CICS® Transaction Server for VSE/ESA™

Resource Definition Guide

Release 1

SC33-1653-00

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Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 393.

First Edition (June 1999)

This edition applies to Release 1 of CICS Transaction Server for VSE/ESA, program number 5648-054, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

The CICS for VSE/ESA Version 2.3 edition remains applicable and current for users of CICS for VSE/ESA Version 2.3.

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At the back of this publication is a page entitled “Sending your comments to IBM”. If you want to make any comments, please use one of the methods described there.

Contents

Preface

What this book is about

This book describes how to define the characteristics of your data processing resources to your CICS® system. Four methods of resource definition are described:

- Macro definition
- Online definition
- Automatic installation (autoinstall)
- Batch definition

A fifth method—EXEC CICS CREATE commands—is described in the *CICS System Programming Reference* manual.

Who this book is for

This book is for those responsible for defining resources to CICS.

What you need to know to understand this book

The book assumes that you have a basic understanding of CICS concepts and facilities.

You must also be familiar with your own system and the resources to be defined and maintained.

How to use this book

Part 1, "Introduction" on page 1 is an introduction to resource definition for CICS; read it if you are new to CICS.

Part 2, "The CICS system definition file (CSD)" on page 13 introduces the CICS system definition file (CSD), and provides guidance and reference for using the online transaction CEDA and the offline utility DFHCSDUP.

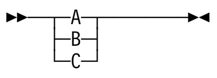
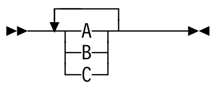
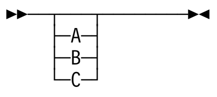
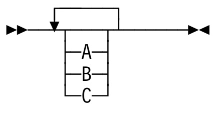
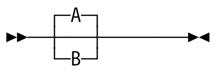
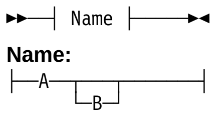
Part 3, "Autoinstall" on page 105 explains automatic installation (autoinstall); read this if you want to make use of the benefits offered by autoinstall.

Part 4, "RDO resource types and their attributes" on page 129 describes each of the resources definable by CEDA, DFHCSDUP, and autoinstall. It is intended as reference material.

Part 5, "Macro reference information" on page 237 explains how to define resource by macro tables. Use it for reference if you use macro definitions.

Railroad syntax notation

The syntax diagrams are in railroad notation. You interpret the syntax by following the arrows from left to right. The conventions are:

Symbol	Meaning
	A set of alternatives—one of which you ***must*** code.
	A set of alternatives—one of which you ***must*** code. You ***may*** code more than one of them, in any sequence.
	A set of alternatives—one of which you ***may*** code.
	A set of alternatives — any number (including none) of which you may code once, in any sequence.
	Alternatives where **A** is the default.
	Use with the named section in place of its name.
Punctuation and uppercase characters	Code exactly as shown.
Lowercase characters	Code your own text, as appropriate (for example, `name`).

For example, with `DEFINE FILE(filename)` you must specify `DEFINE FILE` and `()` unchanged, but are free to specify any valid text string to mean the name of the file.

Notes on terminology

The terms listed in Table 1 are commonly used in the CICS Transaction Server for VSE/ESA Release 1 library. See the *CICS Glossary* for a comprehensive definition of terminology.

Table 1 (Page 1 of 2). Commonly used words and abbreviations in CICS Transaction Server for VSE/ESA Release 1

Term	**Definition (and abbreviation if appropriate)**
$(the dollar symbol)	In the character sets and programming examples given in this book, the dollar symbol ($) is used as a national currency symbol and is assumed to be assigned the EBCDIC code point X'5B'. In some countries a different currency symbol, for example the pound symbol (£), or the yen symbol (¥), is assigned the same EBCDIC code point. In these countries, the appropriate currency symbol should be used instead of the dollar symbol.
BSM	BSM is used to indicate the basic security management supplied as part of the VSE/ESA product. It is RACROUTE-compliant, and provides the following functions: • Signon security • Transaction attach security
C	The C programming language
CICSplex	A CICSplex consists of two or more regions that are linked using CICS intercommunication facilities. Typically, a CICSplex has at least one terminal-owning region (TOR), more than one application-owning region (AOR), and may have one or more regions that own the resources accessed by the AORs
CICS Data Management Facility	The new CICS Transaction Server for VSE/ESA Release 1 facility to which all statistics and monitoring data is written, generally referred to as “DMF”
CICS/VSE	The CICS product running under the VSE/ESA operating system, frequently referred to as simply “CICS”
COBOL	The COBOL programming language
DB2 for VSE/ESA	Database 2 for VSE/ESA which was previously known as “SQL/DS”.
ESM	ESM is used to indicate a RACROUTE-compliant external security manager that supports some or all of the following functions: • Signon security • Transaction attach security • Resource security • Command security • Non-terminal security • Surrogate user security • MRO/ISC security (MRO, LU6.1 or LU6.2) • FEPI security.
FOR (file-owning region)—also known as a DOR (data-owning region)	A CICS region whose primary purpose is to manage VSAM and DAM files, and VSAM data tables, through function provided by the CICS file control program.

Table 1 (Page 2 of 2). Commonly used words and abbreviations in CICS Transaction Server for VSE/ESA Release 1

Term	**Definition (and abbreviation if appropriate)**
IBM C for VSE/ESA	The Language Environment version of the C programming language compiler. Generally referred to as “C/VSE”.
IBM COBOL for VSE/ESA	The Language Environment version of the COBOL programming language compiler. Generally referred to as “COBOL/VSE”.
IBM PL/I for VSE/ESA	The Language Environment version of the PL/I programming language compiler. Generally referred to as “PL/I VSE”.
IBM Language Environment for VSE/ESA	The common runtime interface for all LE-conforming languages. Generally referred to as “LE/VSE”.
PL/I	The PL/I programming language
VSE/POWER	Priority Output Writers Execution processors and input Readers. The VSE/ESA spooling subsystem which is exploited by the report controller.
VSE/ESA System Authorization Facility	The new VSE facility which enables the new security mechanisms in CICS TS for VSE/ESA R1, generally referred to as “SAF”
VSE/ESA Central Functions component	The new name for the VSE Advanced Function (AF) component
VSE/VTAM	“VTAM”

Part 1. Introduction

This part introduces resource definition as it applies to CICS Transaction Server for VSE/ESA Release 1. You should read it if you are new to CICS or to resource definition. It consists of the following chapters:

Chapter 1. Resource definition—an introduction

Before you can use CICS, you must supply it with information about the resources it should use, and how it should use them. Some examples of resources are:

- Connections
- Databases
- Files
- Journals
- Programs
- Terminals
- Transactions

Your CICS system has to know which resources to use, what their properties are, and how they are to interact with each other.

You supply this information to CICS by using one or more of the following methods of **resource definition**:

1. **Resource definition online (RDO)**: This method uses the CICS-supplied online transactions CEDA, CEDB, and CEDC. Definitions are stored on the CICS system definition (CSD) file, and are installed into an active CICS system from the CSD file.
2. **DFHCSDUP offline utility**: This method also stores definitions in the CSD file. DFHCSDUP allows you to make changes to definitions in the CSD file by means of a batch job submitted offline.
3. **Automatic installation (autoinstall)**: Autoinstall minimizes the need for a large number of definitions, by dynamically creating new definitions based on a “model” definition provided by you.
4. **System programming, using the EXEC CICS CREATE commands**: You can use the EXEC CICS CREATE commands to create resources independently of the CSD file. For further information, see the *CICS System Programming Reference* manual.
5. **Macro definition**: You can use assembler macro source to define resources. Definitions are stored in assembled tables in a program library, from which they are installed during CICS initialization.

Which methods you use depends on the resources you want to define. Table 2 on page 4 shows you the methods you can use for each resource. Table 3 on page 5 suggests some of the things you should consider when deciding which definition method to use when there is a choice.

Table 2. Resources and how you can define them to the running CICS system

Resource	**RDO/EXEC CICS CREATE commands**	**DFHCSDUP**	**Autoinstall**	**Macro**
Connections	Yes	Yes	Yes	No
DL/I VSE Databases	No	No	No	Yes
Data tables	Yes	Yes	No	Yes
Files (DAM)	No	No	No	Yes
Files (VSAM)	Yes	Yes	No	Yes
Journals	No	No	No	Yes
Local shared resource (LSR) pools	Yes	Yes	No	Yes
Mapsets	Yes	Yes	Yes	No
Partitionsets	Yes	Yes	Yes	No
Partners	Yes	Yes	No	No
Profiles	Yes	Yes	No	No
Programs	Yes	Yes	Yes	No
Queues (destinations)	No	No	No	Yes
Sessions	Yes	Yes	No.	No
Temporary storage	No	No	No	Yes
Terminals (non-VTAM)	No	No	No	Yes
Terminals (VTAM®)	Yes	Yes	Yes	No
Transactions	Yes	Yes	No	No
Transaction classes	Yes	Yes	No	No
Typeterms	Yes	Yes	No	No

Table 3. Methods of resource definition

Method	Description	Advantages	Disadvantages
RDO	This method uses the CEDA transaction, which allows you to define, alter, and install resources in a running CICS system.	RDO is used while CICS is running, so allows fast access to resource definitions.	Because CEDA operates on an active CICS system, care should be taken if it is used in a production system. Use some form of auditing as a control mechanism.
EXEC CICS CREATE system commands	This method allows you to add CICS resources to a CICS region without reference to the CSD file.	It enables configuration and installation of CICS resources for large numbers of CICS regions from a single management focal point. It also allows you to write applications for administering the running CICS system.	CREATE commands neither refer to nor record in the CSD file. The resulting definitions are lost on a cold start, and you cannot refer to them in a CEDA transaction.
DFHCSDUP	DFHCSDUP is an offline utility that allows you to define, list, and modify resources using a batch job. DFHCSDUP can be invoked as a batch program or from a user-written program running in batch mode. Using the second method, you can specify up to five user exit routines within DFHCSDUP.	You can modify or define a large number of resources in one job.	You cannot install resources into an active CICS system.
Autoinstall	This applies to VTAM terminals, LU 6.2 sessions, programs, mapsets, and partitionsets. You set up “model” definitions using either RDO or DFHCSDUP. CICS can then create and install new definitions for these resources dynamically, based on the models.	If you have large numbers of resources, much time is needed to define them, and if they are not all subsequently used, storage is also wasted for their definitions. Using autoinstall reduces this wasted time and storage.	You must spend some time initially setting up autoinstall in order to benefit from it.
Macro	Using this method, you code and assemble macroinstructions to define resources in the form of tables.	Where possible, use the other methods.	• You can change the definitions contained in the tables while CICS is running, but you must stop and restart CICS if you want it to use the changed tables. • You must do time-consuming assemblies to generate macro tables.

Chapter 2. CICS RDO resources

This chapter introduces the CICS resources that you can define by RDO. For a description of the resources you can define by macro, see Chapter 25, “Introduction to resource definition with macros” on page 239.

CONNECTION	A CONNECTION is the definition of a remote system that your CICS system communicates with using intersystem communication (ISC) or multiregion operation (MRO). See Chapter 12, “CONNECTION” on page 131 for more information.
FILE	CICS file control uses the FILE definition for information on the physical and operational characteristics of a file, such as types of operations allowed on the file, recovery attributes, and operations to be journaled. Remote files (that is, files on another system) are also defined using this RDO resource type. See Chapter 13, “FILE” on page 143 for further information and keywords.
LSRPOOL	The local shared resources (LSR) pool is a reserve of data buffers and strings that VSAM uses when processing access requests for certain files. See Chapter 14, “LSRPOOL” on page 151 for further information and keywords.
MAPSET	Each interactive application using a display device can use specific screen layouts, or maps. Each map can be used by multiple invocations of the same program, or by different programs. You use either basic mapping support (BMS) or Screen Definition Facility (SDF) to create maps. Every map must belong to a mapset. See Chapter 15, “MAPSET” on page 155 for further information and keywords.
PARTITIONSET	The screen areas of some display devices (for example, the 8775 Display Terminal, and the IBM 3290 Information Panel) can be divided into **partitions**, each of which can be treated as a separate display. Different programs or transactions can write to or receive input from different partitions. See Chapter 16, “PARTITIONSET” on page 157 for further information and keywords.
PARTNER	You use the PARTNER definition to enable CICS application programs to communicate via APPC protocols to a partner application program running on a remote logical unit. This interaction is called a **conversation**. The PARTNER definition also facilitates the use of the call to the interface with the communications element of the System Application Architecture. See Chapter 17, “PARTNER” on page 161 for further information and keywords.
PROFILE	The PROFILE definitions is used to specify options that control the interactions between transactions and terminals or logical units. It is a means of standardizing the use of, for example, screen size and printer compatibility. Each TRANSACTION definition names the PROFILE to be used. See Chapter 18, “PROFILE” on page 165 for further information and keywords.
PROGRAM	You use the PROGRAM definition to describe the control information for a program that is stored in the program library and used to process a transaction. See Chapter 19, “PROGRAM” on page 171 for further information and keywords.
SESSIONS	Before two systems can communicate using ISC or MRO, they must be logically linked through one or more sessions. The nature of the link determines how they can communicate. You specify the link in the SESSIONS definition. See Chapter 20, “SESSIONS” on page 175 for further information and keywords.

TERMINAL	CICS needs a definition for each terminal with which it communicates. A terminal's unique properties are in its TERMINAL definition. Properties that it has in common with other terminals (usually static) are in the TYPETERM definition. See Chapter 21, “TERMINAL” on page 183 for further information and keywords.
TRANSACTION	A CICS application consists of one or more programs written to perform a specific function. A particular invocation of such an application is a **transaction**. In the TRANSACTION definition you specify options related to functions provided by CICS itself, such as transaction priority, transaction class (TRANCLASS), and the length of the transaction work area (TWA). See Chapter 23, “TRANSACTION” on page 205 for further information and keywords.
TRANCLASS	By putting your transactions into transaction classes (TRANCLASSes), you can control how CICS dispatches tasks. For example, you can separate transactions into those that are heavy resource users and those that are of lesser importance, such as the “Good morning” broadcast messages. You can then use the attributes on the TRANCLASS definition to control the number of active and new tasks allowed from each transaction class. See Chapter 22, “TRANCLASS” on page 203 for further information and keywords.
TYPETERM	A TYPETERM is a partial terminal definition which identifies a set of common terminal properties or attributes. Every TERMINAL definition must specify a TYPETERM. TYPETERMS make it easier to define your terminals if you have many terminals of the same kind. See Chapter 24, “TYPETERM” on page 213 for further information and keywords.

How the resource types relate to each other

Every resource is defined with a set of **attributes**. The attributes are the properties of the resource, telling CICS such things as whether a file can be updated, what security level should be given to a transaction, what remote systems CICS can communicate with, and so on. Some of the attributes relate resources to each other. For example:

- Every TRANSACTION definition must refer to either a PROGRAM definition or a REMOTESYSTEM definition.
- Every SESSIONS definition must refer to a CONNECTION definition.
- Every TERMINAL definition must refer to a TYPETERM definition.

Figure 1 on page 9 shows how the definitions for the RDO resource types relate to each other.

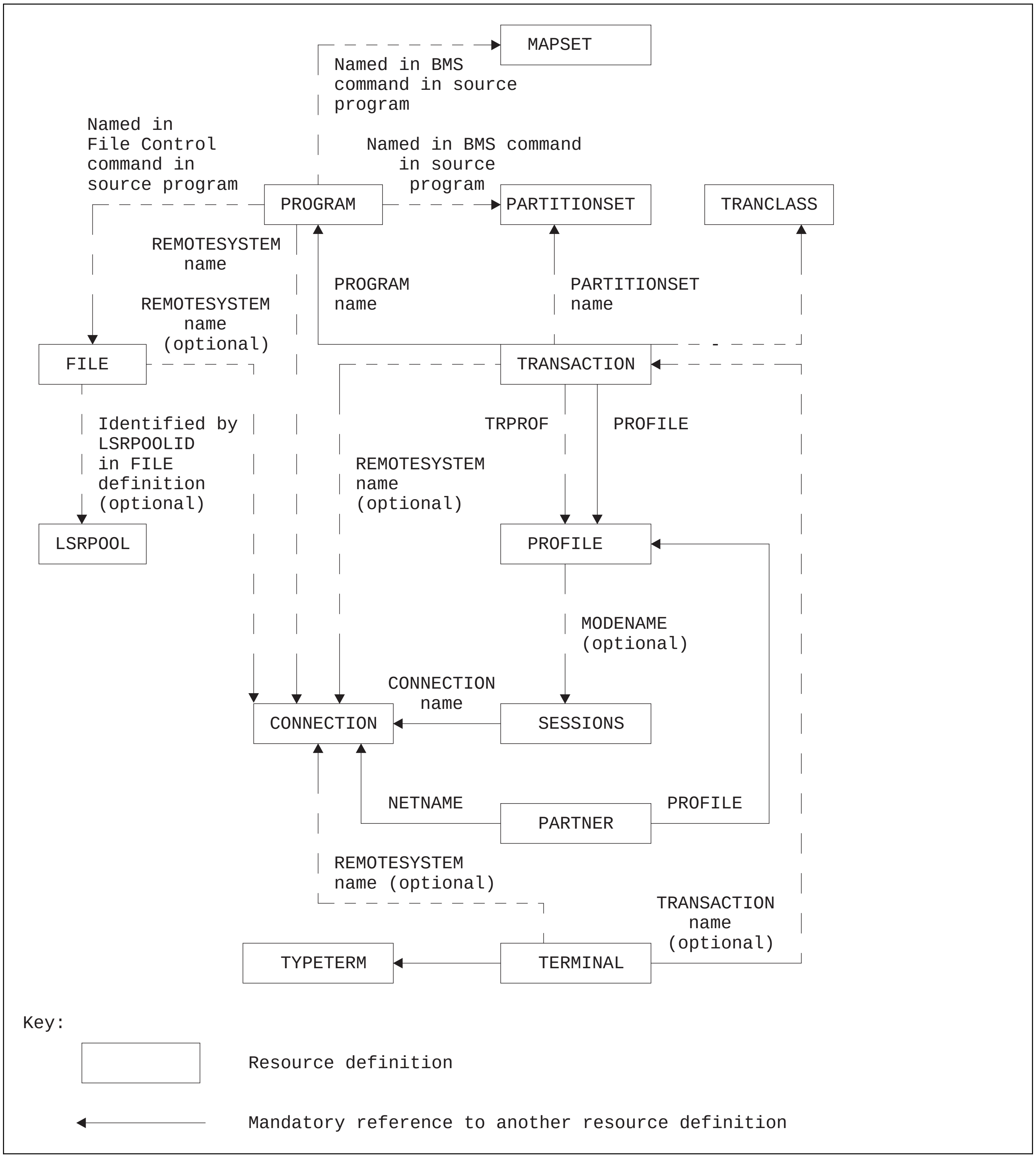

MAPSET
Named in BMS command in source program
Named in File Control command in source program
Named in BMS command in source program
PROGRAM
PARTITIONSET
TRANCLASS
REMOTESYSTEM name
PROGRAM name
PARTITIONSET name
REMOTESYSTEM name (optional)
FILE
TRANSACTION
Identified by LSRPOOLID in FILE definition (optional)
TRPROF
PROFILE
REMOTESYSTEM name (optional)
LSRPOOL
PROFILE
MODENAME (optional)
CONNECTION name
CONNECTION
SESSIONS
NETNAME
PARTNER
PROFILE
REMOTESYSTEM name (optional)
TRANSACTION name (optional)
TYPETERM
TERMINAL
Key:
Resource definition
Mandatory reference to another resource definition

Figure 1. How resource definitions refer to each other

Chapter 3. Getting started

The following list shows you what you must do to begin defining resources. If you are new to CICS, all the items in the list may apply to you; if you are an existing CICS user but are new to RDO, some items may not apply to you.

1. **Create and initialize a CSD**

   If you are a new CICS user, you must create and initialize a CICS system definition file (CSD). The CSD is used to store records of all resources defined by CEDA or DFHCSDUP. Refer to the *CICS System Definition Guide* for information on how to do this.

2. **Migrate existing definitions**

   If you are moving to CICS Transaction Server for VSE/ESA Release 1 from an earlier release and you have any of the following definitions, you **must** migrate them to the CSD before using CICS Transaction Server for VSE/ESA Release 1:

   - All of your PCT
   - All of your PPT
   - VTAM TCT entries

   CICS Transaction Server for VSE/ESA Release 1 does not support macro definition of these resources. Refer to the *CICS Migration Guide* for more detailed information.

3. **Run a DFHCSDUP UPGRADE job**

   Do this to bring the definitions in your CSD up to the level of CICS Transaction Server for VSE/ESA Release 1 function. See “UPGRADE a CSD” on page 102 for information on how to do this.

4. **Work with your resource definitions**

   Use Table 2 on page 4 and Table 3 on page 5 to help you decide which methods to use to define and manage your resources. If you are an existing CICS user, some of these decisions will have been made for you already.

   When you know which methods you want to use, read the following sections:

   - If you want to use macro definitions, read Part 5, “Macro reference information” on page 237.
   - If you want to use CEDA, read Chapter 5, “Using CEDA” on page 27.
   - If you want to use DFHCSDUP, read Chapter 7, “System definition file utility program, DFHCSDUP” on page 73.
   - If you want to use autoinstall, read Part 3, “Autoinstall” on page 105.

Part 2. The CICS system definition file (CSD)

This part explains what the CICS system definition file (CSD) is and how it relates to CICS. It contains the following chapters:

Chapter 4. The CICS system definition file (CSD)

This chapter introduces the CSD file. It contains the following information:

Introducing the CSD file

The CICS system definition (CSD) file is a VSAM data set containing a resource definition record for every resource defined to CICS by means of CEDA or DFHCSDUP. It can be defined as recoverable, so that changes that were incomplete when an abend occurred are backed out.

Creating a CSD

If you do not already have a CSD, you must create one. For detailed information about creating a CSD, see the *CICS System Definition Guide*.

You can create more than one CSD, depending on your requirements. For example, you can have different CSDs for different systems, so that your test systems and production systems are separate from each other.

You can also share one CSD between CICS releases; see “Compatibility mode (CSD sharing)” on page 19 for information about this.

When the CSD has been initialized it contains a number of groups (all beginning with the letters ‘DFH’) containing related resource definitions, and one list, called DFHLIST. These definitions are supplied by CICS and are necessary for some system functions and for running CICS-supplied transactions.

How the CSD is organized—groups and lists

Information on the CSD is organized into **groups** and **lists**. The main purpose of the **group** is to provide a convenient method of collecting related resources together on the CSD. Every resource that you define must belong to a group; you cannot define a resource without also naming its group.

A **list** contains the names of groups that CICS installs at a cold start. You can add groups to lists if you want them to be installed at a cold start, or if it helps you to manage your groups better, but groups do not need to belong to lists, and can be defined independently.

Creating groups and lists

A group is created when you specify it as the GROUP name in a DEFINE command or as the TO group in a COPY command. For example, the command:

```
CEDA DEFINE PROGRAM(PROG1) GROUP(MYGROUP)
```

defines a program called PROG1, and creates a group called MYGROUP if it does not already exist. See page 50 for information on the DEFINE command, and page 52 for information on the COPY command.

These are the only ways to create a group; a nonexistent group can be named in a list, but naming it in a list does not create it.

A group must not have the same name as an existing group or list.

You can create a list in either of the following ways:

- Use the ADD command to add a group to a list. If the specified list does not exist, it is created. See page 44 for information about the ADD command.
- Use the APPEND command to append the contents of one list to another list. If the appended-to list does not exist, it is created, containing the contents of the first list. See page 47 for information about the APPEND command.

A list must not have the same name as an already existing group or list.

Managing resource definitions

Manage your resource definitions using commands supplied as part of RDO. These commands allow you to work with your resources, defining, deleting, copying, renaming, and so on.

The commands are listed in Table 4 on page 17. For the syntax of these commands and information on how to use them, see Chapter 6, “CEDA commands—syntax and examples” on page 43 and Chapter 8, “DFHCSDUP commands” on page 81. To help you use CEDA, there is also a CEDA tutorial in Chapter 5, “Using CEDA” on page 27.

CEDA and DFHCSDUP commands

Table 4. CEDA and DFHCSDUP commands

COMMAND	FUNCTION	CEDA —see page	DFHCSDUP — see page
ADD	Adds a group name to a list.	44	82
ALTER	Modifies the attributes of existing resource definitions.	45	83
APPEND	Copies a list to the end of another list.	47	84
CHECK	Cross checks the resource definitions within a group, or within the groups in a list or lists, up to a maximum of four lists. The CHECK command is CEDA only.	48	—
COPY	Copies one or more resource definitions from one group to another, or one resource definition within a group.	50	85
DEFINE	Creates a new resource definition.	52	87
DELETE	Deletes one or more resource definitions.	53	88
DISPLAY	Shows the names of one or more groups, lists, or resource definitions within a group. The DISPLAY command is CEDA only.	54	—
EXPAND	Shows the names of the resource definitions in one or more groups or lists. The EXPAND command is CEDA only.	56	—
EXTRACT	Extracts and processes resource definition data from groups or lists on the CSD file. The EXTRACT command is DFHCSDUP only.	—	90
INITIALIZE	Prepare a newly-defined data set for use as a CSD file. The INITIALIZE command is DFHCSDUP only.	—	92
INSTALL	Dynamically adds a resource definition or a group of resource definitions to the active CICS system. The INSTALL command is CEDA only.	58	—
LIST	Produce listings of the current status of the CSD. The LIST command is DFHCSDUP only.	—	93
LOCK	Prevents other operators updating or deleting a group or the groups in a list. The LOCK command is CEDA only.	61	—
MIGRATE	Transfers the contents of a terminal control table (TCT) or file control table (FCT) to the CSD. The MIGRATE command is DFHCSDUP only.	—	95
MOVE	Moves one or more resource definitions from one group to another. The MOVE command is CEDA only.	63	—
REMOVE	Removes a group name from a list.	65	98
RENAME	Renames a resource definition, either within a group, or while simultaneously moving it to another group. The RENAME command is CEDA only.	66	—
SERVICE	Applies corrective maintenance to the CSD. The SERVICE command is DFHCSDUP only.	—	99
UNLOCK	Releases a lock on a group or list. The UNLOCK command is CEDA only.	68	—
UPGRADE	Upgrades the CICS-supplied resource definitions on the CSD file (for example, when you migrate to a higher release of CICS). The UPGRADE command is DFHCSDUP only.	—	102
USERDEFINE	Creates a new resource definition with your own defaults.	69	100
VERIFY	Removes internal locks on groups and lists. The VERIFY command is DFHCSDUP only.	—	103
VIEW	Shows the attributes of an existing resource definition. The VIEW command is CEDA only.	72	—

How many resource definitions should a group contain?

Try to keep your groups to a manageable size; ideally, there should be no more than about 100 resource definitions in a group. You should allocate your resource definitions between groups in such a way as to obtain optimum performance, in both system and administration terms. The following considerations may help:

- A large group can involve a lot of unnecessary processing time to install. This is particularly true of those containing TERMINAL and SESSIONS definitions, because they take a large amount of dynamic storage.
- A large number of very small groups can also use unnecessary processing time, due to the extra I/O involved as a result of many group names having to be read from the CSD. In theory, you could have one resource definition per group, but this is not recommended; the processing of a large number of single-resource groups can affect DASD space, cold start performance, and the performance of both CEDA and DFHCSDUP.
- Administration is easier if you have smaller groups. For example, the DISPLAY GROUP ALL command involves a lot of scrolling if the resource definitions in the group extend over many screens. You cannot see at a glance what you have in a large group.
- You may find that you have storage problems when you EXPAND, COPY or INSTALL a large group. In particular, if a very large number of CSD records are defined in a region with a small DSA, issuing a

  ```
  CEDA EXPAND GROUP(*)
  ```

  results in the system going SOS (short on storage).

What should be in a group?

Usually, the definitions within a group have something in common. For example:

For application resources:

- You will probably find it most convenient to keep all the resource definitions belonging to one application in one group.
- If you use PARTITIONSET or PROFILE definitions for many applications, keeping them separate in their own groups avoids the possibility of unnecessary duplication.

For communication resources:

- SESSIONS definitions ***must*** be in the same group as the CONNECTION definition to which they refer. You may have more than one group of definitions for each system and its sessions with other systems, in a single CSD that is shared by all the systems; be careful that you install each group of definitions in the correct system.
- We recommend that you restrict a group to contain only one CONNECTION definition with its associated SESSIONS definitions.
- We recommend that you keep all your TYPETERM definitions in one group. This avoids the possibility of unnecessary duplication. You must put the group of TYPETERMs before the groups of TERMINAL definitions in your lists.
- You will probably find it convenient to group TERMINAL definitions according to departmental function or geographical location.
- You ***must*** keep all the TERMINAL definitions for one pool of pipeline terminals in the same group.
- You should keep AUTINSTMODEL TERMINAL definitions separately in a group of their own.

Compatibility mode (CSD sharing)

CICS supports the capability for a CSD and its resource definitions to be shared between different CICS systems. The systems might be running the same or different releases of CICS. *Compatibility mode* is intended for use when you want to create or change resource definitions on a CSD which is shared between different releases.

All maintenance should be done under the latest release of CICS. This avoids the risk of earlier releases modifying entries created under more recent releases with new keywords that the older version does not recognize. Ensure this by restricting write access to the CSD to the latest release.

You enter compatibility mode by using PF2 on the CEDA panels where it is available. It gives you access to those keywords which were current at your earlier release, but are obsolete at your later release. However, it is only possible to use compatibility mode with commands affecting individual resources: you cannot perform generic commands (ALTER, DEFINE and VIEW) in compatibility mode.

You can find further information about issues relating to compatibility mode in the following places:

- For the usage and meaning of keywords and their compatibility with previous releases of CICS, see Appendix A, “Obsolete attributes retained for compatibility” on page 317.
- For information about what compatibility groups you need in your startup group list in order for CSD sharing to work, see “CICS-supplied compatibility groups” on page 325.
- If you need more detailed information about migration and compatibility, see the *CICS Migration Guide*.
- For information on defining your CSDs, see the *CICS System Definition Guide*.

Installing resource definitions

This section explains the installation of resource definitions into an active CICS system.

When a resource definition is installed, the information on it is moved into CICS storage, to become an entry in a “table”. This does not necessarily mean that all the information is stored in a large, contiguous area; the tables are virtual, but it is convenient to refer to them in this way.

In this section we look at what happens to resource definitions:

- When CICS is initialized
- When you use the INSTALL command

We also discuss dual-purpose resource definitions which allow resource definitions to be shared between systems.

The section following this deals with particular aspects of installing definitions for specific resource types.

What happens when CICS is initialized

When you initialize CICS, what happens to your resource definitions depends on the type of start. This is defined in the START system initialization operand; START=COLD for a cold start, and START=AUTO for a warm or emergency restart.

Cold start

During cold start, CICS creates system tables by installing groups named in the list or lists named by the GRPLIST system initialization parameter. If you installed a group with the INSTALL command during the previous CICS execution, you must add its name to a list if you want it to be installed during a cold start.

If you usually use START=COLD at CICS initialization, installing by means of a list will probably be your standard way of making resource definitions available to CICS. Use of the INSTALL command is a supplementary method, which can be very useful when testing a system, or if an unexpected need for a resource arises once CICS is running.

You may not want to use the RDO transactions in a production system, for security or performance reasons. In this case, the CSD is shared by both systems, but is read-only in the production system. Define all your production resources using your development system, and install them in the production CICS system when you cold start it.

Warm or emergency start

During a warm or emergency start, CICS recreates the tables from the resource definitions stored in the restart data set and global catalog.

No reference is made to the CSD file, nor is the GRPLIST name used. So all groups that had been installed by the end of the previous CICS execution are reinstalled automatically at a warm or emergency restart. Thus any CICS system modifications you have introduced using RDO persist. For autoinstalled resources, see the following:

- "What happens at CICS restart" on page 115
- "Connection autoinstall and recovery and restart" on page 124
- "Program autoinstall and recovery and restart" on page 128

If you have named a different list in the GRPLIST operand, or if you have added new groups to it since the last system initialization, CICS does not install the groups in the new list during a warm or emergency restart, because CICS does not refer to the list.

If you usually use START=AUTO at CICS initialization, using the INSTALL command is the standard way of making resource definitions available to CICS. Use a list to define your system only when you need to do a cold start. You can ensure that your list is up to date by adding to it each group installed using the INSTALL command.

What happens when you use the INSTALL command

Resource definitions may be installed in groups or as single definitions.

If the INSTALL command fails part of the way through installing the group, those resource types committed at the group level are backed out, whereas those resource types committed at the resource level are left in a committed state.

The following resource types are committed by individual resource, and not by complete group:

- AUTINSTMODEL
- FILE
- LSRPOOL
- MAPSET
- PARTITIONSET
- PARTNER
- PROFILE
- PROGRAM
- TRANCLASS
- TRANSACTION

For these resources, the effect of a partially successful INSTALL is to leave the resources that were added in a committed state.

The following resources are committed at the group level:

- CONNECTION
- SESSIONS
- TERMINAL
- TYPETERM

These resources are backed out after a partially successful INSTALL.

There are basically two reasons why an INSTALL may not be successful, both for INSTALLs of complete groups and for individually committed definitions:

1. One of the resource definitions could not be installed because it was currently in use (an executing transaction, for example).
2. System failure during installation.

If you wish to install only a few new or changed definitions, you are advised to install single resources, as described on page 58. (Note that the single-resource INSTALL of some CONNECTIONs and SESSIONS is not possible.) Use of the single resource INSTALL eliminates the problems of a partial INSTALL caused by a failure. However, if you wish to change or add a larger number of definitions, you might prefer to install a new group. In that case, the following considerations apply.

When you install a group containing an updated definition of an existing resource, the installation will fail if the resource is being used at the time. You should make sure that none of the resources in a group is in use before trying to install the group.

Installation is a two-stage process: any existing definition for the resource must be “deleted” from the system tables before a definition can be installed. This can result in more than one message, if the “deletion” fails, and causes the installation to fail.

If you have several CICS systems that share the same CSD, you must be careful not to install a group of resources in the wrong system.

Dual-purpose resource definition

With the extensions to dual-purpose resource definitions, you may want to consider the way in which resources are organized within your resource definition groups. For example, you might now have two groups; one containing all the resources for a CICS TOR, and one containing all the resources for a CICS AOR. When using shared resource definitions, you can decide to maintain three groups instead, with the first group containing resources specific to the TOR, the second group containing resources specific to the AOR, an the third group containing resources that will be installed in both the TOR and the AOR.

These resources should be defined as either local or remote. When the definition is installed on the TOR, CICS compares the SYSIDNT name with the REMOTESYSTEM name. If they are different, a remote transaction definition is created. When the definition is installed on the AOR, CICS compares the REMOTESYSTEM name with the SYSIDNT name. If they are the same, a local transaction definition is installed.

Duplicate resource definition names

An RDO-defined definition overrides a macro-defined definition of the same name. For example, if you try to install a definition for a VTAM terminal that has the same name as a non-VTAM terminal, the VTAM terminal entry overwrites the non-VTAM terminal entry.

If you INSTALL a group while CICS is active, the resource definitions in the group override any of the same type and name already installed.

When an existing resource definition is replaced in this way, the statistics associated with the old resource definition are transferred to the new definition. If a PROGRAM definition is replaced, the program is relocated on the library and loaded afresh when the new definition is referenced for the first time. In effect, the new definition implies a NEWCOPY operation. The same rules apply to map sets and partition sets.

An exception to these rules can occur with duplicate file definitions. If the file is defined as ENABLED, then the later install of a duplicate will fail. However, if the file is defined as DISABLED, then the later install of a duplicate will succeed.

It is probably unwise to have more than one resource definition of the same name on the CSD, even for different resource types. You must keep PROGRAM, MAPSET, and PARTITIONSET names unique. If you have, for example, a PROGRAM and a MAPSET with the same name, only one of them is available to CICS. As far as names are concerned, after installation these definitions are treated as if they were the same resource type.

If two groups in a list contain resource definitions of the same name, of the same resource type, CICS uses the definition in the group that is later in the list.

The only reason why you might have more than one resource definition of the same name is if you have alternative definitions of the same real resource, with different attributes. These resource definitions must be in different groups.

Using lists for initialization

How to set up lists for initialization

The lists that you name in the GRPLIST system initialization parameter must include all the resource definitions required by CICS. These are supplied by CICS and are added to the CSD when you initialize it before starting to use RDO.

You can specify up to four lists, using specific or generic naming, on the GRPLIST system initialization parameter. The default list is the CICS-supplied list DFHLIST.

This is how you would go about creating a list containing both CICS-supplied and your own resource definitions.

1. Start to create the list that you will use to initialize CICS, by appending DFHLIST to a new list. For example:

   ```
   CEDA APPEND LIST(DFHLIST) TO(INITLIST)
   ```

   This ensures that all CICS-supplied definitions are installed, whether or not you need to change them.
2. Remove the groups containing definitions for function that you do not require. For example, for ISC:

   ```
   CEDA REMOVE GROUP(DFHISC) LIST(INITLIST)
   ```
3. Copy all the resource definitions that you need to change into your own groups. For example:

   ```
   CEDA COPY TRANSACTION(CEDF) GROUP(DFHOPER)  TO(SECTRANS)
   CEDA COPY PROFILE(DFHCICST) GROUP(DFHSTAND) TO(REQMOD)
   ```

   Do ***not*** rename the copies. You can now use ALTER to change the attributes as necessary. For example:

   ```
   CEDA ALTER TRANSACTION(CEDF) GROUP(SECTRANS)
   ```
4. Add these groups to your list for initialization. For example:

   ```
   CEDA ADD GROUP(SECTRANS) LIST(INITLIST)
   CEDA ADD GROUP(REQMOD)   LIST(INITLIST)
   ```

   Make sure that you add this group **after** the DFH groups. Although you now have two definitions for the resources that you have altered, the second definition in the list is the one that will be installed, if you name this list as a GRPLIST parameter when you initialize CICS.

5. Add any other groups containing resource definitions of your own that you want to use, or append other lists. Your list might look like this:

   ```
   DFHAKP
   DFHBACK
   DFHBMS
   DFHCONS
   ⋮
   DFHVTAMP
   SECTRANS
   REQMOD
   ZEMAPPL
   ZEMCOMM
   ZEMTYPES
   ZEMTERMS
   ```

   Note that the group containing the TYPETERMs should come before the groups containing the TERMINAL definitions.

6. Cold start your CICS system, naming the list or lists that you have created in the GRPLIST system initialization parameter. For example:

   ```
   START=COLD,GRPLIST=INITLIST
   ```

How you can use several lists

You can create lists that contain different sets of groups so that you can initialize different “flavors” of CICS using the GRPLIST system initialization parameter.

Using different lists at different times

We recommend that you initialize your CICS system with the system initialization parameter START=AUTO, so that the CICS catalog is used to define the system whenever possible, instead of the list or lists named in the GRPLIST system initialization parameter. However, if you use CICS differently each time you initialize it, you will not want to do this. You will code the START=COLD system initialization parameter, and you can specify a different list to define your system every time you initialize CICS. For example, you might have:

- A different list for each day of the week, if the pattern of work is different on each day.
- A list for the CICS used for the day shift and a list for the CICS used for the night shift.
- A test only list used only when CICS is started up by the system programmers on a Sunday.
- For security reasons, a special list containing groups of restricted resource definitions. You could append this list to your usual one, when these resources are needed.

Consider how you might use the list and group mechanisms with transactions related to a company’s salary operations.

Let’s assume that some transactions used by the salary administrators will be used every day. For example, a transaction for handling an employee’s tax details may have to be performed at any time. Other transactions, such as minor weekly or monthly payroll adjustments, are run at predefined intervals, or on specific days or dates. You would therefore not want to include the same mixture of transactions and programs every time the system was started up.

By creating a resource definition group for taxation transactions, and another for payroll transactions, you could add them to different lists to produce the required system tables for different days. In the above example, one list would identify only the taxation group; the other would identify both taxation and payroll groups. You would specify the appropriate list in the GRPLIST system initialization parameter.

Clearly, a real system would have many more groups and lists than this.

Using different lists for different CICS systems

If you are running more than one CICS system, in the same VSE image, you may use the same CSD file to define your resources to both systems. This helps you to ensure that each system has the same definition of resources where necessary. You probably don't want to use all the same resources in each system, so you could create a list for each system. You name the appropriate list in the GRPLIST system initialization parameter for each system.

For example, you might have two production CICS systems sharing a CSD file. Let's assume that one production system runs three applications: customer inquiry, billing, and adjustments. Each application has its own resources (programs, mapsets, and transactions), so you put the resource definitions in three groups: CUSTINQ, CUSTBILL, and CUSTADJ. Then you add these groups to a list called CICS1A.

Another production system runs two more applications in addition to customer inquiry: customer update and customer credit authorization. For these you create two more groups (CUSTCRED and CUSTUPDT) and another list called CICS1B.

CICS1B contains the same CUSTINQ group as CICS1A, and it also contains CUSTCRED and CUSTUPDT. If you decide, for performance reasons, to move one of your applications to a different CICS system, all you need to do is add the appropriate group name to the appropriate list. The next time you initialize CICS with this list specified in the GRPLIST system initialization parameter, you will install the new group.

Using different lists when you introduce changes

The list with which you initialize CICS is a definition of your system (for RDO resources). When you introduce changes to your resources, it is useful to create a new list, keeping the old list to return to if something goes wrong. Then you can re-initialize CICS with the old list, knowing that everything is as it was previously.

Checking groups and lists of resource definitions for consistency

The CHECK command checks the consistency of definitions within a group or within all of the groups within a list or lists. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group although you found no problems when using the CHECK command.

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list. It does not simply check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

Security and RDO

This section discusses security for RDO and the CSD.

Resource security checking

Resource security checking ensures that terminal operators are able to access only those resources for which they have been authorized. You can use resource security checking (RESSEC) for the TRANSACTION definition.

Multiple CSD files

You can have different CSD files for different CICS systems. The users of one CICS do not have access to the CSD for another CICS.

You could have a test CSD in a system where the RDO transactions can be used, and a production CSD in a system where the RDO transactions are not available. There would then be no chance of unauthorized users altering resource definitions needed for production work.

Read-only and update definitions for the same CSD file

Having two CSDs means duplicating resource definitions for resources that are shared by more than one system. An advantage of RDO is that you need only one definition for each resource. You can define one CSD data set to be shared among several CICS systems with only one having write access. To do this, you define one CSD data set differently to different systems, by using the CSDACC system initialization parameter. For the system where the CSD can be used, but not updated, you could code:

```
CSDACC=READONLY
```

and for the system where you are planning to update the CSD, you could code:

```
CSDACC=READWRITE
```

You need read-only access to install definitions. This also allows you to use the DISPLAY and VIEW commands. You need READWRITE access to use the DEFINE, ALTER, MOVE, RENAME, DELETE, or COPY commands. For details of defining the CSD, see the *CICS System Definition Guide*.

RDO also provides a means of controlling access to any group or list, so that users in the same system can have different types of access. This is done with the LOCK command.

Controlling access to a group or list—LOCK and UNLOCK

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user’s operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:

- DISPLAY
- VIEW
- COPY
- CHECK
- INSTALL

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

Controlling access to the RDO transactions

Recommended access for the CEDA, CEDB, and CEDC transactions is as follows:

- CEDC can be given fairly wide access, as it allows only read-only commands.
- CEDB should be restricted, as it allows modification of the CSD as well as read-only commands.
- CEDA should be further restricted to the few people allowed to modify both the active CICS system and the CSD file.

Dependent default values

Some attribute values have default values that differ, depending on the values for the other attributes you have already specified on the command line. This means you don't have to remember so many attribute values.

These default values are known as dependent defaults. They are similar to forced values, but you ***can*** change them if you want to.

RDO cannot remember that they are defaults, as it can with default names and forced values, so if you change the value of the attribute on which they depend, ***the dependent defaults stay as they were***. For example, if you copy a 3270P TYPETERM and then change its DEVICE attribute to 3270, you do not get the appropriate default values for the other attributes, and your TYPETERM definition is not applicable to a display device or to a printer, unless you change all the values yourself.

It is very important that you should ***not*** change the value of DEVICE, SESSIONTYPE, or TERMMODEL either using ALTER or by overtyping. If you make a mistake with these attributes, delete the definition and define a new one. For the same reason, you should ***not*** use COPY and ALTER as a method of creating many TYPETERMs with different DEVICE values.

Dependent and forced values mean that you don't have to remember which attributes are relevant to different devices. (See Table 14 on page 215 for a list of TYPETERM dependent defaults and forced values.)

Chapter 5. Using CEDA

This chapter is in the form of a tutorial to show you how to use the RDO transactions CEDA, CEDB, and CEDC. It assumes that you have read the information on resources, groups and lists in “How the CSD is organized—groups and lists” on page 15 and “Using lists for initialization” on page 22.

At the end of the tutorial, you should be familiar with the CEDA panels, and be able to manage your resources efficiently.

The examples in the tutorial all use CEDA, because if you have CEDA authorization, you can issue all RDO commands. If you have access to only CEDB or CEDC, you can issue the following commands:

CEDB all RDO commands except INSTALL.

CEDC DISPLAY, EXPAND, and VIEW commands only.

The cursor is indicated by the symbol ‘■’.

Enter CEDA at a CICS terminal. The following panel appears:

```
 ■
 ENTER ONE OF THE FOLLOWING

ADd
ALter
APpend
CHeck
COpy
DEFine
DELete
DIsplay
Expand
Install
Lock
Move
REMove
REName
UNlock
USerdefine
View
                                             SYSID=CICA  APPLID=MYCICS

PF 1 HELP       3 END          6 CRSR          9 MSG          12 CNCL
```

Figure 2. CEDA transaction: initial panel

This is a list of all the CEDA commands. CEDB has all of these except INSTALL, and CEDC offers you only DISPLAY, EXPAND, and VIEW.

Abbreviating commands Each command can be abbreviated. The minimum abbreviations are shown in uppercase - for example, you can enter REM for REMOVE, but not just R or RE, because to CEDA that would be ambiguous with RENAME.

So that you have some resources of your own to work with, use the DEFINE command to create a new resource in a new group. At the top of the screen, enter DEFINE. You will see the following screen:

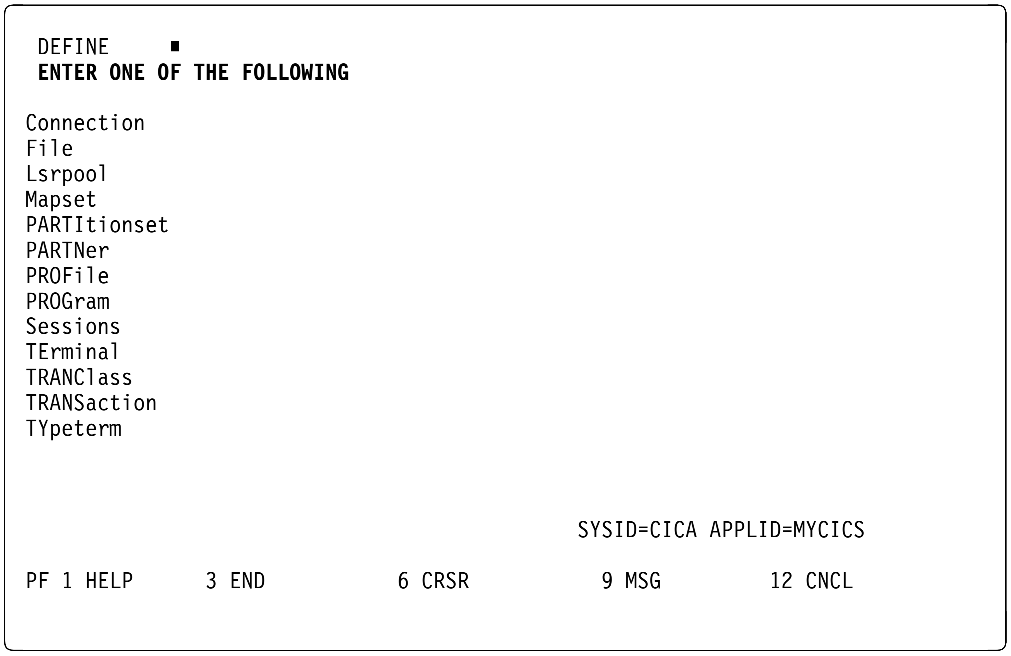

```
 DEFINE     ■
 ENTER ONE OF THE FOLLOWING

Connection
File
Lsrpool
Mapset
PARTItionset
PARTNer
PROFile
PROGram
Sessions
TErminal
TRANClass
TRANSaction
TYpeterm



                                              SYSID=CICA APPLID=MYCICS

PF 1 HELP      3 END           6 CRSR           9 MSG         12 CNCL
```

Figure 3. CEDA DEFINE panel

This is a list of all the resource types you can define for CICS by means of CEDA or DFHCSDUP. They are explained in detail in Part 4, “RDO resource types and their attributes” on page 129.

