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Information
Control
System
CICS/MVS

Licensed Program
Version 2.1.2

Program Number
5665-403

CICS-Supplied
Transactions

SC33-0511-01

Second Edition (March 1991)

This edition applies to Version 2 Release 1 Modification 2 of the IBM licensed program Customer Information Control System/Multiple Virtual Storage (CICS/MVS), program number 5665-403, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Consult the latest edition of the applicable IBM system bibliography for current information on this product.

This book is based on the *CICS-Supplied Transactions* for CICS/MVS 2.1, SC33-0511. Changes from that edition are marked by vertical lines to the left of the changes.

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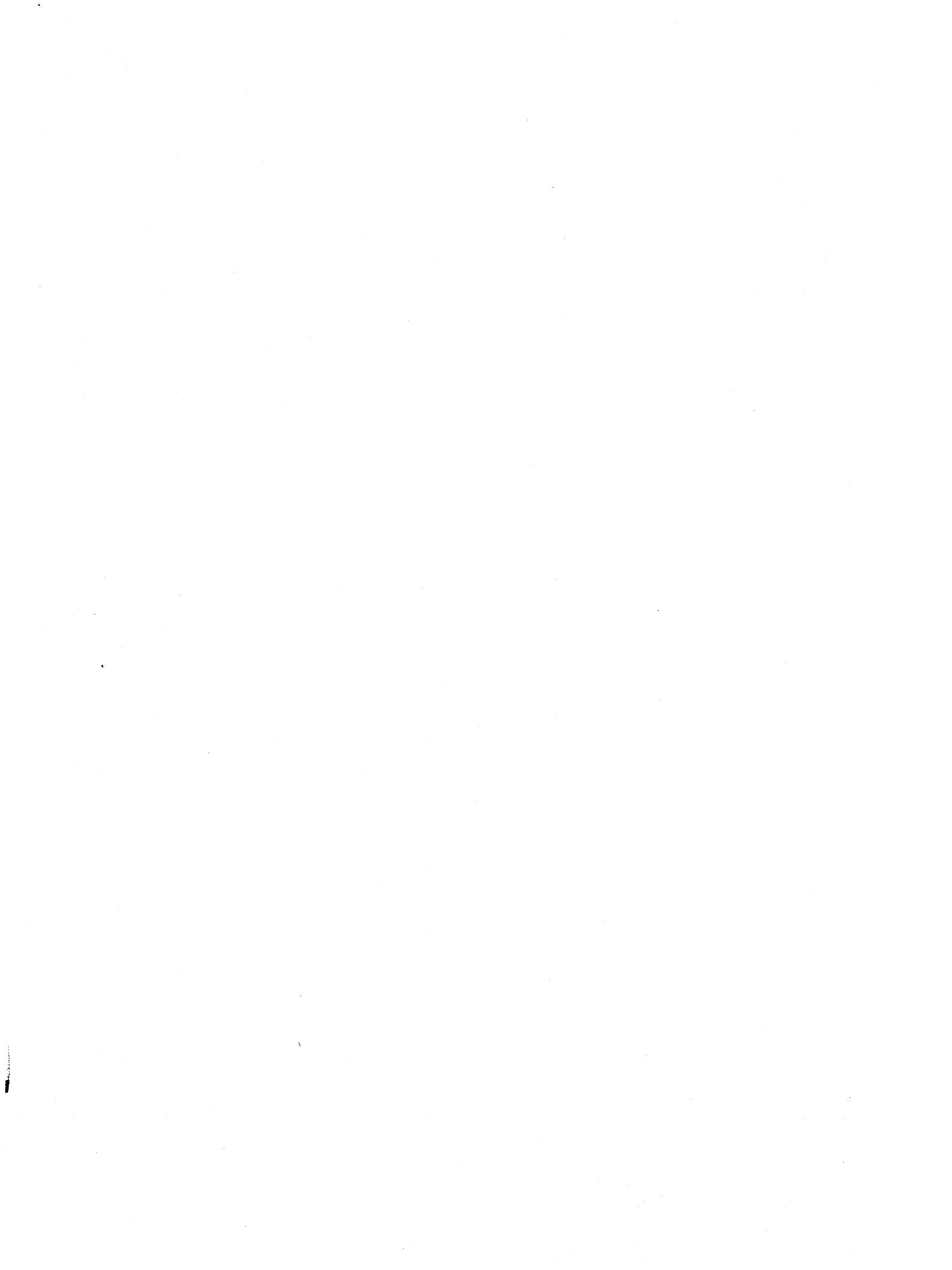
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This publication is intended to help you to use the transactions supplied with CICS. It contains guidance about the CICS-supplied transactions. It also provides guidance about how to control elements of the system, how to switch messages, how to collect statistics, and how to retrieve terminal error information.

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Preface

What this book is about

This book tells you how to initiate transactions supplied with CICS, how to control elements of the system, how to switch messages, how to collect statistics, and how to retrieve terminal error information. It also describes how to use the MVS* console as a CICS terminal.

The CEBR, CECI, CECS, and CEDF transactions are fully described in the *CICS/MVS Application Programmer's Reference* manual, and the CEDA transaction is fully described in the *CICS/MVS Resource Definition (Online)* manual.

Who should read this book

This book is for CICS terminal operators and persons responsible for preparing terminal operating procedures. It will also be useful for both system and application programmers.

What you need to know to understand this book

A knowledge of the concepts and terminology introduced in the *CICS General Information* manual is required. For more information about CICS and the related subjects discussed in this book, see the books listed below. Details of system requirements and a glossary of terms applicable to CICS are provided in the *CICS/MVS Facilities and Planning Guide*.

How to use this book

This book is mainly for reference. Following a brief introduction, the rest of the book is arranged in alphabetical order of the transaction identifier. The keywords associated with each transaction identifier are also arranged in alphabetical order. An index is provided to pinpoint individual transactions and keywords.

Notes on terminology

CICS refers to CICS/MVS*.

VTAM* refers to ACF/VTAM and to the record interface of ACF/TCAM.

TCAM refers both to TCAM and to the DCB interface of ACF/TCAM.

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CICS/MVS 2.1.2 library

General

CICS Library Guide
GC33-0356-04
Master Index
SC33-0513-01
User's Handbook
SX33-6061-01
Messages and Codes
SC33-0514-02

Evaluation and planning

Brochure
GC33-0503-00
CICS General Information
GC33-0155-01
Facilities and Planning Guide
SC33-0504-01
Release Guide
GC33-0505-03
Data Tables General Information
SC33-0684

Administration

Installation Guide
SC33-0506-01
Customization Guide
SC33-0507-02
Resource Definition (Online)
SC33-0508-01
Resource Definition (Macro)
SC33-0509-02
Operations Guide
SC33-0510-01
CICS-Supplied Transactions
SC33-0511-01

Special topics

Intercommunication Guide
SC33-0519-02
Recovery and Restart Guide
SC33-0520-01
Performance Guide
SC33-0521-01
XRF Guide
SC33-0522-02
CICS Communicating with CICS OS/2
SC33-0736-1
Data Tables Guide
SC33-0632-01

Service

Problem Determination Guide
SC33-0516-01
Diagnosis Handbook
LX33-6062-01
Diagnosis Reference
LY33-6077-00
Data Areas
LY33-6078-00

Programming

CICS Application Programming Primer
SC33-0674-00
Application Programmer's Reference
SC33-0512-01

Version 1 books

CICS/VS Application Programmer's Reference Manual (Macro Level) (SC33-0079)

CICS/OS/VS IBM 3270 Data Stream Device Guide (SC33-0232)

CICS/OS/VS IBM 4700/3600/3630 Guide (SC33-0233)

CICS/OS/VS IBM 3650/3680 Guide (SC33-0234)

CICS/OS/VS IBM 3767/3770/6670 Guide (SC33-0235)

CICS/OS/VS IBM 3790/3730/8100 Guide (SC33-0236)

Books from related libraries

The reader of this book may also want to refer to the following IBM publications:

Operator's Library: OS/VS2 MVS System Commands, GC38-0229

OS/VS Display Consoles, GC38-0255

OS/VS Data Management Macro Instructions, GC26-3793

MVS/ESA Operations: System Commands, GC28-1826-1

Resource Access Control Facility (RACF): Security Administrator's Guide, SC28-1340-5

IMS/ESA Messages and Codes Reference Manual, SC26-4290

IMS/ESA System Administrator's Guide, SC26-4278

IMS/ESA Operations Guide, SC26-4287

IMS/ESA Utilities Reference Manual, SC26-4284

IMS/VS Data Base Recovery Control Guide and Reference, SH35-0027

IMS/VS Messages and Codes Reference Manual, SH20-9030

IMS/VS Utilities Reference Manual, SH20-9029

CICS/CMS User's Guide, SC33-0285-0

An Introduction to the IBM 3270 Information Display System, GA27-2739.

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Summary of changes

This edition is based on the *CICS/MVS CICS-Supplied Transactions* manual (SC33-0511-0), and incorporates updates and revisions as well as enhancements introduced by CICS/MVS 2.1.1 and CICS/MVS 2.1.2. These enhancements are described in the *CICS/MVS Release Guide*.

The opportunity has also been taken to correct errors and incorporate readers' comments.

All changes that are new in this edition, other than editorial changes, are marked by revision bars in the left margin, like this paragraph.

Questionnaire

CICS/MVS Version 2 Release 1 Modification 2
CICS-Supplied Transactions

Publication No. SC33-0511-01

To help us produce books that meet your needs, please fill in this questionnaire. A reader's comment form is also included at the back of this book should you want to make more detailed comments. Whichever form you use, your comments will be sent to the author's department for review and appropriate action.

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easy to understand	1	2	3	4	5	incomprehensible
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4. How could the book be improved?

5. How often do you use this book? Less than once a month? Monthly? Weekly? Daily?

6. What sort of work do you use CICS for?

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Introduction

This book contains, in alphabetic order of the transaction identifier, the syntax of the CICS-supplied transactions that are needed to perform a range of tasks from making simple inquiries to controlling complex systems.

This book shows you how to start the transactions supplied with CICS, how to control the CICS system, how to send messages, how to collect statistics, and how to get terminal error information. You should also find it useful if you are responsible for preparing procedures for people who operate such terminals.

The book also describes how you can use the operating system console as a CICS terminal.

CICS-supplied transactions

CICS supports operations, usually initiated from terminals, called **transactions**, each of which involves the use of tables, programs, and internal services. This book deals only with those transactions supplied by CICS. These transactions have identification codes (transaction identifiers) that always start with "C", and which are always 4 characters long; for example, CEMT. Table 1 shows the CICS-supplied transaction names, and their meanings, that you can use from your terminal.

Table 1. Transactions supplied by CICS

CBRC	Database recovery control
CEBR	Temporary storage browse
CEBT	Master terminal
CECI	Command level interpreter
CECS	Command level syntax checker
CEDA	Resource definition online (RDO)
CEDB	Resource definition online (RDO)
CEDC	Resource definition online (RDO)
CEDF	Execution diagnostic facility
CEHS	Remote server
CEMT	Master terminal
CEOT	Terminal status
CESN	Sign on (preferred to CSSN)
CEST	Supervisory terminal
CMSG	Message switching
CRTE	Routing
CSFE	Terminal test, trace, storage
CSPG	Terminal paging
CSSF	Sign-off
CSSN	Sign-on
CSTT	System statistics and monitoring
CWTO	Write to console operator

In general, you start a CICS-supplied transaction by entering its transaction identification code. The transaction identification code is used by CICS to identify the application programs that handle the specified transactions and to establish a task to execute them.

Introduction

The CICS-supplied transactions allow you to make inquiries about, for example, the contents of a database, update or add to the contents of a database, or perform calculations, the results of which can be returned to you at your terminal.

If you use an IBM* 3270 display or similar display device that has the appropriate features installed, you can also start a transaction by a program function (PF) key or program attention (PA) key, by the operator identification card reader, by the magnetic slot reader, or by the light pen. For other types of terminals or subsystems, consult the appropriate CICS/OS/VS subsystem guide.

If you use an IBM 3279 display you can benefit from some of the special facilities incorporated in that device such as color, highlighting, validation, and programmed symbols. Press the CLEAR key after performing a transaction that uses these special facilities. This resets the display to the default state.

Press the CLEAR key after the CICS "good morning" message has been displayed. You can now enter a transaction.

How to start a transaction

You start a CICS-supplied transactions by entering the transaction identifier, either by itself or followed by data, on the command line of your display. The command line is a single line, usually at the top of the screen. If you do not enter enough information, or if the information you enter is wrong, you are prompted to complete or correct your input. For example, in the following transaction:

```
CEMT INQUIRE PROGRAM(PROG1)
```

"CEMT" is the transaction identifier and the additional data is "INQUIRE PROGRAM(PROG1)".

When it is started, the transaction processes the additional data. At the completion of this transaction, you get the following message:

```
STATUS: SESSION ENDED
```

Syntax notation

The syntax displays for each CICS-supplied transaction use a standard notation.

Depending on the way your terminal works, you can enter the transaction identifiers in either uppercase or lowercase characters although, in this book, they are generally shown in uppercase.

When entering a transaction, you must:

- Enter digits and special characters exactly as shown.
- Enter your own information wherever you see lowercase letters.

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- Select one of the items enclosed in braces { }. The items are separated by an "or" sign |.
- Enter parentheses () exactly as shown, unless indicated otherwise; they act as delimiters.
- Enter a blank character when you see a lowercase b in a syntax display.
- Optional data is enclosed in square brackets []. A keyword that is underlined is the default, and is assumed if you do not select any of the optional values.
- Repeat as many times as you like any item or group of items followed by an ellipsis (...).

Minimum abbreviation of keywords

In general, CICS-supplied transactions accept as few characters of a keyword as will identify it within the request. For example, in a CEMT INQUIRE TASK command, you could use TASK, TAS, or TA to uniquely identify TASK. T alone, however, could be confused with TIME, TERMINAL, TRANSACTION, or TRACE.

In the syntax displays on your screen (unless your terminal is 'uppercase only'), and in some cases in this book, the minimum permitted abbreviation is given in uppercase characters, the remainder in lowercase.

Terminal operators

You normally find the following classes of operators in a CICS system:

- As a CICS **terminal operator**, you can use a terminal to perform routine transactions that cause application programs to be executed. You can use a small selection of CICS-supplied transactions. For example, you can inquire about, or change, the status of your own terminal.
- As a CICS **supervisory terminal operator**, you can perform all the duties of a terminal operator, in addition to supervising other operators within a functional group. Your operator security code gives you access to the supervisory terminal transaction CEST, with which you monitor and control the system resources used by your group.
- As a CICS **master terminal operator**, you can monitor and control all resources in a CICS system. Your operator security code gives you access to the master terminal transaction CEMT, with which you monitor and control all the system resources.

Operator security codes

The transactions you can initiate are defined by your operator security code, which is normally provided when you sign on using the CESN or CSSN transaction.

Generally, the master terminal operator has access to all CICS-supplied transactions, the supervisory terminal operator has access to a subset, and the terminal operator has access to very few transactions.

Introduction

The system programmer is responsible for allocating operator security codes to restrict the use of particular transactions. For more information, see the *CICS/MVS Facilities and Planning Guide*.

Terminal operator

To operate the system, you normally first sign on to the system and, as a minimum, enter your user identification and your password.

During signon, you also enter your name at the terminal. This is used by CICS to establish a priority and a security key for the transactions that you may want to perform later on.

A security key default option lets you make transaction requests with a security key of 1 without going through the signon procedure.

After you have signed on, you can enter only a limited range of transaction identifiers. You should also be aware of error messages that might be generated by the transactions you invoke, as well as corrective action that you must take. As well as error messages, you should also be aware of other messages that CICS might transmit to your terminal.

You must know the identifiers of other terminals with which you wish to communicate. If you operate a BTAM terminal connected to the system over a switched (dial-up) line, you must identify your terminal to CICS. To do this, you may have to enter a terminal identifier (1 through 4 characters) assigned to that terminal immediately after you have established connection.

If the identifier is valid, the system responds with a READY message. The READY message does not occur on programmable binary synchronous devices, or on the 3275 display. Normal operation then may proceed. If the identifier is invalid, an error message is returned and your terminal is disconnected. For details of conditions under which you do not need to enter a terminal identifier, see your system programmer.

Supervisory terminal operator

A supervisory terminal operator is the supervisor of any part of the system for which group control is desired. You are responsible for supervising, and keeping operational, groups of terminals in a designated terminal list table (TLT). You do this using the CICS supervisory terminal transaction (CEST).

Your responsibilities can be regarded as being a subset of those of the master terminal operator, and you should be aware of those functions that are not available to the terminals under your supervision.

You should know the identity of all terminals and operators under your supervision. The terminal identifiers are found in the TLT that has the same suffix as the 1-or 2-character identifier supplied in the SUPRID parameter list keyword.

Be aware of, and understand, the procedure for changing the status of each terminal.

A group of terminals under your control is known as a class of terminals and is defined in the TLT. For guidance information about defining this table, see the *CICS/MVS Resource Definition (Macro)* manual.

You can specify a class of terminals or a list of terminals. A class of terminals is specified by the parameter list keyword `CLASID=xx`, where `xx` is the suffix that makes `DFHTLtxx` a unique name for the particular TLT. A list of terminals is specified by the parameter list keyword `TERMID=t1,t2,...`, where `t1`, `t2`, are terminal identifiers.

The TLT by which either the class or list of terminals is defined is required so that you can identify terminals under your control as a class or list when you need to exercise a supervisory function. The interaction between you and the system requires either the `SUPRID` parameter list keyword, followed by your 2-character key, the terminal class identifier introduced by the `CLASID` keyword, or both. The response given as input to the system must be the same two characters as those that form the suffix to the name of the appropriate TLT.

When you want to use supervisory terminal services, the original input may indicate the service to be performed and may, in fact be sufficient information for the service to be performed. To request a service, you enter `CEST` followed by the request. In this way, `CEST` can be used to control:

- Terminals
- Control units and lines
- Tasks.

Unless otherwise stated, the information given in this book about the supervisory terminal and its transaction applies only to a single CICS system, regardless of whether it is connected to another CICS system through intersystem communication (ISC) or multiregion operation (MRO).

Master terminal operator

The master terminal operator controls system components using the master terminal transaction (`CEMT`). A requirement of a data base/data communication (`DB/DC`) system is that system control parameters can be changed dynamically. Under CICS, primary system control is provided by the master terminal transaction (`CEMT`).

Although the transaction can be invoked at any valid 3270 or 3270-like terminal or from the console, its use is intended to be limited, by signon and security key, to a person known as the **master terminal operator**. The control permitted through `CEMT` allows you, the master terminal operator, to improve performance by changing control parameters in the day-to-day operation of the system. In addition to system control, you have prime responsibility for administering the terminal facilities of the system.

By using the routing transaction (`CRTE`), you can also be a master terminal operator for multiple connected CICS systems.

As the master terminal operator, you can access all terminal and supervisory terminal transactions. In addition, however, you must be familiar with all the

Introduction

procedures associated exclusively with the master terminal. You must be aware of which terminals and operators can access CICS at any given time, and of the identifiers by which they are known to CICS.

You must also know the TCTTE identifier of each intercommunication (LUTYPE6.1, LUTYPE6.2, or MRO) session because this needs to be specified when operating on the session.

You are usually the only individual allowed to make changes to various system operating parameters. You should know the effects such changes have on performance, and should understand how CICS works.

Your use of the master terminal transaction is restricted by entries in the signon table (SNT) and in the program control table (PCT). These entries are the responsibility of the system programmer.

During long periods of continuous operation, you can, at intervals, enter a transaction (using transaction identifier CSTT and the appropriate parameters) to read out and reset the statistics counters. The volume of activity in your system determines how often you should do this.

You can invoke all master terminal functions only at a 3270 or 3270-like terminal, or at the system console.

When the system has satisfactorily completed its response to a service request, the time and date are printed or displayed at your terminal, as follows:

```
TIME=hh.mm.ss DATE=mm/dd/yy
```

where time is in hours, minutes, and seconds, and date is in months, days, and years. You can use the DATFORM operand of the DFHSIT system macro to change the order of the months, days, and years; see the *CICS/MVS Resource Definition (Macro)* manual. For brevity this final message has been deleted from all examples in the remainder of the book.

You can monitor and control the following system components and parameters:

- Time and interval
- Wait count and storage cushion
- Tasks
- Transactions
- Programs
- Files
- Terminals
- Remote control units and lines
- Trace and auxiliary trace
- VTAM ACB (VTAM access method control block)
- Interregion communication
- CICS shutdown
- Formatted dumps.

Unless otherwise stated, the information given in this book about the master terminal and its transactions applies only to a single CICS system, regardless of whether it is part of a CICS intersystem communication link.

MRO and ISC support

The intercommunication facility of multiregion operation (MRO) enables you, while signed on at a terminal assigned to one CICS region, to run transactions in connected CICS regions in the same MVS image. Also, it enables application programs to address resources attached to other CICS regions.

Intersystem communication (ISC) permits distributed transaction processing. This means that a transaction initiated within one CICS system can communicate directly with a transaction running in a different MVS image.

Apart from experiencing longer response times, you will not be aware that the MRO or ISC processes, which make more efficient use of resources in a network, are being used.

Partitions

When you use display devices that support partitions, make sure that you understand:

- How to use the SCROLL, PARTITION JUMP, CLEAR, and CLEAR PARTITION keys
- The concept of the active partition
- The meanings of the partition-related indicator symbols that can appear on a display screen.

For guidance information about partitions, see the *CICS/MVS Application Programmer's Reference* manual.

CLEAR key

The CLEAR key clears all partitions from the display and sets the terminal to base state. The next BMS output request recreates the partitions (but does not restore their contents), using the application partition set.

The CLEAR and CLEAR PARTITION keys cannot be used interchangeably when running an existing CICS transaction in a single explicit partition.

Partitions and CEDF

The execution diagnostic facility (EDF), invoked by the CEDF transaction identifier, is not available in single-screen mode on a terminal in partitioned state. EDF must be used in dual-screen mode for debugging application programs that use partitions.

Partitions and the command interpreter

The CICS command interpreter, invoked by the CECI or CECS transaction identifier, cannot be used to execute commands that refer to partitions. This is because the command-interpreter display cannot be restored after the screen has been partitioned.

Introduction

PA1 print key

The PA1 print key cannot be used from a terminal in partitioned state.

Routing and multiple partitions

Routed messages can be directed to a terminal, including the transaction terminal, that supports partitions. However, such messages reset the terminal to base state.

Terminal paging

When a BMS logical message is saved in CICS temporary storage, CICS also saves the application partition set. This partition set is loaded onto the target terminal before any pages are delivered. CICS builds a separate page for each partition, and overflow occurs on a partition basis.

Page retrieval

Terminal operator page retrieval commands operate on a partition basis. When a page retrieval or page copy command is entered in a partition, it implicitly refers to pages in that partition. If single keystroke retrieval is used, the retrieval command applies to the partition containing the cursor when the PF key is pressed. The first page for a partition is displayed initially in the viewport.

Message chaining

CICS retains a current partition for each level of page chaining. This is initially the default partition for that partition set. Page retrieval commands entered on a cleared screen, or page retrieval commands for a chaining level other than the one being displayed, refer to the current partition for the target chaining level. The current partition is reset to the partition in which the last terminal operator command was entered.

CICS retains the current page for each partition in the partition set. This is initially the first page. The current page is redisplayed in each partition in the following circumstances:

- For the initial display when the BMS paging program is first invoked
- Following erasure of the terminal partition set due to pressing the CLEAR key
- Following page retrieval for a different page chaining level
- Following page purge for a different page chaining level.

Copying pages

BMS page copy operates on a partition basis, not a screen or partition set basis. BMS page copy copies a page from a partition to any terminal in base state. You cannot copy a page from a partition to another partition on the same or another terminal.

Message termination

When you terminate a message, the entire logical message (that is, all pages in all partitions) is purged, irrespective of the partition in which you entered the purge command.

The response to a page query request will be displayed on a cleared unpartitioned screen.

Error messages

Most error messages relating to invalid paging commands are displayed with an erase/write in the partition in which you entered the command. Other error messages unrelated to any particular partition (such as those relating to invalid message identifiers) are displayed on a cleared unpartitioned screen.

Using the operating system console as a CICS terminal

Console support makes it possible for a terminal to be both an operating system console and a CICS master terminal. Furthermore, multiregion operation (MRO) enables a console to communicate with a CICS system in any region. Consequently, you can be a master terminal operator for several CICS systems.

If multiple console support (MCS) is in use, you can define each console to CICS as a separate terminal, and all consoles can communicate with CICS simultaneously.

You can use all operating system consoles as CICS terminals if `CONSLID=XX` has been specified in the TCT. All consoles can support automatic task initiation (ATI), and can receive messages from other terminals and consoles, and from CICS transactions.

If you try to communicate with CICS from a console that has not been defined in the TCT, the following message will appear:

```
DFH2015 THIS CONSOLE HAS NOT BEEN DEFINED TO CICS
```

and your input will be ignored.

In a system that has only consoles and VTAM terminals, a console can remain active when CICS and VTAM are disconnected from each other. You can use the console to make or break the CICS-VTAM connection without CICS being terminated.

You start a CICS transaction from a console by using the `MVS MODIFY` command (which can be abbreviated to `F`), as follows:

```
MODIFY ident, 'datastring'
```

ident

is the name of the job used to start CICS if it is started by a job stream, or the name of the procedure used to start CICS if it is run as a started task.

datastring

is a string of data, starting with a CICS transaction identifier. The single quotes are optional.

Introduction

For example, to start the transaction CEBT from the console, enter:

```
MODIFY CICSA,CEBT PERFORM TAKEOVER
```

If the data string is enclosed in single quotes, a single quote required within the string should be replaced by two single quotes, for example:

```
MODIFY CICSB,'MSG R=xxxx,M=''PLEASE SIGN OFF'',S'
```

Data strings in quotes are not translated into uppercase unless you specify UCTRAN in the TCT.

You can enter more than one MODIFY command at a console. They are processed in order of entry.

Communicating with a CICS transaction from a system console

A CICS transaction can issue EXEC CICS READ, EXEC CICS WRITE, or EXEC CICS CONVERSE commands to communicate with an operator. WRITE and CONVERSE commands transmit application program messages, but a single READ command produces no message. The console operator, who continues to monitor the system while performing a transaction, requires a prompt for each outstanding input request. CICS provides such a prompt by producing a message of the following form each time a single READ command is issued to a console:

```
@nnDFH4200A ident tttt
```

@nn

"nn" is the identifier you must prefix to your reply to the transaction. Messages from a transaction that uses CONVERSE commands will also be prefixed by @nn.

ident

is the jobname of CICS in the operating system.

tttt is the identifier of the CICS transaction that has issued a terminal control READ command to the console. This tells you which transaction you are communicating with.

