsystem Display Commands

The DISPLAY commands show subsystem-related or subsystem-managed information. The keyword DISPLAY can be abbreviated as D. The following commands are available:

- DISPLAY IBIPROD displays one line of information for every IBI address space running on the system. For MSO and iWay servers, information such as current and maximum number of users and LU names are displayed.
- DISPLAY HIPERBUDGET shows current expanded storage usage and HiperBUDGET limit values.
- DISPLAY SUBSYSTEM shows internal information about the subsystem.

IBI Subsystem SET Commands

The SET commands are used with the HiperBUDGET feature of HiperFOCUS to change the limit values. The keyword SET can be abbreviated as T. More than one limit may be set on the same command, as shown in the following example:

```
IBIS SET MVSLIM=500  
IBIS T FILELIM=300, MVSLIM=500
```

Acceptable values are:

```
SET MVSLIM = {value|-1}  
SET SERVLIM = {value|-1}  
SET TCBLIM = {value|-1}  
SET FILELIM = {value|-1}
```

A value of -1 specifies no limit checking for that particular parameter. The parameters MVSLIM and SERVLIM must be set in the subsystem by issuing IBIS SET commands in the console (see *IBI Subsystem Operator Controls* on page 2-25) or by running job SUBSYSIH (see Appendix A, *Subsystem Sample JCL and Zaps*).

TCBLIM and FILELIM have equivalents that can be used to set their values in FOCPARM, as indicated in the following table:

Subsystem Parameter	FOCPARM Equivalent	Definition
TCBLIM	HIPERSPACE	Maximum number of hiperspace pages/user.
FILELIM	HIPERFILE	Maximum number of hiperspace pages/file.
MVSLIM	None	Maximum number of hiperspace pages for all Information Builders products on the operating system.
SERVLIM	None	Maximum number of hiperspace pages allowed for multiple users per server.

IBI Subsystem Troubleshooting

In the event of problems with the IBI Subsystem, check the following conditions before contacting the Information Builders technical support group.

The following are the most common causes of problems with the IBI Subsystem:

- The zap job was not run, or did not run correctly, or an incorrect value may have been used for the zap.
- The zap job was run against the wrong library (SUBSYSI might be in two different libraries).
- SUBSYSI is not being run from an APF-authorized library.
- SUBSYSI was not run to START the subsystem.
- SUBSYSI was run with STOP or REMOVE and disabled the subsystem.
- For MSO, SU, or other environments that require them, the communication data sets were not allocated.
- The communication data sets were allocated, but with the wrong ddname.
- The communication data sets were allocated incorrectly. For example, MSO requires two distinct data sets.
- There is a conflict with an existing subsystem name.
- There is a mismatch between the subsystem code and FOCUS code. If necessary for a new release of FOCUS, you must re-run the appropriate copy and zap jobs.
- FOCUS is running out of a library that was not zapped.
- The HiperBUDGET parameters were not properly set.

IBI Subsystem Diagnostic information

When contacting Information Builders technical support for subsystem problems, some or all of the following information may be needed, depending on the nature of the problem:

1. For installation problems, the JCL, input, and output for all zap and copy jobs run.
2. For installation problems, all SYS1.PARMLIB updates performed.
3. The output from the D SUBSYSTEM, D IBIPROD, and D HIPERBUDGET commands.
4. The JCL, input, and output for all SUBSYSI jobs run.
5. The JCL and output for the failing address spaces.

Install the Simultaneous Usage (SU) Facility

This optional feature was described briefly in the first section of this manual and is fully documented in the *Simultaneous Usage for OS/390 and MVS User's Manual*.

The installation steps are:

- Install the IBI Subsystem.
- Allocate the communication data set FOCSU.
- Create the auxiliary FOCUS database FOCUSU.
- Create JCL for the Simultaneous Usage (SU) central database job.

If you wish to install the optional FOCUS/SU Security Interface, see *Install the FOCUS/SU Security Interface* on page 2-29.

Allocate the Communication Data Set FOCSU

The database job that performs the centralized FOCUS I/O runs in its own address space, and makes its presence in the system known through a communication data set that is accessed by all TSO users and batch jobs that it services. This data set plays a role only in the initial handshake; subsequent transfers of commands and of data between the central database job and client jobs or TSO IDs take place entirely in virtual storage.

The communication data set must be allocated and catalogued on a permanently mounted volume, and its name must be chosen so as to allow WRITE access by the central database job and READ access by any other TSO ID or batch job. The allocation is for a minimal amount of space for a single 16-byte fixed-length record. The actual data set name is irrelevant but we recommend using something suggestive of its role:

```
ATTR ADCB LRECL(16) RECFM(F) BLKSIZE(16)
ALLOCATE DA('SYS1.FOCSU.DATA') CATALOG SP(1) TRACK USING(ADCB)
```

You may want to run several central database jobs, each dedicated to a set of FOCUS data sources associated with a particular application. To do so, you must allocate a different communication data set to each such job.

Create the Auxiliary FOCUS Database FOCUSU

This auxiliary FOCUS database is accessed in READ mode by the central database job, but not by the TSO users or batch jobs that it services. The same auxiliary database can be used by all central database jobs, if there is more than one. The following process creates it:

```
ALLOCATE F(MASTER) DA('prefix.FOCCTL.DATA') SHR
ALLOCATE F(ERRORS) DA('prefix.ERRORS.DATA') SHR
ALLOCATE F(FOCUSSU) DA('SYS1.FOCUSSU.FOCUS') CATALOG SP(1) TRACKS +
    LRECL(4096) BLKSIZE(4096) RECFM(F)
CALL 'prefix.FOCLIB.LOAD(FOCUS)'
CREATE FILE FOCUSU
FIN
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

Install the FOCUS/SU Security Interface (Optional)

The only installation step is authorization of the FOCLIB.LOAD library. An operating systems programmer must authorize the entire FOCLIB.LOAD library. This process allows some of the modules in FOCLIB.LOAD to issue certain privileged operating system functions, including making security requests. The module that actually issues the security requests is module SUSI. The HLISECUR module in FOCLIB.LOAD is the only module with a non-zero authorization code, meaning it is the only module that can be invoked directly as an authorized program. All other modules in FOCLIB.LOAD have authorization codes of zero, meaning they can only run authorized if invoked properly by HLISECUR.

The program HLISECUR simply links to the module HLISNK, which controls the FOCUS Database Server. This must run authorized so that the interface can later invoke module SUSI to do the security access checking.

The program SUSI checks security access on behalf of the source user. This program runs under the authorization of HLISECUR in order to issue the RACROUTE macro.

The modules HLISECUR and SUSI are the only modules in FOCLIB.LOAD that must run authorized.

Source code for these modules is provided on the tape to permit you to verify, if you wish, that these modules do not pose a system security risk when installed as authorized modules. The source code for HLISECUR and SUSI can be found in members HLISESRC and SUSISRC in the FOCCTL.DATA library.

Using the FOCUS/SU Security Interface

To use the interface, insert the following command in the SU profile:

```
SET SUSI=ON
```

The SU profile is member HLIPROF of a PDS allocated to ddname FOCEXEC on the FOCUS Database Server (sink machine).

Once the interface is installed, you must change all FOCUS Database Server jobs to execute the program HLISECUR, rather than HLISNK, as in the following JCL line:

```
//SINK EXEC PGM=HLISECUR,PARM='parameters'
```

You can use the same password and ECHO or STAT parameters for HLISECUR as for HLISNK.

For more information see the *Simultaneous Usage for OS/390 and MVS User's Manual*.

Making FOCUS Database Servers Non-Swappable

To ensure optimal communications between the client and the central database region, we recommend running the central database region as non-swappable. This requires APF authorization, as well as updating member SCHEDxx of SYS1.PARMLIB. To do this simply insert two PPT entries for the HLISNK and HLISECUR programs as follows:

```
PPT PGMNAME(HLISNK)NOSWAP CANCEL  
PPT PGMNAME(HLISECUR)NOSWAP CANCEL
```

These statements are activated with the next system IPL, or can be refreshed using certain operating system products.

Create TSO Logon Procedures and Allocation CLISTs

FOCUS users can logon using any normal TSO logon procedure that defines a 4096K virtual region and permits at least 25 ddnames to be allocated dynamically. Data sources to be accessed can be allocated using TSO ALLOCATE commands issued from CLISTs before FOCUS is entered, or from FOCUS procedures invoked in FOCUS. FOCUS work files are automatically allocated by FOCUS itself if no previous allocation exists. In most cases there is no need for a STEPLIB: FOCUS can be invoked using the CALL command without loss of function.

We recommend providing a common TSO logon procedure for all FOCUS users. This provides a convenient place in which to allocate the FOCUS error message library (ERRORS), the library of user-supplied subroutines (USERLIB), and most commonly used work files, with adequate disk space for all but extreme cases. Data sources read through FOCUS, as well as the Master Files (MASTER) and associated FOCUS procedures (FOCEXEC), are best allocated in TSO CLISTs tailored for each application. These allocation CLISTs are executed once, immediately after the logon, and FOCUS itself is entered using a separate CLIST that contains nothing more than the CALL command. This arrangement minimizes repetitive online allocations, which cause delays and use extra resources.

When FOCUS loads programs that load further modules from an unspecified ddname, a STEPLIB is required in the logon procedure (for example, when FOCUS invokes GDDM to produce 3270-type graphics).

A STEPLIB is also required in the logon procedure if FOCUS is loaded from another program (for example, if a user invokes program DFSRRC00 with IMS, which loads FOCUS).

The following typical FOCUS logon procedure sets up support for GDDM and provides access to IMS databases:

```
//LOGON EXEC PGM=IKJEFT01,REGION=1200K,DYNAMNBR=25
//STEPLIB DD DSN=prefix.FOCLIB.LOAD,DISP=SHR For FOCUS 1
// DD DSN=gddmlibrary,DISP=SHR For GDDM 3
//IMS DD DSN=IMSVS.PCBLIB,DISP=SHR, For IMS 2
// DD DSN=IMSVS.DBDLIB,DISP=SHR For IMS
//*
/* FOCUS error messages and work data sets
/*
//ERRORS DD DSN=prefix.ERRORS.DATA,DISP=SHR
//FOCSTACK DD UNIT=SYSDA,SPACE=(TRK,(1,1)) Needed only if
//FOCSORT DD UNIT=SYSDA,SPACE=(TRK,(1,2)) default allocation
//HOLD DD UNIT=SYSDA,SPACE=(TRK,(1,2)) (see IBITABLA) is
//HOLDMAST DD UNIT=SYSDA,SPACE=(TRK,(1,2,1)) not acceptable.
//OFFLINE DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
/*
/* data sets for other TSO utilities
/*
```

STEPLIB entries 1 and 2 are required for IMS; entry 3 is needed for GDDM. Normal FOCUS use does not require a STEPLIB.

All FOCUS work data sets except FOCSORT are good candidates for VIO. Notice that SYSIN need not be allocated, as it defaults to the TSO terminal.

A sample FOCUS CLIST for allocating all necessary data sets follows:

```
/* Allocation CLIST - to be executed once */
/* */
/* FOCUS file descriptions, procedures and the User program library */
/* Assumes that ERRORS is allocated in the LOGON PROC. */
/* */
ALLOC F(MASTER) DA('userid.MASTER.DATA') SHR
ALLOC F(FOCEXEC) DA('userid.FOCEXEC.DATA') SHR
ALLOC F(USERLIB) DA('prefix.FUSELIB.LOAD') SHR
ALLOC F(WINFORMS) DA('prefix.WINFORMS.DATA') SHR
/* */
/* Communication to the central database job */
/* */
ALLOC F(FOCSU) DA('SYS1.FOCSU.DATA') SHR
/* */
/* files and databases accessed by FOCUS */
/* */
ALLOC F(CARS) DA ('userid.CARS.FOCUS') SHR
.
.
.
```

where:

prefix

Is the high-level qualifier for your production FOCUS data sets.

userid

Is the high-level qualifier for a user's data sets.

Finally, the CLIST for entering FOCUS should simply read:

```
CALL 'prefix.FOCLIB.LOAD(FOCUS)'
```

If the logon procedure has allocated FOCLIB.LOAD to STEPLIB, users can enter FOCUS by typing FOCUS at the TSO READY prompt, rather than from a CLIST that issues the CALL command. However, we recommend not having a STEPLIB in the logon procedure, unless it is mandated by the conditions discussed previously because it will always be searched first for all load modules (including the TSO command modules).

If IMS data sources are to be accessed in IMS batch mode, without the benefit of the BMP extension of the IMS/DB Data Adapter, FOCUS must be entered as follows:

```
CALL 'IMSVS.RESLIB(DFSRRCOO)' 'DLI, FOCUS, psbname'
```

The FOCUS load library must be in STEPLIB.

For additional information regarding FOCUS files, TSO logon procedures, CLISTs and batch jobs, see the *Overview and Operating Environments* manual.

CHAPTER 3

Customizing FOCUS

Topics:

- Changing the FOCUS Defaults
- Installing HiperFOCUS
- Installing the FOCUS Menu
- Installing the FOCUS ToolKit
- Enabling National Language Support

This chapter describes default FOCUS parameter settings and tells how to change them, as well as providing instructions for installing several of the major optional FOCUS features.

Changing the FOCUS Defaults

You can customize many of the default FOCUS space allocations, command lists and naming conventions while doing your install. Customizable items include:

- Number of cache pages permitted
- Space allocation for work files (IBITABLA)
- System file naming conventions (DSNTAB)
- Contents of the efficiency list of TSO commands (TSOTAB)
- Number of data exceptions permitted before a session terminates

Record Buffer Size

The default buffer size has been increased to 32K in FOCUS 7.2 (from the 16K default in prior releases). This new default is the required size for both the LINREC and DATREC buffers and may no longer be changed.

Setting the Maximum Number of Cache Pages

FOCUS sites can limit the maximum number of cache pages allowed per FOCUS session. Check your IBM documentation for cache requirements. During installation, you can set a cache page limit of between 3 and 524,288 pages (the hardware maximum), with each page 4096 bytes in length. The FOCUS default is 0 pages. The HiperFOCUS default is 256.

Individual users or batch jobs can reset cache page limits to one less than the site-selected maximums by using the SET CACHE command:

Syntax

How to Set the Cache Page Limit

```
SET CACHE = {0|n}
```

where:

0

The default FOCUS setting allocates no space for cache; Cache is inactive.

n

Is the number of 4K-byte pages of contiguous storage allocated to cache memory. The minimum is two pages. The maximum value is either 524287, or one less than the site-specified maximum value.

In normal use, the number of pages requested by users should be far less than the hardware maximum to avoid degrading the performance of the paging subsystem.

Procedure How to Change the Maximum Number of Cache Pages

1. After unloading the FOCUS distribution tape, edit member CCHCOM in the FOCCTL.DATA library, to establish a maximum number of cache pages for your site. Do this by locating the following line:

```
MAXPAGES EQU 524288
```

Replace 524288 with the maximum number of cache pages you wish to allow. The value of MAXPAGES must be between 3 and 524288. Do not change any other lines in this file. After setting MAXPAGES, save member CCHCOM back into data set FOCCTL.DATA.

2. Next, assemble member CCHCOM from FOCCTL.DATA as follows:

```
//ASSEM EXEC PGM=IEV90,PARM='LIST,OBJ,NOALIGN'
//SYSLIB DD DISP=SHR,DSN=SYS1.MACLIB
//SYSUT1 DD UNIT=SYSDA,SPACE=(TRK,(30,10))
//SYSUT2 DD UNIT=SYSDA,SPACE=(TRK,(30,10))
//SYSUT3 DD UNIT=SYSDA,SPACE=(TRK,(30,10))
//SYSPRINT DD SYSOUT=*
//SYSPUNCH DD DUMMY
//SYSLIN DD DISP=SHR,DSN=prefix.OBJ(CCHCOM)
//SYSIN DD DISP=SHR,DSN=prefix.FOCCTL.DATA(CCHCOM)
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

