

FOCUS for Mainframe

CMS Installation Guide

Version 7.3

EDA, EDA/SQL, FIDEL, FOCCALC, FOCUS, FOCUS Fusion, FOCUS Vision, Hospital-Trac, Information Builders, the Information Builders logo, Parlay, PC/FOCUS, SmartMart, SmartMode, SNAPPack, TableTalk, WALDO, Web390, WebFOCUS and WorldMART are registered trademarks, and iWay and iWay Software are trademarks of Information Builders, Inc.

Due to the nature of this material, this document refers to numerous hardware and software products by their trademarks. In most, if not all cases, these designations are claimed as trademarks or registered trademarks by their respective companies. It is not this publisher's intent to use any of these names generically. The reader is therefore cautioned to investigate all claimed trademark rights before using any of these names other than to refer to the product described.

Copyright © 2003, by Information Builders, Inc. All rights reserved. This manual, or parts thereof, may not be reproduced in any form without the written permission of Information Builders, Inc.

Preface

This documentation describes how to install FOCUS® Version 7.3 in the VM/ESA® and z/VM™ operating environments. It is intended for the FOCUS VM user support group.

How This Manual Is Organized

This manual includes the following chapters:

Chapter/Appendix		Contents
1	Features and Components	Describes the installation options and the CMS configurations required for the installation and execution of FOCUS.
2	Basic Installation	Provides step-by-step installation procedures.
3	Customizing FOCUS	Describes how to install the FOCUS Menu, the FOCUS Toolkit, StyleSheets, and National Language messages
4	User Exits	Describes the Usage Accounting Exit and how to install an external password security system
5	Interface Installation	Describes how to install the FOCCALC® Graphics Facility and discusses considerations for running the ICU Interface
6	Maintenance	Describes FOCUS maintenance after installation
A	Common Mistakes During FOCUS Installation	Lists possible problems, their causes, and actions to take to resolve the problems.
B	User Written Subroutines	Describes installation issues for user-written subroutines
C	Language Environment Support	Describes IBM's Dynamic Language Environment (LE) which enables you to use a common run-time environment for all LE-supported high-level languages (HLLs)

Documentation Conventions

The following conventions apply throughout this manual:

Convention	Description
<code>THIS TYPEFACE</code> or <code>this typeface</code>	Denotes syntax that you must enter exactly as shown.
<code>this typeface</code>	Represents a placeholder (or variable) in syntax for a value that you or the system must supply.
<code>underscore</code>	Indicates a default setting.
<code>this typeface</code>	Represents a placeholder (or variable), a cross-reference, or an important term. It may also indicate a button, menu item, or dialog box option you can click or select.
this typeface	Highlights a file name or command.
Key + Key	Indicates keys that you must press simultaneously.
{ }	Indicates two or three choices; type one of them, not the braces.
[]	Indicates a group of optional parameters. None are required, but you may select one of them. Type only the parameter in the brackets, not the brackets.
	Separates mutually exclusive choices in syntax. Type one of them, not the symbol.
...	Indicates that you can enter a parameter multiple times. Type only the parameter, not the ellipsis points (...).
.	Indicates that there are (or could be) intervening or additional commands.

Related Publications

To view a current listing of our publications and to place an order, visit our World Wide Web site, <http://www.informationbuilders.com>. You can also contact the Publications Order Department at (800) 969-4636.

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 8:00 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 (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, be ready to provide the following information when you call:

- Your six-digit site code (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 FILEDEF
- 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 data sources, have you tried executing a query containing just the code to access the data source?
- 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?

User Feedback

In an effort to produce effective documentation, the Documentation Services staff welcomes your opinions 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 Documentation Feedback form on our Web site, <http://www.informationbuilders.com>.

Thank you, in advance, for your comments.

Information Builders Consulting and Training

Interested in training? Information Builders Education Department offers a wide variety of training courses for this and other Information Builders products.

For information on course descriptions, locations, and dates, or to register for classes, visit our World Wide Web site (<http://www.informationbuilders.com>) or call (800) 969-INFO to speak to an Education Representative.

Contents

1. Features and Components	1-1
Operating System	1-2
Installed Features	1-2
The Basic FOCUS System	1-3
High-Resolution Graphics on IBM 3270 Type Terminals	1-3
The FOCUS/ICU Interface	1-3
User Exits	1-3
Virtual Machine Size Requirements	1-4
DASD Requirements	1-4
The FOCUS Maintenance Disk	1-5
The FOCUS Production Disk	1-5
Shared Storage	1-5
External Sort Considerations	1-6
2. Basic Installation	2-1
Define FOCUS Production and Maintenance Disks	2-2
Unload the FOCUS Distribution Cartridge	2-2
Modify the CMS EXEC That Generates FOCUS	2-3
Install the FOCUS Site Code	2-4
Select FOCUS Default Startup Options	2-5
Selecting Default Startup Options Using FOCPARM ERRORS	2-5
Assembling Default Startup Options Into FOCUS	2-5
Generate FOCUS	2-7
3. Customizing FOCUS	3-1
Changing FOCUS Limits	3-2
Limiting the Number of Active FOCUS Databases Allowed	3-2
Setting the Maximum Number of Cache Pages	3-4
Field Buffer Size	3-4
Installing the FOCUS Menu	3-4
Installing the FOCUS Toolkit	3-5
Installing HiperFOCUS	3-8
Installing FOCUS StyleSheets	3-9

Configuring VM FOCUS for NLS Services	3-9
Graphic Character Representation	3-9
Character Mapping	3-9
DBCS Support	3-9
Code Page Handling	3-10
Customizing NLS	3-10
Configuration Steps for NLS	3-10
Step 1. How to Identify the FOCUS Code Page	3-11
Step 2. How to Edit the CPCODEPG EDANLS File	3-13
Step 3. How to Execute the TSGU EXEC	3-13
Step 4. How to Configure Default NLS Characteristics	3-14
Step 5. How to Configure Sort Sequences	3-16
Step 6. How to Configure Monocasing	3-17
NLSCFG ERRORS File	3-17
Configuration Examples	3-18
4. User Exits	4-1
Usage Accounting Exit: UACCT	4-2
UACCT Calling Sequence	4-2
Usage Statistics Calls (CALLTYPE=0)	4-4
DBA Violation Calls (CALLTYPE=1)	4-6
Start of Processing Calls (CALLTYPE=2)	4-7
External Security Violations	4-7
Installing the Usage Accounting Exit (UACCT)	4-7
Installing an External Password Security System	4-8
FOCUSID Calling Sequence	4-8
FOCUSID Installation	4-10
5. Interface Installation	5-1
Installing the FOCCALC Graphics Facility	5-2
Considerations for Running the ICU Interface	5-2
6. Maintenance	6-1
FOCUS Release Numbering	6-2
The Release Signature	6-2
FOCUS Release Information	6-2
Corrections to Reported Problems	6-3
The Online Release Information	6-3
Release Cartridges	6-4
Service Packs	6-4
How to Apply an Individual PTF	6-4
A. Common Mistakes During FOCUS Installation	A-1
Possible Problem List	A-2

B. User Written Subroutines	B-1
Generating LOADLIB Members: The GENSUBLL EXEC	B-2
Calling HLI Programs as Subroutines	B-2
User Exit Availability	B-2
C. Language Environment Support	C-1
Language Environment Support	C-2
Improving VM (OS-Bridge) Performance	C-2
How to Access SCEERUN	C-2
LE Preinitialization Facilities	C-2

Contents

CHAPTER 1

Features and Components

Topics:

- Operating System
- Installed Features
- Virtual Machine Size Requirements
- DASD Requirements
- Shared Storage
- External Sort Considerations

This chapter describes the installation options and the CMS configurations required for the installation and execution of FOCUS. The actual installation steps are detailed in Chapter 2, *Basic Installation*.

Operating System

The CMS version of FOCUS 7.3 runs on any IBM or plug-compatible S/390 or z Series processors running the VM/ESA or z/VM operating system. All versions of the operating system that are supported by IBM are compatible with FOCUS.

Installed Features

In order to make the installation as easy as possible, all but one or two of the FOCUS features that you ordered are delivered fully enabled. This manual covers the installation of all the available options and configurations of FOCUS. If you obtain additional FOCUS products, you will receive installation manuals for them.

This manual covers the installation of the following components:

- The basic FOCUS system.
- Changes to FOCUS defaults.
- High-resolution graphics on IBM 3270 type terminals, along with the ICU Interface.
- User exits.
- Interface installation.

The major data adapters and products whose installation is covered in separate manuals are:

ADABAS®	ORACLE®
FOCCALC	DB2 For VM™
TERADATA®	XMI/DATACOM®

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

The Basic FOCUS System

From an installation standpoint, the basic FOCUS system consists of many FOCUS features installed in several steps. The basic system contains everything except graphics support for IBM® 3270 type terminals and interfaces to complex data sources created by other DBMS systems. It contains all the FOCUS data management functions, including FIDEL (the FOCUS full screen data entry facility), and the entire FOCUS query language and report writer. The report writer works with FOCUS data sources, and also with sequential, ISAM, and VSAM files.

The basic system is a prerequisite for the use of all other FOCUS features.

High-Resolution Graphics on IBM 3270 Type Terminals

FOCUS high-resolution graphics are supported on a variety of ASCII devices, in asynchronous mode, and also on graphics terminals such as the IBM 3270 series. For the supported ASCII terminals, FOCUS graphics are enabled in all cases, without any action on your part.

For 3270 type terminals, FOCUS requires the assistance of the IBM GDDM graphics support product. If GDDM is installed at your site and you want to include 3270 type graphics support in FOCUS, make sure that the ADMNLIB TXTLIB, which contains the GDDM code, is accessible during the subsequent execution of the exec that generates FOCUS In that case no further action on your part is required.

The FOCUS/ICU Interface

FOCUS can be used to generate graphs in conjunction with IBM's Interactive Chart Utility (ICU). The normal FOCUS GRAPH syntax is used and all of its capabilities are available. The ICU Interface can either place the user directly in the ICU Environment or can save the graph format and data for subsequent ICU processing. The installation requirements are the same as the IBM 3270 type graphics option. See Chapter 5, *Interface Installation*, for execution time requirements.

User Exits

Two user exits can be installed with FOCUS:

- The Usage Accounting Exit.
- The FOCUS Password User Exit.

The Usage Accounting Exit (UACCT) can be used to capture FOCUS usage statistics, such as the number of records retrieved and lines printed, aggregated at the FOCUS command level rather than at the user ID level. The Usage Accounting Exit is alerted to log attempted violations of FOCUS security, and it can also be used to limit access to FOCUS procedures and files. Detailed information on the Usage Accounting Exit is available in Chapter 4, *User Exits*.

The FOCUS Password User Exit (FOCUSID) enables an external security system to set passwords automatically. With this exit, users need not know the password for an application. Detailed information on the FOCUS Password User Exit is available in Chapter 4, *User Exits*.

The distributed version of FOCUS contains dummy routines that resolve the exit calls, and if you are not interested in these exits you simply do nothing. They are independent of one another and they can always be added later on.