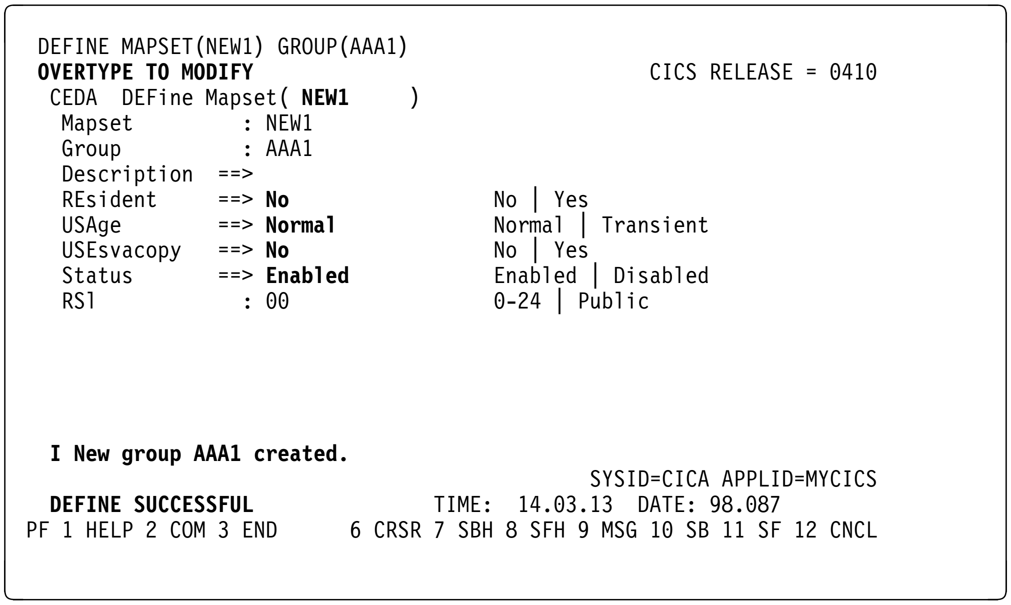
SYSID This is your system identifier specified in the SYSIDNT parameter of the system initialization table (SIT).

APPLID This is the VTAM application identifier for the CICS system, as specified in the APPLID parameter of the SIT.

PF keys The PF keys on this screen are:

PF1 HELP	Provides help in using CEDA.
PF3 END	Takes you out of CEDA. After using PF3, you can clear the screen and continue with another transaction.
PF6 CRSR	Puts the cursor in the top left corner of the screen.
PF9 MSG	Shows you any error messages produced by CEDA.
PF12 CNCL	Takes you back to the previous panel.

After the word DEFINE that you entered, type in MAPSET(NEW1) GROUP(AAA1).



```
 DEFINE MAPSET(NEW1) GROUP(AAA1)
 OVERTYPE TO MODIFY                                 CICS RELEASE = 0410
  CEDA  DEFine Mapset( NEW1     )
   Mapset        : NEW1
   Group         : AAA1
   Description  ==>
   REsident     ==> No                 No | Yes
   USAge        ==> Normal             Normal | Transient
   USEsvacopy   ==> No                 No | Yes
   Status       ==> Enabled            Enabled | Disabled
   RSl           : 00                  0-24 | Public




  I New group AAA1 created.
                                               SYSID=CICA APPLID=MYCICS
  DEFINE SUCCESSFUL               TIME:  14.03.13  DATE: 98.087
PF 1 HELP 2 COM 3 END      6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 4. DEFINE MAPSET(NEW1) GROUP(AAA1)

You can see that your whole command (DEFINE MAPSET(NEW1) GROUP(AAA1)) remains at the top of the screen. You must specify a group name for every resource you want to define or work with; if you do not, CEDA displays a severe error message informing you that you have not supplied a group.

The main part of the screen shows the attributes of the MAPSET that you have just defined. All the attributes and values that you see are described in Chapter 15, “MAPSET” on page 155.

Attributes and values The attributes of the map set are listed in the first column, and their associated values are listed in the second column. For example:

```
Status     ==> Enabled          Enabled | Disabled
```

Status is the attribute.
Enabled is the value it has been defined with.
Enabled | Disabled shows the values it is possible to define it with.

Use of ==> When you see a ‘==>’ symbol between an attribute and its value, it means that you can change the value. These values which can be changed are also highlighted.

Use of colon (:) When you see a colon (:) between an attribute and its value, it means that you cannot change the value. This can be for a number of reasons:

- You do not have authority to change the values (for example, if you are a CEDC user).
- You are using the VIEW command (explained later in this tutorial).
- The attribute is the resource name or the group name (in this example, MAPSET name NEW1 and GROUP name AAA1).
- The attribute is obsolete for the current release of CICS (for example, the RSL attribute).

To change the value of obsolete attributes, you must use the **compatibility mode** option, as described in the PF keys below.

<u>**PF keys**</u> The PF keys on this screen which were not on the previous screen are:

PF2 COM	Allows you to use **compatibility mode** to change the value of obsolete attributes. On the above panel, if you press PF2, you will see that the symbol between RSL and its value changes from '==>' to ':', the value is highlighted, and the display at the top right of the screen changes from 'CICS RELEASE=0410' to 'COMPATIBILITY MODE'. You can now overtype the value to change it, then press PF2 again to get out of compatibility mode. Compatibility mode is described in "Compatibility mode (CSD sharing)" on page 19.
PF7 SBH	Scrolls back half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.
PF8 SFH	Scrolls forward half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.
PF9 MSG	Shows you any error messages produced by CEDA. If you press PF9 just now, you will see the message "NEW GROUP AAA1 CREATED". This is the same message as is displayed on the screen, but if you issue a command which generates more than one message, you may have to use PF9 to see them all.
PF10 SB	Scrolls up one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.
PF11 SF	Scrolls down one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

<u>**Messages**</u>. CEDA has produced the informational message 'I New group AAA1 created'. There are four levels of error messages in CEDA, as follows:

- S for severe. CEDA cannot continue until you correct what is wrong.
- E for error. Commands resulting in these messages will be executed when you press enter, but the results may not be what you intended; for example, if you abbreviate a command to the point where it becomes ambiguous, CEDA warns you, and tells you which command it is going to assume when you press enter. It may not be the command you intended.
- W for warning.
- I for information.

You can use PF9 to view CEDA messages. If you try it at this point it will be the same as what is on the screen, as there is only one message. When you have read the messages, use the Enter key to get back to where you were.

Press PF3 to get out of CEDA. The following is displayed:

```
CEDA DEFINE MAPSET(NEW7) GROUP(AAA1)
 STATUS:  SESSION ENDED
```

Figure 5. SESSION ENDED panel

Clear the screen, and you will be able to enter another transaction.

So far, you have gone through a number of panels to define a resource, but you have the alternative of entering a complete CEDA command on the command line. For example, if you enter:

```
CEDA DEFINE TRANSACTION(XYZ1) PROGRAM(XYZ2) GROUP(AAA2)
```

The screen you see is very similar to Figure 4 on page 30:

```
 OVERTYPE TO MODIFY                                CICS RELEASE = 0410
  CEDA  DEFine TRANSaction( EEEE )
   TRANSaction    : EEEE
   Group          : AAA1
   DEscription  ==>
   PROGram      ==> AAAA
   TWasize      ==> 00000            0-32767
   PROFile      ==> DFHCICST
   PArtitionset ==>
   STAtus       ==> Enabled          Enabled | Disabled
   PRIMedsize     : 00000            0-65520
   TASKDATALoc  ==> Below            Below | Any
   TASKDATAKey  ==> User             User | Cics
   STOrageclear ==> No               No | Yes
   RUnaway      ==> System           System | 0 | 500-2700000
   SHutdown     ==> Disabled         Disabled | Enabled
  REMOTE ATTRIBUTES
+  DYnamic      ==> No               No | Yes
   REMOTESystem ==>
   I New group AAA2 created
                                              SYSID=CICA APPLID=MYCICS
  DEFINE SUCCESSFUL             TIME:  16.47.45  DATE: 98.088
PF 1 HELP 2 COM 3 END        6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

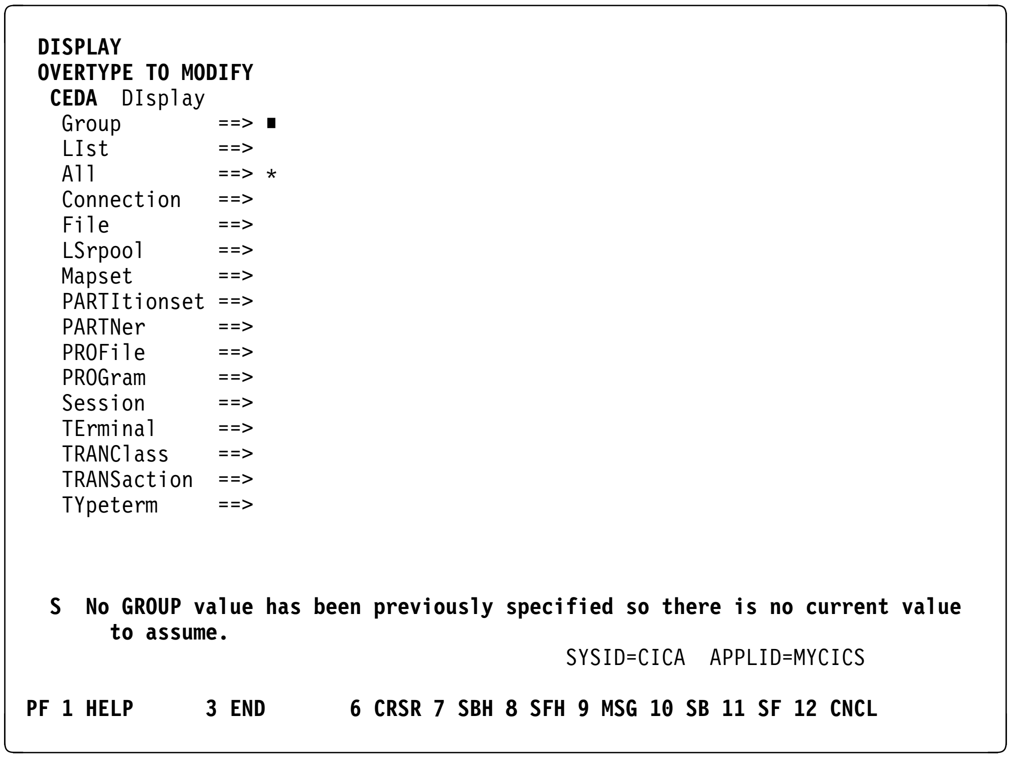
Figure 6. CEDA DEFINE TRANSACTION(XYZ1) PROGRAM(XYZ2) GROUP(AAA2) panel

You must specify a PROGRAM whenever you define a new TRANSACTION; if you do not, CEDA displays a severe error message saying that you must specify either a PROGRAM or REMOTESYSTEM. The attributes of the TRANSACTION definition are described in Chapter 23, “TRANSACTION” on page 205.

You can see that the TRANSACTION definition has many more attributes than the MAPSET definition. The **plus sign (+)** to the left of the last attribute in the list means that there are more attributes, so you can use either PF8 or PF11 to scroll down through them, then PF7 or PF10 to scroll back up.

You now have two new resources to work with, a MAPSET in group AAA1, and a TRANSACTION in group AAA2. These resources will be used throughout the remainder of the tutorial to demonstrate the other CEDA commands.

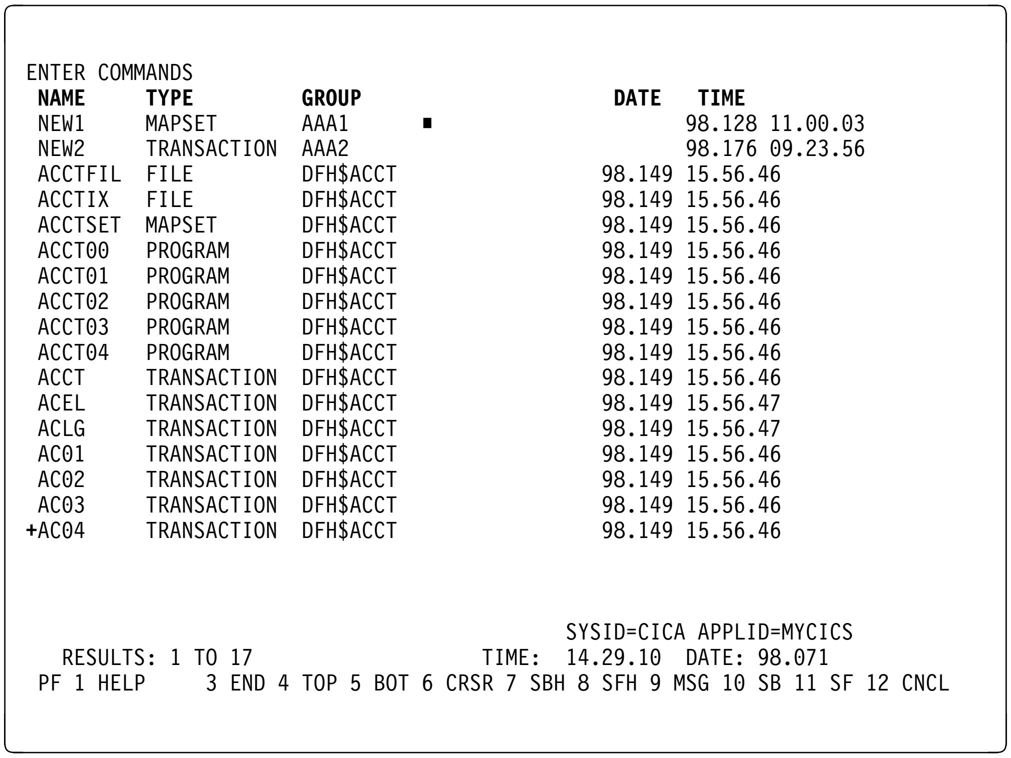
Press PF3 to get out of CEDA. Instead of clearing the screen as you did before, you have the alternative of typing a new command over the existing one at the top of the screen. Type ‘DISPLAY’ over ‘DEFINE’ and delete the rest of the line. You will see a screen like this:



```
 DISPLAY
 OVERTYPE TO MODIFY
  CEDA  DIsplay
   Group        ==> ■
   LIst         ==>
   All          ==> *
   Connection   ==>
   File         ==>
   LSrpool      ==>
   Mapset       ==>
   PARTItionset ==>
   PARTNer      ==>
   PROFile      ==>
   PROGram      ==>
   Session      ==>
   TErminal     ==>
   TRANClass    ==>
   TRANSaction  ==>
   TYpeterm     ==>



  S  No GROUP value has been previously specified so there is no current value
       to assume.
                                              SYSID=CICA  APPLID=MYCICS

PF 1 HELP      3 END       6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 7. CEDA DISPLAY panel

You may not know any group names or list names yet, so type in an asterisk where the cursor is, beside GROUP, then press enter. The asterisk means that you want to display all groups. If your system has a large number of groups in it, this command may take some time to execute. You get a screen like this:



```
ENTER COMMANDS
 NAME     TYPE         GROUP                     DATE   TIME
 NEW1     MAPSET       AAA1      ■                     98.128 11.00.03
 NEW2     TRANSACTION  AAA2                            98.176 09.23.56
 ACCTFIL  FILE         DFH$ACCT                 98.149 15.56.46
 ACCTIX   FILE         DFH$ACCT                 98.149 15.56.46
 ACCTSET  MAPSET       DFH$ACCT                 98.149 15.56.46
 ACCT00   PROGRAM      DFH$ACCT                 98.149 15.56.46
 ACCT01   PROGRAM      DFH$ACCT                 98.149 15.56.46
 ACCT02   PROGRAM      DFH$ACCT                 98.149 15.56.46
 ACCT03   PROGRAM      DFH$ACCT                 98.149 15.56.46
 ACCT04   PROGRAM      DFH$ACCT                 98.149 15.56.46
 ACCT     TRANSACTION  DFH$ACCT                 98.149 15.56.46
 ACEL     TRANSACTION  DFH$ACCT                 98.149 15.56.47
 ACLG     TRANSACTION  DFH$ACCT                 98.149 15.56.47
 AC01     TRANSACTION  DFH$ACCT                 98.149 15.56.46
 AC02     TRANSACTION  DFH$ACCT                 98.149 15.56.46
 AC03     TRANSACTION  DFH$ACCT                 98.149 15.56.46
+AC04     TRANSACTION  DFH$ACCT                 98.149 15.56.46



                                             SYSID=CICA APPLID=MYCICS
   RESULTS: 1 TO 17                   TIME:  14.29.10  DATE: 98.071
 PF 1 HELP     3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 8. CEDA DISPLAY GROUP(*) panel

This shows the groups in your system and the resource definitions that they contain.

Plus sign. The plus sign (+) beside the last value means that there are more resources, so you can use PF8 or PF10 to scroll down to see them, then PF7 or PF11 to scroll back up again. PF7 and PF8 enable you to scroll down and up half a screen at a time. PF10 and PF11 enable you to scroll down and up a full screen at a time.

GROUP. This tells you which group each resource definition belongs to. This whole display of resource definitions is ordered by listing the groups alphabetically.

NAME. The list under the NAME heading tells you the name of each individual resource definitions installed on your system. You can have duplicate resource names only if the resource definitions are in different groups. The resource names are listed alphabetically according to their resource types (that is, within any one group, all the transactions are listed alphabetically, then all the programs, and so on).

TYPE. This tells you what resource type each definition is for. The resource types were introduced briefly on page 7, and are described fully in Part 4, “RDO resource types and their attributes” on page 129. Within each group, the similar resource types are shown together (that is, all the transactions, then all the programs, and so on).

DATE and TIME. This shows the date and time when the resource definition was last updated. The time and date immediately above the PF key descriptions at the bottom of the screen are the current time and date.

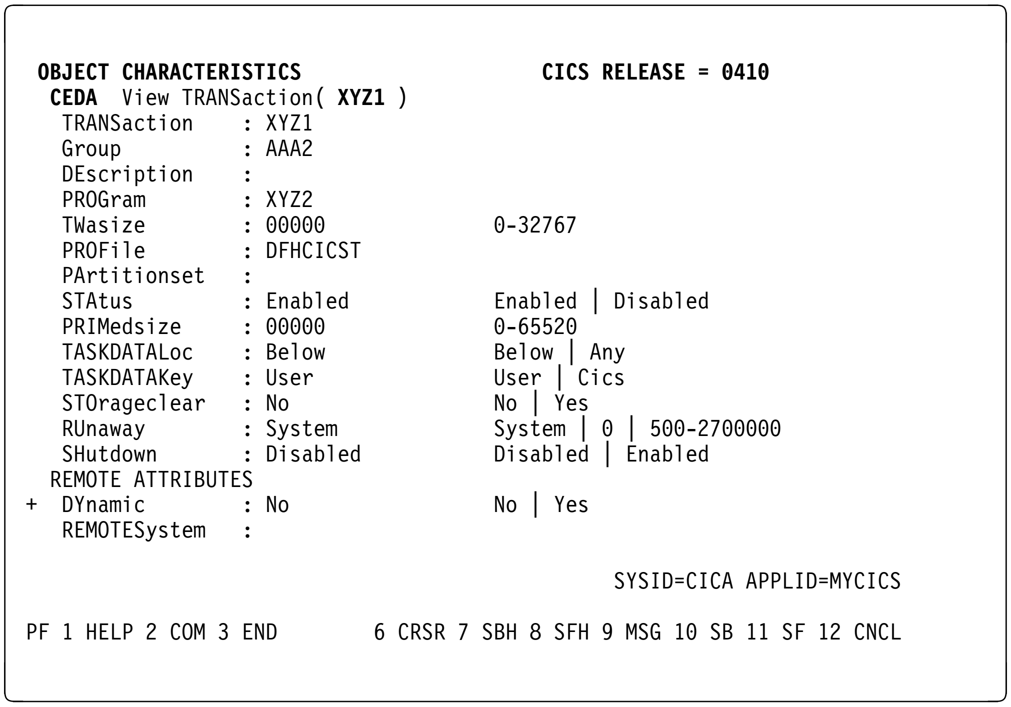
RESULTS: 1 TO 17. Below the list of groups, there is a line that says "RESULTS: 1 TO 17". This tells you how many group names are displayed on the screen. If there are more than 17, this message changes as you scroll up and down the list of group names. At the beginning of a CEDA DISPLAY GROUP(*) command, it says "RESULTS: 1 TO 17", but as you scroll down, CEDA builds up a count of the total number of groups, and eventually the message changes to be of the form "RESULTS: 52 TO 68 OF 97". If the list is very long, you can use PF5 to go straight to the bottom of it, and PF4 to get back to the top of it.

ENTER COMMANDS. You can enter commands in the area of the screen where the cursor is. If you are using CEDA, valid commands from this screen are:

ALTER
COPY
DELETE
INSTALL
MOVE
RENAME
VIEW
?
=

If you are using CEDB, all of these are valid except INSTALL, and if you are using CEDC, only VIEW, ?, and = are valid.

Move the cursor down to the TRANSACTION XYZ1 that you defined earlier and type in 'VIEW' beside it. A screen like this is displayed:



```
 OBJECT CHARACTERISTICS                    CICS RELEASE = 0410
  CEDA  View TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription    :
   PROGram        : XYZ2
   TWasize        : 00000            0-32767
   PROFile        : DFHCICST
   PArtitionset   :
   STAtus         : Enabled          Enabled | Disabled
   PRIMedsize     : 00000            0-65520
   TASKDATALoc    : Below            Below | Any
   TASKDATAKey    : User             User | Cics
   STOrageclear   : No               No | Yes
   RUnaway        : System           System | 0 | 500-2700000
   SHutdown       : Disabled         Disabled | Enabled
  REMOTE ATTRIBUTES
+  DYnamic        : No               No | Yes
   REMOTESystem   :

                                               SYSID=CICA APPLID=MYCICS

PF 1 HELP 2 COM 3 END       6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 9. CEDA VIEW TRANSACTION(XYZ1) GROUP(AAA2) panel

This is almost identical to the panel you saw when you defined this transaction (shown in Figure 6 on page 32), with the difference that on the VIEW panel there is a colon (:) between each attribute and its value. You cannot change any values from a VIEW panel.

If you notice at this point that you have defined TRANSACTION(XYZ1) incorrectly, you may want to alter one or more of its values. Press PF12 to return to the DISPLAY screen. There is now an asterisk (*) beside the transaction to indicate that you have worked with it. Type ‘ALTER’ over the asterisk, and you will see a panel which begins like this:

```
OVERTYPE TO MODIFY                            CICS RELEASE = 0410
 CEDA  ALter TRANSaction( XYZ1 )
  TRANSaction    : XYZ1
  Group          : AAA2
  DEscription  ==>
  PROGram      ==> XYZ2
  TWasize      ==> 00000              0-32767
  PROFile      ==> DFHCICST
   ⋮
```

Figure 10. CEDA ALTER TRANSACTION(XYZ1) GROUP(AAA2) panel

The highlighted text at the top left of the screen, ‘OVERTYPE TO MODIFY’, means that you can overtype any of the highlighted values. Overtype the TWASIZE value, changing it from 00000 to 32767. When you press Enter, CEDA displays an ‘ALTER SUCCESSFUL’ message at the bottom of the screen.

Press PF12 to return to the DISPLAY screen, where the ‘ALTER SUCCESSFUL’ message is displayed on the same line as the TRANSACTION. Type in VIEW against the TRANSACTION, and you can see that the value of TWASIZE has been changed.

At this point in the tutorial, you still have only two resources that you defined by yourself. You can create more using the DEFINE command as before, or you can copy existing resources, both within their own groups, and to other groups.

Press PF12 to return to the DISPLAY screen. Beside TRANSACTION(XYZ1) type in:

```
COPY TO(AAA1) AS(XYZ2)
```

A ‘COPY SUCCESSFUL’ message is displayed in the right hand column of the screen.

The COPY command has copied the definition for TRANSACTION(XYZ1) from group AAA2 to group AAA1, renaming it as TRANSACTION(XYZ2). The original transaction, TRANSACTION(XYZ1), still exists in group AAA2. Press PF3 to display the **SESSION ENDED** panel, and overtype the existing ‘CEDA DISPLAY’ with:

```
CEDA DISPLAY GROUP(AAA1)
```

Group AAA1 now contains two resource definitions, a MAPSET called NEW1 and a TRANSACTION called XYZ2. Because this is a DISPLAY screen similar in format to Figure 8 on page 34, you can enter the same commands against the definitions.

```
DISPLAY GROUP(AAA1)
ENTER COMMANDS
 NAME     TYPE         GROUP                          DATE   TIME
 NEW1     MAPSET       AAA1                           98.087 16.22.12
 NEW5     MAPSET       AAA1                           98.088 15.34.00
  ⋮
```

Figure 11. CEDA DISPLAY GROUP(AAA1) panel

The next part of the tutorial is about entering commands from the command line. Press PF3 to get out of CEDA and clear the screen.

Entering commands from the command line

So far, this tutorial has taken you through panels to execute CEDA commands, but when you become familiar with your system’s resources and with CEDA, you can enter most CEDA commands on the command line.

Here is a sequence of commands; if you follow them, you can see that entering commands on the command line is quicker than going through all the CEDA panels.

You do not need to use PF3 or PF12 at this point. Use PF6 to move the cursor to the top left corner of the screen. Insert a transaction name and remove the group; the command now looks like this:

```
CEDA DEFINE TRANSACTION(BBB1) PROGRAM(CCC1)
```

When you press Enter, the new transaction BBB1 is defined. Note that it has been defined without an associated group name; this is because, as long as you are within the same CEDA session, the current group (that is, the one you have most recently been working with) is used by default. If you had used PF3 before this, your CEDA session would have ended, so there would be no current group name for CEDA to assume.

Rename the transaction by overtyping the command to read:

```
RENAME TRANSACTION(BBB1) AS(DDD1)
```

Move the transaction to group AAA2 by overtyping the command to read:

```
MOVE TRANSACTION(DDD1) TO(AAA2)
```

Before installing groups AAA1 and AAA2, you can check them by using the CHECK command. This ensures that all transactions have access to their related programs, that terminal definitions have access to their related typeterm definitions, and so on. Overtype the command to read:

```
CHECK GROUP(AAA1)
```

This should result in the message:

```
W PROGRAM CCC1 referenced by TRANSACTION DDD1 in group AAA2
  cannot be found
```

This is because when you moved transaction DDD1, you did not also move its related program, CCC1. You can remedy this by using the COPY command:

```
COPY PROGRAM(CCC1) G(AAA1) TO(AAA1)
```

If you repeat the CHECK command on both groups, there should be no more error messages.

This is clearly faster and more efficient than using panels. You can now use PF3 to get out of CEDA, then clear the screen.

Removing resource definitions from the CSD

The resource definitions that you have created for the tutorial can be removed; this allows other people to follow the tutorial, and ensures that your CSD space is not being used unnecessarily. Using the DELETE command, you can delete the whole of groups AAA1 and AAA2 from your CSD:

```
CEDA DELETE ALL GROUP(AAA1)
CEDA DELETE ALL GROUP(AAA2)
```

Note that you cannot delete the group itself; it ceases to exist only when it contains no resource definitions. See “DELETE a resource definition, group, or list” on page 88 for more information on the DELETE command.

Generic naming

You used this feature of CEDA on page 34 when you used an asterisk to mean 'all' groups. The asterisk can be used to mean ‘all’ anything. For example, CEDA VIEW TRANSACTION(DISC) GROUP(*) shows you transactions called DISC in any group where they occur. CEDA DISPLAY GROUP(*) TRANSACTION(*) shows you all the transactions in every group.

Another way to see groups without having to specify their exact names is to use the plus sign (+) as part of the group name to represent one character. For example, whereas CEDA DISPLAY GROUP(DFH*) will display all groups beginning with DFH, CEDA DISPLAY GROUP(DFH+++) will display only those groups which begin with DFH and are six characters long, CEDA DISPLAY GROUP(DFH++++) will display those which begin with DFH and are seven characters long, and so on.

Table 5 on page 41 tells you which commands you can use generic naming with.

Which commands accept generic names?

Generic names allow you to use one command to perform the same operation on many objects.

You can use the keyword ALL in some commands, instead of specifying a resource type. The command will operate on all resource definitions that fit the name specified with ALL.

yes means that you may use a generic name, or an actual name.

no means that you must use an actual name.

- means that this keyword is not applicable for this command.

Table 5. Commands accepting generic names

COMMAND	**Generic Resource Name**	**Generic Group Name**	**Generic List Name**	**ALL Resource Types**
ADD	-	no	no	-
ALTER	yes	yes	-	no
APPEND	-	-	no	-
CHECK GROUP	-	no	-	-
CHECK LIST	-	-	no	-
COPY	yes	no	-	yes
DEFINE	no	no	-	no
DELETE	yes	no	-	yes
DISPLAY GROUP	-	yes	-	-
DISPLAY GROUP ALL	yes	yes	-	yes
DISPLAY LIST	-	-	yes	-
DISPLAY LIST GROUP	-	yes	yes	-
EXPAND GROUP	yes	yes	-	yes
EXPAND LIST	-	yes	yes	-
INSTALL	-	no	-	-
INSTALL GROUP	-	no	-	-
LOCK GROUP	-	no	-	-
LOCK LIST	-	-	no	-
MOVE	yes	no	-	yes
REMOVE	-	yes	no	-
RENAME	no	no	-	yes
UNLOCK GROUP	-	no	-	-
UNLOCK LIST	-	-	no	-
USERDEFINE	no	no	-	no
VIEW	yes	yes	-	no

Chapter 6. CEDA commands—syntax and examples

This chapter explains the syntax and rules for each of the CEDA commands. The commands are:

ADD a group to a list

ADD syntax

```
►►──ADd──Group(groupname1)──LIst(listname)──┬──────────────────────┬──►◄
                                             ├─Before(groupname2)─┤
                                             └─After(groupname3)──┘
```

The ADD command adds a group to a list.

Group(groupname1)
The name of the group to be added. The name must not already exist in the list. A generic group name is not accepted. If you don't specify a group, the current group name is added.

LIst(listname)
The name of the list to which the group is to be added. If the list does not already exist, a new one is created. If LIST is not specified, the group name is added to the current list if there is one. A generic list name is not accepted.

The list name can be up to 8 characters in length. The characters allowed are A-Z, 0-9, @, #, and $. Lowercase characters are treated as uppercase. Do not use Grouplist names beginning with DFH, because these characters are reserved for use by CICS.

Before(groupname2)
You can use this to control the placing of the new group name. If you don't specify BEFORE or AFTER, the group name is added at the end of the list.

After(groupname3)
You can use this to control the placing of the new group name. If you don't specify BEFORE or AFTER, the group name is added at the end of the list.

You can use the ADD command from a DISPLAY screen.

Examples of the ADD command

Create a list LA01, by adding a group to it:

```
ADD GROUP(GA001) LIST(LA01)
```

Add another group to list LA01, without specifying where:

```
ADD GROUP(GA002) LIST(LA01)
```

LA01 now looks like this:

GA001
GA002

Add another group at the top of the list:

```
ADD GROUP(GA003) LIST(LA01) BEFORE(GA001)
```

and another group between GA001 and GA002:

```
ADD GROUP(GA004) LIST(LA01) AFTER(GA001)
```

LA01 now looks like this:

GA003
GA001
GA004
GA002

ALTER a resource definition

ALTER syntax

```
►►──ALter──┬─Connection(name)───┬──Group(groupname)──────────────────────►
           ├─File(name)─────────┤
           ├─Lsrpool(name)──────┤
           ├─Mapset(name)───────┤
           ├─PARTItionset(name)─┤
           ├─PARTNer(name)──────┤
           ├─PROFile(name)──────┤
           ├─PROGram(name)──────┤
           ├─Sessions(name)─────┤
           ├─TErminal(name)─────┤
           ├─TRANClass(name)────┤
           ├─TRANSaction(name)──┤
           └─TYpeterm(name)─────┘

►──attribute list(new value)──►◄
```

The ALTER command changes some or all of the attributes of one or more **existing** resource definitions.

For information about the attributes that you can specify on the ALTER command for the various resource types, see Part 4, "RDO resource types and their attributes" on page 129.

Resource(name)
The resource whose attributes you want to alter.

Group(groupname)
The name of the group containing the resource to be altered.

Attribute list
The attributes to be altered. For information about the attributes that you can specify on the ALTER command for each resource type, see Part 4, "RDO resource types and their attributes" on page 129.

- Do ***not*** use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, you should delete the definition, and define a new one with the correct values.
- You can specify null operand values, for example:

  ```
  ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
  ```

  If a keyword, for which you have specified a null value, has a default, the default value is used. If a keyword does not have a default value, the definition acts as if the keyword has never been specified. In this example, if you list the resource definition for file TEST, it is shown with DESCRIPTION().
- Changes to resource definitions in the CSD do not affect the running CICS system until you install the definition, or the group in which the resource definition resides.
- You can use CEDA ALTER from a DISPLAY panel. If you use PF12 after making your alterations, CEDA gives you the DISPLAY panel again, with an 'ALTER SUCCESSFUL' message in the Date and Time fields. If you do this but do not make any alterations, an asterisk replaces your 'ALTER' command.
- With a generic resource or group name, you can use one ALTER command to change the same attributes in the same way on more than one resource definition.

Command-line examples of the CEDA ALTER command

To make a program resident and reset DATALOCATION to its default value:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES) DATALOCATION()
```

To change the status of a whole group of programs:

```
ALTER PROGRAM(*) GROUP(GENMODS) STATUS(ENABLED)
```

If you do not specify an attribute list and type in:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS)
```

CEDA gives an “ALTER SUCCESSFUL” message followed by the ‘overtype to modify’ panel.

APPEND a list to another list

APPEND syntax

```
►►──APpend──LIst(listname1)──To(listname2)──►◄
```

The APPEND command adds the groups in one list to the end of another list.

LIst(listname1)
The source list to be appended. A generic list name is not accepted.

To(listname2)
The target list to be appended to. A generic list name is not accepted. If *listname2* already exists, the source list is appended to it. If *listname2* does not exist, it is created.

Example of the APPEND command

A list called LISTA contains the following groups:

GB001
GB002
GB003

A list called LISTB contains the following groups:

G001
G002
G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA will contain the following groups, in this order:

GB001
GB002
GB003
G001
G002
G003

and LISTB will still contain:

G001
G002
G003

CHECK related resources

CHECK syntax

```
►►──CHeck──┬─Group(groupname)───────────────────────────────────────────►
           └─LIst(listname1, listname2, listname3, listname4)─┘

►──┬─────────────────────┬──►◄
   └─Remotesystem(sysid)─┘
```

The CHECK command checks the consistency of definitions.

Group
The group you want to check. A generic group name is not accepted.

LIst
The list you want to check. A generic list name is not accepted.

Remotesystem*(sysid)*
A check is to be run on a group or list in a CICS region with a different sysid from the region that the CHECK command is being issued from. If this option is not used, the CHECK command will use the sysid of the region from which the CHECK command is issued.

- The CHECK command performs a cross-check of a group, list, or lists of resource definitions, and should be used before the resource definitions are installed.

  It checks that the resource definitions within the group or lists are consistent with one another.

  For example: for each TRANSACTION in the list being checked, a check is made that the named PROGRAM definition exists in one of the groups. The success of the check does not necessarily mean that the PROGRAM is available to the running system.
- Lists should be checked before being used to initialize CICS during a cold start (when the list or lists are specified in the GRPLIST system initialization parameter).
- A group should be checked before you use the INSTALL command to install it on the running CICS system.
- A group can be checked before you use the ADD command to add the group to a list. (The group might not be self-contained, in which case there is no point in checking it alone. You should put it into a list with the groups containing related resource definitions.)
- You can use the CHECK command from a DISPLAY panel.

Checking groups and lists of resource definitions for consistency

The CHECK command checks the consistency of definitions within a group or within all of the groups within a list. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group although you found no problems when using the CHECK command.

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list. It does not simply check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

Checking terminal definitions

Although you can use the CHECK command to check a group of TERMINAL definitions (it resolves references from display devices to printers, for instance), it is not very useful in resolving TYPETERM references if these are in a separate group because it would produce many unwanted messages for missing TYPETERMs.

When you add a new cluster of terminal devices, create a new group for them, and then create a list containing your TYPETERM definitions group and the new group of TERMINAL definitions. You can then use the CHECK command to check the whole list, without it being too time-consuming. This list is only needed for the duration of the checking, and is never named in the GRPLIST system initialization parameter.

To avoid duplicating TERMINAL names, you could maintain a list of all groups containing TERMINAL definitions. You can use CHECK list to ensure that all new TERMINAL names are unique. If this is too lengthy a process, you can avoid it if TERMINAL names beginning with similar characters are kept in separate groups, for example:

```
TERMINAL(AZ01) GROUP(AZTERMS)
TERMINAL(AZ02) GROUP(AZTERMS)
TERMINAL(AZ03) GROUP(AZTERMS)
          .
          .
          .
TERMINAL(AZnn) GROUP(AZTERMS)

TERMINAL(BJ01) GROUP(BJTERMS)
TERMINAL(BJ02) GROUP(BJTERMS)
TERMINAL(BJ03) GROUP(BJTERMS)
          .
          .
          .
TERMINAL(BJnn) GROUP(BJTERMS)
```

If you are using autoinstall for terminals, you must install the TYPETERM definitions **before** installing the autoinstall model definitions, to ensure that the model is created. The CHECK command does not check the order of such definitions.

COPY a resource definition

COPY syntax

```
►►──COpy──┬─All(name)──────────┬──Group(groupname)──────────────────────────►
          │                    │
          ├─Connection(name)───┤
          ├─File(name)─────────┤
          ├─Lsrpool(name)──────┤
          ├─Mapset(name)───────┤
          ├─PARTItionset(name)─┤
          ├─PARTNer(name)──────┤
          ├─PROFile(name)──────┤
          ├─PROGram(name)──────┤
          ├─Sessions(name)─────┤
          ├─TErminal(name)─────┤
          ├─TRANClass(name)────┤
          ├─TRANSaction(name)──┤
          └─TYpeterm(name)─────┘

►───┬─AS(newname)──────────────────────┬───┬─────────┬──►◄
    ├─TO(newgroupname)─────────────────┤   ├─Replace─┤
    └─AS(new-name) TO(newgroupname)────┘   └─MErge───┘
```

The COPY command copies a resource definition, either within the same group or to a different group.

Resource(name)
The resource you want to copy. The default is ALL, which copies all the resource definitions in a group to another group.

Group(groupname)
The group containing the definitions to be copied.

AS If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to copy a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

TO You can copy definitions to a different group, using TO to specify the new group.

Replace
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify REPLACE, the definitions being copied replace those in the group named in the TO operand.

MErge
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

If you don’t specify either **MERGE** or **REPLACE**, a message will warn you that you are attempting to create duplicate resources, and your COPY will be unsuccessful.

Examples of the COPY command

- You can copy a single resource definition into a new group, using the **TO** keyword to specify the new group. For example:

```
COPY SESSIONS(L122) GROUP(CICSC1) TO(CICSC2)
```

- You can copy a resource definition within the same group. If you do this, you must rename it using the AS option. For example:

```
COPY TERMINAL(TD12) AS(TD34) GROUP(TERMVDU1)
```

- When copying between groups, you can give the copy a new name, using the **AS** keyword to specify the new name.

```
COPY PROGRAM(ABC01) GROUP(XYZ) AS(ABC02) TO(NEWXYZ)
```

  (If you leave the copy with the same name as the original definition, be careful that you install the one you want when the time comes.)

- Using the **ALL** keyword, without a name, you can copy all the resource definitions in the group to the new group. For example:

```
COPY ALL GROUP(N21TEST) TO(N21PROD)
```

- You can copy more than one resource definition to a new group, using the **TO** keyword to specify the new group.
- Using a generic resource definition name, you can copy all or some definitions of the same resource type to the new group. For example:

```
COPY CONNECTION(*) GROUP(CICSG1) TO(CICSG2)
COPY PROGRAM(N21++) GROUP(NTEST) TO(NPROD)
```

- Using the **ALL** keyword with a generic name, you can copy all or some of the resource definitions in the group to the new group. For example:

```
COPY ALL(N21*) GROUP(N21OLD) TO(N21NEW)
```

- Using the **ALL** keyword with a specific name, you can copy all the resource definitions of that name (which must necessarily be for different resource types) in the group to the new group. For example:

```
COPY ALL(XMPL) GROUP(EXAMPLE) TO(EX2)
```

- If you are copying a number of definitions into another group, and the groups contain duplicate resource names, you must specify either **MERGE** or **REPLACE**. For example:

```
COPY ALL GROUP(TAX1) TO(TAX2) MERGE
COPY ALL GROUP(TAX1NEW) TO(TAX1) REPLACE
```

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions by those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

DEFINE a resource definition

DEFINE syntax

```
►►──DEFine──┬─Connection(name)───┬──Group(groupname)──┬────────────────┬──►◄
            ├─File(name)─────────┤                    └─Attribute list─┘
            ├─Lsrpool(name)──────┤
            ├─Mapset(name)───────┤
            ├─PARTItionset(name)─┤
            ├─PARTNer(name)──────┤
            ├─PROFile(name)──────┤
            ├─PROGram(name)──────┤
            ├─Sessions(name)─────┤
            ├─TErminal(name)─────┤
            ├─TRANClass(name)────┤
            ├─TRANSaction(name)──┤
            └─TYpeterm(name)─────┘
```

The DEFINE command creates a new resource definition.

Resource(name)
The name of the resource you want to define. Do not use a generic resource name.

Group(groupname)
The name of the group containing the resource definition being defined. Do not use a generic group name. If you specify the name of a group which does not already exist, the group is created.

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. See Part 4, “RDO resource types and their attributes” on page 129 for a description of the attributes and default values of each resource type. Attributes that you do not specify are given default values.

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

Be careful, when you have any resource definitions with the same name, that you install the one you really want. See “Duplicate resource definition names” on page 21.

You must specify the resource type and name on the command line. You may also specify the group and other attributes on the command line.

The whole definition will be displayed on an overtype-to-modify panel, and you can change any of the attributes there, unless you entered a complete DEFINE command on the command line, in which case you can not change the *name* or *groupname* attributes.

The definition was created when you entered the DEFINE command. If you do not wish to further modify it, you may enter another command from the command line.

If a resource definition of the same name and type already exists in the group, any attributes specified on the command line will be ignored, and the **existing** resource definition will be displayed. You can then overtype and modify any of the existing values if you wish. If you do not wish to modify the definition, you may enter another command from the command line.

Beware of overtyping values on which other attribute values are dependent. See “Dependent default values” on page 26.

DELETE a resource definition

DELETE syntax

```
            ┌─All(*)──────────────────┐
►►──DELete──┼─────────────────────────┼──Group(groupname)──┬────────┬──►◄
            ├─All(name)───────────────┤                    └─Remove─┘
            ├─Connection(name)────────┤
            ├─File(name)──────────────┤
            ├─Lsrpool(name)───────────┤
            ├─Mapset(name)────────────┤
            ├─PARTItionset(name)──────┤
            ├─PARTNer(name)───────────┤
            ├─PROFile(name)───────────┤
            ├─PROGram(name)───────────┤
            ├─Sessions(name)──────────┤
            ├─TErminal(name)──────────┤
            ├─TRANClass(name)─────────┤
            ├─TRANSaction(name)───────┤
            └─TYpeterm(name)──────────┘
```

Deletes one or more resource definitions from the CSD.

Resource(name)
The resource you want to delete. You can use a generic resource name. To delete all the resource definitions in the group, specify ALL(*).

Group(groupname)
The group containing the resource. Do not use a generic group name.

Remove
Specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

Deleting a resource definition is different from removing a group from a list (see “REMOVE a group from a list” on page 65). A deleted resource definition really does disappear from the CSD.

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

This command does ***not*** affect definitions installed on the active CICS system. To remove installed definitions from the active CICS system, you can use either the CEMT DISCARD transaction or the EXEC CICS DISCARD command in an application program. You can discard AUTINSTMODEL, FILE, PARTNER, PROFILE, PROGRAM, TRANCLASS, and TRANSACTION resources. For information on the CEMT transaction see the *CICS-Supplied Transactions* manual. For programming information on the EXEC CICS DISCARD command see the *CICS System Programming Reference* manual.

Examples of the DELETE command

Delete all resources in a group:

```
DELETE ALL(*) GROUP(TOPS)
```

Delete all programs in a group:

```
DELETE PROGRAM(*) GROUP(NSOS)
```

Delete all resources with names beginning D0 in a group:

```
DELETE ALL(D0*) GROUP(REINDEER)
```

Delete all resources called ABCD in a group called NSOS:

```
DELETE GROUP(NSOS) ALL(ABCD)
```

DISPLAY groups and lists

DISPLAY syntax

```
►►──DISplay──┬─List(listname)──┬───────────────────┬─────────────────────────┬──►◄
             │                 └─Group(groupname)──┘                         │
             │                    ┌─All(*)──────────────┐                    │
             └─Group(groupname)───┼─────────────────────┼───┬──────────┬─────┘
                                  ├─All(name)───────────┤   └─REname───┘
                                  ├─Connection(name)────┤
                                  ├─File(name)──────────┤
                                  ├─Lsrpool(name)───────┤
                                  ├─Mapset(name)────────┤
                                  ├─PARTItionset(name)──┤
                                  ├─PARTNer(name)───────┤
                                  ├─PROFile(name)───────┤
                                  ├─PROGram(name)───────┤
                                  ├─Sessions(name)──────┤
                                  ├─TErminal(name)──────┤
                                  ├─TRANClass(name)─────┤
                                  ├─TRANSaction(name)───┤
                                  └─TYpeterm(name)──────┘
```

The DISPLAY command displays one or more group names, list names, or resources on a full screen panel.

List(listname)
The name of the list to be displayed. You can use a generic list name.

Group(groupname)
The name of the group to be displayed. You can use a generic group name.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group by overtyping the resultant display. This option is ignored if a generic group name is specified.

Resource(name)
The name of the resource to be displayed.

DISPLAY GROUP command

You can enter the following commands next to the names on the panel if a generic group alone is specified:

CHECK
DISPLAY ALL
EXPAND[1]
INSTALL[2]
LOCK
UNLOCK

You can enter the following commands next to the names on the panel if a specific group is named, or a generic group with a named resource:

ALTER
COPY
DELETE
INSTALL
MOVE
RENAME

[1] Only for compatibility with previous release.

[2] You cannot install CONNECTION and SESSIONS resources from a DISPLAY panel. They have to be installed in groups.

VIEW

On these panels, all these commands can be abbreviated down to their initial letter. It is unnecessary to type the group name. For the syntax of each command, see that command in this section.

To DISPLAY the group names, you must use a generic name. For more information about using the DISPLAY panel, see Figure 7 on page 33 and Figure 8 on page 34.

Examples of the DISPLAY GROUP command

Display all groups on the CSD

```
DISPLAY GROUP(*)
```

Display all groups whose names begin with PROD and have 7 characters.

```
DISPLAY GROUP(PROD+++)
```

Display all resources in a group.