You respond by using the MVS REPLY command (abbreviation R), which can be entered at the prompted console or the master console. The format of the reply command is:

```
REPLY nn,'datastring'
```

nn is the number of the message to which you are replying. The number is generated by the operating system, and is transmitted as part of the message.

datastring

is your reply to the request.

Message strings in quotes are not translated into uppercase during handling by the operating system. If you want them to be, you must specify UCTRAN in the TCT.

If a transaction is purged while it is awaiting a reply from the operator, the reply is canceled.

Example of a conversation using EXEC CICS CONVERSE

```

modify job002,serv . . . . . (1)
@17 fault type? . . . . . (2)
R17,'elec' . . . . . (3)
MESSAGE HAS BEEN SENT

```

The first line (1) specifies that a user-written transaction "serv" is to be started. This transaction logs messages to service groups supporting the installation.

The operating system relays the transaction response (2) produced by an EXEC CICS CONVERSE command.

Line (3) is the operator response to this request for more information. The fault is electrical.

In a real conversation, the messages could be separated by other, unconnected messages.

Example of a conversation using EXEC CICS WRITE/READ

Note the use of "f" as the abbreviation for modify.

```

f job002,'usid' . . . . . (1)
USER SIGN-ON ID=? . . . . . (2)
@25DFH4200A JOB002 USID . . . . . (3)
R25,'accts1' . . . . . (4)
USER'S NAME: J. SMITH . . . . . (5)
USER'S TEL. NO.: 88999 . . . . . (6)

```

Line (1) is the initial request; "usid" is the transaction that returns information on a user, given the userid.

Introduction

Line (2) is an application-program message produced by an EXEC CICS WRITE command.

Line (3) is a system message produced by an EXEC CICS READ command.

Line (4) is the operator's reply.

Lines (5) and (6) make up a transaction message using an EXEC CICS WRITE command – no reply needed.

CICS application programs should be designed and used with care if they are to be initiated from an operating system console. Messages to the console from such transactions can become interspersed with messages from the operating system and from other regions, making them difficult to read. In extreme cases, parts of lengthy messages can be displaced from the console screen before they have been read.

As well as the MVS MODIFY and MVS REPLY commands, the system programmer should consider use of the CONTROL, DISPLAY, and VARY commands when preparing console operator procedures. For information on these commands and other system details, see the relevant MVS manuals for your system.

CBRC—database recovery control transaction

The database recovery control transaction, CBRC, allows you to issue commands to the IMS database recovery control component (DBRC). This transaction applies only to CICS systems that use IMS DBRC to provide recovery control for DL/I databases.

You can initiate CBRC from 3270 (and 3270-like) terminals or from the system console.

You start the transaction by entering the identifier, CBRC, on the command line of your display. You end the transaction by pressing PF3.

You can enter CBRC by itself, or you can add operands on the same line, separated by commas or blanks, to form a complete request. You need not worry about the line length restriction that normally applies to DBRC commands; you can enter them as a single string. The cursor jumps automatically to the next line when you reach the end of a line. The command is formatted by CBRC before it is passed to the database recovery control component.

Enter CBRC, in either uppercase or lowercase, on the command line of your display. You will get a display that lists the keywords associated with CBRC, as follows:

```
Change  
Delete  
Genjcl  
Init  
List  
Notify.
```

The display contains other information that is self-explanatory. This information is given in the full displays in the following pages. The format of each of the keywords and any modifiers that you can use with them, is given in the appropriate reference manuals in the IMS library.

Examples of the CBRC transaction

The following display shows what appears after you have entered CBRC, pressed ENTER, and selected one of the displayed keywords (here, the "list" keyword), following it with the "subsystem" modifier.

The display shows you the RECON data set subsystem record for the local CICS system.

```
LIST 'SUBSYS
LIST.SUBSYS
-----
SSYS
SSID=CICSA3  IRLMID=JRLM2      LOG START=83.047  13:31:21.3
SSTYPE=ONLINE  ABNORMAL TERM-OFF  RECOVERY STARTED=NO
AUTHORIZED DATA BASES/AREAS:4
  -DBD-      -AREA-
  BE2PCUST
  BE3ORDRX
  BE3ORDER
  BE3PSID1
DSP0180I  NUMBER OF RECORDS LISTED IS      1
DSP0203I  COMMAND COMPLETED WITH CONDITION CODE 00
DSP0220I  COMMAND COMPLETION TIME 83.047  15:16:16.9
DSP0211I  COMMAND PROCESSING COMPLETE
DSP0211I  HIGHEST CONDITION CODE = 00
DSP0058I  RML COMMAND COMPLETED

APPLID=CICSA3

PF: 1 HELP      3 END      7 SBH 8 SFH      10 SB 11 SF
```

Example of CBRC LIST LOG command

The following display shows the result of a LIST.LOG command. For CICS, all the log data sets used during a run are contained in one PRILOG record. The word "CICS" in the second line of the PRILOG record shows that this is a CICS log.

```

L 'LOG

LIST.LOG
-----
PRILOG
START =83.047  13:31:21.3  STOP =00.000  00:00:00.0
SSID=CICSA3   #DSN=2      CICS
DSN=IMS131.DFH.INTERIM2.J04A
START =83.047  13:31:21.3  STOP =83.047  15:08:09.1
FILE SEQ=0001  #VOLUMES=0001 -VOLSER-      -STOPTIME-
                               VS1134      83.047  15:08:09.1

DSN=IMS135.DFH.J01B
START =83.047  15:08:09.1  STOP =00.000  00:00:00.0
FILE SEQ=0001  #VOLUMES=0001 -VOLSER-      -STOPTIME-
                               VS1135      00.000  00:00:00.0

LOGALL
START  = 83.047  13:31:21.3*  -DBD-  -DDN-  -ALLOC-
                               BE3PARTS DE3PARTS  1

DSP0260I NO ONLINE LOG RECORDS FOUND IN RECON
DSP0180I NUMBER OF RECORDS LISTED IS 2
+ DSP0203I COMMAND COMPLETED WITH CONDITION CODE 00

APPLID=CICSA3

PF: 1 HELP      3 END      7 SBH 8 SFH      10 SB 11 SF

```

CBRC

Example of CBRC LIST DB command

The following display shows the result of a LIST.DB command. The RECON record displayed is the database record for the named database BE3PARTS.

```
L 'DB DBD(BE3PARTS)

LIST.DB DBD(BE3PARTS)
-----
DB
DBD=BE3PARTS   IRLMID=**NULL**   DMB#= 4   SHARE LEVEL=3
  FLAGS:
    BACKOUT NEEDED-OFF
    PROHIBIT AUTHORIZATION-OFF
    READ ONLY-OFF
  COUNTERS:
    RECOVERY NEEDED=0
    IMAGE COPY NEEDED=0
    AUTHORIZED SUBSYSTEMS=0
    HELD AUTHORIZATION STATE=0

DSP0180I NUMBER OF RECORDS LISTED IS      1
DSP0203I COMMAND COMPLETED WITH CONDITION CODE 00
DSP0220I COMMAND COMPLETION TIME 83.109   08:04:09.1
DSP0211I COMMAND PROCESSING COMPLETE
DSP0211I HIGHEST CONDITION CODE = 00
DSP0058I RML COMMAND COMPLETED

APPLID=CICSA3

PF: 1 HELP      3 END      7 SBH 8 SFH      10 SB 11 SF
```

Example of CBRC LIST DBDS command

The three following displays show the multipanel result of entering a LIST.DBDS for DE3PARTS, a data set in database BE3PARTS.

```

L 'DBDS DBD(BE3PARTS) DDN(DE3PARTS)

LIST.DBDS DBD(BE3PARTS) DDN(DE3PARTS)
-----
DBDS
DSN=IMSPRIME.DE3PARTS.DBASE          DBDS SEQ=4      IMS
DBD=BE3PARTS DDN=DE3PARTS DSID=01 DBORG=HDAM DSORG=VSAM DSLOG SEQ=02
CA GRPNAME=BE3GRP GENMAX=2 IC AVAIL=1 IC USED=1 DSSN=00000001
      IC NEEDED-OFF RECOV-OFF RECOVPD =0
REUSE ICJCL=ICJCL OICJCL=OICJCL RECOVJCL=RECOVJCL
DSLOG
DSN=IMSPRIME.BE3PARTS.DSLOG1          DDN=DS000401
CREATE = 83.105 08:53:38.5*
RUN = 83.105 10:15:21.7
-VOLSER- -STOPTIME- -FLG- -FIRSTRBA- -LASTRBA-- -LNUM- -CHG-
VS1134 83.105 08:38:31.2 LST 00000000 00000591 01 YES
VS1134 83.105 08:45:15.1 LST 00000788 00001773 01 YES
INTERM 83.105 09:48:23.1 LST 00001970 00003743 01 YES
ALLOC
ALLOC = 83.105 08:33:04.5* START = 83.105 08:29:05.0
+                                     DSSN=00000001
                                           APPLID=CICSA3

PF: 1 HELP      3 END      7 SBH 8 SFH      10 SB 11 SF

```

```

L 'DBDS DBD(BE3PARTS) DDN(DE3PARTS)

+ ALLOC
  ALLOC = 83.105 09:19:34.2* START = 83.105 09:12:42.8
                                     DSSN=00000001

MRGND
DBD=BE3PARTS DDN=DE3PARTS MN TIMESTAMP=83.105 08:29:05.0
DSID=01 DSSN=00000001 SUBSYSTEM COUNT=2 MERGE DONE=YES
ASSOCIATED SUBSYSTEM INFORMATION:
  SSID PRILOG START TIME ALLOCATION TIMESTAMP
  CICSA3 83.105 08:29:05.0 83.105 08:33:04.5
  CICSA1 83.105 09:12:42.8 83.105 09:19:34.2
IMAGE
RUN = 83.105 08:14:37.6* RECORD COUNT =84
STOP = 00.000 00:00:00.0 BATCH
IC1
DSN=IMSVS.BE3PARTS.DE3PARTS.IC.IC164330 FILE SEQ=0001
VOLS DEF=0001 VOLS USED=0001
VOLSER=VS1134

RECOV
+ RUN = 83.105 15:18:17.3*
                                           APPLID=CICSA3

PF: 1 HELP      3 END      7 SBH 8 SFH      10 SB 11 SF

```

```
L 'DBDS DBD(BE3PARTS) DDN(DE3PARTS)
+
      AVAILABLE DATA SETS
      DBD=BE3PARTS DDN=DE3PARTS
DSLOG
* DSN=IMSPRIME.BE3PARTS.DSLOG2          DDN=DS000402
  CREATE = 83.105  08:10:30.6*
      AVAILABLE DATA SETS
      DBD=BE3PARTS DDN=DE3PARTS
IMAGE
* CREATE = 83.105  08:10:18.7*
IC1
  DSN=IMSVS.BE3PARTS.DE3PARTS.IC.IC165201  FILE SEQ=0001
                                           VOLS DEF=0001 VOLS USED=0000
                                           VOLSER=VS1134
DSP0180I  NUMBER OF RECORDS LISTED IS          9
DSP0203I  COMMAND COMPLETED WITH CONDITION CODE 00
DSP0220I  COMMAND COMPLETION TIME 83.109  08:04:42.3
DSP0211I  COMMAND PROCESSING COMPLETE
DSP0211I  HIGHEST CONDITION CODE = 00
DSP0058I  RML COMMAND COMPLETED
                                           APPLID=CICSA3
PF: 1 HELP          3 END          7 SBH 8 SFH          10 SB 11 SF
```

CEBR—temporary storage browse transaction

CEBR is a utility that lets you access data on a temporary storage queue. Enter CEBR, in either uppercase or lowercase, on the command line of your display, as follows:

```
CEBR
```

You will get a display for the queue called CEBRname (where "name" is your terminal identifier) on your terminal. You can view the contents of other queues by entering the QUEUE subcommand of CEBR.

You can also invoke the transaction indirectly, under EDF, by using PF keys. Group DFHEDF must be installed before CEBR can be used.

You can use other subcommands, or your PF keys, to process the queue. You can use CEBR to browse, copy, or purge queues. You cannot read an output extrapartition transient data queue. Pressing PF1 generates a help panel that lists the functions of CEBR.

For further guidance information about the CEBR transaction, see the *CICS/MVS Application Programmer's Reference* manual.

CEBT—master terminal transaction

The master terminal transaction (CEBT) can be entered only at the system console. Using this transaction, the operator can control an alternate CICS system in an XRF complex. Entering a transaction at the system console is described on page 9.

For further guidance on how to use CEBT, see the *CICS/MVS XRF Guide*.

Minimum abbreviation of keywords

The CEBT command accepts as few characters of a keyword as will uniquely identify it within the request. An exception to this rule is SHUTDOWN for which the minimum abbreviation is SHUT.

In the syntax displays on your screen, but not in this book, you will see the minimum permitted abbreviation in uppercase characters, the remainder in lowercase.

CEBT PERFORM commands

Detailed descriptions follow of the CEBT PERFORM commands in alphabetical order. For each command, its associated operands are also presented, again, in alphabetical order.

These functions are not concerned with resource status; they are used to shut down the CICS alternate system (PERFORM SHUTDOWN), get a dump and continue execution (PERFORM SNAP), and cause the alternate system to take over from the active system (PERFORM TAKEOVER).

PERFORM SHUTDOWN

To shut down the CICS alternate system, enter PERFORM SHUTDOWN at the console. All active (system) tasks and SNA (backup) sessions are terminated normally, and the alternate system signs off normally from the CICS availability manager (CAVM).

The syntax of the command is as follows:

```
CEBT PERFORM SHUTDOWN  
[IMMEDIATE]  
[DUMP]
```

DUMP

A dynamic storage dump is produced on completion of the termination process.

CEBT

IMMEDIATE

The alternate system is shut down immediately, terminating all active tasks and SNA sessions. The alternate system signs off abnormally from the CAVM. This can cause CICS to abend if tasks are still running.

PERFORM SNAP

To get a dump and continue execution, select SNAP, as shown, after PERFORM on the command line. (In effect, you get a "snapshot" of the CICS system.)

```
CEBT PERFORM SNAP  
[PARTITION]  
[FORMAT]
```

FORMAT

A formatted system dump is written to the dump data set.

PARTITION

A partition dump is produced. The type of partition dump (CICS or PDUMP) depends on the DUMP parameter of the system initialization table (SIT). The default is a CICS partition dump.

If you specify neither PARTITION nor FORMAT, the system produces a partition dump, or a formatted dump, or no dump at all, depending on what is specified in the DUMP parameter of the SIT.

Execution continues.

Note: The use of CEBT PERFORM SNAP prevents all other tasks from running, and may delay takeover or recovery after takeover.

PERFORM TAKEOVER

To initiate a takeover, select TAKEOVER, as shown, after PERFORM on the command line. The alternate system takes over from the active system.

```
CEBT PERFORM TAKEOVER  
[DUMP]
```

DUMP

A message is sent to the active system requesting it to take a dump after it has signed off abnormally from the CAVM. However, this request may not be honored if the active system failed before the dump could be taken.

CEBT INQ/SET commands

The combined CEBT INQ/SET commands are described in alphabetical order of the name of the resource. For each command, its associated operands are also presented, again in alphabetical order.

AUXTRACE

CEBT {INQ SET} AUXTRACE	
[ON OFF]	(SET only)
[OPEN CLOSED SWITCH]	(SET only)

INQ AUXTRACE tells you whether auxiliary trace is on or off, whether the auxiliary trace data set is open or closed, and which of the auxiliary trace data sets, DFHAUXT or DFHBUXT, is active.

Note: Auxiliary trace entries are recorded only when auxiliary trace and internal trace are both active at the same time. (Internal trace is started at system initialization.)

CLOSED

closes the auxiliary trace data set.

OFF

stops recording entries in the auxiliary trace data set.

ON

opens the auxiliary trace data set if it was not previously opened, and starts recording entries in that data set. Auxiliary trace entries are not recorded, however, unless internal trace is active at the same time. In this way, auxiliary tracing can be controlled by starting and stopping internal trace.

OPEN

opens the auxiliary trace data set.

SWITCH

closes the current auxiliary trace data set, then opens the alternate trace data set if defined. The status of auxiliary trace (on or off) remains as it was before the switch request, unless the second data set fails to open. Here the auxiliary trace is turned off.

DUMP

CEBT {INQ SET} DUMP	
[OPEN CLOSED SWITCH]	(SET only)
[AUTOSWITCH NOAUTOSWITCH]	(SET only)

INQ DUMP tells you whether the dump data set is open or closed, whether AUTOSWITCH is active, and which of the dump data sets, DFHDMPA or DFHDMPB, is active.

CEBT

AUTOSWITCH

When the data set currently being used becomes full, it is closed and the dump (that was being written at the time) is restarted automatically on the other data set. Now, AUTOSWITCH is deactivated to allow the data set that has just been closed to be printed. SET DUMP AUTOSWITCH can then be used to reactivate automatic switching.

CLOSED

closes the dump data set.

NOAUTOSWITCH

You must explicitly switch the dump data set.

OPEN

opens the dump data set.

SWITCH

closes the current dump data set and opens the inactive one.

SURVEILLANCE

CEBT {INQ SET} SURVEILLANCE [ON OFF] (SET only)

INQ SURVEILLANCE tells you whether surveillance is ON or OFF.

OFF

stops surveillance.

ON

starts surveillance.

TAKEOVER

CEBT {INQ SET} TAKEOVER [AUTOMATIC MANUAL COMMAND] (SET only)

INQ TAKEOVER tells you the type of takeover that is to be done; that is, automatic, by command, or manual.

AUTOMATIC

Takeover is automatic.

COMMAND

Takeover is by command.

MANUAL

Takeover is manual.

TRACE

CEBT {INQ SET} TRACE [ON OFF] (SET only)

INQ TRACE tells you whether the trace is on or off.

OFF

stops recording entries in the trace table.

ON

starts recording entries in the trace table.

CECI—command level interpreter transaction

The CECI transaction, which invokes the command level interpreter, allows you to enter a CICS command, check its syntax and, if required, modify and, in most cases, execute it from your 3270 screen. You do this by entering the following transaction identifier:

CECI

Use of CECI can be limited, by security code, to selected operators.

For guidance information about the the command level interpreter, see the *CICS/MVS Application Programmer's Reference* manual.

Command level syntax checker transaction (CECS)

The CECS transaction, which invokes the command level interpreter, allows you to enter a CICS command and check only its syntax. You do this by entering the following transaction identifier:

CECS

CECS checks only the command syntax; it does not execute the command.

CEDA—resource definition online transaction

The CEDA transaction is used for resource definition online (RDO). You use it for the interactive definition and dynamic addition of programs, transactions, map sets, partition sets, profiles, terminals, typeterms, connections, and sessions.

The CEDB and CEDC transactions allow you to use only certain functions of CEDA, limited by security level, as described below.

Enter the transaction identifier as follows:

CEDA

Using CEDA, you can update both the CICS system definition data set (CSD) and the running CICS system.

CEDB

Using CEDB, you can update the CSD but not the running CICS system, because the INSTALL GROUP command is not available to you.

CEDC

Using CEDC, you can only interrogate the CSD; you cannot update it.

For further guidance information about these transactions, see the *CICS/MVS Resource Definition (Online)* manual.

CEDF—command level execution diagnostic transaction

The CEDF transaction allows you to test command-level application programs by invoking the execution diagnostic facility (EDF).

For the transaction to be available, the CEDF transaction code must be defined in the program control table (PCT) and its associated programs must be defined in the processing program table (PPT). To do this, you must code the EDF option of the FN operand of both the DFHPCT TYPE=GROUP and DFHPPT TYPE=GROUP system macros. Alternatively, if you are using resource definition online (RDO), make sure that group DFHEDF is installed on your system.

Enter the transaction identifier as follows:

```
CEDF [termid|sysid|sessionid] [,ON|,OFF]
```

where:

termid

is the identifier of the terminal on which the transaction to be tested is being run.

sysid

is the identifier of the system for LU6.2.

sessionid

is the identifier of the session for MRO and LU6.1.

If you omit an identifier, the terminal at which you enter the CEDF transaction is assumed. If you omit both ON and OFF, the default is ON.

For further guidance information about the execution diagnostic facility, see the *CICS/MVS Application Programmer's Reference* manual.

CEHS—remote server transaction

The remote server transaction (CEHS) receives requests for remote resources from CICS/CMS* and it operates **only** on a terminal that is connected to and controlled by CICS/CMS.

Enter CEHS on the command line of your display, as follows:

```
CEHS
```

You will get the following display:

```

CCCCC  EEEEEEE  HH   HH  SSSSSS
CCCCCCC EEEEEEE  HH   HH  SSSSSSSS
CC   CC  EE     HH   HH  SS   SS
CC     EE     HH   HH  SS
CC     EEEEEEE HHHHHHHH SSSSSSSS
CC     EEEEEEE HHHHHHHH SSSSSSSS
CC     EE     HH   HH   ss
CC   CC  EE     HH   HH  SS   SS
CCCCCCC EEEEEEE  HH   HH  SSSSSSSS
CCCCC   EEEEEEE  HH   HH  SSSSSS

```

```
Status: STARTING|RUNNING|STOPPING
```

```
Hit PF3 to Exit
```

To end the CEHS transaction, press PF3. The following message appears:

```
CEHS terminated, clear screen and type next transaction identifier
```

For more information about the remote server transaction, see the *CICS/CMS User's Guide*.

* IBM Trademark. For a list of trademarks see page iii.

CEMT—master terminal transaction

The master terminal transaction (CEMT) can be invoked only from 3270 (and 3270-like) terminals, or from the system console. Invocation from the system console is described on page 9. The description of CEMT throughout this section assumes, unless stated otherwise, that you are using a 3270 (or 3270-like) terminal.

You can enter the identifier, CEMT, on the command line by itself, or you can add operands on the same line, separated by commas or blanks, to form a complete request. You start the transaction by entering CEMT and pressing ENTER; you terminate it by pressing PF3.

You can also modify a CEMT display by moving the cursor to the required field and changing its contents.

Program function (PF) keys

The lower part of your display contains a list of PF keys. If your terminal does not have such keys, you can obtain the same effect by placing the cursor under a name in the list and pressing ENTER.

Here is what the PF keys do:

- PF1** Is a general HELP key. It also gives you a list of the PF keys and what they do.
- PF3** End session. This key terminates your CEMT transaction. However, if you use this key when you are modifying your display, say, by keying in a new command or by overtyping an old command, this key does not end your session; it is ignored.
- PF7** Scroll backward half. This key lets you go back half a screenful.
- PF8** Scroll forward half. This key lets you go forward half a screenful.
- PF9** Expand messages. If more than one message has been generated in response to your request, a message telling you how many messages have been generated appears near the bottom of the screen. This key lets you display all the messages on a separate display. Simply press ENTER to go back to your original display.
- PF10** Scroll backward. As for PF7, but it lets you go back a complete screen.
- PF11** Scroll forward. As for PF8, but it lets you go forward a complete screen.

Scrolling symbol (+ sign)

A plus (+) sign on the first or last line of a display tells you that there is more data above or below your current display. Scrolling backward reveals data above, and scrolling forward reveals data below.

CEMT

Minimum abbreviation of keywords

CEMT accepts as few characters of a keyword as will uniquely identify it within the request. In this way you can enter the keyword TASK as TA, TAS, or TASK, but you cannot use T, because it can be confused with TIME, TERMINAL, TRANSACTION, or TRACE. An exception to this rule is the keyword SHUTDOWN, for which at least SHUT must be specified.

In the syntax displays on your screen, but not in this book, you will see the minimum permitted abbreviation in uppercase characters, the remainder in lowercase.

INQUIRE and SET keywords

Most of your requests will either inquire about (INQ), or set (SET) the status of a resource (such as a terminal), a group of resources (such as a class of terminals), or a list of resources. INQ displays the status of specified resources. SET makes the changes specified, and displays the new status of the resources. However, SET does not make the change if any error is found in the syntax of the command.

For SET, an argument, a generic argument, or ALL must be specified. For example:

SET TERMINAL INSERVICE produces an error

SET TERMINAL(TRM1) INSERVICE sets TRM1 in service

SET TERMINAL(TRM*) INSERVICE sets all terminals, whose identifiers start with TRM, in service

SET TERMINAL(ALL) INSERVICE sets all terminals in service

SET TERMINAL(TRM1,TRM2,TRM3) INSERVICE sets in service the terminals whose identifiers are TRM1, TRM2, and TRM3. The terminal identifiers in the list can be separated by commas, as in this example, or by blanks.

ALL operand

Many of the request formats contain the ALL operand. For INQ, this is a default that is assumed if you do not specify an alternative. For example, if you inquire about terminals, you will receive information about all terminals unless you specify a terminal identifier, a terminal class identifier, or a system identifier.

Family of resources (using * and + symbols)

You can use the symbols * and + as part of an identifier to specify a family of resources. and "+" represents a single character, for example:

- A* specifies all identifiers beginning with A. DATA.
- TERM00+ specifies all 7-character identifiers beginning with TERM00.

You cannot use * or + when the identifier is in a list.

Subdefining resource groups

When you make an inquiry, you can subdefine a resource group by specifying one or more attributes of the group. For example:

```
INQ TERMINAL ALL INSERVICE
```

displays the status of all terminals that are in service.

You cannot subdefine a resource group by specifying the attributes of a group by using SET. For example:

```
SET TERMINAL ALL INSERVICE PAGE
```

puts **all** terminals in service and into page status. However, you can manage such groups of resources by specifying INQ, and modifying the display produced.

Inquiry display

When you make an inquiry, you will usually get a display that consists of one line of status information for each resource in the specified group. The status information is displayed as a list of abbreviated keywords.

Overtyping a display

You can move the cursor to any field in the line and change its contents by overtyping. When you press the ENTER key again, CICS reads the contents of all fields that have been changed, and executes any valid operations implied by the changes. If you make an invalid change, you will get an error message, and the field will not be changed.

Whenever you overwrite a display, not only is that particular action taken but all the status information is refreshed. You can avoid the overhead of many locates either by using the SET command or by limiting your inquiry to a specific number of resources.

Tab key

The fields you can change are different in each display. You can detect them, however, by pressing the tab key repeatedly. This causes the cursor to jump from one field to the next. You can see the changes which may be made by positioning the cursor to the start of one of the lines of status information, and typing a question mark (?). This produces a display consisting of that line of data and the syntax of the appropriate SET request.

Blank fields in a display

Some displays contain blank fields that allow you to specify operands, such as NEWCOPY and PURGE, which are not part of the status of a resource. A status such as NOREAD, which begins "NO", is also represented by a blank field. You can detect these fields by using the tab key.

CEMT

Invoking CEMT from an application program

Many of the CEMT INQUIRE and SET operations are available through the EXEC CICS INQUIRE and EXEC CICS SET commands, as described in the *CICS/MVS Customization Guide*. The *CICS/MVS Customization Guide* also describes the programmable interface to master terminal functions that use an EXEC CICS LINK to a master terminal program. If the function you require is available via the EXEC CICS INQUIRE/SET commands, you are recommended to use them in preference to the programmed master terminal equivalent.