3. Next, link this new program into FOCUS as follows:

```
//LINKFOC EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))
//SYSLMOD DD DISP=OLD,DSN=prefix.FOCLIB.LOAD <- FOCUS
//MAINTAIN DD DISP=SHR,DSN=prefix.FOCCTL.DATA <- FOCCTL
//OBJECT DD DISP=SHR,DSN=prefix.OBJ <- Assembled code
//SYSLIN DD *
INCLUDE OBJECT(CCHCOM) <----- Assembled CCHCOM
INCLUDE SYSLMOD(FOCUS) <----- Module to be Changed
INCLUDE MAINTAIN(FOCUS) <----- Linkedit Control Statements
NAMES FOCUS(R) <----- New Module
/
*
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

4. If you run HLI or SU, you must also link this new program into the HLI module:

```
//LINKFOC EXEC PGM=IEWL,PARM='REUS,LET,LIST,NCAL,SIZE=1024K'
//SYSPRINT DD  SYSOUT=*
//SYSUT1 DD   UNIT=SYSDA,SPACE=(CYL,(10,1))
//SYSLMOD DD  DISP=OLD,DSN=prefix.FOCLIB.LOAD  <- FOCUS
//MAINTAIN DD DISP=SHR,DSN=prefix.FOCCTL.DATA  <- FOCCTL
//OBJECT DD   DISP=SHR,DSN=prefix.OBJ         <- Assembled code
//SYSLIN DD   *
INCLUDE OBJECT(CCHCOM) <----- Assembled CCHCOM
INCLUDE SYSLMOD(HLI)   <----- Module to be Changed
INCLUDE MAINTAIN(HLI)  <----- Linkedit Control Statements
NAMES HLI(R)           <----- New Module
/*
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

5. If you run SU, you must also link the new program CCHCOM into the HLISNK module:

```
//LINKFOC EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'
//SYSPRINT DD  SYSOUT=*
//SYSUT1 DD   UNIT=SYSDA,SPACE=(CYL,(10,1))
//SYSLMOD DD  DISP=OLD,DSN=prefix.FOCLIB.LOAD  <- FOCUS
//MAINTAIN DD DISP=SHR,DSN=prefix.FOCCTL.DATA  <- FOCCTL
//OBJECT DD   DISP=SHR,DSN=prefix.OBJ         <- Assembled code
//SYSLIN DD   *
INCLUDE OBJECT(CCHCOM) <----- Assembled CCHCOM
INCLUDE SYSLMOD(HLISNK) <----- Module to be Changed
INCLUDE MAINTAIN(HLISNK) <----- Linkedit Control Statements
NAMES HLISNK(R)       <----- New Module
/*
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

Default Space Allocation Table for Work Files: IBITABLA

FOCUS dynamically allocates output data sets not allocated by the user. To reset the default space attributes for these dynamically allocated ddnames, edit member IBITABLA of the FOCCTL.DATA PDS.

To change the FOCUS default allocations for output data sets, you must copy file IBITABLA to a data set allocated to ddname ERRORS. IBITABLA is a fixed columnar file and you must make all changes in the appropriate columns, which are as follows:

Column Name	Starting Column	Length
DDname	01	8
Allocation units (CYLS,TRKS)	10	4
Primary space	15	3
Secondary space	19	3
Number of Directory entries (PDS)	23	2
Sysout class (OFFLINE only)	26	1
Volume	28	6
Unit (SYSDA, DASD, HIPER, NOHIPER*)	35	8
Unit Count	44	2

*Use NOHIPER as a unit name to exclude particular data sets from HiperFOCUS.

Example

Sample of IBITABLA as Shipped

IBITABLA defines the default allocations for all dynamically allocated Information Builders files. It is provided to allow each customer to tailor these defaults as required, thereby creating a local copy of IBITABLA.

```
*...+...1...+...2...+...3...+...4...+
HOLD    CYLS    5  10
HOLDMAST TRKS    5  5 36          NOHIPER
SAVE    CYLS    5  10
REBUILD CYLS    5  10
FOCSML  CYLS    5  5
FOCUS   CYLS    5  5
FOCSTACK TRKS    5  5
FOCSORT CYLS    5  5
OFFLINE CYLS                A
SESSION TRKS    5  5
FOCCOMP TRKS    5  5 12
HOLDACC TRKS    5  5 12
FMU     TRKS    5  5 12
TRF     TRKS    5  5 12
FOCPOOLT CYLS    5  20          NOHIPER
FUSION  CYLS    5  50          NOHIPER
MDI     CYLS    5  20          NOHIPER
FOC$HOLD CYLS    5  5
EXTINDEX CYLS    5  5
```

Establishing Default System File Naming Conventions

To take advantage of the automatic FOCUS allocation facility, certain naming conventions must be followed. These can be adjusted to site standards during FOCUS installation.

The following list shows the default naming conventions:

<i>prefix</i> .FOCEXEC.DATA	For FOCEXEC
<i>prefix</i> .FOCCOMP.DATA	For compiled MODIFY procedures
<i>prefix</i> .MASTER.DATA	For MASTER files
<i>prefix</i> .ddname.FOCUS	For database files
<i>prefix</i> .MODEL.DATA	For FOCCALC [®] spreadsheets
SYS1.ADMCFORM	For ICU format files
SYS1.ADMCDATA	For ICU data files
<i>prefix</i> .TTEDIT.DATA	For TABLETALK saved sessions
<i>prefix</i> .FMU.DATA	For FMU files
<i>prefix</i> .TRF.DATA	For TRF files
<i>prefix</i> .WINFORMS.DATA	For online Maintain applications

The prefix is selected based on the following rules:

- If the FOCUS SET PREFIX command was previously issued, then the set value is selected.
- If no SET PREFIX command was issued and FOCUS is executed under TSO, then the standard TSO prefix (as set by the TSO PREFIX command) is selected.

Reference

Usage Notes for File Naming Conventions

- Existing FOCUS files must be allocated before using them. The CREATE command allocates a FOCUS database to a temporary data set.
- FOCUS does not attempt to dynamically allocate data sets already allocated via a CLIST, JCL, user-issued TSO ALLOC, or FOCUS DYNAM command.
- Naming conventions can be set up so that some or all data sets mentioned can share a prefix set to a fixed word (for example, SYS1), in cases where SET PREFIX was not issued.
- If, for some reason FOCUS fails to allocate a data set (for example, if the data set is not catalogued), it issues the customary error message indicating that the requested file cannot be found. Interactive users can still allocate the right data set using a TSO ALLOC or FOCUS DYNAM command.
- In batch execution, since standard prefixes do not exist in this environment, the SET PREFIX command must be issued to establish a standard prefix for any data sets being allocated dynamically.
- The facility may be disabled for any or all of the data sets listed above.

Modifying Naming Conventions for Automatic Allocation: DSNTAB

You can adjust the table of naming conventions for data sets allocated dynamically during FOCUS installation. The FOCUS data source is no longer dynamically allocated. The ERRORS PDS must be allocated prior to the execution of FOCUS.

The current table is member DSNTAB in FOCCTL.DATA. You can adjust the contents of this table by editing, compiling, and link-editing it into FOCUS. You can also adjust it with the AMASPZAP utility.

DSNTAB contains allocation information used when dynamically allocating MASTER, FOCEXEC, FIXFORM, and other files:

```

DSNTAB CSECT
* 1 MASTER
    DC C'PREFIX MASTER.DATA                1'
* 2 FOCEXEC
    DC C'PREFIX FOCEXEC.DATA                1'
* 3 FOCUS Database
    DC C'PREFIX DATABASE.FOCUS              1'
* 4 FIXFORM File
    DC C'PREFIX DDNAME.DATA                 1'
* 5 Errors
    DC C'SYS1 FOCUS.ERRORS.DATA             1'
* 6 Set_prefix_value - 8 characters long
    DC C'                                     '
* 7 FOCCOMP File
    DC C'PREFIX FOCCOMP.DATA                1'
* 8 FOCCALC Spreadsheet
    DC C'PREFIX MODEL.DATA                  1'
* 9 ICU Format File
    DC C'SYS1 ADMCFORM                       1'
* 10 ICU Data File
    DC C'SYS1 ADMCDATA                       1'
* 11 TTEDT TableTalk saved session PDS
    DC C'PREFIX TTEDIT.DATA                 1'
* 12 FMU
    DC C'PREFIX FMU.DATA                     1'
* 13 TRF
    DC C'PREFIX TRF.DATA                     1'
* 14 WINFORMS
    DC C'PREFIX WINFORMS.DATA               1'
*
    END
    
```

Each entry in the table is 53 bytes long and has the following format:

prefix (8 char)	data set name (44 char)	flag (1 char)
0	8	52

where:

prefix

Is an 8-character field beginning at byte 0. If it contains the word PREFIX, the TSO prefix will be substituted for the prefix value; otherwise, the prefix is whatever is entered in this field. If the SET PREFIX command is issued, it takes priority and the SET value will be substituted.

data set name

Is a 44-character field beginning at byte 8. Data set name must contain the reserved word DATABASE for FOCUS files and DDNAME for FIXFORM files being allocated. These reserved words can appear anywhere in the 44-character string.

flag

Is a 1-character field beginning at byte 52 that indicates whether or not the DDNAME should be allocated dynamically. If FLAG=1, it indicates that the file should be allocated by FOCUS. If FLAG=0, then it should not be allocated.

Reference**Usage Notes for DSNTAB**

- In the 44-character data set name field, the low-level qualifiers must remain as defined in the DSNTAB table (except in the cases of FOCUS and FIXFORM files). For example, the data set *prefix*.TTEDIT.DATA may be additionally qualified as *prefix.xxxx*.TTEDIT.DATA, but not as *prefix.xxxx*.TTEDIT. In order to use a variant form of the low level qualifiers, the DSNTAB table would either have to be edited, compiled and linked, or zapped.
- Changes to entries 3 and 5 will have no affect.

Procedure**How to Customize and Re-install DSNTAB**

1. Change member DSNTAB of FOCCTL.DATA.
2. Assemble it.
3. Link edit the new DSNTAB into FOCUS:

```
//LINK1 EXEC PGM=IEWL,PARM='LET,NCAL,LIST,MAP,SIZE=1024K'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))
//OLDMOD DD DSN=prefix.FOCLIB.LOAD,DISP=SHR
//DSNTAB DD DSN=assembled.dsntab,DISP=SHR
//MAINTAIN DD DSN=prefix.FOCCTL.DATA,DISP=SHR
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=SHR
//SYSLIN DD *
INCLUDE DSNTAB
INCLUDE OLDMOD(FOCUS) <---- MODULE TO BE CHANGED
INCLUDE MAINTAIN(FOCUS) <---- LINK1 CNTL STATEMENTS
NAME FOCUS(R) <---- NEW MODULE
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

assembled.dsntab

Is the name of the data set that contains the assembled version of DSNTAB.

Modifying the Efficiency List of TSO Commands in FOCUS: TSOTAB

For optimal efficiency, FOCUS maintains a list of commonly executed TSO commands assumed valid without verification that are passed control whenever called (member TSOTAB in FOCCTL.DATA). TSO commands not on this list can also be run, but must first be verified by searching the STEPLIB, JOBLIB, and linklist libraries using the BLDL macro. The TSO command sequence is not significant and the list is terminated by the first 8 bytes of hex FF encountered (do not include the TIME command in this list).

Procedure

How to Install the Customized TSOTAB

To augment the list, first edit TSOTAB, and then compile and link-edit it into FOCUS. The JCL for this operation appears below.

The following JCL link-edits TSOTAB into FOCUS.

```
//LINK1 EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'  
//SYSPRINT DD SYSOUT=*  
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))  
//OLDMOD DD DSN=prefix.FOCLIB.LOAD,DISP=SHR  
//TSOTAB DD DSN=assembled.tsotab,DISP=SHR  
//MAINTAIN DD DSN=prefix.FOCCTL.DATA,DISP=SHR  
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=SHR  
//SYSLIN DD *  
INCLUDE TSOTAB  
INCLUDE OLDMOD(FOCUS) <---- MODULE TO BE CHANGED  
INCLUDE MAINTAIN(FOCUS) <---- LINK1 CNTL STATEMENTS  
NAME FOCUS(R) <---- NEW MODULE
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

assembled.tsotab

Is the name of the data set that contains the assembled version of TSOTAB.

Adjusting the Number of Allowable Data Exceptions

FOCUS allows **ten** data exception interrupts before terminating a run with the following error message:

```
(FOC204) TOO MANY INTERRUPTS. RUN TERMINATED.
```

Each version of FOCUS can have only one limit. If you need more than one, you must create another copy of FOCUS and give each a different value for the limit.

You can change this default (10) with the AMASPZAP utility. To do so, zap the appropriate bytes in CSECT LIMIT in the FOCUS module. For example, to raise the limit from 10 to 20, zap the existing limit of x'0000000A' to x'00000014'. Be sure to verify the contents of the bytes being changed before doing the zap.

Use the following JCL for setting a new limit:

```
//STEP1      EXEC PGM=AMASPZAP
//SYSLIB     DD DSN=prefix.FOCLIB.LOAD,DISP=OLD
//SYSPRINT   DD SYSOUT=*
//SYSIN      DD *
NAME FOCUS LIMIT <--- Specify the module and CSECT.
VER 00 0000000A <--- Verify that pos 0 contains x'0000000A'.
REP 00 00000014 <--- Replace fullword with x'00000014'.for 20
/*
```

REP replaces the fullword at LIMIT with the new limit.

To permit unlimited data exceptions, change the allowable data exception limit to zero.

This procedure must be performed each time you install a new version or release of FOCUS.

Installing HiperFOCUS

This section describes installation of HiperFOCUS . It also discusses the new HiperBUDGET facility of HiperFOCUS.

HiperFOCUS is installed and customized using SET commands in the FOCPARM member of ERRORS.DATA. You can install HiperFOCUS by simply adding SET HIPERINSTALL=ON to the FOCPARM entries and accepting the defaults. However, since this would not establish limits on the number of hiperspaces that FOCUS could create, it is strongly recommended that you establish operating limits via the SET parameters that follow and those in the following section on the IBI Subsystem. Together, the SET commands establish the working parameters of the HiperBUDGET facility of HiperFOCUS.

All SET options (except for SET HIPERFOCUS) can be issued only from the FOCPARM member of the ERRORS file. Issuing these commands from a FOCUS session produces a FOC964 error.

Syntax

How to Install HiperFOCUS

```
SET HIPERINSTALL={ON|OFF}
```

where:

ON

Installs HiperFOCUS.

OFF

Disables HiperFOCUS.

Syntax

How to Set the Number of Hiperspace Pages

```
SET HIPERSPACE=nnn
```

where:

nnn

Is the number of (4K) pages to aggregate for hiperspace. There is no default limit. (Equivalent to SET TCBLIM under the IBI Subsystem—if both parameters establish different limits, FOCUS enforces the lower.)

Syntax

How to Set the Maximum Number of Pages in a Hiperspace

```
SET HIPERFILE=nnn
```

where:

nnn

Is the maximum number of (4K) pages in an individual hiperspace. The default size is 524288 (4K) pages or 2 GB. (Equivalent to SET FILELIM under the IBI Subsystem—if both parameters establish different limits, FOCUS will enforce the lower.)

Syntax

How to Set the Number of Cache Pages for HiperFOCUS

```
SET HIPERCACHE=nnn
```

where:

nnn

Is the number of (4K) pages in HIPERCACHE. The default size is 256 (4K) pages or 1M.

Syntax How to Set the Number of Hiperextents

```
SET HIPEREXTENTS=nnn
```

where:

nnn

Is the permissible number of extents. The default is 127.

Syntax How to Enable Users to Issue HiperFOCUS Commands

