

FOCUS[®] for S/390[®]

CMS Installation Guide

Version 7.2

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Printed in the U.S.A.

Preface

This documentation describes how to install FOCUS® Version 7.2 in the VM/ESA® and z/VM™ operating environments. It is intended for the FOCUS VM user support group. It is available in the following formats: printed manual, Adobe® Acrobat® (PDF), HTML, and HTMLHelp.

How This Manual Is Organized

This manual includes the following chapters:

Chapter/Appendix		Contents
1	<i>Features and Components</i>	Describes the installation options and the CMS configurations required for the installation and execution of FOCUS.
2	<i>Basic Installation</i>	Provides step-by-step installation procedures.
3	<i>Customizing FOCUS</i>	Describes how to install the FOCUS Menu, the FOCUS Toolkit, StyleSheets, and National Language messages
4	<i>User Exits</i>	Describes the Usage Accounting Exit and how to install an external password security system
5	<i>Interface Installation</i>	Describes how to install the FOCCALC® Graphics Facility and discusses considerations for running the ICU Interface
6	<i>Maintenance</i>	Describes FOCUS maintenance after installation
A	<i>Common Mistakes During FOCUS Installation</i>	Lists possible problems, their causes, and actions to take to resolve the problems.
B	<i>User Written Subroutines</i>	Describes installation issues for user-written subroutines

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.
<i>this typeface</i>	Represents a placeholder (or variable) in syntax for a value that you or the system must supply.
<u>underscore</u>	Indicates a default setting.
<i>this typeface</i>	Represents a placeholder (or variable) in a text paragraph, indicates a cross-reference, or emphasizes an important term.
this typeface	Highlights file names and commands (in a text paragraph) that must be lowercase.
this typeface	Indicates buttons, menu items, and dialog box options you can click or select.
Key + Key	Indicates keys that must be pressed simultaneously.
{ }	Indicates two choices from which you must choose one. You type one of these choices, not the braces.
[]	Indicates a group of optional parameters. None are required, but you may select one of them. Type only the information within the brackets, not the brackets.
	Separates two mutually exclusive choices in a syntax line. You type one of these choices, not the symbol.
...	Indicates that you can enter a parameter multiple times. Type only the parameters, not the ellipsis points (...).
.	Indicates that there are (or could be) intervening or additional commands.

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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 number (xxxx.xx).
- The FOEXEC 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
 - CMS QFI

- The exact nature of the problem:
 - Are the results or the format incorrect; are the text or calculations missing or misplaced?
 - The error message and code, if applicable.
 - Is this related to any other problem?
- Has the procedure or query ever worked in its present form? Has it been changed recently? How often does the problem occur?
- What release of CMS 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?

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CHAPTER 1

Features and Components

Topics:

- Operating System
- Installed Features
- Virtual Machine Size Requirements
- Required CMS Disks
- 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 7.2 runs on any IBM or plug-compatible S/390 or z/900 running the VM/ESA (ESA feature) or z/VM operating system. All versions of the operating system that are supported by the manufacturers 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	SQL/DSTM
CA-IDMS/DB®	SYSTEM 2000
INTELLECT	TERADATA®
MODEL 204®	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 will be 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 CMS EXEC that generates FOCUS. At most sites this TXTLIB resides on a CMS system disk that is automatically accessed from all CMS virtual machines. In that case no further action on your part is required. The CMS EXECs that generate FOCUS will always install 3270 type graphics support if the required TXTLIB is accessible when they are executed.

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 will be from 8 to 14 Meg depending on the combination of features you install.

The smaller configuration is adequate for dealing with simple files and modest maintenance procedures. The recommended size can accommodate all but the most extreme production level applications.

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. If it is a Saved Segment, the use of GDDM will not increase the virtual machine size requirements in any significant way.

If you are accessing non-FOCUS data sources, for example, SQL/DS, you will also need additional memory.