```
DISPLAY GROUP (EXAMPLE)
```

DISPLAY LIST command

- Displays one or more list names on a full screen panel.
- You can enter the following commands next to the names on the panel if a generic list name is specified:

  APPEND
  CHECK
  DISPLAY GROUP
  EXPAND[3]
  LOCK
  UNLOCK

  You can enter the following commands next to the names on the panel if a specific group is named:

  ADD
  REMOVE

  On these panels, all these commands can be abbreviated down to their initial letter. It is not necessary to type the list name. For the syntax of each command, see that command in this section.
- To DISPLAY the list names, you must use a generic list name.
- For more information about using the DISPLAY panel, see Figure 7 on page 33 and Figure 8 on page 34.

Examples of the DISPLAY LIST command

Display all lists on the CSD:

```
DISPLAY LIST(*)
```

Display all lists whose names begin with PROD and have five characters:

```
DISPLAY LIST(PROD+)
```

Display all groups in a specific list:

```
DISPLAY LIST(DFHLIST)
```

3 Only for compatibility with previous release.

EXPAND one or more groups

EXPAND syntax

```
►►──EXPand──┬─List(listname)──┬─────────────────┬──────────────────────────────┬──►◄
            │                 └─Group(groupname)┘                              │
            │                 ┌─All(*)──────────────────┐                      │
            └─Group(groupname)┼─────────────────────────┼──┬──────────┬────────┘
                              ├─All(name)───────────────┤  └─REname───┘
                              ├─Connection(name)────────┤
                              ├─File(name)──────────────┤
                              ├─Lsrpool(name)───────────┤
                              ├─Mapset(name)────────────┤
                              ├─PARTItionset(name)──────┤
                              ├─PARTNer(name)───────────┤
                              ├─PROFile(name)───────────┤
                              ├─PROGram(name)───────────┤
                              ├─Sessions(name)──────────┤
                              ├─TErminal(name)──────────┤
                              ├─TRANClass(name)─────────┤
                              ├─TRANSaction(name)───────┤
                              └─TYpeterm(name)──────────┘
```

The EXPAND command shows the resource definitions in one or more groups or lists. It has been retained in CICS Transaction Server for VSE/ESA Release 1 for compatibility with previous releases.

Group(groupname)
The group to be expanded.

List(listname)
The list to be expanded.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group by overtyping the resultant display.

Resource(name)
The resource you want to see within the expanded group.

EXPAND GROUP command

- Shows the resource definitions in one or more groups on a full screen panel.
- You can enter the following commands next to the names on the panel:

  ALTER
  COPY
  DELETE
  INSTALL
  MOVE
  RENAME
  VIEW

  All these commands can be abbreviated down to their initial letter. It is unnecessary to type the group or list name. For the syntax of each command, see that command in this section.

- You may EXPAND a generic group name. For example:

  Show all the resource definitions in all groups on the CSD:

  ```
  EXPAND GROUP(*)
  ```

  Show all the resource definitions in groups whose names begin with PROD and are 7 characters long:

  ```
  EXPAND GROUP(PROD+++)
  ```

- You may EXPAND a group to show only one resource type. The name you specify as the resource name may be a generic name. For example:

Show all PROFILE definitions in all groups on the CSD:

```
EXPAND GROUP(*) PROFILE(*)
```

Show all TERMINAL definitions that begin with SZ in a group:

```
EXPAND GROUP(ZEMGROUP) TERMINAL(SZ++)
```

- You may EXPAND a group or groups, limiting the resource definitions to those that share a generic name. For example:

  Show all resource definitions, of all types, ending in A1:

  ```
  EXPAND GROUP(REINDEER) ALL(*A1)
  ```

- If you use the RENAME keyword, you get a special panel on which you can overtype the resource definition names. This is a quick way of renaming many resource definitions.

EXPAND LIST command

- Shows the group names in one or more lists on a full screen panel.
- When expanding a list, you can enter the following commands next to the names on the panel:

  ADD
  REMOVE

- You may EXPAND part of a list, by using a generic group name, for example:

  ```
  EXPAND LIST(INITLIST) GROUP(DFH*)
  ```

- You may EXPAND more than one list, by using a generic list name. For example, to show the groups in all lists on the CSD:

  ```
  EXPAND LIST(*)
  ```

  Show the groups in lists whose names begin with PROD and are five characters long:

  ```
  EXPAND LIST(PROD+)
  ```

INSTALL a resource definition or group on an active CICS system

INSTALL syntax

```
             ┌─All──────────────────────┐
►►──Install──┼──────────────────────────┼──Group(groupname)──►◄
             ├─Connection(name)─────────┤
             ├─File(name)───────────────┤
             ├─Lsrpool(name)────────────┤
             ├─Mapset(name)─────────────┤
             ├─PARTItionset(name)───────┤
             ├─PARTNer(name)────────────┤
             ├─PROFile(name)────────────┤
             ├─PROGram(name)────────────┤
             ├─TErminal(name)───────────┤
             ├─TRANClass(name)──────────┤
             ├─TRANSaction(name)────────┤
             └─TYpeterm(name)───────────┘
```

The INSTALL command dynamically makes the resource definitions in the named group available to the active CICS system.

Resource(name)
The resource to be installed. The default is ALL. ALL installs all the resource definitions in a group. Using single-resource INSTALL avoids the overhead of installing all resources in a group when only a few have changed. By using single resource install, you install only the resources you require.

When applied to telecommunication and intercommunication resources there are restrictions on the single resource INSTALL command. The restrictions apply to resource definitions that are linked: CONNECTION and SESSIONS definitions, or TERMINAL and related TYPETERM definitions.

You can install the following resource types **only** as part of a group:

- CONNECTION definitions, except a CONNECTION with ACCESSMETHOD(INDIRECT)
- SESSIONS definitions.

If you want to use single resource INSTALL for TERMINAL and related TYPETERM definitions, you must install the TYPETERM that is referred to by a TERMINAL definition **before** you install the TERMINAL definition.

The same applies when installing groups containing TERMINAL and TYPETERM definitions; you should install the group containing the TYPETERM definition before you install the group containing the TERMINAL definition.

If the named resource already exists in the active CICS system, the existing definition is replaced by the new one, provided that the resource is not currently in use. If the resource is in use the install fails.

Group(groupname)
The group to be installed, or containing the resource to be installed. A generic group name is not accepted.

Replacement of an existing definition will only occur if it is not actually in use.

If the install of one or more of the resources in the group being installed fails because the resource is in use or for any other reason, the following takes place:

1. The install process continues with the next resource in the group.
2. When the group install is complete, the TERMINAL, TYPETERM, CONNECTION and SESSION resource types, (that is, those committed at the group level) are backed out. The other resource types; FILE, LSRPOOL, PROGRAM, MAPSET, AUTINSTMODEL, PARTITIONSET, TRANCLASS, TRANSACTION, PARTNER and PROFILE (that is, those committed at the resource level) are not backed out.

3. A message is displayed to indicate that the install of the group has been unsuccessful. A message is also produced on the message panel for each of the resources that failed to install stating the reason for each failure. No messages are produced for those resources that have been backed out.

CEDA INSTALL can be performed from a console, using the VSE MSG command, for example:

```
MSG F2,DATA=CEDA INSTALL GROUP(EXAMPLE)
```

What happens when you use the INSTALL command

Resource definitions may be installed in groups or as single definitions.

If the INSTALL command fails part of the way through installing the group, those resource types committed at the group level are backed out, whereas those resource types committed at the resource level are left in a committed state.

The following resource types are committed by individual resource, and not by complete group:

- AUTINSTMODEL
- PROFILE
- PROGRAM
- MAPSET
- PARTITIONSET
- PARTNER
- TRANCLASS
- TRANSACTION
- FILE
- LSRPOOL

For these resources, the effect of a partially successful INSTALL is to leave the resources that were added in a committed state.

The following resources are committed at the group level:

- CONNECTION
- SESSIONS
- TERMINAL
- TYPETERM

These resources are backed out after a partially successful INSTALL.

There are basically two reasons why an INSTALL may not be successful, both for INSTALLs of complete groups and for individually committed definitions:

1. One of the resource definitions could not be installed because it was currently in use (an executing transaction, for example).
2. System failure during installation.

If you wish to install only a few new or changed definitions, you are advised to install single resources. (Note that the single-resource INSTALL of some CONNECTIONs and SESSIONS is not possible.) Use of the single resource INSTALL eliminates the problems of a partial INSTALL caused by a failure. However, if you wish to change or add a larger number of definitions, you might prefer to install a new group. In that case, the following considerations apply.

When you install a group containing an updated definition of an existing resource, the installation will fail if the resource is being used at the time. You should make sure that none of the resources in a group is in use before trying to install the group.

Installation is a two-stage process: any existing definition for the resource must be “deleted” from the system tables before a definition can be installed. This can result in more than one message, if the “deletion” fails, and causes the installation to fail.

If you have several CICS systems that share the same CSD, you must be careful not to install a group of resources in the wrong system.

LOCK a resource definition

LOCK syntax

```
►►──Lock──┬─Group(groupname)─┬──►◄
          └─List(listname)───┘
```

The LOCK command assures exclusive access to a group or list by restricting update and delete access to a single operator identifier.

Group(groupname)
The group to be locked.

List(listname)
The list to be locked.

The group or list can be used, looked at, and copied by other users of RDO, but cannot be changed or deleted by them.

You can LOCK a nonexistent group or list, thereby reserving the named group or list for your own future use.

The only RDO command which releases a lock is the UNLOCK command. No other RDO commands can unlock a group or list. For example, if you DELETE all the resources in a group, or all the groups in a list, the lock remains.

You must specify either GROUP or LIST, even if you are locking the current group or list.

A generic group or list name is not accepted.

Controlling access to a group or list—LOCK and UNLOCK

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT see the *CICS Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:

- DISPLAY
- VIEW
- COPY
- CHECK
- INSTALL

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

Examples of the LOCK command

Lock a list L1:

```
LOCK LIST(L1)
```

Lock a group G1:

```
LOCK GROUP(G1)
```

MOVE a resource definition

MOVE syntax

```
           ┌─All(*)────────────────┐
►►──Move───┼───────────────────────┼──Group(groupname)──┬────────┬─────────────────►
           ├─All(name)─────────────┤                    └─REMove─┘
           ├─Connection(name)──────┤
           ├─File(name)────────────┤
           ├─Lsrpool(name)─────────┤
           ├─Mapset(name)──────────┤
           ├─PARTItionset(name)────┤
           ├─PROFile(name)─────────┤
           ├─PROGram(name)─────────┤
           ├─Sessions(name)────────┤
           ├─TErminal(name)────────┤
           ├─TRANClass(name)───────┤
           ├─TRANSaction(name)─────┤
           └─TYpeterm(name)────────┘

►──┬─AS(new-name)──────────────────────┬──┬─────────┬──►◄
   ├─TO(new-group-name)────────────────┤  ├─REPlace─┤
   └─AS(new-name) TO(new-group-name)───┘  └─MErge───┘
```

The MOVE command moves one or more resource definitions from the group named by the GROUP keyword to the group named by the TO keyword. This command has the effect of copying the resource definitions from the first group into the second, followed by the deletion of the resource definitions from the first group.

When you MOVE the last resource in a group TO a different group, the group is automatically deleted. An empty group cannot exist.

Resource(name)
The resource you want to move. The default is ALL, which moves all the resource definitions in a group to another group.

Group(groupname)
The group containing the definitions to be moved.

AS If you move a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

TO You can move definitions to a different group, using TO to specify the new group.

REPlace
This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify REPLACE, the definitions being moved replace those in the group named in the TO operand.

MErge
This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

REMove
specifies that, when a group is deleted because the last resource in the group is moved elsewhere, the group is to be removed from all lists that had contained it.

If you don't specify either **MERGE** or **REPLACE**, a message warns you that you are attempting to create duplicate resource definitions. The definitions will not be moved.

Examples of the MOVE command

When you move a single resource definition, you can simultaneously rename it, using the AS keyword to specify the new name. For example:

```
MOVE PARTITIONSET(PSETQ1) GROUP(PSET1) AS(PSETQ4) TO(PSET2)
```

A generic resource definition name can be specified, to move all or some definitions of the same resource type. For example:

```
MOVE TRANSACTION(*) GROUP(DENTRY) TO(TEST1)
MOVE MAPSET(ACCT+++) GROUP(ACCOUNTS1) TO(ACCOUNTS2)
```

To move all the resource definitions in a group to the new group, you can use ALL. For example:

```
MOVE ALL GROUP(N21TEST) TO(N21PROD)
```

You can use ALL with a generic name, to move all qualifying resource definitions in the group to the new group. For example:

```
MOVE ALL(N21*) GROUP(N21OLD) TO(N21NEW)
```

You can use ALL with a specific name, to move all the resource definitions of that name (which must be for different resource types) in the group to the new group. For example:

```
MOVE ALL(XMPL) GROUP(EXAMPLE) TO(EXAMPLE2)
```

To merge definitions from group X in with the definitions in group Y, keeping the Y version of any duplicates:

```
MOVE GROUP(X) TO(Y) MERGE
```

To combine definitions from group X in with definitions in group Y, keeping the X version of any duplicates:

```
MOVE GROUP(X) TO(Y) REPLACE
```

REMOVE a group from a list

REMOVE syntax

```
►►──REMove──Group(groupname)──List(listname)──►◄
```

The REMOVE command removes a group name from a list.

Group(groupname)
The group to be removed.

List(listname)
The list from which the group is to be removed.

The group, and all its resource definitions, still exists on the CSD.

When the last group is removed from a list, the list no longer exists on the CSD.

A generic list name is not accepted.

A generic group name can be specified to remove many or all groups from a list with one command.

When a group is deleted, the user may have requested that the group be removed from all lists that had contained it. When the last group is removed from a list, the list is deleted.

Examples of the REMOVE Command

A list LL02 contains the following groups:

G001
X001
XG001
G002
G003
X002
G004

To remove all groups beginning with G:

```
REMOVE GROUP(G*) LIST(LL02)
```

This leaves:

X001
XG001
X002

To remove the list completely:

```
REMOVE GROUP(*) LIST(LL02)
```

RENAME a resource definition

RENAME syntax

```
           ┌─All(*)──────────────────┐
►►──REName─┤                         ├──┬────────────────────┬───────────────────────►
           ├─All(name)───────────────┤  └─Group(groupname)───┘
           ├─Connection(name)────────┤
           ├─File(name)──────────────┤
           ├─Lsrpool(name)───────────┤
           ├─Mapset(name)────────────┤
           ├─PARTItionset(name)──────┤
           ├─PARTNer(name)───────────┤
           ├─PROFile(name)───────────┤
           ├─PROGram(name)───────────┤
           ├─Sessions(name)──────────┤
           ├─TErminal(name)──────────┤
           ├─TRANClass(name)─────────┤
           ├─TRANSaction(name)───────┤
           └─TYpeterm(name)──────────┘

►──┬────────────────┬──┬────────────────────────┬──┬─────────┬──►◄
   └─AS(new-name)───┘  └─TO(new-group-name)─────┘  └─Remove──┘
```

The RENAME command renames a resource definition to the new name specified in the AS option.

Resource(name)
The resource you want to rename. The default is ALL, which renames all the resource definitions in a group to another group.

Group(groupname)
The group containing the definitions to be renamed.

AS If you rename a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

TO You can move definitions to a different group, using TO to specify the new group.

Remove
specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

You can also rename a resource definition by using the DISPLAY command or the EXPAND command with the RENAME option. See "DISPLAY groups and lists" on page 54 and "EXPAND one or more groups" on page 56 for information about these commands.

Examples of the RENAME command

- To rename a resource and keep it in its current group:

```
RENAME PROFILE(PROF1) AS(NEWPROF) GROUP(PROFS)
```

- You can rename all resource definitions which share the same name, to a new name, using the ALL keyword instead of a resource type. For example:

```
RENAME ALL(TVA) AS(XTVA) GROUP(XTVA1)
RENAME ALL(USER) AS(OLDU) GROUP(USERDEF)
```

- You can move a resource definition to a new group, which you specify in the TO option, at the same time as renaming it. (You can also do this with the MOVE command.) For example:

```
RENAME PROGRAM(N20ZA) AS($SOSERR) GROUP(N20) TO($MODULES)
```

- You can move all the resource definitions of the same name from one group to another, using the TO option, at the same time as renaming them. For example:

```
RENAME ALL(USER) GROUP(USERDEF) AS(TEMP) TO(TEMPGRP)
```

- You cannot rename a resource definition to a name that already exists in the target group.
- A generic resource definition name or group is only accepted if TO is specified without AS.

UNLOCK a group or list

UNLOCK syntax

```
►►──UNLock──┬─Group(groupname)─┬──►◄
            └─List(listname)───┘
```

UNLOCK removes the lock from a group or a list of definitions.

- The UNLOCK command is the only RDO command which can remove a lock on a list or group put there by use of the RDO LOCK command.
- You can UNLOCK a nonexistent group or list.
- You must specify either the GROUP or the LIST keyword, even if you are unlocking the current group or list, because the UNLOCK command can be used with both.
- A generic group name or list name is not accepted.
- For more information about UNLOCK, see “Controlling access to a group or list—LOCK and UNLOCK” on page 25.

Group(groupname)
The group to be unlocked.

List(listname)
The list to be unlocked.

Controlling access to a group or list—LOCK and UNLOCK

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user’s operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT see the *CICS Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:

- DISPLAY
- VIEW
- COPY
- CHECK
- INSTALL

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

Example of the UNLOCK command

Unlock a group G1:

```
UNLOCK GROUP(G1)
```

Unlock a LIST L1:

```
UNLOCK LIST(L1)
```

USERDEFINE

USERDEFINE syntax

```
►►──USerdefine──┬─Connection(name)───┬──Group(groupname)──Attribute list──►◄
                ├─File(name)─────────┤
                ├─Lsrpool(name)──────┤
                ├─Mapset(name)───────┤
                ├─PARTItionset(name)─┤
                ├─PARTNer(name)──────┤
                ├─PROFile(name)──────┤
                ├─PROGram(name)──────┤
                ├─Sessions(name)─────┤
                ├─TErminal(name)─────┤
                ├─TRANClass(name)────┤
                ├─TRANSaction(name)──┤
                └─TYpeterm(name)─────┘
```

USERDEFINE is an alternative to the DEFINE command: Instead of using CICS-supplied default values, USERDEFINE uses your own defaults. Otherwise it operates in exactly the same way as DEFINE.

Group(groupname)
The name of the group to be defined.

To set up your own defaults, use DEFINE to create a dummy resource definition named USER in a group named USERDEF. Each dummy resource definition must be complete (for example, a transaction definition must name a program definition, even though you will always supply a program name when you USERDEFINE a transaction). You need not install the dummy resource definitions before using USERDEFINE.

Do this for each type of resource for which you want to set default values. Each of them will be named USER, but this does not matter because the fact that they are definitions of different resource types makes them unique.

So you could have the following resources in your USERDEF group:

CONNECTION(USER)
FILE(USER)
LSRPOOL(USER)
MAPSET(USER)
PARTITIONSET(USER)
PARTNER(USER)
PROFILE(USER)
PROGRAM(USER)
SESSIONS(USER)
TERMINAL(USER)
TRANCLASS(USER)
TRANSACTION(USER)
TYPETERM(USER)

Let's use this example and look at the panels you would see.

Example of the USERDEFINE process

Assembler programmers at an installation have created a dummy program definition called USER with Assembler as the default language. They use USERDEFINE to define their programs to CICS.

First you must define a program called USER in group USERDEF. You could do this with the command:

```
CEDA DEFINE PROGRAM(USER) GROUP(USERDEF)
```

The following figure shows the panel you would see as a result of this command:

```
 DEFINE PROGRAM(USER) GROUP(USERDEF)            CICS RELEASE = 0410
 OVERTYPE TO MODIFY
  CEDA  DEFine
   PROGram        : USER
   Group          : USERDEF
   DEscription  ==>                                                     .
   Language     ==>                  CObol | Assembler | C | Pli
   RELoad       ==> No               No | Yes
   RESident     ==> No               No | Yes
   USAge        ==> Normal           Normal | Transient
   USEsvacopy   ==> No               No | Yes
   Status       ==> Enabled          Enabled | Disabled
   RSl            : 00               0-24 | Public
   Cedf         ==> Yes              Yes | No
   DAtalocation ==> Below            Below | Any


I New group USERDEF created
                                              SYSID=ABCD    APPLID=DBDCCICS
  DEFINE SUCCESSFUL                    TIME:  11.24.39   DATE:  98.059
PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Type in ASSEMBLER as the LANGUAGE keyword and press ENTER:

```
 OVERTYPE TO MODIFY
  CEDA  USerdefine
   PROGram        : USER
   Group          : USERDEF
   DEscription  ==>
   Language     ==> Assembler        CObol | Assembler | C | Pli
   RELoad       ==> No               No | Yes
   RESident     ==> No               No | Yes
   USAge        ==> Normal           Normal | Transient
   USEsvacopy   ==> No               No | Yes
   Status       ==> Enabled          Enabled | Disabled
   RSl            : 00               0-24 | Public
   Cedf         ==> Yes              Yes | No
   DAtalocation ==> Below            Below | Any



                                              SYSID=ABCD    APPLID=DBDCCICS
  DEFINE SUCCESSFUL                    TIME:  11.24.41   DATE:  98.059
PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Now, each time you want to define a new program, you can use the USERDEFINE command to get the default value ASSEMBLER automatically. So, if you want to define a new program P2 in group GRP you enter the command:

```
CEDA USERDEFINE PROGRAM(P2) GROUP(GRP)
```

The following figure shows the panel resulting from this command.

```
 USERDEFINE PROGRAM(P2) GROUP(GRP)
 OVERTYPE TO MODIFY
  CEDA  USerdefine
   PROGram       : P2
   Group         : GRP
   DEscription  ==>
   Language     ==> Assembler          CObol | Assembler | C | Pli
   RELoad       ==> No                 No | Yes
   RESident     ==> No                 No | Yes
   USAge        ==> Normal             Normal | Transient
   USEsvacopy   ==> No                 No | Yes
   Status       ==> Enabled            Enabled | Disabled
   RSl           : 00                  0-24 | Public
   Cedf         ==> Yes                Yes | No
   DAtalocation ==> Below              Below | Any



                                                               APPLID=DBDCCICS
  USERDEFINE SUCCESSFUL                  TIME:  11.25.48   DATE:  98.059
PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

You will see that the value ASSEMBLER has appeared for the LANGUAGE keyword. You can overtype the keyword values on this panel to complete the definition just as you can with the DEFINE command panel.

Once you have set up your own defaults in a USER resource definition, anyone using the USERDEFINE command for that resource type will get those default values.

By renaming your USER to something else and defining your own, you can use your own default values. Normally, though, your installation will probably agree upon default values for standardization reasons, and put a LOCK on the USERDEF GROUP.

VIEW resource definitions

VIEW syntax

```
►►──View──┬─Connection(name)──────┬──Group(groupname)──►◄
          ├─File(name)────────────┤
          ├─Lsrpool(name)─────────┤
          ├─Mapset(name)──────────┤
          ├─PARTItionset(name)────┤
          ├─PARTNer(name)─────────┤
          ├─PROFile(name)─────────┤
          ├─PROGram(name)─────────┤
          ├─Sessions(name)────────┤
          ├─TErminal(name)────────┤
          ├─TRANClass(name)───────┤
          ├─TRANSaction(name)─────┤
          └─TYpeterm(name)────────┘
```

The VIEW command lets you look at the resource definition attributes in the same way as the ALTER command. However, you cannot update any of the definitions.

Group(groupname)
The group to be viewed. If no name is given, the current group is assumed.

Examples of the VIEW Command

```
VIEW TERMINAL(SZT1) GROUP(ZEMTERMS)

VIEW MAPSET(N20MAP01) GROUP(N20)
```

See Figure 9 on page 36 for an example of the VIEW panel.

Chapter 7. System definition file utility program, DFHCSDUP

The CICS system definition utility program, DFHCSDUP, is a component of resource definition online (RDO). DFHCSDUP is an offline utility program that allows you to read from and write to a CICS system definition (CSD) file, either while CICS is running or while it is inactive.

You can use the DFHCSDUP program to:

- ADD a group to the end of a named list in a CSD file
- ALTER attributes of existing resource definitions
- APPEND a group list from one CSD file to a group list in another, or in the same, CSD file
- COPY all of the resource definitions in one group or several generically named groups to another group or several other generically named groups in the same, or in a different, CSD file
- DEFINE a single resource, or a group of resources, on the CSD
- DELETE from the CSD a single resource definition, all of the resource definitions in a group, or all of the group names in a list
- EXTRACT data from the CSD and pass it to a user program for processing
- INITIALIZE a new CSD file, and add to it CICS-supplied resource definitions
- LIST selected resource definitions, groups, and lists
- MIGRATE the contents of a table from a CICS load library to a CSD file
- REMOVE a single group from a list on the CSD file
- SERVICE a CSD file when necessary
- UPGRADE the CICS-supplied resource definitions in a primary CSD file for a new release of CICS
- VERIFY a CSD file by removing internal locks on groups and lists

You can invoke the DFHCSDUP program in two ways:

1. As a batch program (see page 75)
2. From a user program running in batch mode (see page 76)

Sharing the CSD between CICS Transaction Server for VSE/ESA Release 1 and earlier releases

If you want to share the CSD between CICS regions at different release levels, to enable you to share common resource definitions, you must update the CSD from the higher level region—CICS Transaction Server for VSE/ESA Release 1.

In CICS Transaction Server for VSE/ESA Release 1, some attributes are obsolete, and are removed from the CSD definitions. Using the ALTER command on definitions that specify obsolete attributes does not cause the loss of these attributes in CICS Transaction Server for VSE/ESA Release 1, so you can safely update resource definitions from a CICS Transaction Server for VSE/ESA Release 1 region. If you are sharing the CSD between a CICS Transaction Server for VSE/ESA Release 1 region and a CICS for VSE/ESA Version 2.3 region, you can also use the CICS Transaction Server for VSE/ESA Release 1 CSD utility, DFHCSDUP, to update resources that specify obsolete attributes. A compatibility option is added for this purpose, which you must specify on the PARM parameter on the // EXEC DFHCSDUP statement. You indicate the compatibility option by specifying COMPAT or NOCOMPAT. The default is NOCOMPAT, which means that you cannot update obsolete attributes. (See Figure 13 on page 75.)

The *CICS Migration Guide* discusses these obsolete attributes and their compatibility with earlier releases.

See also Appendix A, “Obsolete attributes retained for compatibility” on page 317 for a list of obsolete keywords.

Note: You cannot use the EXTRACT command of the CICS Transaction Server for VSE/ESA Release 1 DFHCSDUP utility when the COMPAT option is specified.

Input to the DFHCSDUP program

Input to the DFHCSDUP program (see Figure 12) is from:

- A **primary CSD file**, which must be present, and have a DLBL of DFHCSD
- Optionally, a **secondary CSD file**, for which you can specify any DLBL
- A CICS table, as specified on the MIGRATE command.

Output from the DFHCSDUP program

The result of running the DFHCSDUP program (see Figure 12) may be an updated primary file, or a print file.

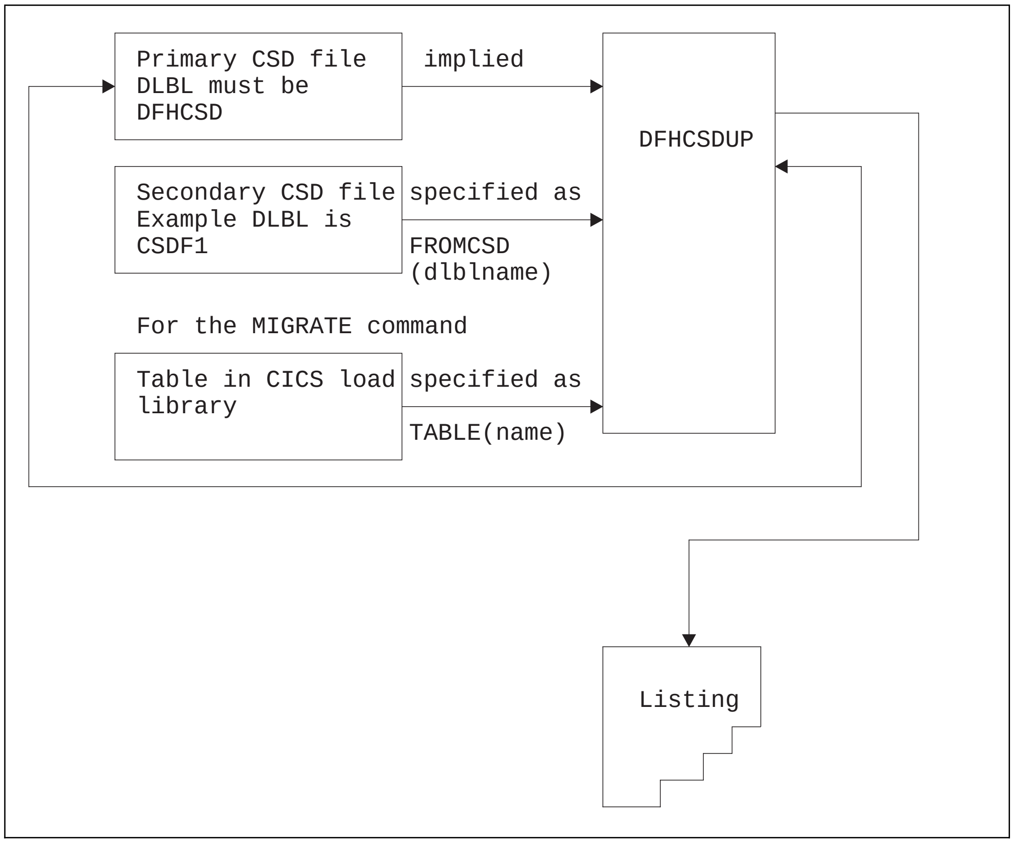

Primary CSD file DLBL must be DFHCSD
implied
DFHCSDUP
Secondary CSD file Example DLBL is CSDF1
specified as
FROMCSD (dlblname)
For the MIGRATE command
Table in CICS load library
specified as
TABLE(name)
Listing

Figure 12. The DFHCSDUP offline utility program

Invoking DFHCSDUP as a batch program

The job in Figure 13 shows you an example of the job control statements you can use to invoke DFHCSDUP as a batch program.

```
// JOB     CSDJOB    Job to execute DFHCSDUP
// DLBL    usercat,'usercat',,VSAM
// DLBL    DFHCSD,'user.dfhcsd',,VSAM,CAT=usercat
// DLBL    SECCSD,'user.dfhcsd2',,VSAM,CAT=usercat  1
// DLBL    indd,'extract.input.dataset',0,SD 2
// EXTENT  SYSxxx, volid,1,0,rtrk1,ntrks1
// ASSGN   SYSxxx,DISK,VOL=volid,SHR

// DLBL    outdd,'extract.output.dataset',0,SD 3
// EXTENT  SYSyyy,volid,1,0,rtrk2,ntrks2
// ASSGN   SYSyyy,DISK,VOL=volid,SHR
*
// LIBDEF  PHASE,SEARCH(user.library,PRD1.BASE)
*
// EXEC    DFHCSDUP,SIZE=DFHCSDUP,PARM='CSD(READWRITE)' 4
  ⋮
     DFHCSDUP commands 5
  ⋮
/*
/&
```

Figure 13. Sample job to run DFHCSDUP

Notes:

1. You need a DLBL statement for a secondary CSD if you specify the FROMCSD parameter on an APPEND, COPY, or SERVICE command. The filename for this DLBL statement is the name you specify on the FROMCSD parameter. The secondary CSD must be a different data set from the primary; you must not define primary and secondary DLBL statements that reference the same data set.
2. If you specify the EXTRACT command, you may need to:
   - Add to LIBDEF the libraries that contain your USERPROGRAM programs.
   - Include a DLBL statement for any input data set that is defined in your user program. For example, the CICS-supplied user program, DFH$CRFA, needs a DLBL statement with a filename of CRFINPT.

     The input file specified by CRFINPT is needed by the user programs DFH$CRFx (where x=A for Assembler or x=P for PL/I) and DFH0CRFC (for COBOL) to supply the list of resource types or attributes for which you want a cross reference listing. You can specify (in uppercase) any resource type known to CEDA, one resource type per line (starting in column 1). For example, your CRFINPT file may contain the following resource types (one per line) to be cross referenced:

     PROGRAM
     TRANSACTION
     TYPETERM
     XTPNAME
     DSNAME.

     For programming information about the use of the CRFINPT file by the programs DFH$CRFx or DFH0CRFC (for COBOL), see the *CICS Customization Guide*.
3. If you specify the EXTRACT command, you need to include the DLBL statements for any data sets that receive output from your extract program. The CICS-supplied sample programs need DLBL statements for the following filenames:

Table 6. DLBL statements for the CICS-supplied sample programs

Program name	**Required DLBL and EXTENT**
DFH0CRFC	// DLBL CRFOUT,'name',0,SD // EXTENT SYS003,volid,1,0,rtrk,ntrks
DFH0CBDC	// DLBL CBDOUT,'name',0,SD // EXTENT SYS002,volid,1,0,rtrk,ntrks

4. The EXEC statement should specify a suitable SIZE and PARM parameter:
   - **The SIZE parameter**. The DFHCSDUP program is around 276K in size. However:
     – For the MIGRATE command, the table to be migrated is loaded into partition GETVIS.
     – For the EXTRACT command, the user program is loaded into partition GETVIS.
     – DFHCSDUP requires some of partition GETVIS for its own use.

     So the partition size for the DFHCSDUP job should be at least 300KB plus the size of the largest table or user program.
   - **The PARM parameter**. Use this to specify any of the following options:

     UPPERCASE specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

     CSD({READWRITE|READONLY}) specifies whether you want read/write or read-only access to the CSD from this batch job. The default value is READWRITE.

     PAGESIZE(nnnn) specifies the number of lines per page on output listings. Values for nnnn are 4 through 9999. The default value is 60.

     NOCOMPAT or **COMPAT** specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in CICS Transaction Server for VSE/ESA Release 1). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see "Sharing the CSD between CICS Transaction Server for VSE/ESA Release 1 and earlier releases" on page 73.
5. Syntax

   You can code commands and keywords using abbreviations and mixed case, as given in the syntax box in the description of each command. If you enter an ambiguous command or keyword, the DFHCSDUP program issues a message indicating the ambiguity.

   You can specify keyword values longer than one line, if you use the continuation character (an asterisk) at the end of a line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters.

Invoking the DFHCSDUP program from a user program

Invoking the DFHCSDUP program from a user program enables you to create a flexible interface to the utility. By specifying the appropriate entry parameters, your program can cause the DFHCSDUP program to pass control to an exit routine at any of five exit points. The exits can be used, for example, to pass commands to the DFHCSDUP program, or to respond to messages produced by its processing.

You can run your user program in batch mode.

The following sections outline the entry parameters of the DFHCSDUP program and the responsibilities of the user program. For programming information about invoking the DFHCSDUP program from a user program, see the *CICS Customization Guide*.

Entry parameters for the DFHCSDUP program

When invoking the DFHCSDUP program, your program passes a list of up to five parameters, as described below:

OPTIONS
A list of character strings, separated by commas. (The information passed here is that which would otherwise be passed on the PARM keyword of the EXEC statement of JCL.)

Note: A maximum of three options may be specified:

UPPERCASE specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

CSD({READWRITE|READONLY}) specifies whether you require read/write or read-only access to the CSD. The default value is READWRITE.

PAGESIZE(nnnn) specifies the number of lines per page on output listings. Valid values for nnnn are 4 through 9999. The default value is 60.

NOCOMPAT|COMPAT specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in CICS Transaction Server for VSE/ESA Release 1). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see “Sharing the CSD between CICS Transaction Server for VSE/ESA Release 1 and earlier releases” on page 73.

FILENAMES
A list of filenames that, if specified, are substituted for those normally used by the DFHCSDUP program.

HDING
The starting page number of any listing produced by the DFHCSDUP program. You can use this parameter to ensure that subsequent invocations produce logically numbered listings. If this parameter is not specified, the starting page number is set to 1.

The page number, if supplied, must be four numeric EBCDIC characters.

ACBs
The address of a data control block for use internally by the DFHCSDUP program. Any ACB that you specify is used internally, instead of that normally used by the DFHCSDUP program.

Note that if you specify both replacement FILENAMES and a replacement ACB, the alternative ACB is used, but the alternative FILENAMES are disregarded.

EXITS
The addresses of a set of user exit routines to be invoked during processing of the DFHCSDUP program.

Responsibilities of the user program

Before invoking the DFHCSDUP program, your calling program must ensure that:

- AMODE(24) and RMODE(24) are in force
- S/390® register conventions are obeyed
- If the EXITS parameter is passed, any programming environment needed by the exit routines has been initialized
- Any ACBs passed for use by the DFHCSDUP program are OPEN.

Commands for the DFHCSDUP program

This section describes the commands available with the DFHCSDUP utility program. Commands can be abbreviated, but the minimum abbreviation allowed differs from some of the CEDA command abbreviations.

Rules for the syntax and preparation of commands

Enter the commands in columns 1 through 71 of 80-character input records. You can specify keyword values longer than one line, if you use the continuation character (an asterisk) at the end of a line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters.

The command keywords can be specified by abbreviations and in mixed case, as shown in the command syntax under each command description. The minimum abbreviation is given in uppercase in the command syntax, with the optional characters given in lower case; for example:

```
ALter Connection(name) Group(groupname)
```

Leading blanks are ignored, and blanks between keywords and operands are permitted.

Comment records are permitted; they must have an asterisk (*) in column 1. Comment material is not permitted on a record that contains a command.

Blank records between commands are ignored.

Follow the conventions for the names of groups and lists when coding the GROUP, LIST, TO, and TYPESGROUP parameters. If you use a generic specification for the GROUP or LIST parameter in the LIST command, you can use the symbols * and + in the same way as for CEDA.

The FROMCSD parameter must contain a valid DLBL name conforming to the rules for the JCL of the operating system.

An example of a valid sequence of commands is shown in Figure 14 on page 79. Other examples of commands are given in the command descriptions that follow.

```
*                                 SET UP INITIAL CSD FILE
INITialize
*
LIst LIst(DFHLIST) Objects
*                                 UPGRADE FROM EARLIER RELEASE
UPgrade
*                                 MIGRATE MAIN TABLES
MIgrate TAble(DFHFCTF1)
*
MIgrate TAble(DFHTCTT1)
*
LI Group(PPTM1)
LI G(SETM*)
*                                    CREATE GROUP PCTZ4
Copy G(PCTM1)  To(PCTZ4)
C G(SETMP3) T(PCTZ4) Replace
LI G(P++M+)
*                                    CREATE LIST MODLIST
APpend LIst(TESTLIST) TO(MODLIST) FRomcsd(CSDF1)
AP LI(SECLIST)  To(MODLIST) FR(CSDF1)
AP LI(DFHLIST)  To(MODLIST)
*
LI ALL OBJECTS
```

Figure 14. Sample commands of the DFHCSDUP program

Command processing following internal error detection

If you have provided a put-message-exit routine for the DFHCSDUP program, it is invoked whenever a message is issued. You can use this exit to respond to error messages produced by DFHCSDUP processing, when the DFHCSDUP program is invoked from a user program. The put-message-exit routine is not used if the DFHCSDUP program is running as a batch program. For programming information about the DFHCSDUP exits, see *CICS Customization Guide*.

The reaction of the DFHCSDUP program to an error (with return code 8 or greater) depends on the nature of the error and on how the DFHCSDUP program is invoked.

If an error is detected while the DFHCSDUP program is running as a batch program, one of the following two reactions occurs:

1. If the error occurs during connection of the CSD, no subsequent commands are completed.
2. If the error occurs elsewhere, no subsequent commands are executed other than LIST commands.

If an error is detected while the DFHCSDUP program is receiving commands from a get-command exit, all subsequent commands are processed if possible.

Chapter 8. DFHCSDUP commands

This chapter explains the syntax and rules for each of the DFHCSDUP commands. The commands are:

- “ADD a group to a list” on page 82
- “ALTER a resource definition” on page 83
- “APPEND a list to another list” on page 84
- “COPY a resource definition” on page 85
- “DEFINE a resource definition” on page 87
- “DELETE a resource definition, group, or list” on page 88
- “EXTRACT resource definition data” on page 90
- “INITIALIZE a new CSD with the required CICS resource definitions” on page 92
- “LIST resource definitions” on page 93
- “MIGRATE macro-defined resource definitions from tables to the CSD” on page 95
- “REMOVE a group from a list” on page 98
- “SERVICE a CSD” on page 99
- “UPGRADE a CSD” on page 102
- “VERIFY a CSD” on page 103

Note: CICS may add new resource types and attributes across different releases. For similar named fields, such as Transaction and Tranclass, the minimum abbreviation may have to change from release to release. For example, at CICS for VSE/ESA Version 2 Release 3 the minimum abbreviation for Transaction was TR, whereas at CICS Transaction Server for VSE/ESA Release 1 it becomes TRANS, to differentiate between that and TRANC for Tranclass.

RDO commands are validated online by the CEDA/B/C transactions, and confirmation for such ambiguities is required before the transaction can continue. This is not possible for input to DFHCSDUP however. To avoid batch operations failing due to the minimum abbreviation altering across CICS releases, it is recommended that the full resource type and attribute names are used when coding input to DFHCSDUP. While CICS cannot guarantee upward compatibility of the abbreviations, it always provides such compatibility for the full names of the fields.

ADD a group to a list

ADD syntax

```
►►──ADd──Group(groupname1)──LIst(listname)──►◄
```

The ADD command adds a group to a list.

Group(groupname1)
The name of the group to be added. The name must not already exist in the list. A generic group name is not accepted. If you don't specify a group, the current group name is added.

LIst(listname)
The name of the list to which the group is to be added. If the list does not already exist, a new one is created. If LIST is not specified, the group name is added to the current list if there is one. A generic list name is not accepted.

The list name can be up to 8 characters in length. The characters allowed are A-Z, 0-9, @, #, and $. Lowercase characters are treated as uppercase. Do not use Grouplist names beginning with DFH, because these characters are reserved for use by CICS.

Examples of the ADD command

Create a list LA01, by adding a group to it:

```
ADD GROUP(GA001) LIST(LA01)
```

Add another group to list LA01:

```
ADD GROUP(GA002) LIST(LA01)
```

LA01 now looks like this:

GA001
GA002

ALTER a resource definition

ALTER syntax

```
►►──ALter──┬─Connection(name)───┬──Group(groupname)──────────────────►
           ├─File(name)─────────┤
           ├─Lsrpool(name)──────┤
           ├─Mapset(name)───────┤
           ├─PARTItionset(name)─┤
           ├─PARTNer(name)──────┤
           ├─PROFile(name)──────┤
           ├─PROGram(name)──────┤
           ├─Sessions(name)─────┤
           ├─TErminal(name)─────┤
           ├─TRANClass(name)────┤
           ├─TRANSaction(name)──┤
           └─TYpeterm(name)─────┘

►──attribute list(new value)──►◄
```

The ALTER command changes some or all of the attributes of one or more **existing** resource definitions.

Resource(name)
The resource whose attributes you want to alter. You can specify a generic name using the characters '+' and '*'.

For information about the attributes that you can specify on the ALTER command for the various resource types, and for a description of the attributes and default values of each resource type, see Part 4, "RDO resource types and their attributes" on page 129.

Group(groupname)
The name of the group containing the resource to be altered.

Attribute list
The attributes to be altered. For information about the attributes that you can specify on the ALTER command for each resource type, see Part 4, "RDO resource types and their attributes" on page 129.

- Do ***not*** use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, you should delete the definition, and define a new one with the correct values.
- You can specify null operand values, for example:

  ```
  ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
  ```

  If a keyword, for which you have specified a null value, has a default, the default value is used. If a keyword does not have a default value, the definition acts as if the keyword has never been specified. In this example, if you list the resource definition for file TEST, it is shown with DESCRIPTION().
- Changes to resource definitions in the CSD do not take effect until you install the group in which the resource definition resides.
- With a generic resource name, or a group name, you can use one ALTER command to change the same attributes in the same way on more than one resource definition. For each resource in the CSD file matching the specified combination of resource name and group name, an ALTER is attempted. In the case of an individual ALTER failing, processing terminates when all attempts for the command have been processed.

Example of the DFHCSDUP ALTER command

To make a program resident and reset DATALOCATION to its default value:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES) DATALOCATION()
```

APPEND a list to another list

APPEND syntax

```
►►──APpend──LIst(listname1)──To(listname2)──►◄
```

The APPEND command adds the groups in one list to the end of another list.

List(listname1)
Specifies the name of the list that is appended. A generic list name is not accepted.

The list being appended can be on the primary CSD, or on another CSD. If you are appending from another CSD, you must identify it by specifying the FROMCSD parameter.

The list name can be up to 8 characters in length. The characters allowed are A-Z, 0-9, @, #, and $. Lowercase characters are treated as uppercase. Do not use Grouplist names beginning with DFH, because these characters are reserved for use by CICS.

To(listname2)
Specifies the name of the list to which you want the group names appended. If you are appending from another CSD, you can give this list the same name as the one you are appending from. A generic list name is not accepted.

If this target list already exists, the source list is appended to the end of it. If the target list does not exist, it is created. (In effect, you are copying the source list.)

FRomcsd(filename)
Identifies the filename of the secondary CSD from which you are appending listname1.

No duplicate group names are allowed in a list. If DFHCSDUP finds any duplicate names during the APPEND operation it ignores them, and they are not appended. The DFHCSDUP output listing contains a warning message if this happens.

Example of the APPEND command

A list called LISTA contains the following groups:

GB001
GB002
GB003

A list called LISTB contains the following groups:

G001
G002
G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:

GB001
GB002
GB003
G001
G002
G003

and LISTB still contains:

G001
G002
G003

COPY a resource definition

COPY syntax

```
          ┌─All(name)──────────┐
►►──COpy──┼────────────────────┼──Group(groupname)─────────────────►
          ├─Connection(name)───┤
          ├─File(name)─────────┤
          ├─Lsrpool(name)──────┤
          ├─Mapset(name)───────┤
          ├─PARTItionset(name)─┤
          ├─PARTNer(name)──────┤
          ├─PROFile(name)──────┤
          ├─PROGram(name)──────┤
          ├─Sessions(name)─────┤
          ├─TErminal(name)─────┤
          ├─TRANClass(name)────┤
          ├─TRANSaction(name)──┤
          └─TYpeterm(name)─────┘

►──┬─AS(newname)───────────────────┬──┬─────────┬──►◄
   ├─TO(newgroupname)──────────────┤  ├─Replace─┤
   └─AS(new-name) TO(newgroupname)─┘  └─MErge───┘
```

The COPY command copies a resource definition, either within the same group or to a different group.

Group(groupname1)
: Specifies the name of the group to be copied. You can specify a generic name by using an asterisk (*). See “Generic naming in the COPY command” on page 86 for details.

To(groupname2)
: Specifies the name of the group to which the definitions are copied. If you are copying from another CSD, you can give this group the same name as the one you are copying from. You can specify a generic name by using an asterisk (*). See “Generic naming in the COPY command” on page 86 for details.

Replace
: If groupname2 already exists and duplicate definitions occur, the definitions in groupname1 replace those in groupname2.

MErge
: If groupname2 already exists and duplicate definitions occur, the original definitions in groupname2 are preserved.

FRomcsd(filename)
: Identifies the filename of the secondary CSD from which you are copying groupname1.

The COPY command copies all the resource definitions in *groupname1* to *groupname2*. The group to be copied (*groupname1*) can be on the primary CSD, or it can be on the CSD specified by the FROMCSD parameter.

The group is copied to the group named on the TO parameter (*groupname2*) in the primary file. If this group already exists, the definitions from the source group (*groupname1*) are added to those already in the *groupname2* group. If the group specified on the TO parameter does not already exist, a new group of that name is created. However, if duplicate definitions exist in the two groups, the whole copy operation fails unless you specify REPLACE or MERGE to indicate how duplicates should be handled.

Generic naming in the COPY command

The COPY command accepts generic group names, both on the GROUP keyword and on the TO keyword, subject to the following rules:

- The only generic character permitted on the COPY command is the asterisk (*) symbol.
- The prefix length of *groupname1* must be equal to or greater than the prefix length of *groupname2*. Thus COPY GROUP(DFHCOMP*) TO(USRCMP*) is valid, but COPY GROUP(DFHCO*) TO(USRCOMP*) is not.

You can use the asterisk (*) symbol to copy from generically-named groups to other generically-named groups or from generically-named groups to a specific group, as shown in Figure 15.

Note: There is no AS parameter as in the CEDA version of the COPY command.

The DFHCSDUP output listing tells you which definitions were copied, and what happened if duplicates were found.

Examples of the COPY command

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions with those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The following example copies all the CICS-supplied groups to user-named groups with a prefix of USR, with the result that DFHOPER becomes USROPER, DFHSTAND becomes USRSTAND, and so on.