Virtual Machine Size Requirements

The virtual machine size required to run FOCUS ranges from 8-14 Meg depending on the combination of features you install.

The smaller configuration is adequate for dealing with simple files and modest maintenance procedures. In order to run the most extreme production level applications it is recommended that you use 14 Meg.

If you will also be using IBM 3270 type terminals for high-resolution FOCUS graphics, you will need additional memory, unless the GDDM graphics support program is implemented as a Saved Segment (NSS). If it is in an NSS, the use of GDDM will not increase the virtual machine size requirements in any significant way.

CMS resides between 14 and 16 Meg and grabs any storage that you define until you reach at least 18 Meg. Because of this, in order to truly increase the amount of storage that you are using you must set it to at least 20 Meg.

If you are accessing a non-FOCUS data source, for example, DB2 for VM, you may also need additional memory.

Maintain application developers who use the FOCUS Painter to create Winforms may also need additional memory.

DASD Requirements

You need two CMS minidisks or SFS directories in order to contain the FOCUS product. We refer to them as the FOCUS maintenance and production libraries. If you use minidisks they should be formatted with a blocksize of 4096 bytes. If you use SFS directories the FOCUS production directory should be a DIRCONTROL directory.

The system programmer must include a Machine XC statement in each user's directory entry if they will be accessing FOCUS from a SFS directory.

The FOCUS Maintenance Disk

The maintenance disk is the CMS minidisk (or SFS directory) onto which you unload the FOCUS distribution cartridge. Initially this disk or directory should be empty and you should not store any other files on it.

You must have different maintenance disks or directories for different FOCUS releases. This is a critical requirement. You may generate a defective copy of FOCUS if you load a maintenance cartridge for one release onto the maintenance disk of another release. When you phase out an older FOCUS release and want to reuse its maintenance disk or directory for the next release, you must erase all the files on it. A simple way to do that is to use the CMS FORMAT command: it erases all the files on the disk and at the same time assigns a CMS label to it. Although you can label this disk any way you like, we suggest a name such as FM n n n , where n n n is the FOCUS release signature. For example, FM7301 is a good descriptive name for the maintenance disk for FOCUS 7.3.

The maintenance disk or directory should not be accessed by FOCUS users. This makes it possible to do the greater part of FOCUS maintenance and new release testing while end users are still using the current production release.

The FOCUS Production Disk

After installation, the production CMS minidisk or SFS directory contains an executable copy of FOCUS. This is the disk that all FOCUS users must access when they invoke FOCUS. The disk contains all files necessary for execution of the FOCUS version that you have installed. Most of the files on this disk are created by the CMS EXECs that create the installed version of FOCUS, for example, FOCUS load modules, and the text of FOCUS error messages. You can add your own locally developed files, such as text of user-written subroutines, or CMS EXECs of interest to all FOCUS users. The set of files created by the FOCUS installation process on the production disk can vary from release to release.

As with the maintenance disk, the CMS label of the production disk is immaterial to FOCUS, but we suggest FOCUS as the label of the production disk of the current version of FOCUS to which all users should be linked by default. If you have more than one version of FOCUS installed, we suggest a descriptive label such as FC n n n for the FOCUS production disk. Thus FC7301 is a good label for the production disk of FOCUS Version 7.3.

Shared Storage

The NSSs (Named Saved Segments) are dynamically defined and no special preparation is necessary. Shared storage conserves system resources such as real storage, paging devices, and paging. Because many virtual machines use the same FOCUS modules, only one copy of the modules, rather than many, must be paged in and out of real storage. Thus, the system uses real storage more efficiently, there is less need for space on paging devices, there is less contention for paging and users can define smaller virtual memory sizes.

The IBIDFSEG EXEC is used to define the TRW, DLL and HLI NSSs. Chapter 2, *Basic Installation*, details the use of this EXEC.

External Sort Considerations

In CMS, you can use one of the following external sort products with any TABLE, EMR, MATCH or GRAPH report request: DFSORT, Syncsort, and VMSORT. The sort must be 31-bit addressable. FOCUS always respects your sort product's installation parameters.

We recommend that you issue a GLOBAL TXTLIB command to identify the location of the sort software. If FOCUS cannot locate the sort it issues a GLOBAL TXTLIB SORTLIB command. If FOCUS still cannot locate the sort software, it terminates with the following error message:

```
(FOC909) CRITICAL ERROR IN EXTERNAL SORT. RETURN CODE IS: 16
```

You also get a CMS error message if the system sort is DFSORT/CMS and your temporary disk is not large enough for your sort requirements. With DFSORT/CMS, the maximum temporary disk obtainable is 16 cylinders. If this is not large enough for your sort requests, you may need to modify the DUFMAC MACRO to add space for sort work files. Consult the *IBM DFSORT/CMS* manual for your release of DFSORT.

CHAPTER 2

Basic Installation

Topics:

- Define FOCUS Production and Maintenance Disks
- Unload the FOCUS Distribution Cartridge
- Modify the CMS EXEC That Generates FOCUS
- Install the FOCUS Site Code
- Select FOCUS Default Startup Options
- Generate FOCUS

This chapter describes the installation procedures step by step, and assumes that you have already read Chapter 1, *Features and Components*.

The steps for installing a new release of FOCUS are:

- 1.** Define FOCUS Production and Maintenance Disks.
- 2.** Unload the FOCUS Distribution Cartridge.
- 3.** Modify the CMS EXEC That Generates FOCUS.
- 4.** Install the FOCUS Site Code.
- 5.** Select FOCUS Default Startup Options.
- 6.** Generate FOCUS.
- 7.** Test the generated version of FOCUS.
- 8.** Move FOCUS to the production disk.
- 9.** Test FOCUS on the production disk.
- 10.** Link user IDs to the production disk.

If you are installing the FOCUS Menu, the FOCUS ToolKit, StyleSheets, or translated FOCUS error messages (NLS), see Chapter 3, *Customizing FOCUS*, for installation instructions.

Define FOCUS Production and Maintenance Disks

The total disk space requirements for the various versions of FOCUS are summarized in the following table:

Maintenance disk, all FOCUS versions	56,000 4K blocks (325 cylinders)
Production disk	16,000 4K blocks (100 cylinders)

For SFS directories, allow the number of 4K blocks specified above plus 20 percent.

For National Language support (NLS), the maintenance requirements increase by 1000 4K blocks for each language on the cartridge. Production disk requirements increase by 1000 4K blocks for each language used.

For FBA disks that are allocated in 512-byte blocks, take the number above and multiply by 8. A 512 blocksize is not recommended.

For CKD devices, allocate the appropriate number of cylinders to give the required amount of space. The following table lists common CKD devices from IBM and the number of 4K blocks that fit on a cylinder.

Device	4K Blocks/Cylinder
3390-3	180
9345	150

The production and maintenance disks should be two distinct CMS minidisks or SFS directories and must have no files on them. If you define new CMS disks for these functions they must be formatted by the CMS FORMAT command. The sizes above are calculated for disks formatted in 4K block sizes.

The CMS label is immaterial to FOCUS. Refer to Chapter 1, *Features and Components*, for suggested disk labels.

Unload the FOCUS Distribution Cartridge

The FOCUS distribution cartridge is an unlabeled 3480 cartridge created by the VMFPLC2 command. This step moves the contents of the cartridge onto the maintenance disk.

To unload the cartridge:

- Mount the cartridge on an IBM 3480 drive as virtual 181.
- Access the maintenance disk as your A disk, in READ/WRITE mode.

- Issue the VMFPLC2 command to unload the cartridge to unload all files onto the maintenance disk:

```
VMFPLC2 LOAD * * A
```

If you are installing FOCCALC, see Chapter 5, *Interface Installation*.

If you are installing National Language messages, see Chapter 3, *Customizing FOCUS*.

If you are installing other features, the current installation instructions should be included with your cartridge, and are available from your representative.

- When the cartridge is unloaded, detach virtual 181.

Modify the CMS EXEC That Generates FOCUS

The IBIDFSEG EXEC defines the necessary NSSs to VM. By default, the NSSs are called TRWSEGXA, HLISEGXA and DLLSEGXA.

The shared part of each NSS is defined by the SR attribute of the DEFSEG command, and the non-shared part is defined by one or more EW attributes.

These NSSs must reside above the 16M line and not overlay any other NSS used during a FOCUS session or the running of an HLI program. You may edit the following lines in the IBIDFSEG EXEC to change the values of the variables that identify the segment names, as appropriate for your site:

```
trwname = 'trwsegname'
hliname = 'hlisegname'
dllname = 'dllsegname'
```

where:

trwsegname

Is the name of the TRW NSS.

hlisegname

Is the name of the HLI NSS.

dllsegname

Is the name of the DLL NSS.

Install the FOCUS Site Code

You may also change the NSS addresses by editing the following lines:

```
trwaddr = 'trwsegaddr'  
hliaddr = 'hlisegaddr'  
dlladdr = 'dllsegaddr'
```

where:

trwsegaddr

Is the address of the TRW NSS.

hlisegaddr

Is the address of the HLI NSS.

dllsegaddr

Is the address of the DLL NSS.

Note: If you do change the addresses, you must make sure not to change the sizes.

Do not change any other lines in IBIDFSEG EXEC.

Install the FOCUS Site Code

A unique identifying site code is assigned to each site where FOCUS is installed. This code, of the form *nnnn.nn*, is displayed in the FOCUS release signature whenever FOCUS is first entered, and also by the ? RELEASE command. You need to know your site code whenever you call with any question regarding FOCUS service or maintenance. It is the key to all our service and maintenance records.

The site code must be embedded into FOCUS itself, at installation time.

The site code of your installation is shown on the packing list that accompanied your installation package. If you do not know your site code, you can always obtain it by calling Customer Support Services in New York, at (800) 736-6130.

Using the CMS editor, create a new file on your FOCUS maintenance disk named FOC SITE CODE. The record format must be F and the record length must be 80.

Enter your site code as the first seven characters of the first and only record of this file. Do not enter any other characters on the record.

The site code is always of the form *nnnn.nn* and must include the period.

Select FOCUS Default Startup Options

Some installations may wish to change the startup options for FOCUS. FOCUS provides two means for implementing site-wide configuration parameters.

Selecting Default Startup Options Using FOCPARM ERRORS

FOCPARM ERRORS is executed before each user's PROFILE FOCEXEC, and may only include FOCUS SET commands. FOCUS SET commands are documented in the *Developing Applications* manual.

The sample FOCPARM ERRORS provided on the FOCUS cartridge is shown below:

```

-----*
-* 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 FIELDNAME=NEW
SET QUALCH= .
SET QUALTITL=OFF
SET HOLDSTAT=OFF
SET HOTMENU=OFF
SET IMMEDIATE=OFF
SET AUTOPATH=ON
SET AUTOINDEX=ON

```

Assembling Default Startup Options Into FOCUS

An assembly language file called FOCPARM has also been provided, which enables sites to change startup default options, including some that may not be specified in SET commands.