Starting the CEMT transaction

You can construct a CEMT request in stages, or you can enter a complete request. The CEMT transaction checks the syntax of requests and diagnoses errors. If your request is syntactically correct, it is executed immediately. If your request cannot be executed because of severe syntax errors, the full syntax of your request will be displayed.

If you put a question mark (?) before your request, the syntax of your request will be displayed, but it will not be executed.

After you have initiated the CEMT transaction, you need not reenter CEMT on subsequent requests, because the identifier is implied at the beginning of any further request. However, this is not true if you are using a system console, when you must always start each master terminal request with CEMT.

Enter CEMT on the command line of your display, as follows:

```
CEMT
```

You will get the following display:

```
ENTER ONE OF THE FOLLOWING  
  
ADD  
INQUIRE  
PERFORM  
REMOVE  
SET
```

The ADD and REMOVE keywords apply only to volumes; they are described later under "VOLUME" on page 70.

This display prompts you to enter one of the keywords INQUIRE, PERFORM, or SET.

If, for example, you want to inquire about a resource, enter INQUIRE (or a suitable abbreviation) on the command line. Throughout the rest of this book, we have used INQ.

If you want to perform the functions that are not concerned with resource status, enter **PERFORM** (or a suitable abbreviation) on the command line.

If you want to set, or change, the value of a resource, enter **SET** (or a suitable abbreviation) on the command line.

If you enter **INQ**, you will get the following display:

```
INQ

STATUS: ENTER ONE OF THE FOLLOWING OR PRESS ENTER
FOR DEFAULT

AUTOINSTALL
AUXTRACE
CONNECTION
CONTROL
DLIDATABASE
DUMP
DUMPOPTIONS
DATASET
FILE
IRBATCH
IRC
JOURNAL
LINE
MODENAME
NETNAME
PITRACE
PROGRAM
QUEUE
TASK
TCLASS
TERMINAL
TRACE
TRANSACTION
VOLUME
VTAM
```

You can inquire about any of the displayed options by typing its keyword after **INQ** on the command line. For example:

```
INQ PROGRAM
```

gives you the status of all programs and, for each program, tells you the name of the program, its class, its length, the number of times it is currently being used, the number of times it has been used, what language it is written in, and whether it is disabled. Full details are given in "PROGRAM" on page 62.

System parameters

If, instead of entering one of the above keywords, you simply press ENTER, you will get by default a display of all the system parameters, as follows:

```
[MAXTASKS(value)]
[AMAXTASKS(value)]
[AKP(value)]
[CUSHION(value)]
[IOCP(value)]
[TIME(value)]
[RUNAWAY(value)]
[STALL(value)]
```

The values are the current values of the system parameters. You can change these values easily by using CEMT SET or by overtyping the above display. The following list, in alphabetical order, tells you what these parameters mean:

AKP(value)

is the activity keypoint frequency (trigger value).

It can have a value in the range 200 through 65535. You cannot change this value if AKPFREQ=0 is specified in DFHSIT at system initialization or at startup.

AMAXTASKS(value)

is the maximum number of tasks that CICS will allow to be concurrently active.

It can have a value in the range 1 through 999. The value cannot exceed the value in the MAXTASKS operand.

CUSHION(value)

is the size, in bytes, of the storage cushion. This value will be rounded up to the page size, or to a multiple of page size (PGSIZE operand of DFHSIT).

It can have a value in the range 20 through 524288. Cushion size does not change until the existing cushion is released. When the cushion is regained, the cushion will be the size indicated by the new value, after rounding.

IOCP(value)

is the input/output wait count percentage. It can have a value in the range 0 through 50. When CICS releases control to the operating system because all internal tasks are waiting for the completion of an event (normally an I/O operation), it passes a list of the events on which tasks are waiting. While it is possible for CICS to regain control when any one event completes, it may be more efficient to allow a number of tasks to complete before control is regained, thus allowing multiple CICS tasks to proceed before reinvoking an operating system wait. This operand regulates the number of events to be completed before CICS regains control.

MAXTASKS(value)

is the maximum number of concurrent tasks in the CICS system, including active and suspended tasks.

It can have a value in the range 2 through 999. Its minimum value is the greatest of:

2 | AMAXTASKS | 1 more than maximum TCLASS value

The task class value (TCLASS) is described on page 66.

RUNAWAY(value)

is the runaway task interval, in milliseconds. It is the interval for which a task can have control before it is assumed to be in a runaway condition, that is, looping.

You can specify zero, or a value in the range 500 through 2700000. The value chosen will be rounded down to a multiple of 10. CICS will purge a task if it has not given up control after this interval (that is, if the task appears to be looping). If you specify zero, runaway task control is inoperative (that is, tasks do not get purged if they appear to be looping). The value is independent of, and can be less than, the value in the TIME operand.

CICS runaway task detection is based upon task time, that is, the interval is decremented only when the task has control of the processor. You do not, therefore, need to allow for the effect of other jobs when setting the value.

STALL(value)

is the interval, in milliseconds, after which the system is considered to have stalled.

It can have a value in the range 100 through 327670. The value chosen will be rounded down to a multiple of 10. The value cannot be less than the value in the TIME operand. (A typical value is 20000.) A stalled system is one in which no active tasks have been able to proceed during this interval. Purgeable tasks will be purged to reduce the load on the system.

TIME(value)

is the interval, in milliseconds, for which CICS will release control to the operating system if no transactions are ready to resume processing. This interval is known as the region exit interval.

It can have a value in the range 100 through 327670. The value chosen will be rounded down to a multiple of 10. (A typical value is 1000.) The value cannot exceed the value in the STALL operand.

CEMT PERFORM commands

Detailed descriptions follow of the CEMT PERFORM commands in alphabetical order. For each command, its associated operands are also presented, again in alphabetical order.

These functions are not concerned with resource status; they are used to:

- Reset the date and time of day (PERFORM RESET)
- Reconnect the IMS resource lock manager (IRLM) (PERFORM RECONNECT)
- Rebuild the RACF resource profile (PERFORM SECURITY)
- Shut down CICS (PERFORM SHUTDOWN)
- Get a dump and continue execution (PERFORM SNAP).

CEMT

PERFORM RECONNECT

To reconnect CICS to IRLM after IRLM has been restarted following a failure, select RECONNECT, as shown, after CEMT PERFORM on the command line.

```
CEMT PERFORM RECONNECT
```

You will get one of the following responses to this command:

NORMAL

CICS has been reconnected successfully.

IN PROGRESS

A CEMT PERFORM RECONNECT command has already been issued for this CICS system and is being processed.

ALREADY CONNECTED

IRLM is already connected.

IRLM NOT UP YET

The new IRLM has not been started or has not yet completed initialization.

PREV IRLM CLEANUP

The failing IRLM has not yet terminated. This usually means that not all the transactions that were scheduled when the IRLM failed have completed pseudoabend processing.

IRLM REQUEST FAIL

The "identify" request that CICS issued to identify itself to IRLM has been rejected, either by the MVS subsystem interface (SSI) or by IRLM itself. When this happens, CICS issues the following message to the CSMT destination:

```
DFH3921 IDENTIFY FAILED DURING RECONNECT - RC=rr
```

The return codes are documented in the relevant *IMS Messages and Codes Reference Manual*.

NO IRLM SUPPORT

There is no IRLM associated with this CICS system. DLIRLM=NO has been specified in the system initialization table (SIT) or as a startup override.

PERFORM RESET

To reset CICS, select RESET as shown, after CEMT PERFORM on the command line. The CICS date and time-of-day is synchronized with the system date and time-of-day.

```
CEMT PERFORM RESET
```


PERFORM SECURITY REBUILD

To rebuild the RACF resource profiles, select SECURITY REBUILD as shown, after CEMT PERFORM on the command line. The RACF resource profiles are rebuilt by reissuing the RACLIST macro for the active class names.

```
CEMT PERFORM SECURITY REBUILD
```

PERFORM SHUTDOWN

To shut down CICS, select SHUTDOWN as shown, after CEMT PERFORM on the command line.

```
CEMT PERFORM SHUTDOWN
[XLT(suffix)]
[PLT(suffix)]
[IMMEDIATE|TAKEOVER]
[DUMP]
```

If you execute CEMT PERFORM SHUTDOWN with no other operands, the system is shut down but all tasks are allowed to finish, and SNA sessions are allowed to terminate normally.

DUMP

A dynamic storage dump is produced upon completion of the termination process.

IMMEDIATE

The system is shut down immediately, terminating all active tasks and SNA sessions. This could cause CICS to abend if tasks are still running.

PLT

specifies the 2-character suffix of a program list table (PLT) to be used for the shutdown.

TAKEOVER

If you are running XRF, the active CICS system is shut down, signing off abnormally from the CAVM, causing the alternate system to take over.

XLT

specifies the 2-character suffix of a transaction list table (XLT) to be used for the shutdown.

Transactions listed in the specified XLT can be initiated after the SHUTDOWN request and before the system quiesces. The default XLT should contain an entry for the master terminal transaction. This ensures that you can issue an immediate shutdown if, for example, a task is found to be suspended after an ordinary (nonimmediate) shutdown has been requested.

Figure 1 on page 44 shows the effect of the TAKEOVER operand on the CICS active system.

CEMT

	CEMT PERFORM SHUTDOWN (on active)		
	(normal)	TAKEOVER	IMMEDIATE
Tasks	finish	finish	terminate
SNA-session (XRF)	unbind	leave	leave
SNA-session (non-XRF)	unbind	unbind	unbind

Figure 1. Effect of TAKEOVER on the CICS active system

Figure 2 shows the effect of the TAKEOVER operand on the CICS alternate system.

	CEMT PERFORM SHUTDOWN (on active)		
	(normal)	TAKEOVER	IMMEDIATE
CICS alternate	shutdown	takes over	takes over

Figure 2. Effect of TAKEOVER on the CICS alternate system

A PERFORM SHUTDOWN cannot be issued from within an application program because a terminal is required for successful completion.

PERFORM SNAP

To get a dump and continue execution, select SNAP after CEMT PERFORM on the command line. (In effect, you will get a "snapshot" of the CICS system.)

```
CEMT PERFORM SNAP
[PARTITION]
[FORMAT]
[TITLE(xxx)]
```

FORMAT

A formatted system dump is written to the dump data set.

PARTITION

A partition dump is produced. The type of partition dump (CICS or PDUMP) depends on the DUMP parameter of the system initialization table (SIT). The default is a CICS partition dump.

TITLE(xxx)

"xxx" is a title, of up to 32 characters, that you can add to the dump. If your title includes spaces, you must enclose the whole title in single quotes.

If you specify neither PARTITION nor FORMAT, a partition dump, or a formatted dump, or no dump at all will be produced, depending on what is specified in the DUMP parameter of the SIT.

Execution continues.

Note: The use of CEMT PERFORM SNAP prevents all other tasks from running, so terminal operators may experience long delays in response.

CEMT INQ/SET commands

Detailed descriptions follow of the combined CEMT INQ/SET commands in alphabetical order of the name of the resource. For each command, its associated operands are also presented, again in alphabetical order.

AUTOINSTALL

CEMT {INQ SET} AUTOINSTALL [MAXIMUM(value)] [PROGRAM(pgrmid)] [ACTIVE(value)]	(INQ only)
---	------------

For guidance information about the automatic installation of terminals (autoinstall), see the *CICS/MVS Resource Definition (Online)* manual.

ACTIVE(value)

"value" is the number of current autoinstall logon requests.

MAXIMUM(value)

"value" is the maximum number of concurrent autoinstall requests.

You can prevent further terminals from logging on through autoinstall by setting this value to 0. This allows autoinstalled entries for terminals currently logged on to be deleted by the autoinstall program when they log off.

PROGRAM(pgrmid)

"pgrmid" is the name of the autoinstall user program. A default program is supplied.

AUXTRACE

CEMT {INQ SET} AUXTRACE [ON OFF] [OPEN CLOSED SWITCH]	(SET only) (SET only)
--	--------------------------

INQ AUXTRACE tells you whether auxiliary trace is on or off, whether the auxiliary trace data set is open or closed, and which of the auxiliary trace data sets, DFHAUXT or DFHBUXT, is active.

Note: Auxiliary trace entries are recorded only when auxiliary trace and internal trace are both active at the same time. (Internal trace is initially under the control of a SIT parameter, and may be dynamically controlled by the CEMT SET TRACE command).

CEMT

CLOSED

closes the auxiliary trace data set.

OFF

stops recording entries in the auxiliary trace data set.

ON

opens the auxiliary trace data set if it was not previously opened, and starts recording entries in that data set. Auxiliary trace entries are not recorded, however, unless internal trace is active at the same time. In this way, auxiliary tracing can be controlled by activating and deactivating internal trace.

OPEN

opens the auxiliary trace data set.

SWITCH

closes the current auxiliary trace data set. If you have defined an alternate trace data set, it is opened. The status of auxiliary trace (on or off) remains as it was before the switch request, unless the second data set fails to open, in which case auxiliary trace is turned off.

CONNECTION

```
CEMT {INQ|SET} CONNECTION[(sysid)]
[ALL] (see page 36)
[NETNAME(netname)] (INQ only)
[PENDING|NOTPENDING]1
[INSERVICE|OUTSERVICE]
[ACQUIRED|RELEASED|OBTAINING|FREEING|AVAILABLE]2
[XNOTDONE|XOK] (INQ only)
[PURGE|FORCEPURGE] (SET only)
```

¹ PENDING is INQ only

² OBTAINING, FREEING, and AVAILABLE are INQ only

"sysid" is a 4-character name defined for an intersystem communication (ISC) or interregion communication (IRC) connection.

Batch regions currently connected to the CICS system through IRC can be addressed by the system name "@BCH". For example:

```
CEMT SET CONNECTION(@BCH) INSERVICE
```

enables communication between CICS and all batch regions.

ACQUIRED (LU6.2 only)

Sessions are established. When used with SET, sessions that would be established at CICS startup will be established. For further guidance on LU6.2 session acquisition, see the *CICS/MVS Intercommunication Guide*. ACQUIRED is ignored if the system is OUTSERVICE.

Note: If the CICS internal temporary storage dataids prefixed 'DF' are defined as recoverable in the DFHTST TYPE=RECOVERABLE resource definition macro, a link requested by a CEMT SET ACQUIRED transaction is not acquired until the CEMT transaction is terminated.

AVAILABLE (LU6.2 only)

All LU6.2 limited resource sessions are not bound. For further guidance on limited resources and LU6.2 session acquisition, see the *CICS/MVS Intercommunication Guide*.

FORCEPURGE

All tasks running on sessions on the connected system are immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

A CEMT SET CONNECTION FORCEPURGE transaction has the same effect as issuing a CEMT SET TASK FORCEPURGE transaction for each of the tasks using the connection.

FREEING (LU6.2 only)

LU6.2 sessions are being released. For guidance on LU6.2 sessions, see the *CICS/MVS Intercommunication Guide*.

INSERVICE

For an **MRO** system (that is, links to system "sysid" are through IRC), setting the status to INSERVICE causes all IRC sessions owned by the system to be placed in service.

If both the issuing system and the partner system have open IRC sessions (see CEMT SET IRC OPEN under "IRC" on page 57), and the partner system has INSERVICE status for the issuing system, connections will be established and made available between the two systems. Otherwise, the status of the system (and the status of the underlying sessions) is set INSERVICE so that, when both systems have open IRC sessions and are INSERVICE with respect to each other, connections will be established. INQ will indicate that systems (and their underlying sessions) are INSERVICE even though no connections can be used.

For INQ on MRO systems, the status of the underlying sessions for a system is always the same as that for the system itself.

For **LU6.1** ISC links, setting the status to INSERVICE will also set all the underlying sessions INSERVICE and make them available for use, depending on the state of the partner system and its session status. Attempts can now be made to bind and manage these sessions individually using the SET TERMINAL ACQ command – see "TERMINAL" on page 66.

For **LU6.2** ISC links, setting the link INSERVICE enables a subsequent SET CONNECTION ACQ command to attempt to establish the link. It also allows the partner system to establish the link. The underlying modegroups and their sessions are unavailable until the connection has been established.

NETNAME(netname) (VTAM only)

"netname" is the name by which the remote system is known to the network.

NOTPENDING (LU6.2 only)

When used with SET, this deletes unit of recovery descriptors (URDs) for tasks that had either failed or not completed, due to a connection failure. Because these URDs contain resynchronization information, integrity problems may ensue if this operation is done without proper caution being exercised.

When INQUIRE is being used, NOTPENDING means that there are no outstanding resynchronization URDs present for the connection.

OBTAINING (LU6.2 only)

LU6.2 sessions are being established. For guidance on LU6.2 session acquisition see the *CICS/MVS Intercommunication Guide*.

OUTSERVICE

The system is not available for use.

For SET on MRO (MRO) systems, the following occurs:

1. If the issuing system and "sysid" are currently connected, those connections are broken (quiesce for OUTSERVICE alone, immediate break for OUTSERVICE with PURGE or FORCEPURGE). The connections cannot be reestablished until an INSERVICE request is issued for "sysid".
2. If the systems are not currently connected, connections will not be allowed until an INSERVICE request is issued for "sysid".

For INQ on IRC systems, the status of the underlying sessions for a given system is always the same as that for the system itself.

For SET on an LU6.1 link, all ISC sessions owned by the system are placed out of service and are released; immediately if PURGE or FORCEPURGE is specified, or when tasks have terminated if neither PURGE nor FORCEPURGE is specified.

For INQ on LU6.1 links, OUTSERVICE means that all the underlying sessions are OUTSERVICE and, therefore, RELEASED. This causes the link, as a whole, to return the status OUTSERVICE.

SET on an LU6.2 ISC system is valid only if the link is released. All sessions owned by the ISC system will then be out-of-service and released. An OUTSERVICE system rejects attempts by the partner system to establish sessions.

PENDING (LU6.2 only)

indicates that outstanding resynchronisation URDs are present for the connection. See NOTPENDING above.

PURGE

Tasks running on the connected system are abnormally terminated, but task termination occurs only when system integrity, or data integrity, or both, can be maintained.

A CEMT SET CONNECTION PURGE transaction has the same effect as issuing CEMT SET TASK PURGE transactions for each of the tasks using the connection.

RELEASED (LU6.2 only)

All sessions, including the SNASVCMG sessions, are released.

Note: If the CICS internal temporary storage dataids prefixed 'DF' are defined as recoverable in the DFHTST TYPE=RECOVERABLE resource definition macro, a CEMT SET RELEASED transaction does not cause the link to be released until the CEMT transaction is terminated.

XNOTDONE (LU6.2 only)

The exchange lognames (XLN) flow for the LU6.2 connection has not completed successfully; the CSMT log may contain information relating to this state. XNOTDONE means that Synclevel 2 conversations are not allowed on the connection (but SL(0) and SL(1) are still allowed).

XOK (LU6.2 only)

The exchange lognames (XLN) process for the LU6.2 connection has completed successfully.

No status is displayed if exchange lognames is not applicable. This may be because the link:

- Is released
- Is MRO, LU6.1, or single session LU6.2
- Does not support synclevel 2 conversations.

For more information on the LU6.2 exchange lognames process, see the *CICS/MVS Intercommunication Guide*.

CONTROL

CEMT {INQ SET} CONTROL(terminid) [INSERVICE OUTSERVICE] [PURGE FORCEPURGE]	(SET only)
---	------------

"terminid" is the name of any terminal associated with the control unit. The symbols * and + cannot be used to define a family of terminal identifiers, but a list of identifiers can be specified.

FORCEPURGE

All transactions running with terminals associated with the control unit are immediately terminated abnormally without regard to their state.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

CEMT

INSERVICE

The control unit is available for use. Changing the status of the control unit causes all the terminals associated with it to be set to the equivalent status.

OUTSERVICE

The control unit is not available for use. Changing the status of the control unit causes all the terminals associated with it to be set to the equivalent status.

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but task termination occurs only when system and data integrity can be maintained.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

DATASET

The FILE keyword is the preferred keyword. However, DATASET is still accepted, and all the operands described under "FILE" on page 54, apply equally to DATASET.

DLIDATABASE

```
CEMT {INQ|SET} DLIDATABASE[(fileid)]
[ALL] (see page 36)
[STARTED|STOPPED|RECOVERDB|DUMPDB]1
[GLOBAL] (SET only)
[ACCESS{RO|RD|UP|EX}]
[UPDATE|READONLY|ERROR] (INQ only)
[IOERRORCOUNT] (INQ only)
```

¹ RECOVERDB and DUMPDB are SET only

"fileid" is an 8-character name defined to DL/I (in the DDIR control block).

ACCESS{RO|RD|UP|EX}

specifies the access intent against a DL/I database. You can specify the following values:

- EX** Exclusive access
- RD** Read access
- RO** Read-only access
- UP** Update access.

STARTED is always assumed when the ACCESS value is changed. You cannot change the ACCESS value when GLOBAL is specified.

DUMPDB

prohibits updates on DL/I databases. You can run a backup utility in another region, after which you can return the data base to online operation by setting it STARTED.

ERROR

The database is in error.

GLOBAL

In a data-sharing environment, this specifies that a SET STARTED, SET STOPPED, SET DUMPDB, or SET RECOVERDB command for a DL/I data base is to be transmitted to all the data-sharing subsystems as well as being executed on the local CICS system.

IOERRORCOUNT

is the number of read and write errors that have occurred.

READONLY

You cannot update records in the data set.

RECOVERDB

prohibits reads and updates on DL/I databases. This allows a recovery utility to be run in another region, following which the database may be returned to online operation by setting it STARTED.

The current tape volume (or disk data set) of the system log is closed and the next is opened. This happens once for each batch of commands (a "batch" is the set of changes to the CEMT display when ENTER is pressed). We recommend that all data bases that require RECOVERDB processing are processed in one batch so that system log volume switching occurs once only.

STARTED

indicates the logical state of the database, in this case, that the database is available for processing. The database is physically opened when the first schedule request is made against it.

STOPPED

causes a physical close of the database.

UPDATE

You can update records in the data set.

Return codes for DL/I database operations

If a CEMT command for a DL/I database fails for any reason, a return code is displayed. Some return codes are generated by CICS; others are received from DBRC and passed directly to the CEMT display.

Successful completion of a command is indicated by the NORMAL response.

If you issue a command by overtyping the CEMT display, rather than by typing a specific SET command at the top of the screen, there will be no subsequent display of the command that you actually issued. It is important that you remember any commands that you issue in this way, so that you can interpret the DBRC return codes generated by failing commands.

CICS return codes: Return codes generated by CICS have the following format:

RC=0000xxyy

where "xx" (in hexadecimal) is the **primary code**, and "yy" (also in hexadecimal) is the **subcode**.

In general, the primary code indicates the type of failure that has occurred, and the subcode gives the reason for the failure. The meanings of the return codes are as follows:

Primary codes

- 08** Invalid request.
- 18** GLOBAL was specified, but the command cannot be transmitted. The command is executed locally only.

Subcodes

- 00** The local command executed normally (this occurs only with primary code 18).
- 1C** IMS storage unavailable.
- 71** Database not found. (It is not defined in DFHDLDBD.)
- 72** Database busy. (It is being used by another CEMT command.)
- 73** Integrity risk. This condition cannot occur if DBRC is present. It indicates that, following a backout failure, an attempt has been made to open the DL/I database before RECOVERDB has been issued.
- 74** Invalid access parameter. Possible reasons are:
 - The access keyword (RD, RO, UP, or EX) is not spelled correctly.
 - GLOBAL is specified.
- 75** Invalid global parameter. IRLM and DBRC have not been specified by the SIT operands DLIRLM and DLDBRC.
- 76** Close failure. The database could not be closed. This can occur for any operation that requires closure, not just for the CLOSED command.
- 77** Change authorization failure. A requested access value has not been allowed. For example, exclusive access (EX) has been requested on a database for which another subsystem has authorization.
- 79** The database has been closed and an attempt has been made to deallocate it, but the attempt has failed.

DBRC return codes: Return codes from DBRC have the following format:

DBRC RC=n

where "n" is a decimal number. The meanings of the return codes are given in the relevant *IMS Messages and Codes Reference Manual*. A return code of zero, meaning successful completion, is not displayed.

To interpret a DBRC return code, you must take into account the command that you issued and whether it is local or global. The following table shows how the various commands are referred to in the IMS manual.

CEMT	IMS
STARTED	/START
STOPPED	/STOP
DUMPDB	/DBD
RECOVERDB	/DBR

DUMP

CEMT {INQ SET} DUMP	
[OPEN CLOSED SWITCH]	(SET only)
[AUTOSWITCH NOAUTOSWITCH]	(SET only)

INQ DUMP tells you whether the dump data set is open or closed, whether AUTOSWITCH is active, and which of the dump data sets, DFHDMPA or DFHDMPB, is active.

AUTOSWITCH

When the data set currently being used becomes full, it is closed and the dump (that was being written at the time) is restarted automatically on the other data set. At this time, AUTOSWITCH is deactivated to allow the data set that has just been closed to be printed. SET DUMP AUTOSWITCH can then be used to reactivate automatic switching.

CLOSED

closes the dump data set.

NOAUTOSWITCH

You must explicitly switch the dump data set.

OPEN

opens the dump data set.

SWITCH

closes the current dump data set and opens the inactive one.

DUMPOPTIONS

CEMT {INQ SET} DUMPOPTIONS
[PCDUMP NOPCDUMP]
[ABDUMP NOABDUMP]

allows you to select whether a system dump is required in some situations. This transaction overrides the specification of ABDUMP, or PCDUMP, or both on the SIT.

CEMT

ABDUMP

You want a CICS system dump if a transaction abends with CICS code ASRB (operating system abend).

NOABDUMP

You do not want a CICS system dump for ASRB transaction abends.

NOPCDUMP

You do not want a CICS system dump if a transaction abends with CICS code ASRA (program check).

PCDUMP

You want a CICS system dump for ASRA transaction abends.

PCDUMP and ABDUMP take effect only if the abending transaction is defined with DUMP(YES) by RDO or has FDUMP=ASRA, or FDUMP=ASRB, or both defined in the PCT.

FILE

```
CEMT {INQ|SET} FILE[(filename)]
[ALL] (see page 36)
[VSAM|BDAM|REMOTE] (INQ only)
[OPEN|CLOSED|FORCECLOSE]1
[ENABLED|UNENABLED|DISABLED]2
[READ|NOREAD]
[UPDATE|NOUPDATE]
[ADD|NOADD]
[BROWSE|NOBROWSE]
[DELETE|NODELETE]
[EXCLUSIVE|NOEXCLUSIVE] (BDAM only)
[EMPTYREQ|NOEMPTYREQ] (VSAM only)
[OLD|SHARE]
[DSNAME(name)]
```

¹ FORCECLOSE is SET only.

² UNENABLED is INQ only.

"filename" is an 8-character name defined in the file control table (FCT).