```
SET HIPERLOCKED={ON|OFF}
```

where:

ON

Disallows processing of user interface commands.

OFF

Allows processing of user interface commands (such as SET HIPERFOCUS). OFF is the default.

Syntax How to Activate HiperFOCUS

```
SET HIPERFOCUS={ON|OFF}
```

where:

ON

Activates a HiperFOCUS session when HiperFOCUS is installed. ON is the default.

OFF

Deactivates a HiperFOCUS session.

HiperBUDGET and the IBI Subsystem

The IBI Subsystem provides communication between address spaces running Information Builders products on the same OS/390 system. HiperBUDGET uses the subsystem to regulate and report on the overall use of hiperspace on that system. It accomplishes this by enforcing pre-defined limits on hiperspace consumption set at the system, server, user and file levels. Limits set at lower levels may never exceed those set at higher levels.

You must set these values by either using the console or running job SUBSYSIH, which is described in Appendix A, *Subsystem Sample JCL and Zaps*.

Syntax

How to Set the Maximum Number of Hiperspace Pages

`SET MVSLIM = {nnn|-1}`

where:

nnn

Is the maximum number of 4k hiperspace pages for all Information Builders products on the operating system.

-1

Specifies no hiperspace limit checking for the operating system.

Syntax

How to Set the Maximum Number of Hiperspace Pages Per Server for Multiple Users

`SET SERVLIM = {nnn|-1}`

where: .

nnn

Is the maximum number of 4k hiperspace pages allowed for multiple users on a per server basis

-1

Specifies no limit/per server checking.

Syntax

How to Set the Maximum Number of Hiperspace Pages Per User

`SET TCBLIM = {nnn|-1}`

where:

nnn

Is the maximum number of 4K hiperspace pages/per user.

-1

Specifies no limit/per user checking.

TCBLIM is equivalent the SET HIPERSPACE parameter described in the HiperFOCUS installation section. If both parameters are specified, the smaller value takes precedence. To set this value in FOCPARM, you *must* use the parameter name HIPERSPACE.

Syntax**How to Set the Maximum Number of Pages in a Hiperspace**

```
SET FILELIM = {nnn|-1}
```

where:

nnn

Is the maximum number of 4K hiperspace pages per individual file.

-1

Specifies no limit/per file checking.

FILELIM is equivalent to the SET HIPERFILE parameter described in the IBI Subsystem Installation. If both parameters are specified, the smaller value takes precedence. To set this value in FOCPARM, you *must* use the parameter name HIPERFILE.

Syntax**How to Query Hiperspace Limits and Statistics**

```
? HBUDGET
```

The ? HBUDGET query shows the Hiperspace limits specified and actual utilization statistics, including: limits set at the system, server, user and file levels; the number of busy pages; the number of hiperextents allowed; and the ddnames and sizes of files allocated in hiperspace or spilled to disk.

```
>? HBUDGET
```

```
Total system  limit is not set
Total server   limit is not set
Total hiperspace limit is not set
Single file size limit is  524288 pages
Total amount of busy pages is  616 pages
Number of extents is set to  127
```

```
DDname :Reserved :Hiperspace : Spilled :Spill DDn
```

Installing the FOCUS Menu

The FOCUS Menu offers a convenient way to access FOCUS facilities using windows.

The FOCUS Menu should be installed when you install FOCUS. Sites installing MSO FOCUS should refer to the FOCUS *Multi-Session Option Installation and Technical Reference Guide*.

1. Allocate the FMU.DATA data set.

Data set FMU.DATA requires the following allocations in addition to the allocations described in Chapter 2, *Basic Installation Steps*:

Data Set	Allocation Parameters	trk
FMU.DATA	Primary Allocation	115
	Secondary Allocation	15
	Directory Blocks	10
(LRECL=4096, BLKSIZE=12288, RECFM=FB)		

2. Modify the FOCLOAD JCL.

Add the following allocations to the corresponding allocations in the JCL used to unload the distribution tape found in Chapter 2, *Basic Installation Steps*. FMU.DATA is file 40 on the distribution tape.

```
//I40 DD DSN=FMU.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=volid,LABEL=(40,SL)
//O40 DD DSN=prefix.FMU.DATA,DISP=OLD
.
.
.
COPY INDD=I40,OUTDD=O40
```

3. Install the FOCUS site code and test the FOCUS system as described in Chapter 2, *Basic Installation Steps*. For MSO FOCUS, you must also perform all of the installation steps in the *Multi-Session Option Installation Steps and Technical Reference Guide*.
4. To enable the FOCUS Menu, edit member SHELPROF in FOCEXEC.DATA, which was unloaded from the distribution tape.

The FOCEXEC contains the following commands:

```
-* This FOCEXEC will be executed only after PROFILE FOCEXEC
-* execution has been completed.
-* INCLUDE FMMAIN
```

Remove the comment (*) from the line with the INCLUDE command.

```
-INCLUDE FMMAIN
```

5. Test the FOCUS Menu by entering FOCUS with the following allocations:

```
DYNAM FREE FILE MASTER FOCXEXEC FMU CAR ERRORS
DYNAM ALLOC FILE MASTER DA prefix.MASTER.DATA SHR REUSE
DYNAM ALLOC FILE FOCXEXEC DA prefix.FOCXEXEC.DATA SHR REUSE
DYNAM ALLOC FILE FMU DA prefix.FMU.DATA SHR REUSE
DYNAM ALLOC FILE CAR DA prefix.CAR.FOCUS SHR REUSE
```

The minimal allocation for testing the FOCUS Menu requires ddnames FOCXEXEC, FMU, and ERRORS. Allocate MASTER and a database (CAR in this example) to test specific FOCUS Menu facilities. Any of the ddnames in the example above may have concatenated data sets.

Note:

In MSO FOCUS, ERRORS should not be freed and re-allocated.

The FOCUS Menu will appear.

The cursor should be positioned on the first option on the menu, “Next, Next Menu Option”.

You can exit FOCUS by pressing PF3 to go to the Quit Menu.

Move the cursor to the last option on that menu, Quit FOCUS, and press Enter.

6. Continue the installation of FOCUS with *Install Link-Edited User Exits and Change FOCUS Defaults* in Chapter 2, *Basic Installation Steps*.

Installing the FOCUS ToolKit

The FOCUS ToolKit provides a convenient menu-driven way of accessing FOCUS facilities using windows.

The FOCUS ToolKit should be installed at the same time you install FOCUS.

1. Allocate the FMU.DATA data set. This data set requires the following allocation parameters and disk space in addition to the allocations described in Chapter 2, *Basic Installation Steps*:

Data Set	Allocation Parameters	trk
FMU.DATA	Primary Allocation	115
	Secondary Allocation	15
	Directory Blocks	10
	(LRECL=4096, BLKSIZE=12288, RECFM=FB)	

2. Referring to the instructions for unloading the distribution tape in Chapter 2, *Basic Installation Steps*, add the following commands to the appropriate sections of the JCL used to unload the tape. FMU.DATA is file 40 on the distribution tape.

```
//I40 DD DSN=FMU.DATA,DISP=(OLD,PASS),UNIT=TAPE,
// VOL=SER=volid,LABEL=(40,SL)
.
.
.
//O40 DD DSN=prefix.FMU.DATA,DISP=OLD
.
.
.
COPY INDD=I40,OUTDD=O40
```

3. Continue the FOCUS installation as described in Chapter 2, *Basic Installation Steps*. MSO FOCUS installers must also perform all of the installation steps described in the *Multi-Session Option Installation and Technical Reference Guide*.
4. Create a partitioned data set with a record length (LRECL) of 80. This data set is allocated to ddname ISHFALOC during installation and execution of the ToolKit and all users must have read access to it when executing the ToolKit. This data set contains a site-specific background for the ToolKit (member ISHFPROF), user selections for print destination (member ISHDPNTR), and customized file allocation procedures (FOCEXECs). The following sample provides recommendations for data set naming conventions and DCBs.

```
ALLOC F(ISHFALOC) DA('prefix.ISHFALOC.DATA') NEW CATALOG -
SPACE(5,5) TRACKS LRECL(80) RECFM(F B) BLKSIZE(23440) DIR(30)
```

Note:

Sites can customize the ToolKit for user groups by creating separate ISHFALOC data sets for each group. Step 5 must be executed for each group/data set.

5. Customize the ToolKit with site-specific information.

To prepare the background window for the ToolKit, you are asked for the company name, a support center phone number, the installation date, the Information Builders FOCUS Site Code, a default printer destination, and a list of optional printer destinations. The company information is then displayed on the background of the ToolKit Menuing system. The printer information is used to assign a default printer when first executing the ToolKit and allows users to change their print destinations easily. You supply this information on simple fill-in-the-blank screens.

- a. Enter FOCUS with your FOCUS CLIST.

b. Execute the ToolKit Installation Procedure.

```
EX ISHFINST
```

Enter company name at the prompt and press ENTER.

Enter telephone number for support at the prompt and press ENTER.

Enter install date (in MM/DD/YY format) at the prompt and press ENTER.

Enter the FOCUS site code at the prompt and press ENTER.

Enter the default printer at the prompt and press ENTER.

The format for the printer prompt is: 'c (node.)dest', where 'c' is the one-character sysout class, node is the JES printer node, and dest is the JES destination parameter. The node and dest parameters are optional and, when provided, must be separated from the sysout class by a single blank.

Reply to the prompt for additional company printer IDs that can be selected by the user. If the reply is no, installation is complete. If the reply is yes, enter the additional printers in the format: one-character sysout class, 17-character node and destination (node.dest where node is optional), and 30-character description. The sysout class cannot be blank or zero (you may delete entries by blanking out the sysout class). Note that the first printer in the list will be assigned as the user's default printer. You may also designate a data set as the output by providing an arbitrary sysout class, a destination code of DISKFILE, and the low-level qualifiers of the data set name as the description. The user's user ID will be prefixed to this name. The data set must be typed in uppercase (all capitals), as it will not be translated. Up to 18 printers can be added at this time, including the default printer. Changes can be made after installation by allocating the ISHFALOC data set and executing FOCEXEC ISHFPNTR, or by editing the member ISHDPNTR in the ISHFALOC data set (be sure to maintain columnar spacing).

When the installation is complete, the ToolKit will be executed. Move the cursor to the last option (EXIT) on the menu and press ENTER.

6. Enable batch submission.

The ToolKit permits batch submission of FOCEXECs by users. The JCL submitted must be customized for site data-set naming and JOBCARD standards.

a. Edit member ISHFBJCL in FOCEXEC.DATA.

Replace the job card information with a site-specific job card. The variable &&USER, which is the user ID set in the ToolKit startup program (ISHFSHLL), may be used in the job card.

Replace the data set names for STEPLIB, ERRORS, FOCEXEC, MASTER, and FOCSQL (where appropriate), with the site-specific data set names for the FOCUS data sets.

b. Edit member ISHFBTCH in FOCEXEC.DATA.

Delete the following lines that preclude batch execution until the JCL has been updated in the previous step (6a).

```
-SET &&ERROR='BATCH EXECUTION NOT INSTALLED-SEE DOCUMENTATION' ;
-GOTO EXIT
```

To provide direct submission of the generated JCL in TSO, remove the comment characters (-*) from the following lines:

```
-* DYNAM SUBMIT &BATCHJCL
-* -GOTO DONE
```

Otherwise, the JCL will be displayed in TED. The user may then submit the batch job by typing SUBMIT on the TED command line.

7. Disable the COPY function.

The ToolKit OS/390 Utilities and FOCUS Utilities menus support copying of data sets and members in TSO (but not MSO) by utilizing the TSO COPY command. If your site supports the COPY command, proceed to Step 8. If not, you will have to disable this function as follows:

a. Edit member ISHFEDTF in FOCEXEC.DATA.

After the -COPY label, insert the following lines:

```
-SET &&ERROR='COPY option is not available at -company name-';
-GOTO STRT
```

b. Edit member ISHFTUTL in FOCEXEC.DATA.

After the -PDSCOPY label, insert the following lines:

```
-SET &&ERROR='COPY option is not available at -company name-';
-GOTO TOP
```

8. Customize user program data set allocations.

Many ToolKit options allow users to write to their own data sets. To that end, the ToolKit assumes that users' files will follow the suggested Information Builders data-set-naming convention:

```
userid.FOCEXEC.DATA
userid.MASTER.DATA
userid.FOCDEF.DATA (optional)
userid.FOCSQL.DATA (optional)
userid.filename.FOCUS
```

(where *filename* is the Master File name that describes the FOCUS data source)

If your site follows these conventions, continue with Step 9. Otherwise, you may alter these assumptions as follows:

a. Change high-level qualifier only.

Edit ISHFSHLL in FOCEXEC.DATA. Change the following line to return the desired value (the default is userid).

```
-SET &&USER=GETUSER('A8');
```

Note: If &&USER was used in ISHFBJCL in JOBCARD processing (Step 6), modifications must be made in that program as well.

b. Change the low-level qualifiers.

Edit ISHFSHLL in FOCEXEC.DATA.

Change the following lines to return the desired value.

```
-SET &DEFMAS = &&USER || '.MASTER.DATA';
-SET &DEFFEX = &&USER || '.FOCEXEC.DATA';
-SET &DEFSQL = &&USER || '.FOCSQL.DATA';
-SET &DEFDEF = &&USER || '.FOCDEF.DATA';
```

Edit ISHFFOCM in FOCEXEC.DATA.

Change the following lines to return the desired value.

```
-SET &DSN=&&USER || &MASTNAME || '.FOCUS';
```

c. Pre-allocation of user program data sets.

The ToolKit will attempt to allocate the program data sets to ddnames ISHXFOCX, ISHXMAST, ISHXFDEF, and ISHXFSQL, unless those ddnames have been pre-allocated. Therefore, you may pre-allocate any user data set (a PDS with LRECL 80) to these ddnames prior to executing the ToolKit and those allocations will be respected. (You must still change the ISHFFOCM program in the previous step). It is recommended that these data sets also be concatenated to ddnames FOCEXEC, MASTER, FOCDEF, and FOCSQL.

d. Dynamic allocation of user program libraries.

If the files were not pre-allocated and the user data set is not found, the ToolKit will allocate, to the ddnames ISHXFOCX, ISHXMAST, ISHXFDEF, and ISHXFSQL, the *first* data set in the concatenation of ddnames FOCEXEC, MASTER, FOCDEF, and FOCSQL, as follows:

```
ISHXFOCX=FOCEXEC
ISHXMAST=MASTER
ISHXFDEF=FOCDEF
ISHXFSQL=FOCSQL
```

9. Customize database allocations.

The ToolKit will attempt to dynamically access FOCUS, sequential, and comma-delimited files identified to the ToolKit. This is accomplished by creating a FOCEXEC that performs the necessary allocations and USE commands for a given data source. This FOCEXEC is stored in the ISHFALOC data set, with a member name corresponding with the file name (as used by FOCUS).

For example, to allow the ToolKit to dynamically allocate the CAR FOCUS data source, create a FOCEXEC in the ISHFALOC data set with member name CAR. This FOCEXEC may contain the following:

```
DYNAM ALLOC FILE CAR DA prefix.CAR.FOCUS SHR REUSE
-EXIT
```

Note that these members are FOCEXECs and can include any FOCUS commands.

10. To provide automatic execution of the ToolKit upon a user's entry to FOCUS, edit member SHELPROF in FOCEXEC.DATA (this step is optional).

The original FOCEXEC contains the following commands, which support automatic execution of the FOCUS Menu:

```
-* This FOCEXEC will be executed only after PROFILE FOCEXEC
-* execution has been completed.
-* INCLUDE FMMAIN
```

Change the FOCEXEC to read:

```
-IF &FOCMODE EQ 'CRJE' GOTO EXIT;
EX ISHFSHLL
-EXIT
```

This will allow the ToolKit to execute online only; it will be bypassed in batch.

Note: You may use this FOCEXEC to give users the option of executing the ToolKit, the FOCUS Menu, or exiting to native FOCUS.

11. To execute the ToolKit, enter FOCUS with one of the following sample CLISTs. If the DB2 Data Adapter is not installed, use the first example. If the DB2 Data Adapter is installed, use the second example. If the SHELPROF option is not incorporated, the ToolKit may be executed from the command line by issuing:

```
EX ISHFSHLL
```

Note:

The DB2 Data Adapter must already be installed to take advantage of ToolKit DB2 features. The DB2 installation creates the *prefix.FOCSQL.DATA*, *prefix.TRF.DATA*, and *prefix.FOCSQL.LOAD* data sets. The installation must also copy AUTODB2 from *prefix.FOCSQL.DATA* to *prefix.FOCEXEC.DATA*, as this is used in the ToolKit.

a. CLIST for non-DB2 Data Adapter installation:

```

ALLOC F(MASTER)    DA(' &SYSUID..MASTER.DATA' -
                    'prefix.MASTER.DATA')    SHR
ALLOC F(FOCEXEC)   DA(' &SYSUID..FOCEXEC.DATA' -
                    'prefix.FOCEXEC.DATA')    SHR
ALLOC F(FMU)       DA('prefix.FMU.DATA')      SHR
ALLOC F(ISHFALOC) DA('prefix.ISHFALOC.DATA')  SHR
ALLOC F(ERRORS)    DA('prefix.ERRORS.DATA')   SHR
ALLOC F(USERLIB)   DA('prefix.FUSELIB.LOAD')   SHR
CALL 'prefix.FOCLIB.LOAD(FOCUS)'
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

b. CLIST for DB2 installation:

```

ALLOC F(MASTER)    DA(' &SYSUID..MASTER.DATA' -
                    'prefix.MASTER.DATA')    SHR
ALLOC F(FOCEXEC)   DA(' &SYSUID..FOCEXEC.DATA' -
                    'prefix.FOCEXEC.DATA')    SHR
ALLOC F(FMU)       DA('prefix.FMU.DATA')      SHR
ALLOC F(TRF)       DA('prefix.FOCSQL.DATA')    SHR
ALLOC F(FOCSQL)    DA(' &SYSUID..FOCSQL.DATA' -
                    'prefix.FOCSQL.DATA')    SHR
ALLOC F(ISHFALOC) DA('prefix.ISHFALOC.DATA')  SHR
ALLOC F(ERRORS)    DA('prefix.ERRORS.DATA')   SHR
ALLOC F(USERLIB)   DA('prefix.FOCSQL.LOAD' -
                    'prefix.FOCLIB.LOAD' -
                    'prefix.FUSELIB.LOAD')    SHR
CALL 'prefix.FOCLIB.LOAD(FOCUS)'
```

where:

prefix

Is the high-level qualifier for your FOCUS production data sets.

Note:

If you installed the DB2 data adapter using the TSO Attach Facility, replace the CALL statement with the following lines:

```

DSN SYSTEM (ssid)
RUN PROGRAM(FOCUS) PLAN(plan) LIBRARY('prefix.FOCLIB.LOAD')
END
```

where:

ssid

Is the subsystem id of the DB2 subsystem.

plan

Is the DB2 application plan.

Enabling National Language Support

FOCUS enables sites to provide FOCUS messages in a variety of languages.

The following steps describe how to unload the Information Builders-translated messages from the FOCUS tape:

1. Unload ERRNLS.DATA from the FOCUS installation tape.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//I44 DD DSN=ERRNLS.DATA,DISP=OLD,UNIT=TAPE,VOL=SER=valid,
// LABEL=(44,SL,EXPDT=98000)
//O44 DD DSN=prefix.ERRNLS.DATA,DISP=(NEW,CATLG,DELETE),
// SPACE=(CYL,(42,5,90)),UNIT=unit,VOL=SER=valid,
// DCB=(LRECL=80,BLKSIZE=1600,RECFM=FB)
//SYSIN DD *
COPY INDD=I44,OUTDD=O44
/*
```

where:

valid

Is the identifier for the tape volume.

unit

Is the type of storage unit.

2. You may copy the members of ERRNLS.DATA into ERRORS.DATA, or concatenate this PDS under the ddname ERRORS.

CHAPTER 4

User Exits

Topics:

- Usage Accounting Exit: UACCT
- Data Set Naming Enforcement (DSNCHK)
- User-Coded Password Security Interface

Several user exits are provided to facilitate the customization of FOCUS for use at your site.

You must use ESA- or OS/390-compatible versions of these user exits, or unpredictable results may occur.

Usage Accounting Exit: UACCT

The FOCUS UACCT user exit is designed for logging FOCUS usage statistics, for capturing attempted violations of the DBA provisions specified in the Master File, and for trapping violations detected by external security systems such as RACF and CA--ACF2. Usage statistics are provided following the completion of FOCUS commands that access data, such as TABLE, MATCH, or MODIFY, whether entered live or executed from a procedure, and DBA violations are logged as detected. External security violations can be trapped before data is accessed and cause orderly exits from FOCUS. The exit routine is also called once at the start of a FOCUS session and once at the end, to facilitate orderly initialization and shutdown procedures. FOCUS only provides the necessary information in the exit routine calling sequence—it does not write an accounting or security log. Each site must write its own accounting exit routines for managing these files and supplying other resources required by the facility.

The distributed copy of FOCUS contains a dummy version of the UACCT exit routine. To activate a live version, a small interface routine and the user code must be link edited into FOCUS. The user code can be written in any language or mixture of languages, and can issue all system macros except STAI and STAX. It is entered through a standard IBM CALL macro, at entry point UACCT. Since this code becomes an integral part of the FOCUS code, you must avoid name conflicts with FOCUS routines, and it is suggested that all user-written programs start with the letters UA.

Note that ESA-compatible or OS/390-compatible versions of user exits are required since the user-exit code resides within the FOCUS load module.

UACCT Calling Sequence

The UACCT exit is called at different times for different purposes, but the calling sequence is always the same. The first argument indicates the type of call being made. For example, in COBOL the UACCT calling sequence is:

```
ENTRY UACCT USING CALLTYPE ATCB BILLCODE  
      COMMAND FILE LINENO PROCEDURE STATS UACVT
```

All arguments are input arguments and must not be modified by the called program, except as noted in *External Security Violations* on page 4-7.

CALLTYPE	4-byte binary integer	
	-1	Initialization call, made at start of job or session.
	-2	Wrap-up call, made at end of job or session.
	0	Usage statistics call, made following the completion of most FOCUS commands.
	1	DBA violation call, made as detected.
	2	FOCUS starting processing call, made after parsing but before data access.
ATCB	4-byte address of the FOCUS task control block. The TSO userid or batch job name and various other items can be obtained from this standard IBM control block.	

The ATCB parameter is present in all calls. The remaining arguments are also present but meaningful only when the CALLTYPE is 0, 1 or 2.

BILLCODE	8 characters FOCUS billing code, set by the FOCUS command SET BILLCODE=value. This argument is included to enable accounting distinctions within a user ID.
COMMAND	8 characters Name of FOCUS command to which the exit call applies.
FILE	8 characters Name of the FOCUS data source.
LINENO	4-byte binary integer The current FOCEXEC procedure line number.
PROCEDURE	8 characters The name of the FOCEXEC containing the command that triggers the call to the Usage Accounting exit. Dialogue Manager commands and comment lines do not trigger calls to Usage Accounting. If the command that triggers the call is terminal input, PROCEDURE will be blank.
STATS	17 fullword binary integers Contains either usage statistics or DBA violation data. Ignore this if the call signals the start of processing (CALLTYPE = 2).
UACVT	Not currently in use.

Usage Statistics Calls (CALLTYPE=0)

The UACCT exit is called with CALLTYPE=0 for the following FOCUS commands:

TABLE*
 TABLEF*
 MODIFY*
 GRAPH*
 SCAN*
 MATCH
 HOLD
 SAVE
 SAVB
 ANALYSE
 REBUILD
 CMS/TSO
 CREATE
 RETYPE
 REPLOT

Commands designated with an asterisk (*) also generate a starting-processing call to UACCT (CALLTYPE=2).

When CALLTYPE is 0 the 17 STATS words contain information that can be displayed by issuing the ? STATS command. These statistics are also posted as Dialogue Manager parameters, under the &name shown. All statistics are per command, not cumulative for the FOCUS session.

STATS(1)	&RETCODE FOCUS return code posted by the command (not the return code posted when FOCUS exits). Zero indicates that the command executed successfully.
STATS(2)	&RECORDS The number of records retrieved by a TABLE, TABLEF or GRAPH command. When more than one segment is referenced by the command, a record is a path in the referenced subtree.
STATS(3)	&LINES The number of lines created by the report, or the number of records SAVED or HELD, before application of any IF TOTAL tests.
STATS(4)	Reserved.
STATS(5)	&BASEIO The number of 4096 byte pages read or written in the FOCUS data source. This value will be zero for non-FOCUS data sources.

STATS(6)	The number of reads issued when reporting from a non-FOCUS data source. The value will be zero for FOCUS data sources. Each read is a QSAM GET, ISAM GET, or one call to the interface module, as the case may be. In the case of data adapters, such as the IMS/DB, IDMS, TOTAL, ADABAS, and FOCSAM interfaces, each call produces one instance of one segment.
----------	--

STATS(7) to STATS(16) are statistics posted by the MODIFY and the SCAN commands. These statistics will have the value zero for all other commands.

STATS(7)	&TRANS
STATS(8)	&ACCEPTS
STATS(9)	&INPUT
STATS(10)	&CHANGED
STATS(11)	&DELETED
STATS(12)	&NOMATCH
STATS(13)	&DUPLS
STATS(14)	&FORMAT
STATS(15)	&INVALID
STATS(16)	&REJECTS
STATS(17)	&SORTIO - The number of reads and writes to the FOCSORT scratch file. Zero indicates that the sort phase of the report is executed entirely in memory.

Note:

FOCUS data sources and the FOCSORT scratch file are BDAM data sets and as such must be formatted before they can be used. Formatting occurs when the CREATE command is issued or when the FOCUS data source is extended, as in the course of a MODIFY command; FOCSORT is formatted by the first write into it. The formatting I/O activity is not included in the &BASEIO or in the &SORTIO statistics.

DBA Violation Calls (CALLTYPE=1)

Execution-time DBA violations arising from insufficient access rights generate one of several FOCUS error messages, depending on the nature of the violation, and the accounting exit routine is called with CALLTYPE=1 to log this event. The call to log the violation occurs before the corresponding error message is displayed (for example, before the user is made aware that the violation was detected). All the calling arguments are as documented previously, except the STATS area, which in lieu of statistics contains the following items:

STAT(1)	4 byte binary integer The FOCUS error message number (for example, 47, 56).
STAT(2)	4-byte binary integer The length, in bytes, of the variable portion of the error message.
STAT(3)	A character string of the length indicated by STAT(2), the variable portion of the error message. This will be the FOCUS data source name or field name to which the message refers.

The possible error messages follow. The variable portion of the message is shown in brackets.

(FOC047) USER DOES NOT HAVE SUFFICIENT ACCESS RIGHTS TO FILE:<file>

(FOC052) USER DOES NOT HAVE SUFFICIENT ACCESS RIGHTS TO FIELD:<filename>

(FOC054) FILE PROTECTED BY DIFFERENT DBA:<file>

(FOC056) USER ACCESS RIGHTS DO NOT ALLOW INCLUDE OR DELETE:<file>

Error messages 54 and 56 can occur only with FOCUS data sources, but 47 and 52 can occur in any FOCUS readable file protected by the DBA feature.

Start of Processing Calls (CALLTYPE=2)

These exit calls are made following the parsing and verification of the retrieval commands (TABLE, TABLEF, GRAPH, MATCH) and of the SCAN and MODIFY commands, but before any attempt is made to access the data. For retrieval commands the start of the processing call is made for all types of data—sequential and VSAM files, IMS data sources, FOCUS data sources—and, in the case of VSAM and QSAM files, before they are opened. The CALLTYPE is 2 and all other arguments are exactly the same as for the Usage Statistics call that will follow, except that the STATS argument is not available.

External Security Violations

The UACCT exit routine can perform any type of accounting or logging activity and it can also interrogate external security systems such as RACF or ACF2 to determine if the current FOCUS command is dealing with secured files or data sets. If a security violation is detected, UACCT can terminate FOCUS gracefully by changing the input COMMAND argument to 8 bytes of binary zeroes. In this event FOCUS will issue the following diagnostic message and return to the operating system with a return code of 8:

```
(FOC999) FOCUS TERMINATED BY USER EXIT ROUTINE UACCT
```

The COMMAND argument is the only modifiable argument in the UACCT calling sequence; all other arguments must be left as they were.

FOCUS can be terminated in this way in all UACCT calls in which CALLTYPE is 0, 1 or 2, but the most logical time to do so is in a type 2 call after all the parsing has been done and before any data access is attempted. In TSO, the ATCB argument points to the FOCUS task control block, which points at the userid or job name, and the FILE argument is the FOCUS name of the data source to be accessed. In the case of QSAM and VSAM files, it is the ddname to which the data set was allocated, and the dsname can easily be obtained using a RDJFCB macro. In the case of FOCUS data sources it is also the ddname to which the data source has been allocated, except when the logical data source is spread over several data sets, allocated under different ddnames. In the case of IMS or IDMS data sources there is no connection between this FOCUS file name and the physical data sets to be accessed, and the FOCUS file name corresponds to a logical view of these data sources—a PCB in the case of IMS, a subschema for IDMS.

UACCT Installation

The following listing shows how to link edit the UACCT exit routine into FOCUS. In this example, COBOL user code (in object form) is allocated to ddname USERCODE and is brought in with the INCLUDE USERCODE statement. Any other routines called should also have INCLUDE statements code before the INCLUDE MAINTAIN (UAIN) statement.