```
COPY GROUP(DFH*) TO(USR*)
```

The following example copies every group starting with ABCD to the group called NEWGROUP:

```
COPY GROUP(ABCD*) TO(NEWGROUP)
```

Figure 15. Examples of the COPY command

DEFINE a resource definition

DEFINE syntax

```
►►──DEFine──┬─Connection(name)───┬──Group(groupname)──┬────────────────┬──►◄
            ├─File(name)─────────┤                    └─Attribute list─┘
            ├─Lsrpool(name)──────┤
            ├─Mapset(name)───────┤
            ├─PARTItionset(name)─┤
            ├─PARTNer(name)──────┤
            ├─PROFile(name)──────┤
            ├─PROGram(name)──────┤
            ├─Sessions(name)─────┤
            ├─TErminal(name)─────┤
            ├─TRANClass(name)────┤
            ├─TRANSaction(name)──┤
            └─TYpeterm(name)─────┘
```

The DEFINE command creates new resource definitions.

Resource(name)
The name of the resource you want to define. You cannot use a generic resource name. The resource keyword must always be the first operand of the DEFINE command.

Group(groupname)
The name of the group containing the resource definition to be altered. You cannot use a generic group name. If you specify the name of a group which does not already exist, the group is created.

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see Part 4, "RDO resource types and their attributes" on page 129. Attributes that you do not specify are given default values.

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

Examples of the DEFINE command

This example defines the VSE console.
(You do not need continuation symbols if a definition spans several lines).

```
DEFINE TERMINAL(CONS)     GROUP(CONTERMS)
       CONSNAME(SYS)      TYPETERM(DFHCONS)
       DESCRIPTION(VSE CONSOLE)
```

The INITIALIZE command generates a TYPETERM definition, but not a TERMINAL definition, for a VSE console. You must have at least one console defined in order to issue VSE MSG commands to CICS.

Figure 16. Examples of the DEFINE command

DELETE a resource definition, group, or list

DELETE syntax

```
►►──DELete──┬─List(listname)───────────────────────────────────────────┬──►◄
            │                    ┌─All──────────────────┐              │
            └─Group(groupname)───┼──────────────────────┼──┬────────┬──┘
                                 ├─Connection(name)─────┤  └─Remove─┘
                                 ├─File(name)───────────┤
                                 ├─Lsrpool(name)────────┤
                                 ├─Mapset(name)─────────┤
                                 ├─PARTItionset(name)───┤
                                 ├─PARTNer(name)────────┤
                                 ├─PROFile(name)────────┤
                                 ├─PROGram(name)────────┤
                                 ├─Sessions(name)───────┤
                                 ├─TErminal(name)───────┤
                                 ├─TRANClass(name)──────┤
                                 ├─TRANSaction(name)────┤
                                 └─TYpeterm(name)───────┘
```

The DELETE command deletes a single resource definition in a group, all the resource definitions in a group, or all the group names in a group list.

List(listname)
Specifies the name of the list to be deleted. You cannot use a generic list name.

Group(groupname)
If this is specified alone, it indicates the name of the group to be deleted. If a resource is also specified, it indicates the group to which the resource belongs. You cannot use a generic group name.

Remove
specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

Resource(name)
The name of the resource to be deleted. You cannot use a generic resource name.

This parameter can be used only with the GROUP keyword.

Deleting a resource definition is different from removing a group from a list (see “REMOVE a group from a list” on page 98). A deleted resource definition really does disappear from the CSD.

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

You cannot delete the definitions of groups and lists supplied by IBM®.

If you delete a list, the definitions of the resources within the groups contained in the list are not deleted. To do this, you must also delete each group individually.

Example of the DFHCSDUP DELETE command

A list in the primary CSD called LISTA contains the following groups:

GB001
GB002

Group GB001 contains the following resource definitions:

TERMINAL(CON0)
TERMINAL(CON1)
TERMINAL(TEST)

The following command deletes the resource definition for the terminal TEST from group GB001:

```
DELETE TERMINAL(TEST) GROUP(GB001)
```

The following command deletes all the resource definitions in group GB002:

```
DELETE GROUP(GB002)
```

This leaves only group GB001 in the group list LISTA.
The following command deletes all group names in the group list LISTA:

```
DELETE LIST(LISTA)
```

Note: The resource definitions in the groups in LISTA are not deleted.

Figure 17. Examples of the DELETE command

EXTRACT resource definition data

EXTRACT syntax

```
►►──EXtract──┬─Group(groupname)─┬──────────────────────────────────────────►
             └─LIst(listname)───┘

►──┬─USerprogram(DFHxCRFy) Objects──────────────┬──►◄
   ├─USerprogram(DFH0CBDC)──┬─────────┬─────────┤
   │                        └─Objects─┘         │
   └─USerprogram(user-written program)──┬─────────┬┘
                                        └─Objects─┘
```

You can use the EXTRACT command to extract resource definition data from the CSD, either from a list or from a group, and invoke a user program to process the extracted data. You specify the user program on the USERPROGRAM parameter.

Note: For programming information about coding user programs for the EXTRACT command, see the *CICS Customization Guide*.

Group(groupname)
Selects only those resource definitions within the named group. You can specify a generic group name.

LIst(listname)
Selects only those resource definitions within the groups contained in the named list. You can use a generic list name only if you are not using the OBJECTS option.

Objects
Returns the detail of each resource definition. You can extract resource definition data at two levels of detail:

- Without the OBJECTS option, the command extracts either the names of all the groups within a specified list, or the names of all the resource definitions within a specified group.
- With the OBJECTS option, all the resource definition attributes are also extracted.

You must specify OBJECTS for the CICS-supplied sample user programs DFHxCRFy and DFHxFORy. It is optional for DFH0CBDC and user-written user programs.

USerprogram(user-written program)
Is the name of the user-written program that is to process the data retrieved by the EXTRACT command. You must supply a USERPROGRAM value.

CICS supplies two types of sample user program: DFHxCRFy and DFH0CBDC. The letter x in the program name is $ for assembler or PL/I and 0 for COBOL. The letter y in the program name denotes the programming language, where y=A is the assembler version, y=C is the COBOL version, and y=P is the PL/I version. Note that DFH0CBDC is supplied as COBOL only. All CICS-supplied user programs are available in source form, in the VSE/ESA® sublibrary, PRD1.BASE, and the assembler versions are also available in pregenerated form in PRD1.BASE.

The COBOL samples can be compiled using the VS COBOL II or COBOL for VSE/ESA compilers. The PL/I version can be compiled using the DOS PL/I or the PL/I for VSE/ESA compilers.

Example of the EXTRACT command

The following command uses the CICS-supplied user program, DFH0CBDC, to extract the resource definitions in group DFHTYPE and create the DEFINE commands needed to create them.
It stores these commands in the file specified by the CBDOUT DLBL statement in the EXTRACT job JCL.

```
     EXTRACT GROUP(DFHTYPE) USERPROGRAM(DFH0CBDC) OBJECTS
```

Figure 18. Example of the EXTRACT command

INITIALIZE a new CSD with the required CICS resource definitions

INITIALIZE syntax

```
►►──INITialize──►◄
```

You can use the INITIALIZE command to prepare a newly defined data set for use as a CSD file. You must initialize your CSD before you can use any of the other DFHCSDUP commands, or the RDO transactions. After you have initialized your CSD, you do not need to execute this function again.

The standard entries for the CICS-supplied resource definitions are created on the CSD. The INITIALIZE command arranges these definitions into groups, and defines these groups in a group list named DFHLIST. This list contains only the CICS-supplied groups that are required by a CICS system.

INITIALIZE also creates a control record at the start of the CSD. This record contains fields identifying the CICS release and the current level of service applied to the CSD. It also has fields containing the date and time of creation of the CSD file, and the date and time the file was last updated. Both these fields appear on the hard copy listing of the CSD produced by the LIST command.

LIST resource definitions

LIST syntax

```
            ┌─All─┐
►►──LIst────┴─────┴────────┬─────────┬──►◄
            ├─Group(groupname)─┤  └─Objects─┘
            └─LIst(listname)───┘
```

The LIST command produces listings of the current status of the CSD. The listings are output to the SYSOUT data set, along with the messages issued by the command processing. The result is to print the contents of all the qualifying groups or lists.

Group(groupname)
Selects only those resource definitions within the named group. You can specify a generic group name.

LIst(listname)
Selects only those resource definitions within the groups contained in the named list. You can use a generic list name only if you are not using the OBJECTS option (the only command where a generic list name is not acceptable is LIST LIST(listname) OBJECTS).

Objects
This specifies the level of detail required for each resource definition. You can extract resource definition data at two levels of detail:

- Without the OBJECTS option, the command extracts either the names of all the groups within a specified list, or the names of all the resource definitions within a specified group.
- With the OBJECTS option, all the resource definition attributes are also extracted.

Examples. The listings produced by the various commands are as follows:

- LIST ALL
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups

  This prints summaries of all the definitions of lists and groups that exist on the CSD.
- LIST ALL OBJECTS
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups
  - Objects in groups

  This prints summaries of all the definitions of lists and groups that exist on the CSD, together with the properties of the resources in all the groups.
- LIST GROUP(groupname) (group name may be generic)
  - Summary of groups

  This summarizes the names of all the resources in one or more groups. They are organized within each group into resource type categories (for example, map sets, programs, and so on).
- LIST GROUP(groupname) OBJECTS (group name may be generic)
  - Summary of groups (see above)
  - Objects in groups

This enables you to tabulate the properties of the resources, again organized according to resource type. The creation time for each resource is given, together with all its attributes, as originally set up by using DEFINE and ALTER commands, or by migrating it from a CICS table. The properties of transactions and profiles are arranged in the same subcategories that appear on the CEDA DEFINE screen.

- LIST LIST(listname) (list name may be generic)
  - Summary of lists

  The contents of one or more group lists are tabulated. The groups appear in the same sequence as their position in the list. This order is set by the commands ADD and APPEND, which were used in the CEDA transaction to build the list.
- LIST LIST(listname) OBJECTS (generic list name not allowed)
  - Summary of lists (see above)
  - Objects of groups in list

  This enables you to tabulate the properties of all the resources to be defined in a CICS system at startup time. These are identified by the list name or names specified in the GRPLIST=(list1,list2,list3,list4) parameter in the system initialization table. The names of all the groups in the list appear in the summary of lists. Then, for each group contained in the list, the properties of the individual resources in the group are tabulated.

  The ‘Objects in Groups in Lists’ tabulation arranges the groups in the same order as they were added to the group list. This order matters if duplication occurs, when definitions of the same resource may exist in more than one group. If a list of this type is used at system startup time, the resource definitions used when there is duplication are those belonging to the group that is latest in the list.

MIGRATE macro-defined resource definitions from tables to the CSD

MIGRATE syntax

```
►►──MIgrate──TAble(tablename)──┬─────────────────────────────┬──────────►
                               └─TYpesgroup(typesgroupname)──┘

►──┬─────────────────────┬──►◄
   └─TOgroup(groupname)──┘
```

The MIGRATE command transfers the contents of an FCT, PCT, PPT, or TCT from a CICS load library to the CSD.

TAble(tablename)
Identifies the name in the load library of the table you want to migrate (that is, DFHFCTxx, DFHPCTxx, DFHPPTxx, or DFHTCTxx).

TYpesgroup(typesgroupname)
For use with TCT migration only, this is the name of the group to which the TYPETERM definitions are to be migrated.

TOgroup(groupname)
For use in PCT and PPT migration only. TOGROUP specifies the name of the default group to which the definition is to be migrated.

The contents of a table are transferred as one group, or as a set of several groups, containing definitions.

When migrating large tables, make sure you allocate a sufficiently large region for the largest table to be loaded.

If you are migrating a table from an earlier release of CICS, you must specify the COMPAT option on the DFHCSDUP PARM of the EXEC statement to prevent migration errors.

- **To transfer an FCT**, the format is:

  MIgrate TAble(tablename)

  The result is a set of groups containing file and LSR pool definitions. You can define each group by the macro:

  ```
  DFHFCT TYPE=GROUP,GROUP=xxxxxxxx
  ```

  which you insert in the FCT source instructions before you assemble the FCT for migration. Any file or LSR pool definitions that come before the first such DFHFCT TYPE=GROUP macro are migrated into a group named after the table name: for example, if the table name is DFHFCTxx, the group name is FCTxx.

- **To transfer a PCT or PPT**, the format is:

  MIGRATE TABLE(tablename) [TOGROUP(groupname)]

  The result is a set of groups containing, for a PCT, transaction and profile definitions or, for a PPT, program, map set, and partition set definitions. You can specify each group by the appropriate macro:

  ```
  DFHPCT|DFHPPT TYPE=GROUP,GROUP=xxxxxxxx
  ```

  which you insert in the PCT or PPT source instructions before you assemble them for migration. All definitions after such a TYPE=GROUP macro, up to the next DFHPCT | DFHPPT TYPE=GROUP macro, go into the group named by `GROUP=xxxxxxxx`. Definitions that occur before the first such TYPE=GROUP macro are migrated to the default group. You can also specify that definitions are to be migrated to the default group by inserting the following macro in the PCT or PPT before the definition entries:

  ```
  DFHPCT|DFHPPT TYPE=GROUP,GROUP=*DEFAULT
  ```

  You can use the TOGROUP parameter of the MIGRATE command to assign a specific name to the default group. If you do not specify TOGROUP, the name of the default group is derived from the table name. For example, if the migrated table name is DFHPPT24, the name of the group created is PPT24.

- **To transfer a TCT**, the format is:

  MIgrate TAble(tablename) [TYpesgroup(typesgroupname)]

  where TYpesgroup(typesgroupname) specifies the name of the group to contain the TYPETERM definitions obtained from the TCT.

  If this parameter is not specified, the TYPETERM definitions are put in the GROUP currently being created, with the TERMINAL definitions.

  The result is:

  1. A set of groups containing terminal definitions. You can define each group by the macro:

     ```
     DFHTCT TYPE=GROUP,GROUP=xxxxxxxx
     ```

     which you insert in the TCT source instructions before you assemble the TCT for migration. Any terminal definitions that come before the first TYPE=GROUP macro are migrated into a group named after the table name. If the table name is DFHTCTxx, the group name is TCTxx.

  2. A group of TYPETERM definitions. These are derived from attributes of the DFHTCT TYPE=TERMINAL macros which are often identical for many terminals. They are put into the CSD GROUP named in the TYPESGROUP parameter.

     The typeterm attributes of each TYPE=TERMINAL table macro are checked with existing TYPETERM definitions and if they don’t match with any of these, a new TYPETERM is added to the CSD.

     The existing TYPETERMs checked are:

     – TYPETERMs in the GROUP currently being created

     – TYPETERMs in the group specified in the TYPESGROUP parameter of the MIGRATE command.

     However, the scope of the checking is never extended to include any other TYPETERMs in other groups already on the CSD. (Such groups may have been created using RDO or by a previous MIGRATE command.) For this reason, it is a good idea to use the TYPESGROUP parameter to avoid creating duplicate TYPETERMs in different groups. It is convenient to keep the TYPETERMs in a separate group anyway.

     TYPETERMs created on the CSD during the migration are named systematically, in a way related to the TRMTYPE parameter of the original DFHTCT TYPE=TERMINAL macro. The name consists of a prefix (3–5 characters) with a 3-character suffix. For example, a TYPETERM defining attributes for a 3270 printer is named 3270P001. Variants with the same TRMTYPE are named 3270P002, and so on. The migration process ensures that this name is used as the TYPETERM parameter of every terminal definition that references it.

  Note: Migrating your TCT does not cause an error if the destination group already exists. Only definitions that already exist are flagged by an error message; any new or additional definitions are added to the existing group.

Example of the MIGRATE command

A PCT, DFHPCTS$, from CICS/VSE® Version 2.3 contains the following definitions:

```
DFHPCT TYPE=ENTRY,PROGRAM=DFH$CPLN,TRANSID=PLAN,
       TPURGE=YES,SPURGE=YES
*
DFHPCT TYPE=ENTRY,PROGRAM=DFH$CIPL,TRANSID=INPL,
       TPURGE=YES,SPURGE=YES
*
DFHPCT TYPE=ENTRY,PROGRAM=DFH$CIPL,TRANSID=ADPL,
       TPURGE=YES,SPURGE=YES
```

To migrate the first and third definitions to the group SAMPLES, and the second definition to the default group, you could add the following DFHPCT macros before the definitions in DFHPCTS$:

`DFHPCT TYPE=GROUP,GROUP=SAMPLES` before the first definition
`DFHPCT TYPE=GROUP,GROUP=*DEFAULT` before the second definition
`DFHPCT TYPE=GROUP,GROUP=SAMPLES` before the third definition

To name the default group STDGROUP, you could use the MIGRATE command:

```
MIGRATE TABLE(DFHPCTS$) TOGROUP(STDGROUP)
```

When this command is executed, the definitions for transactions PLAN and ADPL are migrated to the group SAMPLES, and the definition for transaction INPL is migrated to the group STDGROUP.

Figure 19. Examples of the MIGRATE command

REMOVE a group from a list

REMOVE syntax

```
►►──REMove──Group(groupname)──List(listname)──►◄
```

The REMOVE command removes a group name from a list. The group, and all its resource definitions, still exists on the CSD.

When the last group is removed from a list, the list is deleted.

LIst(listname)
The name of the list from which a group is to be removed. You cannot use a generic list name. When the last group is removed from a list, the list no longer exists on the CSD.

Group(groupname)
The name of the group to be removed. You cannot use a generic group name.

Example of the REMOVE command

A list LL02 contains the following groups:

G001 G002 G003 G004

To remove group G003:

```
REMOVE GROUP(G003) LIST(LL02)
```

This leaves:

G001 G0023 G004

Figure 20. Examples of the REMOVE command

SERVICE a CSD

SERVICE syntax

```
►►──Service──FRomcsd(filename)──LEvel(nnn)──►◄
```

You might occasionally (between CICS releases) have to apply a service routine to carry out preventive or corrective maintenance to your CSD. You do this by loading and running a special service program (DFHCUS1), which is supplied with CICS as a separately loadable module.

You can use the SERVICE command to create a new copy of the CSD, from the existing CSD. All the definitions are preserved, with the corrections (if any) applied.

FRomcsd(filename)
Specifies the filename of the current CSD, which for the purposes of the command is treated as the secondary CSD.

LEvel(nnn)
Associated with your CSD is a current service level, initially set to 000 when the file was initialized. Applying the service routine causes the service level to be incremented in steps of one, from a “current level” to a “target level”.

This operand specifies the target service level to which the CSD is to be upgraded, and must be 1 higher than the current level of FROMCSD. Specify it as a 3-character integer; for example, LEVEL(001).

USERDEFINE to create a new resource definition

USERDEFINE syntax

```
►►──USerdefine──┬─Connection(name)───┬──Group(groupname)──────────►
                ├─File(name)─────────┤
                ├─Lsrpool(name)──────┤
                ├─Mapset(name)───────┤
                ├─PARTItionset(name)─┤
                ├─PARTNer(name)──────┤
                ├─PROFile(name)──────┤
                ├─PROGram(name)──────┤
                ├─Sessions(name)─────┤
                ├─TErminal(name)─────┤
                ├─TRANClass(name)────┤
                ├─TRANSaction(name)──┤
                └─TYpeterm(name)─────┘

►──attribute list(newvalue)──►◄
```

USERDEFINE is an alternative to the DEFINE command. Instead of using CICS-supplied default values, USERDEFINE uses your own defaults. Otherwise it operates in exactly the same way as DEFINE.

To set up your own defaults, use DEFINE to create a dummy resource definition named USER in a group named USERDEF. Each dummy resource definition must be complete (for example, a transaction definition must name a program definition, even though you always supply a program name when you USERDEFINE a transaction). You need not install the dummy resource definitions before using USERDEFINE.

Do this for each type of resource for which you want to set default values. Each of them is named USER, but this does not matter because the fact that they are definitions of different resource types makes them unique.

So you could have the following resources in your USERDEF group:

- CONNECTION(USER)
- FILE(USER)
- LSRPOOL(USER)
- MAPSET(USER)
- PARTITIONSET(USER)
- PARTNER(USER)
- PROFILE(USER)
- PROGRAM(USER)
- SESSIONS(USER)
- TERMINAL(USER)
- TRANCLASS(USER)
- TRANSACTION(USER)
- TYPETERM(USER).

This example is reviewed in the ‘Examples’ section for this command.

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see Part 4, “RDO resource types and their attributes” on page 129. Attributes that you do not specify are given default values.

Group(*groupname*)
The name of the group to be defined.

Example.

Assembler programmers at an installation have created a dummy program definition called USER with Assembler as the default language. They use USERDEFINE to define their programs to CICS.

First they must define a program called USER in group USERDEF. they could do this with the command:

```
DEFINE PROGRAM(USER) GROUP(USERDEF) LANGUAGE(ASSEMBLER)
```

Now, each time they want to define a new program, they can use the USERDEFINE command to get the default value ASSEMBLER automatically. So, if they want to define a new program P2 in group GRP they enter the command:

```
USERDEFINE PROGRAM(P2) GROUP(GRP)
```

After they have set up their own defaults in a USER resource definition, anyone using the USERDEFINE command for that resource type gets those default values.

By renaming their USER to something else and defining their own dummy resource definition, they can use their own default values. Normally, however, an installation probably agrees on default values for standardization reasons, and puts a LOCK on the USERDEF GROUP.

UPGRADE a CSD

UPGRADE syntax

```
►►──UPgrade──┬────────────────┬──►◄
             └─USing(filename)─┘
```

You can use the UPGRADE command to change the CICS-supplied resource definitions in a primary CSD. If your existing CSD was initialized at CICS for VSE/ESA Version 2.3 or earlier, you must UPGRADE it using DFHCSDUP to obtain the RDO extensions in CICS Transaction Server for VSE/ESA Release 1. Upgrading ensures that the definitions in the DFH-groups are brought up to the level of CICS Transaction Server for VSE/ESA Release 1 function.

Note: Any CICS-supplied definitions which you have copied to your own groups do **not** have any changes applied to them as a result of this command.

USing(filename)
Upgrading a CSD for CICS Transaction Server for VSE/ESA Release 1 does not require you to use the USING operand. All IBM-supplied definitions from **any** release are deleted and then the CSD is initialized, so you do not need to say which release you came from. However, UPGRADE USING(filename) is used to upgrade optional IBM functions or features. For example, UPGRADE USING(DFHCURCF) is used to upgrade the report controller definitions on the CSD.

VERIFY a CSD

VERIFY syntax

```
►►──VERIFY──►◄
```

The VERIFY command to remove internal locks on groups and lists. Only use it when the CSD is not in use and no backout processing is pending on the CSD; preferably use it only when no CICS systems that may use the CSD are running.

VERIFY acts upon the whole CSD, and is for use in the extreme condition where internal lock records have been left behind. These records are normally removed when a function that changes the CSD has been completed. However, this may not have happened if there was a system failure when the CEDA transaction was running, or if an offline utility failed to finish. The locks may prevent CEDA users from accessing certain groups and lists on the CSD.

Note that VERIFY removes only the internal locks. It does not affect the normal user locks applied by the LOCK command in the CEDA transaction.

Part 3. Autoinstall

This part discusses the automatic installation of resources in CICS. It consists of the following chapters:

Overview of autoinstall

To use a resource without autoinstall, you must have a definition for that resource installed in your CICS system, created using either CEDA, DFHCSDUP, or a macro table. This clearly uses up time (to define and install every resource), and storage, as every definition occupies storage whether the resource is being used or not.

With autoinstall, you do not need to define and install every resource that you intend to use. Instead, CICS dynamically creates and installs a definition for you when a resource is requested. CICS bases the new definition on a “model” definition provided by you.

Autoinstall can be used for the following resources:

- VTAM terminals
- APPC (LU6.2) connections
- Programs
- Mapsets
- Partitionsets

Autoinstall models

You must provide at least one ***model*** resource definition for each type of resource to be autoinstalled. When a resource is requested which does not have an installed definition, CICS creates a definition based on what you have specified in the model. You can have more than one model depending on what properties you want the autoinstalled resources to have; for example, if you had 500 terminals all with the same properties and another 500 with a different set of properties, you would have two model terminal definitions, one for each of the two sets of properties.

Autoinstall control program

You control autoinstall by means of an ***autoinstall control program***, either user-written or supplied by CICS. This program is responsible for, among other things, providing the model name or names to CICS, providing VTAM information to CICS for autoinstall for terminals, and so on.

CICS provides three autoinstall control programs; one for terminals; one which allows both terminals and connections; and one for programs. You can use the CICS-supplied ones or you can customize them to suit your installation.

These chapters also describe in detail what you must do to use autoinstall, and tell you about other considerations, such as what happens at installation time, and what happens at CICS restart.

Chapter 9. Autoinstall for VTAM terminals

This chapter explains how to implement autoinstall for VTAM terminals. It contains the following information:

If you have not used autoinstall for any resources before, you should read "Overview of autoinstall" on page 105.

For information on autoinstalling connections and parallel sessions, see Chapter 10, "Autoinstall for APPC connections" on page 121.

Getting started with autoinstall

This list explains how to set up autoinstall for your VTAM terminals.

1. **Are your terminals eligible for autoinstall?**

   The terminals that **can** be autoinstalled are:

   - VTAM locally attached 3270 terminals (non-SNA), both displays and printers
   - VTAM logical unit type 0 terminals
   - VTAM logical unit type 1 terminals, including SCS printers
   - VTAM logical unit type 2 terminals
   - VTAM logical unit type 3 terminals
   - VTAM logical unit type 4 terminals
   - VTAM logical unit type 6.2 single-session terminals
   - TLX or TWX terminals using NTO, defined and treated exclusively as SDLC 3767 devices

   Terminals that **cannot** be autoinstalled are:

   - Pipeline terminals
   - Automatic teller machines (3614 and 3624)
   - Non-VTAM resources
   - VTAM logical unit type 6.1 ISC and MRO sessions

2. **Decide whether to use autoinstall**

   You are likely to benefit from autoinstall if any of the following apply to your system:

   - A significant number of VTAM terminals
   - Frequent changes to your network
   - Many VTAM terminals logged off much of the time
   - Many VTAM terminals using other applications much of the time
   - Many VTAM terminals that need access to multiple, but unconnected, CICS systems

   Autoinstall might be less beneficial if you have:

   - A small, static network
   - Many terminals more or less permanently logged on to one CICS system
   - Many terminals logging on and off frequently
   - Many terminals logging on and off at the same time

3. **Decide which devices to autoinstall**

   This decision depends on how you use your VTAM terminals. For example, a terminal that is logged on all the time can be autoinstalled, but you might choose to define it individually.

   An autoinstall logon is slower than a logon to a terminal individually defined to CICS, so if you switch continually between applications and have to log on to CICS frequently, you may require individual definitions for some terminals.

   You should also consider your use of automatic transaction initiation (ATI), terminal list tables (TLTs), and the intercommunication methods in use in your installation. “Autoinstall considerations” on page 109 discusses these and other relevant issues.

4. **Create your TYPETERM and model TERMINAL definitions**

   CICS supplies some TERMINAL and TYPETERM definitions; these are listed in “Model TERMINAL definitions in group DFHTERM” on page 337 and “TYPETERM definitions in group DFHTYPE” on page 340. You can use these definitions if they are suitable; if not, create your own using CEDA or DFHCSDUP.

   Define an autoinstall model for each different kind of terminal to be autoinstalled. Try to keep the number of definitions to a minimum, so that the autoinstall control program can be as simple as possible.

   When you create your definitions, consider whether you want to use the QUERY structured field (see page 213). It can help the autoinstall control program to choose which model on which to base a definition, and so speed up the autoinstall process.

5. **Redefine DFHZCQ**

   For every CICS region using autoinstall, you should redefine DFHZCQ to be RESIDENT(YES). (DFHZCQ is in the CICS-supplied group DFHSPI). See the *CICS Performance Guide* for guidance on why you should consider making programs resident.

6. **Ensure that your VTAM LOGMODE table entries are correct**

   “Autoinstall and VTAM” on page 111 explains the relationship between CICS autoinstall and VTAM. For programming information, including a list of VTAM LOGMODE table entries, see the *CICS Customization Guide*.

7. **Design and write an autoinstall control program**

   The terminal autoinstall control program is invoked by CICS every time there is a valid request for a TCT entry to be autoinstalled, and every time an autoinstalled TCT entry is deleted.

   For programming information about the autoinstall control program, see the *CICS Customization Guide*. “The autoinstall control program” on page 118 provides a summary of what the program is about.

   Before beginning your program, look at the CICS-supplied autoinstall control program DFHZATDX in group DFHSPI to see if it is suitable for what you want to do with autoinstall.

8. **Enable terminal autoinstall**

   You can enable autoinstall for terminals either by using system initialization parameters or by using the EXEC CICS or CEMT INQUIRE|SET AUTOINSTALL command.

   There are five system initialization parameters relating to terminal autoinstall:

   GRPLIST specifies the list or lists containing the group(s) of autoinstall models created.

   AIEXIT specifies the name of the autoinstall program to be used. It defaults to DFHZATDX, the name of the IBM-supplied autoinstall control program.

   AIQMAX specifies the maximum number of terminals that can be queued concurrently for autoinstall. When this limit is reached, CICS will request VTAM to stop passing LOGON and BIND requests to CICS until CICS has processed one more autoinstall request.

The purpose of the limit is to protect the system from uncontrolled consumption of operating system storage by the autoinstall process, as a result of some other abnormal event. Normally, in the process of autoinstall, the principal consumer of CICS storage is the autoinstall task (CATA) itself. The amount of CICS storage consumed by the autoinstall process during normal operation can therefore be controlled by creating an appropriate TRANCLASS definition to limit the number of autoinstall tasks that can exist concurrently.

AILDELAY specifies the time interval, expressed as hours, minutes and seconds (hhmmss), that will elapse after an autoinstall terminal logs off before its TCTTE is deleted. The default value is 0, indicating that TCTTEs will be deleted at logoff time and at warm shutdown as CLSDST is issued for the autoinstall terminals still in session. Specifying an AILDELAY interval will permit the TCTTE to be reused should the terminal log back on before the interval has expired.

AIRDELAY is the time interval, expressed as hours, minutes and seconds (hhmmss), that will elapse after emergency restart before terminal entries will be deleted if they are not in session. The default value is 700, indicating a restart delay of 7 minutes.

For information on how to specify these system initialization parameters, see the *CICS System Definition Guide*.

There are three options relating to terminal autoinstall on the EXEC CICS or CEMT INQUIRE|SET AUTOINSTALL commands:

CURRENT(value) The number of autoinstall logon requests that are currently being processed.

MAXREQS(value) The largest number of autoinstall requests that are allowed to queue at one time, in the range 0-999.

You can prevent more 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) The name of the user program that is controlling the autoinstall process. The default is the CICS-supplied program DFHZATDX.

Autoinstall considerations

This section offers some considerations that should help you to decide which devices to autoinstall. It covers the following subjects:

- “Automatic transaction initiation”
- “The TCT user area (TCTUA)” on page 110
- “The terminal list table (TLT)” on page 111
- “Transaction routing” on page 111
- “Autoinstall and output-only devices” on page 111

Automatic transaction initiation

If a BMS ROUTE message is sent to a terminal that has a TCT entry but is not logged on, CICS saves the message for subsequent delivery. In addition, if the TCT entry so specifies, CICS attempts to acquire the terminal and log it on for that purpose. CICS attempts to satisfy other ATI requests (EXEC CICS START or a transient data trigger level) in the same way.

The use of autoinstall for printers is severely limited because almost all transactions for printers are initiated automatically. It is possible to autoinstall printers, however, if you arrange for them to be logged on. Entering VARY NET,...,LOGON as a console command does this.

For an autoinstalled terminal, a TCT entry ***may*** be available even when the terminal is logged off. This happens only if the terminal has been logged on earlier in the CICS run and depends on the TYPETERM definition, the system initialization parameters, and the SNT entry for the last user of the terminal. For details, see "Automatic signoff, logoff, and TCTTE deletion" on page 115. If a TCT entry exists, an autoinstalled terminal can accept an ATI request just like an individually defined terminal.

If you do choose autoinstall for terminals that might receive ATI requests, you should make use of the AUTOCONNECT attribute on the TYPETERM definition for your models. AUTOCONNECT(YES) means that the terminal is logged on to CICS automatically at an emergency restart (see Figure 24 on page 117), by CICS requesting a VTAM SIMLOGON (simulated logon). (Because this requires a TCT entry, it does not happen at cold or warm start.)

You may find that setting up a printer-owning region is the best approach, especially if you have distributed printing with many small printers.

Whether or not you autoinstall your printers, you can associate a printer and an alternate printer with a display device. The association is made when the display device is autoinstalled. Note that definitions for these printers need not have been installed at the time the display device is autoinstalled, but they must exist at the time of use.

The TCT user area (TCTUA)

The TCT user area is an optional extension to the TCT entry. The TCTUA is available for application use (the rest of the TCT entry belongs to CICS). It has traditionally been used for two purposes:

- To pass data from one transaction of a pseudo-conversational sequence to the next
- To maintain user profile information and statistics during a terminal session. (This is not necessarily a VTAM session, but a period of access to a particular application, as defined by the application.)

The first use has gradually been supplanted by COMMAREA and other CICS facilities, but the second is still fairly common. An application may store statistics, such as teller totals, in the TCTUA, which is initialized by a PLTPI program at the beginning of execution and retrieved by a PLTSD program at termination (shutdown). Autoinstall does not provide the ability to save this information between logoff and logon, because the TCTUA does not exist then. In addition, the TCTUA is not available to PLTPI and PLTSD programs at system initialization and termination. A new technique must be devised to allow the initialization of TCTUA and user data when the user logs on or logs off.

As noted earlier, the autoinstall process creates the TCT entry (including the TCTUA) before the first transaction is executed at the terminal, but after the autoinstall control program has done its initial execution. Thus you cannot access the TCTUA in the autoinstall control program and so any TCTUA initialization must be done later. You could write your own good morning transaction to do this, or use the first transaction of the application in question.

Moreover, the autoinstall control program does not have access to the TCTUA at logoff either, because CICS deletes the TCT entry (including the TCTUA) before invoking this program. Therefore, if an application needs to capture statistics or other information from such a TCTUA, it must get access before CICS does this. The place to do this is in the **node error program (NEP)**, the user-written component of the terminal error processing routines, because CICS drives the NEP exit before it deletes the TCT entry.

The terminal list table (TLT)

A terminal list table is a list of terminals, defined either by four-character CICS terminal names or three-character CICS operator identifiers. It is used principally for routing messages to multiple destinations and giving limited operational control of a group of terminals to a supervisor. Both of these uses must be rethought in an autoinstall environment. If a TLT lists terminals that do not have TCT entries, because they are not logged on at the time the TLT is used, supervisory operations against those terminals will fail. For example, you cannot put a nonexistent TCT entry into or out of service.

Similarly, message routing works differently for individually defined and for autoinstalled terminals. When a message is sent to an individually defined terminal that is not logged on, the message is saved in temporary storage, and delivered when the terminal logs on. When a message is sent to a terminal that is not defined because it is an autoinstall terminal and is not logged on, CICS gives a route fail condition, indicating that it knows nothing of that terminal. Indeed, if terminal names are generated and assigned randomly, as they may be in an autoinstall environment, the whole TLT mechanism breaks down.

Transaction routing

An autoinstall request to a local system overrides an autoinstall request for the same definition shipped from a different system.

If transaction routing can occur between two CICS systems, any terminal that can logon to both should be installed in both in the same way. Such a terminal should either be:

- Autoinstalled in both systems, or
- Defined to each system in its TCT setup at initialization.

Autoinstall and output-only devices

Most of the benefits of autoinstall apply more to **display devices** than to printers. Displays initiate transactions in CICS; usually any transaction output is returned to the input terminal, so that neither CICS nor the application needs to know any other NETNAME than that of the display, which identifies itself in the process of logging on.

On the other hand, when output is directed to output-only **printers**, either CICS or the application must know what NETNAME to use, and this implies that some knowledge of the network be maintained somewhere. The primary and alternate printer names in an individually-defined TCT entry constitute this kind of information, as maintained by CICS. In the case of autoinstalled terminals, corresponding information, if it is required, must either be maintained in tables or files, embedded in the application, supplied by VTAM ASLTAB and ASLENT model terminal support (MTS), or supplied dynamically by the user.

Autoinstall and VTAM

This section explains how autoinstall works with VTAM. It is intended to help you understand the processing that takes place when you use autoinstall. It consists of the following:

- “The process of logging on to CICS using autoinstall”
- “What happens when the user logs off” on page 114

The process of logging on to CICS using autoinstall

To help you understand the process, consider what takes place when you log on to CICS through VTAM. (See also Figure 21 on page 113 and Figure 22 on page 114.) CICS Transaction Server for VSE/ESA Release 1 supports the model terminal support (MTS) function of VTAM. Using MTS, you can define the model name, the printer (PRINTER), and the alternate printer (ALTPRINTER) for each terminal in a VTAM table. CICS captures this information as part of autoinstall processing at logon, and uses it to create a TCTTE for the terminal. If you are using MTS, you must use a version of DFHZATDX that is suitable for use on CICS Transaction Server for VSE/ESA Release 1. See the *CICS Customization Guide* for programming information about the user-replaceable autoinstall program.

1. VTAM receives your request, determines that you want to use CICS, and passes your request to CICS.
2. CICS extracts your terminal's NETNAME name from the logon data. CICS searches the TCT for an entry with the same NETNAME.
3. If it finds such an entry, CICS issues an OPNDST to VTAM to establish a session between CICS and the terminal. This is the normal CICS logon process.
4. If it fails to find a matching entry, CICS checks the system initialization parameters that were coded in the SIT, or reset using CEMT, to check whether it can allow an autoinstall.
5. If the system initialization parameters allow an autoinstall, CICS checks the terminal data passed by VTAM, to check whether the terminal is eligible for autoinstall.
6. If the terminal is eligible, CICS examines the bind image to see if it carries sufficient information.
7. If the VTAM bind image data proves sufficient, CICS searches the autoinstall model table (AMT) and autoinstalls the terminal in one of the following ways:
   - If VTAM has supplied CICS with a valid model name, CICS passes this name to the **autoinstall control program**. (If you are using MTS, and if you have supplied VTAM with names of model terminals, CICS can obtain the name of the model terminal from the logon data.)
   - If VTAM has not supplied CICS with a valid model name, CICS searches the AMT for suitable autoinstall models and passes these to an **autoinstall control program**, together with VTAM logon data. If VTAM has supplied CICS with an invalid model name, message DFHZC6936 results.
8. The autoinstall control program (either the CICS-supplied program or one written by you) selects one of the models and provides the rest of the information necessary to complete a TCT entry for the terminal.
9. When the autoinstall control program returns control, CICS builds a TCT entry using the autoinstall model, the data returned by the autoinstall control program, and the VTAM logon data for the terminal. CICS then adds the new entry to the TCT and issues an OPNDST to VTAM to establish a session between CICS and the terminal.
10. If the TYPETERM definition so specifies, CICS uses the QUERY function to find out about some of the features of the terminal. (These features are listed on page 213.)

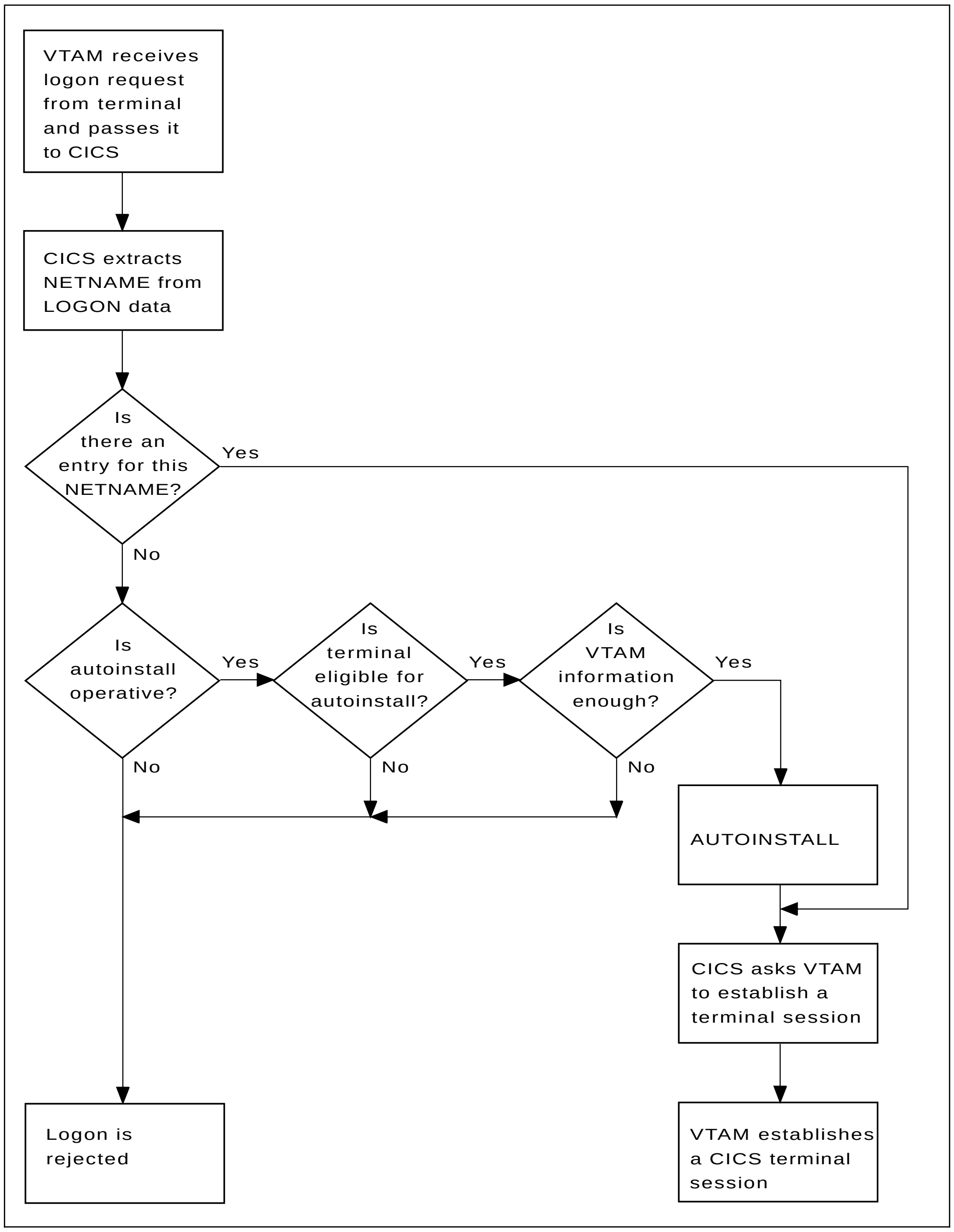

VTAM receives logon request from terminal and passes it to CICS
CICS extracts NETNAME from LOGON data
Is there an entry for this NETNAME?
Yes
No
Is autoinstall operative?
Yes
No
Is terminal eligible for autoinstall?
Yes
No
Is VTAM information enough?
Yes
No
AUTOINSTALL
CICS asks VTAM to establish a terminal session
Logon is rejected
VTAM establishes a CICS terminal session

Figure 21. The process of logging on to CICS using autoinstall. Note that the autoinstall process itself is shown as a single box. What happens inside this box is depicted in Figure 22 on page 114.

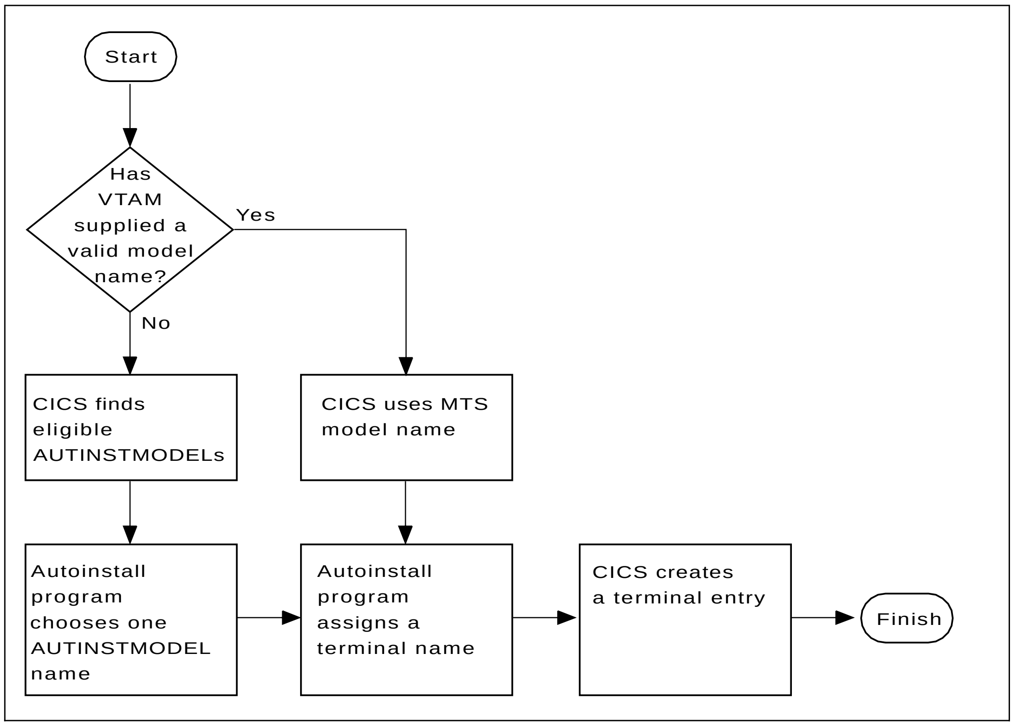

Start
Has VTAM supplied a valid model name?
Yes
No
CICS finds eligible AUTINSTMODELs
CICS uses MTS model name
Autoinstall program chooses one AUTINSTMODEL name
Autoinstall program assigns a terminal name
CICS creates a terminal entry
Finish

Figure 22. How CICS autoinstalls a terminal. Note that the overall process in which this fits is shown in Figure 21 on page 113.

What happens when the user logs off

When the terminal user finishes work and logs off:

1. CICS issues a CLSDST to ask VTAM to end the session.
2. CICS attempts to delete the TCT entry after a delay specified in the AILDELAY system initialization parameter.

   Note that the TCT entry cannot be deleted if there is a lock effective at the time. For instance, CEMT INQUIRE TERMINAL or an outstanding ATI request locks the TCT entry.
3. CICS gives control to the autoinstall control program in case it has any further processing to do, for example, to free the TERMINAL name it gave to the terminal.

If the terminal's TYPETERM definition specifies SIGNOFF(LOGOFF) ***and*** the ESM base segment specifies timeout, expiry of the timeout period causes the terminal to be logged off and the user to be signed off. After this automatic logoff, the delay period commences, leading to deletion of the TCT entry unless the terminal logs on again before the period ends. For details, see "Automatic signoff, logoff, and TCTTE deletion" on page 115.

Autoinstall and recovery and restart

This section explains what happens to autoinstalled terminal definitions at logoff and system restart times. It consists of:

- "What happens at CICS restart"
- "Automatic signoff, logoff, and TCTTE deletion"

What happens at CICS restart

At an **emergency restart**, autoinstalled TCT entries are recovered unless you specify a restart delay period of zero in the AIRDELAY system initialization parameter. This means that users can log on again after an emergency restart without going through the autoinstall process. Those terminals with AUTOCONNECT(YES) specified in their TYPETERM definition are automatically logged on during the restart process, without the need for operator intervention. The recovery of autoinstalled TCT entries avoids the performance impact of many concurrent autoinstall requests following a CICS restart. What happens is that a terminal user logging on after restart uses the TCT entry created for that terminal's NETNAME during the previous CICS run. It is just as if that terminal had an individual TERMINAL definition installed in the TCT.

Because this could pose a threat to security, CICS checks for operator activity after recovery. After a delay, all autoinstalled TCT entries that were recovered but are not in session again are deleted. As well as improving security, this ensures that CICS storage is not wasted by unused TCT entries. You can specify the length of the delay using the system initialization parameters.

If **persistent sessions** is in use and AIRDELAY is not equal to zero, autoinstalled TCT entries are treated exactly like other TCT entries. See the *CICS Recovery and Restart Guide* for more information about persistent sessions.

If **XRF** is in use, autoinstalled TCT entries are treated exactly like other TCT entries. That is, any TCT entry installed in the active CICS can be tracked, and a corresponding TCT entry is then installed in the alternate CICS. At an XRF takeover, for a terminal that is tracked, a TCT entry is already present in the new active CICS and the terminal is logged on. Therefore, the user does not have to go through the autoinstall process again.

At a **warm start**, TCT entries that were previously autoinstalled are lost, unless you logoff and CICS is shut down before the AILDELAY time has expired.

If a TCTTE is recovered during emergency restart, a specification of AUTOCONNECT(YES) prevents deletion of the TCTTE by AIRDELAY. If you want the TCTTE storage to be deleted in this case, specify AUTOCONNECT(NO).

Automatic signoff, logoff, and TCTTE deletion

If a session ends through expiry of the user's TIMEOUT period, the terminal entry is deleted as described in the preceding section only if SIGNOFF(LOGOFF) is specified in the TYPETERM definition of the model. Table 7 on page 116 summarizes the automatic deletion and recovery of TCTTEs for autoinstalled terminals.
Table 10 on page 117 shows how automatic signoff, logoff, and TCTTE deletion occur if a session is timed out. Figure 24 on page 117 shows how logon and TCTTE deletion occur if, at a warm start or emergency restart, a TCTTE exists for an autoinstalled terminal.
Table 11 on page 117 shows how automatic TCTTE deletion occurs if a session ends for any reason other than timeout.

Table 7. AUTOINSTALL—summary of TCTTE recovery and deletion

CICS RUNNING	**Restart delay = 0**	TCTTE entries are not cataloged and therefore can never be recovered in a subsequent run.
	Restart delay > 0	TCTTE entries are cataloged. If they are not deleted during this run or at shutdown, they can be recovered in a subsequent emergency restart.
SHUTDOWN	**Warm**	Terminals are logged off and their TCTTEs are deleted, except for those terminals which were logged off before shutdown but whose AILDELAY has not expired.
	Immediate	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
	Abnormal Termination	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
STARTUP	**Cold**	No TCTTEs are recovered.
	Warm	No TCTTEs are recovered.
	Emergency Restart	**Restart Delay = 0.** No TCTTEs are recovered (but see note in Table 10 on page 117). This session is unbound if it persists.
		Restart Delay > 0. TCTTEs are recovered. For details see Table 10 on page 117. This session is recovered if it persists.

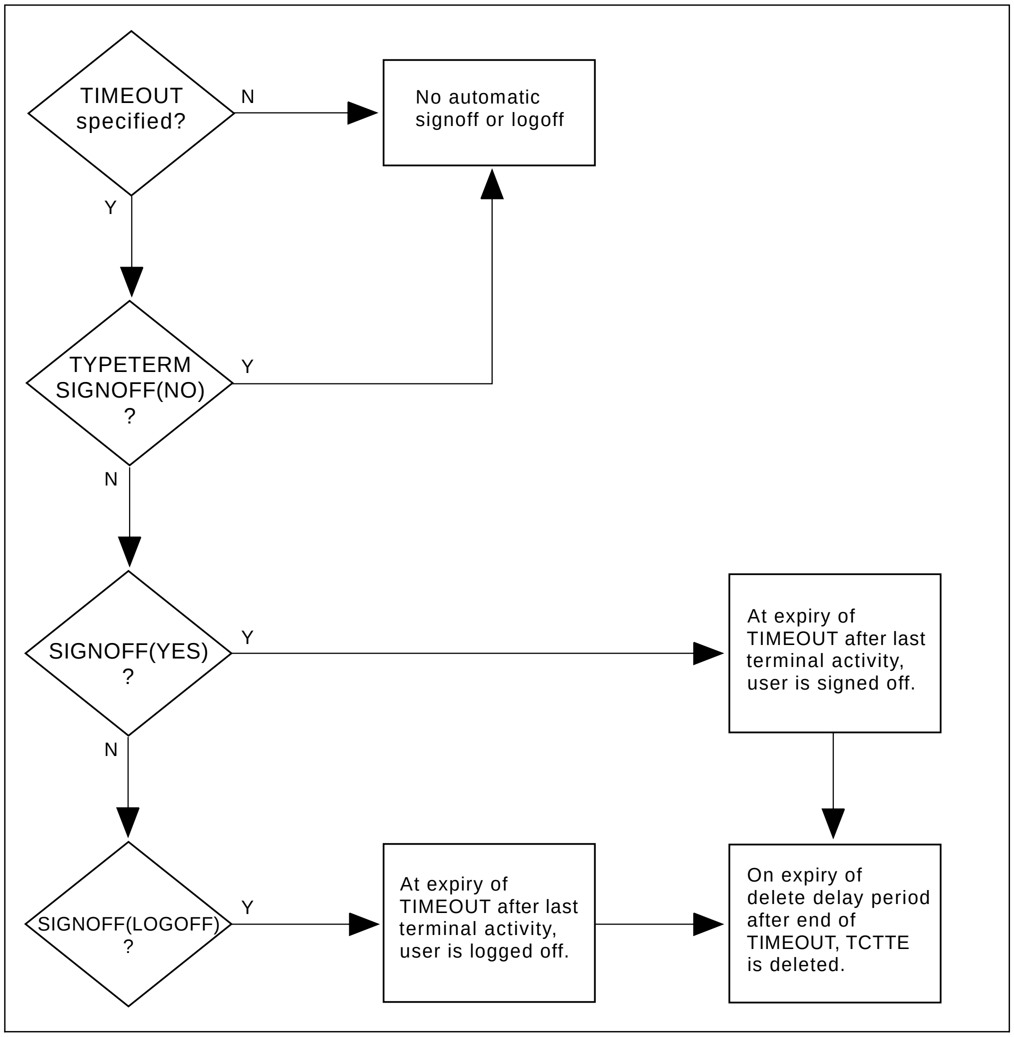

TIMEOUT specified?
N
No automatic signoff or logoff
Y
TYPETERM SIGNOFF(NO) ?
Y
N
SIGNOFF(YES) ?
Y
At expiry of TIMEOUT after last terminal activity, user is signed off.
N
SIGNOFF(LOGOFF) ?
Y
At expiry of TIMEOUT after last terminal activity, user is logged off.
On expiry of delete delay period after end of TIMEOUT, TCTTE is deleted.

Figure 23. AUTOINSTALL - automatic signoff, logoff, and TCTTE deletion

Table 8. Chronological sequence for SIGNOFF(YES)

SIGNOFF(YES) Last activity at terminal.	<-----**TIMEOUT period**-----> User can resume session at any time in this period.	User signed off.

Table 9. Chronological sequence for SIGNOFF(LOGOFF)

SIGNOFF (LOGOFF) Last activity at terminal.	<---**TIMEOUT period**---> User can resume session at any time in this period.	User signed off, terminal logged off.	<--**Delete delay period**--> The terminal can log on during this period without repeating the autoinstall process.	TCTTE entry deleted

Table 10. Chronological sequence for AUTOCONNECT(NO)

Emergency restart	<---------**Restart delay period**---------> For recovered autoinstalled TCTTE entries, the terminal can log on during this period without repeating the autoinstall process.	TCTTE entry deleted

Table 11. AUTOINSTALL—automatic TCTTE deletion after non-automatic logoff

Non-automatic LOGOFF VTAM informs CICS of a session outage, terminal logs off, or transaction disconnects terminal	<---------**Delete delay period**---------> The terminal can log on during this period without repeating the autoinstall process.	TCTTE entry deleted

Note

Successive CICS runs are assumed to use the same restart delay period. Note that, if a run with restart delay > 0 is followed by an emergency restart with restart delay = 0, undeleted TCTTEs are recovered. If the recovered TCTTE specifies AUTOCONNECT(YES), the associated terminal is logged on; otherwise the TCTTE is deleted after startup.

Emergency Restart

If restart delay period = 0, there is no TCTTE recovery during emergency restart.

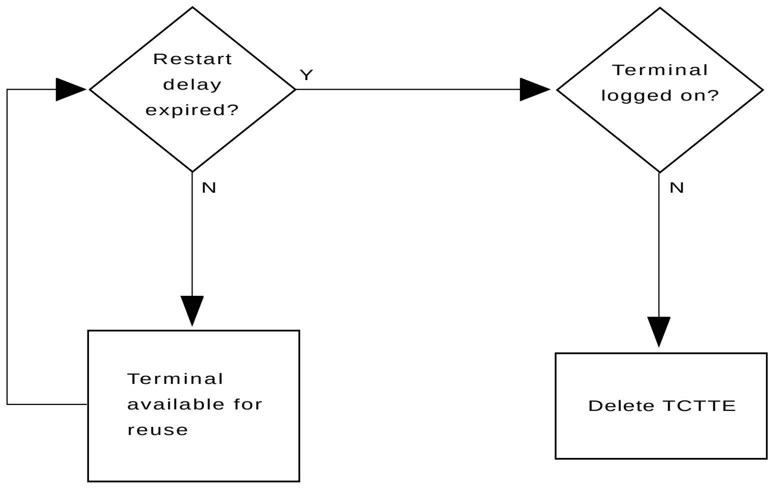


Figure 24. AUTOINSTALL - automatic logoff and TCTTE deletion after an emergency restart

The autoinstall control program

The autoinstall control program is invoked by CICS every time there is a valid request for a TCT entry to be autoinstalled, and every time an autoinstalled TCT entry is deleted.

For programming information about the autoinstall control program, see the *CICS Customization Guide*; this section is a summary of that information. It consists of:

- "Autoinstall with model terminal support"
- "Autoinstall program functions"

Autoinstall with model terminal support

If you are using MTS, you can define, in a VTAM table, the model name as well as other information for each terminal. During logon, VTAM sends this information to CICS, which may use it to create a TCTTE for the terminal. Therefore you do not need to code routines to select model terminal and optional printer and alternate printer, but your autoinstall control program still needs to provide a TERMINAL name. However, if you are already using an autoinstall control program that selects model terminal, optional printer, and alternate printer, CICS can continue to use this program.

Autoinstall program functions

If you are not using MTS, the NETNAME and other VTAM data about the terminal are not sufficient to build a TCT entry for the terminal. This program must create a CICS identifier for the TERMINAL and must choose a suitable model from among those passed to it by CICS.

IBM supplies a program (DFHZATDX) that performs the basic functions, but it may not perform all the functions that you require. For example, you may have your own conventions for TERMINAL names and their relationship to NETNAMEs. (Note that TERMINAL names are up to four characters long, and NETNAMEs are up to eight characters long, so that it is often not possible to derive one from the other.)

In addition, you could code your program to perform other functions associated with terminal logon and logoff. For example:

- Security checking
- Providing associated printer names
- Monitoring the number of terminals currently logged on through autoinstall

The autoinstall control program runs in a transaction environment, rather than as a CICS exit. This means that you can read files and issue other CICS commands, to determine the TERMINAL name, or the associated PRINTER and ALTPRINTER names. The TCT entry, however, does not exist at either of the times that this program is invoked, because at logon it has not yet been created, and at logoff it has already been deleted. The program therefore runs in transaction-without-terminal mode.

You can write the autoinstall control program in any language supported by CICS, including assembler language, C, COBOL and PL/I. Four CICS-supplied autoinstall programs are provided in the VSE/ESA sublibrary, PRD1.BASE:

- DFHZATDX for assembler language
- DFHZCTDX for COBOL
- DFHZDTDX for C
- DFHZPTDX for PL/I

The assembler version, DFHZATDX, is used by default. If you decide to write your own program, you can use one of the CICS-supplied programs as a template. Note that for all Language Environment®-enabled compilers, you will need extra program definitions in the CSD. See the *CICS System Definition Guide* for details of defining the CSD.

You specify the name of the program you want to use in the AIEXIT system initialization parameter.

When you test your autoinstall control program, you will find that the transient data destination CADL records each installation and each deletion of TCT entries. Message DFHZC6987 is useful for indicating which model came closest to being chosen, when a null list of models is passed to the autoinstall control program.

Note: You can have only one autoinstall control program active at one time for terminals and connections. The active program is specified on the AIEXIT system initialization parameter. The DFHZATDY program described in Chapter 10, "Autoinstall for APPC connections" on page 121 provides the same function for terminal autoinstall as DFHZATDX, but also provides function to autoinstall APPC connections initiated by BIND requests. Therefore, if you want to autoinstall APPC connections as well as terminals, you should use a customized version of DFHZATDY rather than DFHZATDX.

For programming information on implementing the CICS-supplied autoinstall control program, or designing and writing your own program, see the *CICS Customization Guide*.

Chapter 10. Autoinstall for APPC connections

This chapter describes how to implement autoinstall for APPC parallel-session or single-session connections when a BIND is received from a primary. It consists of the following:

If you have not used autoinstall for any resources before, read "Overview of autoinstall" on page 105 before going any further.

If autoinstall is enabled, and an APPC BIND request is received for an APPC service manager (SNASVCMG) session that does not have a matching CICS CONNECTION definition, or a BIND is received for a single session, a new connection is created and installed automatically.

Getting started with APPC connection autoinstall

1. **Decide whether to use autoinstall for connections**

   You are most likely to benefit from autoinstall for connections if you have large numbers of workstations all with the same characteristics. The main **benefits** of using autoinstall for connections are that COLD, WARM, and EMERGENCY restarts are faster, you have fewer CSD definitions to manage, and less storage is taken up by unused definitions.

   However, there are some possible **restrictions** that you should be aware of; these are discussed in "Security" on page 122 and "Connection autoinstall and recovery and restart" on page 124.

2. **Decide which sessions to autoinstall**

   You can use autoinstall for CICS to CICS connections, but it is intended primarily for workstations.

3. **Create your model connection definitions**

   The purpose of a model definition is to provide CICS with one definition that can be used for all connections with the same properties. See "Model definitions for connection autoinstall" on page 122 for information.

4. **Design and write an autoinstall control program**

   The purpose of the autoinstall control program is to provide CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name.

   For programming information about the autoinstall control program, see the *CICS Customization Guide*. "The autoinstall control program for connection autoinstall" on page 123 provides a summary of that information.

5. **Enable autoinstall for connections**

   Autoinstall for connections is enabled when you enable autoinstall for terminals; see page 108 for information about the system initialization (SIT) parameters and the CEMT and EXEC CICS INQUIRE and SET options used.

   If terminal autoinstall has been enabled but you want to prevent autoinstall for connections, set the model connection out of service by using the CEMT or EXEC CICS SET CONNECTION(connection-name) OUTSERVICE command. (See the *CICS System Programming Reference* manual for programming information about this command.) When the model connection is out of service, the autoinstall control program cannot access it and copy it, so the autoinstall function for connections is effectively disabled.

Considerations for connection autoinstall

This section offers some considerations which should help you in deciding whether to use autoinstall for connections. It covers the following subjects:

- “Security”
- “Model terminal support (MTS)”
- “Deletion of autoinstalled connections”

Security

Before using autoinstall for connections, you should consider whether the security considerations are suitable for your purposes.

The autoinstalled connection inherits the security attributes specified in the model. The security attributes from the CONNECTION definition are:

SECURITYNAME
ATTACHSEC
BINDSECURITY

If you are using compatibility mode to share a CSD with an earlier release of CICS, the BINDPASSWORD attribute is also inherited. See Chapter 12, “CONNECTION” on page 131 for information on these attributes.

From the SESSIONS definition, the autoinstalled connection inherits the preset security attribute USERID. See page 182 for a description of this attribute. If you are attempting to autoinstall an attachsec identify connection from a CICS system prior to CICS Transaction Server for VSE/ESA Release 1 or you are attempting to autoinstall an attachsec verify connection from a non-EBCDIC based system, then you should refer to 'Attach Time Security and the USEDFLTUSER option' in chapter 12 of the *CICS Security Guide*

Model terminal support (MTS)

MTS is not supported for connection autoinstall. This means that you must code the routines yourself to select the model definition name; you cannot get VTAM to do it for you. MTS is described on page 118.

Deletion of autoinstalled connections

Unlike autoinstalled terminal definitions, autoinstalled connection definitions are **not** deleted when they are no longer in use. This means that they continue to occupy storage.

Model definitions for connection autoinstall

Model definitions for connections autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed connection definition can be used as a “template” for an autoinstalled connection.

For performance reasons you should use an installed connection definition that is not otherwise in use. The definition is locked while CICS copies it, and if you have a very large number of sessions autoinstalling, the delay may be noticeable.

You can set the model connection definition out of service by using the CEMT or EXEC CICS SET CONNECTION OUTSERVICE command. This effectively disables autoinstall for connections, since the autoinstall control program cannot access and copy the model definition.

For CICS-to-CICS connections autoinstall, the MAXIMUM attribute in the SESSIONS definition of the model connection should be large enough to accommodate the largest device using the model. If not, the lower of the two is used.

When creating model connections, you must ensure that the usergroup modenames specified in the session's MODENAME field match the usergroup modenames in the connection to be autoinstalled.

The autoinstall control program for connection autoinstall

The autoinstall control program is invoked at installation for:

- APPC parallel-session connections initiated by a BIND
- APPC single-session connections initiated by a BIND

The purpose of the autoinstall control program is to provide CICS with any extra information it needs to complete an autoinstall request. For APPC parallel sessions, the control program provides a SYSID for the new definition.

When an APPC BIND request is received by CICS, CICS receives the partner's VTAM NETNAME and passes it to the autoinstall control program. The control program uses the information contained in the partner's NETNAME and in the VTAM BIND to select the most appropriate model on which to base a new connection. In order to return the name of the most suitable model to CICS, the control program must know the NETNAME or SYSID of every model.

CICS supplies a sample control program, DFHZATDY, for connections autoinstall. You can use DFHZATDY unchanged if both of the following conditions are met:

- Your model connections are called CCPS, CBPS, or CBSS
- You use the last four characters of the NETNAME as the SYSID or terminal name

If not, you will have to change DFHZATDY to suit your installation. Its source is supplied in the VSE/ESA sublibrary, PRD1.BASE. DFHZATDY is defined as follows:

```
DEFINE PROGRAM(DFHZATDY)  GROUP(DFHAI62)  LANGUAGE(ASSEMBLER)
       RELOAD(NO)  RESIDENT(NO)  STATUS(ENABLED)  CEDF(NO)
       DATALOCATION(ANY)  EXECKEY(CICS)
```

The definitions for the supplied model connections and sessions are:

```
DEFINE CONNECTION(CBPS)  GROUP(DFHAI62)  NETNAME(TMPLATE1)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)

DEFINE SESSION(CBPS)  GROUP(DFHAI62)  CONNECTION(CBPS)
       PROTOCOL(APPC)  MAXIMUM(10,5)

DEFINE CONNECTION(CBSS)  GROUP(DFHAI62)  NETNAME(TMPLATE2)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(YES)

DEFINE SESSION(CBSS)  GROUP(DFHAI62)  CONNECTION(CBSS)
       PROTOCOL(APPC)  MAXIMUM(1,0)

DEFINE CONNECTION(CCPS)  GROUP(DFHAI62)  NETNAME(TMPLATE3)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)

DEFINE SESSION(CCPS)  GROUP(DFHAI62)  CONNECTION(CCPS)
       PROTOCOL(APPC)  MAXIMUM(10,5)
```

If you want to use these definitions, you must add group DFHAI62 to your group list.

Note: MODENAME is left to default to blanks. If you need to change MODENAME to nonblanks, make a copy of group DFHAI62 and modify it as appropriate.

Warning: Do not try to use the terminal autoinstall exit DFHZATDX to autoinstall connections; any sessions installed by DFHZATDX are terminated and message DFHZC6921 is issued.

For programming information on customizing the autoinstall control program, see the *CICS Customization Guide*.

Connection autoinstall and recovery and restart

This section explains how autoinstalled connections are handled in different restart situations.

Persistent sessions support: Because autoinstalled connections are not cataloged, they can not benefit from persistent sessions support. This means that when a session does persist, any autoinstalled connections relating to it are unbound.

XRF support: Autoinstalled connections are tracked to XRF.

Autoinstalled connections are recovered only at a COLD start of CICS; they are ***not*** recovered at WARM and EMERGENCY restarts.

Unit-of-recovery descriptors (URDs) for autoinstalled connections are recovered after COLD, WARM, and EMERGENCY restarts, as long as the SYSIDs of the connections are consistent.

The SYSIDs of the autoinstalled connections must be consistent if you are using recoverable resources.

Chapter 11. Autoinstall for programs, mapsets, and partitionsets

This chapter describes how to implement autoinstall for programs, mapsets, and partitionsets. It consists of the following:

If you have not used autoinstall for any resources before, read “Overview of autoinstall” on page 105 before going any further.

If autoinstall for programs is active, and an implicit or explicit load request is issued for a previously undefined program, mapset, or partitionset, CICS dynamically creates a definition and installs it and catalogs it as appropriate. An implicit or explicit load occurs when:

- CICS starts a transaction
- An application program issues one of the following commands:

  ```
  EXEC CICS LINK
  EXEC CICS XCTL
  EXEC CICS LOAD
  EXEC CICS ENABLE (for global user exit, or task-related user exit, program)
  ```

- When, after an EXEC CICS HANDLE ABEND PROGRAM(...), a condition is raised and CICS transfers control to the named program
- CICS calls a user-replaceable module for the first time
- An application program issues one of the following commands:

  ```
  EXEC CICS RECEIVE or SEND MAP
  EXEC CICS SEND PARTNSET
  EXEC CICS RECEIVE PARTN
  ```

Getting started with program autoinstall

1. **Decide whether your programs eligible for autoinstall**

   Programs that **cannot** be autoinstalled are:

   - The program autoinstall control program
   - The terminal autoinstall control program
   - The connection autoinstall control program

   All other programs can be autoinstalled, including:

   - All other user-replaceable programs
   - Global user exits (GLUEs) and task-related user exits (TRUEs)
   - PLT programs

   User-replaceable programs and PLT programs are autoinstalled on first reference. GLUEs and TRUEs are autoinstalled when enabled.

2. **Decide whether to use autoinstall for programs**

   Using autoinstall for programs can save time spent on defining individual programs, mapsets, and partitionsets. Savings can also be made on storage, as the definitions of autoinstalled resources do not occupy space until they are referenced.

   Use of autoinstall for programs can reduce the number of definitions to be installed on a COLD start, thereby reducing the time taken.

3. **Decide which programs to autoinstall**

   Depending on your programs, you can choose to use a mixture of RDO and autoinstall. A suggested way to manage program autoinstall is to continue to use RDO for existing program definitions and for installing groups containing related programs. Use autoinstall as you develop and install new applications, and in test environments, where you might otherwise install large numbers of programs at CICS startup.

4. **Enable autoinstall for programs**

   You can enable autoinstall for programs either by using the system initialization table (SIT) or by using the EXEC CICS or CEMT INQUIRE|SET SYSTEM command.

   There are three system initialization parameters relating to program autoinstall:

   PGAICTLG This specifies whether autoinstalled program definitions should be cataloged. See “Considerations for program autoinstall” for guidance on using this parameter.

   PGAIPGM This specifies whether the program autoinstall function is active or inactive.

   PGAIEXIT This specifies the name of the program autoinstall exit.

   For information on how to specify these system initialization parameters, see the *CICS System Definition Guide*.

   There are three options relating to program autoinstall on the EXEC CICS or CEMT INQUIRE|SET SYSTEM commands:

   PROGAUTOCTLG This specifies whether autoinstalled program definitions are to be cataloged. See “Considerations for program autoinstall” for guidance on using this option.

   PROGAUTOINST This specifies whether the program autoinstall function is active or inactive.

   PROGAUTOEXIT This specifies the name of the program autoinstall exit.

   For programming information on how to code EXEC CICS commands, see the *CICS System Programming Reference*, and for information on how to use CEMT, see the *CICS-Supplied Transactions* manual.

5. **Create your model program definitions**

   The purpose of a model definition is to provide CICS with one definition that can be used for all programs with the same properties. See “Model definitions for program autoinstall” on page 127 for further information.

6. **Design and write an autoinstall control program**

   The purpose of the autoinstall control program is to provide CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name. You can write your autoinstall program in any language supported by CICS, with full access to the CICS application programming interface. See “The autoinstall control program for program autoinstall” on page 127 for further information.

Considerations for program autoinstall

Cataloging You can specify whether an autoinstalled program definition is cataloged or not (that is, whether the definition is retained over a warm or emergency start) by using either the PGAICTLG system initialization parameter or by using the PROGAUTOCTLG option on either the CEMT SET SYSTEM or the EXEC CICS SET SYSTEM command, (and you can see what is specified using either the CEMT INQUIRE SYSTEM or the EXEC CICS INQUIRE SYSTEM command). The values you can specify are as follows:

MODIFY
Autoinstalled program definitions are cataloged only if the program definition is modified by a SET PROGRAM command subsequent to the autoinstall.

NONE
: Autoinstalled program definitions are not cataloged. This gives a faster CICS restart (warm and emergency) compared with the MODIFY or ALL options, because CICS does not reinstall definitions from the global catalog. Definitions are autoinstalled on first reference.

ALL
: Autoinstalled program definitions are written to the global catalog at the time of the autoinstall, and following any subsequent modification.

The effects of specifying cataloging for program autoinstall apply mainly to recovery and restart. See “Program autoinstall and recovery and restart” on page 128 for information.

Model definitions for program autoinstall

Model definitions for program autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed program, mapset, or partitionset definition can be used as a “template” for program autoinstall.

If you do not want to use your own definitions, you can use the CICS-supplied model definitions in group DFHPGAIP. These are:

- DFHPGAPG for programs
- DFHPGAMP for mapsets
- DFHPGAPT for partitionsets

They are listed in Appendix B, “CICS-supplied resource definitions, groups, and lists” on page 321.

The autoinstall control program for program autoinstall

You specify the name of the control program you want to use in the PGAIEXIT system initialization parameter, or use the CEMT or EXEC CICS SET SYSTEM PROGAUTOEXIT command.

For detailed programming information about the autoinstall control program for programs, see the *CICS Customization Guide*; this section is a summary of that information.

When it is invoked

For **programs**, the autoinstall control program is invoked when:

- Any of these commands references a previously undefined program:
  - EXEC CICS LINK
  - EXEC CICS XCTL
  - EXEC CICS LOAD
- The program is the first program in a transaction
- An EXEC CICS ENABLE is issued for a GLUE or a TRUE
- An abend occurs after an EXEC CICS HANDLE ABEND PROGRAM command is issued and CICS invokes the named program
- CICS calls a user-replaceable module.

For **mapsets**, the autoinstall control program is invoked when an EXEC CICS SEND MAP or EXEC CICS RECEIVE MAP refers to a previously undefined mapset.

For **partitionsets**, the autoinstall control program is invoked when an EXEC CICS SEND PARTNSET or EXEC CICS RECEIVE PARTN command refers to a previously undefined partitionset.

Sample programs

The following sample programs are supplied by CICS:

- DFHPGADX—assembler program for program autoinstall exit
- DFHPGAHX—C program for program autoinstall exit
- DFHPGALX—PL/I program for program autoinstall exit
- DFHPGAOX—COBOL definition for program autoinstall exit.

The source for these programs and the executable form of the assembler version are supplied in the VSE/ESA sublibrary, PRD1.BASE.

Autoinstall program functions

The program autoinstall facility uses model definitions, together with a user-replaceable module, to create explicit definitions for programs, mapsets, and partitionsets that need to be autoinstalled. CICS calls the user-replaceable module, with a parameter list that gives the name of the appropriate model definition. On return from the user-replaceable module (depending on the return code), CICS creates a resource definition from information in the model and from parameters returned by the user-replaceable module.

Note: CICS does not call the URM for any CICS programs, mapsets, or partitionsets (that is, any objects beginning with the letters DFH).

For programming information on how to code a program autoinstall URM, see the *CICS Customization Guide*.

Program autoinstall and recovery and restart

There is a difference in performance between warm and emergency restarts using program autoinstall without cataloging, and warm and emergency restarts using autoinstall with cataloging. (See the *CICS Recovery and Restart Guide* for information on cataloging.)

If you are using autoinstall with cataloging (system initialization parameter PGAICTLG=NONE), restart times are similar to those of restarting a CICS region that is not using program autoinstall. This is because, in both cases, resource definitions are reinstalled from the catalog during the restart. The definitions after the restart are those that existed before the system was terminated.

If you are using autoinstall without cataloging, CICS restart times are improved because CICS does not install definitions from the CICS global catalog. Instead, definitions are autoinstalled as required whenever programs, mapsets, and partitionsets are referenced following the restart.

Part 4. RDO resource types and their attributes

This part describes the resource types that you can define, manage, and install using RDO commands. The resource types are in alphabetical order.

For each resource type, we show the panel(s) that you get when you type a **DEFINE** command correctly, followed by a resource type, and with no resulting error messages. For example:

```
DEFINE FILE(FILEB) GROUP(MYGROUP)
```

We have cut out everything but the information area, and joined the panels together when there is more than one.

- Attributes that you **must** fill in are highlighted.
- Capital letters indicate the minimum command line abbreviation for each keyword.

  Note: CICS may add new resource types and attributes across different releases. For similar named fields, such as Transaction and Tranclass, the minimum abbreviation may have to change from release to release. For example, at CICS for VSE/ESA Version 2 Release 3 the minimum abbreviation for Transaction was TR, whereas at CICS Transaction Server for VSE/ESA Release 1 it becomes TRANS, to differentiate between that and TRANC for Tranclass.

  RDO commands are validated online by the CEDA/B/C transactions, and confirmation for such ambiguities is required before the transaction can continue. This is not possible for input to DFHCSDUP however. To avoid batch operations failing due to the minimum abbreviation altering across CICS releases, it is recommended that the full resource type and attribute names are used when coding input to DFHCSDUP. While CICS cannot guarantee upward compatibility of the abbreviations, it always provides such compatibility for the full names of the fields.
- Dots indicate the maximum length of each name.
- The choice of possible values is shown on the right. (The basic default values are shown following the `==>`, but note that some default values may differ, depending on other values that you type in.)
- Where you see a colon (**:**) instead of the `==>`, this indicates that the keyword is for *compatibility mode*. See "Compatibility mode (CSD sharing)" on page 19 for further information.

Following the panel for each resource type, there is an alphabetical list of the attributes, with an explanation of each attribute and the possible values that it can take.

If you are familiar with resource definition macro operands, you may also want to refer to Appendix C, "Keyword cross-reference tables" on page 347.

Chapter 12. CONNECTION

A CONNECTION is the definition of a remote system that your CICS system will communicate with using ISC or MRO. When the CONNECTION definition is installed in the CICS system, this information is stored in the terminal control table (TCT) as a system entry (TCTSE).

When you define a CONNECTION, you give enough information to identify the system and specify its basic attributes. You put details about the sessions you will use to communicate with the system in the SESSIONS definition. CICS uses the CONNECTION name, to identify the other system when the definition has been installed. For other CICS systems connected via MRO, this name is typically the same as that specified in the other CICS system as the SYSIDNT system initialization (SIT) parameter. For other systems connected via ISC, this name is typically based on an acronym that describes the location of or the organization that owns the system (for example, USA1 or IBMC).

The REMOTESYSTEM name on a TRANSACTION definition, or on a TERMINAL definition, refers to a CONNECTION definition through its CONNECTION name. These attributes are used for transaction routing.

The REMOTESYSTEM name on a PROGRAM definition refers to a CONNECTION definition through its CONNECTION name. This attribute is used for Distributed Program Link.

The REMOTESYSTEM name on a FILE definition and the SYSIDNT name on a DFHTST and DFHDCT TYPE=REMOTE macro refers to a CONNECTION definition through its CONNECTION name. These attributes are used by function shipping.

The CONNECTION definition does ***not*** name associated SESSIONS.

Installing CONNECTION definitions

To install **new** CONNECTION definitions, put them in a group of their own which does not contain CONNECTION definitions that have already been installed, then use CEDA INSTALL to install the whole group. You cannot install single CONNECTION definitions.

To modify and reinstall existing MRO CONNECTION definitions, or if you want new and existing MRO CONNECTION definitions to be in the same group, you must close down all interregion communication (IRC) and open it again, before you can use the definition. If you do not close IRC and open it again, you get message DFHIR3788 when you try to bring up the region with the new connection. You should adopt the following procedure:

1. Close IRC down:
   ```
   CEMT SET IRC CLOSED
   ```
2. Install the resource definitions:
   ```
   CEDA INSTALL GROUP(groupname)
   ```
3. When you have successfully installed the group containing the definitions, open IRC again:
   ```
   CEMT SET IRC OPEN
   ```

Definitions for various links and sessions

Here is some guidance on creating resource definitions for:

- MRO links and sessions
- APPC (LUTYPE6.2) links and parallel sessions
- APPC (LUTYPE6.2) single session terminals
- LUTYPE6.1 links and sessions
- LUTYPE6.1 CICS-IMS links and sessions
- INDIRECT connections

MRO links and sessions

You define an MRO link using one CONNECTION definition, and its associated parallel sessions using one SESSIONS definition.

ACCESSMETHOD
On the CONNECTION definition, you specify this as IRC (for interregion communication). IRC is used to open and close the links.

PROTOCOL
On the SESSIONS definition you specify LU61 as the PROTOCOL. On the CONNECTION definition you leave the PROTOCOL value blank.

SENDPFX
SENDCOUNT
RECEIVEPFX
RECEIVECOUNT
In one SESSIONS definition you specify a number of send sessions and a number of receive sessions. The values that you specify in these attributes are used to determine the names of the TCT entries created when the definition is installed. (See the section on installing “MRO links and sessions” on page 175.)

USEDFLTUSER
If you have a connection or APPC terminal definition to an earlier CICS release or CICS on another platform then you may need to code this as USEDFLTUSER(YES), See 'Attach Time Security and the USEDFLTUSER option' in the *CICS Security Guide*.

APPC links and parallel sessions

For APPC, the sessions are grouped into modesets. You define each modeset with a SESSIONS definition, so you will have as many SESSIONS definitions as you require modesets. You define the link as a CONNECTION definition.

The following attributes are significant:

ACCESSMETHOD
On the CONNECTION definition, you specify this as VTAM.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, you specify APPC as the protocol.

MODENAME
On the SESSIONS definition for each modeset, you name the modeset with the MODENAME. This is the name by which the modeset will be known to CICS when the definition is installed in the active system.

MAXIMUM
You use this to control the number of sessions in the modeset.

USEDFLTUSER
If you have a connection or APPC terminal definition to an earlier CICS release or CICS on another platform then you may need to code this as USEDFLTUSER(YES), See 'Attach Time Security and the USEDFLTUSER option' in the *CICS Security Guide*.

APPC (LUTYPE6.2) single session terminal

You can define an APPC terminal as a CONNECTION-SESSIONS pair or as a TERMINAL-TYPETERM pair. The TERMINAL-TYPETERM method is described on page 187.

If you want to use the CONNECTION-SESSIONS method, the following attributes are significant:

ACCESSMETHOD
On the CONNECTION definition, you specify this as VTAM.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, you specify APPC as the protocol.

SINGLESESS
YES indicates that the CONNECTION definition is for a single session terminal.

MODENAME
On the SESSIONS definition, you specify the MODENAME. This is the name that CICS uses to identify the session when the definition is installed in the active system.

MAXIMUM
For a single session terminal, specifying 1,0 or 1,1 has the same effect. (For further information, see page 178.)

USEDFLTUSER
If you have a connection or APPC terminal definition to an earlier CICS release or CICS on another platform then you may need to code this as USEDFLTUSER(YES), See 'Attach Time Security and the USEDFLTUSER option' in the *CICS Security Guide*.

LUTYPE6.1 links and sessions

LUTYPE6.1 links and sessions can be defined in one of two ways:

- In one CONNECTION and one SESSIONS definition
- In one CONNECTION and a number of SESSIONS definitions: one for each session needed.

If your sessions are all to have ***identical*** attributes, define each link in one CONNECTION definition and all its associated sessions in one SESSIONS definition.

ACCESSMETHOD
On the CONNECTION definition, you specify this as VTAM.

PROTOCOL
On the SESSIONS definition and on the CONNECTION definition, you specify this as LU61.

SENDPFX
SENDCOUNT
RECEIVEPFX
RECEIVECOUNT
These attributes are used as for MRO links and sessions.

If your sessions are to have ***different*** attributes from each other, you must create a separate SESSIONS definition for each one. With the exception of NETNAMEQ, this method is the same as that for CICS-IMS sessions, described below.

Note: For CICS-CICS ISC links and sessions, you are recommended to use APPC rather than LUTYPE6.1.

LUTYPE6.1 CICS-IMS links and sessions

IMS™ needs each session to be defined in a separate SESSIONS definition, because each session must have a different NETNAMEQ.

You define the link as a CONNECTION definition, and create a number of SESSIONS definitions: one for each SEND session and one for each RECEIVE session.

ACCESSMETHOD
On the CONNECTION definition, you specify this as VTAM.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, you specify LU61 as the protocol.

SESSNAME
This is the name that CICS uses to identify the session when the definition is installed in the active system.

NETNAMEQ
This is the name that the remote IMS system uses to identify the session.

SENDCOUNT
RECEIVECOUNT
You use these attributes to specify whether a session is a SEND session or a RECEIVE session.

A SEND session is one in which the local CICS is the secondary and is the contention winner. Specify it by defining SENDCOUNT(1) and leaving RECEIVECOUNT to default to blank.

A RECEIVE session is one in which the local CICS is the primary and is the contention loser. It is specified by defining RECEIVECOUNT(1) and leaving SENDCOUNT to default to blank. (You do not need to specify a SENDPFX or a RECEIVEPFX.)

INDIRECT connections

An INDIRECT connection is a remote system for which you have not defined a direct link with the local system. Instead, the two systems communicate with each other by way of one or more intermediate systems. You can use this method for transaction routing: the remote system, indirectly connected, is always the terminal-owning region; the local system is always the application-owning region or an intermediate region on the transaction routing path.

Important

In releases of CICS before CICS Transaction Server for VSE/ESA Release 1, indirect connections were required for transaction routing across intermediate systems. They were needed on the application-owning region and on intermediate regions, to:

- Identify the NETNAME of the terminal-owning region
- Identify the next system in the path to the terminal-owning region

In CICS Transaction Server for VSE/ESA Release 1, indirect connections are required only if you use non-VTAM terminals for transaction routing across intermediate systems. Optionally, you can use them with VTAM terminals, where several transaction routing paths are possible, to identify the preferred path to the terminal-owning region. For information about why you might want to define indirect connections, and about the resource definitions required for transaction routing, see the *CICS Intercommunication Guide*.

Defining indirect connections

In the local system, you must have ordinary CONNECTION and SESSIONS definitions for the intermediate systems to which you are directly connected. The ACCESSMETHOD should be IRC with PROTOCOL(LU61), or VTAM with PROTOCOL(APPC).

For the INDIRECT connection (also known as an indirect link or an indirect system) you need, in the local system, a CONNECTION definition only. You do not need a SESSIONS definition: the sessions that are used are those of the intermediate system. The following attributes of the CONNECTION definition are significant:

ACCESSMETHOD
You should specify this as INDIRECT.

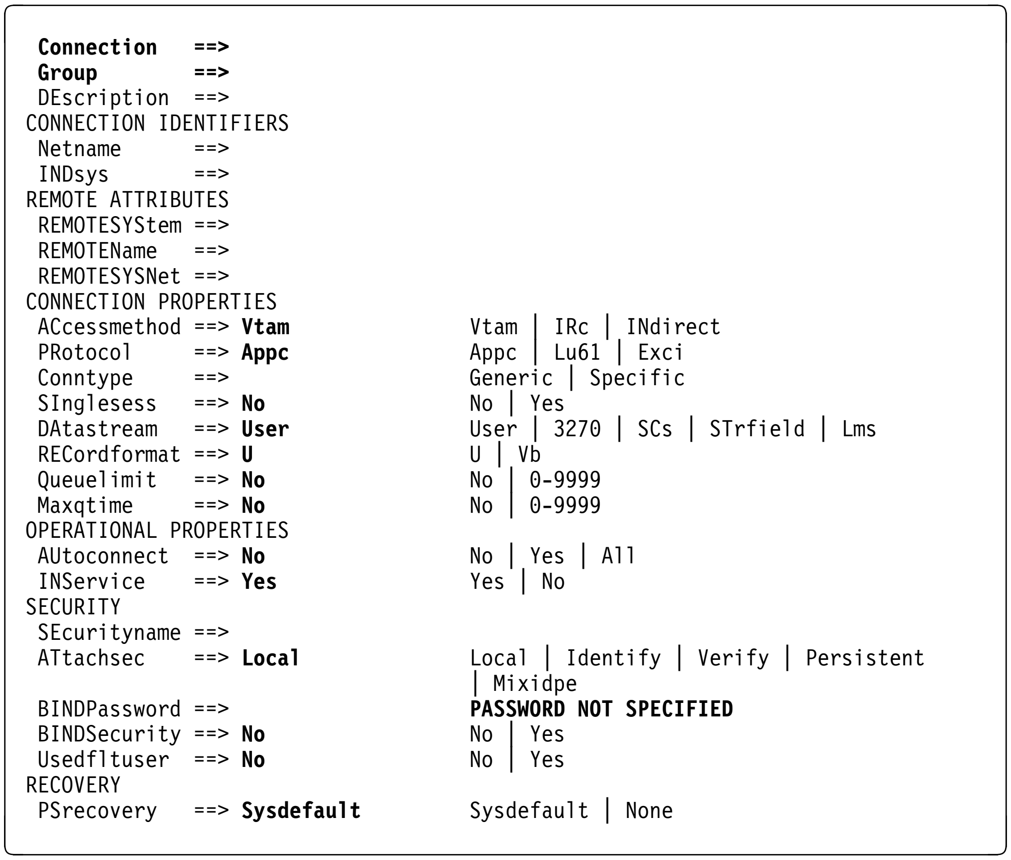
NETNAME
You should name the APPLID of the terminal-owning system.

INDSYS
You should name the CONNECTION definition for the MRO or APPC link that is the start of a path to the terminal-owning system.

More information about defining intercommunication resources

Before you start creating definitions for these resources, see the *CICS Intercommunication Guide* for further guidance. There you will find many useful examples of the attributes you must specify for different types of links and sessions.

Defining a CONNECTION