You can use the DATASET keyword in place of FILE.

ADD

You can add records to the file.

BDAM

The access method of the data set is the basic direct access method (BDAM).

BROWSE

You can browse records in the file.

CLOSED

The file is closed; the access method does not allow accesses to the data until the file is opened. The file may be opened either explicitly by the user or, if the file has the ENABLED attribute, implicitly by CICS on the next reference to the data.

When used with SET, the file is closed and also disabled. (The file is disabled to prevent access requests from implicitly opening the file again.) The close is effected at the time of the command only if there are no tasks currently accessing the file. If there are current users, the display shows a CLOSE requested. This means that, when the last user completes use of the file, it effects the close.

A file that has been disabled by a SET CLOSED command becomes enabled again by a later SET OPEN command. To distinguish between a file that has been disabled in this way from one that has been disabled by a SET DISABLED command, the former is displayed with the UNENABLED attribute.

A file with the DISABLED attribute can be enabled only by a SET ENABLED command. A file with the UNENABLED attribute can be enabled by a SET ENABLED command or SET OPEN command. In the following descriptions, both the DISABLED and UNENABLED attributes are called DISABLED.

DELETE

You can delete records from the file.

DISABLED

The file is not available for use by applications except for those that are currently using it. If there are any such users, "DISABLING" is also displayed. When used with SET, this command has no effect on existing users; it simply prevents new users accessing the file.

The file can be reenabled by SET ENABLED. (See also UNENABLED.)

DSNAME(name)

Specifies the name (44 characters) of the VSAM or BDAM file with which this file is associated. CEMT SET FILE(filename) DSNAME(datasetname) associates a file with a data set and increments the data set's filecount by 1. To dissociate a file from its current data set, issue a CEMT transaction with a null DSNAME value.

EMPTYREQ (VSAM only)

Applies only to a VSAM data set that has been defined to VSAM as a cluster with the REUSE parameter. It shows that, when a file to which the data set is allocated is next opened, its data will be erased. When used with SET, it can be applied only to closed disabled files, and has no effect on the data until the file is opened. A SET EMPTYREQ may be canceled by a SET NOEMPTYREQ.

ENABLED

The file is available for use by applications and, if closed, is opened in the first request.

EXCLUSIVE (BDAM only)

Records on the data set are protected from simultaneous update.

FORCECLOSE

This applies to SET only and is similar to SET CLOSED, except that existing users of the file, if any, are abended (abend code AFCD). As for CLOSED, the close is effected by the last of these users.

NOADD

You cannot add records to the file.

NOBROWSE

You cannot browse records in the file.

NODELETE

You cannot delete records from the file.

NOEMPTYREQ (VSAM only)

Applies to VSAM data sets only. It shows that, when a file to which the data set is allocated is next opened, its data will not be deleted. When used with SET, it may be applied only to closed disabled files, and cancels the request implicit in a previous SET EMPTYREQ.

NOEXCLUSIVE (BDAM only)

Records on the data set are not protected from simultaneous update.

NOREAD

You cannot read records in the file.

NOUPDATE

You cannot update records in the file.

OLD

The disposition of the data set associated with the file is defined as unshared for dynamic allocation.

OPEN

Shows that the file is open. If the file is OPEN ENABLED, it is available for data accesses by CICS transactions. If it is OPEN DISABLED, it must first be enabled before it is available. When used with SET, if the file is disabled only implicitly by a previous SET CLOSED command as opposed to explicitly by SET DISABLED, the SET OPEN reenables the file implicitly.

READ

You can read records in the file.

REMOTE

The file is remote.

SHARE

The disposition of the data set associated with the file is defined as shared for dynamic allocation.

UNENABLED

The file is not available for use by applications except for those that are currently using it. If there are any such users, "DISABLING" is also displayed.

This status is the same as DISABLED except that it occurs implicitly when a SET CLOSE is requested. The difference is that here, the file is ENABLED implicitly by a SET OPEN.

UPDATE

You can update records in the file.

VSAM

The access method of the data set is the virtual storage access method (VSAM).

IRBATCH (inquiry only)

```
CEMT INQ IRBATCH
[TASK(number)]
```

identifies, for each batch region currently connected to CICS via the interregion communication (IRC) facility, the batch job currently sharing data with CICS. The identification consists of:

jobname.stepname.procname - time

or, if the program has issued a checkpoint:

chkpid - time

TASK

"number" is the task number of the mirror transaction running for a specific batch job.

IRC

```
CEMT {INQ|SET} IRC
{OPEN|CLOSED|IMMCLOSE} (SET only)
```

INQ IRC tells you whether the interregion communication (IRC) facility (for example, for MRO connections) is open.

CLOSED

terminates the IRC facility for this CICS system after tasks using the session have terminated normally.

IMMCLOSE

terminates the IRC facility immediately. All tasks using the session are abnormally terminated.

OPEN

initializes the IRC facility for this CICS system. This allows connections to be established between this system and other systems (including DL/I batch regions using shared database). You can control the availability of individual connections with the INSERVICE/OUTSERVICE settings on the connection names. See "CONNECTION" on page 46.

CEMT

JOURNAL

CEMT {INQ SET} JOURNAL[(nn)]	
[ALL]	(see page 36)
[INPUT OUTPUT CLOSED SWITCH]	(SET only)
[LEAVE]	(SET only)
[DATASET(value)]	(INQ only)

"nn" is the journal number. The system journal is number 1.

INQ JOURNAL tells you whether the journal is open for input, open for output, or closed.

SET SWITCH causes a volume switch.

Use SWITCH to unload a labeled tape because, when the journal is closed, MVS does not unload such a tape until the end of the step.

CLOSED

The journal is closed and exclusive control is acquired. Only the task that has closed the journal can reopen it. Exclusive control is not released when the task terminates.

DATASET(value)

"value" gives the READY, NOTREADY or CURRENT status of the A and B journal data sets.

CURRENT The named journal data set is currently active.

READY The named journal data set is ready to be written to, if a switch occurs.

NOTREADY The named journal data set is waiting to be archived.

Also, if the system journal 01X is not ready, an informatory message is displayed.

INPUT

The journal is opened for input, and CEMT has exclusive control of the journal. No records can be read from the journal. It cannot be used by any other task, and it must be closed by CEMT to release this exclusive control before the task is terminated.

LEAVE

When used with CLOSED, specifies that the volume is not to be rewound.

OUTPUT

The journal is opened for output.

SWITCH

The volumes are switched.

LINE

CEMT {INQ SET} LINE(termid) [NUMBER(number)] [NEGPOLL(value)] [INSERVICE OUTSERVICE] [PURGE FORCEPURGE]	(SET only)
--	------------

“termid” is the name of any terminal on the line. This request is valid only for BTAM-controlled terminals. The symbols * and + cannot be used to define a family of terminal identifiers for LINE, but a list of identifiers can be specified.

FORCEPURGE

All transactions running with terminals on the line are immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

INSERVICE

The line is available for use. Changing the status of the line does not affect the equivalent status of the terminals on it.

NEGPOLL(value)

“value” (0 through 20000 milliseconds) is the negative poll delay. You can delay the polling of BTAM devices on a line when negative responses are detected. You have some control over processor overhead required by terminal control to service negative poll interrupts, and also over the amount of virtual storage paging.

The value should be balanced to reduce the processor overhead caused by nonproductive polling, and yet still maintain sufficient CICS activity at times of low terminal activity. This balance reduces the amount of the CICS nucleus paged out by concurrent batch regions. (See the TIME system parameter.) Once a terminal on that line enters a conversational-mode transaction, that terminal receives a full poll until the transaction is completed. (“value” is rounded to a multiple of 80 for internal use.)

NUMBER(number)

“number” is the relative line number of a pooled line. For guidance information about pooled lines, see the *CICS/MVS Resource Definition (Macro)* manual.

OUTSERVICE

The line is not available for use. Changing the status of the line does not affect the equivalent status of the terminals on it.

CEMT

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but only when system and data integrity can be maintained. In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

MODENAME

CEMT {INQ SET} MODENAME[(modename)]	
[ALL]	(see page 36)
[CONNECTION(sysid)]	
[MAXIMUM(value)]	(INQ only)
[AVAILABLE(value)]	
[ACTIVE(value)]	(INQ only)
[ACQUIRED CLOSED]	(SET only)

"modename" is the 8-character name of the group of sessions. Modenames need not be unique nor can they be specified as a list. See the *CICS/MVS Intercommunication Guide* for information on the management of modenames.

ACQUIRED

specifies that CICS should acquire, that is BIND and therefore make active, all the contention-winning sessions within the group.

ACTIVE(value)

"value" is the number of sessions within the group that are actually bound. The number of ACTIVE sessions is always less than or equal to the number of AVAILABLE sessions.

AVAILABLE(value)

"value" is the number of sessions within the group which may be concurrently allocated for use between the connected systems. If AVAILABLE has been used to increase the "value" in conjunction with ACQUIRED, any unbound contention-winning sessions are bound and made ACTIVE.

The AVAILABLE "value" is always greater than or equal to the ACTIVE "value".

CLOSED

specifies that CICS is to release all sessions within the group, thus forcing the AVAILABLE "value" to zero. The sessions are quiesced, rather than forced, and attempts by the partner system to re-establish the sessions are rejected. No further activity is possible on the sessions within the group until the AVAILABLE "value" is once more raised above zero by the same CICS system which had earlier issued CLOSED.

The action of CLOSED differs from setting the AVAILABLE "value" to zero, in that the group of sessions is locked against the remote system's influence.

CONNECTION(sysid)

"sysid" is a 4-character name defined for an LUTYPE6.2 connection.

MAXIMUM(value)

"value" is the maximum number of sessions supported within the group. The MAXIMUM "value" is always greater than or equal to the AVAILABLE "value". The maximum AVAILABLE "value" is equal to the lower MAXIMUM "value" of the two partners.

NETNAME

If you are familiar with network names you may prefer to use this command, which has been provided as an alternative to TERMINAL (described under "TERMINAL" on page 66). Netnames need not be unique, and cannot be specified as a list.

```
CEMT {INQ|SET} NETNAME[(netname)]
[REMOTESYSTEM(sysid)|ALL]      (for ALL, see page 36)
[TRANSACTION(tranid)]          (INQ only)
[PRIORITY(value)]
[PAGEABLE|AUTOPAGEABLE]
[INSERVICE|OUTSERVICE]
[ATI|NOATI]
[TTI|NOTTI]
[TERMINAL(terminid)]           (INQ only)
[PURGE|FORCEPURGE]             (SET only)
[ACQUIRED|COLDACQ|RELEASED]
[CREATE|NOCREATE]
```

NETNAME (VTAM only) is the name by which the remote system is known to the network. The remaining operands for NETNAME are identical to those for TERMINAL.

SET NETNAME is not valid for LUTYPE6.2 sessions. See "CONNECTION" on page 46 and "MODENAME" on page 60 for valid commands.

PITRACE

```
CEMT {INQ|SET} PITRACE
[ON|OFF]                          (SET only)
```

INQ PITRACE tells you whether program isolation trace is ON or OFF.

OFF

stops writing IMS program isolation trace records to the CICS system log.

ON

starts writing IMS program isolation trace records to the CICS system log.

CEMT

PROGRAM

CEMT {INQ SET} PROGRAM[(pgrmid)]	
[CLASS(clasid) ALL]	(for ALL, see page 36)
[LENGTH(value)]	(INQ only)
[RESCOUNT(value)]	(INQ only)
[USECOUNT(value)]	(INQ only)
[PLI COBOL ASSEMBLER]	(INQ only)
[ENABLED DISABLED]	
[NEWCOPY]	(SET only)

"pgrmid" is an 8-character program name defined in the processing program table (PPT).

ASSEMBLER

The program is written in assembler language.

CLASS(clasid)

"clasid" is the 2-character suffix of a program list table (PLT).

COBOL

The program is written in COBOL.

DISABLED

The program is not available for use. Programs beginning with "DFH" cannot be disabled because these characters are reserved for use by CICS.

ENABLED

The program is available for use.

LENGTH(value)

"value" is the size of the program in bytes. The value returned is 00 if the program has not been used in this run.

NEWCOPY

refreshes (if the RESCOUNT is 0) the address of the program in its PPT entry and marks it as nonresident. This allows you to get an updated version of a program or to restore one that has been overwritten in main storage. If the program is being executed, it is disabled so that NEWCOPY is effective when the current executions finish.

You can use NEWCOPY for programs that use 31-bit addressing (AMODE=31). If they also have RMODE=ANY, NEWCOPY causes a synchronous operating system LOAD, which degrades CICS performance.

PLI

The program is written in PL/I.

RESCOUNT(value)

"value" is the number of times the program is currently being used.

USECOUNT(value)

"value" is the number of times the program has been used.

QUEUE

CEMT {INQ SET} QUEUE[(destid)]	
[ALL]	(see page 36)
[TRIGGER(number)]	
[INDIRECT EXTRA INTRA REMOTE]	(INQ only)
[SUFFIX(suff) OVPARM(ovpm)	
[OVPARML(ovpm1)]]	(SET only)
[ENABLED DISABLED]	
[OPEN CLOSED]	
[TRANID(tranid)]	(INQ only)
[DESTFAC(dest)]	(INQ only)

"destid" is a 4-character queue name defined in the destination control table (DCT).

CLOSED

An extrapartition queue is closed.

DESTFAC(dest)

"dest" is a 4-character terminal name that identifies the terminal with which the automatically initiated transaction is associated. See also TRANID and TRIGGER below.

DISABLED

The queue is not available for use. Queues beginning with "C" cannot be disabled because they are reserved for use by CICS.

ENABLED

The queue is available for use.

EXTRA

The queue type is extrapartition.

INDIRECT

The queue type is indirect. The name of the final target queue is shown on the display.

INTRA

The queue type is intrapartition.

OPEN

When you set a queue OPEN, you can use either SUFFIX to identify the data control block (the DCB) to be used, or OVPARM to supply parameters from which a DCB can be constructed.

OVPARM(ovpm)

"ovpm" is a string that specifies the standard operating system parameters used to build a DCB. This DCB is opened with the destid specified in the QUEUE operand. The parameters are positional and must be entered in the order shown below; if any leading parameters are omitted, their absence must be showed by commas. (See the relevant *MVS Data Management Macro Instructions* manual for a discussion of the DCB.) The parameters are as follows.

CEMT

OPEN
OUTPUT
INPUT
RDBACK

BUFNO Value from 1 through 255

RECFM

F Fixed
V Variable
FB Fixed blocked
VB Variable blocked
FA Fixed ASA control
VA Variable ASA control
FM Fixed machine control
VM Variable machine control
FBA Fixed-blocked ASA control
FBM Fixed-blocked machine control
VBA Variable-blocked ASA control
VBM Variable-blocked machine

EROPT

IGNORE Accept error (ACC)
SKIP Skip error (SKP)

LRECL Numeric value, up to 32,760 bytes

BLKSIZE Numeric value, up to 32,760 bytes

DDNAME Up to 8 characters

(See also OPEN, above.)

OVPARML

"ovpml" is the length of the string in OVPARM.

REMOTE

The queue type is remote.

SUFFIX(suff)

"suff" is a 2-character string that identifies the appropriate nonresident control block (DFHTRNxx).

TRANID(tranid)

"tranid" is a 4-character string that identifies the transaction that is to be initiated automatically when the queue trigger is reached.

TRIGGER(number)

"number" is the destination trigger level of an intrapartition queue. Such queues can be marked for automatic task initiation (ATI) when this number of requests for output has been issued for the queue. The trigger level can be any value in the range 0 through 32767.

TASK

CEMT {INQ SET} TASK[(number)]	
[TCLASS(clasid) ALL]	(for ALL, see page 36)
[TRANID(tranid)]	(INQ only)
[FACILITY(faid)]	(INQ only)
[ACTIVE HELD SUSPENDED]	(INQ only)
[TASK TERM DEST]	(INQ only)
[PURGE FORCEPURGE]	(SET only)

"number" is the CICS-generated task identifier. Neither a list nor the symbols * and + can be used. If no argument is included, the task has been initiated without a facility. System tasks cannot be displayed or changed. System tasks are those tasks started (and used internally) by CICS, not by tasks initiated by a user transaction.

ACTIVE

The task is active.

DEST

The task has been initiated by a destination trigger level.

FACILITY(faid)

"faid" is the name of the terminal or queue that initiated the task.

FORCEPURGE

The task is immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

HELD

The task is held.

PURGE

Termination occurs only when system integrity, or data integrity, or both, can be maintained. In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

SUSPENDED

The task is suspended.

TASK

The task has been initiated from another task.

TCLASS(clasid)

"clasid" identifies the task class to which the task belongs.

CEMT

TERM

The task has been initiated from a terminal.

TRANID(tranid)

"tranid" is the transaction name of the task.

TCLASS

```
CEMT {INQ|SET} TCLASS[(clasid)]  
[ALL] (see page 36)  
[MAXTASKS(value)]
```

"clasid" identifies the class (1 through 10) to which the task belongs. Neither a list nor the symbols * and + can be used.

MAXTASKS(value)

"value" is the maximum permitted number of concurrent tasks of the task class specified in TCLASS.

It can have a value in the range 1 through one less than the current system MAXTASKS value as described on page 40.

TERMINAL

```
CEMT {INQ|SET} TERMINAL[(termid)]  
[REMOTESYSTEM(sysid)|  
  CLASS(clasid)|ALL] (for ALL, see page 36)  
[TRANSACTION(tranid)] (INQ only)  
[PRIORITY(value)]  
[PAGEABLE|AUTOPAGEABLE]  
[INSERVICE|OUTSERVICE]  
[ATI|NOATI]  
[TTI|NOTTI]  
[NETNAME(netname)] (INQ only)  
[PURGE|FORCEPURGE] (SET only)  
[ACQUIRED|COLDACQ|RELEASED]  
[CREATE|NOCREATE]
```

"termid" is a 4-character name defined in the terminal control table (TCT). In an SNA environment, a terminal is the CICS representation of an SNA logical unit with which CICS may be in communication (SNA environment means that CICS is using VTAM or ACF/TCAM GSA as the access method for communication with SNA logical units). This logical unit may be:

- A physical terminal (such as a 3277)
- A function of a cluster controller (such as a 3790 Type 2 batch function)
- An intersystem communication (ISC) or interregion communication (IRC) session that has been generated by the CEDA transaction or by a DFHTCT TYPE=SYSTEM macro.

If you are familiar with network names, you may prefer to use the command that uses these names. See "NETNAME" on page 61.

SET TERMINAL is not valid for LUTYPE6.2 sessions. See "CONNECTION" on page 46 and "MODENAME" on page 60 for valid LUTYPE6.2 commands.

'TEMP OUT SERVICE' may be displayed if recovery is in progress for the terminal. The 'TEMP OUT SERVICE' indicator may be reset by simply refreshing the screen or by overtyping the 'INS' field with 'INS' or 'OUT'. If 'TEMP OUT SERVICE' continues to be displayed, the cause of the indicator should be investigated.

ACQUIRED (VTAM only)

CICS is in session with the logical unit represented by the terminal.

ATI

The terminal is available for use by transactions that are initiated automatically from within CICS or, if the terminal is an ISC session, by transactions that are using this session as an alternate facility to communicate with another system.

AUTOPAGEABLE

Pages after the first in a series will be written to the terminal automatically.

CLASS(clasid)

"clasid" is the 2-character suffix of a terminal list table (TLT).

COLDACQ (VTAM only)

is an option for use with SET and is a special form of ACQUIRED, where no resynchronization is required.

CREATE (VTAM only)

If the terminal is not in session and if it is required to satisfy an ATI request, CICS acquires it.

FORCEPURGE

Any transaction running with the terminal is immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

Only PURGE or FORCEPURGE can be specified in a SET request for a terminal involved in an IRC session.

INSERVICE

The terminal is available for use. For VTAM, INSERVICE means that the terminal can be ACQUIRED.

NETNAME(netname) (VTAM only)

"netname" is the name by which the remote system is known to the network.

NOATI

The terminal is not available for use by transactions that are initiated automatically from within CICS or, if the terminal is an ISC session, by transactions that are using this session as an alternate facility to communicate with another system.

NOATI is mutually exclusive with NOTTI.

NOCREATE (VTAM only)

The terminal is not acquired by CICS to satisfy an ATI request if the terminal is not in session. A session must be started, for example, by a LOGON request or by a CEMT ACQUIRE, before the ATI request can be satisfied.

NOTTI

The terminal is not available for use by transactions that are initiated from this terminal.

NOTTI is mutually exclusive with NOATI.

OUTSERVICE

The terminal is not available for use. Setting a terminal OUTSERVICE means that the terminal can no longer to be used by transactions. If PURGE or FORCEPURGE is also specified, any transaction using the terminal is terminated abnormally. If PURGE or FORCEPURGE is not specified, the transaction is allowed to terminate normally, but no further transactions are allowed to use the terminal. For VTAM, setting a terminal OUTSERVICE also causes it to be released and the operator to be signed off, either immediately or when the current transaction has terminated.

A terminal with a termid of CNSL cannot be put out of service.

PAGEABLE

Pages after the first in a series are written to the terminal only if you request them to be written.

PRIORITY(value)

"value" is the priority given to one terminal over other terminals. The priority of a task is the sum of the transaction priority, the terminal priority, and the operator priority. Priority has no meaning for terminals that are ISC sessions being used as alternate facilities. The value must be in the range 0 through 255, where 255 is the highest priority.

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but task termination occurs only when system integrity, or data integrity, or both, can be maintained.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

Only PURGE or FORCEPURGE can be specified in a SET request for a terminal involved in an IRC session.

RELEASED (VTAM only)

CICS is not in session with the logical unit represented by the terminal. Setting a terminal RELEASED causes the session to be terminated; immediately if PURGE or FORCEPURGE is also specified, or when any active transaction has finished if PURGE or FORCEPURGE is not specified.

REMOTESYSTEM(sysid)

"sysid" is a 4-character system name defined in the terminal control table (TCT). This limits the terminals referred to by the request to those ISC or IRC sessions connected to the specified system. Batch regions currently connected to the CICS system through IRC can be addressed by the system name "@BCH". For example:

```
CEMT SET REMOTESYSTEM(@BCH) INSERVICE
```

allows communication between CICS and all batch regions.

You can specify only PURGE or FORCEPURGE with SET for a terminal involved in IRC.

TRANSACTION(tranid)

"tranid" is the name of the transaction currently executing with this terminal as its principal facility.

TTI

The terminal is available for use by transactions that are initiated from this terminal.

TRACE

```
CEMT {INQ|SET} TRACE
[ON|OFF] (SET only)
```

INQ TRACE tells you if the CICS internal trace is active. Trace has to be ON for auxiliary trace to be active.

OFF

stops recording entries in the trace table.

ON

starts recording entries in the trace table.

TRANSACTION

```
CEMT {INQ|SET} TRANSACTION[(tranid)]
[CLASS(classid)|ALL] (for ALL, see page 36)
[PRIORITY(value)]
[ENABLED|DISABLED]
```

"tranid" is a 4-character transaction name defined in the program control table (PCT).

CEMT

CLASS(clasid)

"clasid" is the 2-character suffix of a transaction list table (XLT).

DISABLED

The transaction is not available for use. Transactions that have identifiers beginning with "C" cannot be disabled because these are reserved for use by CICS.

ENABLED

The transaction is available for use.

PRIORITY(value)

"value" is the priority of one transaction over other transactions. When a transaction is executing as a CICS task, the priority of a task is the sum of the transaction priority, the terminal priority, and the operator priority. The "value" must be in the range 0 through 255, where 255 is the highest priority.

VOLUME

Applies only to journals using standard labeled tape.

```
CEMT {INQ|SET|ADD|REMOVE} VOLUME[(volser)]
[JOURNAL(nn)|ALL] (not REMOVE) (for ALL, see page 36)
[PART(value)] (INQ only)
[OPEN|CLOSED|PENDING] (INQ only)
[OCCUPIED|EMPTY] (INQ only)
[FINPUT|FOUTPUT|FOPEN|FCLOSE|
OK|READONLY] (INQ only)
[DATE(value)] (See note)
[TIME(value)] (See note)
```

Note: The DATE and TIME parameters cannot be entered with the command, but are always shown in the resultant display.

"volser" is a 6-character volume serial number.

ADD VOLUME tells CICS that the named volume(s) can be used for writing the specified journal.

REMOVE VOLUME tells CICS that the contents of the specified volume(s) are no longer required.

CLOSED

The volume is closed.

DATE

gives the date of the oldest data in the volume.

EMPTY

The volume has no data on it.

FCLOSE

The volume is unavailable because of a failure during close.

FINPUT

The volume is unavailable because of a failure during input.

FOPEN

The volume is unavailable because of a failure during open.

FOUTPUT

The volume is unavailable because of a failure during output.

JOURNAL

"nn" is the journal number. The system journal has the number 1.

OCCUPIED

The volume has data on it.

OK

The volume is in working order.

OPEN

The volume is open.

PART

"value" is the part number. A part is a section of data that fits in one data set on one volume. Parts are numbered consecutively.

PENDING

The volume is pending.

READONLY

The volume is read only.

TIME

gives the time of writing of the oldest data in the volume.

VTAM

CEMT {INQ SET} VTAM {OPEN CLOSED IMMCLOSE FORCECLOSE} (SET only)
--

INQ VTAM tells you whether a connection is established between CICS and the SNA access method.

CLOSED

The connection is terminated normally; that is, transactions are allowed to complete and terminals are released normally.

FORCECLOSE

The connection is terminated immediately, and all terminal connections using the VTAM ACB (access method control block), together with the transactions associated with them, are terminated abnormally. No warning or diagnostic messages are issued. Quiesce protocols are ignored, the VTAM ACB is immediately closed, and VTAM will unbind.

IMMCLOSE

The connection is terminated as quickly as possible, and any transactions using terminals are terminated abnormally. CICS can then continue to run while VTAM is abended and restarted. CICS still adheres to the quiesce protocols of CLSDST before closing the VTAM ACB. This means that the ACB might not be closed successfully if a controller has been powered down and fails to respond.

OPEN

establishes this connection. With ACF/VTAM, it refers to the opening of the ACF/VTAM ACB through which ACF/VTAM communicates with CICS.

See also HALT(Z), HALT(Z) QUICK, and HALT(Z) CANCEL commands in the *ACF/VTAM Operation* manual, SC31-6408.

CEOT—terminal status transaction

You can use CEOT to inquire about the processing status, page status, and service status of any terminal. You can use it to change only the automatic transaction initiation processing and page statuses of your own terminal; you cannot use it to change the service status of your own or any other terminal. The ability to change either processing status or page status may be affected by the physical characteristics of the terminal.

A terminal has the following statuses:

- **Processing status**, which can be one of the following:

INPUT Your terminal can send messages, but cannot receive them. The IBM 3270 cannot have input status.

RECEIVE Your terminal can receive messages, but cannot send them. When your terminal is a screen, be careful not to overwrite existing messages inadvertently.