```
//LINK1 EXEC PGM=IEWL,PARM='LET,NCAL,LIST,MAP,SIZE=1024K'  
//SYSLMOD...DD DISP=OLD,DSN=prefix.FOCLIB.LOAD <-- FOCUS load library  
//MAINTAIN..DD DISP=SHR,DSN=prefix.FOCCTL.DATA <-- Maintenance library  
//UACCT ...DD DISP=SHR,DSN=prefix.user.code <-- Compiled UACCT code  
//SYSUT1 ...DD UNIT=SYSDA,SPACE=(CYL,(5,5))  
//SYSPRINT..DD SYSOUT=*  
//SYSLIN ..DD *  
INCLUDE UACCT .....<-- UACCT and any programs it calls  
INCLUDE MAINTAIN(UAIN) .<-- Real exit-calling routine  
REPLACE CHARGE .....<-- Use the new exit-calling routine  
INCLUDE SYSLMOD(FOCUS) <-- FOCUS itself  
INCLUDE MAINTAIN(FOCUS) <-- Linkage editor control cards  
NAME FOCUS(R) .....<-- Output module  
/*
```

The last three INCLUDE statements must execute in the order shown. The UAIN member of the FOCCTL.DATA PDS replaces the dummy UACCT interface shipped in the distributed version of FOCUS.

Data Set Naming Enforcement (DSNCHK)

To manage disk space effectively, many installations enforce strict data set naming conventions. Since FOCUS refers to data sources by ddname, the data set names (dsnames) are not significant for processing. However, as an optional feature to support your installation's standards, FOCUS can call special installation-coded verification routines to determine whether the names are acceptable. This optional facility can be used with the following data sources: FOCUS MASTER Files, FOCEXEC files, ERROR files, and FOCUS data sources. If you install this optional feature, FOCUS calls your data set name verification routine (it must be named DSNCHK) whenever any of these is opened.

The argument in the call has the following syntax:

```
CALL SUBROUTINE DSNCHK(ddname,dsname,RETCOD)
```

where:

ddname

Is an 8-byte, left-justified file name with trailing blanks.

dsname

Is a 44-byte data set name field, which is also left justified with trailing blanks.

RETCOD

Is a fullword binary integer set by DSNCHK. A return code of 0 means the name is acceptable; a non-zero code means the name is unacceptable. If the return code is not zero, FOCUS issues the following diagnostic message:

```
(FOC333) INVALID DATASET NAME: dsname
```

where:

dsname

Is the actual data set name. FOCUS then proceeds as if the file was not allocated, which may generate further error messages.

The dsname argument field is actually the start of a 176-byte area that is returned by the RDJFCB macro. Refer to IBM publications for further file information returned by the macro.

Subroutine DSNCHK is link-edited to FOCUS. Normally, FOCUS is delivered with a link-edited dummy DSNCHK that accepts all data set names.

Note that ESA-compatible or OS/390-compatible versions of all user exits are required since the user exit code resides within the FOCUS load module.

Procedure**How to Install DSNCHK**

1. Create member DSNCHK of FOCCTL.DATA.
2. Assemble it.
3. Link edit the new DSNCHK into FOCUS:

```
//LINK1 EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))
//OLDMOD DD DSN=prefix.FOCLIB.LOAD,DISP=SHR
//DSNCHK DD DSN=assembled.dsnchk,DISP=SHR
//MAINTAIN DD DSN=prefix.FOCCTL.DATA,DISP=SHR
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=SHR
//SYSLIN DD *
INCLUDE DSNCHK
INCLUDE OLDMOD(FOCUS) <---- MODULE TO BE CHANGED
INCLUDE MAINTAIN(FOCUS) <---- LINK1 CNTL STATEMENTS
NAME FOCUS(R) <---- NEW MODULE
```

User-Coded Password Security Interface

The FOCUS password (normally set by the FOCUS command SET PASS) can also be set automatically by an external security system such as RACF, CA-ACF2 or CA-Top Secret®. Passwords issued this way are set when FOCUS is first entered and may be permanent (that is, not overridable by subsequent SET USER, SET PASS or -PASS commands) or they may be defaults that can subsequently be overridden. They can be permanent for some users, defaults for others, or not set at all for still others. The advantage of setting FOCUS passwords externally is that they need not be known to the user and, therefore, do not have to be prompted for or embedded in a PROFILE FOCEXEC or in an encrypted FOCEXEC.

FOCUS passwords set this way must match the FOCUS password in the Master Files of the data sources being accessed.

The FOCUS password is set by a CSECT in FOCUS called FOCUSID, which is a dummy in the distributed version of FOCUS. The CA-ACF2 Interface is a working version of this routine, supplied by Computer Associates. Functionally equivalent versions can be written for RACF and for other security systems. In all cases, the FOCUS password is inferred from the FOCUSID code. The function of the FOCUSID CSECT is to provide FOCUS with an overridable or non-overridable FOCUS password. The FOCUSID user exit is supported in the TSO and batch environments.

System administrators can use the exit to restrict access to data sets by causing FOCUS to be entered using an inferred user ID. The installation and use of the external password security exit for CA-ACF2 is documented in Chapter 5, *Interface Installation*.

Syntax

FOCUSID Calling Sequence

```
CALL FOCUSID(ENV,REG1,FOCID,LOGID,RC)
```

where:

ENV	Input	Fullword binary integer.
		Environment from which call is made.
	0	CMS
	1	TSO
	2	OS/390 batch job
	3	CICS
	4	open
	5	IMS/DC MP region
	6	IMS/DC BMP region

REG1	Input	<p>Fullword binary integer. Register 1 as passed to FOCUS. Useful only when it points at an IMS PSB.</p>
FOCID	Output	<p>8 characters. 8-byte FOCUS password returned by FOCUSID. Left-justified, trailing blanks. Upper-case printable EBCDIC characters only. Leading and embedded blanks respected. Trailing blanks ignored. The last non-blank character of FOCID determines whether the FOCID is overridable:</p> <p>If the last non-blank character of FOCID is a period (.), or if the eighth character is not a blank, then the FOCUS password is not overridable. If the last non-blank character is not a period and the password is less than eight characters then the password may be overridden using standard PASS, -PASS or SET PASS commands.</p> <p>The FOCID returned, less the period if any, is set as the user's FOCUS password. The FOCUS password must match the USER= declarations stored in the appropriate Master Files.</p>
LOGID	Output	<p>8 characters. Not used at present.</p>
RC	Output	<p>Fullword binary integer. Return code posted by FOCUSID.</p> <ul style="list-style-type: none"> 0 FOCID and LOGID posted by FOCUSID. 4 External Security System not installed. 8 No FOCID field (FOCUS Password) for this user. 16 Fatal error in FOCUSID (FOCUS exits via BDEXIT).

Note:

The FOCUS password will not be set if RC is non-zero.

Installing the FOCUSID User Exit

The object code of FOCUSID, plus any other object code that it calls, is link-edited into load module FOCUS with the JCL that follows. The new FOCUSID module will replace the dummy version in the distributed FOCUS load module. The steps for installing your password exit are as follows:

1. Write your FOCUSID code, compile and link edit it.
2. Change the FOCUSID DD statement in FOCCTL.DATA(JCLACF21) to point to your new FOCUSID module.
3. Continue editing JCLACF21 according to the steps given for the FOCUS/CA-ACF2 Interface. After editing the JCL according to your installation's specifications, submit the job, which creates the module FOCUSID, and links the password interface modules into FOCUS.

The JCL for installing your interface, which is found in FOCCTL.DATA(JCLACF21), is as follows:

```
//LINK1 EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'  
//SYSPRINT DD SYSOUT=*  
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))  
//OLDMOD DD DSN=prefix.FOCLIB.LOAD,DISP=SHR  
//FOCUSID DD DSN=user.compiled.focusid,DISP=SHR  
//MAINTAIN DD DSN=prefix.FOCCTL.DATA,DISP=SHR  
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=SHR  
//SYSLIN DD *  
MODE AMODE(24),RMODE(24)  
INCLUDE FOCUSID <---- FOCUSID CODE  
INCLUDE MAINTAIN(ACFINT1) <---- MODE-SWITCHING CODE  
ENTRY ACFINT1 <---- CNTL STATEMENT  
NAME FOCUSID(R) <---- NEW MODULE  
INCLUDE MAINTAIN(ACFINT0,ACFID) <---- ACTIVATION PROGRAMS  
INCLUDE OLDMOD(FOCUS) <---- MODULE TO BE CHANGED  
INCLUDE MAINTAIN(FOCUS) <---- CNTL STATEMENTS  
NAME FOCUS(R) <---- NEW MODULE
```

CHAPTER 5

Interface Installation

Topics:

- Installing and Using an External Password Security System
- Installing the ICU Interface
- Installing the FOCCALC Graphics Facility

This chapter describes procedures for installing special interfaces for external security systems, the Interactive Chart Utility (ICU) and the FOCCALC graphics facility.

Installing and Using an External Password Security System

There are two options for using an external password security system with FOCUS:

1. Use the FOCUS-supplied ACF2 Interface.
2. Write and use your own security interface. See Chapter 4, *User Exits* for more information on this topic.

The FOCUS-Supplied CA-ACF2 Interface

The FOCUS/CA-ACF2 Interface is an optional FOCUS facility that integrates FOCUS security features with the CA-ACF2 file security system. It provides the following benefits to FOCUS users and security administrators:

- The FOCUS userid set by the CA-ACF2 Interface is not echoed to the terminal and is not shown in batch job output listings. This ensures greater security than explicit SET USER and SET PASS commands, which both echo output to the screen and show it in batch output listings.
- Since FOCUS users do not need to know their FOCUS user IDs, security is improved.
- Many logon IDs can be translated into the same FOCUS user ID. This enables creation of classes of FOCUS users, each of whom has a private logon ID but the same level of access to FOCUS data sources.
- There is no need to embed FOCUS user ID declarations in catalogued FOCUS procedures. When employees leave or FOCUS user IDs are changed, security can be maintained without changing production procedures. In addition, database administrators can assume all responsibility for FOCUS user ID maintenance.

Each logon ID exists on a CA-ACF2 LOGONID record and is paired with a FOCUS user ID that provides access to FOCUS data sources. Upon entering FOCUS, the CA-ACF2 Interface infers the FOCUS userid from the user-supplied logon ID. This FOCUS user ID is maintained for the duration of the session, and may or may not be overridden by the user. The result of the inference is equivalent to issuing the FOCUS command

```
SET USER = userid
```

Once installed, FOCUS users see no difference between the default version of FOCUS and the CA-ACF2 protected version until they attempt to override the FOCUS userids. Database administrators can use the CA-ACF2 CHANGE command to assign FOCUS user IDs to logon IDs as default or imposed FOCUS user IDs.

Default FOCUS User IDs

When the LOGONID record contains a default FOCUS user ID, a FOCUS user ID, which the user can override, is inferred for the user's LOGONID record. A default FOCUS userid can be up to eight bytes long.

To assign a default FOCUS user ID for a logon ID, use the CHANGE command with a FOCUS user ID (up to eight bytes long) that does not end in a period. For example, if logon user SMITH wishes to access the data as TOM, he (or the administrator) would issue the following CA-ACF2 command:

```
CHANGE SMITH FOCUSID(TOM)
```

This is functionally equivalent to the FOCUS command

```
SET USER = TOM
```

or the command

```
SET PASS = TOM
```

issued by userid SMITH. SMITH could override this latest access by issuing another SET USER or SET PASS command, or a Dialogue Manager -PASS command.

Imposed FOCUS User IDs

When the CA-ACF2 LOGONID record contains an imposed FOCUS user ID, the user cannot override it. An imposed FOCUS user ID can have up to seven bytes plus a period, for a maximum length of eight bytes.

To assign an imposed FOCUS user ID to a logon ID, use the CA-ACF2 CHANGE command and include a period (.) at the end of the FOCUS userid. For example,

```
CHANGE SMITH FOCUSID(TOM.)
```

This assigns an imposed FOCUS user ID of TOM. for logon ID, SMITH. In this case, the user operates FOCUS with an imposed level of access to FOCUS files that he cannot change. FOCUS behaves as if user SMITH had entered

```
SET USER = TOM
```

as his first FOCUS command. However, the period at the end of the FOCUS user ID in the LOGONID record prevents the user from overriding this level of access. Any attempt to override the imposed ID results in a FOCUS diagnostic message.

Unidentified FOCUS Users

It is not necessary to identify all possible FOCUS users in the CA-ACF2 LOGONID records. Users whose LOGONID records provide no FOCUS user ID operate FOCUS as if the FOCUS/CA-ACF2 Interface were not installed. If they wish to access files protected by FOCUS security features, they must identify themselves through an explicit SET USER or SET PASS command or the Dialogue Manager -PASS command.

Procedure

How to Install the CA-ACF2 Interface

To install the FOCUS/CA-ACF2 Interface, follow these steps:

1. Edit member JCLACF21 in the FOCCTL.DATA library, according to the following steps and your installation's specifications. Then submit the job, which creates the module FOCUSID and links the live CA-ACF2 modules into FOCUS. The JCLACF21 member shipped with FOCUS follows:

```
//LINK1 EXEC PGM=IEWL,PARM='LET,NCAL,LIST,SIZE=1024K'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))
//OLDMOD DD DSN=prefix.FOCLIB.LOAD,DISP=SHR
//FOCUSID DD DSN=prefix.FOCCTL.DATA(FOCACF21),DISP=SHR
//MAINTAIN DD DSN=prefix.FOCCTL.DATA,DISP=SHR
//*ACFMOD DD DSN=***.***,DISP=SHR
//SYSLMOD DD DSN=prefix.TEST.FOCLIB.LOAD,DISP=SHR
//SYSLIN DD *
MODE AMODE(24),RMODE(24)
INCLUDE FOCUSID <---- FOCUSID CODE
INCLUDE MAINTAIN(ACFINT1) <---- MODE-SWITCHING CODE
ENTRY ACFINT1 <---- CNTL STATEMENT
NAME FOCUSID(R) <---- NEW MODULE
INCLUDE MAINTAIN(ACFINT0,ACFID) <---- ACTIVATION PROGRAMS
INCLUDE OLDMOD(FOCUS) <---- MODULE TO BE CHANGED
INCLUDE MAINTAIN(FOCUS) <---- CNTL STATEMENTS
NAME FOCUS(R) <---- NEW MODULE
```

- a. If the CA-ACF2 ACCVT is not anchored in the subsystem vector control table (SSVT), activate the ACFMOD DD statement. Also include the following under the SYSLIN DD statement immediately preceding the INCLUDE FOCUSID card:

```
INCLUDE ACFMOD($ACFGCVT)
```

- b. Note that the MAINTAIN DD statement should point to the maintenance data set for the load library specified on the OLDMOD DD statement. The new module is created in the data set pointed to by SYSLMOD, from the like-named module contained in the data set pointed to by OLDMOD. Note that if the two statements point to the same data set, the new module will replace the old. Otherwise, after testing the new module, you can copy it to the old.

2. Add a field to member USERLID of SYS1.ACFMAC:

```
LIDFOCID DS CL8 FOCUSID
```

3. Add the following @CFDE macro to member USERCFDE of SYS1.ACFMAC. Note that the ALTER and LIST attributes may be different at your installation.

```
@CFDE      FOCUSID,LIDFOCID,CHAR,                X
           ALTER=ACCOUNT,LIST=ALL,FLAGS=NULL,PRTN=9, X
           RRTN=1,GROUP=4
```

4. Reassemble and link the ACFFDR into LPALIB.
5. IPL with CLPA.

Installing the ICU Interface

The default ICU format files are in a PDS distributed on the FOCUS installation tape. These files can be unloaded with the following JCL:

```
//COPYIT   EXEC PGM=IEBCOPY
//IN24     DD  DISP=OLD,DSN=ADMCFORM,UNIT=TAPE,
//          VOL=SER=valid,LABEL=(24,SL)
//OUT24    DD  DISP=(NEW,CATLG),DSN=prefix.ADMCFORM,
//          VOL=SER=volume,UNIT=SYSDA,SPACE=(TRK,(2,1,2)),
//          DCB=(LRECL=400,RECFM=F,BLKSIZE=400)
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
           COPY INDD=IN24,OUTDD=OUT24
/*
```

Note:

If you are installing from a 3480 cartridge, you may have to change TAPE to your site-defined name for 3480 drives in DD statement IN24.

The basic FOCUS system installation and testing must be completed before the ICU Interface can be used.

Reference

Requirements for Running the ICU Interface

1. FOCUS must be installed with the High Resolution Graphics for 3270 Terminals option.
2. The terminal must have extended attributes and PS storage or Vector Graphics in order to be able to run GDDM graphics. (See the *IBM GDDM* manual for model numbers.)
3. There must be enough main memory to execute ICU with FOCUS. ICU usually requires at least 4Mb of virtual storage.

4. The following is a typical CLIST for executing FOCUS and the ICU Interface:

```
ALLOC F(ERRORS)      DA('prefix.ERRORS.DATA')      SHR
ALLOC F(USERLIB)     DA('prefix.FUSELIB.LOAD' +
                      'SYS1.GDDM.V2R1.GDDMLOAD') SHR
ALLOC F(ADMSYMBL)   DA('SYS1.GDDM.V2R1.GDDMSYM')  SHR
ALLOC F(ADMCFORM)   DA('prefix.ADMCFORM')        SHR
ALLOC F(ADMCDATA)   DA(ADMCDATA)                 SHR
ALLOC F(ADMDECK)    SPACE(2 2) TRACKS
CALL 'prefix.FOCLIB.LOAD(FOCUS)'
```

- The GDDM load library is usually allocated to ddname STEPLIB in the TSO logon proc since STEPLIB is where GDDM expects to find the other modules that it loads. Some sites may be able to allocate the GDDM load library to ddname USERLIB instead.
- The GDDM symbols library must be allocated to ddname ADMSYMBL.
- The ADMCFORM format PDS must be allocated to ddname ADMCFORM.
- The ddname ADMCDATA must be allocated to either a scratch data set, if no permanent storage of graph data is required, or to a permanent data set. The DCB for this data set should be:

```
LRECL=400,RECFM=F,BLKSIZE=400
```

This data set is a PDS and must therefore be given directory blocks.

- The ddname ADMDECK must be allocated to a scratch disk. There is no need to provide DCB information for this data set.

Installing the FOCCALC Graphics Facility

FOCCALC includes a graphics facility for displaying spreadsheet data as graphs. The FOCCALC Graphics facility is installed separately from GDDM graphics support for FOCUS high-resolution graphics. A minimum of 2500K bytes of virtual memory is required to run FOCCALC with the Graphics facility.

The Graphics facility requires a 3270-type terminal fitted for graphics with access to the IBM Graphics Data Display Manager (GDDM) software product.

Procedure

How to Install the FOCCALC Graphics Facility

On OS/390, FOCCALC Release 2 is installed automatically when FOCUS is installed. To include the FOCCALC Graphics facility, you must also link edit a GDDM stub from the GDDM load library into FOCCALC. This can be done any time after installing the basic FOCUS system.

1. One data set (MODEL.DATA) on the FOCUS installation tape must be unloaded for FOCCALC Release 2, *whether or not the Graphics facility is installed*. This data set can be loaded from tape to disk with the following JCL and should be made available to all FOCCALC users.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//I23 DD DSN=MODEL.DATA,DISP=OLD,UNIT=TAPE,VOL=SER=valid,
// LABEL=(23,SL,EXPDT=98000)
//O23 DD DSN=prefix.MODEL.DATA,DISP=(NEW,CATLG,DELETE),
// SPACE=(TRK,(4,1,45)),UNIT=unit,VOL=SER=valid,
// DCB=(LRECL=1028,BLKSIZE=4112,RECFM=VB)
//SYSIN DD *
COPY INDD=I23,OUTDD=O23
/*
```

2. To install FOCCALC Release 2 with the Graphics facility, you must relink module FCALC2 with GDDM Graphics. The following sample JCL for this can be found in data set FOCCTL.DATA(LINKCA2G):

```

/*****
/* Relink module FCALC2 with GGDM Graphics.
/* Change DSN names as appropriate at your location.
/*****
//LFCALC2 EXEC PGM=IEWL,PARM='NCAL,LET,LIST,SIZE=1024K'
//OLDMOD DD DSN=prod.FOCLIB.LOAD,DISP=SHR
//FOCCTL DD DSN=prod.FOCCTL.DATA,DISP=SHR
//SYSLMOD DD DSN=new.FOCLIB.LOAD,DISP=SHR
//ADMRLIB DD DSN=SYS1.GDDMLOAD,DISP=SHR
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,1))
//SYSPRINT DD SYSOUT=*
//SYSLIN DD *
INCLUDE FOCCTL(GDDMDRV2)
INCLUDE FOCCTL(@GDDMDR2) <----- FOCCALC/GDDM INTERFACE
INCLUDE FOCCTL(GDDMTAB2)
INCLUDE FOCCTL(FCALC2) <----- Linkedit Control Statements
INCLUDE ADMRLIB(FSINR) <----- GDDM Stub
REPLACE GDDMDRVR <----- Replace old entries
REPLACE NO_CLINK
INCLUDE OLDMOD(FCALC2) <----- Existing copy of FocCalc
NAME FCALC2(R)
/*

```

CHAPTER 6

Maintenance

Topics:

- FOCUS Release Numbering
- The Release Signature
- Corrections to Reported Problems
- Release Memos
- Release Tapes
- Load Libraries and Maintenance Libraries
- How to Apply an Individual PTF
- The FOCMAP Utility

This chapter deals with topics concerning the maintenance of FOCUS following installation.

FOCUS Release Numbering

FOCUS release numbers are in the form:

V.R

V.R represents the version and release of FOCUS.

The Release Signature

FOCUS runs in many operating environments and its configuration differs from one to the next. These differences are what we mean when we speak of the different versions of mainframe FOCUS: the OS/390 and MVS version or the VM/ESA version. Each version can be created at each release level, sometimes with options selected at installation time. The release signature identifies the particular combinations available.

The release banner is always displayed when FOCUS is first entered. In the OS/390 version it consists of a release number followed by the current date and time and your assigned sitecode. For example:

```
FOCUS 7.2.0          CREATED mm/dd/yyyy sitecode
```

To display the release signature at anytime from within FOCUS, issue the following command:

```
? RELEASE
```

In response FOCUS displays the release number, creation date, and sitecode of the current copy of FOCUS.

```
FOCUS 7.2.0          CREATED mm/dd/yyyy sitecode
```

Corrections to Reported Problems

When you encounter problems that require corrections to FOCUS rather than to your own procedures, those corrections will become part of a future release. In some situations, you receive corrections to your problems as soon as they become available, regardless of the next scheduled release. Such corrections are called PTFs and are identified by unique PTF numbers and Program Update (PUT) Level numbers.

You receive individual PTFs only in response to specific problems that you report yourself. (Normally, solutions to problems reported by other users will reach your installation through the next release.) The documentation accompanying each PTF identifies the problem corrected, tells how to apply the PTF, and states the range of releases to which the PTF applies.

Note:

Never apply a PTF to a release outside of the indicated range. If you do, you will damage the copy of FOCUS that you are trying to correct.

If you apply more than one PTF to a release, they must be applied in update level order. For this reason, it is essential to keep a detailed record of all PTFs applied to each copy of FOCUS.

Release Memos

FOCUS distribution tapes contain online information summarizing new features, error corrections, installation notes, operational notes, and all known problems in the new release.

To review this information online, issue the following command:

```
EX READMEF
```

A menu displays which prompts you to choose a category of release information to view.

The summary of the errors corrected by the release is included in the problems corrected selection. These are cumulative for each release. The ERRORS and MASTER PDSs must be allocated in order to run READMEF.

Release Tapes

All of the FOCUS tapes shipped by Information Builders are one of the following types:

- A full release distribution tape.
- An individual PTF tape.

Full FOCUS releases are distributed on either 9-track 6250 BPI tape reels or on 3480 cartridges and can be unloaded using the instructions documented in Chapter 2, *Basic Installation Steps*.

If you have optional products installed (such as the DB2 Data Adapter), you must reinstall those after installing each new release of FOCUS.

Individual PTFs, which are distributed on either 9-track 6250 BPI tape reels or on 3480 cartridges, can be unloaded using the instructions that accompany them, usually an IEBUPDTE batch job.

Load Libraries and Maintenance Libraries

Separately installed FOCUS components are delivered in paired sets of libraries: a load library, and possibly other libraries needed for execution, and a maintenance library. The maintenance library is not needed for execution, but contains whatever is needed to install the component and maintain its load library. The contents of these libraries may vary from release to release and it is critical that you retain the association between load libraries for given releases and their corresponding maintenance libraries. The simplest way to do this is to follow the data set naming conventions described in Chapter 1, *Features and Components*.

The following table shows the standard names of the FOCUS libraries, including the Data Adapter libraries that have their own associated installation guides. You will find that FOCUS is easy to maintain if you retain these data set names, with only the high-level prefixes added to differentiate between releases.

Component	Load Library Other Libraries	Maintenance Library
The basic FOCUS system plus optional components whose installation is covered in this manual	FOCLIB.LOAD FUSELIB.LOAD ERRORS.DATA MASTER.DATA FOCEXEC.DATA ADMCFORM WINFORMS.DATA	FOCCTL.DATA FUSELIB.DATA
FOCCALC	MODEL.DATA	
The FOCUS Multi-Session Option	MSO.LOAD	MSO.DATA
ADABAS Data Adapter	ADABAS.LOAD	ADABAS.DATA
CA-Datcom Data Adapter	DATA.COM.LOAD	DATA.COM.DATA
DB2 and Oracle Data Adapters	FOCSQL.LOAD	FOCSQL.DATA
CA-IDMS and SQLIDMS Data Adapters	IDMS.LOAD	IDMS.DATA
IMS/DB and IMS/DC Data Adapters	IMS.LOAD	IMS.DATA
MODEL 204 Data Adapter	FOCM204.LOAD	FOCM204.DATA
SAP® Data Adapter	FOCSAP.LOAD	FOCSAP.DATA

Component	Load Library Other Libraries	Maintenance Library
SYSTEM 2000 Data Adapter	FOCS2K.LOAD	FOCS2K.DATA
The Teradata Data Adapter	FOCDBC.LOAD	FOCDBC.DATA
The TOTAL Data Adapter	TOTAL.LOAD	TOTAL.DATA

For historical reasons, the maintenance library of FOCLIB.LOAD is called FOCCTL.DATA rather than FOCLIB.DATA. For all other separately installed components, the load library has the suffix LOAD and its maintenance library has the same name with the low-order suffix DATA.

How to Apply an Individual PTF

PTFs change the contents of one of the standard FOCUS libraries. This is usually done by link editing new object code into a load module, but the correction may also affect the contents of the maintenance library itself, or of the error message library. In any event, you will receive written documentation describing the problem corrected, the range of FOCUS releases to which the PTF applies, and instructions on how to apply it.

The PTF always contains all necessary JCL needed for its application, expressed in terms of the standard FOCUS library names.

Unload the PTF Tape

Use the following JCL as a sample to unload the PTF tape into a partitioned data set named PTFLIB.DATA:

```
//PTF      EXEC  PGM=IEBUPDTE
//SYSUT1   DD    DSN=prefix.ptfnnnnn.PTFLIB.DATA,DISP=SHR
//SYSUT2   DD    DSN=prefix.ptfnnnnn.PTFLIB.DATA,DISP=SHR
//SYSIN    DD    UNIT=TAPE,LABEL=(1,SL,EXPDT=98000),DSN=OUT,
//          DISP=(OLD,KEEP),VOL=SER=volser
//SYSPRINT DD    SYSOUT=A
```

The receiving data set must be an existing (empty, pre-allocated) PDS with the following attributes: LRECL=80, RECFM=FB, BLKSIZE=1600 (or less.)

Note: A larger BLKSIZE may cause problems for the linkage editor. The PDS should allow for a large number of directory blocks (at least 200), and also needs large space allocation because PTFs may require large amounts of space. For example, use SPACE=(CYL,(5,5,200)). It is good practice to include the PTF number in each data set name.

One of the members unloaded to the receiving PDS will contain the JCL for applying the PTF, along with extensive comments to explain what is being done. This JCL will have one or more job steps, each an appropriate utility for updating one of the standard FOCUS libraries using the other PTF members as input or as control statements:

- For 5-digit PTF numbers, the JCL member name will be `JCLnnnnn`, and the PTFLIB data set name will be `prefix.ptfnnnnn.PTFLIB.DATA`, where `nnnnn` is the PTF number.
- For 6-digit PTF numbers, the JCL member name will be `JCnnnnnn`, and the PTFLIB data set name will be `prefix.ptnnnnnn.PTFLIB.DATA`, where `nnnnnn` is the PTF number

Edit and Submit the Unloaded JCL Member

Edit the JCL member to change the standard data set names to your actual data set names, add a JOB card, and submit the job for batch execution. Be careful to change data set names only, *not* ddnames or member names.

Note: Each PTF has a PUT (Update) Level number. If you have several to apply, process them individually in ascending PUT Level sequence, not in the PTF number sequence. (PTF numbers are assigned at the outset of problem analysis and merely serve as substitute names with no intrinsic significance.)

Validate the Maintenance and Setup

The first step of the job will validate your maintenance and setup.

If any error messages are generated that are prefixed by the characters PTFVR, follow the instructions displayed or contact your support representative for further assistance. After correcting any PTFVR errors, re-execute the job until there are no errors displayed.

Warning: Do *not* continue with the PTF if there are unresolved PTFVR errors unless you have received specific instructions regarding those errors from your support representative.

The application of individual PTFs will not be reflected in the FOCUS release signature, but can be confirmed by issuing the following command at the FOCUS prompt:

```
? PTF
```

The FOCMAP Utility

The FOCMAP Utility is an interface module that facilitates analyzing OS/390 and CMS load libraries through simple FOCUS queries. It maps the various elements of a load module into a hierarchical structure, described to FOCUS as file FOCMAP, and provides access to such items as subroutine names and sizes, compilation and linkage edit dates, external references, and so forth. Although it was developed to assist the Information Builders programming staff in the development and maintenance of FOCUS, the FOCMAP Interface can be used to analyze any load module generated by the OS linkage editor.

This Interface is distributed as member FCMAPIN of FOCLIB.LOAD, and the associated MASTER file as member FOCMAP of FOCCTL.DATA. Members FOCMAP1, FOCMAP2, and FOCMAP3, also in FOCCTL.DATA, are sample procedures that use this utility. Parties interested in using it on their own load libraries should contact their local Information Builders representative and ask for a copy of the *FOCMAP Users Manual*.

The following example illustrates the use of the FOCMAP Interface. It shows the FOCMAP1 procedure and the output it generates.

```
TABLE FILE FOCMAP
HEADING CENTER
" DSN"
" "
" LIST BY MEMBERS ... RUN ON &DATE AT &TOD"
" "
PRINT MSIZE AS 'SIZE,HEX'
      ISIZE AS 'SIZE,DEC'
      EPNAME AS 'ENTRY'
      LDATE AS 'CREATED , ON'
      LJDATE AS 'YYDDD'
      ALIAS OVLY RENT
BY MEMBER
ENDPAGE 1
```

The output follows on the next page.