```
 Connection   ==>
 Group        ==>
 DEscription  ==>
CONNECTION IDENTIFIERS
 Netname      ==>
 INDsys       ==>
REMOTE ATTRIBUTES
 REMOTESYStem ==>
 REMOTEName   ==>
 REMOTESYSNet ==>
CONNECTION PROPERTIES
 ACcessmethod ==> Vtam             Vtam | IRc | INdirect
 PRotocol     ==> Appc             Appc | Lu61 | Exci
 Conntype     ==>                  Generic | Specific
 SInglesess   ==> No               No | Yes
 DAtastream   ==> User             User | 3270 | SCs | STrfield | Lms
 RECordformat ==> U                U | Vb
 Queuelimit   ==> No               No | 0-9999
 Maxqtime     ==> No               No | 0-9999
OPERATIONAL PROPERTIES
 AUtoconnect  ==> No               No | Yes | All
 INService    ==> Yes              Yes | No
SECURITY
 SEcurityname ==>
 ATtachsec    ==> Local            Local | Identify | Verify | Persistent
                                   | Mixidpe
 BINDPassword ==>                  PASSWORD NOT SPECIFIED
 BINDSecurity ==> No               No | Yes
 Usedfltuser  ==> No               No | Yes
RECOVERY
 PSrecovery   ==> Sysdefault       Sysdefault | None
```

Figure 25. The DEFINE panel for CONNECTION

ACCESSMETHOD({VTAM|IRC|INDIRECT})
Indicates the access method to be used for this connection.

VTAM
Specifies that communication between the local CICS region and the system defined by this CONNECTION is through VTAM. You can use VTAM intersystem communication (ISC) for systems that are in different VSE images or in different address spaces in the same VSE image.

IRC
Specifies that communication between the local CICS region and the region defined by this CONNECTION is through the interregion communication (IRC) program DFHIRP. You can only use IRC for multiregion operation (MRO) for regions that are in the same VSE image.

INDIRECT
Communication between the local CICS system and the system defined by this CONNECTION will be through the system named in the INDSYS operand.

ATTACHSEC({ LOCAL|IDENTIFY|VERIFY|PERSISTENT|MIXIDPE})
Indicates the level of attach-time user security required for the connection.

LOCAL
The authority of the user is taken to be that of the link itself, and you will be relying on link security alone to protect your resource. If the PROTOCOL attribute on the CONNECTION definition is LU6.1, you must specify LOCAL.

IDENTIFY
Incoming attach requests must specify a user identifier. You should enter IDENTIFY when the connecting system has a security manager, for example, if it is another CICS system.

VERIFY
Incoming attach requests must specify a user identifier and a user password. You should enter VERIFY when the connecting system has no security manager and hence cannot be trusted.

You should not specify VERIFY for CICS to CICS communication, because CICS does not send passwords.

PERSISTENT
Incoming attach requests must specify a user identifier and a user password on the first attach request. Subsequent attach requests require only the user identifier. This should be used only between a PWS (programmable workstation, for example, an IBM Personal System/2) and CICS.

MIXIDPE
Supports incoming attach requests which may be using either or both IDENTIFY or PERSISTENT security types. The security type actually used will depend on the incoming attach request.

AUTOCONNECT({NO|YES|ALL})
For systems using ACCESSMETHOD(VTAM), you specify with AUTOCONNECT(YES) or (ALL) that sessions are to be established (that is, BIND is to be performed). Such sessions are set up during CICS initialization, or when you use the CEMT or EXEC CICS SET VTAM OPEN command to start communication with VTAM. If the connection cannot be made at these times because the remote system is unavailable, you must subsequently acquire the link by using the CEMT or EXEC CICS SET CONNECTION(sysid) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and itself initiates communications.

What you have to specify for APPC and LU6.1 connections is discussed below:

APPC
For CONNECTIONs with SINGLESESS(NO) specified, CICS tries to bind, on system start-up, the LU services manager sessions in mode group SNASVCMG.

For CONNECTIONs with SINGLESESS(YES) specified, the AUTOCONNECT operand is ignored. You should instead use the AUTOCONNECT operand of the SESSIONS definition.

NO
CICS will not attempt to bind sessions when the connection is established.

YES
CICS will attempt to bind only contention winning sessions when the connection is established.

ALL
On this definition, ALL is equivalent to YES, but you can specify ALL to be consistent with the SESSIONS definition.

You should not specify ALL for connections to other CICS systems. This can lead to a bind race condition, and is discussed in the *CICS Intercommunication Guide*.

LU6.1
This option is not applicable on an LU6.1 CONNECTION.

Specify AUTOCONNECT(YES) on the SESSIONS if you want the connection to be established at initialization or CEDA install.

Specify AUTOCONNECT(NO) on the SESSIONS if you don't want the connection to be established at initialization or CEDA install.

BINDPASSWORD(password) (APPC only)
Enter a password of up to 16 hexadecimal characters (0-9, A-F). A password of less than 16 characters will be padded on the right with hexadecimal zeros.

CICS masks the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

If you supply a password, an identical password must be supplied in the remote system to ensure bind-time security, allowing a connection to be established.

BINDSECURITY({NO|YES}) (APPC only)
This indicates whether an ESM is being used for bind-time security.

NO
No external bind-time security is required. However, if you define a password on the BINDPASSWORD parameter, CICS defaults to using its own bind security checking.

YES
If security is active and the XAPPC system initialization parameter is set to YES, CICS will attempt to extract the session key from the ESM in order to perform bind-time security. If no ESM profile is available, the bind fails.

CONNECTION(name)
The name of this CONNECTION definition. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

This is the name specified as REMOTESYSTEM on RDO FILE, TERMINAL, TRANSACTION, and PROGRAM definitions, and as SYSIDNT on DFHTST and DFHDCT TYPE=REMOTE macros.

The name that you specify becomes the name of the TCSE (the TCT entry for the CONNECTION) when this CONNECTION definition is installed. For this reason, the CONNECTION name must be unique, but remember that terminals are also defined by entries in the TCT (TCTTEs) so the names of TERMINAL definitions must also be taken into account when choosing unique names.

CONNTYPE({SPECIFIC|GENERIC})
For external CICS interface connections, indicates the nature of the connection.

SPECIFIC
The connection is for communication from a non-CICS client program to the CICS region, and is specific. A specific connection is an MRO link with one or more sessions dedicated to a single user in a client program. For a specific connection, NETNAME is mandatory.

GENERIC
The connection is for communication from a non-CICS client program to the CICS system, and is generic. A generic connection is an MRO link with a number of sessions to be shared by multiple EXCI users. For a generic connection you cannot specify the NETNAME attribute.

DATASTREAM({ USER|3270|SCS|STRFIELD|LMS})
The type of data stream.

USER
Let DATASTREAM default to USER, if the data stream is user-defined. If you are communicating between multiple CICS systems, you should always let DATASTREAM default to USER.

3270
The data stream is a 3270 data stream as defined in the type 6.1 logical unit (LUTYPE6.1) architecture.

SCS
The data stream is an SCS data stream as defined in the LUTYPE6.1 architecture.

STRFIELD
The data stream is a structured field data stream as defined in the LUTYPE6.1 architecture.

LMS
The data stream is a Logical Message Services (LMS) data stream consisting of FMH4s and FMH8s as defined in the LUTYPE6.1 architecture.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDSYS(name)
The name of an intermediate system that will be used to relay communications between this system and the remote system. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

You may name an intermediate system only if you specify ACCESSMETHOD(INDIRECT). The name must be the name of a CONNECTION definition.

INSERVICE({YES|NO})
The status of the connection that is being defined.

YES Indicates that transactions may be initiated and messages may automatically be sent across the connection.

NO Indicates that the connection can neither receive messages nor transmit input.

MAXQTIME
A time control on the wait time of queued allocate requests that are waiting for free sessions on a connection that appears to be unresponsive. The maximum queue time is used only if a queue limit is specified on QUEUELIMIT, and then the time limit is applied only when the queue length has reached the QUEUELIMIT value.

You can specify either NO, or a number:

NO
CICS maintains the queue of allocate requests that are waiting for a free session. No time limit is set for the length of time requests can remain queued (though the DTIMOUT mechanisms can apply to individual requests). In this case, a value of `X'FFFF'` is passed on the XZIQUE parameter list (in field UEPEMXQT).

number
The approximate upper limit on the time that allocate requests can be queued for a connection that appears to be unresponsive. The number represents seconds in the range 0 through 9999.

CICS uses the maximum queue time parameter to control a queue of allocate requests waiting as follows:

- When the number of queued allocate requests reaches the queue limit (QUEUELIMIT), and
- A new allocate request is received for the connection, and
- The rate of processing for the queue indicates that, on average, the new allocate will take more than the maximum queue time, then
- The queue is purged, and message DFHZC2300 is issued.

No further queuing takes place until the connection has successfully freed a session. At this point, CICS issues DFHZC2301 and resumes normal queuing.

You can also control the queuing of allocate requests through an XZIQUE global user exit program. This allows you more flexibility to use statistics provided by CICS, which report the state of the link. You can use these statistics, in combination with the queue limit and maximum queue time values you specify, to make more specialized decisions about queues.

The MAXQTIME value is passed to an XZIQUE global user exit program on the XZIQUE parameter list, if the exit is enabled. See the *CICS Customization Guide* for programming information about writing an XZIQUE global user exit program.

You can also specify the NOQUEUE|NOSUSPEND option on the ALLOCATE command to prevent an explicit request being queued. See the *CICS Application Programming Reference* manual for programming information about these API options.

NETNAME(name)
The network name that identifies the remote system. The name can be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

The NETNAME is the APPLID of the remote system or region. For a connection to an XRF complex, the NETNAME is the generic APPLID of the complex.

For VTAM, the APPLID is the label of the remote VTAM VBUILD TYPE=APPL statement.

If you do not supply a NETNAME, the CONNECTION name is used by default.

There are some rules about duplicate NETNAMEs. You **cannot** have:

- Two or more APPC links with the same NETNAME
- An APPC link and an LUTYPE6.1 link with the same NETNAME
- Two or more IRC connections with the same NETNAME.

You **can** have:

- An IRC connection and an LUTYPE6.1 connection with the same NETNAME
- An IRC connection and an APPC connection with the same NETNAME
- Two or more LUTYPE6.1 connections with the same NETNAME.

You cannot use an ALIAS when naming an APPC or LUTYPE6.1 link. CICS requires that you use the real NETNAME of the connecting partner. Any attempt to use and alias will cause the BIND to be rejected.

PROTOCOL({APPC|LU61|EXCI|blank})
The type of protocol that is to be used for the link.

blank
For MRO between CICS regions. You must leave the PROTOCOL blank for MRO, and on the SESSIONS definition you must specify LU6.1 as the PROTOCOL.

APPC (LUTYPE6.2 protocol)
Advanced program-to-program communication, or APPC protocol. This is the default value for ACCESSMETHOD(VTAM). Specify this for CICS-CICS ISC.

LU61
LUTYPE6.1 protocol. Specify this for CICS-CICS ISC or CICS-IMS ISC, but not for MRO.

EXCI
The external CICS interface. Specify this to indicate that this connection is for use by a non-CICS client program using the external CICS interface.

PSRECOVERY({<u>SYSDEFAULT</u>|NONE})
In a CICS region running with persistent sessions support, this specifies whether, and how, LU6.2 sessions are recovered on system restart within the persistent session delay interval.

<u>SYSDEFAULT</u>
If a failed CICS system is restarted within the persistent session delay interval, the following actions occur:

- User modegroups are recovered to the SESSIONS RECOVOPTION value.
- The SNASVCMG modegroup is recovered.
- The connection is returned in ACQUIRED state and the last negotiated CNOS state is returned.

NONE
All sessions are unbound as out-of-service with no CNOS recovery.

QUEUELIMIT
The maximum number of allocate requests that CICS is to queue while waiting for free sessions. You can specify either NO, or a number:

<u>NO</u>
There is no limit set to the number of allocate requests that CICS can queue while waiting for a free session. In this case, a value of `X'FFFF'` is passed on the XZIQUE parameter list (in field UEPQUELM).

number
The maximum number of allocate requests, in the range 0 through 9999, that CICS can queue on the connection while waiting for a free session. When the number of queued allocate requests reaches

this limit, CICS rejects subsequent allocate requests until the queue drops below the limit.

This queue limit is passed to an XZIQUE global user exit program on the XZIQUE parameter list if the exit is enabled.

You can also control the queuing of allocate requests through the MAXQTIME parameter, and through an XZIQUE global user exit program. See the MAXQTIME parameter for more information about controlling queues.

Notes:

1. The queueing of requests applies to ALLOCATE requests only. On an LU62 session, Function Shipping requests will be failed with a SYSIDERR immediately if the MAXIMUM() value is reached. This option should be used with caution on a link where both Allocate and Function Shipping requests occur.
2. BIND re-negotiation is not triggered, even if there are unused secondary sessions. Unless the CEMT SET MODE command is used to force re-negotiation, the queuelimit will come into play as soon as all the primary sessions are in use.

RECORDFORMAT({U|VB})
The type of SNA chain.

U Let RECORDFORMAT default to U if the SNA chain is a single, unblocked stream of data. You can have private block algorithms within the SNA chain.

You should let RECORDFORMAT default to U if you are communicating between multiple CICS systems.

VB The SNA chain is formatted according to the VLVB standard as defined in the LUTYPE6.1 architecture.

REMOTENAME(name)
The name by which the APPC connection for transaction routing is known in the system or region that owns the connection. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. The remote system or region could be an APPC device (see “APPC devices for transaction routing” on page 188).

REMOTESYSNET(name)
The network name (APPLID) of the system that owns the connection. The name can be up to eight characters in length. It follows assembler language rules, and must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

Use REMOTESYSNET when transaction routing to remote APPC systems or devices and there is no direct link between the region in which this definition is installed and the system that owns the connection to the remote device. You do not need to specify REMOTESYSNET if either of the following is true:

- You are defining a local connection (that is, REMOTESYSTEM is not specified, or specifies the name of the local system).
- REMOTESYSTEM names a direct link to the system that owns the connection.

REMOTESYSTEM(name)
The name that identifies the intercommunication link to the system that owns the connection. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

This is the CONNECTION name on the CONNECTION definition for the intercommunication link.

REMOTESYSTEM is used for transaction routing to remote APPC systems or devices. If it is not specified, or if it is specified as the name of the local system, then this connection will be local to this system. If the name is that of another system, the connection will be remote. You can therefore use the same definition for the connection in both the local system and a remote system.

If there are intermediate systems between this CICS and the region that owns the (connection to) the device, REMOTESYSTEM should specify the first link in the path to the device-owning region. If there is more than one possible path, it should specify the first link in the preferred path.

SECURITYNAME(name)
For APPC and LU6.1 links only, this is the security name of the remote system.

In a CICS system with security initialized (SEC=YES), the security name is used to establish the authority of the remote system.

Note: If USERID is specified in the session definition (DEFINE SESSIONS command) associated with the connection definition, it overrides the userid specified in the SECURITYNAME parameter, and is used for link security.

The security name (or USERID on the sessions definition) must be a valid ESM userid on your system. Access to protected resources on your system is based on the ESM user profile and its group membership.

For further information on defining connections for MRO, LUTYPE6.1, and APPC, see the *CICS Security Guide*.

SINGLESESS({NO|YES})
YES indicates that the definition is for an APPC terminal on a single session APPC link to CICS. The MODENAME attribute of the SESSIONS definition can be used to supply a modename for the single session mode set.

Note that an APPC single session terminal can also be defined as a TERMINAL-TYPETERM definition. Both the TERMINAL-TYPETERM definition and the CONNECTION definition can be autoinstalled. If you are considering using autoinstall, see Chapter 9, “Autoinstall for VTAM terminals” on page 107 and Chapter 10, “Autoinstall for APPC connections” on page 121.

USEDFLTUSER({NO|YES}) (APPC and MRO only)

NO Indicates that each inbound attach FMH will be checked for the presence of those fields required by the ATTACHSEC option and if the required fields are not present a protocol violation message will be issued and the attach will fail. NO is the default.

YES Indicates that some checks on the validity of the attach FMH are bypassed. This provides the same level of security as in previous releases of CICS. See 'Attach Time Security and the USEDFLTUSER option' in the *CICS Security Guide*.

Chapter 13. FILE

The following resources associated with CICS files can be managed using RDO:

- VSAM files
- Data tables
- Remote VSAM files
- Remote DAM files
- VSAM local shared resource (LSR) pools

You use the FILE definition to describe to CICS file control the physical and operational characteristics of a file. The definition includes keywords that provide information about record characteristics, types of operations allowed on the file, recovery attributes, and the operations that are to be journaled. This information is used to generate control information used by CICS as well as an access control block (ACB). CICS files correspond to physical data sets that must have been defined to VSAM before they are used.

For the file to be used by an active CICS system, its definition must have been installed on to the system. CICS file control uses the definition to find the file when it needs to access it, to keep count of the number of tasks using the file, to maintain a record of the address of the associated ACB, and to capture processing statistics.

Remote files

When multiple CICS systems are connected, they can share each other's files; all such files must be defined to CICS, including those belonging to another system. Files on other systems are defined as 'remote'.

The resource attributes needed by CICS for remote files are not specific to the access method used. You can therefore define both remote DAM files and remote VSAM files using RDO.

If you name a REMOTESYSTEM, you may also supply a REMOTENAME, which is the name of the ***file*** used in the remote system.

If you specify a REMOTESYSTEM name that corresponds to the system in which the install has been made, a local FCT entry is created. Otherwise a remote FCT entry is created.

Installing FILE definitions

Adopt the following procedure to install a FILE definition.

1. If the file already exists, ensure that it is closed and disabled:
   ```
   CEMT SET FILE(filename) CLOSED DISABLED
   ```
2. Terminate the CEMT command.
3. Install the file definition:
   ```
   CEDA INSTALL GROUP(groupname) FILE(filename)
   ```
4. When you have successfully installed the group containing the file, use CEMT to open and enable the file if it is not already defined as open and enabled:
   ```
   CEMT SET FILE(filename) OPEN ENABLED
   ```

Trapping file and data set recovery inconsistencies

Always ensure consistency of recovery attributes between files referring to the same base data set cluster or its paths. File opens that detect an inconsistency in the settings for the file and those for the associated data set will fail.

The first file open for the base data set determines the base data set recovery attributes.

To look at the recovery attributes, use the CEMT INQUIRE DSNAME or EXEC CICS INQUIRE DSNAME command on the base cluster to which the file refers. If all files are consistent, the recovery attributes on the file will be the same as on the base cluster.

A global user exit, XFCNREC, is provided for any user who wishes to continue processing regardless of any inconsistencies in the backout setting for files associated with the same data set. If XFCNREC is used to suppress open failures that are a result of inconsistencies in the backout settings, a warning message will be issued to alert the user that the integrity of the data set can no longer be guaranteed. Any CEMT INQUIRE DSNAME or EXEC CICS INQUIRE DSNAME RECOVSTATUS command from this point onward will return NOTRECOVABLE regardless of the recovery attribute that CICS has previously enforced on the base cluster. This condition will remain until the next CEMT SET DSNAME REMOVE or EXEC CICS SET DSNAME REMOVE command or COLD START. Note that it may survive a COLD START if the associated data set is in a backout failed state, because backout failed is treated as a special case on COLD START with some data set information recovered from the catalog.

The order in which files are opened for the same base data set will determine the content of the message received on suppression of an open failure using XFCNREC. If the base cluster block is set as unrecoverable and a mismatch has been allowed, access to the data set, via an unrecoverable file, may be allowed before the data set is fully recovered.

See the *CICS Customization Guide* for information about XFCNREC.

File control uses the backout setting from the file definition to decide whether to do logging for a file request.

CICS takes the actions shown in the following list when opening a file for update processing (that is, if you set SERVREQ=ADD, DELETE, or UPDATE. If you set only SERVREQ=READ and/or BROWSE, CICS does not make these consistency checks). These checks are not made at resource definition or install time.

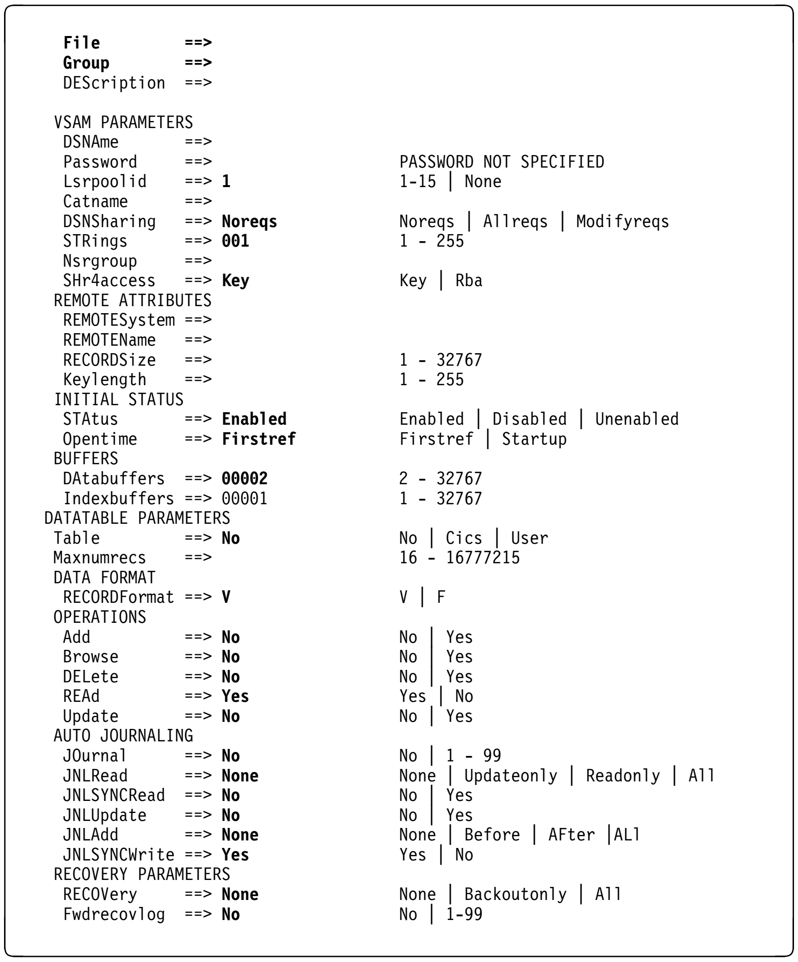
- If an FCT entry refers to an alternate index (AIX) path and RECOVERY is ALL or BACKOUTONLY, the AIX must be in the upgrade set for the base. This means that any changes made to the base data set are also reflected in the AIX. If the AIX is not in the upgrade set, the attempt to open the FCT entry for this AIX path fails.
- If an FCT entry is the first to be opened against a base cluster since the last cold start, the recovery attributes of the FCT entry are copied into the base cluster block.
- If an FCT entry is not the first to be opened for update against a base cluster since the last cold start, the recovery attributes in the FCT entry are checked against those copied into the base cluster block at first open. There are the following possibilities:
  - Base cluster has RECOVERY(NONE):
    - FCT entry defined with RECOVERY(NONE): the open proceeds.
    - FCT entry defined with RECOVERY(BACKOUTONLY): the attempt to open the file fails unless the user is making use of the XFCNREC global user exit to allow inconsistencies in backout settings for files associated with the same base data set.
    - FCT entry defined with RECOVERY(ALL): the open fails.
  - Base cluster has RECOVERY(BACKOUTONLY):

    - FCT entry defined with RECOVERY(NONE): the attempt to open the file fails unless the user is making use of the XFCNREC global user exit to allow inconsistencies in backout settings for files associated with the same base data set.
    - FCT entry defined with RECOVERY(BACKOUTONLY): the open proceeds.
    - FCT entry defined with RECOVERY(ALL): the open fails.
  - Base cluster has RECOVERY(ALL):
    - FCT entry defined with RECOVERY(NONE): the open fails.
    - FCT entry defined with RECOVERY(BACKOUTONLY): the open fails.
    - FCT entry defined with RECOVERY(ALL): the open proceeds unless the setting of FWDRECOVLOG is different from the base cluster setting in which case the open fails.

Any failure to open a data set for an FCT entry results in a message to the operator. If necessary, the recovery options must be changed. To change the recovery attributes (held in the base cluster block) of a VSAM data set, you can use the CEMT SET DSNAME REMOVE or EXEC CICS SET DSNAME REMOVE commands. This deletes the base cluster block, so CICS has no record of prior recovery settings for the this VSAM data set. The next file to open against this data set causes a new base cluster block to be built and, if the file is opened for update, the data set takes on the recovery attributes of this file.

The base cluster block, together with its recovery attributes, and the inconsistency condition which may be set if using XFCNREC, is preserved even when all the files relating to it are closed, and across warm and emergency restarts. It will also survive a COLD START if the associated data set is in a backout failed state, because backout failed is treated as a special case on COLD START with some information recovered from the catalog.

Defining a FILE



```
 File        ==>
 Group       ==>
 DEScription ==>

VSAM PARAMETERS
 DSNAme      ==>
 Password    ==>                    PASSWORD NOT SPECIFIED
 Lsrpoolid   ==> 1                  1-15 | None
 Catname     ==>
 DSNSharing  ==> Noreqs             Noreqs | Allreqs | Modifyreqs
 STRings     ==> 001                1 - 255
 Nsrgroup    ==>
 SHr4access  ==> Key                Key | Rba
REMOTE ATTRIBUTES
 REMOTESystem ==>
 REMOTEName  ==>
 RECORDSize  ==>                    1 - 32767
 Keylength   ==>                    1 - 255
INITIAL STATUS
 STAtus      ==> Enabled            Enabled | Disabled | Unenabled
 Opentime    ==> Firstref           Firstref | Startup
BUFFERS
 DAtabuffers ==> 00002              2 - 32767
 Indexbuffers ==> 00001             1 - 32767
DATATABLE PARAMETERS
Table        ==> No                 No | Cics | User
Maxnumrecs   ==>                    16 - 16777215
DATA FORMAT
 RECORDFormat ==> V                 V | F
OPERATIONS
 Add         ==> No                 No | Yes
 Browse      ==> No                 No | Yes
 DELete      ==> No                 No | Yes
 REAd        ==> Yes                Yes | No
 Update      ==> No                 No | Yes
AUTO JOURNALING
 JOurnal     ==> No                 No | 1 - 99
 JNLRead     ==> None               None | Updateonly | Readonly | All
 JNLSYNCRead ==> No                 No | Yes
 JNLUpdate   ==> No                 No | Yes
 JNLAdd      ==> None               None | Before | AFter |ALl
 JNLSYNCWrite ==> Yes               Yes | No
RECOVERY PARAMETERS
 RECOVery    ==> None               None | Backoutonly | All
 Fwdrecovlog ==> No                 No | 1-99
```

Figure 26. The DEFINE panel for FILE

ADD(NO|YES)
Specifies whether records can be added to the file.

BROWSE(NO|YES)
Specifies whether records can be retrieved sequentially from the file.

CATNAME(name)
The name of the VSAM catalog in which the data set is defined. The name can be up to seven characters in length. The acceptable characters are A-Z, 0-9, $ @ and #. Lowercase characters are converted to uppercase.

DATABUFFERS(2|value)
A value, in the range 2 through 32767, to define the number of buffers to be used for data. The minimum value you may specify is one more than the number of strings defined in the STRINGS attribute.

DELETE(NO|YES)
Specifies whether records can be deleted from the file.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

DSNAME(name)
The data set name (as known to the operating system) to be used for this file. The name is composed of 1 to 44 characters, acceptable characters are A-Z, 0-9, @, #, $, ., and -. Names consisting of more than eight characters must be segmented by periods; 1- to 8-charaters may be specified between periods. The first character of any name or name-segment must be chosen from A-Z, @, #, and $. The last character of a name cannot be a period, and the name may not contain two consecutive periods.

At file open time, if no JCL statement exists for this file, the open is preceded by a dynamic allocation of the file using this DSNAME.

If a JCL statement exists for this file in the CICS start-up job, the DSNAME specified on it takes precedence over this DSNAME.

DSNSHARING(<u>NOREQS</u>|ALLREQS|MODIFYREQS)
Indicates whether VSAM data set name sharing will be used for the VSAM file. The possible values are:

<u>NOREQS</u>
Data set name sharing will not be set in the ACB when the file is opened, and will therefore not be used for this file.

ALLREQS
Data set name sharing will be set in the ACB when the file is opened and will therefore be used for all file requests.

MODIFYREQS
Data set name sharing will be set in the ACB when the file is opened only if an operation of DELETE, ADD, or UPDATE is set for the file.

FILE(name)
The name can be up to seven characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

FWDRECOVLOG(<u>NO</u>|value)
The value, in the range 1 through 99, specifies which journal the after images for forward recovery are written to. This value is only used if RECOVERY(ALL) is specified.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDEXBUFFERS(<u>1</u>|value)
A value, in the range 1 through 32767, to define the number of buffers to be used for the index. The minimum value you may specify is the number of strings defined in the STRINGS attribute.

JNLADD(<u>NONE</u>|BEFORE|AFTER|ALL)
Specify the add operations you want recorded on the journal nominated by the JOURNAL parameter. Possible values are:

<u>NONE</u>
Do not journal add operations.

ALL
Journal the file control write operation both before and after the VSAM I/O operation has completed.

BEFORE
Journal the file control write operation before the VSAM I/O operation.

AFTER
Journal the file control write operation after the VSAM I/O operation.

JNLREAD(<u>NONE</u>|UPDATEONLY|READONLY|ALL)
Specify the read operations you want recorded on the journal nominated by the JOURNAL parameter. Possible values are:

<u>NONE</u>
Do not journal read operations.

UPDATEONLY
Journal only READ UPDATE operations (not READ ONLY operations).

READONLY
Journal only READ ONLY operations (not READ UPDATE operations).

ALL
Journal all read operations.

JNLSYNCREAD(<u>NO</u>|YES)
Indicates whether you want the automatic journaling records, written for READ operations to the journal specified by JOURNAL, to be written synchronously or asynchronously.

JNLSYNCWRITE(<u>YES</u>|NO)
Indicates whether you want the automatic journaling records, written for WRITE operations to the journal specified by JOURNAL, to be written synchronously or asynchronously.

JNLUPDATE(<u>NO</u>|YES)
Specify whether you want REWRITE and DELETE operations recorded on the journal nominated by the JOURNAL parameter.

JOURNAL(<u>NO</u>|value)
Indicates whether you want automatic journaling for this file. For a data table, journaling is performed only for requests that result in VSAM I/O requests. The journaled data is in the format of the VSAM record and is used for user controlled journaling. The data to be journaled is identified by the JNLADD, JNLREAD, JNLSYNCREAD, JNLSYNCWRITE and JNLUPDATE parameters.

Note: Automatic journaling is independent of logging done to the system and forward recovery logs, as specified by the RECOVERY and FWDRECOVLOG parameters.

Possible values are:

<u>**NO**</u>
No journal activity for this file.

1 Journal data is recorded on the system log.

value
The journal identification in the range 2 through 99.

KEYLENGTH(value)
The length in bytes, in the range 1 through 255, of the logical key for remote files. If not defined here, the length option must be specified in the application program that refers to this file.

LSRPOOLID(1–15|None)
The identity of the local shared resource pool. For a data table the default value for LSRPOOLID is 1, unless a value has been coded for the NSRGROUP parameter, in which case the default value is NONE.

<u>1</u>–15
The value, in the range 1 through 15, identifies the number of the VSAM shared resource pool that will be used by the VSAM data set associated with this file. The data set is defined as using VSAM Local Shared Resources (LSR).

None
Specifies that the data set associated with this file will use VSAM non-shared resources (NSR).

MAXNUMRECS(value)
If you have specified ‘CICS’ or ‘USER’ for the TABLE parameter, specify here the maximum number of entries to be accommodated in the data table, in the range 16 through 16777215.

NSRGROUP(value)
The NSRGROUP parameter only takes effect for files referencing data sets that use VSAM non-shared resources.

Code this with a symbolic name (up to eight characters) to group together file definitions that refer to the same VSAM base data set. The value is purely symbolic and need not refer to any particular file definition. It is merely necessary that all file definitions that need to be grouped together code the same name. You do not have to code this parameter to ensure correct processing, but if you do not provide it, performance of your system may be degraded.

The NSRGROUP parameter is associated with the VSAM concept of data set name sharing which causes VSAM to create a single control block structure for the strings and buffers required by all the files that relate to the same base data set.

When the first member of such a group of files is opened, the total number of strings to be allocated for all file entries in the group must be specified to VSAM (by means of the BSTRNO value in the Access Control Block). The VSAM control block structure is built this time regardless of whether the first file to be opened is associated with a path or base data set. The value of BSTRNO is calculated at this time by adding together the STRINGS values in all the file definitions with the same NSRGROUP parameter. After the first file in the group is opened, any new files added to the group will not affect the VSAM control block structure already built. This would only change if all the files open against the base were closed and then re-opened. Data set name sharing is not in effect if a file is opened for read-only processing with DSNSHARING=MODIFYREQS or any file defined with DSNSHARING=NOREQS. Such a file will still, however, contribute to the BSTRNO calculation.

If a file is using VSAM nonshared resources, and you do not provide an NSRGROUP parameter, the VSAM control block structure may be built with insufficient strings for later processing. When this happens, files may fail to open.

For files specifying that VSAM local shared resources are to be used (LSRPOOLID=n, where n is in the range 1 to 15), NSRGROUP has no effect.

The NSRGROUP parameter must not be coded for a data table.

Figure 27 shows an example of how to specify the required file control definition for a VSAM base data set and and alternate index path.

```
CEDA DEFINE FILE(VSAM10B)  GROUP(xxxxxx)
            DSNAME(DTGCAT.VSAM10B)
            ADD(YES)
            BROWSE(YES)  DELETE(YES)  READ(YES)
            UPDATE(NO)  RECORDFORMAT(F)
            STRINGS(8)  LSRPOOLID(NONE)
            RECOVERY(NONE)  NSRGROUP(GROUP1)
            INDEXBUFFERS(8)  DATABUFFERS(9)

CEDA DEFINE FILE(VSAM10P)  GROUP(xxxxxx)
            DSNAME(DTGCAT.VSAM10P)
            ADD(NO)
            BROWSE(YES)  DELETE(NO)  READ(YES)
            UPDATE(NO)  RECORDFORMAT(F)
            STRINGS(5)  LSRPOOLID(NONE)
            RECOVERY(NONE) NSRGROUP(GROUP1)
            INDEXBUFFERS(5) DATABUFFERS(6)
```

Figure 27. VSAM base data set and alternate index path definition.

OPENTIME(<u>FIRSTREF</u>|STARTUP)
Indicates when the file will be opened. Possible values are:

<u>**FIRSTREF**</u>
The file will remain closed until a request is made to open it by:

- A master terminal command
- An EXEC CICS SET FILE OPEN command in an application program

- An implicit open.

STARTUP
The file will be opened immediately after CICS initialization by an automatically initiated CICS transaction (CSFU), unless the status of the file is UNENABLED when the file will be left closed.

PASSWORD(name)
The 1-to 8-character password that will be used to verify user access to the file.

CICS will mask the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

READ(<u>YES</u>|NO)
Indicates whether records on this file can be read.

RECORDFORMAT(<u>V</u>|F)
The format of the records on the file.

<u>V</u> The records are variable length.

F The records are fixed length. For VSAM files, code this only if the VSAM access method services definition specifies fixed size records (that is, the average size is equal to the maximum size), and all the records in the file are of that size. F is invalid for user-maintained data tables. All user-maintained data tables are variable length.

RECORDSIZE(number)
specifies the maximum length in bytes of records in a remote file. (The information is not required for local files, it is obtained from the VSAM catalog.) The size specified can be in the range 1 through 32767.

RECOVERY(<u>NONE</u>|BACKOUTONLY|ALL)
Indicates the recovery to be done for this file. (See the *CICS Recovery and Restart Guide* for further information.)

<u>NONE</u>
No recovery logging for this file.

BACKOUTONLY
Log before images to the system log. For CICS-maintained data tables, BACKOUTONLY specifies that the data table and its source data set are recoverable. They will both be updated in step and, if required, recovered in step. For user-maintained tables, this specifies only dynamic backout. No log records are written and, therefore, there is no recovery at emergency restart.

Note: If the JCT system initialization parameter has a value of NO, no recovery of any sort will be performed.

Note: When specified for VSAM ESDS files, no backout will be performed by CICS.

ALL
Log before images to the system log, and after images to the journal specified in the FWDRECOVLOG parameter.

Records written to the FWDRECOVLOG are independent of any automatic journaling options that may be set.

RECOVERY=ALL together with FWDRECOVLOG provide a means of separating the needs of a forward recovery utility from those of automatic journaling. Additional information, not available via automatic journaling, is recorded on the FWDRECOVLOG. RECOVERY=ALL plus FWDRECOVLOG is the recommended way to provide forward recovery support.

Existing forward recovery utilities that used the JREQ=(WU,WN) and JID=(*nn*) DFHFCT TYPE=FILE macro settings can still be used with these settings. The RDO equivalents of these automatic journaling settings are JNLADD(BEFORE), JNLUPDATE(YES), and the JOURNAL(*nn*) parameter.

For CICS-maintained data tables, the data table and its source data set are logged, journaled, and recovered together. For user-maintained tables, specifying ALL has the same effect as specifying BACKOUTONLY: only dynamic backout is provided. There is no forward recovery support for user-maintained tables.

REMOTENAME(name)
The name by which this file is known in the system or region in which it is resident. The name can be up to seven characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. If REMOTENAME is not specified, the name given in the FILE attribute will be used.

Note: If the file resides in a CICS/ESA® or CICS Transaction Server for OS/390® system, its name can be up to eight characters long.

REMOTESYSTEM(name)
If you are operating in an ISC or MRO environment, and the file is held by a remote system, this specifies the name of the system or region in which the file is resident. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. The name you specify must be the name of the CONNECTION resource definition for the link to the remote CICS system. If you specify REMOTESYSTEM, you may also supply a REMOTENAME, to specify the name of the file in the remote system.

RESSECNUM({<u>0</u>|value|PUBLIC})
The RESSECNUM keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See

Appendix A, “Obsolete attributes retained for compatibility” on page 317 for information.

SHR4ACCESS(KEY|RBA)
Indicates how the data set is to be updated if the data set associated with this file is a VSAM KSDS defined with the SHROPT(4) attribute.

KEY
The data set is to be updated by KEY.

RBA
The data set is to be updated by RBA.

STATUS({ENABLED|DISABLED|UNENABLED})
The initial status of the file following a CICS initialization with START=COLD. You can change the status of a closed file with the master terminal transaction CEMT. The status of a file (enabled, disabled, or unenabled) following a CICS restart is recovered to its status at the previous shutdown.

ENABLED
Normal processing is allowed against this file.

DISABLED
Any request against this file from a command-level application program will cause the DISABLED condition to be passed to the program.

UNENABLED
This prevents the file being opened by an implicit open from an application program. Any such attempt to access the file will raise the NOTOPEN condition. By contrast, an explicit request to open the file (for example, a CEMT or EXEC CICS SET FILE OPEN command), will change the status to ENABLED before attempting to open the file.

STRINGS(1|value)
The number, in the range 1 through 255, of concurrent requests that can be processed against the file. When the number of requests reaches this value, CICS will queue any additional requests until one of the active requests terminates. This applies both to files using shared resources, and to those not using shared resources. *When coding STRINGS, be aware that a proportion (20%) of the specified number of strings are reserved by CICS for use in read-only requests*.

For VSAM files using shared resources, this number is not used by VSAM. It is used by CICS, not only as described above, but also to calculate the default value in the buffer pool definition.

TABLE(NO|CICS|USER)
Indicates the type of data table that you require.

NO
Data table not required.

CICS
CICS-maintained data tables. These automatically reflect all modifications to their source data set. If you specify CICS, you must also specify LSRPOOLID with a value of 1 through 15, and MAXNUMRECS with the value you require.

USER
User-maintained tables. These remain independent of their source data sets, and changes to the user-maintained tables are not reflected in corresponding source data sets. If you specify USER, you must also specify LSRPOOLID with a value of 1 through 15, RECORDFORMAT as V (or let this default to the value of V), and MAXNUMRECS with the value you require.

UPDATE(NO|YES)
Records on this file can (YES), or cannot (NO) be updated.

Chapter 14. LSRPOOL

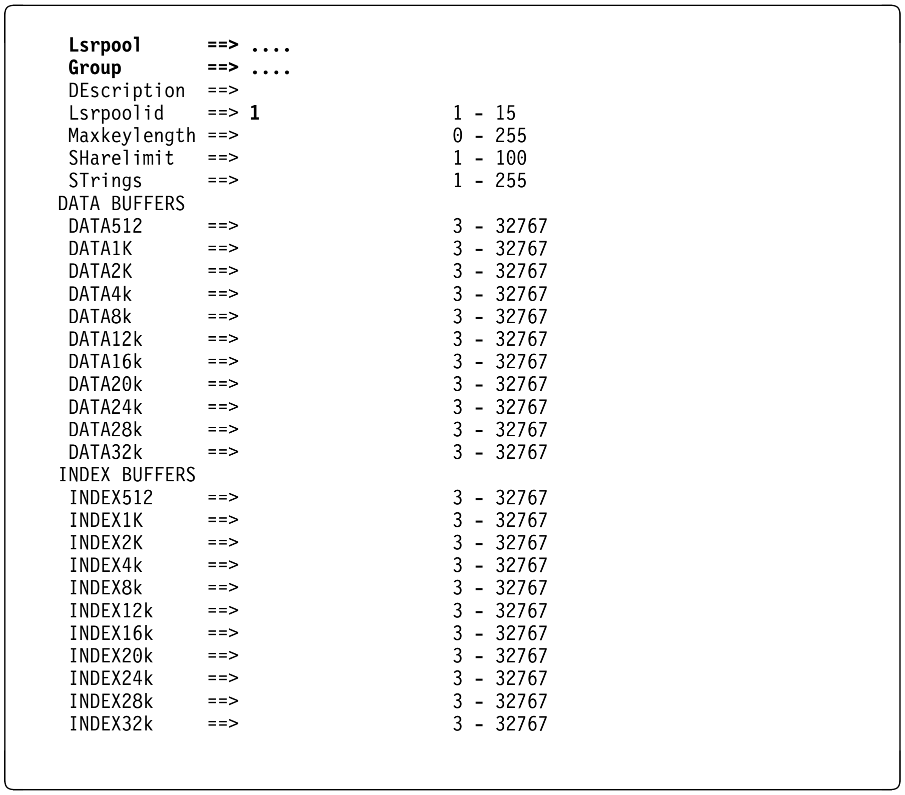
The local shared resources (LSR) pool is a reserve of data buffers and strings that VSAM uses when processing access requests for certain files. You use the LSRPOOL definition to define the size and characteristics of the pool. Up to fifteen LSR pools can be defined concurrently in the system, each identified by their LSRPOOLID. This LSRPOOLID is used to associate a FILE with an LSR pool if that file is to use shared resources.

When the LSRPOOL definition is installed in the active system, its information is stored and used when the pool with the specified ID is next built. A pool is built when the first file using a particular LSR pool is opened, and is dynamically deallocated only when no files are currently open against that pool. This means that when an LSRPOOL definition is installed into the system it may not take effect immediately.

CICS sets default attributes if an LSRPOOL is not defined, but you are advised to define the LSRPOOL anyway, for reasons of performance. In a production system, for example, delay may be incurred while pool requirements are being calculated by CICS. Another possible problem is that if files in the FCT are not allocated at the time the pool is built, the data set names will not be known to CICS. In this case, the pool is built based on the information available, but the subsequent performance of the system may suffer or files may fail to open.

You can associate the CSD with a particular LSRPOOL by specifying the CSDLSRNO system initialization parameter. The default is pool 1; you should ensure that sufficient buffers of an appropriate size are provided to permit the CSD to be used by CICS. See the *CICS System Definition Guide* for further information about CSDLSRNO and about calculating the buffer requirements for the CSD.

Defining an LSRPOOL



```
 Lsrpool      ==> ....
 Group        ==> ....
 DEscription  ==>
 Lsrpoolid    ==> 1                  1 - 15
 Maxkeylength ==>                    0 - 255
 SHarelimit   ==>                    1 - 100
 STrings      ==>                    1 - 255
DATA BUFFERS
 DATA512      ==>                    3 - 32767
 DATA1K       ==>                    3 - 32767
 DATA2K       ==>                    3 - 32767
 DATA4k       ==>                    3 - 32767
 DATA8k       ==>                    3 - 32767
 DATA12k      ==>                    3 - 32767
 DATA16k      ==>                    3 - 32767
 DATA20k      ==>                    3 - 32767
 DATA24k      ==>                    3 - 32767
 DATA28k      ==>                    3 - 32767
 DATA32k      ==>                    3 - 32767
INDEX BUFFERS
 INDEX512     ==>                    3 - 32767
 INDEX1K      ==>                    3 - 32767
 INDEX2K      ==>                    3 - 32767
 INDEX4k      ==>                    3 - 32767
 INDEX8k      ==>                    3 - 32767
 INDEX12k     ==>                    3 - 32767
 INDEX16k     ==>                    3 - 32767
 INDEX20k     ==>                    3 - 32767
 INDEX24k     ==>                    3 - 32767
 INDEX28k     ==>                    3 - 32767
 INDEX32k     ==>                    3 - 32767
```

Figure 28. The DEFINE panel for LSRPOOL

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see "How the CSD is organized—groups and lists" on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

LSRPOOL(name)
The name of the local shared resource pool being defined. The name may be up to eight characters in length.

If only DATA BUFFERS is specified, one set of buffers is built for the pool to be used for both the index and the data components of a VSAM KSDS data set.

If no data buffers are specified, CICS will calculate the buffers required for both data and index components, both components sharing the same set of buffers.

If INDEX BUFFERS is specified, two parts of the pool will be built, one for data and the other for index buffers. If you specify INDEX BUFFERS, you must also specify DATA BUFFERS.

LSRPOOLID({1|value})
The identifier of the local shared resource pool being defined. The value must be in the range 1 through 15.

MAXKEYLENGTH(value)
This value overrides part of the CICS resource calculation. It specifies the maximum key length of any of the files that are to share resources. If you do not code it, CICS will determine the maximum key length. The value must be in the range 0 through 255.

SHARELIMIT(value)
Code this if CICS is to calculate the maximum amount of resources required by the VSAM files that are to share resources. Because these resources are to be shared, some percentage of this maximum amount of resources must be allocated. The SHARELIMIT operand specifies,

as an integer, the percentage of the maximum amount of VSAM resources to be allocated. If this parameter is omitted, 50 percent of the maximum amount of resources will be allocated. If both the STRINGS and SIZE parameters are coded, SHARELIMIT will have no effect.

The number can be any value from 1 through 100.

STRINGS(value)
The limit, in the range 1 through 255, of all the strings of the files in the pool.

DATA512(value)
The number, in the range 3 through 32767, of 512-byte data buffers you require.

DATA1K(value)
The number, in the range 3 through 32767, of 1KB data buffers you require.

DATA2K(value)
The number, in the range 3 through 32767, of 2KB data buffers you require.

DATA4K(value)
The number, in the range 3 through 32767, of 4KB data buffers you require.

DATA8K(value)
The number, in the range 3 through 32767, of 8KB data buffers you require.

DATA12K(value)
The number, in the range 3 through 32767, of 12KB data buffers you require.

DATA16K(value)
The number, in the range 3 through 32767, of 16KB data buffers you require.

DATA20K(value)
The number, in the range 3 through 32767, of 20KB data buffers you require.

DATA24K(value)
The number, in the range 3 through 32767, of 24KB data buffers you require.

DATA28K(value)
The number, in the range 3 through 32767, of 28KB data buffers you require.

DATA32K(value)
The number, in the range 3 through 32767, of 32KB data buffers you require.

INDEX512(value)
The number, in the range 3 through 32767, of 512-byte index buffers you require.

INDEX1K(value)
The number, in the range 3 through 32767, of 1KB index buffers you require.

INDEX2K(value)
The number, in the range 3 through 32767, of 2KB index buffers you require.

INDEX4K(value)
The number, in the range 3 through 32767, of 4KB index buffers you require.

INDEX8K(value)
The number, in the range 3 through 32767, of 8KB index buffers you require.

INDEX12K(value)
The number, in the range 3 through 32767, of 12KB index buffers you require.

INDEX16K(value)
The number, in the range 3 through 32767, of 16KB index buffers you require.

INDEX20K(value)
The number, in the range 3 through 32767, of 20KB index buffers you require.

INDEX24K(value)
The number, in the range 3 through 32767, of 24KB index buffers you require.

INDEX28K(value)
The number, in the range 3 through 32767, of 28KB index buffers you require.

INDEX32K(value)
The number, in the range 3 through 32767, of 32KB index buffers you require.

Chapter 15. MAPSET

Each interactive application using a display device can use specific screen layouts, or maps. These are not specified in the program itself. Instead, you use basic mapping support (BMS). This gives greater flexibility and allows the maps to be used by multiple invocations of the same program, or by several different programs. You specify maps, and the fields on them, using the DFHMSD, DFHMDI, and DFHMDF macros. For further guidance on this, see the *CICS Application Programming Guide*.

Instead of using the BMS map set definition macros, you can define map sets interactively with the Screen Definition Facility program product, SDF II 1.6, program number 5746-XXT. Instead of coding macro statements, you paint the screen interactively and then generate it to get an equivalent CICS/BMS map set. At the same time, SDF II generates a data structure for each map that can then be used by the application program. The test facilities of SDF II enable you to see your map in its run-time appearance.

For information about SDF II, see the *Screen Definition Facility II for VSE: Primer for CICS/BMS Programs*, SH12-6313, and the *Screen Definition Facility II for VSE: General Introduction* manual, SH12-6315.

An application can use a series of related maps at different times during the interaction with the user. It can also use several related maps at the same time and on the same display, to build up a complete screen.

These related maps belong to a map set, which you specify in a MAPSET definition. Even if your program has only one map, this must still belong to a map set. You can define your MAPSETs either by using CEDA or DFHCSDUP, or by setting the appropriate SIT options to enable them to be autoinstalled. See Chapter 11, “Autoinstall for programs, mapsets, and partitionsets” on page 125 for further information about autoinstall.

There is no link through resource definitions between a program and its map sets. Instead, you code the MAPSET name in the BMS SEND MAP and RECEIVE MAP commands in your program.

Defining a MAPSET

```
Mapset       ==>
Group        ==>
Description  ==>
REsident     ==> No               No | Yes
USAge        ==> Normal           Normal | Transient
USEsvacopy   ==> No               No | Yes
Status       ==> Enabled          Enabled | Disabled
RSl            : 00               0-24 | Public
```

Figure 29. The DEFINE panel for MAPSET

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

MAPSET(name)
The name of this MAPSET definition. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. Do not use map set names beginning with DFH, because these characters are reserved for use by CICS.

For a BMS device-dependent map set, the map set name must be derived by adding the map set suffix to the original (1-to 7-character) map set name. The suffix depends on the parameter coded in the TERM operand of the DFHMSD macroinstruction that defined the map set.

To use device-dependent suffixes, you need to specify the BMS=(,,,DDS) system initialization parameter. For programming information on map set suffixes, see the *CICS Application Programming Reference* manual.

RESIDENT({<u>NO</u>|YES})
The residence status of the map set.

<u>NO</u>
The map set is not to be permanently resident.

YES
The map set is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system.

RSL
The RSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for information.

STATUS({<u>ENABLED</u>|DISABLED})
The map set status.

<u>ENABLED</u>
The map set may be used.

DISABLED
The map set may not be used.

USAGE({<u>NORMAL</u>|TRANSIENT})
Defines when the storage for this map set will be released.

<u>NORMAL</u>
When the use count of the map set reaches zero, it will become eligible for removal from storage as part of the normal dynamic storage compression process.

TRANSIENT
When the use count for this map set becomes zero, the storage for this map set is released. This value should be coded for map sets that are referenced infrequently.

USESVACOPY({<u>NO</u>|YES})
Defines whether the map set is to be used from the VSE shared virtual area (SVA).

<u>NO</u>
The map set is not to be used from the SVA. It will be loaded into the CICS partition.

YES
The map set can be used from the SVA if SVA=YES is specified as a system initialization parameter. The use of the map set from the SVA requires that it has been installed there and that the map set is not named by the PRVMOD start-up option. For further guidance on this, see the *CICS System Definition Guide*.

Chapter 16. PARTITIONSET

The screen areas of some display devices (the 8775 Display Terminal and the IBM 3290 Information Panel, for example), can be divided into **partitions**, which can be treated as several different small displays. Different programs or program steps in a transaction can write to or receive input from different partitions.

You specify the partition set with DFHPSD and DFHPDI macros, described for programming purposes in the *CICS Application Programming Reference* manual.

You specify each different partition configuration as a PARTITIONSET. PARTITIONSET definitions are created using CEDA or DFHCSDUP, or they can be autoinstalled if the appropriate SIT options have been set. See Chapter 11, “Autoinstall for programs, mapsets, and partitionsets” on page 125 for information.

You can name the PARTITIONSET that you want the transaction to use in the TRANSACTION definition. When the transaction starts, the information is loaded into the internal buffer of the display device.

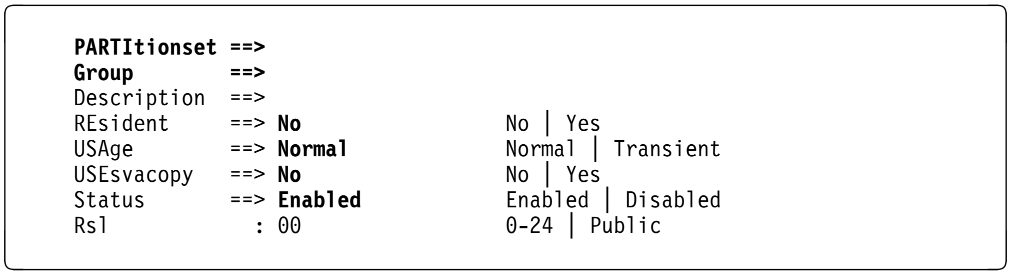
Alternatively, if you do not specify a PARTITIONSET, CICS sets the display device to its base state before the transaction is initiated.

The transaction may require CICS to load a PARTITIONSET, or change to a new one, by issuing the BMS SEND PARTNSET command. This loads the partition set dynamically, if its definition has been installed in the active CICS system.

Instead of using the BMS partition definition macros, you can define partitions interactively with the Screen Definition Facility program product, SDF II 1.6, program number 5746-XXT. Instead of coding macro statements, you paint the screen interactively and then generate it to get an equivalent CICS/BMS partitionset. At the same time, SDF II generates a data structure for each partition that can then be used by the application program. The test facilities of SDF II enable you to see your partition in its run-time appearance.

For information about SDF II, see the *Screen Definition Facility II for VSE: Primer for CICS/BMS Programs*, SH12-6313, and the *Screen Definition Facility II for VSE: General Introduction* manual, SH12-6315.

Defining a PARTITIONSET