TRANSACTION Your terminal can initiate transactions and receive messages only if you request them using paging commands. See the "CSPG—page retrieval transaction" on page 123.

TRANSCEIVE Your terminal can initiate transactions without you having to request them, and messages can be sent to it. When your terminal is a screen, be careful not to overwrite existing messages inadvertently.

- **Page status**, which can be one of the following:

AUTOPAGEABLE All pages in a page set are written automatically to the terminal. This option should never be used with a display device.

PAGEABLE The first page in a page set is written to the terminal when it is available. All other pages in the set are written only when you request them using paging commands. See the "CSPG—page retrieval transaction" on page 123.

- **Service status**, which can be one of the following:

INSERVICE Your terminal is operational and can function according to its processing status.

OUTSERVICE Your terminal is out of service and no reading or writing can be performed by the terminal.

You cannot use CEOT with the routing transaction (CRTE).

If you make an invalid request, or you enter only CEOT, CICS lists the keyword options and waits for a valid keyword entry.

You can cancel the CEOT transaction by entering CANCEL.

CEOT

Enter CEOT, in either uppercase or lowercase, on the command line of your display, as follows:

```
CEOT
```

You will get the following display:

```
STATUS: RESULTS - OVERTYPE TO MODIFY
Ter(xxxx) Tra(CEOT) Pri(nnn) Pag Ins Ati Tti
      NET(netname) Acq Cre

CEOT SYNTAX:
[PAGEABLE|AUTOPAGEABLE]
[ATI|NOATI]
```

This display shows your termid (xxxx), which transaction is running on your terminal (CEOT), the priority (nnn) of the task set up to run your transaction, and the status of your terminal. The status values are as for CEMT TERMINAL, as described on page 66.

You can change only the processing and paging status of your own terminal by specifying one or more of the options shown in the syntax panel, or by overtyping any of the items displayed on the status line.

ATI

Automatic transaction initiation. The terminal is available for use by transactions that are initiated automatically from within CICS or, if the terminal is an ISC session, by transactions that are using this session as an alternate facility to communicate with another system.

AUTOPAGEABLE

Pages after the first in a series are written to the terminal automatically.

INSERVICE

The terminal is available for use. For VTAM, INSERVICE means that the terminal can be ACQUIRED.

NOATI

The terminal is not available for use by transactions that are initiated automatically from within CICS or, if the terminal is an ISC session, by transactions that are using this session as an alternate facility to communicate with another system.

NOATI is mutually exclusive with NOTTI.

NOTTI

The terminal is not available for use by transactions that are initiated from this terminal.

NOTTI is mutually exclusive with NOATI.

OUTSERVICE

The terminal is not available for use.

PAGEABLE

Pages after the first in a series are written to the terminal only when you request them.

PRIORITY

"nnn" is the priority of a terminal relative to other terminals. The priority of a task is the sum of the transaction priority, the terminal priority, and the operator priority. (Priority has no meaning for terminals that are ISC sessions being used as alternate facilities.) The value must be in the range 0 through 255, where 255 is the highest priority.

TTI

Terminal transaction initiation. The terminal is available for use by transactions that are initiated from this terminal.

CESN—signon transaction

The signon table entries can be defined by a unique 8-character alphanumeric userid. To sign on via this userid, use the CESN transaction.

The userid specified for this transaction is used in error messages and so on, to identify the user. Use this form of signon in preference to CSSN. In Resource Access Control Facility (RACF), this is the userid that RACF verifies. RACF is the external security manager used by CICS.

You still sign off by using CSSF.

Note: If you sign on at a terminal that is already signed on, the previous operator will be signed off.

You cannot use the CESN form of signon for numeric-only devices or for the IBM 2741 Communication Terminal.

IBM 3270 terminal

Enter CESN on the command line of your display, as follows:

```
CESN
```

Press ENTER. You will get the following display:

```
CESN - CICS SIGNON - ENTER USERID AND PASSWORD

  USERID: _

  PASSWORD:
  NEWPASSWORD:
```

Type in your userid. You can use up to 8 characters.

The NEWPASSWORD field is displayed only if EXTSEC=YES is specified when bringing up CICS.

Non-3270 terminal

Enter the signon transaction identifier and operands, as follows:

```
CESN USERID=nn,PS=pppppppp,NEWPS=password
```

where:

CESN

is the signon transaction identifier

PS=pppppppp

is your password (up to 8 characters)

NEWPS=password

"password" is your new password (up to 8 characters). This operand applies only if EXTSEC=YES is specified when bringing up CICS.

USERID=nn

is your userid (up to 8 characters)

Password security

If you are signing on from an MVS console, enter the PS and NEWPS keywords only if the HIDEPASSWORD(YES) option has been specified in the CICS subsystem definition (as described in the *CICS/MVS Installation Guide*). Otherwise the passwords are exposed in the system's hardcopy log.

If the HIDEPASSWORD(YES) option is not in use, omit the PS and NEWPS keywords, and wait to be prompted for your passwords by the DFH4200A message that follows message DFH3524. The reply to DFH4200A, which is not recorded in the hardcopy log, is either *password* or *password/newpassword*. You can specify a new password only if you are using an external security manager.

CEST—supervisor terminal transaction

The keywords in these commands are the same as those used in the CEMT commands; they are included here for completeness.

The SUPRID keyword is used to identify the supervisor performing the transaction, and its value is the 2-character suffix of a terminal list table (TLT). For guidance information about the TLT, see the *CICS/MVS Resource Definition (Macro)* manual.

Many of the request formats contain the ALL operand. For INQ this is a default which is assumed if you do not specify an alternative. For example, if you inquire about terminals, you will receive information about all terminals, unless you specify a terminal identifier, a terminal class identifier, or a system identifier.

CEST INQ/SET commands

Detailed descriptions follow of the combined INQ/SET commands in alphabetical order of the name of the resource. For each command, its associated operands are also presented, again, in alphabetical order.

CONTROL

CEST {INQ SET} CONTROL(termid) SUPRID(suprid) [INSERVICE OUTSERVICE] [PURGE FORCEPURGE]	(SET only)
---	------------

“termid” is the name of any terminal associated with the control unit. The symbols * and + cannot be used to define a family of terminal identifiers, but a list of identifiers can be specified.

FORCEPURGE

All transactions running with terminals associated with the control unit are terminated abnormally without regard to their state.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

INSERVICE

the control unit is available for use. Changing the status of the control unit causes all the terminals associated with it to be set to the equivalent status.

CEST

OUTSERVICE

The control unit is not available for use. Changing the status of the control unit causes all the terminals associated with it to be set to the equivalent status.

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but task termination occurs only when system integrity, or data integrity, or both can be maintained.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

SUPRID

"suprid" is a 2-character suffix of a terminal list table (TLT) that identifies the supervisor performing the transaction.

LINE

```
CEST {INQ|SET} LINE(termid)
SUPRID(suprid)
[NUMBER(value)]
[INSERVICE|OUTSERVICE]
[PURGE|FORCEPURGE] (SET only)
```

"termid" is the name of any terminal on the line. This request is valid only for BTAM-controlled terminals. The symbols * and + cannot be used to define a family of terminal identifiers for LINE, but a list of identifiers can be specified.

FORCEPURGE

All transactions running with terminals on the line are immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

INSERVICE

The line is available for use. Changing the status of the line does not affect the equivalent status of the terminals on it.

NUMBER

"number" is the relative line number of a pooled line. For guidance about pooled lines, see the *CICS/MVS Resource Definition (Macro)* manual.

OUTSERVICE

The line is not available for use. Changing the status of the line does not affect the equivalent status of the terminals on it.

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but task termination occurs only when system integrity, or data integrity, or both can be maintained.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

SUPRID

"suprid" is a 2-character suffix of a terminal list table (TLT) that identifies the supervisor performing the transaction.

NETNAME

If you are familiar with network names, you may prefer to use the NETNAME operand, which has been provided as an alternative to TERMINAL (see "TERMINAL" on page 83).

CEST {INQ SET} NETNAME[(netname)]	
SUPRID(suprid)	
[REMOTESYSTEM(sysid) ALL]	
[TRANSACTION(tranid)]	(INQ only)
[PRIORITY(value)]	
[TERMINAL(termid)]	(INQ only)
[PAGEABLE AUTOPAGEABLE]	
[INSERVICE OUTSERVICE]	
[ATI NOATI]	
[TTI NOTTI]	
[PURGE FORCEPURGE]	(SET only)
[ACQUIRED COLDACQ RELEASED]	
[CREATE NOCREATE]	

"netname" (VTAM only) is the name by which the remote system is known to the network.

SUPRID

"suprid" is a 2-character suffix of a terminal list table (TLT) that identifies the supervisor performing the transaction.

The remaining operands for NETNAME are identical to those for TERMINAL, starting on page 83.

CEST

TASK

CEST {INQ SET} TASK(number)	
SUPRID(suprid)	
[TCLASS(clasid) ALL]	
[TRANID(tranid)]	(INQ only)
[FACILITY(faid)]	(INQ only)
[ACTIVE SUSPENDED]	(INQ only)
[TASK TERM DEST]	(INQ only)
[PURGE FORCEPURGE]	(SET only)

"number" is the CICS-generated task identifier. Neither a list nor the symbols * and + can be used. If no argument is included, the task has been initiated without a facility.

ACTIVE

The task is active.

DEST

The task has been initiated by a destination trigger level.

FACILITY

"faid" is the name of the terminal or queue that initiated the task.

FORCEPURGE

The task is immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but task termination occurs only when system integrity, or data integrity, or both can be maintained.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

SUPRID

"suprid" is a 2-character suffix of a terminal list table (TLT) that identifies the supervisor performing the transaction.

SUSPENDED

The task is suspended.

TASK

The task has been initiated from another task.

TCLASS

"clasid" identifies the task class to which the task belongs.

TERM

The task has been initiated from a terminal.

TRANID

"tranid" is the transaction name of the task.

TERMINAL

If you are familiar with network names, you may prefer to use the NETNAME operand, which has been provided as an alternative to TERMINAL (see "NETNAME" on page 81).

```
CEST {INQ|SET} TERMINAL[(termid)]
SUPRID(suprid)
[CLASS(clasid)|REMOTESYSTEM(sysid)|ALL]
[TRANSACTION(tranid)] (INQ only)
[PRIORITY(value)]
[NETNAME(netname)] (INQ only)
[PAGEABLE|AUTOPAGEABLE]
[INSERVICE|OUTSERVICE]
[ATI|NOATI]
[TTI|NOTTI]
[PURGE|FORCEPURGE] (SET only)
[ACQUIRED|COLDACQ|RELEASED]
[CREATE|NOCREATE]
```

"termid" is a 4-character name defined in the terminal control table (TCT). In an SNA environment, a terminal is the CICS representation of an SNA logical unit with which CICS may be in communication (SNA environment means that CICS is using VTAM or ACF/TCAM GSA as the access method for communication with SNA logical units). This logical unit may be:

- A physical terminal (such as an IBM 3277 Display Station)
- A function of a cluster controller (such as the type 2 batch function of an IBM 3790 Communication System)
- An intersystem communication (ISC) or interregion communication (IRC) session which has been generated by a DFHTCT TYPE=SYSTEM macro.

ACQUIRED (VTAM only)

CICS is in session with the logical unit represented by the terminal.

ATI

The terminal is available for use by transactions that are initiated automatically from within CICS or, if the terminal is an ISC session, by transactions that are using this session as an alternate facility to communicate with another system.

AUTOPAGEABLE

Pages after the first in a series are written to the terminal automatically.

CLASS

"clasid" is the 2-character suffix of a terminal list table (TLT).

COLDACQ (VTAM only)

is an option for use with SET and is a special form of ACQUIRED, where no resynchronization is required.

CREATE (VTAM only)

The terminal can be acquired automatically by ATI transactions.

FORCEPURGE

Any transaction running with the terminal is immediately terminated abnormally.

Data integrity is not guaranteed. In some extreme cases (for example, if an error occurs during backout processing), CICS might terminate abnormally.

In some BTAM situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a BTAM nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

Only PURGE or FORCEPURGE can be specified in a SET request for a terminal involved in an IRC session.

INSERVICE

The terminal is available for use. For VTAM, INSERVICE means that the terminal can be ACQUIRED.

NETNAME (VTAM only)

"netname" is the name by which the remote system is known to the network.

NOATI

The terminal is not available for use by transactions that are initiated automatically from within CICS or, if the terminal is an ISC session, by transactions that are using this session as an alternate facility to communicate with another system.

NOATI is mutually exclusive with NOTTI.

NOCREATE (VTAM only)

The terminal cannot be acquired automatically by ATI transactions. Session initiation from this CICS system is exclusively under the control of the master terminal operator. Session initiation requests from the logical unit or from the network operator have no effect.

NOTTI

The terminal is not available for use by transactions that are initiated from this terminal.

NOTTI is mutually exclusive with NOATI.

OUTSERVICE

The terminal is not available for use. Setting a terminal OUTSERVICE means that the terminal can no longer to be used by transactions. If PURGE or FORCEPURGE is also specified, any transaction using the terminal is terminated abnormally. If PURGE or FORCEPURGE is not specified, the transaction is allowed to terminate normally, but no further transactions are

allowed to use the terminal. For VTAM, setting a terminal **OUTSERVICE** also causes it to be released and the operator to be signed off, either immediately or when the current transaction has terminated.

A terminal with a termid of **CNSL** cannot be put out of service.

PAGEABLE

Pages after the first in a series are written to the terminal only if you request them.

PRIORITY

"value" is the priority of a terminal over other terminals. The priority of a task is the sum of the transaction priority, the terminal priority, and the operator priority. Priority has no meaning for terminals that are **ISC** sessions being used as alternate facilities. The value must be in the range 0 through 255, where 255 is the highest priority.

PURGE

Tasks running on terminals associated with the control unit are abnormally terminated, but task termination occurs only when system integrity, or data integrity, or both can be maintained.

In some **BTAM** situations, further user action is required to complete the purging of the task. If a task is in a terminal read on a **BTAM** nonlocal terminal and that task is canceled, it may require input from another terminal on the same line before the cancel operation completes.

Only **PURGE** or **FORCEPURGE** can be specified in a **SET** request for a terminal involved in an **IRC** session.

RELEASED (VTAM only)

CICS is not in session with the logical unit represented by the terminal. Setting a terminal **RELEASED** causes the session to be terminated: immediately if **PURGE** or **FORCEPURGE** is also specified; when any active transaction has finished if **PURGE** or **FORCEPURGE** is not specified.

REMOTESYSTEM

"sysid" is a 4-character system name defined in a **DFHTCT TYPE=SYSTEM** macro. This limits the terminals referred to by the request to those **ISC** or **IRC** sessions connected to the specified system. Batch regions currently connected to the **CICS** system through **IRC** can be addressed by the system name "@**BCH**". For example:

```
CEMT SET REMOTESYSTEM(@BCH) INSERVICE
```

allows communication between **CICS** and all batch regions.

You can specify only **PURGE** or **FORCEPURGE** with **SET** for a terminal involved in **IRC**.

SUPRID

"suprid" is a 2-character suffix of a terminal list table (**TLT**) that identifies the supervisor performing the transaction.

TRANSACTION

"tranid" is the name of the transaction currently executing with this terminal as its principal facility.

CEST

TTI

The terminal is available for use by transactions that are initiated from this terminal.

CMSG—message-switching transaction

The CICS message-switching transaction (CMSG) allows you to send messages from a terminal to one or more destinations. For example, you can send a message to:

- Another terminal
- Another terminal, but only when a specified operator is signed on at that terminal
- Another terminal, but only when the operator signed on at that terminal is in a specified class
- Another operator (CICS locates the operator, if currently signed on, and sends the message to that operator's terminal)
- All terminals
- All terminals with operators signed on in specified classes.

You can specify that the message is to be sent at some future time. If the message cannot be sent, your terminal, or another, can be notified.

You can specify more than one destination (combinations of the above). In addition, standard routing lists can be provided by means of the terminal list table (TLT), which can include terminal and operator identifiers. Multiple routing lists may be specified at the time the message is entered, and individual destinations may be deleted from, or added to, the lists at this time.

CICS message switching is provided by a service program invoked by a user-defined transaction identifier, which must be specified in the program control table (PCT). This transaction identifier can be CMSG or any combination of 4 user-defined characters. CMSG is the transaction identifier assumed throughout this book.

You can extend message switching to include predefined messages and even complete message switching transaction input formats.

Every message destination, and the terminal from which the message-switching transaction is initiated, must be of a terminal type supported by BMS.

Routed messages can be directed to a terminal, including the transaction terminal, which supports partitions. However, such messages reset the terminal to base state.

Examples of message switching are given under "Message-switching examples" on page 107.

Sending a message

To send a message to another terminal or terminals, enter the transaction identifier, CMSG, followed by the applicable operands, as shown in the following syntax panel.

Full details of the operands are given later under "Message-switching operands" on page 93.

```
CMSG [MSG='message'
[,ROUTE={ [termid] [/opid] [,...] | ALL |
          .termlist [,...] [,±[termid]
                [/opid] [,...]] ]
[,OPCLASS=n1 [,...]]
[,TIME=value]
[,DATE=value]
[,ERRTERM={termid|ORIG}]
[,ID=(title)]
[,HEADING={YES|NO}]
[,PROTECT={YES|NO|prefix}]
,{SEND|CANCEL}
```

After entering CMSG, you must include at least the message text, a destination (ROUTE, or OPCLASS, or both), and the SEND operand (which you can abbreviate to S). For example:

```
CMSG 'GOOD MORNING',R=ALL,S
```

sends the "GOOD MORNING" message to all terminals.

If all is well, your message is sent, and the response

```
MESSAGE HAS BEEN ROUTED
```

is returned to your terminal.

This response is received for the normal completion of a message-switching transaction. It means that the message has been successfully routed to its destination but does not reflect any delivery status.

You can use backspace characters in your input.

New-line characters (or carriage returns on a hard-copy terminal) that are not part of the message are changed to commas, unless they appear at the beginning or end of the input, in which case they are deleted. In this way, you can use NL characters as operand separators, instead of commas. For example, on a display device, you could enter:

```
CMSG R=(T001,T002)#
T=1500#
'THE TIME IS 1500 HOURS'#
S@
```

where '#' represents a new-line (NL) character, and '@' represents the ENTER key.

You can enter the operands, except SEND and CANCEL (one of which must be entered last), in any order after CMSG and one or more spaces.

You can abbreviate every operand, except CANCEL, to a single character, and you can include one or more operands in a single input. If you specify two or more operands, you must follow each by a comma, except the last, which must be followed by a space or by an end-of-data (EOD) condition indicating the end of your input. Any data following a space in the same input is ignored.

Press the ENTER key on display devices such as the IBM 3270 to mark the end of a single input. For hard-copy terminals such as the IBM 2741, a single input is a line of input and is ended by a carriage return.

To maintain the "conversation" with a terminal, the status of all inputs, except the final input which includes the SEND operand, is saved in a single temporary storage record.

A message-switching transaction remains conversational until it is ended. This means that all input (even other transaction identifiers) is passed to the message-switching program. You must end a message-switching transaction (possibly involving multiple inputs) before you can start a different transaction.

Canceling a message

You can cancel your current message-switching transaction by entering:

- CANCEL as the last 6 characters of your input. You get the response:
TERMINATED BY OPERATOR.
- CMSG as your first 4 characters, followed by end-of-data (EOD). You get the response:
NO INPUT - REENTER.
- CMSGx as your first 5 characters, where x is any character other than a space or a "C". You get the response:
SPACE MUST FOLLOW TRANSID.
- CMSG as your first 4 characters followed by a space and EOD. This starts a new message-switching transaction. You get the response:
CONTINUE INPUT.

The first three examples above terminate the conversation with you and allow you to enter other transactions.

Message-switching continuation

The message-switching transaction appears to be conversational. Internally, a new task is created to process each message switching input.

If a task requires more information to complete the transaction, the current status of the transaction is saved in temporary storage, a response is sent to your terminal, and the task terminates with a requirement that the next task started be a message-switching task (EXEC CICS RETURN TRANSID(code)).

CMSG

The saving of status replaces any previously saved status for any message switching transaction from that terminal.

If a message-switching transaction completes successfully, or you have canceled it, an appropriate response is sent to your terminal, the status of the transaction is not saved, and the task terminates with no transaction restart specified.

The saved status is always used by a message-switching task to continue a conversational input from your terminal. You can recall the saved status by entering the transaction identifier to which you have added "C" (for example CMSGC). You can include additional input, but it must follow CMSGC with no intervening spaces.

This method is useful because you can enter CANCEL to bypass errors in the current input and yet not allow the conversation to continue. You can then enter, for example CMSGC and then enter "EOD", which puts the terminal in the conversation that prevailed at the time of the most recent input that has not been canceled or has not resulted in a message being routed. At this point you could also add an operand if desired; for example, CMSGCT=1030. (There are no spaces between the transaction identifier, the "C", or the following data.) For example:

```
Enter:  CMSG R=(T40,T41)
Receive: R OK CONTINUE INPUT
```

```
Enter:  T=1500
Receive: RT OK CONTINUE INPUT
```

```
Enter:  'THERE WILL BE ..... AT THE
Receive: RT OK CONTINUE MSG
```

```
Enter:  MAIN NIO;FOMH PM VS;OGPTMOS SBR CANCEL (see Note)
Receive: TERMINATED BY OPERATOR
```

```
Enter:  CMSGCMAIN BUILDING ON CALIFORNIA AVENUE
Receive: RT OK CONTINUE MSG
```

```
Enter:  IN ROOM 407',SEND
Receive: MRTS OK MESSAGE HAS BEEN ROUTED
```

Note: You can cancel and reenter instead of trying to correct the input. This terminates the entire transaction. To save the previously entered input, enter CMSGC to restart at the previously saved status point and continue the message.

Your terminal is free between a message-switching response and the next input, and if it is in TRANSCEIVE status, an automatically initiated task can be started on your terminal before you can continue the message-switching transaction.

Upon completion of this new task, even if it required a response from you, the message-switching transaction continues as if nothing had intervened. However, if you receive a response indicating that the intervening task has issued a RETURN, you must enter the transaction identifier followed by "C" to force continuation of the previous message-switching transaction.

Message delivery

You can deliver a message to a destination if the following conditions are met:

- The specified delivery time has been reached
- The terminal is INSERVICE
and either
- The opid of the operator signed on matches the requested opid if specified in the ROUTE operand
or
- The class of the operator signed on matches any class specified by the OPCLASS operand.

The processing and paging status of a terminal, which also affects delivery of eligible messages, is defined by the TRMSTAT operand of the DFHTCT TYPE=TERMINAL system macro. You can change the status by means of the CEMT, CEST, and CEOT transactions.

When the processing status is RECEIVE or TRANSCEIVE, a message is sent automatically to the terminal when no transaction is attached to it.

When the processing status is TRANSACTION, you must request message delivery by entering a paging command. (See "CSPG—page retrieval transaction" on page 123.)

A message is formed into one or more "pages", the size of which is predefined for a destination by the system programmer. The above discussion of the terminal processing status determines the delivery of the first or only page of a message. Succeeding pages, if any, are sent according to the paging status of the terminal as defined by the system programmer.

When the terminal is in PAGE status, you must request succeeding pages through a paging command.

When the terminal is in AUTOPAGE status, the complete message is printed.

Subsystems and terminal systems

With the exception of any specific details relating to the ROUTE operand (see page 96), all other information on the use of the following subsystems in message switching are given in the appropriate IBM subsystem guides, as listed in "CICS/MVS 2.1.2 library" on page vi.

- IBM 3600 Finance Communication System (VTAM)
- IBM 3650 Retail Store System
- IBM 3770 Data Communication System
- IBM 3790 Communication System.

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IBM 3270 display devices

The responses to 3270 display devices are designed to fit on a single 40-character line of a Model 1 terminal. To provide more space for the response, the indicators that precede the response do not have the spaces between them that appear on non-3270 terminals.

Responses to the 3270 display devices do not erase what is displayed on the screen and are displayed in the last 40 character positions of the line.

After a message-switching transaction has been started, you can press the CLEAR key if you want to continue from an empty screen. A CLEAR/CANCEL OR CONT xxxxx response is displayed, where xxxxx is either INPUT, ROUTE, or MSG. You can continue the transaction or, if you press the CLEAR key a second consecutive time, you can cancel the transaction. A better method of erasing the screen is to press the ERASE INPUT key, because this does not cause an interaction with the processor.

Because positions on the screen that are not keyed are not received, you can position and display data on the screen in various ways. For example, you can start each operand on a new line of the display screen. You must include a comma between consecutive operands. Also, if you want to start a new line within the message text, you should enter a field mark character to indicate the end of the current line. All field mark characters within a message (including the first character of the message) are interpreted as NL characters (there is no corresponding key on 3270 display devices) and cause correct positioning of the message on all other terminals, 3270 or otherwise.

IBM 3767 communication terminal

The keyboard/printer unit of the 3767 is eligible for entering and receiving messages.

Sequential terminal

On a sequential (BSAM) terminal, the CMSG message-switching facility remains conversational until a message switching transaction is completed or canceled. Variable conditions requiring a response, such as operators not being signed on, can be handled easily from an interactive terminal. These conditions, however, cannot always be anticipated, and the message-switching task continues reading input and issuing error messages until a valid response is received. It is possible that an entire sequential input stream could be consumed in such a process. It is therefore suggested that a CMSG CANCEL record should appear in the sequential input following each message switching transaction that could possibly require an unanticipated reply. This is strongly recommended following the final message-switching transaction.

Message-switching operands

The message-switching operands are listed below. Except for CANCEL, you can specify the first letter of each operand instead of the entire operand.

CANCEL

specifies that the current input is to be ignored and institutes a **non-conversational** status between the terminal and the message-switching transaction. CANCEL must be the last 6 characters of the input. CANCEL is also effective within a message.

DATE=value

is the date on which the message should be delivered, and is specified in one of the following forms:

yy.ddd	year (00-99) and day (001-366)
mm/dd	month (01-12) and day (01-31)
mm/dd/yy	month (01-12), day (01-31), and year (00-99)
+d	day (0-4)

Note: September 5, for example, must be specified as 09/05 and not as 9/5.

A plus sign preceding "d" specifies the number of days from the current day for message delivery.

The date can be entered as dd/mm or dd/mm/yy if the DFHSG system macro specified PROGRAM=CSA and DATFORM=DDMMYY.

To avoid confusion during the half-hour period before and after a date change, DATE=+d entries are not allowed between 2330 and 0030.

TIME and DATE may be specified in the following combinations to schedule the message for output as shown:

neither As soon as the receiving terminal is free.
TIME= At the specified time today or from the present.
DATE= At this time on the specified date.
TIME=,DATE= At the specified time on the specified date.

The time and date must be less than 100 hours from the beginning of the current day. This makes the latest time 0359 on the fourth day from the current day. Future message delivery uses CICS time services, which is restricted to less than 100 hours.