This file contains instructions for changing the following 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).
- Maximum number of data exceptions (DELIMIT). If you do not change this value, 10 data exceptions will be allowed.

Select FOCUS Default Startup Options

The options may be changed by replacing old options with new ones, and then assembling and linking the options into FOCUS. The default values in the sample FOCPARM provided with FOCUS follow. The value 1 enables an option; the value 0 disables an option:

```
FOCPARM  CSECT ,
BANNER   DC    F'1'                Indicates display banner
CLRSCRN  DC    F'1'                Clear screen at startup
*
* National Language Support defaults
*
LANG      DC    F'1'                Language Number (INTLCM)
JTERM    DC    CL8'IBM3270'        J-Terminal (INTLCM)
*
* DELIMIT defines the number of data exceptions (DataExceptionLIMIT)
* FOCUS will handle before termination.
* Set DELIMIT to ZERO (F'0') for an unlimited number of exceptions.
* When the limit is reach the following message will be issued:
* (FOC204) TOO MANY INTERRUPTS. RUN TERMINATED
* and FOCUS will terminate
*
DELIMIT  DC    F'10'               allow 10 trapped abends
         DC    F'0'               Available
         DC    F'0'               Available
*
PROFOPT  DC    F'1'               NOPROF / PROFILE 0 = disallow
*                                       PROFILE and NOPROF options on
FOCUS
*                                       entry
*                                       1=allow user to specify NOPROF
CDN      DC    F'0'               cdn setting 0=off 1=on
XDBSC    DC    CL4'@'             character for ext. db security
PCHOLD   DC    F'1'               pchold flag
TTFEX    DC    CL4'PDS'           dsorg of tabltalk focexec
DATTIM   DC    CL4'EDA'           date/time format
*
* DO NOT ADD, DELETE, OR CHANGE ORDER OF THE CURRENT OPTIONS
* ADD NEW OPTIONS AT THE END OF THE COMMON
*
         DC    (256-(FOCPARM-*))X'00' pad to 256 bytes
```

Note: Since each installation of FOCUS generates its own version of the FOCPARM options, the procedures outlined below must be performed each time a new release of FOCUS is installed.

- Edit the file FOCPARM ASSEMBLE (using XEDIT or your system's equivalent), to revise the options as needed.
- After making the change, file FOCPARM back onto the maintenance disk.

- Assemble the file FOCPARM ASSEMBLE with the following command, ensuring that the resulting TEXT file is located on the maintenance disk:

```
ASSEMBLE FOCPARM
```

The new version of FOCPARM ASSEMBLE must precede the old version in the CMS search order.

Generate FOCUS

This step creates a core of FOCUS load modules on the production disk with the majority of code in the FOCUS NSS defined in *Modify the CMS EXEC That Generates FOCUS* on page 2-3. It also creates your FOCUS site code.

Before you execute this step you should know:

- Whether or not you need graphics support for 3270-type graphics terminals.
- If user exits will be installed.

You need to log on to a Class E virtual machine to generate FOCUS. You cannot create FOCUS from a general user class G virtual machine.

1. Spool the console for documentation purposes.

```
CP SPOOL CONSOLE START TERM TO *
```

2. Define storage.

Use the CP DEFINE STORAGE command to set the virtual machine size to at least 5 megabytes higher than the ending address of the highest of the three segments. If you have not changes the default addresses, use CP DEFINE STORAGE 125M.

3. Set Machine.

```
SET MACHINE XC
```

Note: 370 mode is not supported.

4. IPL CMS.

```
IPL CMS PARM AUTOCR
```

5. Release disks.

Release all unused CMS minidisks. This list includes all minidisks that are not required for the installation of FOCUS. The FOCUS maintenance disk and the CMS system disks are required. The maintenance disk must be accessed as A, in READ/WRITE mode. The CMS system disks will most likely be 190 and 19E, accessed as S and Y/S respectively.

6. Locate the ADMNLIB TXTLIB for GDDM support (optional).

If you are not including graphics support for IBM 3270 type terminals or the ICU Interface, which require GDDM, proceed to Step 7.

If you are including graphics support, verify the accessibility of the required GDDM library by issuing the CMS command:

```
LISTFILE ADMNLIB TXTLIB *
```

If you cannot locate this file on the currently accessed disks, you must determine where it is and explicitly access the disk on which it is found. If you fail to do this, the next step will create FOCUS without graphics support for IBM 3270 type terminals.

See Chapter 5, *Interface Installation*, for considerations for running the ICU Interface.

7. Install user exits and change FOCUS limits (optional).

If you are not including user exits or changing FOCUS limits, proceed to Step 8.

If you are including any user exits, the disk containing the compiled programs must be accessed. See Chapter 4, *User Exits*, for additional information.

If you are changing FOCUS limits, IBIDFSEG must be edited and assembled.

8. Execute GENFS.

The GENFS EXEC on the maintenance disk generates the FOCUS NSS and other files needed by FOCUS.

Note: You must have edited IBIDFSEG EXEC on the maintenance disk (A). See *Modify the CMS EXEC That Generates FOCUS* on page 2-3 for more information.

9. Invoke the GENFS EXEC:

```
EXEC GENFS
```

The GENFS EXEC writes messages to the terminal. If you receive any CMS error messages during this step, call the Customer Support Services in New York, at (800) 736-6130, or your local FOCUS representative.

10. Close the terminal console spool.

```
CP SPOOL CONSOLE CLOSE
```

This causes the terminal console input and output log to be spooled to your READER. Save this output for your own documentation and have it on hand if you call the Customer Support Services in New York or your local FOCUS representative regarding any installation problems.

11. Test the generated version of FOCUS.

This step tests the version of FOCUS residing on the maintenance disk in the smallest virtual machine on which it can run.

- Define the minimum operational virtual machine (see Chapter 1, *Features and Components*).
- IPL CMS.
- Release all CMS disks except the production disk, the maintenance disk and the CMS system disks. The maintenance disk must be accessed as A, in READ/WRITE mode.

12. Enter FOCUS.

Enter FOCUS by executing the CMS EXEC named FOCUS:

```
EXEC FOCUS
```

FOCUS is always entered using this CMS EXEC, which is created by the GENFS EXEC, which inserts your FOCUS segment name. When FOCUS is entered it displays the release banner. You should see a single caret (>).

13. Test the terminal I/O.

Press Enter without typing anything else, not even a blank. The response you should receive is simply the word FOCUS.

14. Execute the FOCUS test procedure.

Issue the following command:

```
EXEC CARTEST
```

This test FOCEXEC runs through the major test areas and prints reassuring messages if all is well. Use Enter in full-screen mode and CLEAR to page through the test. The end of this short test is signaled by the message:

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

You can return to the CMS command level by issuing the FOCUS command FIN when you receive the above message.

15. Read 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:

```
EXEC READMEF
```

This FOCEXEC allows you to choose to see a list of PTFs applied, Installation information, and New Features.

16. Move FOCUS to the production disk.

This step moves all the components required for FOCUS execution from the maintenance disk to the production disk. If any FOCUS users are linked to the production disk, you must wait until they all log off or detach it.

- Access the maintenance disk as A.
- Access the production disk as C, in READ/WRITE mode.
- Release all other CMS disks, except for the system disks.
- Copy FOCUS and the executable FOCUS components. Execute the COPYFS EXEC on the FOCUS maintenance disk:

`EXEC COPYFS`

If you wish to install the FOCUS Menu, FOCUS ToolKit, StyleSheets, or National Language messages, see the instructions in Chapter 3, *Customizing FOCUS*.

17. Test FOCUS on the production disk.

You can test FOCUS on the production disk as follows:

- Define the virtual machine size as in the first bullet in Step 10.
- IPL CMS.
- Access two cylinders of temporary storage as A, in READ/WRITE mode.
- Access the production disk as B/B, which makes it read only.
- Release all other disks except the CMS system disks.
- Repeat the instructions in Step 10 through 13.

18. Link user IDs to the production disk

End users must access the FOCUS production disk in order to execute FOCUS. Recall that the production disk contains executable FOCUS modules, files of error messages, useful FOCEXECs, and also the CMS EXEC named FOCUS, through which FOCUS must be entered.

The link and access to this disk are routine CP/CMS functions and FOCUS has no special requirements in this area, but you should make it easy and transparent to your users. The link must be READ-only and it should not require a READ password.

The required CP LINK command can be placed in each user's VM directory, in which case it becomes effective immediately after the logon, or it can be issued from each user's PROFILE EXEC. In either of these two cases the PROFILE EXEC should also issue the associated CMS ACCESS command.

If you want to give users access to several FOCUS releases, use the method outlined above to access the default release, and create special EXECs on the CMS S or Y disks to access all other releases. For example, you can use the following sample if you do not already have a directory accessed as F:

```

/* Sample exec to access FOCUS as "F" disk.                               */
/* This sample assumes FOCUS 70 is defined on the FOCUS70 191 and       */
/* FOCUS 72 is defined on the FOCUS72 191 mdisk.                       */
/* The default version will be FOCUS 70 and be accessed as "F".       */
/* Syntax:                                                             */
/* EXEC XFOCUS some-focus-options / 70      to link to the 70 version */
/* EXEC XFOCUS some-focus-options / 72      to link to the 72 version */

Address 'COMMAND'
Trace 'N'

Arg parms '/' version .

If version = ' '                               /* default version of FOCUS */
Then version = '70'

Select
When version = '70'
Then focmdisk = 'FOCUS70 191'                 /* userid and mdisk */
When version = '72'
Then focmdisk = 'FOCUS72 191'
Otherwise
Do
Say "Version" version "is unknown."          /* invalid version */
Exit 28
End
End /* select */

'PIPE COMMAND QUERY ACCESSED F | DROP 1 | VAR DISKF'
Parse Value diskf With . . . mdaddr direntry .

'EXEC VMLINK' focmdisk '<* F> ( NOTYPE'

'EXEC FOCUS' parms
exitrc = rc

If Left(mdaddr,3) = 'DIR'
Then 'PIPE COMMAND ACCESS' direntry 'F | HOLE'
Else 'PIPE COMMAND ACCESS' mdaddr 'F | HOLE'

Exit exitrc

```

Generate FOCUS

CHAPTER 3

Customizing FOCUS

Topics:

- Changing FOCUS Limits
- Installing the FOCUS Menu
- Installing the FOCUS Toolkit
- Installing HiperFOCUS
- Installing FOCUS StyleSheets
- Configuring VM FOCUS for NLS Services
- NLSCFG ERRORS File

This chapter describes how to alter FOCUS limits. It also describes how to install the FOCUS Menu, the FOCUS Toolkit, StyleSheets, and how to configure VM FOCUS for NLS services.

Changing FOCUS Limits

FOCUS has settings that you may change to suit your site's needs.

Limiting the Number of Active FOCUS Databases Allowed

The default maximum number of FOCUS databases that can be active at one time is 255 files.

An active file is defined as a file that appears in a USE command or a file that is referenced by a FOCUS command such as MODIFY FILE *fn*. All files mentioned in the USE command are added to the current list of files. These files remain in the list until a subsequent USE either replaces them or clears them.