```
PARTItionset ==>
Group        ==>
Description  ==>
REsident     ==> No                 No | Yes
USAge        ==> Normal             Normal | Transient
USEsvacopy   ==> No                 No | Yes
Status       ==> Enabled            Enabled | Disabled
Rsl            : 00                 0-24 | Public
```

Figure 30. The DEFINE panel for PARTITIONSET

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that, for each left parenthesis, there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see "How the CSD is organized—groups and lists" on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

PARTITIONSET(name)
The name of this PARTITIONSET definition. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. Do not use partition set names beginning with DFH, because these characters are reserved for use by CICS.

A partition set is a table that describes to CICS how to partition a display screen. Partition sets are created by coding and assembling a series of commands.

For a device-dependent partition set, the partition set name must be derived by adding the partition set suffix to the original (1- to 6-character) partition set name. The suffix depends on the parameter coded in the SUFFIX operand of the DFHPSD macro instruction that defined the partition set.

To use device-dependent suffixes, you need to specify the BMS=(,,,DDS) system initialization parameter.

For programming information on partition set suffixes, see the *CICS Application Programming Reference* manual.

RESIDENT({NO|YES})
The residence status of the partition set.

NO
The partition set is not to be permanently resident.

YES
The partition set is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system.

RSL
The RSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for information.

STATUS({ENABLED|DISABLED})
Enter the partition set status.

ENABLED
The partition set may be used.

DISABLED
The partition set may not be used.

USAGE({NORMAL|TRANSIENT})
Defines when the storage for this partition set will be released.

NORMAL
When the use count for this partition set reaches zero, it will become eligible for removal from storage as part of the normal dynamic program compression process.

TRANSIENT
When the use count for this partition set becomes zero, the storage for this partition set is released. This value should be coded for partition sets that are referenced infrequently.

USESVACOPY({NO|YES})
Defines whether the partition set is to be used from the VSE shared virtual area (SVA).

NO
The partition set is not to be used from the SVA. It will be loaded into the CICS partition.

YES
The partition set can be used from the SVA if SVA=YES is specified as a system initialization parameter. The use of the partition set from the SVA requires that it has been installed there and that the partition set is not named by the PRVMOD start-up option. For more details on this, see the *CICS System Definition Guide*.

Chapter 17. PARTNER

You use the PARTNER definition to enable CICS application programs to communicate via APPC protocols to a partner application program running on a remote logical unit. This interaction between a CICS application program and a partner application program is called a **conversation**.

The PARTNER definition also facilitates the use of the call to the interface with the communications element of the System Application Architecture (SAA). For more information on the SAA communications interface, see the *Common Programming Interface Communications Reference*, SC26-4399-04.

To allow the SAA communications interface to be used, you must specify the following resources:

- A PROFILE definition (see “Defining a MAPSET” on page 155)
- A CONNECTION definition (see Chapter 12, “CONNECTION” on page 131)
- A SESSIONS definition (see Chapter 20, “SESSIONS” on page 175)

You can define your CICS partner information in one of two ways:

- Create a PARTNER definition.
- In an application program, by setting SYMDESTNAME to a null value, and issuing the appropriate CPI SET calls. See the *CPI-C Communications Reference* manual for further details.

PARTNER uses the following keywords:

PROFILE
This is the name of the communication profile that specifies the interaction between transactions and the logical units involved.

NETNAME
This is the name of the logical unit on which the partner application program will be running.

What happens to PARTNER definitions

When you install a PARTNER definition, CICS attempts to resolve references to CONNECTION and PROFILE definitions. CICS then creates an entry for the PARTNER definition in the **partner resource table (PRT)**. See the *CICS Intercommunication Guide* for more information.

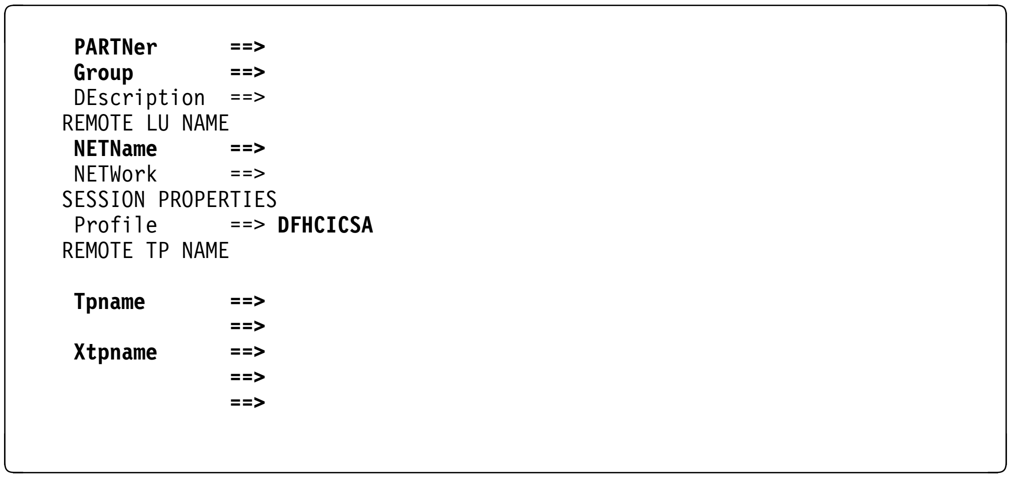
Because it is possible for programs to use the SAA communications interface SET calls to change the PARTNER name and the TPNAME name, CICS does not check that the CONNECTION definition is present when the PARTNER resource is being installed.

If you leave out the PROFILE attribute, CICS will use the default profile DFHCICSA. Since it is not possible for an SAA communications interface program to set a different profile, the PROFILE must be installed before the PARTNER resource. However, the PARTNER install will not fail if the PROFILE is missing; instead, a run-time error will occur when the partner conversation is attempted.

The MODENAME specified in the PROFILE need not be specified in a corresponding SESSIONS definition, as it is possible for the SAA communications interface program to set a different value for MODENAME.

CICS programs, and SAA communications interface programs that do not use the SET calls, require that all the relevant definitions be installed. You can use CEDA CHECK to help find out if all required definitions are in a group.

Defining a PARTNER



```
 PARTNer      ==>
 Group        ==>
 DEscription  ==>
REMOTE LU NAME
 NETName      ==>
 NETWork      ==>
SESSION PROPERTIES
 Profile      ==> DFHCICSA
REMOTE TP NAME

 Tpname       ==>
              ==>
 Xtpname      ==>
              ==>
              ==>
```

Figure 31. The DEFINE panel for PARTNER

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see "How the CSD is organized—groups and lists" on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

NETNAME(name)
The NETNAME attribute specified in the CONNECTION definition. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. For further information on the CONNECTION definition and its NETNAME attribute, see Chapter 12, "CONNECTION" on page 131.

NETWORK(name)
You can use this optional attribute to specify the name of the network on which the partner LU is located. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

PARTNER(name)
The name of this PARTNER definition. The name must be exactly eight characters in length. The acceptable characters are A-Z and 0-9. Do not use partner names beginning with DFH, because these characters are reserved for use by CICS.

A partner definition specifies the SAA communications interface information required to establish a conversation with a partner program. For further guidance on this, see the *Common Programming Interface Communications Reference*, SC26-4399-04.

PROFILE(name)
Use this attribute to specify which communication profile is to be used for the session and conversation. The default PROFILE is DFHCICSA. The name can be up to 8 characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. For information on how PROFILE resources are defined, see Chapter 18, "PROFILE" on page 165.

TPNAME(name)
Enter the name of the remote transaction program that will be running on the partner LU. The definition of a remote TP name is mandatory; you must specify either TPNAME or its alternative, XTPNAME.

This name can be up to 64 characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. If this range of characters is not sufficient for a name that you wish to specify, you may use the XTPNAME attribute instead of TPNAME.

XTPNAME(value)
This attribute may be used as an alternative to TPNAME; you **must** specify one of the two, as the definition of a remote TP name is mandatory.

Enter a hexadecimal string up to 128 characters in length, representing the name of the remote transaction program that will be running on the partner LU. All hexadecimal combinations are acceptable **except** **`X'40'`**. In order to specify an XTPNAME over 72 characters long to DFHCSDUP, put an asterisk in column 72. This causes the following line to be concatenated.

Chapter 18. PROFILE

You specify options that control the interactions between transactions and terminals or logical units as a PROFILE. The PROFILE is a means of standardizing the use of such options as screen size and printer compatibility, and the use of such functions as message journaling and the node error program.

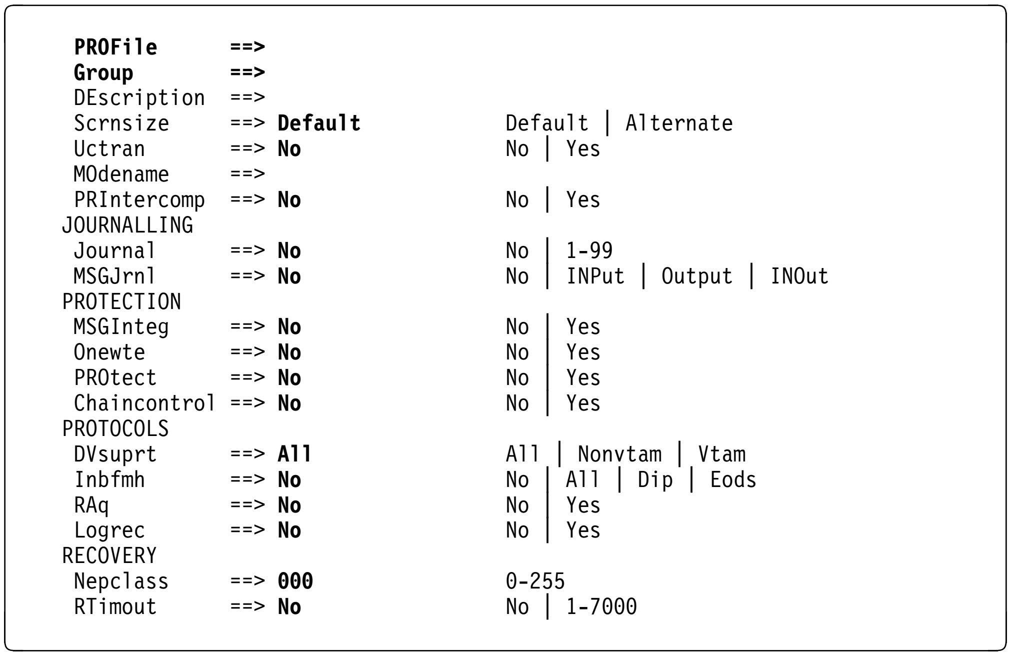
MODENAME
A profile is associated with the communication between a transaction and an LUTYPE6.1 or APPC session to another system. For APPC sessions, you refer on the PROFILE definition to the MODENAME that is also named on the SESSIONS definitions. This MODENAME is the name of the mode set to which the sessions belong. See “APPC links and parallel sessions” on page 132 and “APPC (LUTYPE6.2) single session terminal” on page 133.

When installed in CICS, the information from the PROFILE definition creates an entry in the profile table. This entry is later used by each transaction that references that PROFILE.

There are CICS-supplied PROFILE definitions suitable for most purposes. Each TRANSACTION definition names the PROFILE to be used. If you do not specify a PROFILE, the transaction uses the PROFILE supplied for using a terminal in a standard way.

With CICS intercommunication facilities (for example, function shipping), a PROFILE is needed for the communication between the transaction and the session. The attributes of the CICS-supplied profiles are shown in Appendix B, “CICS-supplied resource definitions, groups, and lists” on page 321. The *CICS Intercommunication Guide* gives further information about the CICS-supplied PROFILEs, and tells you about defining your own profiles.

Defining a PROFILE



```
 PROFile      ==>
 Group        ==>
 DEscription  ==>
 Scrnsize     ==> Default           Default | Alternate
 Uctran       ==> No                No | Yes
 MOdename     ==>
 PRIntercomp  ==> No                No | Yes
JOURNALLING
 Journal      ==> No                No | 1-99
 MSGJrnl      ==> No                No | INPut | Output | INOut
PROTECTION
 MSGInteg     ==> No                No | Yes
 Onewte       ==> No                No | Yes
 PROtect      ==> No                No | Yes
 Chaincontrol ==> No                No | Yes
PROTOCOLS
 DVsuprt      ==> All               All | Nonvtam | Vtam
 Inbfmh       ==> No                No | All | Dip | Eods
 RAq          ==> No                No | Yes
 Logrec       ==> No                No | Yes
RECOVERY
 Nepclass     ==> 000               0-255
 RTimout      ==> No                No | 1-7000
```

Figure 32. The DEFINE panel for PROFILE

CHAINCONTROL({NO|YES})
Specify YES if the application program can control the outbound chaining of request units. You must not code PROTECT(YES) as well. If you specify CHAINCONTROL(YES), then ONEWTE(YES) means one chain, and not one terminal control output request.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

DVSUPRT({ALL|NONVTAM|VTAM})
Indicates the devices (terminals or logical units) that are to be supported. The access method used by a particular terminal or logical unit is specified in its associated TCTTE.

ALL
The profile can be used with any terminal or logical unit.

NONVTAM
The profile can be used only with non-VTAM terminals.

VTAM
The profile can be used only with logical units.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INBFMH({NO|ALL|DIP|EODS}) - SNA LUs only
For profiles used with logical units, using this attribute you can specify whether a Function Management Header (FMH) received from a logical unit is to be passed to the application program.

NO
The FMHs are discarded.

ALL
All FMHs (except APPC FMHs and LU6.1 ATTACH and SYNCPOINT FMHs that are processed by CICS) are passed to the application program. This value is required for function shipping transactions such as CSMI, transactions which use distributed transaction processing, and for distributed program link requests.

DIP
The batch data interchange program (DFHDIP) is to process inbound FMHs. BMS will issue a batch data interchange receive request if a BMS receive request has been issued, and a batch data interchange receive request is issued instead of a terminal control receive request.

EODS
An FMH is passed to the application program only if it indicates end of data set (EODS).

JOURNAL({NO|journal-id})
You can specify with this attribute that you want automatic journaling of messages to take place, by specifying the identifier of the journal. If you want automatic journaling, you must also specify JCT=YES or JCT=suffix as a system initialization parameter.

NO
No automatic journaling of messages is to take place.

journal-id
The journal ID to be used for automatic journaling. This may be any number from 1 through 99. Journal number 1 is the system log.

LOGREC({NO|YES})
Enter LOGREC(YES) if the design of the application requires that each EXEC CICS RECEIVE request be satisfied by a logical record. This option allows existing 2770-and 2780-based application programs to be attached to a batch logical unit (for example, 3790 or 8100) without modification to the program.

MODENAME(name)
The name that identifies a group of sessions for use on an APPC connection. The name can be up to 8 characters in length, and must be the name of a VTAM LOGMODE entry defined to VTAM. It must not be the reserved name SNASVCMG. If you omit the modename it defaults to blanks. See the *CICS Intercommunication Guide* for more information about VTAM modenames.

If a transaction that specifies this profile has been started using an EXEC CICS START command, the MODENAME will be used for allocation of the principal facility. If a transaction performs an EXEC CICS ALLOCATE command specifying this profile, the MODENAME will be used for allocation of the alternate facility.

If you do not specify a MODENAME, CICS will select a session from any one of the mode sets that have been defined.

The CICS-supplied profile DFHCICSA is used, if PROFILE is not specified on an EXEC CICS ALLOCATE command. For function shipping, the profile DFHCICSF is always used. MODENAME is not specified on the definition for either of these profiles, but you can add a MODENAME if you make your own copy. You must then ensure that the mode sets using your MODENAME have been defined in the TERMINAL or SESSIONS definition for all the systems with which communication will take place using APPC.

If a MODENAME is specified and you wish to remove it, delete completely the value previously specified by pressing the ERASE EOF key.

MSGINTEG({NO|YES}) - SNA LUs only
YES means that a definite response is to be requested with an output request to a logical unit. You cannot specify YES for a pipeline transaction.

MSGJRNL({NO|INPUT|OUTPUT|INOUT})
Indicates which messages are to be automatically journaled. If you specify a value other than NO, you must also supply a value for the JOURNAL attribute.

NO
Message journaling is not required.

INPUT
Journaling is required for input messages.

OUTPUT
Journaling is to be performed for output messages.

INOUT
Journaling is to be performed for input and output messages.

NEPCLASS({0|value})—VTAM only
The node error program transaction class. This value overrides the value specified on the TYPETERM and SESSION definitions.

0 This results in a link to the default node error program module for VTAM devices, or is the default value for non-VTAM devices.

value
The transaction-class for the (non-default) node error program module. The value can be in the range 1 through 255. For programming information on the node error program, see the *CICS Customization Guide*.

ONEWTE({NO|YES})
Specify YES if the transaction is permitted only one write operation or EXEC CICS SEND during its execution. YES has the effect of forcing the LAST option on the first write of the transaction. Any additional write requests are treated as errors, and the task is made ready for abnormal termination.

You must specify YES for a PIPELINE transaction.

PRINTERCOMP({NO|YES})
This attribute defines the level of compatibility required for the generation of data streams to support the printer compatibility option for the BMS SEND TEXT command.

NO
Each line of output starts with a blank character, so that the format is equivalent to that on a 3270 display where an attribute byte precedes each line.

YES
No blank character is inserted, so that forms-feed characters included as the first character of your data are honored and the full width of the printer is available for your data.

If you use the BMS forms feed option, you should specify YES.

PROFILE(name)
The name of this PROFILE definition. The name can be up to eight characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. Do not use profile names beginning with DFH, because these characters are reserved for use by CICS.

Note: If you use a comma (,) in a name, you will be unable to use those commands such as

```
CEMT INQUIRE PROFILE(value1,value2)
```

where the comma serves as a list delimiter. See the *CICS-Supplied Transactions* manual for information about using lists of resource identifiers.

A profile specifies the options that will control the interaction between CICS and a terminal or logical unit. A profile name is specified on the transaction definition to indicate the set of options that will control the communication between the transaction and its principal terminal. You can also specify a profile name on an EXEC CICS ALLOCATE command to indicate the options that will control communication between the transaction and the allocated session.

CICS supplies a number of profile definitions that are suitable for most purposes. For guidance on the names of the definitions, see Appendix B, "CICS-supplied resource definitions, groups, and lists" on page 321. Further guidance is also given in the *CICS Intercommunication Guide*.

PROTECT({<u>NO</u>|YES}) - SNA LUs only
Enter PROTECT(YES) to provide recovery for output message. This option provides message integrity (see the MSGINTEG option on page 167), and also causes message logging to take place. CICS also records the contents of deferred write requests that are pending at a syncpoint, and records the receipt of the definite response (associated with the deferred write) on the system log for message recovery and resynchronization purposes. Journaling support is required during generation of the CICS system.

If you specify PROTECT(YES):

- You must specify MSGINTEG(YES). This ensures the integrity response is received.
- Definitions for the transaction CSLG and program DFHZRLG must be available.

RAQ({<u>NO</u>|YES}) - SNA terminals only
Indicates whether the 'read ahead queuing' option is required.

<u>NO</u>
The transaction will obey SNA protocols and only SEND and RECEIVE when in the correct mode. If it does not follow the protocol, then it may be abended with code ATCV.

YES
The transaction may not obey SNA protocols, and CICS queues incoming data on temporary storage until the data is specifically requested by the transaction. RAQ(YES) is provided only for compatibility with transactions that support both bisynchronous devices and logical units, and its use is not recommended. If you enter RAQ(YES), the temporary storage program must be generated.

RTIMOUT({<u>NO</u>|value})
The time-out value for the read time-out feature. The task that is timed out will receive an AKCT or AZCT abend. (Note that if a value is specified and you wish to let it default to NO, you must completely delete the value previously specified.)

RTIMOUT has no effect for MRO or basic (unmapped) APPC connections.

<u>NO</u>
The read time-out feature is not required.

value
This is an interval (MMSS for minutes and seconds) after which the task will be terminated if no input has been received from the terminal. The maximum value that can be specified is 70 minutes. The value specified in this option is rounded up to units of 16.78 seconds. Thus, the minimum value (after rounding-up) is 16.78 seconds.

SCRNSIZE({<u>DEFAULT</u>|ALTERNATE})
This attribute specifies whether the DEFAULT or ALTERNATE buffer size for a 3270 display or printer is to be used. For further information on the choice of screen sizes and buffer sizes, refer to the ALTSCREEN and DEFSCREEN attributes on the TYPETERM definition.

The SCRNSIZE value will be ignored if the TYPETERM definition has ALTSCREEN(0,0) and DEFSCREEN(0,0). That is, the screen size will be assumed from the related TERMMODEL attribute in the TYPETERM definition; the page size will be taken from PAGESIZE; the ALTPAGE value will be ignored. The 3270 EW command will be inserted for output requests with the ERASE option.

<u>DEFAULT</u>
If the TYPETERM definition has non-zero ALTSCREEN or non-zero DEFSCREEN, the default screen size mode will be applied, using the erase write (EW) command. That is, whenever the terminal issues a terminal output request with the

ERASE option, the 3270 EW command will be inserted in the data stream. The screen size specified in the DEFSCREEN attribute will be assumed, and BMS will use the value specified in the PAGESIZE attribute as the page size.

ALTERNATE
If the TYPETERM definition has non-zero ALTSCREEN, the alternate screen size mode will be applied, using the erase write alternate (EWA) command. That is, whenever a terminal output request with the ERASE option is issued, the 3270 EWA command will be inserted in the data stream. The ALTSCREEN value will be assumed as the screen size, and BMS will use the value in ALTPAGE as the page size.

SCRNSIZE(ALTERNATE) may be used for all CICS service transactions (for example, CSMT).

Note: Both DEFAULT and ALTERNATE can be overridden by the DEFAULT and ALTERNATE options on the SEND MAP, SEND TEXT, and SEND CONTROL commands. See the *CICS Application Programming Reference* for programming information about these commands.

UCTRAN({NO|YES}) – VTAM only
This attribute specifies whether terminal input is to be translated to uppercase before passing to programs for the transaction using this profile.

You can also request translation to uppercase at the terminal level on the associated TYPETERM definition (see page 235) but you should be aware of the following points:

- A TYPETERM UCTRAN(YES) definition overrides a PROFILE UCTRAN(NO) definition. So, if you specify TYPETERM UCTRAN(YES), a PROFILE UCTRAN(NO) has no effect.
- A PROFILE UCTRAN(YES) definition overrides a TYPETERM UCTRAN(NO) definition.
- Specifying TYPETERM UCTRAN(TRANID) causes the tranid to be translated to uppercase so that CICS can locate the transaction definition. All other input received by the application is translated according to what is specified for PROFILE UCTRAN.
- UCTRAN(YES) on a profile definition does not cause translation of the input data until an EXEC CICS RECEIVE or CONVERSE is executed. This means that if the transaction is routed through a dynamic routing program, for example DFHDYP, the copy of the input data passed to the routing program is unaffected by the UCTRAN option of the PROFILE definition.

Note: In a transaction routing environment where your VTAM terminals have a remote definition on the AOR, and the AOR has a different UCTRAN value from the TOR, the TOR value of UCTRANST (as specified in an EXEC CICS SET TERMINAL command) overrides that on the AOR.

Table 12 shows which portion of the terminal input is translated (transaction id and/or data) according to the setting of the UCTRAN on the PROFILE and TYPETERM resource definitions.

Table 12. The effect of UCTRAN parameters on tranid and data translation

Profile (PROFILE)	**Terminal (TYPETERM)**		
	UCTRAN (YES)	**UCTRAN (NO)**	**UCTRAN (TRANID)**
UCTRAN (YES)	Tranid: Yes Data: yes	Tranid: No Data: Yes	Tranid: Yes Data: Yes
UCTRAN (NO)	Tranid: Yes Data: Yes	Tranid: No Data: No	Tranid: Yes Data: No

Chapter 19. PROGRAM

You use the PROGRAM definition to describe the control information for a program that is stored in the program library and used to process a transaction, or part of a transaction. For example, this is where you would tell CICS whether the program can handle data located above the 16MB line. You can create PROGRAM definitions either by using CEDA or DFHCSDUP, or by setting the appropriate system initialization parameters and allowing programs to be autoinstalled. See Chapter 11, “Autoinstall for programs, mapsets, and partitionsets” on page 125 for information on autoinstall for programs.

Installing PROGRAM definitions

Use the INSTALL command to install a new PROGRAM definition in your CICS system. If the program is a new version of an existing program, you must install it again using the INSTALL command, then use CEMT to make the new version available:

```
CEMT SET PROGRAM(pgmid) NEWCOPY
```

See the *CICS-Supplied Transactions* for further information about CEMT.

Defining a PROGRAM

```
  PROGram      ==>
  Group        ==>

  DEscription  ==>
  Language     ==>                    CObol | Assembler | C | Pli
  RELoad       ==> No                 No | Yes
  RESident     ==> No                 No | Yes
  USAge        ==> Normal             Normal | Transient
  USEsvacopy   ==> No                 No | Yes
  Status       ==> Enabled            Enabled | Disabled
  RSl            : 00                 0-24 | Public
  Cedf         ==> Yes                Yes | No
  DAtalocation ==> Below              Below | Any
  EXECKey      ==> User               User | CICS
REMOTE ATTRIBUTES
  REMOTESystem ==>
  REMOTEName   ==>
  Transid      ==>
  EXECUtionset ==> Fullapi            Fullapi | Dplsubset
```

Figure 33. The DEFINE panel for PROGRAM

CEDF(Yes|No)
This defines the action of the execution diagnostic facility (EDF) when the program is running under EDF control.

Yes
The EDF diagnostic screens are displayed. If the program is translated with the NOEDF option, only the program initiation and termination EDF screens are displayed. See Table 13.

No The EDF diagnostic screens are not displayed.

Table 13. The effect on programs of CEDF(NO) and NOEDF

CEDF option on PROGRAM	**EDF option on translator**	
	EDF	**NOEDF**
YES	ALL EDF screens	Program initiation and termination screens only
NO	NO EDF screens	NO EDF screens

Note: The table shows how the CEDF option on the program resource definition interacts with the EDF option specified for the translator.

DATALOCATION({BELOW|ANY})
Commands using the SET option can return a data address to an application program; this operand defines the location of the data. For example, in the command EXEC CICS RECEIVE SET(ptr-ref), ptr-ref will be less

than 16MB if DATALOCATION(BELOW) is specified or defaulted to, but may be greater than 16MB if DATALOCATION(ANY) is specified. Note that DATALOCATION does not affect the operation of the GETMAIN command. See the *CICS Application Programming Reference* for programming information about where CICS obtains storage in response to a GETMAIN command.

BELOW
The program can handle only 24-bit addresses and must therefore only be given data located below the 16MB line. If necessary, data will be copied below the 16MB line before passing its address to the application program.

ANY
The program can handle 31-bit addresses. The address of the data can be above or below the 16MB line. The DATALOCATION options are independent from the addressing mode of the link-edited program. Programs link-edited with addressing mode AMODE(24) cannot access data above 16MB; you should therefore ensure that the DATALOCATION option you specify is compatible with the addressing mode of the link-edited application program. For example:

- You are recommended to specify ANY for all 31-bit programs, unless they pass CICS data addresses on to other 24-bit programs.
- Specify DATALOCATION(BELOW) for an AMODE(24) program, unless storage addresses are being passed to a program that can access storage above 16MB, or the program explicitly switches addressing mode.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

EXECKEY(USER|CICS)
This specifies the key in which CICS gives control to the program, and determines whether the program can modify CICS-key storage. For all except reentrant programs (that is, programs link-edited with the RENT attribute), EXECKEY also defines, in conjunction with the residency mode, into which of the DSAs CICS loads the program (see note 2).

USER
This specifies that CICS is to give control to the program in user key when it is invoked. CICS loads the program into one of the user-key shared DSAs—either the SDSA or the ESDSA, depending on the residency mode specified for the program (see note 2 below).

In a CICS region with storage protection active, a user-key program has read and write access to all user-key storage, but read-only access to CICS-key storage.

User-key programs always have read-only access to CICS-key storage.

CICS
This specifies that CICS is to give control to the program in CICS key when it is invoked. CICS loads the program into one of the CICS-key DSAs—either the CDSA or the ECDSA, depending on the residency mode specified for the program (see note 2).

In a CICS region with storage protection active, a CICS-key program has read and write access to CICS-key and user-key storage of its own task and all other tasks.

Notes:

1. First-level global user exit programs, task-related user exit programs, user-replaceable programs, and PLT programs always receive control in CICS key, and regardless of the EXECKEY definition.
2. If the program is link-edited with the RENT attribute, CICS loads the program into one of the read-only DSAs—either the RDSA or the ERDSA, depending on the residency mode specified for the program, regardless of the EXECKEY option. The read-only DSAs are allocated from read-only storage only if RENTPGM=PROTECT is specified as a system initialization parameter.

EXECUTIONSET(FULLAPI|DPLSUBSET)
This indicates whether you want CICS to link to and run a program as if it were running in a remote CICS region.

FULLAPI
Specify FULLAPI if you want CICS to link to the program and run it without the API restrictions of a DPL program. The program can use the full CICS API.

DPLSUBSET
Specify DPLSUBSET if you want CICS to link to the program and run it with the API restrictions of a remote DPL program. See the *CICS Application Programming Guide* for details of the API restrictions for a DPL program.

The EXECUTIONSET parameter applies only when the REMOTESYSTEM name is the same name as the local CICS region. Its purpose is to test programs in a local CICS environment as if they were running as DPL programs.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

LANGUAGE(COBOL|ASSEMBLER|C|PLI)
indicates the program language. There is no default language, and if you omit the language, or define it incorrectly, the CICS program manager deduces the correct language and ignores your incorrect definition.

If you intend to share the CSD with a level of CICS prior to CICS Transaction Server for VSE/ESA Release 1, you should not leave this field blank, as it will default to COBOL in the earlier release, which may not be correct.

COBOL
This is a COBOL program.

ASSEMBLER
This is an assembler language program.

C This is a C program.

PLI
This is a PL/I program.

PROGRAM(name)
The name of this PROGRAM definition. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. Do not use program names beginning with DFH, because these characters are reserved for use by CICS.

To use the program in an active CICS system, it must have been link-edited into one of the libraries specified as part of the LIBDEF search chain for the CICS job or, if it is reentrant, it may have been placed in the shared virtual area (SVA). For more information about installing application programs, see the *CICS System Definition Guide*.

RELOAD({NO|YES})
Indicates whether a program control link, load, or XCTL request is to bring in a fresh copy of a program.

NO
Any valid copy of the program currently in storage will be reused for the request.

YES
A fresh copy of the program will be brought into storage for every request. For programming information about the RELOAD(YES) option, see the *CICS Application Programming Reference* manual. Furthermore, each of these program copies must be removed from storage explicitly, using a storage control FREEMAIN request, when it is no longer required and before the transaction terminates. If the relevant FREEMAIN(s) are not issued, areas of the DSA/EDSA will become tied up with inaccessible program copies, potentially causing storage shortage or fragmentation.

RELOAD(YES) can be used to load tables or control blocks that are modified by execution of the associated program(s). It should not be specified for the first program loaded for a task. This is because the task would have no way of issuing a FREEMAIN for the program.

You must specify RELOAD(YES) for non-reentrant programs.

REMOTENAME(name)
The name by which the program is known in the remote CICS region. If you specify REMOTESYSTEM and omit REMOTENAME, the REMOTENAME parameter defaults to the same name as the local name (that is, the PROGRAM name on this resource definition).

REMOTESYSTEM(name)
Specify the name of a remote CICS region if you want CICS to ship a distributed program link (DPL) request to another CICS region. The name you specify must be the name of the CONNECTION resource definition for the link to the remote CICS.

Note that an application program can also specify a remote system explicitly on the program LINK command, using the SYSID parameter of the EXEC CICS LINK PROGRAM(name) command. The rules of precedence are as follows:

1. If an application program issues a DPL request, and the SYSID option on the EXEC CICS LINK command specifies a remote CICS region, CICS ships the request automatically without reference to the program resource definition.
2. If an application program issues a DPL request, but the SYSID is the same name as the local CICS region or the SYSID option is not specified, CICS checks the program resource definition. If the program definition specifies a remote system name, CICS ships the request to the remote system, otherwise CICS runs the program locally.

The rules for specifying the remote system name are the same as for the CONNECTION parameter of the CONNECTION resource definition.

Note: You must not specify remote attributes for any user-written CICS programs, such as the dynamic transaction routing or autoinstall user programs.

RESIDENT({NO|YES})
The residence status of the program.

NO
The program is not to be permanently resident. This value must be specified if RELOAD(YES) is specified.

YES
The program is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system. When you specify RESIDENT(YES), CICS assumes a specification of USAGE(NORMAL).

RSL
The RSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for information.

STATUS({ENABLED|DISABLED})
The program status.

ENABLED
The program may be used.

DISABLED
The program may not be used.

TRANSID(name)
Specifies the name of the transaction you want the remote CICS to attach, and under which it is to run the remote program. If you do not specify a transaction name on the TRANSID parameter, the remote region executes the DPL program under one of the following CICS-supplied default mirror transactions:

CPMI	This is the CICS mirror transaction for LU6.2 connections that specify data conversion.
CSMI	This is the CICS ISC mirror transaction for MRO and LU6.2 connections with sync level 2.
CVMI	this is the CICS/VM™ mirror transaction for LU6.2 connections with sync level 1.

USAGE({NORMAL|TRANSIENT})
Defines when the storage for this program will be released.

NORMAL
When the use count for this program reaches zero, it will become eligible for removal from storage as part of the normal dynamic program compression process.

This value must be specified if RELOAD(YES) is specified.

TRANSIENT
When the use count for this program becomes zero, the storage for this program is released. This value should be coded for programs that are referenced infrequently.

USESVACOPY({NO|YES})
Defines whether the program is to be used from the shared virtual area (SVA).

NO
The program is not to be used from the SVA. It will be loaded into the CICS address space.

YES
The program can be used from the SVA if SVA=YES is specified as a system initialization parameter. The use of the program from the SVA requires that it has been installed there and that the program is not named by the PRVMOD system initialization parameter. For guidance on this, see the *CICS System Definition Guide*.

Chapter 20. SESSIONS

Before two systems can communicate using intersystem communication (ISC) or multiregion operation (MRO), they must be logically linked through one or more sessions. The nature of the logical link determines how they can communicate. You specify the logical link in the SESSIONS definition. CICS does **not** use the SESSIONS name when the definition has been installed in the active system. This name is used only to identify the definition in the CSD.

You use the CONNECTION attribute of the SESSIONS resource definition to name the CONNECTION with which these SESSIONS are associated when they are installed in the active systems.

If you use the INSTALL command to install a new SESSIONS definition for MRO, when there is already a definition installed, you must then close down all interregion communication (IRC) and open it again, before you will be able to use the definition. You should adopt the following procedure:

1. Close IRC down:
   ```
   CEMT SET IRC CLOSED
   ```
2. Install the resource definitions:
   ```
   CEDA INSTALL GROUP(groupname)
   ```
3. When you have successfully installed the group containing the definitions:
   ```
   CEMT SET IRC OPEN
   ```

MRO links and sessions

When you install a SESSIONS definition for MRO, you are telling CICS about a set of parallel sessions between this CICS and another CICS. The number of sessions is determined by the SENDCOUNT and RECEIVECOUNT attributes. The SEND sessions are identified by names created from the SENDPFX and SENDCOUNT. The RECEIVE sessions are identified by names created from the RECEIVEPFX and RECEIVECOUNT.

APPC (LUTYPE6.2) links and parallel sessions

When you install the SESSIONS definition, the sessions are grouped (for the benefit of VTAM) into a modeset, which is identified by the MODENAME. The individual sessions are named by a counter; the first session created will be named -999, the second -998, and so on. The value of this counter is retained over a warm or emergency start. The number of sessions created is controlled by the MAXIMUM attribute on the SESSIONS definition.

LUTYPE6.1 CICS-CICS ISC links and sessions

The way in which the sessions are identified by CICS depends on the way you defined them, using SENDPFX, SENDCOUNT, RECEIVEPFX, and RECEIVECOUNT like MRO sessions, or using SESSNAME as for CICS-IMS sessions.

Note: You should use APPC for all new CICS-CICS ISC links.

LUTYPE6.1 CICS-IMS links and sessions

When you install the SESSIONS definitions in the active CICS system, CICS identifies each session by the SESSNAME.

INDIRECT connections

Because the association between an INDIRECT link and the intermediate systems used for communicating with it is made at installation time, it is advisable for you to install the definition for the intermediate system before the definition for the INDIRECT link. If you install the INDIRECT link first, it will remain dormant until the intermediate definition is installed, and until any other already-installed connections which make reference to it are resolved. For example, System A is indirectly connected with system C through system B.

In system A, you should install the following definitions, in this order:

1. The intermediate system:

   ```
   CONNECTION(B) NETNAME(B) ACCESSMETHOD(IRC) ...
   ```

2. The INDIRECT link

   ```
   CONNECTION(C) NETNAME(C) ACCESSMETHOD(INDIRECT) INDSYS(B) ...
   ```

Defining a SESSION