ERRTERM={termid|ORIG}

"termid" is the identifier of the terminal to which notification is to be sent if the message is purged because it is undeliverable.

ORIG is a way of specifying the identifier of the originating terminal.

Note: A message is considered to be undeliverable to a destination if it cannot be delivered within a certain interval after the requested delivery time. This interval is specified by the system programmer. If no interval is specified, no action is taken for undelivered messages, and the ERRTERM operand has no effect.

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If PRGDLAY is specified in the DFHSIT system macro, the transient data destination CSMT is notified of the number of undeliverable messages purged for a terminal. In addition, if ERRTERM is entered, the specified terminal is notified of the message number, title identifier, and destination of the message.

HEADING = {YES|NO}

specifies heading information. You can use H or HEADING in place of HEADING = YES.

YES

specifies that the current time, date, and identifier of the originating terminal is to precede the message text.

NO

causes a previous heading request to be ignored.

ID = (title)

"title" specifies the title (maximum length 62 characters) to be associated with the message.

See "CSPG—page retrieval transaction" on page 123 for commands describing how you can request a display of the titles of all messages queued for immediate delivery to that terminal.

MSG = 'message'

"message" is the text of the message to be sent. The MSG keyword and the equal sign are optional. The message must be enclosed within single quotes. A single quote to be included as part of the message must be represented by a pair of single quotes. The message may be continued across multiple consecutive inputs.

A single quote is required to end the message text. If the ending single quote is omitted, the entire input is treated as part of the message and a request to continue the message is sent to the terminal. The entire transaction may be canceled or, alternatively, operands previously entered for this transaction may be saved by entering a single quote followed by a comma to terminate the MSG operand. The correct message can then be reentered, and the previous incorrect message will be ignored.

A single quote at the end of data in a MSG operand means either the end of the MSG operand, or the first of a pair of single quotes indicating that a single quote is to be included as part of the message.

In this situation, the response to the terminal is:

```
CONTINUE INPUT OR MSG
```

If the first character of the next input is a single quote, it is treated as the second of a pair of single quotes and the message is continued. Any character other than a single quote causes the message to be completed, and that character is treated as the first character of a new operand.

New-line (NL) characters within the message are kept. (If the first character is a new-line character, it is deleted.) This allows the operator to enter M=' and then carriage return (CR) or the equivalent of CR, to begin entering the message text at the left margin. That first CR is deleted. Additional CRs

may be entered if blank lines are desired at the top of the transmitted message.

Note: If the HEADING operand is specified, these blank lines appear between the heading (time, date, and originator's terminal identifier) and the message.

With NL processing, the delivered message is positioned at the left margin. If an unformatted message, or a line within a formatted message, exceeds the line width defined for the receiving terminal, sentences are split between words for any line exceeded.

OPCLASS = n1[,...]

specifies one or more numbers, each of which can be in the range 1 through 24, that define the operator classes required for messages to be eligible for delivery.

If ROUTE is specified as well, the message is routed to all requested destinations, but is not eligible for delivery to a terminal unless the class of the operator signed on matches one of the numbers specified by OPCLASS. (If a ROUTE destination is qualified by an operator identifier, OPCLASS is ignored for that destination.)

If ROUTE is omitted, the message is routed to all terminals currently signed-on with an operator class that matches one of the numbers specified by OPCLASS. If OPCLASS = 1 is specified, the message is routed to all terminals that are in service regardless of whether an operator is signed-on or not. However, if OPCLASS is specified with a number other than 1, but not exceeding 24, the message is delivered, either to an operator with that class who is signed-on, or to a terminal that has that operator security specified in its TCTTE.

PROTECT = {YES|NO|prefix}

specifies message recovery for a CICS emergency restart. You can use P or PROTECT in place of PROTECT = YES.

YES

specifies that \$\$ is to be prefixed to the temporary storage data identifier of the stored message.

NO

specifies that a previous protect request is to be ignored. This is done by using the default prefix of **, the same as when this operand is omitted altogether, as described below.

prefix

specifies a 1-or 2-character prefix to be used for the temporary storage data identifier of the stored message. If a single character only is specified, a \$ is provided as the second character. (For example, PROTECT = T causes a prefix of T\$.)

If this operand is omitted, a default prefix of ** is used. ** is also the default for user application programs issuing BMS message requests where no protection is specified (REQID option omitted).

A temporary storage table (TST) entry is needed for each prefix specified in the PROTECT operand so that message recovery is effective for that prefix.

ROUTE=

specifies the destination(s) to receive the message. For routing messages to 3600, 3770 (batch) or 3790 (batch) terminals, see "Examples of 3600 and 3770 (batch) destinations" on page 112.

termid

A 1-to 4-character terminal identifier to which the message is routed. If routing is performed to several terminals of the same device and map suffixes, CICS processes the message identically for all of them and the most restricting page size prevailing is used.

A terminal identifier specified in a message-switching transaction must not contain any of the following characters:

- / slash
- , comma
-) right parenthesis
- (left parenthesis
- + plus sign
- minus sign
- * asterisk

or a space

/opid

A 1-to 3-character operator identifier preceded by a slash (without termid). The message is routed to the first terminal (located in a search from the start of the terminal control table) to which an operator with that identifier is currently signed on. If no such terminal is found, the sending operator is notified.

An operator identifier specified in a message-switching facility must not contain any of the following characters:

- , comma
-) right parenthesis
- space

termid/opid

A terminal identifier is qualified by an operator identifier to restrict the message delivery to the specified operator at the terminal location.

ALL

broadcast to all terminals.

There is a limit to the number of terminals to which a message can be sent. This limit depends on a combination of factors. Significant factors are the type of terminals in the TCT, the number of these terminals, and the length of message sent. However, the transaction is abended with an abend code of ABMC if the limit is exceeded.

If a CMSG ROUTE=ALL is issued to a large number of terminals, a task for each terminal is initiated up to the MAXTASK (CMXT) value. Because the tasks are single-threaded, they are suspended and may give rise to a SOS condition. This problem can be alleviated by setting CMXT to a low value for CMSG. See the *CICS/MVS Performance Guide* for further information about the CMXT operand.

.termlist

A 1-or 2-character terminal list table (TLT) suffix preceded by a period, for example, .xx for DFHTLTxx. Each TLT module name referenced must be included in the processing program table (PPT). A maximum of 10 terminal lists may be concatenated. The entries in the terminal lists contain terminal identifiers, or operator identifiers, or both. Duplicate entries in concatenated lists are deleted. Entries are considered duplicate if each has the same terminal identifier and operator identifier.

(±termid/opid,...)

A +termid/opid adds the specified destination (if not a duplicate) to any destinations contained in the requested TLT. A -termid/opid deletes the specified destination from the requested TLT. A -termid, without an opid, deletes all destinations of that terminal (with or without operator identifier) resulting from the requested TLT. + or -termid/opid parameters only affect entries resulting from requested TLTs and have no effect on other + or -termid/opid parameters. All TLT suffixes must be entered before any + or - parameters.

A ROUTE operand may be divided across multiple consecutive inputs. However, if it refers to a TLT, it must be completed in the same input as started. An individual ROUTE parameter (termid/opid) may not be split across two inputs.

SEND

specifies that all of the operands have been entered and that the message is to be routed. SEND is the final operand and must be followed by a space or an end-of-data.

TIME=value

"value" is the time at which the message should be delivered based on the 24 hour clock or, if the value is preceded by a plus sign (+), it specifies how long delivery of the message is to be delayed from the present time. TIME may be entered in one of the following forms. (hh represents hours and mm or m represents minutes.)

hhmm	0001 through 2400	(mm<60)
+hhmm	0000 through 2400	(mm<60)
+mm	00 through 99	
+m	0 through 9	

A delivery time on the current day within the past hour is considered as requesting immediate delivery. An earlier time than that is considered already passed and is treated as an error.

Logical unit destinations

This section describes how you can use the CMMSG transaction to send messages to logical units. For details of message handling within CICS subsystems, and of the use of the message-switching transaction at subsystem terminals, see the appropriate CICS/OS/VIS subsystem guide, as listed in "CICS/MVS 2.1.2 library" on page vi.

Each logical unit in a CICS-SNA network is identified by a single terminal identifier and, provided that the logical unit is capable of receiving message text,

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messages may be routed to it in the same way as they are routed to non-SNA terminals. Routing by operator identifier may also be employed if the logical unit supports operator signon, and SNA and non-SNA destinations may be specified in the same ROUTE operand.

The destination for a message sent to a logical unit may be a display or printer device, or it may be a data set or an application program in a subsystem controller. To the message sender, however, the destination is simply a "terminal", and any necessary formatting is performed by the CMSG transaction or within the subsystem controller itself.

Logical device codes

Some types of logical unit may be used to obtain access to more than one resource within a subsystem. For example, data sent to a 3601 logical unit may be intended for a 3604 Keyboard Display, a 3618 Line Printer, or some other element of the 3600 subsystem. The facility provided by CICS to permit destination selection within logical units of this type is the logical device code (LDC).

The logical units that support destination selection by LDC are:

3601 logical unit
3770 batch logical unit
3770 batch data interchange logical unit
3790 batch data interchange logical unit

For the user of the message-switching transaction, the LDC is simply a 2-character mnemonic code whose meaning is defined by the CICS installation. It may be used to qualify a logical unit destination by including it in the ROUTE operand in the following way:

```
[/opid]][,...]]
```

where:

is a 2-character LDC mnemonic preceded by an asterisk (*) which qualifies the destination(s). The *ldc parameter may qualify a logical unit identifier (termid), a general broadcast (ALL), or a terminal list table specification (.termlist). The *ldc parameter applies only to logical units but not to any start-stop or BSC terminals.

Different LDC mnemonics may be included in one ROUTE operand specification; however, all destinations for one message must indicate the same device type.

termid*ldc

associates an LDC mnemonic with a logical unit identification.

ALL*ldc

is a general broadcast to all terminals with the same LDC mnemonic qualifying all logical units.

.termid*ldc

qualifies (overrides any LDC specified within the terminal list table) all entries in this terminal list table with the specified LDC mnemonic. This LDC specification does not apply to start-stop or BSC terminals.

Note: This qualification of a TLT occurs before any succeeding TLT(s) or +/- entries are processed. See example 9 in "Examples of 3600 and 3770 (batch) destinations" on page 112.

+termid*ldc/opid

adds a destination, if not a complete duplicate to any contained in the requested TLT(s).

-termid*ldc/opid

deletes duplicate destinations resulting from the requested TLT(s). A -termid*ldc, without an opid, deletes all destinations of that termid*ldc (with or without operator identifiers) resulting from the requested TLT(s). A -termid/opid, without an LDC mnemonic, deletes all destinations of that termid/opid (with or without LDC mnemonics) resulting from the requested TLT(s).

If a destination is specified by /opid without termid, it becomes termid/opid, in which termid is the identifier of the first terminal or logical unit (located in a search from the start of the TCT) to which an operator with that identifier is currently signed on. If no such terminal or logical unit is found, the destination is not valid and the operator is notified.

Message-switching responses

Every input from the terminal receives a response. Most responses are preceded by indicators in the form:

D E H I M O P R S T OK

where the letters before OK represent the first character of each operand except CANCEL, as follows:

D	DATE
E	ERRTERM
H	HEADING
I	ID
M	MSG
O	OPCLASS
P	PROTECT
R	ROUTE
S	SEND
T	TIME

These indicators identify the operands that have been processed and are currently in effect.

Errors may occur because of:

- Syntax (for example, misspelled operand, unbalanced parentheses, terminal identifier more than 4 characters, invalid operand separator, and message and destination not provided)

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- Specification (for example, terminal identifier not in the TCT)
- Operation (for example, operator not currently signed-on to system).

Syntax errors within an operand cause it to be rejected by the message-switching routine. To correct a known error, retype the operand before typing the SEND keyword.

Syntax errors result in no data being processed in that input past the detected error. All following data must be reentered to be included.

A specification or operation error message may be written to the terminal with an indicator which shows that the operand in question has been processed and is still in effect. For example, two possible error messages might be:

1. M OK TERMID GT 4 CHAR AT T004A

This message is caused by the syntax error of a terminal identifier greater than 4 characters. The absence of the R indicator preceding the message shows that ROUTE is not currently in effect and that the message must be reentered.

2. MRS OK INVLD TERMINL ID T004

This message is caused by the specification error of the terminal identifier not having an entry in the TCT. The R indicator shows that ROUTE is still in effect. Operator action as a result of this type of message is either:

- A space (entry deleted)
- Termid/opid specifying a termid, or operator identifier, or both (entry changed)
- Any operand (the route operand or another operand may be entered).

Note: If an operand is entered, the error message is repeated unless a new ROUTE operand is entered before SEND. If the bad entry is changed or deleted by responding with a space or termid/opid, the message is routed unless other errors are still present. These errors are indicated by another message. If an operand is entered, it signifies normal entry mode in which multiple operands can be entered requiring another SEND operand to end the input.

The following is a list of all the responses from the message switching program (DFHMSP). Because of device-dependent considerations, all responses are limited to 25 characters plus the indicators.

ALL ROUTE ENTRIES DELETED

A space entered in reply to a bad destination message caused the remaining destination(s) to be deleted, leaving no destinations to which to route the message. This condition forces a return to normal operand mode, and a ROUTE operand must be reentered to provide the message destination(s).

CANCELED – TEMP STRG ERR N

- N=1. An error occurred on a temporary storage (TS) request. One cause of this error is that the size of the TS record exceeds the CI (control interval) size of the TS data set.

- N=2. An error occurred on a temporary storage (TS) request. A possible cause of this response, not related to a TS problem, is a request for a TS record that does not exist. This can happen if:
 - The transaction identifier is entered followed by a "C". This extended transaction identifier (CMSGC) normally requests a continuation of a message-switching transaction, but no previous status information exists for this terminal. See "Message-switching continuation" on page 89.

Note: A CICS cold start of temporary storage causes the loss of any status saved from a previous CICS execution.
 - The transaction identifier is entered in lowercase on a 3270 display device that is defined as a dual case keyboard (FEATURE=DCKYBD on the DFHTCT TYPE=TERMINAL system macro), and for which no previous message-switching transaction status exists.

Note: The transaction identifier in the terminal input/output area (TIOA) is not translated. To correct this problem, enter the transaction identifier in uppercase.

Another cause of N=2 occurs if transaction routing is being used; and that is when the transaction identifier used to initiate the task is different to that coded in the RMTNAME operand of the DFHPCT TYPE=REMOTE system macro. You should not include the RMTNAME operand in that macro.

- N=3. An error (most likely caused by TS) occurred on a DFHBMS TYPE=TEXTBLD request.
- N=4. An error (most likely caused by TS) occurred on a DFHBMS TYPE=PAGEOUT request.

CLEAR/CANCL or CONT INPUT|ROUTE|MSG

An operator on a 3270 display device pressed the CLEAR key and the message says continue (CONT):

INPUT

The last operand in the previous input is complete. Enter an operand to continue.

ROUTE

The last operand in the previous input is ROUTE and a ")" cannot be found. Continue entering ROUTE destinations.

MSG

The last operand in the previous input is MSG, and a single quote to end the message cannot be found, or a single quote is found as the last character of the input, and might be the first of a pair of single quotes. If the previous input does not end with a single quote, continue entering the message.

If the previous input ends with a single quote, enter another single quote to continue the message (which causes a single quote to be included), or enter any operand which causes the message to be considered complete.

Note: If the operator replies by again pressing the CLEAR key (two consecutive times) it has the same effect as entering CANCEL for the last 6 characters of the input.

CONTINUE INPUT

A SEND operand has not been processed, and a ROUTE or MSG operand was not being continued. Continue by entering any operand.

CONTINUE INPUT OR MSG

The previous input ended with a single quote with the MSG operand being processed. This single quote could specify the end of the MSG operand or could be the first character of a pair of single quotes (signifying that a single quote was to be included within the message).

If the next input starts with a single quote, the message is continued with a single quote included in the message. A nonpaired single quote is required to end the MSG operand.

If the next input starts with any character other than a single quote, it is treated as the beginning of a new operand and the MSG operand is considered complete.

CONTINUE MSG

The previous input ended with the MSG operand being processed. Continue the message.

CONTINUE ROUTE OPERAND

The ROUTE operand was being processed in the previous input and a space or an EOD was found. Continue the ROUTE operand.

DATE ALREADY PASSED

A delivery date prior to the current day is invalid.

DATE INVALID AT xxxxxxxx

Date must be in one of the following forms:

yy.ddd	year (00-99) and day (001-366)
mm/dd	month (01-12) and day (01-31)
mm/dd/yy	month (01-12), day (01-31), and year (00-99)
D=+d	day (0-4)

DATE NOT xx/xx AT xxxxx

DATE must start with 2 numeric digits followed by a slash (for month), or a period (for year). This message is issued if the third character of DATE is not a slash or a period.

DATE TOO FAR IN FUTURE

Future delivery may not be specified after 0359 hours on the fourth day from the current day. This condition may have occurred either by:

1. D = +n, where n is greater than 4, or
2. DATE specified explicitly as being after the fourth day from the current day, or
3. A condition of DATE and TIME that exceeds the stated limit.

If conditions 1 or 2 occur, the DATE operand is not in effect (the D status indicator is not present). If condition 3 occurs, both the DATE and TIME

operands are currently in effect (the D and T status indicators precede the message), and one or both of them must be changed to a valid delivery time or the error will occur again.

ERRTERM INVALID AT xxxxx

An ERRTERM must be 1 through 4 characters.

ERRTERM INVLD/UNSUPP xxxxx

A terminal identifier specified for the ERRTERM operand does not have an entry in the TCT, or it is for a terminal type not supported by BMS, and is therefore invalid. Valid replies by the operator to this are:

1. A terminal identifier or ORIG in the same format as a normal ERRTERM destination (without entering the operand ERRTERM or E). The message is routed following this input unless the new ERRTERM specified is invalid. In this case, the message is repeated.
2. A space as the first character (followed by an EOB or comments) causes the entire ERRTERM specification to be eliminated. The message is routed following this input.
3. Any operand that causes a return to normal operand processing mode. If another ERRTERM operand is not entered to correct this condition, the same error message is repeated after SEND is reentered.

HEADING NOT YES/NO AT xxxxx

A HEADING operand may only be specified as follows:

```
HEADING
HEADING=YES
HEADING=NO
H
H=YES
H=NO
```

ID OPERAND GT 62 CHARS

An ID operand must be from 1 through 62 characters in length, and enclosed within parentheses.

ID OPERAND MISSING (

The ID operand requires the identifier to be enclosed within parentheses.

ID PARAM MISSING OR NO)

The ID operand must be from 1 through 62 characters in length and enclosed within parentheses.

INVALID LDC AT xxxxxxxx

The LDC mnemonic is not valid for the logical unit, or a previous entry contained an LDC mnemonic that indicated a different device type.

Note: A missing LDC mnemonic can cause this message if the default mnemonic for that station indicates a different device type than a previously indicated mnemonic (specified or defaulted).

INVALID OPND AT xxxxx

An invalid operand xxxxx (possibly caused by a keying error) was encountered. No data beyond this point was processed. The status indicators represent the operands that are in effect.

INVALID TBL SFX AT xxxxx

A terminal list table suffix must be 1 or 2 characters preceded by a period.

INVLD OPERATR ID AT xxxxx

An operator identifier must be 1 to 3 characters preceded by a slash.

INVLD SEPARATOR AT xxxxx

The end of an operand must be followed by a space, a comma (except for SEND), a carriage return (new-line character), or end of data (EOD).

INVLD TERMINL ID xxxxx

There is no entry in the TCT for the terminal identifier specified for a ROUTE destination. The valid operator reply is one of the following:

1. A terminal identifier, or operator identifier, or both in the same format as a normal termid/opid ROUTE destination (without entering the operand ROUTE = or R =) that replaces the invalid destination.
2. A space as the first character, which causes the invalid destination to be deleted.
3. Any operand that causes a return to normal operand processing mode. If another ROUTE operand is not entered, the same condition will exist after the SEND operand is reentered.

Note: 1 and 2 cause the message to be routed if the resulting destinations are valid; otherwise, another error message will be issued.

**LDC NOT 2 CHARS AT xxxxx destination must be 2 characters.
MESSAGE HAS BEEN ROUTED**

A SEND operand has been processed and the message has been routed to its destination(s). This is the normal completion of a message-switching transaction.

MSG NOT SENT – NO RECEIVER

This condition is caused by an OPCLASS operand specified without a ROUTE operand and no operators, with the specified operator class, or classes, currently signed-on to terminal types supported by BMS. To correct this situation, a new destination(s) must be entered by the ROUTE operand, or OPCLASS operand, or both.

NEED OPCLASS OR ROUTE

The SEND operand was entered without specifying any destination(s) for the message. To correct this situation, a destination(s) must be entered by the ROUTE operand, or OPCLASS operand, or both.

NO INPUT – REENTER

A transaction identifier was entered followed by end-of-data (EOD), or the number of backspace characters entered caused the deletion of all the data (including the position following the transaction identification if present). If the input does not start with the transaction identifier, the terminal remains in conversation. Otherwise it is not in conversation.

NO MESSAGE PROVIDED

The SEND operand was entered without specifying the message. To correct the situation, provide the message.

NO MSG STRT QUOT AT xxxxx

A MSG parameter must be enclosed within single quotes. A single quote must follow an M or MESSAGE.

NO TRMID FOR LDC AT xxxxx

A logical unit identification must precede the LDC mnemonic.

NO TERM LIST TBL-xx

An entry for a terminal list table with suffix xx (DFHTLTxx) was not found in the PPT.

OPCLASS NOT 1-24 AT xxxxx

An OPCLASS parameter must be from 1 through 24.

OPERATORS NOT SIGNDON nnn

The ROUTE operand specified operator identifications without terminal identifiers (that is, ROUTE=/opid). nnn operator identifications are not currently signed on.

The valid reply to this is to enter one of the following:

1. A space as the first character, which deletes the nnn destinations.
2. The character D (or any other character) which causes each of the nnn destinations to be individually displayed through the message OPRTR ID NOT SIGNDON.
3. Any operand that causes a return to normal operand processing mode. If no further ROUTE operands are entered, this same condition will exist if an operator does not sign on before the SEND operand is reentered.

Note: This message is only issued if nnn is greater than 5; otherwise, each destination is individually displayed. Reply 1 causes the message to be routed if the resulting destinations are valid; otherwise another error message is issued.

OPRTR ID NOT SIGNDON /xxx

An operator with identifier xxx, specified as a destination (entered either by the terminal operator or included as an entry in a TLT whose suffix was specified), is not currently signed on to any terminal controlled by CICS.

The valid reply to this is to enter one of the following:

1. A terminal identifier, or operator identifier, or both in the same format as a normal termid/opid ROUTE destination (without entering the operand ROUTE or R), which replaces this /xxx destination.
2. A space as the first character, which causes the /xxx destination to be deleted.
3. Any operand which causes a return to normal operand processing mode. If no further ROUTE operands are entered, this same condition will exist if an operator with identifier xxx does not sign on by the time the SEND operand is reentered.

Note: Replies 1 and 2 cause the message to be routed if the resulting destinations are valid, otherwise another error message is issued.

PROTECT OPND NOT 1-2 CHAR

The PREFIX option of the PROTECT operand must not specify more than 2 characters.

ROUTE INVALID AT xxxxx

A field separator entered before the first ROUTE parameter, or 2 consecutive field separators were found. Reenter a valid ROUTE operand.

SPACE MUST FOLLOW TRANSID

One or more spaces must follow the transaction identifier before the first operand can start. (The character C causes a continuation from the last input preceding a normal completion or a cancellation.)

TERMID GT 4 CHAR AT xxxxx

A terminal identifier must be 1 through 4 characters.

TERMID NOT +/- AT xxxxx

All TLT suffixes must be specified before any individual destination (which must be preceded by a + or -) may be entered. A ROUTE operand that specifies a TLT suffix may not be continued on a succeeding input. If a ROUTE operand includes more than one parameter, it must be enclosed in parentheses.

TERMINATED BY OPERATOR

The operator entered CANCEL as the last 6 characters of the previous input, or pressed the CLEAR key twice in succession on a 3275/3277 terminal. The previous input is canceled and the terminal is **not** in conversational mode with CICS message switching.

TIME ALREADY PASSED

A delivery time for the current day, more than one hour before the current time is considered already passed and is invalid.

If the message is for immediate delivery, enter T = +0, to replace the TIME operand that is still in effect.

If the message is for delivery at the specified time on a future day, enter the appropriate DATE operand. The specified time is still in effect.

If the message is for delivery at a different time, reenter the TIME operand.

TIME INVALID AT xxxxx

TIME must be one of the following:

hhmm	0001 through 2400	(mm<60)
+hhmm	0000 through 2400	(mm<60)
+mm	00 through 99	
+m	0 through 9	

where hh = hours and mm = minutes.

TIME NOT 4 CHARS AT xxxxx

A TIME parameter must be a 4-digit number if it is not preceded by +.

TOO MANY TBL SFX AT xxxxx

A maximum of 10 TLT suffixes may be specified.

UNBALANCD PARENS AT xxxxx

A ROUTE or OPCLASS operand started or ended with a parenthesis but did not have one at the end or beginning. The x's (above) represent the characters near the end of the operand.

UNSUP OPRT TRMNL xxxxxxxx

An operator identifier without a terminal identifier was specified as a ROUTE destination; however that operator is signed on to a terminal that is a type not supported by BMS and is, therefore, an invalid destination.

The valid reply to this is the same as for the message OPRTR ID NOT SIGNDON (above).

UNSUP TERMINAL xxxxxxxx

A terminal identifier, specified as a ROUTE destination, is for a terminal type not supported by BMS and is, therefore, an invalid destination.

The valid reply to this is the same as for the message INVLD TERMINL ID (above).

ZERO LENGTH MSG AT ''

A message must have at least one character enclosed in single quotes. A single quote to be included as part of a message must be entered as two separate single quote characters. A message must start with a single quote and may be followed immediately by pairs of single quotes.

+DATE INVLD 2330 TO 0030

A DATE= + operand is invalid from 30 minutes before to 30 minutes after midnight.

Message-switching examples

Examples on the following topics are described in this section:

- ROUTE and OPCLASS operands
- Multiple delivery to same terminal
- TIME and DATE operands
- Complete transactions
- ROUTE operand for 3600 and 3770 (batch) destinations.

Examples of ROUTE and OPCLASS operands

1. R=LA04

Route message to the terminal identifier LA04.

2. R=(LA04,OL,SF2)

Route message to the three terminals with identifiers LA04, OL, and SF2.

3. R=LA04/PJL

Same as example 1, but the operator whose identifier is PJL must be signed on to LA04 before the message can be sent.

4. R=(LA04,OL/LBS,SF2)

Same as example 2, but the operator whose identifier is LBS must be signed on to OL before the message can be sent to OL.