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

Required CMS Disks

You need two CMS minidisks for storing FOCUS. We refer to them as the FOCUS maintenance and production disks. You also need space for the NSSs. Any disk device acceptable to VM will do, and the CMS minidisks should be formatted in blocksize 4096 bytes. SFS disks should not be used for FOCUS production unless they are DIRCONTROL and data space enabled.

The FOCUS Maintenance Disk

The maintenance disk is the CMS minidisk onto which you unload the FOCUS distribution tape. Initially this disk should be empty and you should not store any other files on it.

You must have different maintenance disks for different FOCUS releases. This is a critical requirement: you may generate a defective copy of FOCUS if you load a maintenance tape 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 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 `FMnnnn`, where `nnnn` is the FOCUS release signature. For example, `FM7201` is a good descriptive name for the maintenance disk for FOCUS 7.2.

The maintenance disk 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 contains an executable copy of FOCUS. This is the disk that all FOCUS users must `ACCESS` when they invoke FOCUS, and it will contain 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 `FCnnnn` for the FOCUS production disk. Thus `FC7201` is a good label for the production disk of FOCUS Version 7.2.

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 FOCDFSEG 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 Tape
- 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 the FOCUS production and maintenance disks.
2. Unload the FOCUS distribution tape.
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	54,000 4K blocks (300 cylinders)
Production disk	13,500 4K blocks (75 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 tape. Production disk requirements increase by 1000 4K blocks for each language used.

For FBA disks (such as 3370 and 9335) 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
3380	150
3390	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 are defining 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, but refer to Chapter 1, *Features and Components*, for suggested disk labels.

Unload the FOCUS Distribution Tape

The FOCUS distribution tape is an unlabeled 6250 BPI 9-track tape, or a 3480 cartridge, created by the VMFPLC2 command. This step moves the contents of the tape or cartridge onto the maintenance disk.

To unload the tape:

- Mount the tape on a 6250 BPI drive as virtual 181, or the cartridge on a 3480 drive as 181.

- Access the maintenance disk as your A disk, in READ/WRITE mode.
- Issue the VMFPLC2 command to unload the tape or 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 tape, and are available from your representative.

- When the tape or cartridge is unloaded, detach virtual 181.

Modify the CMS EXEC That Generates FOCUS

The FOCDFSEG 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 FOCDFSEG 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.

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 change the sizes.

Do not change any other lines in FOCDFSEG 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 Installation Services Department in New York, at (212) 736-4433.

Using the CMS editor, create a new file on your FOCUS maintenance disk named FOCSITE 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 tape 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

```

Selecting HiperFOCUS Installation and Configuration Options

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 Set the Number of HiperSpace Pages

```
SET HIPERSPACE = nnn
```

where:

nnn

Is the number of (4K) pages to aggregate for hiperspace. The default value is 524287 (2GB).

Syntax

How to Enable User Interface Commands

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

where:

ON

Disables processing of user interface commands such as SET HIPERFOCUS.

OFF

Allows processing of user interface commands. OFF is the default value.

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.

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.

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 = not allowed
*
          DC    F'1'          l=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
```

Make sure the new version of FOCPARM ASSEMBLE precedes 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 100M.

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, the appropriate files 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 FOCDFSEG EXEC on the maintenance disk (A). See *Modify the CMS EXEC That Generates FOCUS* on page 2-3 for more information.

Invoke the GENFS EXEC:

```
EXEC GENFS
```

The GENFS EXEC writes messages to the terminal as it proceeds. If you receive any CMS error messages during this step, call the Installation Services Department in New York, at (212) 736-4433, or your local FOCUS representative.

9. 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 Installation Services Department in New York or your local FOCUS representative regarding any installation problems.

10. 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.

11. 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 (>).

12. 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.

13. 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.

14. 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.

15. 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*.

16. 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.

17. 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:

```

/* 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 vversion 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

```

CHAPTER 3

Customizing FOCUS

Topics:

- Changing FOCUS Limits
- Installing the FOCUS Menu
- Installing the FOCUS Toolkit
- Installing FOCUS StyleSheets
- Installing National Language (NLS) Messages

This chapter describes how to alter FOCUS limits. It also describes how to install the FOCUS Menu, the FOCUS ToolKit, StyleSheets, and National Language messages.