Files not previously referenced in a USE command are added to the list if they appear in the following FOCUS commands:

DEFINE	MATCH	TABLEF
FSCAN	MODIFY	? FDT
GRAPH	REBUILD	? FILE
HOLD FORMAT FOCUS	SCAN	
JOIN	TABLE	

Files that are referenced in the FOCUS commands, but not in a USE command, successively replace each other in the file table. This allows you to execute FOCUS commands against many more files than the installed limit.

The following files also count as open active files: the logical file created by the COMBINE command, files referenced by LOCATION segments, cross-reference files, and files mentioned in the MODIFY FIND and LOOKUP functions.

FOCSTACK counts as an open file when MODIFY is executed. In local mode, FOCSORT is counted toward the limit. In SU mode, both FOCSORT and FOCUSU are active files.

Reference Active Files on the FOCUS Database Server

In SU mode, the FOCUS Database Server has its own file table that counts the active files. If the maximum number of active files allowed is exceeded, the SU session terminates. This can happen if multiple users each request different files on the server.

Files are activated on the server when a source machine issues a FOCUS command against a file on the server. A file is counted only once in the file table if more than one user requests the same file on the server.

A USE command issued by a source machine against a file on the server does not activate the file in the server's file table, but it does activate the file in the user's file table. If an individual user references more than the maximum number of files allowed, an error message appears only for that user and SU processing is not affected.

Reference Error Messages for Number of Active Files

(FOC297) THE NUMBER OF FILES EXCEEDS MAXIMUM:

The number of files provided in the FOCUS 'USE' command exceeds the current maximum allowed (usually 255). If the file has dynamically loaded sections (LOCATION or CRFILE) these must also be counted. However, files mentioned in a USE...LOCAL statement are not counted.

Occurs when a FOCUS user exceeds the limit of active files via a USE command. The user can reduce the number of active files with another USE command or a USE CLEAR command.

(FOC494) FOCUS INSTALLATION ERROR

A FOCUS installation option was incorrectly installed, or an attempt was made to execute an unlicensed copy of FOCUS in VM/PC. Contact your FOCUS representative or your company FOCUS coordinator.

This message appears when you attempt to execute FOCUS and the option to increase the number of active files is installed incorrectly. This is most likely due to incorrect editing of the files.

(FOC683) TOO MANY DATABASES ARE IN USE. FOCUS SESSION TERMINATED

FOCUS has a default limit of 255 databases that can be in use at one time. One database USE entry is created for each file mentioned in a USE command and one for each FOCUS or XMI file accessed. A file has been opened that exceeds the limit.

Occurs if the file table is full and the user activates a file in a way other than a USE command. This message is followed by an exit from FOCUS.

Setting the Maximum Number of Cache Pages

FOCUS sites may limit the maximum number of cache pages allowed per FOCUS session. The limit may be set during FOCUS installation to a value between 3 and 524288 pages (the hardware maximum), where each cache page is 4096 bytes in length. The default limit is 524288 pages. In CMS cache is limited by your virtual machine size.

An individual user or batch job may specify cache pages up to one less than the site-selected maximum with the SET CACHE command:

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

where:

0

Allocates no space to cache; this is the default. 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 524287, or one less than the site-selected maximum that was specified during installation.

In normal use, the number of pages requested by users should be far less than the hardware maximum; otherwise the paging subsystem may be unfavorably affected.

Field 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 not be changed.

Installing the FOCUS Menu

The FOCUS Menu is a convenient way to access FOCUS facilities using windows. A few installation steps are required to enable the menu.

1. Access the FOCUS maintenance disk as A and the FOCUS production disk R/W as C.
2. Execute the COPYSHL EXEC:

```
EXEC COPYSHL
```

3. To enable the FOCUS Menu, edit the file SHELPROF FOCEXEC. This file resides on the production disk, but it may be located on any disk.

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:

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

4. Test the FOCUS Menu by entering FOCUS by executing the CMS EXEC named FOCUS. The FOCUS Menu will display:

The cursor should be positioned next to the first option on the menu, *Next*.

You can return to the CMS command level by pressing PF3 to go to the Quit Menu.

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

5. Continue the CMS FOCUS installation with Chapter 2, *Basic Installation* beginning with *Define FOCUS Production and Maintenance Disks* on page 2-2.

Installing the FOCUS Toolkit

The FOCUS ToolKit is a convenient way to access FOCUS facilities using windows. A few installation steps are required to enable the menu.

1. Access the FOCUS maintenance disk as A and the FOCUS production disk R/W as C.
2. Execute the COPYISH EXEC:

```
EXEC COPYISH
```

3. Customize the Toolkit with site-specific information.

To prepare the background window for the Toolkit, you will be asked to provide the company name, a support center phone number, the installation date, the FOCUS site code, a default printer destination, and a list of optional printer destinations. The company information will be displayed on the background of the Toolkit Menuing system. The printer information will be used to assign a default printer when first executing the Toolkit and allow users to easily change the destination of printed output. You will be asked for this information in simple fill in the blank screens.

This installation will create two files on the production FOCUS disk. The first will contain a site-specific background for the Toolkit (ISHFPROF DATA) and user selections for print destination (ISHDPNTR DATA).

Note: The Toolkit can be customized for user groups by creating separate ISHFPROF and ISHDPNTR files for each group on different minidisks. This minidisk should be accessed in a search order prior to the FOCUS production disk.

- a. Attach the FOCUS Production disk as your writable A minidisk and enter FOCUS:

```
EXEC FOCUS
```

- b.** Execute the ToolKit Installation Procedure.

`EXEC ISHFINST`

At each prompt, enter the required information and press Enter. You will be prompted for the following information:

Company name.

Telephone number for support.

Install date (in MM/DD/YY format).

FOCUS site code.

Default printer. The printer value is the CP TAG value desired for the company default printer. **Note:** The user's printer device must be spooled to RSCS for the print options to be effective.

Additional printers. Reply yes or no to the prompt asking 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 note that the first printer in the list will be assigned as the user's default printer. You may also designate a disk file as the output by providing a TAG value of DISKFILE and the disk filename, filetype, and filemode as the description. Userid will be prefixed to this name. The disk file must be typed in capital letters, 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 accessing the FOCUS production disk in write mode and executing ISHFPNTR, or by editing the file ISHDPNTR DATA on the FOCUS production disk (be sure to maintain columnar spacing).

After installation is complete, the ToolKit will be executed. Move the cursor next to the last option on the menu, Exit, and press Enter.

- 4.** Customize database allocations.

The ToolKit will attempt to dynamically access FOCUS, sequential, and comma delimited files that have been identified to the ToolKit. This is accomplished by creating a FOCEXEC that performs the necessary accesses and USE commands for a given file. This FOCEXEC is named *filename* ISHFALOC, where *filename* is the name of the file (as used by FOCUS).

For example, to allow the ToolKit to access the CAR FOCUS data source, create a FOCEXEC named CAR.

For example, the following FOCEXEC accesses a minidisk with the CAR file as B:

```

-*
-* Issue CMS commands within a FOCEXEC which will link the mdisk
-* with the CAR FOCUS database.
-* The CAR FOCUS database has been saved on CARFOCUS 191 mdisk.
-*
CMS EXEC VMLINK CARFOCUS 191 < * B> ( NOTYPE
-RUN

USE
CAR FOCUS B
END
-RUN

-EXIT

```

Note that this FOCEXEC can include any FOCUS commands.

5. To provide automatic execution of the ToolKit when a user enters FOCUS, edit the file SHELPROF FOCEXEC (this step is optional). This file resides on the production disk, but it may be located on any disk.

The original FOCEXEC contains the following commands, which invoke 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:

```

EXEC ISHFSHLL
-EXIT

```

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

Note: You can give the user the option to execute the ToolKit, the FOCUS Menu, or exit to native FOCUS with this FOCEXEC.

6. To execute the ToolKit, enter FOCUS by issuing:

```

EXEC FOCUS

```

If the SHELPROF option is not incorporated, the ToolKit may be executed from command line by issuing:

```

EXEC ISHFALOC

```

Note: The DB2 For VM Data Adapter must already be installed to take advantage of ToolKit DB2 For VM features.

Installing HiperFOCUS

HiperFOCUS is installed and configured using SET commands. These commands must be issued from the FOCPARM ERRORS file.

HiperFOCUS requires an XC mode virtual machine. To establish XC mode, issue the following command and then re-IPL CMS:

```
CP SET MACHINE XC
```

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 using the HiperFOCUS SET parameters.

The command to activate HiperFOCUS once it is installed (SET HIPERFOCUS) can be issued from FOCPARM or in a user session or FOCEXEC. The HiperFOCUS installation and configuration parameters must be set in FOCPARM.

Syntax

How to Install or Disable HiperFOCUS

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

where:

ON

Installs HiperFOCUS.

OFF

Disables HiperFOCUS.

Syntax

How to Activate HiperFOCUS

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

where:

ON

Activates HiperFOCUS. This is the default.

OFF

Deactivates HiperFOCUS.

If HiperFOCUS is not installed, The SET HIPERFOCUS command is disabled.

Installing FOCUS StyleSheets

You can use StyleSheets to style reports saved in certain formats. These steps describe how to enable StyleSheets:

1. Access the FOCUS maintenance disk as A.
2. Access the FOCUS production disk R/W as C.
3. Execute the MOVSTYLE EXEC:

```
EXEC MOVSTYLE
```

Configuring VM FOCUS for NLS Services

The NLS feature enables FOCUS to support many different languages. Each supported language has an associated code page. In FOCUS, the mapping of graphic characters from one code page into the graphic characters of another is managed by the FOCUS NLS translation component.

Note: NLS is only supported if your terminal emulator is IBM Personal Communications (PC3270).

Graphic Character Representation

The graphic character representation standards used by FOCUS conform to IBM's Character Data Representation Architecture (CDRA). For more information on these standards and a description of the layout of each code page and its corresponding Graphic Character Global Identifiers (GCGIDs), see IBM's CDRA Library documentation set (SC09-9391-00 Registry).

Character Mapping

The mapping of graphic characters from one code page into the graphic characters of another is managed by the NLS translation services component of FOCUS. To achieve this character-to-character conversion, FOCUS has a set of pre-defined translation tables resident in memory at run time.

The configuration process allows an installation to identify the code pages required for FOCUS operations.

The TSGU EXEC is used to generate TRANTBL ERRNLS, the code page translation table.

DBCS Support

Double Byte Character Set (DBCS) refers to those character sets (language sets) that require two bytes to represent each graphic character. These character sets are represented by IBM as a combination of a Single Byte Character Set (SBCS) code page and a DBCS code page, in order to support single-byte code points. NLS represents each DBCS code page as an SBCS code page and a translation table.