5. R=/PJ

Route the message to the first terminal found (in a search from the beginning of the TCT) with the operator identifier PJ currently signed on. If no terminal satisfies this condition, the message is discarded. The terminal operator is notified of this occurrence by an error message.

6. R=(LA04,OL,SF2), O=(2,4,7,12)

Same as example 2, but it also requires that an operator class of 2, 4, 7 or 12 be signed on to the terminals before the message can be sent to those terminals.

7. R=(LA04,OL/LBS,SF2), O=(12,4,2,7)

Same as previous example, but the operator whose identifier is LBS must be signed on to OL before the message can be sent to OL (the operator identifier overrides OPCLASS). There is no operator class requirement for OL.

8. R=(LA04/PJL,/MGK,OL), O=(8,2)

Route message to LA04 and OL. The operator whose identifier is PJL must be signed on to LA04 before the message can be sent to LA04, and an operator whose class is 2 or 8 must be signed on to OL before the message can be sent to OL. The message is also sent to the first terminal found with operator identifier MGK currently signed on.

9. R=(/PJL,/MGK,/L)

Messages are sent to the first terminals found with operator identifier PJL, MGK, or L currently signed on. In this example, a maximum of three messages may be sent, one to each operator identifier.

10. R=ALL

Broadcast message to all terminals.

11. O=(2,10,4),R=ALL

Messages are routed to all terminals but are not sent to any terminal until that terminal has an operator class of 2, 4, or 10 signed on.

12. R=.MK

Load terminal list table DFHTLTMK and use its specifications for terminal identifiers, or operator identifiers, or both.

13. R=(.MK,.P,.LS)

Load terminal list tables DFHTLTMK, DFHTLTP, and DFHTLTL and concatenate the entries from the tables with duplicate entries deleted.

14. R=(.MK,.P,.LS, +LA04/PJL,-OKLN, -SF02/LBS)

Same as example 13, but add the terminal identifier LA04 qualified by operator identifier PJL, delete all entries found with terminal identifier OKLN (whether or not they are qualified by operator identifier), and delete all entries for terminal identifier SF02 qualified by operator identifier LBS if found.

15. **O=(10,3,7), R=(.LS,.P,.MK, -OKLIN, +LA04/PJL, -SF02/LBS)**
 Same as example 14, but the message is not sent to any terminals, unless they are associated with an operator identifier, until operator class 3, 7, or 10 is signed on.
16. **O=(8,2)**
 The message is sent to all terminals that currently have an operator class of 8 or 2 signed on.

Examples of multiple delivery to same terminal

A message may be delivered more than once to the same terminal, as follows:

1. **R=(T001/OP1,T001/OP2)**
 The message is routed for two transmissions to terminal T001, but an operator with identifier OP1 or OP2 must be signed on before it is eligible for delivery. The message can be sent twice to T001 but under different conditions.
2. **R=(T001,T001)**
 The message is routed for two transmissions to terminal T001 and can be sent twice. If the destination terminal is in TRANSCEIVE status, the same message appears consecutively at the terminal; if in TRANSACTION status, the operator must request delivery.
3. **R=(T001,T001/OP1)**
 The message is routed for two transmissions to terminal T001 but one transmission requires an operator with identification OP1 to be signed on. If the operator is already signed on the message may be sent twice to T001. If the destination terminal is in TRANSCEIVE status, the same message appears consecutively at the terminal; if in TRANSACTION status, the operator must request delivery.
4. **R=(T001,T001/OP1,/OP1)**
 Same as an R=(T001,T001/OP1) and, if operator with identification OP1 is signed on to T001 at the time the message is entered, the message may be sent three consecutive times to T001. If the destination terminal is in TRANSCEIVE status, the same message appears consecutively at the terminal; if it is in TRANSACTION status, the operator must request delivery.

For the following examples, assume that the terminal list table DFHTLTL1 contains T001 twice; that is, T001 has been specified twice by the user when the table is generated. Also assume that DFHTLTL2 contains T001 and T001/OP1.

5. **R=(.L1,.L2)**
 All entries from DFHTLTL1 are included as destinations. Duplicate entries within DFHTLTL1 are kept and not removed. All entries from DFHTLTL2 are checked for duplicates against the entries in the previously specified DFHTLTL1 and, if a duplicate is found, it will not be repeated. Duplicates are kept unless they are duplicates of an entry in DFHTLTL1.
- The resulting destination list is T001, T001, T001/OP1.

6. R=(.L2,.L1)

Note the different result if the terminal list tables have the same entries as in example 5, but are specified with L2 first. The DFHTLTL2 entries T001 and T001/OP1 are included in the destination list.

However, the duplicated entries T001 in DFHTLTL1 are not included because there is a duplicate in the previous TLT.

In this case, the resulting destination list is T001, T001/OP1

7. R=(.L1,.L2,+T001)

This gives the same result as R=(.L1,.L2) in example 5. The entry +T001 is not added, because it is a duplicate of an entry from DFHTLTL1.

8. R=(.L1,.L2,+T001/OP1,-T001)

In this example, +T001/OP1 is not added, because it is a duplicate of an entry from DFHTLTL2. The -T001 causes all entries from TLTs that refer to T001 to be deleted. The message ALL ROUTE ENTRIES DELETED is issued.

Note: If DFHTLTL2 did not have an entry T001/OP1, the +T001/OP1 would have caused that entry to be added to the destination list. The -T001 entry would not have deleted the +T001/OP1 entry because only entries from TLTs are affected by + or - entries.

9. R=(.L1,.L2,-T001,+T001/OP1)

The -T001 causes all entries from the TLTs that refer to T001 (including the T001/OP1 entry in DFHTLTL2) to be deleted. The +T001/OP1 entry is then added and becomes the only resulting destination. There is no duplicate because it has just been deleted.

Examples of time and date operands

Assume that the current time is 0900 hours on December 29, 1985. The message is routed for delivery as follows:

1. No time or date

Immediately.

2. T=0930

At 0930 hours today.

3. T=2130

At 2130 hours tonight.

4. T=+5

At 0905 hours today. T=+mm,mm can be any 1-or 2-digit number (minutes can exceed 59).

5. T=+90

At 1030 hours today. T=+mm,mm can be any 1-or 2-digit number (minutes can exceed 59).

6. T=+0130

Same as example 5. T=+hhmm must be 4 digits; it cannot exceed 2400.

7. T=+0815

At 1715 hours today.

- 8. T = +2400**
At 0900 hours on December 30. T = +hhmm must be 4 digits; it cannot exceed 2400.
- 9. D = 12/30 or D = 12/30/85**
At 0900 hours (current time) on December 30.
- 10. D = +1**
Same as example 9.
- 11. D = 01/01/86**
At 0900 hours (current time) on January 1, 1986.
- 12. D = +3**
Same as example 11.
- 13. T = 2130, D = 12/30**
At 2130 hours on December 30.
- 14. D = +1, T = +1230**
Same as example 13.
- 15. D = +1, T = 2130**
Same as example 13.
- 16. T = 0359, D = 01/02/85**
0359 hours on January 2, 1986. Latest future delivery is 99 hours 59 minutes from the beginning of the current day.

For the following examples, assume that the current time is 2350 hours on December 29, 1985.

- 17. T = 2130, D = 12/30**
At 2130 hours on December 30.
- 18. T = 2130, D = +1**
The error message: +DATE INVLD FROM 2330 to 0030 is issued. Because of the possible confusion as to the current day during the half hour period before and after a date change, a plus parameter for DATE is not allowed from 2330 hours to 0030 hours.
- 19. T = 2300**
Immediately. A delivery time on the current day within the past hour from the current time is considered as requesting immediate delivery. An earlier time is considered already passed and is treated as an error. If the current time is 0015 hours, T = 2345 is interpreted as 1145 hours today and not for immediate delivery.
- 20. T = 2245**
The error message: TIME ALREADY PASSED is issued. A delivery time on the current day within the past hour from the current time is considered as requesting immediate delivery. An earlier time is considered already passed and is treated as an error. If the current time is 0015 hours, T = 2345 is interpreted as 1145 hours today and not for immediate delivery.

Examples of complete transactions

Note: # represents a new-line character.

1. CMSG R=ALL,'GOOD MORNING#TODAY IS FRIDAY FEB 1',S

This sends a good morning message to all terminals.

2. CMSG 'GOOD MORNING',R=.G1,T=0900,S

This routes a good morning message to be delivered at 0900 hours to all destinations contained in DFHTLTG1. (Locations in Eastern time zone.)

3. CMSG 'GOOD MORNING',R=(.G2,+CHI4),T=1000,S

This message is for delivery at 1000 hours to terminals in central time zone (DFHTLTG2). Also included as a destination is termid CHI4, which was recently added but not yet included in the TLT.

4. CMSG 'SUPERVISORS''MEETING IN 5 MINUTES',O=(4,7),S

This routes the message to all supervisors who are assigned operator class 4 or 7 and are currently signed on to CICS.

5. CMSG R=ALL,'NEW PRICE MODEL 402 - \$28.70',S

This sends the price of the new model to all terminals.

6. CMSG 'FRED - WHAT IS CURRENT STOCK ON P/N 4837-LP4#

BPK',R=BLD3,H,

This routes a message to BLD3 asking Fred a question and including the requestor's initials (operator identifier). A heading is included so that Fred also knows the originating termid.

7. CMSG 'PNO 4837-LP4, QTY 26?',R=/BPK,H,S

This shows Fred's answer routed to the terminal at which operator identifier BPK is currently signed on.

8. CMSG 'BRID KADDER ARRIVING 3:15 PST. PLEASE MAKE RESERVATION# M.

KRN',R=PADC,H,S

This makes a request for a reservation for a B Kadder.

9. CMSG 'SHUTDOWN IN 5 MINUTES',R=ALL,T=1655,S

This sends the shutdown message to all terminals.

Note: Examples 1, 2, 3, and 9 are possible candidates for inclusion in a sequential (BSAM) terminal input stream during startup.

Examples of 3600 and 3770 (batch) destinations

These examples assume the following:

- Terminal identifiers T36n and T37n are 3600 logical units and 3770 batch logical units respectively; all others are start-stop or BSC terminals.
- LDC mnemonics DS and LP have been defined for the system and T361, T362, and T363, as follows:

DFHTCT TYPE=LDC,LDC=DS

DFHTCT TYPE=LDC,LDC=LP

DFHTCT TYPE=TERMINAL,LDC=(DS,LP)

- LDC mnemonic P1 has been defined for the system and T371, T372, and T373, as follows:

```
DFHTCT TYPE=LDC,LDC=P1
DFHTCT TYPE=TERMINAL,LDC=P1
```

You can also use the typeterm LDCLIST attribute of RDO to define these mnemonics instead of the DFHTCT TYPE=TERMINAL macro shown.

- Terminal list table DFHTLTL3 contains entries for:

```
T361*DS
T362*DS/OP1
T362*DS/OP2
T363
T371*P1
T372*P1/OP1
T372*P1/OP2
T373
T40
```

- Terminal list table DFHTLTL4 contains entries for:

```
T361*DS
T362*DS/OP1
T362*DS/OP2
T363
T40
```

1. R=T361*DS

Route message to terminal identifier T361 qualified by LDC mnemonic DS.

2. R=(T361*DS,T362*DS/OP1,T363,T371*P1,T372*P1/OP1,T373,T40)

Route message to:

- T361 and T362 qualified by LDC mnemonic DS
- T363, using the default LDC
- T371 and T372 qualified by LDC mnemonic P1
- T373 console keyboard/printer
- T40, which is a start-stop or BSC terminal.

T362 and T372 requires an operator with identification OP1 be signed on before the message can be sent.

Note: The default LDC mnemonic for T363 must indicate the same device type as LDC mnemonic DS.

3. R=ALL*LP

Route message to all terminals (3600, 3770 batch and interactive logical units, start-stop, and BSC) with all 3600 destinations qualified by mnemonic LP. LP is ignored for start-stop and BSC destinations.

4. R=.L3

Uses the terminal list table DFHTLTL3 for message destinations. (Same as example 2, plus T362*DS/OP2 and T372*P1/OP2.)

5. R=(.L3,-T362*DS/OP2,-T372*P1/OP2)

Same as example 4, but delete T362*DS/OP2 and T372*P1/OP2. Same result as example 2.

6. R=(.L3,-T362*DS)

Same as example 4, but deletes all entries for T362*DS (with or without opids). Result is T361*DS, T363, all T37n terminals, and T40.

7. R=(.L3,-T362)

Same as example 6. -T362 deletes all entries for T362.

8. R=.L4*LP

LDC mnemonic LP qualifies (overrides) all entries in DFHTLTL4. Resulting destinations are:

T361*LP T362*LP/OP1 T362*LP/OP2 T363*LP T40*LP

Note: The LP mnemonic has no effect on the start-stop or BSC terminal T40.

9. R=(.L4*LP,-T362*DS)

The -T362*DS causes no action, because the TLT destinations are qualified by LDC mnemonic LP before the additions or deletes are processed, thus causing no matching entry to delete.

10. R=(.L4,+T363*LP)

Causes error message 'INVALID LDC AT T363*LP' to be generated. LDC mnemonic LP has a different device type than does LDC mnemonic DS (first 3600 destination encountered is T361*DS). All 3600 destinations for one message must indicate the same device type. All 3770 batch logical unit destinations for one message must indicate the same device type.

11. R=/OP2

Route message to the first terminal or logical unit found in the TCT with operator identifier OP2 currently signed on. If OP2 is signed on to T362, the resulting destination is T362/OP2 with the default LDC mnemonic for logical unit T362. The default is DS because it is the first LDC mnemonic defined for T362. The resulting destination is T362*DS/OP2.

CRTE—routing transaction

The routing transaction (CRTE) provides a simple method of running a transaction that resides on a remote system. CRTE does not work on LU6.1 links; it abends if you try to run it on such links.

Transaction routing in a multiregion operation (MRO) environment or for intersystem communication (ISC) is usually achieved by making entries in the PCT. The entries define the transaction as remote, and name the system on which it is to be executed. Simply entering the transaction code causes CICS to route the requests to the named system. You can also execute transactions on another system without making special PCT entries, by using the routing transaction (CRTE).

You cannot use PA or PF keys to invoke transactions under CRTE.

```
CRTE SYSID{=sysid|(sysid)}[,TRPROF=trprof]
```

SYSID

"sysid" is the name of the system that is to execute the transaction. This sysid is the same as the 4-character CONNECTION specified, either by using RDO (resource definition online), or the 4-character SYSIDNT specified in the DFHTCT TYPE=SYSTEM definition of the remote system.

TRPROF=trprof

"trprof" is the name of the profile to be used for the session that is to carry the intersystem flows if that session uses VTAM. If VTAM is used and "trprof" is not entered, the default profile DFHCICSS is used.

The routing transaction verifies that the specified remote system is known and is available. If it is, a message is displayed confirming that a routing session to the required system has been started.

You can then clear the screen and enter the transaction code for the transaction that is to be executed on that system. In fact, you use the terminal as if it were connected directly to the remote system. However, you might be asked to sign on in that system before being allowed to run any transactions.

The transactions invoked can include pseudoconversational transactions, BMS paging transactions, and even CRTE itself. However, you cannot use transactions CEOT and CSOT in conjunction with CRTE.

You can invoke CRTE from a 3270 terminal (but not from the console).

You end a routing session by entering CANCEL. This automatically signs you off from the connected system (assuming you were signed on in that system).

When a routing session is ended, you get the message:

```
ROUTING SESSION TO SYSTEM system-id TERMINATED
```

CRTE

If the routing session involves daisy chaining (that is, transaction routing through more than one system), this message means that only the session furthest from the terminal has been terminated. To terminate a daisy-chained routing session completely, you must enter CANCEL the same number of times as you entered CRTE.

You should use CRTE, rather than making special PCT entries, when performing little-used transactions, or transactions, such as CEMT, that reside on all systems. Also, you must use CRTE when EDF is used to test a transaction running on a remote system. However, because the session has to be established and canceled explicitly, additional signon operations may be required.

While a terminal is in a routing session with another system (that is, during the period between entering CRTE and CANCEL) the terminal cannot receive messages delivered by automatic transaction initiation (ATI).

If a transaction that builds a message using BMS paging and delivers it by a BMS SEND PAGE command (without specifying either of the RETAIN or RELEASE options) is run on a remote system using CRTE, the message cannot be delivered immediately. It is delivered when the routing session ends (provided the terminal was in TRANSCIVE status when the routing session commenced). Alternatively, you can retrieve the message (while still routed) using BMS paging commands.

There are some restrictions on the use of CRTE in conjunction with BMS chaining of messages:

1. You cannot use CRTE as a chained transaction without losing the logical message from which CRTE was to be chained.
2. You cannot use chaining within a routing session without purging the logical message currently attached to the terminal.
3. You cannot daisy chain back to any system in the chain.

CSFE—field engineering transaction

The CSFE transaction is designed to help system programmers and IBM field engineers diagnose terminal problems and software problems. You can use this transaction to:

- Test your terminal
- Activate any of the following types of trace: field engineering, system, user; and two special purpose trace facilities — the system spooling interface trace and the activate scan trace
- Activate any of the following general debugging functions: storage freeze, the storage violation trap, and the global trap/trace exit.

For each of these activities, successful completion of the CSFE transaction gives you the following message:

```
DFH3301 TRANSACTION COMPLETE
```

Terminal test

You can use the CSFE transaction to test your terminal, if it is one of the terminals supported by CICS, except for the IBM 2780 Data Transmission Terminal, terminals of the IBM 3600 Finance Communication System, the IBM 3614 Consumer Transaction Facility, the IBM 3735 Programmable Buffered Terminal, output-only printers (for example, printers of the IBM 3270 Information Display System), and terminals communicating with the IBM 7770 Audio Response Unit.

Enter CSFE on the command line of your display, as follows:

```
CSFE
```

You get the following display:

```
ENTER PRINT FOR CHARACTER SET  
ENTER END TO TERMINATE  
ALL OTHER DATA WILL BE ECHOED
```

PRINT

When you enter PRINT, all characters printable or capable of display at the terminal are sent to your terminal.

END

When you enter END, the terminal test is ended.

Any other input is returned to your terminal (that is, it is echoed), unless it is of the form of one of the other CSFE requests.

Trace control

You can use the CSFE transaction to request trace facilities.

```
CSFE {FETRACE|SYSTRACE|USERTRACE}={ON|OFF}
```

FETRACE

is the field engineering trace facility.

SYSTRACE

is the system trace facility.

USERTRACE

is the user trace facility.

ON|OFF

turns the specified trace on or off.

Such control gives you flexibility in obtaining trace entries for problem determination.

System spooling interface trace

You can use the CSFE transaction to request additional trace and diagnostic facilities for the system spooling interface.

```
CSFE SPOOLFE={ON|OFF}
```

ON

specifies that additional trace entries of system type will be provided for the system spooling interface.

OFF

turns off the system spooling interface trace and the diagnostic facility.

SPOOLFE

is the system spooling interface trace and diagnostic facility.

Activate scan trace

You can use the CSFE transaction to control the activate scan trace.

```
CSFE ZCPTRACE=(termid,{ON|OFF})
```

ON|OFF

turns the trace on or off.

ZCPTRACE

is the activate scan trace facility. ZCPTRACE=ON specifies that the activate scan routine of the terminal control program (DFHZCP) starts to monitor the

activate scan queue for a TCTTE containing the specified terminal identifier (*termid*). Whenever such a TCTTE is found, indicating activity on the specified terminal, a trace entry of system type is made for the activate scan ZCP routine.

Activate terminal builder trace

You can use the CSFE transaction to control the activate scan trace.

```
CSFE {ZCQTRACE=termid|ZCQTRACE,AUTOINSTALL|ZCQTRACE,OFF}
```

ZCQTRACE=*termid*

turns tracing on for the individual terminal or connection identified by *termid*. Only one explicit terminal can be traced at a time. Issuing the CSFE ZCQTRACE=*termid* command again changes the *termid* to be traced.

ZCQTRACE,AUTOINSTALL

turns tracing on for autoinstalled terminals.

ZCQTRACE,OFF

turns tracing off for both *termid* and AUTOINSTALL.

Debug functions

Storage freeze, the storage violation trap, and the global trap/trace exit are all debugging functions that are controlled by the CSFE transaction. These functions are described in the following sections.

Storage freeze

Certain types of CICS storage are normally freed during the processing of a transaction. You can use CSFE DEBUG to freeze such storage so that it will not be freed until the end of the transaction. This freezing of storage can help you in the subsequent diagnosis of problems that may have occurred during execution.

```
CSFE DEBUG,{TRANID=xxx|TASKREQ=yyy}[ ,STGFRZ={ON|OFF}]
```

You must code the operands in the order shown in the syntax box above.

STGFRZ={ON|OFF}

specifies that you want the storage freeze function to be set on or off. If you omit this operand, storage freeze will be set to OFF by default. To improve efficiency, storage freeze should be turned OFF when not required.

TASKREQ=*yyy*

This is an alternative method of identifying the transaction. "*yyy*" is the PA or PF key definition, on a 3270 display device, that identifies the transaction for which storage freeze is to apply. For example, TASKREQ=PA1.

CSFE

TRANID=xxxx

identifies the transaction for which storage freeze is to apply.

Storage violation trap

You can use CSFE DEBUG to activate and deactivate the storage violation trap. This trap, which is in the trace program (DFHTRP), was formerly known as the FAQE trap, and it lets you:

- Check the FAQE (free area queue element) chains for all or selected subpools.
- Verify the user storage associated with the currently active task.

The FAQE and TASKSTG operands relate to these functions, and are described below in detail. TASKSTG provides checking of the FAQE chains associated with running tasks in addition to checking the transaction storage chains. The FAQE and TASKSTG functions are activated independently, but you can run them concurrently.

The storage violation trap is entered before the trace program returns to its caller after making a trace entry. When a storage violation is detected by the trap, a formatted dump (storage violation type) is produced, and the storage violation trap is switched off for both FAQE and TASKSTG functions. Message DFH0509 records this event.

Further guidance information about the storage violation trap, including use of the STGCHK startup override to activate the trap during CICS initialization, is given in the *CICS/MVS Problem Determination Guide*.

FAQE chain checking

You can use CSFE DEBUG with the FAQE operand to activate and deactivate FAQE chain checking for all or selected subpools.

```
CSFE DEBUG,FAQE={ON|OFF}  
[,SUBPOOL={ALL|CONTROL|TP|TASK|SHARED|RPL}]
```

You must code the operands in the order shown in the syntax box above.

FAQE={ON|OFF}

"ON" specifies that, when the trace program is entered, the FAQE chains for the specified subpool(s) will be checked for corruption.

"OFF" deactivates the FAQE chain checking function for the specified subpool or subpools.

SUBPOOL={ALL|CONTROL|TP|TASK|SHARED|RPL}

To avoid severe performance degradation, especially on large systems, you should use this operand to restrict FAQE chain checking to the subpool that contains the storage error, where this is known. If you want to check more than one subpool, but not all subpools, you must specify the required subpools on successive commands.

ALL

specifies all subpools. This is the default if the SUBPOOL operand is omitted.

CONTROL

specifies the control subpool (01).

TP specifies the TP subpool (02).

TASK

specifies the task subpool (04).

SHARED

specifies the shared subpool (05).

RPL

specifies the RPL subpool (06).

User storage checking (TASKSTG)

You can use CSFE DEBUG with the TASKSTG operand to activate and deactivate verification of the user storage associated with the currently active task.

```
CSFE DEBUG, TASKSTG={ON|OFF}
```

TASKSTG = {ON|OFF}

"ON" specifies that when the trace program is entered, validity checks will be performed for the currently active task, as follows:

- Validity checking of the FAQE chain for that task, unless the FAQE trap is active for the TASK subpool when the check will be done anyway
- Validity checking of the addresses and storage accounting areas for all storage areas on the transaction storage chain.

"OFF" deactivates the user storage-checking function.

Global trap/trace exit

You can use CSFE DEBUG with the TRAP operand to activate and deactivate the global trap/trace exit. This exit is intended to be used only under the guidance of IBM support personnel.

```
CSFE DEBUG, TRAP={ON|OFF}
```

TRAP = {ON|OFF}

specifies that the global/trap exit routine is to be activated or deactivated.

CSPG—page retrieval transaction

Some transactions, especially those performed on screens, produce a response that is too large to be displayed or printed at one time. The whole response is held on direct access storage, and only the first portion (called a page) is displayed. You can manipulate these pages, through basic mapping support (BMS), by means of paging commands. You can use paging to view all pages of the response, in any order. All the pages produced by a transaction make up a logical message.

A page retrieval session begins when you enter the first page retrieval command, or when the first page is presented by automatic transaction initiation (ATI). During the session, CICS passes commands directly to BMS terminal paging, without following the normal transaction identification procedure. You issue a purge (message termination) command to end the session.

When using BMS for IBM 3780 transactions, switch off the SPACE COMPRESS EXPAND (standard feature), TRNSPCY (special feature), and the INHIBIT IRS (special feature) switches.

Pages to be manipulated with paging commands must have been created by BMS, which must be active in the system to service the commands. Paging commands enable you to:

1. Retrieve a page
2. Display information about logical messages queued for your terminal
3. Chain a logical message; that is, retain the previous logical message on direct access storage while you enter a new transaction
4. Purge a logical message; that is, erase it from direct access storage; a paging session must be ended by purging the message
5. Copy a page to another terminal.

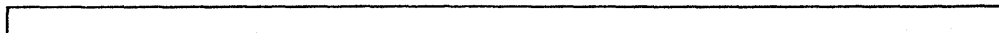
You select the above functions by entering a unique identification code for each function. This code is 1 through 7 characters long, and is defined by the PGRET, PGCHAIN, PGPURGE, and PGCOPY operands of the DFHSIT system macro.

Do not use codes that are the same as the leading characters of any transaction identifier defined in the program control table (the PCT).

Retrieve a page

The page retrieval command allows you to retrieve a specified page.

If partitions are in use, it refers to the partition in which it has been entered. See "Page retrieval and partitions" on page 126.



getpage

is the user-defined identification code for the retrieval transaction, and is 1 through 7 characters long. This code is defined by the PGRET operand of the DFHSIT system macro. For convenience, make the code as short as possible; for example, "P/".

- a** You can omit this operand unless chaining is being used. It is the level, within a chain of logical messages, of the logical message to be retrieved. You must enclose it in parentheses. It can be one of the following:

- n message is at level "n"
- +n message is "n" levels forward
- n message is "n" levels backward
- P previous level backward
- C current level (the default)
- N next level forward
- L last level

For more information on levels of messages, see "Message chaining" on page 127.

- b** defines the next operation to be performed on the logical message at the current level, or at the level specified by (a). It can be one of the following:

- n page "n"
- +n page "n" pages forward
- n page "n" pages backward
- P previous page
- C redisplay current page (after clearing the screen)
- N next page
- L last page
- A for an autopaging (that is, hard copy) terminal that is temporarily in paging mode: return the terminal to autopaging mode and output all remaining pages.