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 or members, as specified in the installation instructions below.

(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 *Link user Ids to the Production Disk*.

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.

- 3a. Attach the FOCUS Production disk as your writable A minidisk and enter FOCUS:
`EXEC FOCUS`

3b. 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 SQL/DS Data Adapter must already be installed to take advantage of ToolKit SQL/DS features.

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
```

Installing National Language (NLS) Messages

Your site can provide FOCUS messages in a variety of languages. These steps describe how to install the translated messages:

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

```
EXEC COPYNLS
```

You will be prompted for the specific languages you wish to install.

Note: The degree of NLS support (data display, messages, menus, and help files) varies from language to language. Please contact your local representative for availability of support for a particular language.

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.

Argument	Description
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.
PROCEDURE	8 characters The name of the FOCEXEC containing the command that triggers the call to the Usage Accounting exit. Dialogue Manager commands and comment lines do not trigger calls to Usage Accounting. If the command that triggers the call is terminal input, PROCEDURE will be blank.
STATS	17 fullword binary integers Contains either usage statistics or DBA violation data. Ignore 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
- HOLD
- 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.

Word	Dialogue Manager Variable
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.

```
(FOCO47) USER DOES NOT HAVE SUFFICIENT ACCESS RIGHTS TO FILE:<file>
(FOCO52) USER DOES NOT HAVE ACCESS TO THE FIELD:<fieldname>
(FOCO54) THE FILE IS PROTECTED BY DIFFERENT DBA ADMINISTRATOR:<file>
(FOCO56) 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 UAINTSYS TEXT. 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 UAINTDUM TEXT A (REPL OLDDATE)`
3. Move the working version of the exit-calling routine into place by entering the command:
`COPYFILE UAINSYS TEXT A UAINTEXT 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 Tape*.
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 Tapes
- How to Apply an Individual PTF

This chapter discusses FOCUS maintenance after installation.

FOCUS Release Numbering

FOCUS release numbers are in the form:

V.R

V.R represents the version and release of FOCUS.

The Release Signature

FOCUS runs in 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 tape 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 tapes are complete FOCUS distribution tapes 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. We call these corrections individual PTFs or reach-ahead service, and they are identified by a PTF number and an update level.

You will receive individual PTFs 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 PTF can be incorporated. It is critical that you do not apply a 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 them in update level order. For this reason, please keep a record of all PTFs applied to each of your copies of FOCUS.

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

The Online Release Information

FOCUS distribution tapes 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 Tapes

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

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

These tapes are unlabeled 6250-BPI 9-track tapes, or 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.

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 update 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 tape or 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 tape, follow those steps. If no special instructions accompany the tape, continue with Step 4 below.

4. Validate your maintenance and setup.

If the PTFVVR EXEC file was unloaded from the PTF tape, execute this EXEC now. This will validate 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 PTFVVR EXEC until no errors are generated.

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 GExxxxxx EXEC were unloaded from the PTF tape as part of this PTF, execute those EXECs now. If more than one PTF is being installed, or more than one GENxxxx EXEC or GExxxxxx EXEC was unloaded, run them in ascending update 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

Topics:

- Possible Problem List

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

Possible Problem List

Problem:	GENFS completes without errors but FOCUS is not working.
Cause:	Loading a new FOCUS Release tape 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 FOCDFSEG EXEC is missing or does not specify the NSS that you are attempting to install.
Action:	Check that the FOCDFSEG 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: Redefine the DLL segment using values found in FOCDFSEG. If DLLSEG fails, this segment is purged. Issue the following commands:
- ```
IPL CMS
ACCESS (NOPROF

Access the disk with FOCLIB LOADLIB

EXEC GENLLSEG dllname
```
- Note:** FOCUS will execute without DLLSEG. User storage may need to be increased.

---

## APPENDIX B

# User Written Subroutines

### Topics:

- 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.

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