Code Page Handling

Code pages required for your enterprise are selected from the samples supplied on your FOCUS distribution tape. The samples are found in CPXCPTBL EDANLS. For example:

Code Page	Character Type	DBCS	Description
CP00037	E	SBCS	US IBM MF EBCDIC Code
CP00437	A	SBCS	US PC ASCII Code

The default code page employed by FOCUS is CP00037, the US Mainframe (MF) EBCDIC code page. The following are the default code pages enabled:

- US MF EBCDIC code page (CP00037)
- US PC ASCII code page (CP00437, UNIX)
- Unicode (UTF8) code page (CP65001)
- IBM MF Open Systems (latin1) code page (CP01047)
- ANSI character set (CP00137, Windows)

Customizing NLS

You need to customize NLS only if your site requires support for code pages other than the defaults described in the previous section.

Configuration Steps for NLS

To configure NLS for FOCUS:

1. Identify the code page used by VM FOCUS.
2. Edit the CPCODEPG EDANLS file, specifying the set of code pages identified in *Step 1. How to Identify the FOCUS Code Page* on page 3-11.
3. Execute the TSGU EXEC to generate the translation table and other files.
4. Configure default NLS characteristics.
5. Configure sort sequences.
6. Configure monocasing.

Step 1. How to Identify the FOCUS Code Page

By default, VM FOCUS supports the US MF EBCDIC code page (CP00037). If FOCUS requires a code page other than the default, select the desired code page from the list of FOCUS-supported code pages. Refer to CPXCPTBL EDANLS. The code page relates directly to the language for which the data sources are generated.

If a desired code page is not found on the list provided, refer to the appropriate IBM CDRA document and create your own, or contact Customer Support Services (CSS) at (800) 736-6130 or (212) 736-6130.

CPXCPTBL EDANLS contains a list of available code pages. The format is:

CPnnnnn b dbcs-id description

where:

CP

Is the code page prefix (always CP).

nnnnn

Is the code page number.

b

Is the character type:

A For ASCII.

E For EBCDIC.

dbcs-id

Is the DBCS identifier (DBCSID). See *NLSCFG ERRORS File* on page 3-17 for the possible values.

description

Is a description of the code page.

The following is part of the supplied CPXCPTBL EDANLS:

Codepage	C	DBCS	Description
CP00037	E	SBCS	US IBM MF EBCDIC code
CP00437	A	SBCS	US PC ASCII code
CP00137	A	SBCS	ANSI character set for MS-Windows
CP00500	E	SBCS	IBM MF International European
CP00273	E	SBCS	IBM MF Germany F.R./Austria
CP00277	E	SBCS	IBM MF Denmark, Norway
CP00278	E	SBCS	IBM MF Finland, Sweden
CP00280	E	SBCS	IBM MF Italy
CP00284	E	SBCS	IBM MF Spain/Latin America
CP00285	E	SBCS	IBM MF United Kingdom
CP00297	E	SBCS	IBM MF France
CP00420	E	SBCS	IBM MF Arabic Bilingual
CP00424	E	SBCS	IBM MF Israel(Hebrew)
CP00850	A	SBCS	IBM PC Multinational
CP00851	A	SBCS	IBM PC Greece
CP00856	A	SBCS	IBM PC Hebrew
CP00860	A	SBCS	IBM PC Portugal
CP00861	A	SBCS	IBM PC Iceland
CP00863	A	SBCS	IBM PC Canadian French
CP00864	A	SBCS	IBM PC Arabic
CP00865	A	SBCS	IBM PC Nordic
CP00871	E	SBCS	IBM MF Iceland
CP00875	E	SBCS	IBM MF Greece
CP00637	A	SBCS	DEC Multinational Character Set
CP00600	A	SBCS	DEC German NRC Set
CP00604	A	SBCS	DEC British (United Kingdom) NRC Set
CP00608	A	SBCS	DEC Dutch (Netherland) NRC Set
CP00612	A	SBCS	DEC Finnish (Finland) NRC Set
CP00616	A	SBCS	DEC French (Flemish and French/Belgian) NRC Set
CP00620	A	SBCS	DEC French Canadian NRC Set
CP00624	A	SBCS	DEC Italian (Italy) NRC Set
CP00628	A	SBCS	DEC Norwegian/Danish (Norway,Denmark) NRC Set
CP00632	A	SBCS	DEC Portugal NRC Set
CP00636	A	SBCS	DEC Spanish (Spain) NRC Set
CP00640	A	SBCS	DEC Swedish (Sweden) NRC Set
CP00644	A	SBCS	DEC Swiss (Swiss/French and Swiss/German) NRC Set
CP00930	E	SOSI	Japanese IBM MF Katakana Code Page (cp290+cp300)
CP00939	E	SOSI	Japanese IBM MF Latin Extended (cp1027+cp300)
CP00932	A	SJIS	Japanese PC Shift-JIS (cp897+cp301)
CP00942	A	SJIS	Japanese PC Shift-JIS Extended (cp1041+cp301)
CP10942	A	EUC	Japanese PC EUC
CP10930	E	SOSIF	Japanese Mainframe (Fujitsu)
CP20930	E	SOSIH	Japanese Mainframe (Hitachi)

Step 2. How to Edit the CPCODEPG EDANLS File

The set of code page numbers, collected in *Step 1. How to Identify the FOCUS Code Page* on page 3-11, must be added to CPCODEPG EDANLS. Each code page number should be added, each on a separate line in this file.

The format of each line is

```
CPnnnnn  bcccc...
```

where:

CP

Is the code page prefix (always CP).

nnnnn

Is the code page number.

b

Is one of the following:

A For ASCII.

E For EBCDIC, but is treated as a comment.

```
cccc...
```

Is a description of the code page.

The following is the sample CPCODEPG EDANLS file distributed with VM FOCUS:

```
CP00037  E SBCS  US IBM MF EBCDIC code
CP00437  A SBCS  US PC ASCII code
CP01047  E SBCS  IBM MF Open Systems (Latin1)
CP65001  A UTF8  Unicode (UTF-8)
CP00137  A SBCS  ANSI Character Set for MS-Windows
```

Step 3. How to Execute the TSGU EXEC

The TSGU (Transcoding Services Generation Utility) EXEC is a utility program that generates the NLS translation table (TRANTBL ERRNLS), customized for your site based on the list of code pages defined in *Step 2. How to Edit the CPCODEPG EDANLS File* on page 3-13.

The TSGU EXEC is provided on your distribution tape. Run it now. The output is TRANTBL ERRNLS.

If you get a duplicate GCGID, choose one to discard and replace it with eight periods:

```
.....
```

Additional steps confirm the generated information:

- INFO shows basic NLS information.
- INFO CP shows a list of translation tables.

The TSGU EXEC also generates NLS sort tables (SORTTBL ERRNLS) and NLS case tables (CASETBL ERRNLS), described in *Step 5. How to Configure Sort Sequences* on page 3-16, and *Step 6. How to Configure Monocasing* on page 3-17, respectively.

Step 4. How to Configure Default NLS Characteristics

NLS is configured by editing the default NLS configuration file NLSCFG ERRORS.

In most cases, it is enough just to change the LANG= parameter, as this will set all other parameters to valid values. The file LANGTBL ERRORS contains valid languages.

The format is:

```
mmm aaaaaaaaaaaa bbb nnnnn cc
```

where:

mmm

Is a language code (the international dial code).

aaaaaaaaaaaa

Is the 12-character language name.

bbb

Is a 3-character language abbreviation (language ID).

nnnnn

Is the code page number (from CP*nnnnn* EDANLS).

cc

Is the hexadecimal value of the dollar symbol (\$).

The default LANGTBL ERRORS file is:

```
<---><-----><-><---><>
001AMENGLISH      00037
001ENGLISH        00037
045DANISH         DAN0027767
031DUTCH          DUT00037
358FINNISH        FIN0027867
033FRENCH         FRE00297
049GERMAN         GER00273
049GERMAN         GE500500
030GREEK          GRE00875
972HEBREW         HEB00424
039ITALIAN        ITA00280
081JAPANESE       JPN00930E0
081JAPANESE       JPE00939
082KOREAN         KOR00933
047NORWEGIAN     NOR0027767
351PORTUGUESE    POR00037
034SPANISH        SPA00284
046SWEDISH        SWE0027867
086T-CHINESE     ROC00937
090TURKISH        TUR01026AD
044UKENGLISH     UKE002854A
```

Note: The language customized should match the code page customized in CPCODEPG EDANLS. For example, suppose LANGTBL ERRORS contains the following entry:

```
.
.
.
081 JAPANESE JPN 00930
.
.
.
```

NLSCFG ERRORS would contain this entry, with the value for LANG matching the abbreviation for the language in LANGTBL ERRORS:

```
LANG=JPN
.
.
.
```

CPCODEPG EDANLS would contain the following entry, with the code page number matching the code page number in LANGTBL ERRORS:

```
CP00930 E DBCS Japanese
```

Step 5. How to Configure Sort Sequences

By default, FOCUS uses a binary sort sequence. If you want to use a weighted sort, you can customize the sort tables. The customized sort table is generated by the TSGU EXEC in SORTTBL ERRNLS.

Note: This step is necessary only if you want to change the default sort sequence.

CPnnnnn EDANLS files have sort weight values for each character. To change those values, perform the following:

1. Edit the CPCODEPG EDANLS file by adding the required code pages. CPCODEPG EDANLS is the same file described in *Step 2. How to Edit the CPCODEPG EDANLS File* on page 3-13. Normally the same file is used to generate SORTTBL ERRNLS.
2. Edit the CPnnnnn EDANLS files. These files contain the Code Point and GCGIDs (Graphic Character Global Identifiers) that are used by the TSGU EXEC to generate TRANTBL ERRNLS. Here you may change 'Sort weight' in the fourth column. See *NLSCFG ERRORS File* on page 3-17 for the format of a code page entry.

For example, CP00437 contains the following lines, which represent code points and their corresponding GCGIDs and other attributes:

Code point	GCGID	GCGID uppercase	Sort weight	Character type
00	.NUL		00	.
01	S3000000		01	.
02	S3010000		02	.
:				
40	SMD50000		40	S
41	LA020000		41	U
42	LB020000		42	U
:				
61	LA020000	LA010000	61	L
62	LB020000	LB010000	62	L
:				
F1	MD010000		61	D
F2	MD020000		62	D
:				
FF	SP300000		FF	.

3. Execute the TSGU EXEC with the parameter SORT. For more information, see *Step 3. How to Execute the TSGU EXEC* on page 3-13.

Step 6. How to Configure Monocasing

By default, all requests, except for data between single quotation marks, are converted to uppercase according to the default CASSETBL ERRNLS file. This feature converts a-z to A-Z only.

If you require any other monocasing (for example, Swedish letters), you must customize NLS monocasing. The supplied functions, LOWERCASE and UPPERCASE, respect the NLS CASSETBL ERRNLS file.

NLS monocasing involves language-sensitive (code page-sensitive) uppercase and lowercase conversion. Each character's attributes are customizable. The customized information is generated by the TSGU EXEC in CASSETBL ERRNLS.