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WIBFOC.S7009810.FOCLIB.LOAD

LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	ON	YD	DD	ALIAS	OVL	RENT
-----	----	----	-----	-----	----	----	-----	----	----
ACCFILE	00FE68	65,128	ACCCTX@	00 JUN 27	179				Y
ACESNK	01DEF0	122,608	HLIMAIN	00 JUN 27	179	Y			
ADASIM	0062B8	25,272	ADABAS	00 JUN 27	179				
ADSRV	007C10	31,760	ADSRV	00 JUN 27	179				
ALCUTIL	004358	17,240	XPXPXPXP	00 JUN 27	179				Y
AXSC	004158	16,728	AXSC	00 JUN 27	179				
AXSP	005E50	24,144	AXSP	00 JUN 27	179				
BANUSER	000040	64	BANUSER	00 JUN 27	179				Y
CACCLI	028398	164,760	CACCLIQI	00 JUN 27	179				Y
CACXSV	004470	17,520	CACXSV	00 JUN 27	179				Y
CALLDB2	006060	24,672	CDRIVER	00 JUN 27	179				
CALLIMS	006A00	27,136	APPCIMS@	00 JUN 27	179				Y
CALLIMS2	0081F8	33,272	CALLIMS2	00 JUN 27	179				Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	ON	YD	DD	ALIAS	OVL	RENT
-----	----	----	-----	-----	----	----	-----	----	----
CALLPGM	004D88	19,848	CALLPGM@	00 JUN 27	179				Y
CALLRTR	004E50	20,048	CALLRTR@	00 JUN 27	179				Y
CALLUTL	0028C8	10,440	CALLUTL	00 JUN 27	179				Y
CDTAB	01A5F0	108,016	XPXPXPXP	00 JUN 27	179				Y
CILINK	000650	1,616	CILINK	00 JUN 27	179				
CIREAD	002DF0	11,760	CIREAD	00 JUN 27	179				Y
CIWRT	003220	12,832	CIWRT	00 JUN 27	179				
CKIDR	001098	4,248	CKIDR	00 JUN 27	179				
CLEAR	000098	152	CLR3270	00 JUN 27	179				
CLR3270	000098	152	CLR3270	00 JUN 27	179	Y			
CLR3270T	000098	152	CLR3270	00 JUN 27	179	Y			
CLR3270V	000098	152	CLR3270	00 JUN 27	179	Y			
CMSDLL	000130	304	XPXPXPXP	00 JUN 27	179				Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	ON	YD	DD	ALIAS	OVL	RENT
-----	----	----	-----	-----	----	----	-----	----	----
CONATLAS	004130	16,688	XPXPXPXP	00 JUN 27	179				
CONCLTTS	004150	16,720	CONCLTTS	00 JUN 27	179				
CXCRYPT	00AFB8	44,984	XPXPXPXP	00 JUN 27	179				
DQSQLF	034B10	215,824	DQSQLF@	00 JUN 27	179				Y
DTSRV	006ED0	28,368	DTSRV@	00 JUN 27	179				Y

```

DUMPCNV 007DF8      32,248  DUMPCONV 00 JUN 27   179
DUMPIDR 001C20       7,200  DUMPIDR  00 JUN 27   179
DUMPRD  00B540      46,400  READDUMP 00 JUN 27   179
EDAAP1  037680     226,944  XPXPXPXP 00 JUN 27   179
EDAITST 0093C8      37,832  EDAITST  00 JUN 27   179
EDAPRT  00DB80      56,192  CEDAPRT  00 JUN 27   179
EDATEST 00A650      42,576  CLKTEST  00 JUN 27   179  Y
EDAUSRO 006D88      28,040  RDAPASO  00 JUN 27   179
    
```

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YD	ALIAS	OVLY	RENT
EDXFOC	015628	87,592	EDXFOC	00 JUN 27	179			Y
EMGSRV	006F08	28,424	XPXPXPXP	00 JUN 27	179			Y
F\$ROOT	358F68	3,510,120	F\$ROOT	00 JUN 27	179			Y
FCALC2	0C5548	808,264	#FC2EP	00 JUN 27	179			
FCMAPIN	01F5F8	128,504	FOCMAPIN	00 JUN 27	179			
FMI	00BA08	47,624	FMI@	00 JUN 27	179			Y
FOC	011678	71,288	FOCC@	00 JUN 27	179			
FOCDIR	001FD8	8,152	FOCDIR	00 JUN 27	179			
FOCINI	0001B8	440	XPXPXPXP	00 JUN 27	179			
FOCMIL	007AF8	31,480	FOCMIL	00 JUN 27	179			Y
FOCMILIV	002300	8,960	FOCMILIV	00 JUN 27	179			
FOCMILP	000F08	3,848	FOCMILP	00 JUN 27	179			Y
FOCML3	007AF8	31,480	FOCML3	00 JUN 27	179	Y		Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YD	ALIAS	OVLY	RENT
FOCSAM	018AE8	101,096	FOCSAM	00 JUN 27	179			
FOCTRN	00F2B0	62,128	XPXPXPXP	00 JUN 27	179			
FOCUS	19E1D8	1,696,216	FOCUS	00 JUN 27	179			
FOCUTL	022400	140,288	XPXPXPXP	00 JUN 27	179			Y
FOCWIN	018720	100,128	FWMAIN	00 JUN 27	179			Y
FOCXDC	000008	8	FOCXDC	00 JUN 27	179			
FSIO	003638	13,880	XPXPXPXP	00 JUN 27	179			
FSROOT	358F68	3,510,120	F\$ROOT	00 JUN 27	179	Y		Y
FSTEST	000008	8	FSTEST	00 JUN 27	179			
FSXAIO	0062D0	25,296	XAIO	00 JUN 27	179			
FTPC	0101F8	66,040	XPXPXPXP	00 JUN 27	179			Y
FUSCAT	011340	70,464	FUSCAT@	00 JUN 27	179			Y
FUSMDI	005080	20,608	FUSMDI@	00 JUN 27	179			Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YRDD	ALIAS	OVLY	RENT
-----	----	----	-----	-----	----	----	----	----
FXCMEM	009578	38,264	XPXPXPXP	00 JUN 27	179			Y
GENFBLCK	000460	1,120	GENFBLCK	00 JUN 27	179			
GENFCTL	000DC8	3,528	GENFCTL	00 JUN 27	179			
GETLOGID	000418	1,048	GETLOGID	00 JUN 27	179	Y		
GETPRFID	000418	1,048	GETPRFID	00 JUN 27	179	Y		
GETSECID	000418	1,048	GETSECID	00 JUN 27	179			
GKCOMP	027E50	163,408	GKBASE	00 JUN 27	179			
GKID3	0139F8	80,376	GKBASE	00 JUN 27	179			
GKINF	014D58	85,336	GKINF	00 JUN 27	179			
GKMAV	002AB8	10,936	GKMAV@	00 JUN 27	179			Y
GKSMODE	014348	82,760	GKSMODE@	00 JUN 27	179			
GKUNBIT	000070	112	GKUNBIT	00 JUN 27	179			Y
GKUTIL	0063A8	25,512	GKUTIL@	00 JUN 27	179			Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YRDD	ALIAS	OVLY	RENT
-----	----	----	-----	-----	----	----	----	----
GNTINT	03D040	249,920	XPXPXPXP	00 JUN 27	179			Y
GRMDBA	008DC0	36,288	XPXPXPXP	00 JUN 27	179			Y
GRMDEF	005B48	23,368	XPXPXPXP	00 JUN 27	179			Y
GRMMAS	00DBC8	56,264	XPXPXPXP	00 JUN 27	179			Y
GRMMNT	011FC8	73,672	XPXPXPXP	00 JUN 27	179			Y
HERMES	005ED0	24,272	XPXPXPXP	00 JUN 27	179			Y
HFFUNC	00E148	57,672	XPXPXPXP	00 JUN 27	179			Y
HFINST	000130	304	HFINST0	00 JUN 27	179			Y
HLFUNC	007CB0	31,920	XPXPXPXP	00 JUN 27	179			Y
HLI	0FE5F0	1,041,904	\$HLIB	00 JUN 27	179			
HLIFOCUS	0027A8	10,152	FOCUS	00 JUN 27	179			
HLIKX	0066B0	26,288	HLIKX	00 JUN 27	179			
HLISECUR	000088	136	HLISECUR	00 JUN 27	179			

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YRDD	ALIAS	OVLY	RENT
-----	----	----	-----	-----	----	----	----	----
HLISNK	01DEF0	122,608	HLIMAIN	00 JUN 27	179			
HLISST	0FFD00	1,047,808	\$HLIB	00 JUN 27	179			
HLISU	0104F8	66,808	HLISEN	00 JUN 27	179			
HLIX	015180	86,400	HLIX@	00 JUN 27	179			
HRMITCP	00BE88	48,776	XPXPXPXP	00 JUN 27	179			
HRMTCP	00A818	43,032	XPXPXPXP	00 JUN 27	179			

HRMXTSK	00BE40	48,704	XPXPXPXP	00 JUN 27	179			Y
HRM0	012788	75,656	XPXPXPXP	00 JUN 27	179			
HRM2	00FEF8	65,272	XPXPXPXP	00 JUN 27	179			
HRM62	010690	67,216	XPXPXPXP	00 JUN 27	179			Y
HRPGATE	004D60	19,808	CHRPATE	00 JUN 27	179			
HTIX	009DA8	40,360	HTIX@	00 JUN 27	179			Y
H2O	00AE78	44,664	HOROADR@	00 JUN 27	179			Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YYDD	ALIAS	OVLY	RENT
IBICOMN	001620	5,664	IBICOMN	00 JUN 27	179			
IBICPUID	0017F0	6,128	IBICPUID	00 JUN 27	179			Y
IBILINK	003538	13,624	IBILINK	00 JUN 27	179			
IBITRC	007370	29,552	XPXPXPXP	00 JUN 27	179			
IBIUTH	00A8C8	43,208	XPXPXPXP	00 JUN 27	179			Y
IMAN	023260	143,968	IMAN@	00 JUN 27	179			Y
IMSRV	0098E0	39,136	IMSRV@	00 JUN 27	179			Y
INTCBS	008870	34,928	XPXPXPXP	00 JUN 27	179			Y
INTERP	014B20	84,768	INTERP	00 JUN 27	179			
INTERPAB	000150	336	INTERPAB	00 JUN 27	179			
KKDO	013028	77,864	XPXPXPXP	00 JUN 27	179			
LETH	01F148	127,304	LETCTX	00 JUN 27	179			
LKTEST	00A650	42,576	CLKTEST	00 JUN 27	179			

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YYDD	ALIAS	OVLY	RENT
MANMSO	07D880	514,176	\$MANMSO	00 JUN 27	179			
MASPAR	02E1F8	188,920	XPXPXPXP	00 JUN 27	179			Y
MDI	02D8D0	186,576	MDICTX@	00 JUN 27	179			Y
MFP	032038	204,856	XPXPXPXP	00 JUN 27	179			Y
MNTDRV	006E20	28,192	MNTDRV	00 JUN 27	179			Y
MNTIPR	0F7F00	1,015,552	XPXPXPXP	00 JUN 27	179			Y
MNTRT1	01C0E0	114,912	MNTRT1@	00 JUN 27	179			Y
MODMNT	00B3F0	46,064	MDMAIN	00 JUN 27	179			
MSCTL	03BDB0	245,168	SSCTL	00 JUN 27	179	Y		
MSDEB	006758	26,456	DEBIN	00 JUN 27	179			Y
MSDUMP	006BF0	27,632	SSVXME	00 JUN 27	179			
MSETUP	006D68	28,008	MSETUP	00 JUN 27	179			
MSINIT	0029D8	10,712	SSVXME	00 JUN 27	179			

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YRDD	ALIAS	OVLY	RENT
MSKILL	00CCC0	52,416	MSKILL0	00 JUN 27	179			
MSODDXL	000310	784	MSODDX	00 JUN 27	179			Y
MSODEB	000158	344	MSODEB	90 FEB 02	90033			
MSODLL	0098B0	39,088	XPXPXPXP	00 JUN 27	179			Y
MSOINFO	000598	1,432	MSOINFO	00 JUN 27	179			
MSOMAPS	000008	8	MSOMAPS	00 JUN 27	179			
MSOTRAC	000238	568	MSOTRAC	00 JUN 27	179			
MSSMFDUM	000008	8	MSSMFDUM	00 JUN 27	179			Y
MSSMFXT	000150	336	MSSMFXT	00 JUN 27	179			Y
MSUSER	014618	83,480	SSVXME	00 JUN 27	179			
MSXGET	005D50	23,888	SSVXME	00 JUN 27	179			
MSXPOT	007088	28,808	SSVXME	00 JUN 27	179			
MVSDLL	008B90	35,728	XPXPXPXP	00 JUN 27	179			Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YRDD	ALIAS	OVLY	RENT
NCACHE	008E50	36,432	XPXPXPXP	00 JUN 27	179			Y
NLSP	0132D8	78,552	XPXPXPXP	00 JUN 27	179			Y
NLSSYS	008BB0	35,760	XPXPXPXP	00 JUN 27	179			
NMDFAKE	000060	96	NMDFAKE	00 JUN 27	179			Y
NMDIN	021538	136,504	NMDIN@	00 JUN 27	179			Y
NMDLINK	000060	96	NMDLINK	00 JUN 27	179	Y		Y
NMDPAS2	0054D0	21,712	NPI2CALL	00 JUN 27	179			
NTDM	007008	28,680	XPXPXPXP	00 JUN 27	179			Y
NTDUMP	00CCF0	52,464	XPXPXPXP	00 JUN 27	179			Y
NTHR	016D00	93,440	XPXPXPXP	00 JUN 27	179			Y
NWH	015CA8	89,256	NWCTX	00 JUN 27	179			Y
ODIN	013BD0	80,848	XPXPXPXP	00 JUN 27	179			Y
ODINIO	0050A0	20,640	XPXPXPXP	00 JUN 27	179			Y

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YRDD	ALIAS	OVLY	RENT
OESAS	0823D8	533,464	XPXPXPXP	00 JUN 27	179			Y
OLDHRM	022D90	142,736	XPXPXPXP	00 JUN 27	179			
OMHERMES	005238	21,048	EDAHRM@	00 JUN 27	179			Y
OMLU62	00E6F0	59,120	OMLU62@	00 JUN 27	179			Y
OMMEM	0046C8	18,120	XPXPXPXP	00 JUN 27	179			Y
OMSOCK	00D610	54,800	SOCKSTUB	00 JUN 27	179			
OMTCP	00D610	54,800	SOCKSTUB	00 JUN 27	179	Y		

OMTCPOE	012480	74,880	OMSOCK@	00 JUN 27	179			Y
OPSINIT	00A1E0	41,440	STARTUP	00 JUN 27	179			
OSL	0220D0	139,472	XPXPXPXP	00 JUN 27	179			Y
OTB	009AC8	39,624	STARTUP	00 JUN 27	179			
OXAT	000430	1,072	OXAT#	00 JUN 27	179			
OXSS	00FA58	64,088	OXSS	00 JUN 27	179			Y

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YD	ALIAS	OVLY	RENT
PARSER	0185A0	99,744	XPXPXPXP	00 JUN 27	179			Y
PTFTABLE	013938	80,184	PTFTABLE	00 JUN 27	179			
PTFTUPD	002F80	12,160	PTFTUPD	00 JUN 27	179			
PTFVR	0005A0	1,440	PTFVR	00 JUN 27	179			
PTREE	008308	33,544	XPXPXPXP	00 JUN 27	179			Y
QCVTIN	008520	34,080	XPXPXPXP	00 JUN 27	179			Y
QDATAOM	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QDSET	013420	78,880	QDSET@	00 JUN 27	179			Y
QFMI	00C7A0	51,104	QFMI@	00 JUN 27	179			Y
QFOCQMF	005318	21,272	QFOCQMF@	00 JUN 27	179			
QFOCSAM	0295F8	169,464	QVSAMX@	00 JUN 27	179	Y		Y
QFQDBE	02E010	188,432	XPXPXPXP	00 JUN 27	179			Y
QFSP000	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YD	ALIAS	OVLY	RENT
QFUSCAT	002588	9,608	QFUSCAT@	00 JUN 27	179			Y
QHLIX	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QIDMSR	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QIMAN	00E4C8	58,568	QIMAN@	00 JUN 27	179			Y
QIMS	014A20	84,512	QIMS@	00 JUN 27	179			Y
QIMSX	03BD60	245,088	QIMSX@	00 JUN 27	179			Y
QLEGACY	009428	37,928	QLEGACY@	00 JUN 27	179			Y
QMFINI	00E3E8	58,344	XPXPXPXP	00 JUN 27	179			Y
QMFS	0065D0	26,064	XPXPXPXP	00 JUN 27	179			Y
QMFSST	006870	26,736	QSENTRY	00 JUN 27	179			Y
QM204I	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QM204IN	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QNMDIN	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE	SIZE	CREATED					RENT
	HEX	DEC	ENTRY	ON	YYDD	ALIAS	OVLY	
QOPSYS	03F838	260,152	XPXPXPXP	00 JUN 27	179			Y
QQDSET	006040	24,640	QQDSET@	00 JUN 27	179			Y
QRCAT	0053F0	21,488	QRCAT@	00 JUN 27	179			Y
QSERVANT	006398	25,496	QSERVANT	00 JUN 27	179			Y
QSQLDS	037010	225,296	QSQLDS@	00 JUN 27	179			Y
QSTRAC	007C68	31,848	QSTRAC	00 JUN 27	179			Y
QSWDB2	016148	90,440	QSWDB2@	00 JUN 27	179			Y
QS2K	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QTOTAL	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QTOTIN	009428	37,928	QLEGACY@	00 JUN 27	179	Y		Y
QVSAMX	0295F8	169,464	QVSAMX@	00 JUN 27	179			Y
RCAT	012030	73,776	RCAT@	00 JUN 27	179			Y
RDAAPP	00A838	43,064	RDAAPP	00 JUN 27	179			