This is discussed further under "Status of hard-copy terminal" on page 131. is the LDC for the device to which you want to send the message. (See "Page retrieval for logical devices", below.) is a special case of *ldc.

hhhhh

is the 6-digit hexadecimal identifier of an undelivered logical message to be retrieved. You would normally determine this identifier by entering a page query command. (See "Display information about logical messages" on page 126.)

If you do not specify an identifier, the oldest message is retrieved. After a paging session has started, you can omit hhhhhh, because all subsequent pages will be from the current message.

In the following examples, "P/" is the page retrieval transaction identifier:

- P/7 Retrieve page 7 of this message.
- P/N Retrieve next page (following the one being displayed) of this message.
- P/(N)9 Retrieve page 9 of the next message (of several that have been chained).

Single keystroke retrieval (SKR)

If you use a 3270 display device under BTAM or VTAM, you can use PA or PF keys (as defined in the SKRxxx operand of the DFHSIT system macro) to enter page retrieval commands, thus greatly reducing the number of keystrokes necessary in a page retrieval session.

After the session has ended, the PA and PF keys can again be used for initiating transactions in the usual way.

For guidance information about definition of SKR commands, see the *CICS/MVS Resource Definition (Macro)* manual.

Page retrieval for logical devices

Your application program can send messages to a communication system such as the IBM 3600. Your application program can also send different pages to each of the logical devices within the system. These pages must be grouped as a single logical message, held in storage.

Each part of a logical message is accompanied by a logical device code (LDC) that identifies its destination. When retrieving the pages for a logical device, you must specify the LDC for that device. However, you do not need to do this if the user-written program in the logical device controller provides a default LDC mnemonic (see below).

If you specify the page number and *ldc, delivery begins with the specified page for that logical device. If the logical device is in AUTOPAGE status, all pages for that logical device, starting with the requested page, are written. If the logical device is in PAGE status, only the specified page is written.

If you omit *ldc, and the application program in the logical device does not provide a default, BMS will select the first page destined for a logical device that is currently in PAGE status. The application program in the logical unit should provide a default LDC, because pages may be delivered to logical devices other than those you originally specified.

In either case, if your request is the first request for a page from a logical message, all pages (within the logical message) destined for logical devices currently in AUTOPAGE status will be delivered after the first or specified page is delivered to a device in PAGE status.

The `getpageA` command supports an `*Idc` specification for nonrouted messages created for a 3601 logical unit. The various forms of `getpageA` are interpreted as follows:

- `getpageA*ALL` — resets to autopaging and delivers all pages for the logical devices that have `autopage` specified in the TCT, but that were temporarily placed in page status by the CICS application programmer.
- `getpageA*Idc` — resets the specified logical device to `autopage` and delivers the pages for that `*Idc`. The command is similar to `getpageA*ALL`, except that it operates only for the specified logical device.
- `getpageA` — resets to autopaging and delivers the remaining pages for the logical device for which pages are currently being displayed.

Page retrieval and partitions

The page retrieval commands, including any PA and PF keys used in single keystroke retrieval, refer to the partition in which they are entered. For example, P/N means "retrieve the next page for this partition". The partition in which the last paging command is entered is the "current partition". A paging command for a partitioned message entered on a nonpartitioned screen (that is, after CLEAR) refers to the current partition.

After a transition from base (unpartitioned) state to partitioned state, or a change of partition set (that is, the initial page display, a page display following CLEAR, or following a change in the level of page chaining) the "current page" is displayed in each partition. The current page is initially the first page for that partition. It is updated by page retrieval commands.

Display information about logical messages

This command displays the message identifiers and titles of logical messages queued for this terminal.

```
getpageQ
```

getpage

is the user-defined identification code for the retrieval transaction, and is 1 through 7 characters long. The PGRET operand of the DFHSIT macro defines this code.

- Q** (query). The identifiers of all logical messages destined for this terminal are displayed. If the message is security protected (that is, if it has been routed to a specific operator id or operator class), its identifier is displayed only if the operator id or class for the operator signed on matches that in the message. The identifier consists of a 6-digit hexadecimal number, a 2-character temporary storage prefix, and optionally, a title. The 6-digit hexadecimal number can be used as the `hhhhh` option in the page retrieval command (see above) to retrieve pages for this display.

Message chaining

Usually, when you have viewed the output pages from a transaction, there is no need to retain the pages. However, you might want to initiate a new transaction and still retain the old pages, so that you can view them again after you have displayed output from the new transaction. This is called "message chaining" and can be done by means of the following command:

```
messchnyyy [parameters]
```

messchn

is the installation-defined message-chaining transaction identification code (for example, C/), as defined in the PGCHAIN operand of the DFHSIT system macro.

parameters

are any parameters required by transaction yyyy.

yyyy

is the identifier of a transaction that will produce data to be added to the message chain.

If the new transaction uses terminal control, or BMS in TERMINAL mode, its output will be displayed immediately. When the new transaction terminates, anything else you enter will be interpreted as a paging command for the first message. For example:

```
TRAN          The transaction invokes an application
              program that produces multiple pages of output.
              The first page is displayed.

P/2           The second page of the message is displayed.

C/CEMT INQ TIM  CEMT data is displayed.

P/2           The second page of the message is redisplayed.
```

If the new transaction uses BMS in PAGING mode, and RETAIN or RELEASE is specified in the SEND PAGE command in the application program, the output will be chained to existing output, and a new level of chaining will be created.

If RELEASE is specified, this chaining process can be repeated indefinitely. However, chaining requests must always be made while viewing pages at the highest level of chaining. Otherwise, messages at levels higher than the current level are automatically purged (if OPERPURGE has not been specified in the application program SEND PAGE command), or you will be asked to purge them.

If RETAIN is specified, no further chaining (in either TERMINAL or PAGING mode) can be performed until the second logical message has been terminated. Further chaining requests are rejected.

If neither RETAIN nor RELEASE is specified, the output from the second transaction is queued as a new message for the terminal, and is not received until all earlier messages have been terminated. It is thus not chained to the current message.

If you enter data that is not a paging command during a message chaining session, all pages on levels higher than the current level are deleted, provided that no message in the chain has been built using OPERPURGE=YES in the SEND PAGE command.

An example of the use of message chaining under BMS in PAGING mode is a search of a personnel file for people who speak French. Your initial inquiry might turn up three names. Without terminating the page containing the names, you can examine the records of each of the three people named. The chaining transaction could be used to read a record, without erasing the three names.

This would create output at the second level of chaining (the output from the original transaction being first-level output). When you have finished viewing a person's record, you would enter a paging command to terminate the current level (see the next section). The message displaying the person's record would be purged, and the original page, containing the three names, redisplayed. Assuming that the message chaining transaction identifier is C/,

Enter:
LANG DEPT=J34,FRENCH

Receive:
ADAMS, J.A.
1043
LEVY, A.R. 7121
WALTON, J. 8143

To find out more about Adams,

Enter:
C/PREC 1043 Find the personnel record for employee
number 1043.
PREC is the identifier of a
user-written transaction for
examining personnel records.

Receive:
NAME - ADAMS, JERRY A.
EMPLOYEE NO - 1043
(and so on)

To go back to the list of names,

Enter:
T/C "T/" is the user-defined transaction identifier that
terminates the message at the current level of
chaining. (See section on Message Termination.)

```

Receive:
ADAMS, J.A.
1043
LEVY, A.R. 7121
WALTON, J. 8143

```

You can now examine Levy's record.

You can also chain a series of messages together and use paging commands to view the series simultaneously. Using the previous example, you can have the summary page as your base message (first level) and each of the personnel records as subsequent chain levels. Assume you are currently displaying the summary:

```

Enter: C/PREC 1043
Receive: NAME - ADAMS...

```

```

Enter: C/PREC 7121
Receive: NAME - LEVY...

```

```

Enter: C/PREC 8143
Receive: NAME - WALTON...

```

There are now four levels of logical messages at the terminal. You can now page back and forth between the personnel records.

```

Enter: P/(2)1
Receive: NAME - ADAMS...

```

```

Enter: P/(L)1
Receive: NAME - WALTON...

```

You can chain a new transaction only while you are viewing the last logical level. If you have four levels (as in the above example), view the summary page (level one) and then enter C/PREC 3642; the new transaction will become level 2 and all other chained messages below that will be erased (assuming that they have been built by means of a SEND PAGE command with the OPERPURGE option omitted).

Messages involving different partition layouts (different partition sets, including unpartitioned) may be chained. The current page in each partition is redisplayed on a change of message level.

Message termination

You can erase a logical message by using the message terminate command. If the logical message is security protected, it is terminated only if your identification or class matches that in the message. After an erase, the last message still in the chain is displayed. The format of the message terminate command is as follows:

```
msgterm{A|B|C|H|R}[ ,hhhhh]
```

msgterm

A user-defined transaction identifier (1 through 7 characters) for the message termination transaction (for example "T/"), as defined in the PGPURG option of the DFHSIT system macro.

- A** Terminate all logical messages destined for and being displayed on that terminal (includes routed messages not yet displayed). The following message is received when termination has been completed:

DFH4122 REQUESTED PURGE COMPLETE

- B** Terminate the logical message being displayed on that terminal and all logical messages chained to it. This does not include routed messages.

Whenever you have finished with all the output from a transaction, you should terminate the base message by entering a command of the form msgtermB. If the message has been built by means of a SEND PAGE command with the OPERPURGE option omitted, you can terminate the paging session by entering data other than a paging command.

- C** Terminate the current (level) logical message and any messages chained below it.
- H** Terminate all logical messages chained to the base logical message being displayed on that terminal. The page of the base message that was most recently displayed will be redisplayed at the terminal.
- R** Terminate all logical messages queued for immediate delivery (routed) to the terminal. The page that was being displayed at the terminal will be redisplayed.

hhhhh

is the 6-digit hexadecimal identifier of a specific, undelivered logical message to be erased. (This identifier would have been determined by means of a page query command.) If the message specified is security-protected, the operator should have a security code that matches the one in the message.

If a message identifier (hhhhh) is not specified in the termination request and there is no message currently displayed, the oldest message is automatically retrieved.

Copying pages

You can send a copy of the page being displayed, as it appeared when initially transmitted, to another terminal (normally hard-copy).

You do this by entering the page-copy transaction identifier and the identifier of the terminal that is to receive the copy, as follows:

msgcopyttt

msgcopy

the copy transaction identifier (1 through 7 characters), for example "D/", as defined in the PGCOPY option of the DFHSIT system macro.

tttt the identifier of the terminal to which the page is to be copied.

You will get the message:

```
DFH4124 xxxxxx COPIED FROM TERMINAL tttt
```

Field and character attributes in the copied page that are not supported by the target terminal are ignored. The copied page is reformatted if it will not fit on the target terminal. Field and character attributes are discarded in the reformatting. If partitions are in use, the page copy command copies the displayed page for the partition in which the copy command is entered.

Status of hard-copy terminal

A hard-copy terminal that is not defined as a paging terminal (one that displays pages when you request them) is an autopaging terminal (one that displays all pages without your intervention). An autopaging terminal may be temporarily designated as a paging terminal by the user's application program using the NOAUTOPAGE option of the SEND PAGE command. If this is done, when the first page is to be displayed on the terminal, the terminal is temporarily treated as a paging terminal for the duration of the message. This condition exists until either of the following occurs:

1. You enter P/A (reset terminal to autopaging status), indicating that all subsequent pages are to be displayed without further intervention.
2. You enter T/C (terminate current message). All pages from that logical message are purged, and the terminal is again put into autopaging status.

"P/" is the paging transaction identifier, and "T/" is the terminate transaction identifier.

Routed pages displayed at terminal

You can use the message switching transaction to direct output to a terminal or terminals other than your own. (For more information on message switching, see "CMSG—message-switching transaction" on page 87.) When a terminal to which you have directed a message is in TRANSCEIVE status, is not involved with a transaction, and is not displaying pages, CICS displays the first page of that message.

However, if the terminal is in TRANSACTION status, you can display the first page only of a waiting message by entering CSPG (the transaction code for the terminal paging transaction), by entering CSPG P/1, or by entering simply P/1. Here, you are using "P/" as a paging command. If no page is waiting, you get the following message:

```
DFH4104 NO PAGES WAITING TO BE DISPLAYED
```

⌘SSF—sign-off transaction

The sign-off transaction breaks the connection between yourself and CICS, sends a message to the message log (transient data destination CSML), writes the sign-off message to your terminal, and logs the message on the transient data destination CSCS.

You cannot issue a sign-off transaction from fixed-format terminals (such as the 3608, the 3614, and the 3653).

Enter the sign-off transaction identifier, as follows:

```
CSSF [GOODNIGHT|LOGOFF]
```

If you enter only CSSF, you are signed off, and your terminal is placed in TRANSCEIVE status. However, you can sign on again at that terminal at any time.

If your terminal is a numeric-only terminal, you can use 8888 instead of CSSF.

where:

GOODNIGHT

Both you and your terminal are signed off.

If your terminal is a VTAM terminal, the connection is broken, all transmission ceases, and its status is unchanged.

If your terminal is a nonswitched BTAM terminal, it is placed in RECEIVE status so that it will be able to receive messages.

If your terminal is a numeric-only terminal, you can use 88888888 instead of CSSF GOODNIGHT.

LOGOFF

If your terminal is a VTAM terminal, the connection is broken, all transmission ceases, and its status is unchanged.

If your terminal is a switched BTAM terminal, it is disconnected. This is the same as CSSF GOODNIGHT, but leaves your terminal in TRANSCEIVE status so that you may sign on or enter other transaction identifiers when your terminal is reconnected.

If your terminal is a nonswitched BTAM terminal, entering CSSF LOGOFF is the same as entering CSSF on its own.

If sign-off is successful, the following message is returned to your terminal:

```
DFH3506I SIGN-OFF IS COMPLETE
```

CSSN—signon transaction

The signon transaction enables CICS to associate you with a terminal. It also establishes security keys and an interface to an external security manager, if requested, to be used by CICS to verify all subsequent transactions entered at that terminal.

Use the CESN transaction, described on page 77, in preference to CSSN.

If CICS uses an external security manager, you can change your password at signon. You can also be prompted by the system when a new password is required. However, if the system uses the existing internal security facilities, you cannot change your password, and the "newpassword" field (see below) will not be displayed.

Your name and password must each match the relevant entries previously established in the signon table (or those defined to the external security manager). If they do not, you will not be able to sign on.

Fixed-format terminals (such as the 3608, 3614, and the 3653) cannot issue a signon transaction.

Signon will vary slightly depending on whether it is for a 3270, a 2741, a non-3270 terminal, or a terminal other than fixed format. Each method is described in the following sections.

After you have signed on to CICS, you are allocated a priority (you can see what this is by using the CEOT transaction) and all transactions started by you are processed with that priority.

Note: If you sign on at a terminal that is already signed on, the previous operator will be signed off.

For auditing purposes, the userid value from the SNT table is used in all messages unless signon is to RACF through the SNT default entry, in which case the first 8 characters of the operator name are used.

IBM 3270 screen

Enter the signon transaction identifier, CSSN, on the command line of your display, as follows:

CSSN

CSSN

You will get the following display:

CICS/VS SIGNON - ENTER PERSONAL DETAILS
NAME: _
PASSWORD:
NEWPASSWORD:

The cursor is positioned at the start of the NAME field. Type your name (up to 20 characters). When you use RACF, the first 8 characters are passed to RACF for verification. Similarly, type your password (up to 8 characters).

You can change your password by typing a new password into the NEWPASSWORD field. The NEWPASSWORD field is displayed only if EXTSEC=YES is specified when bringing up CICS.

The password and new password entry fields are 'dark fields'. This means that text typed into the fields remains invisible. Take care when typing into these fields.

If signon is successful, you will get the following message:

```
DFH3504I time SIGN-ON IS COMPLETE
```

If external security is in use and your password has expired, you will get the following message:

```
DFH3520 YOUR PASSWORD HAS EXPIRED, PLEASE ENTER A  
NEW PASSWORD IN BOTH THE FOLLOWING FIELDS:
```

IBM 2741 terminal

Enter the signon transaction identifier, as follows:

CSSN

You will receive requests for personal details similar to that for the IBM 3270 screen display, but the relevant entry fields are obliterated by overtyping before the password and new password are requested.

Non-3270 terminal

Enter the signon transaction identifier and operands, as follows:

```
CSSN PS=password,NAME=name,NEWPS=newpassword
```

where:

NAME = name

"name" is your name as a character string (up to 20 characters). When using RACF, the first 8 characters are passed to RACF for verification.

NEWPS = newpassword

"newpassword" is your new password (up to 8 characters) to replace your existing, or expired, password. This operand is applicable only when EXTSEC=YES is specified when bringing up CICS.

PS = password

"password" is your password (up to 8 characters).

You can enter PS, NAME, and NEWPS in any order, and you can use blanks instead of equal signs and commas, if you wish. However, if you use a keyword as data, you must use commas as delimiters.

Generally, the PS and NEWPS operands are optional. However, if they are mandatory, you will receive requests for them similar to those for the IBM 3270 screen display, but the relevant entry fields are obliterated by overtyping before the password and new password are requested.

If your name contains any of the characters, blank, slash(/), single quote, or comma, you must enclose it in single quotes. Single quotes in your name must be entered twice. For example:

```
CSSN NAME='O' 'BRIAN',PS=YKE
```

Password security

If you are signing on from an MVS console, enter the PS and NEWPS keywords only if the HIDEPASSWORD(YES) option has been specified in the CICS subsystem definition (as described in the *CICS/MVS Installation Guide*). Otherwise the passwords are exposed in the system's hardcopy log.

If the HIDEPASSWORD(YES) option is not in use, omit the PS and NEWPS keywords, and wait to be prompted for your password by the DFH4200A message that follows message DFH3524. The reply to DFH4200A, which is not recorded in the hardcopy log, is either *password* or *password/newpassword*. You can specify a new password only if you are using an external security manager.

Terminal other than fixed format

Enter the signon transaction identifier, as follows:

9999ppppnnnnnn...nnnnnn

where:

nnnnnn...nnnnnn

Your operator number (up to 20 digits)

pppp

Your password (up to 4 characters).

CSTT—statistics transaction

Statistics are generated by all the CICS management programs. You can use them to investigate and analyze system performance. The following list shows you a small sample of what is generated:

- Number of tasks initiated
- Number of storage acquisitions
- Number of times a program is used
- Number of transactions.

Using the CSTT transaction, you can start and stop the statistics recording mechanism, you can specify that only selected statistics are to be recorded on a one-time basis, or, using the AUT operand, you can specify that statistics are to be recorded automatically over a specified period.

You can display statistics at the system console, or at the master terminal, or at both.

Using the MONITOR operand, you can record accounting, performance, and exception statistics for individual tasks.

You cannot specify statistics on a one-time basis while automatic recording (CSTT AUT) is in effect. Unless you have cleared the statistics counters, for example by using automatic statistics recording, CICS will output statistics for the entire CICS run when the system is shut down.

Some statistics counters have a maximum capacity of 999 events which, if exceeded, gives unpredictable results. This should happen only when usage is heavy or when there is a long interval between resetting counters.

The CSTT transaction invokes the dynamic OPEN/CLOSE facility when recording system statistics or switching the statistics data sets. Unrestricted use of this transaction can degrade system performance because of fragmentation of OSCOR. You should allow for frequent use of CSTT when estimating the amount of storage for the OSCOR area.

Getting statistics on a one-time basis (CSTT)

Statistics are normally sent, as variable-length, unblocked records, to the CSSL transient data destination. These statistics are formatted ready for printing. However, you can specify an alternative destination by supplying its "destid" in your request.

```
CSTT [AOR|AOC|SOR|SOC] [destid] [label,DONE]
```

AOC

All system statistics to date are sent to the specified destination (destid). If you omit a destid, the statistics go to CSSL. After the statistics have been written, all counters, except the "TOTAL NUMBER OF TASKS" counter (which is never reset), and the local shared resources (LSR) pool statistics counters, (which CICS is unable to reset because these fields are obtained from VSAM), are reset to 0.

AOR

All system statistics to date are sent to the specified destination (destid). If you omit a destid, the statistics go to CSSL.

destid

The destination identifier (1 through 4 characters) to which you want the statistics to be sent. If you leave this field blank (that is, it consists of 4 blanks), CSSL is the default destination.

DONE

You must always specify this operand last if you use "label".

label (SOR and SOC only)

One of the following, each giving the statistics shown. You can include one or more labels, separating them by commas, in the same request ending with ",DONE" as shown in the examples below.

Label Statistics

DUMP	Dump
DYTB	Dynamic transaction backout
FILE	DB data set, DL/I DB, and VSAM shared resources
IRCM	Interregion control and for batch operation
JOUR	Journal control
LINK	Intersystem and multiregion link
PROG	Transaction ¹ and program
STOR	Storage
TASK	Task
TEMP	Temporary storage
TERM	Terminal
TRAN	Transient data

¹ includes those transaction identifiers for transactions started by a PF key, a light pen, or operator-identifier card reader (OPID).

SOC

All selected system statistics to date are sent to the specified destination (destid). If you omit a destid, the statistics go to CSSL. After the statistics have been written, all counters, except the "TOTAL NUMBER OF TASKS" counter (which is never reset), and the local shared resources (LSR) pool statistics counters, (which CICS is unable to reset because these fields are obtained from VSAM), are reset to 0.

SOR

All selected system statistics to date are sent to the specified destination (destid). If you omit a destid, the statistics go to CSSL.

Examples:

The following example sends terminal and storage statistics to destination CSMT.

```
CSTT SOR CSMT TERM,STOR,DONE
```

The following example sends task, transaction, and journal statistics to destination DES1.

```
CSTT SOR DES1 TASK,TRAN,JOUR,DONE
```

The following example sends temporary storage statistics to transient data destination CSMT and resets the associated counters to 0.

```
CSTT SOC CSMT TEMP,DONE
```

Statistics are written with no terminal control characters, such as idles or carriage returns.

Usually, the destination is a disk and the statistics are printed using system utilities or are spooled automatically to the printer when the destination is defined as a SYSOUT data set.

If, however, the destination is a terminal, you must use a program to get the line of statistics from the destination identification, format it for the terminal, and write it.

Getting statistics automatically (CSTT AUT)

Statistics can be recorded automatically over a predefined period (for example, every 2 minutes). The statistics are cumulative for the period specified and counters are reset at the end of each period. Because the counters are reset, statistics recorded during these periods are not included in any subsequent totals.

The output is recorded on two sequential extrapartition destinations, DFHSTM and DFHSTN (destids CSSM and CSSN), on disk storage or magnetic tape. These destinations are defined in the destination control table (DCT) at system generation, and normally they will be switched automatically, based on the limits specified as the number of intervals to be recorded on each destination (see the "nnnnn" operand). Do not exceed the number of intervals (set by your system programmer) that the data set has been designed to receive.

You use a utility program to print the automatic statistics offline, and you can format the statistics into interval or summary reports.

You can get an immediate switch by using the SWITCH operand.

If you do not want automatic switching at all, you need to define only a single destination in the DCT.

CSTT

The syntax for CSTT AUT is as follows:

```
CSTT AUT, hhmm, nnnnn, nnnnn  
    or  
CSTT AUT, INQ  
    or  
CSTT AUT, CAN  
    or  
CSTT AUT, SWITCH
```

AUT

Statistics are to be recorded automatically.

CAN

Cancel the automatic recording of statistics. The current output data set is closed, and the statistics can be processed by the statistics utility program.

hhmm

is the recording interval in hours and minutes from 0001 through 9959.

INQ

tells you the destination currently in use. You will get one of the following messages:

```
DFH1818 DESTINATION CSSy LIMIT xxxxx USED wwwww
```

This tells you that switching will occur when xxxxx intervals have elapsed, and that wwwww intervals have elapsed,

or

```
DFH1813 AUTO STATISTICS NOT ACTIVE
```

nnnnn,nnnnn

These values specify the number of intervals to be recorded on the appropriate data set. After the data for the specified number of intervals has been recorded on the current data set, a switch occurs and data is recorded on the alternate data set.

If one (or both) of the nnnnn values is not supplied, it defaults to 0, and switching will not occur when data is being recorded on that data set.

SWITCH

Switches destinations. The destination currently in use is closed and the other destination is opened and put into use at the next recording interval.

You will get one of the following messages:

```
DFH1817 DESTINATION CSSy NOW BEING USED FOR AUTOMATIC STATISTICS
```

Indicating that the switch is successful. The y is replaced by "M" or "N", depending on the destination put into service.

```
DFH1813 AUTO STATISTICS NOT ACTIVE
```

```
DFH1814 OPEN/CLOSE ERROR - DEST CSSy CODE=xx
```

A return code of xx is received from the dynamic open/close routine when an attempt is made to open or close destination CSSy. Automatic recording is stopped.

DFH1816 INVALID DESTINATION - CSSy

Destination CSSy could not be found in the destination control table.
Automatic recording is stopped.

Monitoring individual tasks (CSTT MONITOR)

CSTT MONITOR [, [ON|OFF]=[ACC][PER][EXC][EVE]|
ALL]

ACC

Accounting data class.

ALL

All classes.

EVE

SYSEVENT recording.

EXC

Exception data class.

MONITOR

Start automatic monitoring.

OFF

Recording is stopped for specified data classes.

ON

Recording is started for specified data classes.

PER

Performance data class.

If you specify more than one class, the operands must be separated by commas and enclosed in parentheses. If you specify a single operand, the parentheses are not required.

If you specify CSTT MONITOR on its own, you get the current status of all the monitoring classes. This is the same as CSTT MONITOR ALL.

CWTO—write to operator transaction

You can use the "write to operator" transaction to send messages to the console operator. Enter CWTO plus your message on the command line of your display, as follows:

```
CWTO [message]
```

Your message will be sent to the console, and you will get the normal completion response:

```
MESSAGE HAS BEEN SENT
```

If your message exceeds the line length of the console, it will be divided between words into more than one line.

New-line (NL) characters within your message are kept, except that a leading NL character is deleted. You can include blank lines at the top of your transmitted message, by pressing ENTER (or using carriage returns) the required number of times.

You can enter 1 or more backspace characters (for deletion) as required, within the same input.

Each part of a divided message is prefixed by your identifier and by that of the originating terminal. The message prefix also contains the job name.

If you enter CWTO only, you will be prompted for your message by:

```
ENTER MESSAGE
```

If you enter only blank characters or you delete all of the data because you enter too many deletion characters, you will get:

```
NO INPUT - REENTER
```

You can cancel this transaction by entering CANCEL as the last 6 characters of your message. The transaction is terminated and you will get the following response:

```
TERMINATED BY OPERATOR
```

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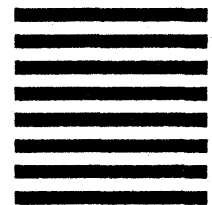
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