CPnnnnn EDANLS files have the information for changing the attributes of each character. To change them, perform the following steps:

1. Edit the CPCODEPG EDANLS file by adding the required code pages. This is the file described in *Step 2. How to Edit the CPCODEPG EDANLS File* on page 3-13. Normally the same file is used to generate CASSETBL ERRNLS.
2. Edit the CPnnnnn EDANLS files. CPnnnnn EDANLS files contain the Code Point and GCGIDs that are also used to generate TRANTBL ERRNLS. Here you may change 'GCGID uppercase' in the third column and 'Character type' in the fifth column. See *NLSCFG ERRORS File* on page 3-17 for the format of CPnnnnn EDANLS files.
3. Execute the TSGU EXEC with the parameter CASE. For more information, see *Step 3. How to Execute the TSGU EXEC* on page 3-13.

NLSCFG ERRORS File

The NLSCFG ERRORS file contains information regarding the NLS setup for FOCUS. For more information, see *Step 4. How to Configure Default NLS Characteristics* on page 3-14.

LANG

Language. LANGTBL ERRORS contains valid values. For more information, see *Step 4. How to Configure Default NLS Characteristics* on page 3-14. The value of LANG determines the defaults for other parameters. (The default value is AMENGLISH.)

CODE_PAGE

FOCUS' code page. (The default value is 37.)

DBCS

The DBCS identifier (DBCSID). Valid DBCSIDs are:

[SBCS](#) (OFF or 0) No DBCS enabled.

[SOSI](#) IBM MF SOSI DBCS enabled.

The default is SBCS.

CDN

Continental Decimal Notation. ',' or '.' (default '.').

DATETIME

DATE/TIME format for SQL:

[EDA](#) EDA type (default). For VM, the default format is HYYMDs.

[ISO](#) yyyy-mm-dd hh.mm.ss

[USA](#) mm/dd/yyyy hh:mm AM or PM

[EUR](#) dd.mm.yyyy hh.mm.ss

[JIS](#) yyyy-mm-dd hh:mm:ss

[LOCAL](#) Any site-defined form

Some parameters depend on other parameter settings:

[LANG](#)

Overrides CODE_PAGE derived from LANG through LANGTBL ERRORS.

[CODE_PAGE](#)

Overrides DBCS derived from CODE_PAGE through CPXCPTBL EDANLS.

[DBCS](#)

Overrides SHIFT_LENGTH, SHIFT_OUT, SHIFT_IN, and CODE_PAGE.

Configuration Examples

In the following examples, asterisks in the first column indicate that the line is a comment, in which the parameter is set by default by the preceding parameters. Lines are parsed in order, so if the same parameter recurs, its first value is overridden by the following value.

Example Specifying US Mainframe FOCUS

To specify US mainframe FOCUS:

```
LANG = AMENGLISH
```

Example Specifying Japanese Mainframe FOCUS

To specify Japanese mainframe FOCUS:

```
LANG = JPN
*CODE_PAGE = 930
DEFAULT_ASCII = 942
DEFAULT_EBCDIC = 930
*DBCS = SOSI
```

Example Specifying German Mainframe FOCUS

To specify German mainframe FOCUS:

```
LANG = GER
*CODE_PAGE = 273
DEFAULT_ASCII = 850
DEFAULT_EBCDIC = 273
```

Example Specifying German Mainframe FOCUS for International European Code Page

To specify German mainframe FOCUS:

```
LANG = GE5
*CODE_PAGE = 500
DEFAULT_ASCII = 850
DEFAULT_EBCDIC = 500
```

Example Specifying Korean Mainframe FOCUS

To specify Korean mainframe FOCUS:

```
LANG = KOR
*CODE_PAGE = 933
DEFAULT_ASCII = 949
DEFAULT_EBCDIC = 933
*DBCS = SOSI
```

Example Specifying Taiwanese Mainframe FOCUS

To specify Taiwanese mainframe FOCUS:

```
LANG = ROC
*CODE_PAGE = 937
DEFAULT_ASCII = 10948
DEFAULT_EBCDIC = 937
*DBCS = SOSI
```

CHAPTER 4

User Exits

Topics:

- Usage Accounting Exit: UACCT
- Installing an External Password Security System

This chapter describes the Usage Accounting Exit and how to install an external password security system.

Usage Accounting Exit: UACCT

FOCUS contains a user exit designed to log FOCUS usage statistics, to capture attempted violations of the DBA provisions as specified in the Master File, and to trap violations detected by external security systems such as RACF and ACF2. Usage statistics are provided following the completion of FOCUS commands that access data, such as TABLE, MATCH, and MODIFY, whether entered live or executed from a procedure, and DBA violations are logged as detected. External security violations can be trapped before any data is accessed and cause an orderly exit from FOCUS.

The exit routine is also called once at the start of the FOCUS session and once at the end, to permit orderly initialization and wrap-up procedures. FOCUS merely provides the necessary information in the exit routine calling sequence, but it does not write an accounting or security log. The responsibility for managing these files and any other resources needed by this facility resides with the installation-written accounting exit.

The distributed copy of FOCUS contains a dummy version of this exit routine. To activate a live version, a small interface routine and the user code are link edited into FOCUS. The user code can be written in any language or mixture of languages, and it 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, name conflicts with FOCUS routines must be avoided and it is suggested that all user-written programs start with the letters UA.

UACCT Calling Sequence

The UACCT exit is called at different times for different purposes, but the calling sequence is the same in all cases. The first argument indicates which type of call is 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 the section dealing with external security violations.

Argument	Description	
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 The 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. Not meaningful under CMS. The ATCB parameter is present in all calls. The remaining arguments are also present but they are meaningful only when the CALLTYPE is 0, 1 or 2.	
BILLCODE	8 characters FOCUS billing code, set by the FOCUS command SET BILLCODE= <i>value</i> . This argument is included to enable accounting distinctions within a user ID.	
COMMAND	8 characters FOCUS command name to which the exit call applies.	
FILE	8 characters FOCUS file name.	
LINENO	4-byte binary integer The current FOCEXEC procedure line number.	

Argument	Description
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 is blank.
STATS	17 fullword binary integers Contains either usage statistics or DBA violation data. Ignore it if the call is to signal start of processing (CALLTYPE = 2).
UACVT	Not currently in use.

Usage Statistics Calls (CALLTYPE=0)

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

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

The commands marked with an asterisk also generate a start of processing call to UACCT (CALLTYPE=2).

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

Word	Dialogue Manager Variable
STATS(1)	&RETCODE FOCUS return code posted by the command (this is 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 the application of IF TOTAL tests.
STATS(4)	Reserved.
STATS(5)	&BASEIO The number of 4096 bytes pages read or written in the FOCUS database. The value will be zero for non-FOCUS files.
STATS(6)	The number of reads issued when reporting from a non-FOCUS file. The value will be zero for FOCUS files. Each read is a QSAM GET, ISAM GET, or one call to the interface module. 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 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 core.

Note: FOCUS databases 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 database is extended in the course of a MODIFY command; FOCSORT is formatted by the first write to 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 (before the user is made aware that the violation was detected). All of the calling arguments are as documented in *UACCT Calling Sequence* on page 4-2, 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 file 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 ACCESS TO THE FIELD:<fieldname>
(FOC054) THE FILE IS PROTECTED BY DIFFERENT DBA ADMINISTRATOR:<file>
(FOC056) THE USER'S ACCESS RIGHTS DO NOT ALLOW INCLUDE OR DELETE:<file>
```

Error messages 54 and 56 can occur only with FOCUS databases, 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 after 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 processing call is made for all types of data, sequential and VSAM files, IMS data source, 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 as for the Usage Statistics call which will follow, except, of course, 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 return to the operating system with a return code of 8.

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 the CALLTYPE is 0, 1, or 2, but the most logical time to do it is in a type 2 call, after all parsing has been done and before any data access is attempted.

Installing the Usage Accounting Exit (UACCT)

To install the Usage Accounting exit routine (UACCT) on CMS, you must replace a dummy version of the code that calls UACCT with a working version. This is achieved by copying the files on the maintenance disk. The distribution tape contains the dummy code as file UAINTEXT and the working version as UAINTEXTSYS. Take the following steps to install the UACCT exit routine on CMS:

1. Ensure that the FOCUS maintenance disk is the A disk.
2. Make a copy of the dummy exit-calling routine by entering the command:

```
COPYFILE UAINTEXT A UAINTEXTDUM TEXT A (REPL OLDDATE)
```

3. Move the working version of the exit-calling routine into place by entering the command:

```
COPYFILE UAINTSYS TEXT A UAIN T TEXT A (REPL OLDDATE)
```

4. Ensure that the disks containing your compiled UACCT TEXT file and all routines that it calls are accessed.
5. Generate FOCUS using the GENFS EXEC.

Installing an External Password Security System

In FOCUS you can write your own 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 (not overridable by subsequent SET USER, PASS or -PASS commands) or they may be defaults and may be subsequently overridden. They may be permanent for some users, defaults for other users, or not set at all for yet other users. The advantage of setting FOCUS passwords externally is that the password need not be known by the user and does not have to be prompted for or be embedded in a PROFILE FOCEXEC or in an encrypted FOCEXEC.

The FOCUS passwords set this way must, of course, 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. In all cases, the FOCUS password is inferred from your FOCUSID code. The function of the FOCUSID CSECT is to provide FOCUS with an overridable or non-overridable FOCUS password.

Note: Any external exits used must be compatible and available for use by FOCUS, otherwise unpredictable results may occur.

FOCUSID Calling Sequence

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

where:

FOCUSID

Is a fullword binary integer.

ENV

Is the environment from which call is made. Possible values can be:

- 0 CMS
- 1 TSO
- 2 MVS batch job
- 3 CICS
- 4 open
- 5 IMS/DC MP region
- 6 IMS/DC BMP region

REG1

Is a fullword binary integer. (MVS only.) Register 1 as passed to FOCUS. Useful only when it points at an IMS PSB.

FOCID

Is an 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:

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.

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 File Descriptions.

LOGID

Is an 8-character fullword binary integer that is not used at present.

RC

Is the return code posted by FOCUSID Possible return codes are:

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

FOCUSID Installation

1. Write and compile/assemble your FOCUSID code. It must have an entry point named FOCUSID, and the compiler/assembler output must be named FOCUSID TEXT.
2. Make a copy of the dummy exit-calling routine by entering the following command:

```
COPYFILE FOCUSID TEXT A FOCUSID SHIPTEXT A ( REPLACE OLDDATE.
```
3. Move your working version of FOCUSID TEXT to the A disk.
4. Generate FOCUS using the GENFS EXEC.

If you decide at some point that you no longer want to use the security interface, issue the following command and regenerate FOCUS:

```
COPYFILE FOCUSID SHIPTEXT A FOCUSID TEXT A ( REPLACE OLDDATE
```

This will replace the active FOCUSID code with the dummy interface.

Note: If your FOCUSID program (together with all of the programs it calls) is fairly large, you may have to increase the size of the non-shared part of the FOCUS NSS.

CHAPTER 5

Interface Installation

Topics:

- Installing the FOCCALC Graphics Facility
- Considerations for Running the ICU Interface

This chapter describes how to install the FOCCALC Graphics Facility and the considerations for running the Interactive Chart Utility (ICU).

Installing the FOCCALC Graphics Facility

FOCCALC includes a Graphics facility that enables the display of spreadsheet data as graphics. The Graphics facility requires a 3270-type terminal fitted for graphics with access to the IBM Graphics Data Display Manager (GDDM) software product.

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.

Syntax

How to Install the FOCCALC Graphics Facility

The installation process for the FOCCALC Graphics facility should be performed when FOCUS is installed.

1. Follow the installation steps in Chapter 2, *Basic Installation*, up to and including *Unload the FOCUS Distribution Cartridge* on page 2-2.
2. Locate the ADMRLIB TXTLIB. Verify the accessibility of the required GDDM library by issuing the following CMS command:

```
LISTFILE ADMRLIB TXTLIB *
```

If this file cannot be located on the currently accessed disks, you must determine where it is and explicitly access the disk on which it resides. If you fail to do this, the next step will render FOCCALC unusable.

3. To install FOCCALC Release 2 with the Graphics facility, execute the LINKCA2G EXEC.

Considerations for Running the ICU Interface

The terminal must have extended attributes and PS storage or Vector Graphics capability in order to be able to run GDDM graphics. (See the IBM GDDM manuals for model numbers.)

The GDDM disk must be attached and a global TXTLIB command issued as follows:

```
GLOBAL TXTLIB ADMNLIB ADMPLIB ADMGLIB
```

Enough main memory must be available to execute ICU with FOCUS.

CHAPTER 6

Maintenance

Topics:

- FOCUS Release Numbering
- The Release Signature
- FOCUS Release Information
- Corrections to Reported Problems
- The Online Release Information
- Release Cartridges
- Service Packs
- How to Apply an Individual PTF

This chapter describes how to install the FOCCALC Graphics Facility and the considerations for running the Interactive Chart Utility (ICU).

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 a number of operating environments, and in some of them it can be configured in different ways. These differences are what we mean when we speak of different versions: the MVS version or the CMS version. Each of these versions can be created at each release level, sometimes with options selected at installation time. The release signature identifies the most significant of all these possible combinations.

The release banner is always displayed when FOCUS is first entered. In the CMS version, it consists of the release number followed by the current date and time and your site code. For example:

```
FOCUS 7.2      mm/dd/yyyy  hh.mm.ss  sitecode
```

The release signature can be displayed on demand any time you are in FOCUS by the ? RELEASE command. ? RELEASE shows the release number followed by the date on which the version was generated, and your site code

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

FOCUS Release Information

Each FOCUS release cartridge has a program update level associated with it.

Following the creation of major new releases, other releases are generated periodically and are available to all users. In general, these other releases correct a number of significant problems. The current release may be seen by issuing a ? RELEASE command within FOCUS. To review the record of prior releases, issue EX READMEF and select the Release Statistics option on the menu that appears.

All release cartridges are complete FOCUS distribution cartridges with corrective service pre-applied and tested.

Corrections to Reported Problems

If you encounter a problem that requires a correction to FOCUS rather than to your own procedures, the correction will become part of the next release. In some situations, you will receive the correction to your problem as soon as it is available, regardless of when the next release is scheduled. It can come in one of two forms; either as a service pack or as an individual PTF, and they are identified by a PTF number and an update level.

You will receive either a service pack or an individual PTF only in response to a specific problem that you yourself report. The solution to problems reported by other users will reach your installation by way of the next release. The accompanying documentation will tell you how to apply it, identify the problem being corrected, and most importantly, state the range of releases into which the service pack or PTF can be incorporated. It is critical that you do not apply a service pack or PTF outside the indicated release range. If you do, you will probably damage the copy of FOCUS that you are trying to correct.

If you apply more than one PTF to a release you must apply it in update level order. For this reason, please keep a record of all PTFs applied to each of your copies of FOCUS. If you install an individual PTF in a release later than Release 7.2 it is recommended that you install the latest service pack created after that individual PTF.

All service packs are cumulative in that they contain all corrections of previous service packs.

The application of individual PTFs does not require that the FOCUS NSSs be redefined to CP.

The Online Release Information

FOCUS distribution cartridges contain online information that summarizes new features, error corrections, installation notes, operational notes, and known problems included in the release.

This information may be viewed online by issuing the following command:

```
EXEC READMEF
```

This is a cumulative listing of features added to each FOCUS release.

The summary of error corrections for the release is also included in the problems corrected selection. These are cumulative for each release.

Release Cartridges

All FOCUS cartridges that you receive are one of two types:

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

They are unlabeled 3480 cartridges in VMFPLC2 format. You unload them onto the maintenance disk by following the instructions in Chapter 2, *Basic Installation*.

Note: If you are using any of the optional data adapters listed in Chapter 1, *Features and Components*, you must reinstall these data adapters after installing a new release of FOCUS.

Service Packs

A service pack is a cartridge that contains all fixes to previously known problems as well as some previously fixed by individual PTFs. Beginning with the FOCUS 7.2 release service packs became available. For your convenience, all prior service packs applicable to FOCUS 7.2 are included in the current service pack, ensuring that your installation will be fully up to date.

Each new service pack preserves any PTFs already applied and includes PTFs released up to its published date. After applying this service pack, typing ? PTF at the FOCUS prompt displays all PTFs applied to date, plus the PTF number representing this service pack.

The procedure for applying a service pack is similar to applying an individual PTF.

How to Apply an Individual PTF

An individual PTF changes the contents of one of the standard FOCUS modules. The correction may also affect the error message files.

Each PTF also shows an update level number. If you have several PTFs to apply, process each one individually, in ascending Put Level sequence, not in the PTF number sequence. The PTF number is merely a substitute name with no intrinsic significance. 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 following procedure should be used to apply the PTFs to your systems:

1. Mount the cartridge as 181 on the FOCUS maintenance ID.
2. Access your FOCUS maintenance disk as A in READ/WRITE mode.
3. Issue the following CMS command:

```
VMFPLC2 LOAD * *
```


If there are special instructions accompanying the PTF cartridge, follow those steps. If no special instructions accompany the cartridge, continue with Step 4 below.

4. Validate your maintenance and setup.

If the PTFVR EXEC file was unloaded from the PTF cartridge, execute this EXEC now. Issue the following command for each PTF number:

```
EXEC PTFVR nnnnnn
```

where:

```
nnnnnn
```

Is the PTF number.

This will invalidate your maintenance and setup. If any errors are generated, follow the instructions displayed, or contact your support representative for further assistance. After correcting the errors that were displayed, re-execute the PTFVR EXEC until no errors are generated. Error messages include the string '@@@' in the text of the message. The string '???' in the text of the message indicates a warning, which is only of concern if it is unexpected.

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

- 5.** If any files of the form GENxxxx EXEC or GExxxxx EXEC were unloaded from the PTF cartridge as part of this PTF, execute those EXECs now. If more than one PTF is being installed, or more than one GENxxxx EXEC or GExxxxx EXEC was unloaded, run them in ascending Put Level sequence.
- 6.** Execute the GENFS EXEC to create FOCUS (only if it has been previously installed). Refer to Chapter 2, *Basic Installation*, for further details if needed.
- 7.** After the FOCUS module has been generated and tested, move the new modules to the FOCUS production disk by executing the COPYFS EXEC.

APPENDIX A

Common Mistakes During FOCUS Installation

Topic:

- Possible Problem List

This appendix contains a list of common problems during FOCUS installation, their possible causes, and ways to fix them.

Possible Problem List

Problem:	After GENFS completes without errors FOCUS does not work.
Cause:	You may have loaded a new FOCUS Release cartridge onto a maintenance disk that contains a previous FOCUS release.
Action:	Define a new maintenance disk and reinstall. Or, erase all the old files from the maintenance disk USING the CMS format command, and reinstall.
Problem:	GENFS ABORTS with DMSLIO109S error.
Cause:	Virtual storage exceeded.
Action:	Issue the command CP DEFINE STORAGE for a larger virtual storage size and re-IPL.
Problem:	After successful GENFS, FOCUS aborts with an addressing exception 141T in routine FOCMAIN and you are returned to CMS.
Cause:	Your FOCUS DLL or NSS is overlaying another active NSS,
Action:	<ol style="list-style-type: none"> 1. Check the disk space allocated for the NSSs. They must conform to sizes specified in Chapter 2, <i>Basic Installation</i>. 2. If you have selected your own name for the NSSs, verify that the references to FOCSEG and DLLSEG in the FOCMAIN EXEC have been changed to reference your NSS names in the FOCUS EXEC. 3. Reread section and verify the following: FOCUS' NSSs, do not overlap other NSSs, defined to CP. Starting address of FOCUS' NSSs are above highest address of any virtual machine using FOCUS. Based on starting address of each NSS, that the current segment definitions have been calculated and entered.
Problem:	GENFS prompts for the address of the FOCUS NSS.
Cause:	The IBIDFSEG EXEC is missing or does not specify the NSS that you are attempting to install.
Action:	Check that the IBIDFSEG EXEC is available and that it includes the appropriate NSS.

Problem:	GENFS gives the message STORAGE IN USE.
Cause:	CMS is using storage where the segment is to be loaded.
Action:	Define more storage and IPL CMS. FOCUS should always be installed from a newly IPL'ed virtual machine.
Problem:	GENFS indicates the DLL segment failed to load properly
Action:	<p>Redefine the DLL segment using values found in FOCDFSEG. If DLLSEG fails, this segment is purged. Issue the following commands:</p> <pre>IPL CMS ACCESS (NOPROF</pre> <p>Access the disk with FOCLIB LOADLIB</p> <pre>EXEC GENLLSEG <i>dllname</i></pre> <p>Note: FOCUS will execute without DLLSEG. User storage may need to be increased.</p>

Possible Problem List

APPENDIX B

User Written Subroutines

Topic:

- Generating LOADLIB Members: The GENSUBLL EXEC

Users can write their own non-FOCUS subroutines and then execute them from FOCUS requests. This appendix explains how to facilitate the use of these subroutines.

Generating LOADLIB Members: The GENSUBLL EXEC

Users can write their own non-FOCUS subroutines and then execute them from FOCUS requests.

If FOCUS end users have their own user-written subroutines, they must be accessed as LOADLIB members. Existing LOADLIB members can be used with new releases of FOCUS (unless otherwise stated in the release notes for that release).

The GENSUBLL EXEC helps you generate the user subroutines as LOADLIB members.

Issue the following CMS command to display detailed help information about the GENSUBLL EXEC:

`EXEC GENSUBLL ?`

Once the LOADLIB members have been generated, the resulting LOADLIB must be GLOBALed for individual users' FOCUS sessions.

Calling HLI Programs as Subroutines

HLI programs called from FOCUS as user subroutines must be made into LOADLIB members and the appropriate FOCADLIB LOADLIB command issued. See GENSUBLL EXEC for details.

No special action is needed for HLI programs called outside of FOCUS and the normal GENHLI procedure should be used.

User Exit Availability

All user exits must be available and linked with AMODE 31, RMODE ANY, otherwise unpredictable results may occur.

APPENDIX C

Language Environment Support

Topic:

- Language Environment Support

IBM's Dynamic Language Environment (LE) enables you to use a common run-time environment for all LE-supported high-level languages (HLLs).

Language Environment Support

IBM's Dynamic Language Environment (LE) enables you to use a common run-time environment for all LE-supported high-level languages (HLLs). IBM LE is required in order to run FOCUS.

Improving VM (OS-Bridge) Performance

Starting in FOCUS Version 7.2, Information Builders required the use of the IBM Language Environment (LE). Specifically, access to an LE runtime library named SCEERUN LOADLIB is required..

FOCUS customers who access several OS formatted disks prior in the search order to the SCEERUN LOADLIB may experience a slowdown in the startup of FOCUS and delays in the processing of requests.

- The SCEERUN LOADLIB file is on minidisk CMS 19E (the Y-disk).
- The production FOCUS minidisk is accessed at filemode F.

In this scenario, the disk containing the SCEERUN LOADLIB is accessed at a filemode higher in the CMS search order than the last OS disk (filemode P). This causes an elongated search through all the CMS disks in order to find the SCEERUN LOADLIB.

Update your installation's procedures to access the SCEERUN LOADLIB before the OS disks

How to Access SCEERUN

1. The recommended method is to access a subset of files from the disk containing SCEERUN LOADLIB (normally the Y disk) as an extension of filemode A. In the following example, filemode z represents an unused filemode at your installation:

```
ACCESS 19E z/A * LOADLIB
```

2. An alternate method is to copy the LOADLIB from the Y-disk (or disk containing SCEERUN LOADLIB) to a separate minidisk and access it in the search order before the first OS formatted disk, for example as filemode B.

Note: This approach may introduce a future maintenance concern because of the possibility of having two different versions of SCEERUN LOADLIB.

LE Preinitialization Facilities

From a non-LE-conforming driver (such as FOCUS), you can use LE preinitialization facilities to create and initialize a common run-time environment, execute applications written in an LE-conforming HLL multiple times within the preinitialized environment, and terminate the preinitialized environment. FOCUS utilizes the CEEPIPI preinitialized interface to perform these tasks.

In the preinitialized environment, FOCUS provides support for executing subroutines multiple times.

Language Environment preinitialization is commonly used to enhance performance for repeated invocations of an application or for a complex application with many repetitive requests where fast response is required. For example, if FOCUS invokes an HLL subroutine a number of times, the creation and termination of that HLL environment multiple times is needlessly inefficient. A more efficient method is to create the HLL environment only once for use by all invocations of the routine.

The IBMLE parameter controls preinitialization for calls to subroutines from FOCUS. The following table summarizes FOCUS preinitialization support for user-written subroutines:

HLL	Preinitialization Supported?	Preinitialization Interface	IBMLE Setting
C	Yes	C assembler interface. Calls to the subroutine use a special extended parameter list.	ON
C++	No		OFF
COBOL	Yes	The COBOL run-time option RTEREUS(ON) is the recommended preinitialization interface for COBOL subroutines. This interface requires IBMLE=OFF.	OFF
		FOCUS can also accommodate LE compliant COBOL subroutines with IBMLE=ON if required by site characteristics or restrictions. RTEREUS preinitialization and CEEPIPI preinitialization are mutually exclusive for FOCUS subroutines and cannot be used simultaneously. If used simultaneously, unpredictable results will occur.	ON
FORTRAN	No		OFF

HLL	Preinitialization Supported?	Preinitialization Interface	IBMLE Setting
PL/I	Yes	PL/I for MVS & VM-defined preinitialization interfaces with calls to CEESTART or PLISTART with a special extended parameter list. Preinitialization services do not support PL/I multitasking applications.	ON

For more information regarding the IBM Language Environment see IBM's *OS/390 V2R10.0 Language Environment for OS/390 & VM Programming Guide*, Document Number: SC28-1939-09.

Index

Symbols

? PTF 6-4
? RELEASE 6-2
? STATS 4-5

Numerics

3270 terminals 1-3

A

active databases 3-2
 error messages 3-3
 in SU 3-2

ADABAS 1-2

assembling startup options 2-5

ATCB 4-3

B

BANNER 2-5

BILLCODE 4-3

C

CACHE 3-4

cache pages 3-4

CALLTYPE 4-3

CARTEST 2-9

CASETBL ERRNLS file 3-17

CDN 2-5

CDRA 3-9

Character Data Representation Architecture 3-9

character mapping 3-9

CLRSCRN 2-5

CMS disks 1-4
 maintenance 1-5
 production 1-5
 space requirements 2-2

code pages 3-10 to 3-11

COMMAND 4-3

components 1-2

configuring sort sequences 3-16

COPYFS EXEC 2-10

COPYISH EXEC 3-5

COPYSHL EXEC 3-4

CPCODEPG EDANLS file 3-13

D

DASD 1-4

data exceptions, number of 2-5

databases 3-2

databases, active 3-2

DATREC 3-4

DB2 for VM 1-2

DBA violations 4-6

DBCS 3-9

DELIMIT 2-5

DFSORT 1-6

disks needed 1-4
 production 2-2

distribution cartridge 2-2

Double-Byte Character Set 3-9

E

error messages 3-3
errors
 installation A-2
exceptions, number allowed 2-5
external password security 4-8
external security violations 4-7
external sorts 1-6

F

features 1-2
FIDEL 1-3
FILE 4-3
FOCALC 1-2
FOCCALC 5-2
FOCPARM 2-5
 ASSEMBLE 2-6
 ERRORS 2-5
FOCUS 1-2
 components 1-2
 databases, active 3-2
 generating 2-7
 limits 3-2
FOCUS Database Server 3-2
FOCUS maintenance disks 1-5
FOCUS Menu 3-4, 3-7
 testing 3-5
FOCUS Password User Exit 1-4
FOCUS ToolKit 3-5
 customizing 3-5
FOCUSID 4-8
 calling sequence 4-8
 installing 4-10

G

GDDM 1-3 to 1-4, 2-8, 5-2
generating FOCUS
 testing 2-9
GENFS EXEC 2-8
GENSUBLL B-2
GENSUBLL EXEC B-2
GLOBAL TXTLIB 1-6
graphics 1-3, 2-8

H

HIPERFOCUS 3-8
HiperFOCUS 3-8
 installing and configuring 3-8
HIPERINSTALL 3-8
HLI B-2

I

IBIDFSEG 1-6
IBIDFSEG EXEC 2-3
 modifying 2-3
ICU interface 1-3, 5-2
 GDDM 5-2
installation 2-2
 active databases allowed 3-2
 cache maximum 3-4
 CARTEST 2-9
 errors A-2
 FOCPARM ERRORS 2-5
 FOCUS limits 3-2
 FOCUS Menu 3-4
 FOCUS ToolKit 3-5
 FOCUSID 4-8, 4-10
 HiperFOCUS 3-8
 ICU interface 5-2

installation (*continued*)

- link userids 2-10
- modify IBIDFSEG EXEC 2-3
- move to production disk 2-10
- PTF 6-4
- site code 2-4
- startup options 2-5
- StyleSheets 3-9
- subroutines B-2
- UACCT 4-2, 4-7

ISHDPNTR DATA 3-5

ISHFALOC FOCEXEC 3-6 to 3-7

ISHFINST FOCEXEC 3-6

ISHFPROF DATA 3-5

L

LANG 2-5

LE C-2

limits 3-2

LINENO 4-3

linking userids 2-10

LINREC 3-4

M

maintenance disk 1-5, 2-2

memory requirements 1-4

mistakes, installation A-1

monocasing 3-17

N

National Language Support 3-9 to 3-10, C-2
 configuring 3-10, 3-13 to 3-14, 3-16, 3-18 to 3-19

NLS 2-2, 2-5, 3-10, C-2

- configuring 3-13 to 3-14, 3-16, 3-18 to 3-19

NLSCFG 3-17

NLSCFG ERRORS file 3-14, 3-17

NSS 1-5

- addresses 2-3

- names 2-3

O

online release information 6-2 to 6-3

operating system 1-2

ORACLE 1-2

P

password security 4-8

problems and solutions A-2

PROCEDURE 4-4

processing calls 4-7

production disk 1-5, 2-2

PROFILE EXEC 2-10

PROFOPT 2-5

PTF 6-3

- installing 6-4

R

READMEF 2-9, 6-2 to 6-3

release cartridges 6-4

release information online 2-9, 6-2 to 6-3

release numbers 6-2

release signature 6-2

S

SCEERUN C-2

security violations 4-7

server code pages 3-11

Index

SET parameters
 CACHE 3-4
 HIPERFOCUS 3-8
 HIPERINSTALL 3-8

SFS directories 1-4

SFS space requirements 2-2

shared storage 1-5

SHELPROF FOCSEXEC 3-4, 3-7

sink machines 3-2

site code 2-4

SORTTBL ERRNLS sort table 3-16

space requirements 2-2

startup options 2-5
 assembling 2-5
 BANNER 2-5
 CDN 2-5
 CLRSCRN 2-5
 data exceptions, number of 2-5
 DELIMIT 2-5
 LANG 2-5
 NLS 2-5
 PROFOPT 2-5

STATS 4-4 to 4-5

StyleSheets 3-9

SU 3-2

subroutines B-2
 HLI B-2

Syncsort 1-6

T

TERADATA 1-2

testing FOCUS 2-9

ToolKit 3-5
 customizing 3-5

TRANTBL ERRNLS 3-13

TSGU 3-13

U

UACCT 4-2, 4-8
 ATCB 4-3
 BILLCODE 4-3
 calling sequence 4-2
 CALLTYPE 4-3
 COMMAND 4-3
 DBA violations 4-6
 external security violations 4-7
 FILE 4-3
 installing 4-7
 LINENO 4-3
 PROCEDURE 4-4
 start of processing calls 4-7
 STATS 4-4 to 4-5
 usage statistics 4-4

UAINTE 4-7

UAINTSYS 4-7

Usage Accounting Exit 1-3

usage statistics 4-4

USE 3-2 to 3-3

user exits 1-3, 4-2, B-2

userid
 linking 2-10

user-written subroutines B-2

V

virtual machine size 1-4

VMFPLC2 2-3

VMSORT 1-6

X

XMI/DATACOM 1-2

Reader Comments

In an ongoing effort to produce effective documentation, the Documentation Services staff at Information Builders welcomes any opinion you can offer regarding this manual.

Please use this form to relay suggestions for improving this publication or to alert us to corrections. Identify specific pages where applicable. You can contact us through the following methods:

- Mail:** Documentation Services - Customer Support
Information Builders, Inc.
Two Penn Plaza
New York, NY 10121-2898
- Fax:** (212) 967-0460
- E-mail:** books_info@ibi.com
- Web form:** <http://www.informationbuilders.com/bookstore/derf.html>

Name: _____

Company: _____

Address: _____

Telephone: _____ Date: _____

E-mail: _____

Comments:

Reader Comments