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE	SIZE	CREATED					RENT
	HEX	DEC	ENTRY	ON	YYDD	ALIAS	OVLY	
REBMIG	011AD0	72,400	REBMIG@	00 JUN 27	179			Y
RMH	007128	28,968	RMH@	00 JUN 27	179			Y
RTH	00BF98	49,048	RTH@	00 JUN 27	179			Y
SASLIB	0A0500	656,640	XPXPXPXP	00 JUN 27	179			Y
SASLIBTR	02A308	172,808	XPXPXPXP	00 JUN 27	179			Y
SCHERMES	00DF30	57,136	HOROADR@	00 JUN 27	179			Y
SERVANT	006398	25,496	SERVANT	00 JUN 27	179	Y		Y
SPIDLL	003910	14,608	XPXPXPXP	00 JUN 27	179			Y
SQLDS	028BC0	166,848	SQLDS@	00 JUN 27	179			Y
SQLFOC	077280	488,064	SQLHAND@	00 JUN 27	179			Y
SQLGET	00AB30	43,824	QSQLGET@	00 JUN 27	179			Y
SQSRV	00AAC8	43,720	SQSRV1@	00 JUN 27	179			Y
SRVINFO	000598	1,432	MSOINFO	00 JUN 27	179	Y		

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LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE	SIZE	CREATED					RENT
	HEX	DEC	ENTRY	ON	YYDD	ALIAS	OVLY	
SSABSMRT	00C9F0	51,696	SSABSMRT	00 JUN 27	179			
SSCON	0076D8	30,424	SSCON	00 JUN 27	179			Y
SSCONS	02CD00	183,552	XPXPXPXP	00 JUN 27	179			
SSCONSEC	000028	40	SSCONSEC	00 JUN 27	179			Y
SSCRENT	0076D8	30,424	SSCRENT	00 JUN 27	179	Y		Y
SSCTL	03BDB0	245,168	SSCTL	00 JUN 27	179			
SSDFEOM	0008B0	2,224	SSDFEOM	00 JUN 27	179			Y
SSDRDA	00A528	42,280	SSDRDA	00 JUN 27	179			Y

SSDWPK	002D08	11,528	DSNLHLI1	00 JUN 27	179			Y
SSFOC	00D270	53,872	SSFOC0	00 JUN 27	179			Y
SSFOCTSO	00D270	53,872	SSFOCTSO	00 JUN 27	179	Y		Y
SSGET	004C98	19,608	SSVX	00 JUN 27	179			
SSOPER	00ABD8	43,992	SSVX	00 JUN 27	179			

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YD	ALIAS	OVLY	RENT
SSPUT	004418	17,432	SSVX	00 JUN 27	179			
SSSOCK	005F00	24,320	SSSOCK@	00 JUN 27	179			
SSSVCS	0048A8	18,600	SSSVCS	00 JUN 27	179			Y
SSTIME	003A00	14,848	SSTIME	00 JUN 27	179			
SUBCSAMD	0034C0	13,504	SUBCSAMD	00 JUN 27	179			
SUBMITX	0007A0	1,952	SUBMITX	00 JUN 27	179			
SUBPCRMD	000800	2,048	SUBPCRMD	00 JUN 27	179			
SUBPERMD	000118	280	SUBPERMD	00 JUN 27	179			
SUBSYSI	002230	8,752	SUBSYSI	00 JUN 27	179			
SUBVECMD	003E90	16,016	SUBVECMD	00 JUN 27	179			
SUSI	000780	1,920	SUSI	00 JUN 27	179			
SVCTEST	000888	2,184	SVCTEST	00 JUN 27	179			
TABUTL	010610	67,088	XPXPXPXP	00 JUN 27	179			Y

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YD	ALIAS	OVLY	RENT
TSCMFN	007ED8	32,472	XPXPXPXP	00 JUN 27	179			
TSCNCP	006CE8	27,880	XPXPXPXP	00 JUN 27	179			
TSCOM	00B3E0	46,048	CTSCOM	00 JUN 27	179			
TSCOML	00B3E0	46,048	TSCOML	00 JUN 27	179	Y		
TSCOML2	019408	103,432	CTSCML2	00 JUN 27	179			
TSCOM3	00B0D0	45,264	TSCOM3A	00 JUN 27	179			Y
TSDB2	00B3E0	46,048	TSDB2	00 JUN 27	179	Y		
TSDB2L2	019408	103,432	CTSCML2	00 JUN 27	179	Y		
TSDB2XF	016780	92,032	TSDB2XF	00 JUN 27	179	Y		
TSEDA	00B3E0	46,048	TSEDA	00 JUN 27	179	Y		
TSEDAL2	019408	103,432	TSEDAL2	00 JUN 27	179	Y		
TSEDAXF	016780	92,032	CTSEDAXF	00 JUN 27	179			
TSFCFN	0083D8	33,752	XPXPXPXP	00 JUN 27	179			

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WIBFOC.S7009810.FOCLIB.LOAD
LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

SIZE SIZE CREATED

MEMBER	HEX	DEC	ENTRY	ON	YYDD	ALIAS	OVLY	RENT
-----	----	----	-----	-----	----	-----	----	----
TSGU	012238	74,296	TSGU@	00 JUN 27	179			
TSGU0	012238	74,296	TSGU0	00 JUN 27	179	Y		
TSHLFN	005E28	24,104	XPXPXPXP	00 JUN 27	179			
TSKILL	004C70	19,568	CTSKIL	00 JUN 27	179			
TS3GL	003E98	16,024	XPXPXPXP	00 JUN 27	179			Y
UFAAPI	006F10	28,432	XPXPXPXP	00 JUN 27	179			Y
UTL	02B1A8	176,552	XPXPXPXP	00 JUN 27	179			Y
VSAMX	024320	148,256	VSAMX@	00 JUN 27	179			Y
VVICSET	030C40	199,744	VVSET@	00 JUN 27	179			Y
VVISAM	0009C0	2,496	VVISAM	00 JUN 27	179			
VVSET	011FB8	73,656	VVSET@	00 JUN 27	179			Y
WEBGRP	00C9F8	51,704	WEBGRP@	00 JUN 27	179			
WFINIT	0296C0	169,664	XPXPXPXP	00 JUN 27	179			Y

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WIBFOC.S7009810.FOCLIB.LOAD
 LIST BY MEMBERS .. RUN ON 07/07/00 AT 15.01.56

MEMBER	SIZE HEX	SIZE DEC	ENTRY	CREATED ON	YYDD	ALIAS	OVLY	RENT
-----	----	----	-----	-----	----	-----	----	----
WPGEN	02A058	172,120	XPXPXPXP	00 JUN 27	179			
WPNT	043178	274,808	PMAIN	00 JUN 27	179			
WTINIT	02D1E0	184,800	XPXPXPXP	00 JUN 27	179			Y
XMI	008520	34,080	XMI	00 JUN 27	179			
XMIKIL	008AF0	35,568	XMIKIL	00 JUN 27	179			
XSBEQ	003AA0	15,008	XSCODE	00 JUN 27	179			Y
XVSET	009DE0	40,416	XVSET@	00 JUN 27	179			Y
XVSRV	008108	33,032	XVSRV@	00 JUN 27	179			Y
X2XBIO	002300	8,960	X2XBIO	00 JUN 27	179	Y		
X2XBSRC	002300	8,960	X2XBSRC	00 JUN 27	179	Y		
ZAPCNTL	000128	296	ZAPCNTL	00 JUN 27	179			

APPENDIX A

Subsystem Sample JCL and Zaps

Topics:

- SUBSYSNM: Changing the Subsystem Name
- SUBSYSCP: Copying SUBSYSI Into a Separate Library
- SUBSYSIJ: Running SUBSYSI
- SUBSYSIH: Starting the Subsystem and Initializing HiperBUDGET
- SUBSYSP: Sample Cataloged Procedure

The following members of FOCCTL.DATA contain sample JCL and zaps for use with the IBI Subsystem.

SUBSYSNM: Changing the Subsystem Name

Run the SUBSYSNM zap to change the default Subsystem name:

```
//*** Your JOB card
//*
/*-----*
/*
/* This zap may be applied to change the default subsystem name
/* used by the IBI Subsystem.
/*
/* If you have defined the IBI Subsystem in SYS1.PARMLIB(IEFSSNxx),
/* be sure to update the definition with the new subsystem name.
/*
/* As this job updates one of the members copied by SUBSYSCP,
/* SUBSYSCP must be run after this JOB.
/*
/* Affected products:
/*      SU, MSO, SmartMode, HiperFOCUS, IMS BMP
/*
/*-----*
/*
//ZAP      EXEC PGM=AMASPZAP
//SYSPRINT DD  SYSOUT=*
//SYSLIB   DD  DISP=SHR,DSN=prefix.FOCLIB.LOAD
//SYSIN    DD  *
NAME MVSDLL  SUBSYSN
REP 00 C9C2C9E2          <-- 'IBIS'
NAME SUBSYSI SUBSYSN
REP 00 C9C2C9E2          <-- 'IBIS'
/*
//
```

SUBSYSCP: Copying SUBSYSI Into a Separate Library

Use the SUBSYSCP JCL if you want to copy the IBI Subsystem modules from FOCLIB.LOAD to a secured library:

```

//*** Your JOB card
//*
//*-----*
//*
//* This job can be used to move the IBI Subsystem modules from
//* FOCLIB.LOAD to a secured library. The target library must be
//* APF-authorized.
//*
//* If the zap provided in SUBSYSNM has been run, ensure that this
//* job is re-run.
//*
//* Remove all members of SSLIB prior to running this.
//*
//* It is recommended that you delete the modules from FOCLIB.LOAD
//* after this job is run.
//*
//*-----*
//*
//COPY      EXEC PGM=IEBCOPY
//FOCLIB DD  DISP=SHR,DSN=prefix.FOCLIB.LOAD
//SSLIB DD  DISP=OLD,DSN=prefix.SUBSYS.LOAD
//SYSIN DD   *
COPYMOD INDD=FOCLIB,OUTDD=SSLIB
S M=(SUBSYSI,SUBCSAMD,SUBPCRMD,SUBPERMD,SUBVECMD)
/*
//

```

SUBSYSIJ: Running SUBSYSI

Use the SUBSYSIJ JCL to start and control the IBI Subsystem:

```
/**** Your JOB card
/**
/**-----*
/**
/** Sample JCL to run SUBSYSI, used for starting and controlling *
/** the IBI Subsystem. (Additional controls are available from *
/** the system console; refer to the appropriate product *
/** documentation for details.) To run SUBSYSI as a started task, *
/** refer to member SUBSYSP. *
/** *
/** SUBSYSI must be run from an APF-authorized library. *
/** *
/** Update the PARM field to select the desired operation. *
/** Valid parameters are: START, RESTART, REPLACE, STOP, REMOVE *
/** *
/**-----*
/**
/**SUBSYSI EXEC PGM=SUBSYSI,PARM=START
/**STEPLIB DD DISP=SHR,DSN=prefix.SUBSYS.LOAD
/**
```

SUBSYSIH: Starting the Subsystem and Initializing HiperBUDGET

Use the SUBSYSIH JCL to start the Subsystem and initialize HiperBUDGET:

```

//*** Your JOB card
//*
//*-----*
//*
//* Sample JCL for starting SUBSYSI and initializing HiperBUDGET.
//*
//* Refer to the product documentation for further information on
//* SUBSYSI and on HiperBUDGET.
//*
//* The sample SYSIN input sets no limit on any Hiper resources,
//* and then displays the current settings.
//*
//*-----*
//*
//SUBSYSI EXEC PGM=SUBSYSI,PARM=START
//STEPLIB DD DISP=SHR,DSN=prefix.SUBSYS.LOAD
//SYSIN DD *
SET MVSLIM=-1,SERVLIM=-1,TCBLIM=-1,FILELIM=-1
DISPLAY HIPERBUDGET
//

```

SUBSYSP: Sample Cataloged Procedure

The SUBSYSP JCL is a sample cataloged procedure for running the Subsystem as a started task:

```

//*-----*
//* SUBSYSP: Sample cataloged procedure for running SUBSYSI as a
//* started task. To run SUBSYSI as a batch job,
//* refer to member SUBSYSI.
//*
//*-----*
//*
//SUBSYSI PROC OPT=START
//*
//SUBSYSI EXEC PGM=SUBSYSI,PARM=&OPT
//STEPLIB DD DISP=SHR,DSN=prefix.SUBSYS.LOAD
//*
//*-----*

```

APPENDIX B

Subsystem Error Messages

Topics:

- SUBSYSI Error Messages

These SUBSYSI messages are written directly to the OS/390 system console by a WTO operation. Since they are not read from ERRORS.DATA, there is no national language support for SUBSYSI messages.

SUBSYSI Error Messages

SUBSYS001 UNABLE TO CREATE SUBSYSTEM

An error has been encountered while creating the subsystem. Contact your IBI support representative.

SUBSYS002 CREATED SUBSYSTEM NOT FOUND

The subsystem search has failed even though the subsystem has just been created. Contact your IBI support representative.

SUBSYS003 UNABLE TO LOAD MODULES TO CSA

Error during LOAD of modules to CSA. Refer to the accompanying CSVxxxx messages for further information.

SUBSYS004 INVALID PARAMETERS PASSED

An invalid parameter has been passed to SUBSYSI. Valid parameters are: START, RESTART, REPLACE, STOP, and REMOVE.

SUBSYS005 SUBSYSTEM XXXX NOT FOUND. UNABLE TO STOP

The specified subsystem cannot be located; the requested operation will not be performed.

SUBSYS006 SUBSYSTEM XXXX NOT FOUND. UNABLE TO REPLACE

The specified subsystem cannot be located; the requested operation will not be performed.

SUBSYS007 SUBSYSTEM XXXX NOT FOUND. UNABLE TO REMOVE

The specified subsystem cannot be located; the requested operation will not be performed.

SUBSYS008 SUBSYSTEM XXXX NOT FOUND. UNABLE TO INFO

The specified subsystem cannot be located; the requested operation will not be performed.

SUBSYS009 UNABLE TO ACTIVATE PC ROUTINE

A bad return code was received during activation of the PC routines. Contact your IBI support representative.

SUBSYS010 UNABLE TO RUN NON-AUTHORIZED

An attempt was made to run SUBSYSI from an unauthorized library. Copy SUBSYSI and the associated modules to an APF-authorized library and try again.

SUBSYS100 SUBSYSTEM XXXX SUCCESSFULLY CREATED

The subsystem control blocks have been created and linked to the system control blocks.

SUBSYS101 SUBSYSTEM XXXX SUCCESSFULLY INITIALIZED

The subsystem has been initialized and all control blocks have been filled in.

SUBSYS102 SUBSYSTEM XXXX DOES NOT EXIST. START MODE ASSUMED

SUBSYSI was called with 'RESTART', but it has not been initialized. 'START' will be assumed.

SUBSYS103 SUBSYSTEM XXXX ALREADY EXISTS. RESTART MODE ASSUMED

SUBSYSI was called with 'START' but it was already initialized. 'RESTART' will be assumed.

SUBSYS104 SUBSYSTEM XXXX ENVIRONMENT REPLACED

SUBSYSI was called with 'REPLACE' and the operation succeeded.

SUBSYS105 SUBSYSTEM XXXX STOPPED

The subsystem is logically stopped. The CSA modules are still loaded but are not active.

SUBSYS106 SUBSYSTEM XXXX INTERFACE REMOVED

The subsystem has been stopped, and modules have been removed from the CSA. The SSCT and the PC routine still exist, but are unused.

SUBSYS107 SUBSYSTEM XXXX COUNTER ERROR OCCURRED

The subsystem has been stopped, but one or more users are still using it. A 30-second wait to allow all activity to stop has not fixed this.

This message generally indicates that the subsystem was stopped while one or more IBI servers were still running. If this is not the case, contact your IBI support representative.

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