```
 Sessions     ==>
 Group        ==>
 DEscription  ==>
SESSION IDENTIFIERS
 Connection   ==>
 SESSName     ==>
 NETnameq     ==>
 MOdename     ==>
SESSION PROPERTIES
 Protocol     ==> Appc               Appc | Lu61 | Exci
 MAximum      ==> 001 , 000          0-999
 RECEIVEPfx   ==>
 RECEIVECount ==>                    1-999
 SENDPfx      ==>
 SENDCount    ==>                    0-999
 SENDSize     ==> 04096              1-30720
 RECEIVESize  ==> 04096              1-30720
 SESSPriority ==> 000                0-255
 Transaction    :
OPERATOR DEFAULTS
 OPERId         :
 OPERPriority   : 000                0-255
 OPERRsl        : 0                  0-24,...
 OPERSecurity   : 1                  0-64,...
PRESET SECURITY
 USERId       ==>
OPERATIONAL PROPERTIES
 Autoconnect  ==> No                 No | Yes | All
 INservice      : No                 No | Yes
 Buildchain   ==> Yes                Yes | No
 USERArealen  ==> 000                0-255
 IOarealen    ==> 00000 , 00000      0-32767
 RELreq       ==> No                 No | Yes
 DIscreq      ==> No                 No | Yes
 NEPclass     ==> 000                0-255
RECOVERY
 RECOvoption  ==> Sysdefault         Sysdefault | Clearconv | Releasesess
                                     | Uncondrel | None
```

Figure 34. The DEFINE panel for SESSIONS

AUTOCONNECT({NO|YES|ALL})
Indicates how connections are to be established. What you have to specify for LU6.1 and APPC sessions is discussed below:

APPC
For a VTAM-connected system that has AUTOCONNECT(YES) or (ALL) on the CONNECTION definition:

NO
CICS will not attempt to bind any sessions when the connection is established. However, one or more user sessions may be allocated as part of any ACQUIRE CONNECTION processing which takes place.

YES or ALL
Contention winner session is established (that is, BIND is performed) during CICS initialization, or when communication with VTAM is started using the CEMT SET VTAM OPEN command. If the connection cannot be made at this time because the remote system is unavailable, the link must be subsequently acquired using the CEMT SET CONNECTION(sysid) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and itself initiates communications.

You should not specify ALL for connections to other CICS systems. This can lead to a bind race condition, and is discussed in the *CICS Intercommunication Guide*

For a VTAM-connected system that has AUTOCONNECT(NO) on the CONNECTION definition:

NO
CICS will not attempt to bind any sessions when the connection is established. However, one or more user sessions may be allocated as part of any ACQUIRE CONNECTION processing which takes place.

YES
Contention winner sessions will be established when the connection is acquired by issuing CEMT SET CONNECTION(sysid) ACQUIRED, or when the remote system itself initiates communication.

ALL
All sessions, not just contention winners, will be established when the connection is acquired by issuing CEMT SET CONNECTION(name) ACQUIRED, or when the remote system itself initiates communication.

LU6.1
Specify AUTOCONNECT(YES) on the SESSIONS if you want the connection to be established at initialization or CEDA install.

Specify AUTOCONNECT(NO) on the SESSIONS if you don't want the connection to be established at initialization or CEDA install.

BUILDCHAIN({YES|NO})
Indicates whether CICS is to perform chain assembly prior to passing the input data to the application program.

YES
Any terminal input/output area (TIOA) received by an application program from this logical unit will contain a complete chain.

NO
Any TIOA received by an application program from this logical unit will contain one request unit (RU).

CONNECTION(name)
The name of the CONNECTION definition that you want to use with this SESSIONS definition. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

Note that the CONNECTION definition must be in the same GROUP as the SESSIONS definition.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

DISCREQ({NO|YES})
Indicates whether disconnect requests are to be honored. DISCREQ applies to LUTYPE6.1 ISC sessions (see the Release Guide for ISSUE DISCONNECT (LUTYPE6.1)), but not to MRO sessions where CICS is not dealing with VTAM devices.

DISCREQ does not apply to APPC (LUTYPE6.2) sessions. When using APPC, individual sessions are acquired as transactions need them, then are subsequently freed. As it is possible to have multiple sessions between APPC logical units, there should never be a problem of one request holding up another. It is not possible to disconnect an individual APPC session; instead, you can issue a CEMT SET CONNECTION RELEASED command.

NO
CICS is not to honor a disconnect request for a VTAM device.

YES
CICS is to honor a disconnect request for a VTAM device, and issue a VTAM CLSDST macro instruction to terminate the VTAM session with that logical unit.

CESF LOGOFF or GOODNIGHT commands issued from the terminal also cause disconnection if you code DISCREQ(YES).

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see "How the CSD is organized—groups and lists" on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INSERVICE({YES|NO})
The INSERVICE keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for more information.

IOAREALEN({<u>0</u>|value1},{<u>0</u>|value2})
The length, in bytes, of the terminal input/output area to be used for processing messages transmitted on the MRO link.

(value1, value2)
Value1 specifies the minimum size of a terminal input/output area to be passed to an application program when a RECEIVE command is issued.

If value2 is not specified, or is less than value1, it defaults to the value of value1.

You can specify value2 as greater than or equal to value1. In this case, when the size of an input message exceeds value1, CICS uses a terminal input/output area value2 bytes long. If the input message size also exceeds value2, the node abnormal condition program sends an exception response to the terminal.

You can waste both real and virtual storage by specifying an IOAREALEN value that is too large for most messages transmitted on your MRO link. On the other hand, if you specify an IOAREALEN value that is either zero or smaller than most of your messages, excessive FREEMAIN and GETMAIN activity may occur. This will result in additional processor requirements.

MAXIMUM({<u>1</u>|value1},{<u>0</u>|value2}) (APPC only)
Indicates the maximum number of sessions that are to be supported for the modeset. Value1 must be greater than or equal to value2.

<u>1</u>|value1
The maximum number of sessions in the group. This value can be in the range 1 through 999. The default is 1.

<u>0</u>|value2
The maximum number of sessions that are to be supported as contention winners. This value can be in the range 0 to 999. The default is 0. Note that this operand has no meaning for a single session connection. (For further information on the effects of the MAXIMUM option, refer to the *CICS Intercommunication Guide*.)

SNA allows some resources (for example, switched lines) to be defined in the network as **limited resources**. At bind-time, VTAM indicates to CICS whether the bind is over a limited resource. When a CICS task frees a session across a limited resource, CICS unbinds the session if no other task wants to use it. If the sessions are to use limited resources, specify MAXIMUM(value1,0). This causes any unbound session to be reset so that either side can then bind it as a winner when it is next required. For more information on limited resources, see the *CICS Intercommunication Guide*.

MODENAME(name) (APPC only)
The name that identifies a group of sessions for use on an APPC connection. The name can be up to eight characters in length, and must be the name of a VTAM LOGMODE entry defined to VTAM. It must not be the reserved name SNASVCMG. If you omit the modename it defaults to blanks. See the *CICS Intercommunication Guide* for more information about VTAM modenames.

The MODENAME must be unique for each group of sessions defined for any one intersystem link. That is, the MODENAME must be unique among the SESSIONS definitions related to one CONNECTION definition. It will be passed to VTAM as the LOGMODE name.

NEPCLASS({<u>0</u>|value})
The node error program transaction class. This value acts as the default.

<u>0</u> This will result in a link to the default node error program module.

value The transaction-class for the (non-default) node error program module. The value can be in the range 1 through 255. For programming information about the node error program, see the *CICS Customization Guide*.

NETNAMEQ(name)
The name by which the remote IMS system knows this particular session. This is used for CICS-IMS sessions. The name can be up to eight characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

OPERID(code)
The OPERID keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for more information.

OPERPRIORITY({0|number})
The OPERPRIORITY keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for more information.

OPERRSL({0|number[,...]})
The OPERRSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for more information.

OPERSECURITY({1|number[,...]})
The OPERSECURITY keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for more information.

PROTOCOL({APPC|LU61|EXCI})
Indicates the type of protocol that is to be used for an intercommunication link (ISC or MRO).

APPC (LUTYPE6.2)
Advanced program-to-program communication (APPC) protocol. Specify this for CICS-CICS ISC.

LU61
LUTYPE6.1 protocol. Specify this for CICS-CICS ISC, for CICS-IMS, or for MRO.

EXCI
The external CICS interface. Specify this to indicate that the sessions are for use by a non-CICS client program using the external CICS interface. If you specify EXCI, you must leave SENDCOUNT blank.

RECEIVECOUNT({blank.|number})
The number of MRO, LUTYPE6.1, or EXCI sessions that usually receive before sending.

For MRO, receive sessions can only receive before sending.

blank
These sessions can send only; there are no receive sessions.

number
Specifies the number of receive sessions on connections that specify blank, LU61, or EXCI on the protocol parameter of the CONNECTION definition. CICS uses the number to generate the last two or three characters of the session names (see RECEIVEPFX for details).

If you are using the default receive prefix (<), or your own 1-character prefix, specify a number in the range 1 through 999.

If you specify a 2-character prefix, the number is restricted to the range 1 through 99.

Except for external CICS interface (EXCI) connections, the RECEIVECOUNT in this system should equal SENDCOUNT in the other system.

Note: CICS restricts the number of sessions for an EXCI address space to 25. When this limit is reached, IRP rejects further requests for a session with SYSTEM_ERROR reason code 608.

RECEIVEPFX(<|prefix)
Specifies a 1- or 2-character prefix that CICS is to use as the first 1 or 2 characters of the receive session names (the names of the terminal control table terminal entries (TCTTEs) for the sessions).

Prefixes must not cause a conflict with an existing connection or terminal name.

< (MRO and EXCI sessions)
For MRO sessions, if you do not specify your own receive prefix, CICS enforces the default prefix—the less-than symbol (<), which is used in conjunction with the receive count to generate receive session names.

CICS creates the last three characters of the session names from the alphanumeric characters A through Z, and 1 through 9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the RECEIVECOUNT value. Note that receive session names are generated **after** the send sessions, and they follow in the same sequence.

For example, if the last session name generated for the send sessions is <AAJ, using the default prefix (<) CICS generates the receive session names as <AAK, <AAL, <AAM, and so on. (This method of generation of session identifiers is the same as for APPC sessions, except for the initial prefix symbol.)

Note: If you specify your own prefix, CICS generates the session names as in earlier releases, which is the same as for LUTYPE6.1 sessions.

prefix (LUTYPE6.1 sessions)
If the sessions are on LUTYPE6.1 ISC connections, you must specify a 1- or 2-character prefix. Do not use the default < symbol for LUTYPE6.1 sessions.

For LUTYPE6.1 sessions (and MRO if you specify your own 1- or 2-character prefix) CICS generates session names by appending a number to the prefix, either in the range 1 through 99, or 1 through 999. The number begins with 1 and is incremented by 1 until the specified RECEIVECOUNT is reached.

RECEIVESIZE({<u>4096</u>|value})
Indicates the maximum VTAM request unit (RU) size that these sessions are capable of receiving. The value must be between 1 and 30720 for LU61 sessions, or 256 and 30720 for APPC sessions. The default is 4096.

The value specified will be transmitted to the connected logical unit. This value may be rounded down by CICS, depending on what value you specified, because the value must be transmitted in an architected form. The value may be negotiated down still further at BIND time.

If CICS is the secondary LU session, then this indicates the maximum VTAM request unit (RU) size that these sessions are capable of sending.

RECOVOPTION({<u>SYSDEFAULT</u>|CLEARCONV|RELEASESESS|UNCONDREL|NONE})
This option applies to the recovery of sessions in a CICS region running with VTAM persistent sessions, or with XRF.

VTAM persistent sessions: In a CICS region running with persistent session support, this option specifies how you want CICS to recover the session, and return the terminal to service on system restart within the persistent session delay interval.

XRF: In a CICS region running with XRF support, this option specifies how you want CICS to recover the session, and return the terminal to service after an XRF takeover.

For all recovery options other than NONE, if the action taken is a VTAM UNBIND, the UNBIND is followed by a VTAM SIMLOGON.

<u>SYSDEFAULT</u>
VTAM persistent sessions: In a CICS region running with persistent session support, this specifies that CICS is to select the optimum procedure to recover a session on system restart within the persistent session delay interval, depending on the session activity and on the characteristics of the terminal.

Although sessions are recovered, any transactions in-flight at the time of the failure are abended and not recovered. Transactions are also abended if the recovered session is being used by another CICS region over an APPC connection.

CICS recovers the session with the least possible impact, in one of the following ways:

- If the session was not busy at the time that CICS failed, no action is required.
- If the session was busy at the time that CICS failed, CICS issues a DEALLOCATE(ABEND) (equivalent to an EXEC CICS ISSUE ABEND) for the APPC conversation in progress at the time of the failure.
- If neither of the above applies, the session is unbound.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

CLEARCONV
VTAM persistent sessions: CLEARCONV is not supported for APPC sessions. It defaults to SYSDEFAULT.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

RELEASESESS
VTAM persistent sessions: CLEARCONV is not supported for APPC sessions. It defaults to SYSDEFAULT.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

UNCONDREL
Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent whether or not the session was busy at the time of system restart (in the case of persistent session support) or the takeover (in the case of XRF).

NONE
VTAM persistent sessions: In a CICS region running with persistent session support, this specifies that the session is not to be recovered at system restart within the persistent session delay interval: in effect, the sessions on the modegroup have no persistent session support. LU6.2 sessions are unbound and the modegroup CNOS value is reset to zero. After system restart, the session is reconnected automatically if you specify AUTOCONNECT(YES).

XRF: In a CICS region running with XRF support, this specifies that the logon state is not tracked by the alternate system, and the terminal session is not automatically recovered after a takeover; in effect, the terminal has no XRF support. After takeover, the terminal is reconnected automatically by the alternate system, if you specify AUTOCONNECT(YES).

RELREQ=({<u>NO</u>|YES})
Indicates whether CICS is to release the logical unit.

<u>NO</u>
CICS is not to release the logical unit upon request by another VTAM application program.

YES
CICS is to release the logical unit, if the logical unit is not currently part of a transaction.

SENDCOUNT(<u>blank</u>|number)
The number of MRO or LUTYPE6.1 sessions that usually send before receiving.

For MRO, send sessions must send before they can receive.

blank
These sessions can receive only; there are no send sessions.

You must leave this field blank when the sessions are on an external CICS interface (EXCI) connection.

number
Specifies the number of send sessions on connections that specify blank or LU61 on the protocol parameter of the CONNECTION definition. CICS uses the number to generate the last two or three characters of the session names (see SENDPFX for details).

If you are using the default send prefix (>), or your own 1-character prefix, specify a number in the range 1 through 999.

If you specify a 2-character prefix, the number is restricted to the range 1 through 99.

Except for external CICS interface (EXCI) connections the SENDCOUNT in this system should equal RECEIVECOUNT in the other system.

SENDPFX(>|prefix)
Specifies a 1- or 2-character prefix that CICS is to use as the first 1 or 2 characters of the send session names (the names of the terminal control table terminal entries (TCTTEs) for the sessions).

Prefixes must not cause a conflict with an existing connection or terminal name.

> **(MRO sessions)**
For MRO sessions, if you do not specify your own send prefix, CICS enforces the default prefix—the greater-than symbol (>), which is used in conjunction with the send count to generate send session names.

CICS creates the last three characters of the session names from the alphanumeric characters A through Z, and 1 through 9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the SENDCOUNT value.

For example, using the default prefix (>) CICS generates session names as >AAA, >AAB, >AAC, and so on. (This method of generation of session identifiers is the same as for APPC sessions, except for the initial symbol.)

Note: If you specify your own prefix, CICS generates the session names as in earlier releases, which is the same as for LUTYPE6.1 sessions.

prefix (for LUTYPE6.1 sessions)
If the sessions are on LUTYPE6.1 ISC connections, you must specify a 1- or 2-character prefix. Do not use the default > symbol for LUTYPE6.1 sessions.

For LUTYPE6.1 sessions (and MRO if you specify your own 1- or 2-character prefix) CICS generates session names by appending a number to the prefix, either in the range 1 through 99, or 1 through 999. The number begins with 1 and are incremented by 1 until the specified SENDCOUNT is reached.

SENDSIZE({<u>4096</u>|value})
Indicates the maximum VTAM request unit (RU) size that these sessions are capable of sending. The value must be between 1 and 30720 for LU61 sessions, or between 256 and 30720 for APPC sessions. The default is 4096. The value may be negotiated down at bind time. Increasing the value of SENDSIZE will cause more storage to be allocated for the session but may decrease the number of physical messages sent between the two nodes.

If CICS is the secondary LU session, then this parameter indicates the maximum VTAM request unit (RU) size that these sessions are capable of receiving. The value must be between 256 and 30720.

SESSIONS(name)
The name of this SESSIONS definition. The name can be up to eight characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

This name is used to identify the SESSIONS definition on the CSD. It is not used within the active CICS system.

SESSNAME(name)
The symbolic identification to be used as the local half of a session qualifier pair in a CICS intercommunication parallel session.

The name can be up to four characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . & ! : ; " , and ¬. If you type a name of less than four characters, it will be padded with trailing blanks to four characters.

SESSPRIORITY({<u>0</u>|number})
Establishes the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority; this must not exceed 255.)

TRANSACTION(name)
This keyword is now obsolete, but is supported to provide CSD compatibility for earlier releases of CICS where it is still valid. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for more information.

USERAREALEN({0|value})

Specify this with the length, in bytes (0 to 255), of the user area for this terminal. It should be made as small as possible. The TCT user area is initialized to zeros when a session is installed.

The TCT user area may be located above or below the 16Mb line in virtual storage. Where it is located depends on the value of the TCTUALOC operand of the DFHSIT macro. You should ensure that this is specified correctly to allow successful operation of any programs you may have that are not capable of handling 31-bit addressing.

USERID(name)

A user identifier used for signon (system initialization parameter SEC=YES) and referred to in security error messages, security violation messages and the audit trail. It must be a valid userid defined to the external security manager. Operators are unable to sign on. All access to protected resources depends on USERID.

This USERID overrides a SECURITYNAME specified on the CONNECTION definition.

The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

Chapter 21. TERMINAL

CICS needs a definition for each terminal device with which it communicates. Terminal devices include visual display units, printers, operating system consoles, and more specialized devices such as facsimile machines.

The unique and possibly dynamic properties of terminals are defined in the TERMINAL definition in the CSD.

However, many of your terminals have identical properties, and it is unnecessary to define each of them separately and fully to CICS. There are two ways you can reduce the time and effort needed to define each terminal:

- **TYPETERM definitions**, with or without the QUERY function. Each TERMINAL definition must refer to a TYPETERM definition, which defines the common, often more complex, and usually static properties. Together, information from the TERMINAL and TYPETERM definitions makes up a terminal entry in the TCT (a TCTTE).

  One TYPETERM can represent a lot of the properties of many terminals. Some of these properties can be left undefined at the time of creating the TYPETERM definition. These properties can be determined, for each terminal, from the QUERY structured field at logon time.
- **Autoinstall**: using one TERMINAL definition to represent many terminals. In addition, autoinstall reduces the virtual storage required for the terminal control table (TCT) if some of your terminals are not logged on when CICS is active.

  There are, however, still more properties that many terminals have in common, to the extent that their TERMINAL definitions would all be identical. So a facility is provided that avoids the need for each terminal to have its own resource definition installed in the TCT the whole time CICS is active.

  Instead, you let CICS create and install the resource definition dynamically when the terminal is needed, at logon time. To do this, CICS uses a **model TERMINAL definition** from the CSD. This process is known as automatic installation, or autoinstall.

  If you are involved in planning for and managing CICS communications resources such as terminals, you should read Chapter 9, “Autoinstall for VTAM terminals” on page 107 for further information.

Installing TERMINAL definitions

For groups of TERMINAL definitions, adopt the following procedure:

1. Make sure that nobody is using the terminals which you want to install. Remember that CEMT INQUIRE TERMINAL puts a lock on the TCT entry and this also prevents installation of a group containing that terminal.
2. Make sure that there are no ATIs outstanding for the terminals.
3. Use CEMT, with a generic name if appropriate:
   ```
   CEMT SET TERMINAL(trmid) RELEASED OUTSERVICE NOATI
   ```
4. Install the resource definitions:
   ```
   CEDA INSTALL GROUP(groupname)
   ```
5. Use CEMT to make the terminals available again:
   ```
   CEMT SET TERMINAL(trmid) ACQUIRED INSERVICE ATI
   ```

TERMINAL and TYPETERM definitions are resolved at installation to become a TCT entry, sometimes known as a TCT terminal entry or TCTTE. Each definition contains only some of the information necessary to build a TCT entry.

Each TYPETERM definition must be installed before, or at the same time as the TERMINAL definitions that reference it. When you are using CEDA to install groups, if the TYPETERMs are in a separate group from the TERMINALs, you must install the TYPETERMs group before the TERMINALs. You may include TYPETERMs and TERMINALs in the same group for testing purposes, although we do not recommend it for long term use. (See “What should be in a group?” on page 18.)

Because the TERMINAL definition is not necessarily in the same group as its associated TYPETERM definition, the global catalog is used to store the TYPETERMs.

Changing a TYPETERM definition and then reinstalling it has no effect on an already installed terminal entry, even though the TERMINAL definition used to create it refers to the TYPETERM. To change the terminal entry, you must reinstall both the TYPETERM and the TERMINAL.

Installing autoinstall model TERMINAL definitions

If you define a model TERMINAL for autoinstall, you install it just as you would an ordinary resource definition, that is, by installing the group containing it. However, TERMINAL definitions specified as AUTINSTMODEL(ONLY) are only stored in the AMT at this time; they do not result in a TCTTE on the active CICS system. These model TERMINAL definitions are stored in the AMT until needed by CICS to create a definition for an actual terminal logging on through VTAM using autoinstall. The resulting TERMINAL definition is “automatically installed” at this time.

This is what happens when you install a TERMINAL definition, either at system initialization or using INSTALL:

AUTINSTMODEL(NO)
A TCT entry is created for the terminal.

AUTINSTMODEL(YES)
A TCT entry is created for the terminal, and the model definition is stored for later use by the autoinstall process.

AUTINSTMODEL(ONLY)
The model definition is stored for later use by the autoinstall process.

If you install two model TERMINAL definitions with the same AUTINSTNAME, the second one will replace the first.

For further information about autoinstall and model TERMINAL definitions, see Chapter 9, “Autoinstall for VTAM terminals” on page 107.

Types of terminals

Different types of terminal have different characteristics, and the way you use them may vary, too. Here is some guidance on defining terminals that are used in particular ways:

- Terminals for printing
- Pipeline terminals for VTAM pooled sessions
- Devices with LDC lists
- APPC single session terminals

Terminals for printing

A TERMINAL definition for a display device can name TERMINAL definitions for printers, using the PRINTER and ALTPRINTER attributes. Such a reference is not resolved when the TERMINAL definitions are installed. Instead, the reference is resolved when the printer is needed by the display device.

There are several ways in which printed output can be created and sent to a printer.

- BMS page building
- Screen copying, using one of the following:
  - A hardware copy key
  - A local copy key
  - The ISSUE PRINT command.

For programming information about creating output by these methods, see the *CICS Application Programming Reference* manual.

The TYPETERM and TERMINAL definitions are used for both printers and display devices. There are a number of attributes that apply only to printers, or have special meanings for printers. There are also some attributes that you need to specify for a display device that is to be used for screen-copying.

Printers

You need a TERMINAL definition for each printer. Specify NO for AUTINSTMODEL, unless you are using autoinstall for printers. (For more information about this, see "Autoinstall and output-only devices" on page 111.)

TERMINAL

The name of the printer is the TERMINAL name on the resource definition for that printer.

(The PRINTER attribute is used on a display device definition, to refer to a printer device to be used for output from the display. You do not specify PRINTER on the printer definition. See "Associating printers with display devices" on page 186.)

DEVICE

The TERMINAL definition for each printer must refer to a TYPETERM with an appropriate DEVICE type. The DEVICE attribute, and in one case, the SESSIONTYPE attribute, determine whether a TYPETERM defines printers or display devices. The values that you can specify for printers are:

DEVICE	SESSIONTYPE	Printers
3270P	-	All printers that support the 3270 data stream (not SNA-connected).
LUTYPE3	-	All printers that support the 3270 data stream (SNA-connected).
SCSPRINT	-	All printers that support the SNA character set (SNA-connected).
3790	SCSPRINT	IBM 3793 keyboard-printers that support the SNA character set (SNA-connected).

AUTOPAGE

AUTOPAGE must be YES for printers, but you do not need to worry about it, because RDO fills it in for all printer DEVICE types. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page, before requesting the next page to be delivered.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET, does not use autopaging.

You need at least one TYPETERM definition for each type of printer you use. You may need more, if you want to allow printers to be used only for some functions and not for others.

PAGESIZE and ALTPAGE

For BMS, the PAGESIZE attribute determines the default page size, and also the size of the print buffer. You specify the number of lines in the page (the length) and the number of characters in each line (the width).

Another attribute, ALTPAGE, indicates the page size to be used when the alternate screen size (ALTSCREEN) is selected. The width you specify in ALTPAGE must be the same as the width specified in the ALTSCREEN attribute. However, the length of ALTPAGE and ALTSCREEN can be different. This could be useful if you are using the same BMS map to display and to print. For instance, you could make the screen one line longer than the page, to reserve the bottom line of the screen for error messages.

The ALTPAGE, DEFSCREEN, and ALTSCREEN attributes do not normally apply to printers.

FORMFEED

You need to define FORMFEED as YES for BMS page building.

Associating printers with display devices

If you want to copy the contents of a screen direct to a printer you need to associate a specific printer with the display device, in the TERMINAL definition. You do this using the PRINTER and ALTPRINTER attributes.

PRINTER and ALTPRINTER

The alternative printer is used if the primary printer is unavailable. Both these attributes can be set dynamically by the autoinstall control program, if the display device definition is autoinstalled.

PRINTERCOPY and ALTPRINTCOPY

You specify YES for PRINTERCOPY, if you want to use the hardware COPY feature on the primary printer.

You specify YES for ALTPRINTCOPY, if you want to use the hardware COPY feature on the alternative printer.

For programming information about screen copying, see the *CICS Application Programming Reference* manual and for further guidance see the *CICS 3270 Data Stream Device Guide*.

Pipeline TERMINAL definitions

When you define a 3600 pipeline logical unit, you generate a TCTTE which is associated with a pool of TCTTEs. As messages enter CICS from the 3600 pipeline logical unit, a task is attached to process this message, using as anchor block one of the TCTTEs from the pool. In this way, consecutive messages sent via the pipeline logical unit can be processed concurrently, the number of concurrent transactions being limited by the number of TCTTEs in the pool. The number of TCTTEs in the pool should represent the high water mark of inquiry activity. In this way, the pipeline facility allows less TCTTEs to be defined to CICS than the total number of pipeline inquiry terminals.

All the TERMINAL definitions within a named POOL must be in the same group on the CSD. TASKLIMIT must have been specified on at least one of the definitions in the group. If it is specified on more than one definition, the maximum value of TASKLIMIT over the definitions in the group is used.

TERMINAL and TYPETERM definitions are resolved just as they are for ordinary terminals.

You should install PIPELINE terminals by GROUP. If you do not, the results can be unpredictable.

Defining pipeline terminals

You define pipeline terminals with the following attributes:

POOL
: All the TERMINAL definitions having the same POOL name belong to the same pipeline pool. The presence of a value for the POOL attribute distinguishes these from ordinary TERMINAL definitions.

NETNAME
: Names the VTAM session that is used.

TASKLIMIT
: You must specify the maximum number of concurrent tasks that can be active for the pool of terminals on at least one of the TERMINAL definitions.

One TYPETERM would normally suit all the definitions. The TYPETERM may be in another group.

SESSIONTYPE
: You use this attribute on the TYPETERM definition to identify the TYPETERM as representing pipeline terminals. You specify PIPELINE as the value.

Pipeline transactions are associated with a PROFILE definition that has the ONEWTE attribute. The programs associated with these transactions are only permitted one write or EXEC CICS SEND operation, or else they are terminated with an ATCC abend code. This means that CICS tasks rapidly appear and disappear across the pool of sessions.

There is an example of definitions for a pool of pipeline terminals on page 199.

Devices with LDC lists

For 3600, 3770 batch, 3770 and 3790 batch data interchange, and LUTYPE 4 logical units, you can specify the name of an LDC (logical device code) list. The list specifies which LDCs are valid for this logical unit and, optionally, which device characteristics are valid for each LDC. The first LDC in this list is the default when CICS must choose a default LDC for a logical unit.

All the TERMINAL definitions for devices that reference a particular LDC list must name the same TYPETERM, because the LDCLIST attribute is on the TYPETERM definition.

The LDC list itself must be defined using a DFHTCT TYPE=LDCLIST macro. It may be a local LDC list or an extended local LDC list. There is an example of the coding for each on page 227, and further guidance in “Logical device codes” on page 289. You use the label coded on the macro instruction to identify the LDC list on the TYPETERM definition, specifying it in the LDCLIST attribute.

APPC (LUTYPE6.2) single session terminal

An APPC (LUTYPE6.2) single session terminal can be defined as a TERMINAL, with a reference to a TYPETERM with DEVICE(APPC). When these definitions are installed, the resources they define are known to CICS as a connection and a modeset, just as they are when defined in RDO as CONNECTION and SESSIONS. The name of the connection is the TERMINAL name and the name of the modeset is the MODENAME on the TERMINAL definition.

An APPC terminal may be a PS/2, an Application System/400® (AS/400®), a System/38™, or similar. You can define an APPC terminal either by a TERMINAL-TYPETERM definition or by a CONNECTION-SESSIONS definition. Both kinds of definition can be autoinstalled (see Chapter 9, “Autoinstall for VTAM terminals” on page 107 and Chapter 10, “Autoinstall for APPC connections” on page 121 for information about autoinstall). If you decide to use the TERMINAL-TYPETERM method, the following attributes are important:

DEVICE
The TERMINAL definition references a TYPETERM with APPC (advanced program-to-program communications) specified as the DEVICE. One such TYPETERM definition suffices for many terminals.

MODENAME
This is the name that CICS uses to identify the session when the definition is installed in the active system.

Terminals for transaction routing

Transaction routing enables terminals in one CICS system to invoke transactions in another CICS system.[4] You can use transaction routing between systems connected by MRO or by an APPC link. (See the *CICS Intercommunication Guide* for guidance.) If you use transaction routing, there are three possible methods of defining the terminals.

When a terminal belonging to (local to and fully defined in) one system invokes a transaction belonging to another system, it is known to the application-owning region as a **remote terminal**. The application-owning system needs to have access to at least a partial definition of the remote terminal. This partial definition is often known as a **remote definition**.

The terminal-owning system has a complete definition of the terminal: this is known as a **local definition**.

Making a partial definition of a terminal available to the application-owning CICS system(s) can be done in one of the following ways:

- Having a separate terminal definition for each system involved, each on a CSD that is accessible to that system. One is created as a local definition and one or more are created as remote definitions. We refer to this as **duplicating terminal definitions**, because there is more than one resource definition for the same terminal (the definitions are not necessarily exact duplicates of each other).
- Having one dual-purpose definition in one, shared CSD, available to all the systems involved, both terminal-owning and application-owning. This method is known as **sharing terminal definitions**.
- Having, in the CSD available to the terminal-owning system, one **local** terminal definition that can be shipped to other systems when required. This method is known as **shipping terminal definitions**.

These three different methods of making a partial definition available, involve three different ways of using the TYPETERM and TERMINAL definitions. Local, remote, and dual-purpose terminal definitions are described more fully in:

- “Local definition” on page 189
- “Remote definition” on page 189
- “Dual-purpose definition” on page 189.

APPC devices for transaction routing

APPC transaction routing allows an APPC device belonging to one CICS system to invoke transactions in another CICS system. The three methods of defining a terminal for transaction routing, described in “Terminals for transaction routing,” are also applicable to APPC devices. These methods can involve the use of either TERMINAL-TYPETERM or CONNECTION-SESSION definitions. For APPC single session terminals, the TERMINAL-TYPETERM definition method is recommended (see “APPC (LUTYPE6.2) single session terminal” on page 187.)

[4] In this section, the word “system” means a CICS system communicating with other systems using MRO or ISC.

Local definition

This is a full definition of the terminal, installed in the terminal-owning system. It is used in the **duplicating** and in the **shipping** methods.

- No REMOTESYSTEM, REMOTESYSNET, or REMOTENAME is needed on the TERMINAL or CONNECTION definition.

  If the REMOTESYSTEM named on the TERMINAL definition is actually the name of the local system (as specified by the SYSIDNT system initialization operand), the definition is treated as a local terminal when it is installed, rather than a remote one.
- SHIPPABLE on the TYPETERM is NO if duplicating definitions.
- SHIPPABLE on the TYPETERM is YES if shipping definitions.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- All other necessary attributes on the TERMINAL and TYPETERM definitions must be specified.

Remote definition

This is a partial definition of the terminal, installed in the application-owning region and intermediate regions. It contains the minimum information necessary for the terminal to access a transaction in that system. You create remote definitions only if you are using the **duplicating** method.

- The REMOTESYSTEM name must be the name of the CONNECTION definition for the next region in the transaction routing path to the terminal-owning region.
- REMOTESYSNET must be the netname (generic applid) of the terminal-owning region. If REMOTESYSTEM names a direct CONNECTION to the terminal-owning region, REMOTESYSNET is not required.
- The REMOTENAME is the name that the terminal or APPC device is known by in the terminal-owning region. It may be the same as or different from the TERMINAL or CONNECTION name, which must be the name the terminal is known by in the application-owning system. REMOTENAME defaults to the TERMINAL name if not specified.
- SHIPPABLE on the TYPETERM is NO for non-APPC devices.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- Some of the attributes on the TERMINAL and TYPETERM definitions may be omitted. For further guidance about these definitions, see the *CICS Intercommunication Guide*.

The following terminals and logical units cannot use transaction routing and therefore cannot be defined as remote:

- Pooled 3600 or 3650 pipeline logical units
- IBM 2260 terminals
- A VSE console

Dual-purpose definition

This is a full definition of the terminal, installed in the terminal-owning system and in the application-owning and intermediate regions. It is used in the **sharing** method only.

- The REMOTESYSTEM name must be the SYSIDNT of the terminal-owning region. This must also be the name of the CONNECTION that you define from the application-owning region to the intermediate region (if any), and from the intermediate region to the terminal-owning region. All the CONNECTION definitions on the path from the application-owning region to the terminal-owning region must be given this same name.
- REMOTESYSNET must be the netname (generic applid) of the terminal-owning region.
- The REMOTENAME is the same as the TERMINAL or CONNECTION name.

- SHIPPABLE on the TYPETERM is NO for non-APPC devices.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- All other necessary attributes on the TERMINAL and TYPETERM definitions must be specified.

Duplicating your definitions: maintaining local and remote definitions

1. You create a local definition for the terminal, in the CSD of the terminal-owning system, or on a shared CSD.
2. You create a remote definition for the terminal, in the CSD of the application-owning system, or in a shared CSD. If you have more than one application-owning system, you may need more than one remote definition, but if the systems are sharing a CSD, you may be able to use the same remote definition for them all.
3. If your systems share a CSD, you make sure the definitions are in different groups, because:
   - You want to install them in different systems
   - The TERMINAL names are probably the same, so the definitions cannot be in the same group.
4. You install the local definition in the terminal-owning system. This definition can be autoinstalled.
5. You install the remote definition in the application-owning system(s).

Advantages

- You can use this method whether or not your systems share a CSD, so you can use it for transaction routing between different VSE images.
- This is the ***only*** method you can use, if your terminals are known by different names in different systems.
- You can use automatic transaction initiation (ATI) in the application-owning system for a remote terminal without having to set up XALTENF and XICTENF exits. (See the *CICS Customization Guide* for programming information on these exits.) This is especially useful for printers, because they must be acquired ***before*** any ATI can be successful.

Disadvantages

- The CSD is using at least twice the necessary amount of disk storage for your definitions.
- The TCT is using more than the necessary amount of virtual storage for your definitions.
- There will be more effort than necessary involved in maintaining the definitions.
- You can autoinstall the terminal in the terminal-owning system, but you cannot autoinstall it in the application-owning systems.

Duplicating definitions

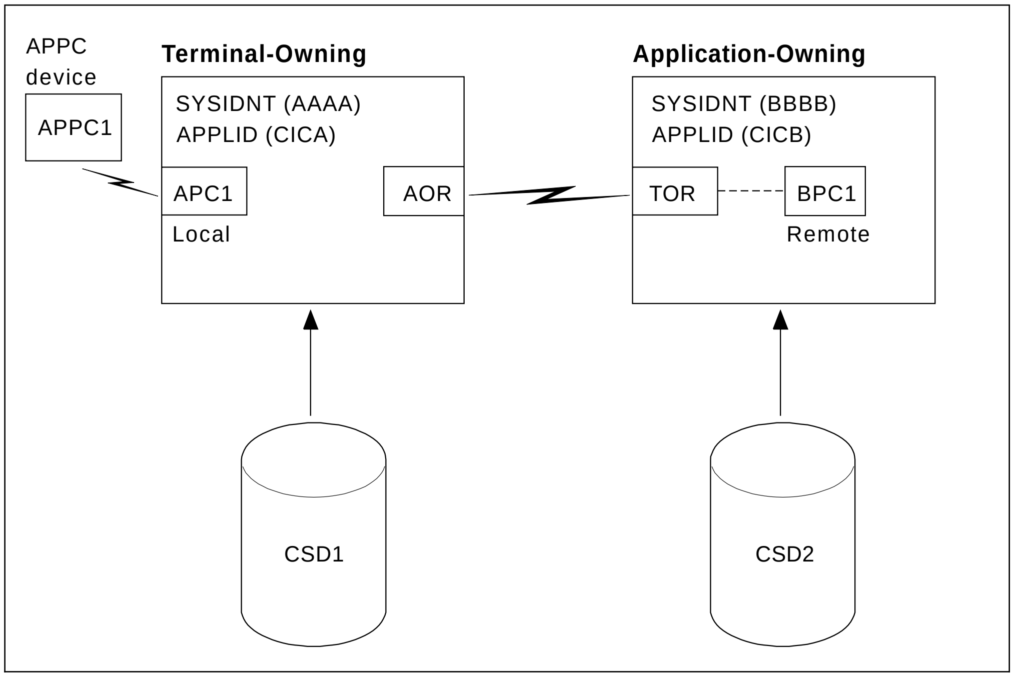


Figure 35. Maintaining local and remote definitions separately. The definitions may be on the same CSD.

Connections	Definitions in the AOR	Definitions in the TOR
Connection between the systems	CONNECTION(TOR) NETNAME(CICA)	CONNECTION(AOR) NETNAME(CICB)

Connection to APPC device, using TERMINAL and TYPETERM	TERMINAL(BPC1)
	TYPETERM(APPC0001)
	NETNAME(APPC1)
	REMOTESYSTEM(TOR)
	REMOTENAME(APC1)
	and
	TYPETERM(APPC0001) DEVICE(APPC)
		TERMINAL(APC1)
		TYPETERM(APPC0001)
		NETNAME(APPC1)
		and
		TYPETERM(APPC0001) DEVICE(APPC)

Connection to APPC device, using CONNECTION and SESSIONS	CONNECTION(BPC1) NETNAME(APPC1)
	REMOTESYSTEM(TOR)
	REMOTENAME(APC1)
		CONNECTION(APC1) NETNAME(APPC1)
		and
		SESSIONS(APPC0001)
		CONNECTION(APC1)

Note: The REMOTESYSNET option is not required because there is a direct connection between the AOR and the TOR.		

Sharing dual-purpose definitions

1. You create a dual-purpose definition for the terminal, in the shared CSD.
2. You install the definition in all the systems: it becomes a remote definition in a system whose SYSIDNT is different from the REMOTESYSTEM name; it becomes a local definition in a system whose SYSIDNT is the same as the REMOTESYSTEM name.

Advantages

- You can use automatic transaction initiation (ATI) in the application-owning system for a remote terminal without having to set up XALTENF and XICTENF exits. (See the *CICS Customization Guide* for programming information on these exits.) This is especially useful for printers, because they must be acquired ***before*** any ATI will be successful.
- Disk storage use is reduced because you need only one CSD record.
- Maintenance is reduced because you need only one CSD record.

Disadvantages

- The TCT is using more than the necessary amount of virtual storage for your definitions.
- You cannot use this method if your systems do not share a CSD, so you can use it only for transaction routing within the same VSE image.
- You cannot use this method if your terminals are known by different names in different systems.

Sharing definitions

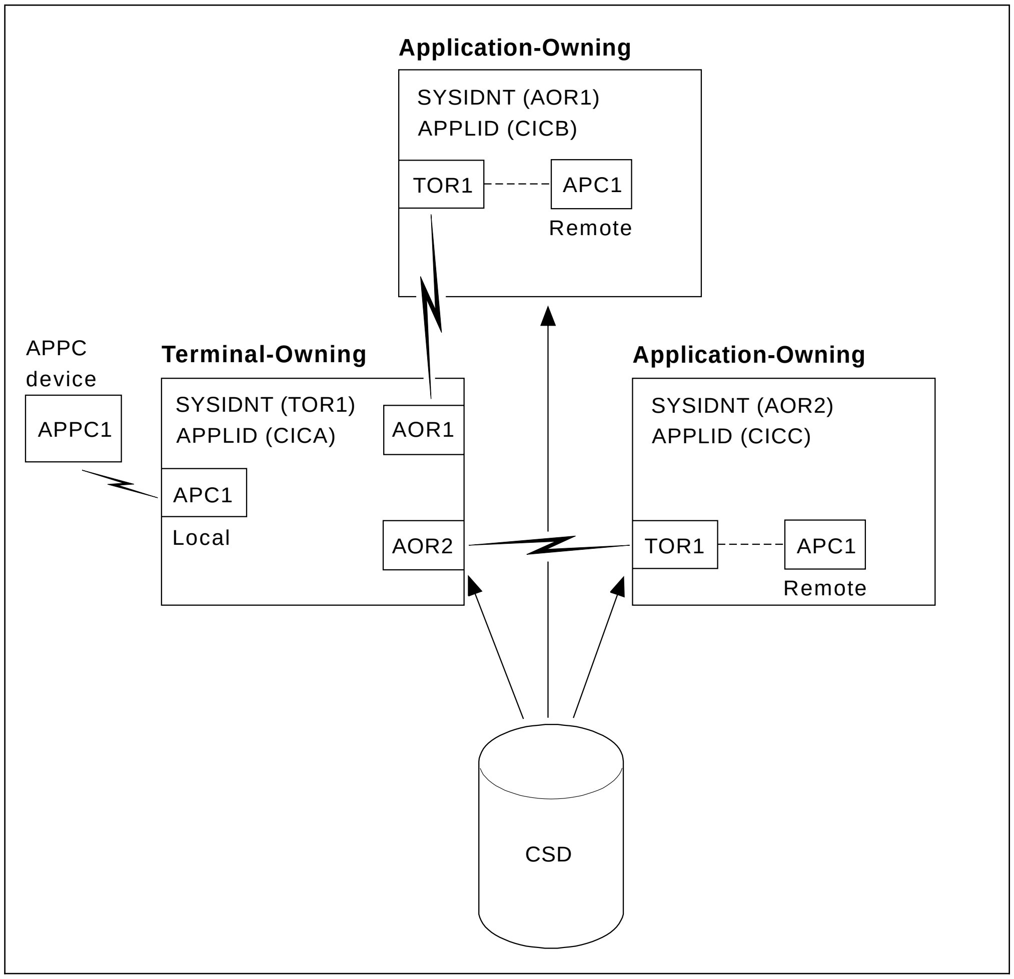


Figure 36. Sharing dual-purpose definitions

Connections	Definitions in the AORs	Definitions in the TOR
Connection between the systems	CONNECTION(TOR1) NETNAME(CICA)	CONNECTION(AOR1) NETNAME(CICB)
Connection to APPC device, using TERMINAL and TYPETERM	-	TERMINAL(APC1) TYPETERM(APPC0001) NETNAME(APPC1) REMOTESYSTEM(TOR1) REMOTENAME(APC1) and TYPETERM(APPC0001) DEVICE(APPC)
Connection to APPC device, using CONNECTION and SESSIONS	-	CONNECTION(APC1) NETNAME(APPC1) REMOTESYSTEM(TOR1) REMOTENAME(APC1) and SESSIONS(APPC0000) CONNECTION(APC1)
Note: The REMOTESYSNET option is not required because there are direct connections between the AOR and the TOR.		

Shipping terminal definitions to application-owning systems

1. You create a local definition for the terminal, in the CSD of the terminal-owning system. (This can be a shared CSD.)
2. You install the local definition in the terminal-owning system. (This definition can be installed at system initialization, or by using CEDA INSTALL, or by autoinstall.)
3. When the terminal invokes a transaction belonging to another system, the information necessary to create a remote definition is shipped to that system, and a temporary definition is installed there, automatically.

If the local definition was autoinstalled, the shipped definition lasts until the terminal is logged off. Otherwise, the shipped definition lasts until the local definition is installed again, or until the link between the systems is broken.

Advantages

- You can use this method whether or not your systems share a CSD, so you can use it for transaction routing between different VSE images.
- Disk storage use is reduced because you need only one CSD record.
- Maintenance is reduced because you need only one CSD record.
- Virtual storage use is reduced because you install the definition in only one system.
- You can autoinstall the terminal in the terminal-owning system, and ***in effect*** autoinstall it in the application-owning systems. (Shipping terminal definitions has the same effect as autoinstall, but does not itself involve the autoinstall process.)

Disadvantages

- You cannot use this method if your terminals are known by different names in different systems.
- You may need to use the global exits XALTENF and XICTENF if you use ATI in the transaction owning system. See the *CICS Customization Guide* for programming information on these exits.

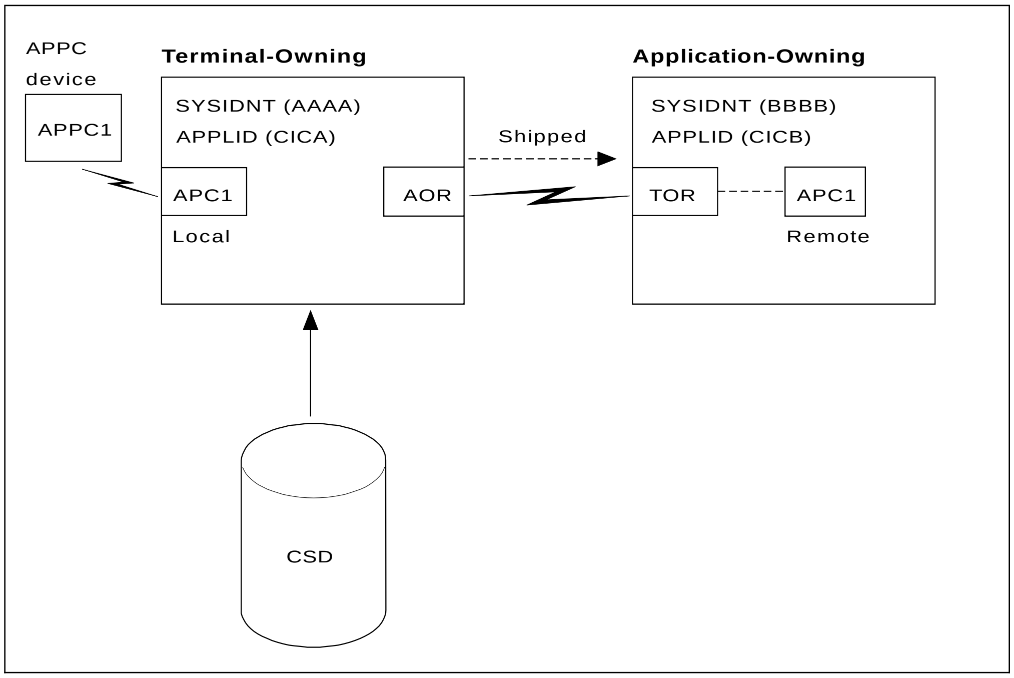


Figure 37. Shipping local definitions to an application-owning system

The definitions in the TOR to connect to the APPC device would be either a pair of TERMINAL and TYPETERM definitions or a CONNECTION and SESSIONS pair of definitions. Both are given here:

```
TERMINAL(APC1) TYPETERM(APC0001) NETNAME(APPC1)
and
TYPETERM(APPC0001) DEVICE(APPC) SHIPPABLE(YES)
      (SHIPPABLE is mandatory for device type APPC)

CONNECTION(APC1) NETNAME(APPC1)
and
SESSIONS(APPC0000) CONNECTION(APC1)
```

Transaction routing—summary

You should consider carefully these methods of defining terminals for transaction routing, and decide which is most suitable for your network before you start to use RDO.

We recommend the **shipping method**, unless you use terminals that are known by different names in different systems. Note that for ATI to work with the shipping method in a transaction owning system, you may need to use the XALTENF and XICTENF global exits. (See the *CICS Customization Guide* for programming information on these exits). If you use the same names in different systems and you don’t want to use global exits to ensure that ATI works, we recommend the **sharing method** for systems with a shared CSD.

You should not need to use the **duplicating method** unless you use terminals that are known by different names in different systems, or if you use ATI to acquire terminals but do not have a shared CSD, and you don’t want to use the XALTENF and XICTENF global user exits.

You could use a mixture of methods: perhaps shipping for display terminals, and duplicating for printers that need ATI to acquire them but without the use of the XALTENF and XICTENF global user exits.

Before you start creating definitions for these resources, see the *CICS Intercommunication Guide* for further guidance. There you will find useful examples of the attributes you must specify for different types of links and sessions.

XRF and persistent session support for terminals

Three TYPETERM attributes relate specifically to the use of XRF and persistent session support for terminals.

RECOVNOTIFY
This applies only to VTAM persistent sessions. You use it to specify how the terminal user is notified at system restart. You can specify either a simple message to be displayed, or a transaction that can do more than that. In either case, all the terminals for which you specify MESSAGE get the same message, and all the terminals for which you specify TRANSACTION get the same transaction.

There are two messages, DFHXRC1 and DFHXRC2, that you may edit in mapset DFHXMSG. The source for DFHXMSG is supplied in the VSE/ESA sublibrary, PRD1.BASE. Alternatively you can change the name of the map passed to the node error program. You specify the transaction using the RMTRAN system initialization parameter, which defaults to the ‘good morning’ transaction specified in GMTRAN system initialization operand.

MESSAGE is more efficient than TRANSACTION, and minimizes the takeover time.

RECOVOPTION
Use this option to influence how CICS recovers the terminal session and returns the terminal to service:

- After an XRF takeover, or
- On system restart within the persistent session delay interval.

For further details, see page 232.

XRFSIGNOFF
You use this option to set the signon characteristics of a group of terminals. You can either allow the group to be signed-on after takeover, or you can force the group to be signed off. You might choose to force signoff to prevent unauthorized use of the terminal if it became active again after a takeover while the authorized user was absent.

There is a hierarchy of options for signon/signoff.

- DFHSIT XRFSOFF=FORCE|NOFORCE
- TYPETERM XRSIGNOFF(NOFORCE|FORCE)
- ESM base segment

For further guidance on extended recovery for terminals, see the *CICS XRF Guide*. For further guidance on persistent sessions, see the *CICS Recovery and Restart Guide*.

Defining a TERMINAL

```
  TErminal     ==>
  Group        ==>
  Description  ==>
  AUTINSTModel ==> No                  No | Yes | Only
  AUTINSTName  ==>
 TERMINAL IDENTIFIERS
  TYpeterm     ==>
  NEtname      ==>
  Consname     ==>
  REMOTESYSTem ==>
  REMOTEName   ==>
  REMOTESYSNet ==>
  Modename     ==>
 ASSOCIATED PRINTERS
  PRINTER      ==>
  PRINTERCopy  ==> No                  No | Yes
  ALTPRINTEr   ==>
  ALTPRINTCopy ==> No                  No | Yes
  SPOOLTo      ==>
 PIPELINE PROPERTIES
  POol         ==>
  TAsklimit    ==> No                  No | 1-32767
 OPERATOR DEFAULTS
  OPERId         :
  OPERPriority   : 000                 0-255
  OPERRsl        : 0                                         0-24,...
  OPERSecurity   : 1                                         1-64,...
 PRESET SECURITY
  Userid       ==>
  NAtlang      ==>
 TERMINAL USAGES
  TRansaction  ==>
  TErmpriority ==> 000                 0-255
  Inservice    ==> Yes                 Yes | No
 PRINTER DATA
  SPOOLDest    ==>
  SPOOLPRTRsl  ==>                    0-24|Public
  SPOOLPRTRTo  ==>                    0-59
  SPOOLFcb     ==>
  PRINTEDmsg   ==>                    No|Yes
  PRINTImmed   ==>                    No|Yes
 SESSION SECURITY
  Securityname ==>
  ATtachsec    ==> Local               Local | Identify | Verify | Persist
                                       | Mixidpe
  BINDPassword ==>                     PASSWORD NOT SPECIFIED
  BINDSecurity ==> No                  No | Yes
  USEDfltuser  ==> No                  Yes | No
```

Figure 38. The DEFINE panel for TERMINAL

ALTPRINTCOPY({NO|YES})
YES means that the hardware COPY feature is to be used to satisfy a PRINT request on the printer named in ALTPRINTER. For further details, see the PRINTERCOPY attribute.

ALTPRINTER(name)
The name of a 3270 printer to be used as an alternative to the PRINTER named in this TERMINAL definition, if the PRINTER is unavailable. The name may be up to four characters in length. For further details, see the PRINTER attribute. You should not specify an ALTPRINTER without specifying a PRINTER. If you do, ALTPRINTER will be ignored.

The printer you name must be owned by the same CICS system that owns this TERMINAL definition.

If you want to specify the hardware COPY feature for the alternative printer, specify YES for ALTPRINTCOPY on this TERMINAL definition.

Note: In a VTAM transaction routing environment, the PRINTER name on the TOR overrides the PRINTER name on the AOR. The PRINTER value on the TOR is initially taken from the terminal, but can be amended using the EXEC CICS SET TERMINAL PRINTER command.

ATTACHSEC({<u>LOCAL</u>|IDENTIFY|VERIFY| PERSISTENT|MIXIDPE}) (APPC only)
Indicates the level of attach time user security required for the connection.

<u>LOCAL</u>
The authority of the user is taken to be that of the link itself, and you will be relying on link security alone to protect your resource.

IDENTIFY
Incoming attach requests must specify a user identifier. You should specify IDENTIFY when the connecting terminal has a security manager.

VERIFY
Incoming attach requests must specify a user identifier and a user password. You should specify VERIFY when the connecting terminal has no security manager and hence cannot be trusted.

PERSISTENT
This involves a user signon to a remote system that persists over multiple conversations until the user signs off from the remote system. In this way, the user’s ID and password are passed only on the first (signon) attach. Subsequent attach requests require only the user's ID.

MIXIDPE
This represents a connection able to support attaches using either or both IDENTIFY and PERSISTENT security types. The security type used depends on the incoming attach.
As in previous releases, IDENTIFY implies that there is a degree of trust between the two systems that allows this system to accept the signon logic of the other system. In effect this is a distributed security manager, with one system doing the signon and the other doing the security check.
These two options, PERSISTENT and MIXIDPE, are valid only with VTAM as the access method, and when APPC is being used.

AUTINSTMODEL({<u>NO</u>|YES|ONLY})
Indicates whether this TERMINAL definition can be used as a model terminal definition for autoinstall. For more information on autoinstall and model TERMINAL definitions, see Chapter 9, “Autoinstall for VTAM terminals” on page 107.

<u>NO</u>
This definition will not to be used as a model for autoinstall. It will be used only as a definition for a specific device that will not be autoinstalled.

YES
This definition will be used as a definition for a specific device that will not be autoinstalled. The definition will also be used as a model for automatic installation.

ONLY
This definition will be used only as a model for autoinstall. It will not be used as a definition for a specific device.

AUTINSTNAME(name)
The name that this model definition will be known by in the autoinstall control program. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

You need only specify this if AUTINSTMODEL is YES or ONLY. You can let it default to the TERMINAL name followed by four blanks, as long as this is acceptable to the autoinstall control program. For more information about autoinstall models, autoinstall names, and the autoinstall control program, see Part 3, “Autoinstall” on page 105.

BINDPASSWORD(password) (APPC only)
A password of up to 16 hexadecimal characters (0-9, A-F). A password of less than 16 characters will be padded on the right with hexadecimal zeros. A password of more than 16 characters will be ignored.

CICS will mask the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

If you supply a password, an identical password must be supplied in the CONNECTION definition for the remote system to ensure bind time security.

BINDSECURITY({<u>NO</u>|YES}) (APPC only)
This indicates whether an ESM is being used for bind-time security.

<u>No</u> No external bind-time security is required. However, if you define a password on the BINDPASSWORD parameter, CICS defaults to using its own internal security mechanism for bind security checking.

Yes
If security is active and the XAPPC system initialization parameter is set to YES, then CICS will attempt to extract the session key from the ESM in order to carry out bind-time security. If no ESM profile is available, the bind fails.

CONSNAME(name)
The length of CONSNAME must be from two to eight characters and must begin with an alphabetic character or one of #, @, or $.

The CONSNAME corresponds to the name defined for the console. For example, to define an Interactive Interface (II) user as a console device, code CONSNAME(*name*) where *name* is the II userid.

If the name DFHCONxx (where xx can be any valid character) is specified the terminal will be used by CICS as a 'pool' console for use when processing a modify command from a console with a name which is not defined to CICS.

For more information about defining consoles, see the *VSE/ESA Operation* manual.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INSERVICE({<u>YES</u>|NO})
The status of the terminal that is being defined.

<u>YES</u> Transactions may be initiated and messages may automatically be sent to the terminal.

NO Indicates that the terminal can neither receive messages nor transmit input.

MODENAME(name) (APPC single session terminals only)
The name will be passed to VTAM as the LOGMODE name. The name may be up to eight characters in length, but may not have the reserved name SNASVCMG. The name follows assembler language rules. It must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

For further guidance on the LOGMODE name, see the *VTAM Resource Definition Reference*

NATLANG({<u>blank</u>|C|E|G|K})
The language in which all NLS-enabled messages will be displayed for this terminal.

Use only one character, which can be A-Z 0-9 @ # and $.

<u>blank</u> If you leave this blank and do not supply a value, CICS will use the system default as specified in the system initialization table (SIT).
C Chinese
E English
G German
K Kanji

NETNAME(name)
The network name that identifies the terminal to VTAM. The name may be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

If you do not specify a name, the NETNAME defaults to the TERMINAL name.

The NETNAME must be unique; that is, you cannot install two terminals or a terminal and a connection with the same NETNAME.

OPERID(code)
The OPERID keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for information.

OPERPRIORITY({<u>0</u>|number})
The OPERID keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for information.

OPERRSL({<u>0</u>|number[,...]})
The OPERRSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for information.

OPERSECURITY({ <u>1</u>|number[,...]})
The OPERRSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for information.

POOL(name)
The pool name for a 3600 or 3650 pipeline terminal pooled with other pipeline terminals.

When you define a 3600 pipeline logical unit, you generate a TCTTE which is associated with a pool of TCTTEs. A pool of pipeline TCTTEs can be used by one pipeline logical unit, or it can be shared by a number of pipeline logical units.

The pool name is used only as a method of identifying the related TERMINAL definitions on the CSD. It is not used within the active CICS system. The name can be up to 8 characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

For a pipeline terminal, you must specify a TYPETERM with SESSIONTYPE(PIPELINE) specified. You must specify a TASKLIMIT on at least one of the pool of pipeline terminals. You must name the same group for each of the pipeline terminals in a pool.

An example of the definitions for a pool of pipeline terminals follows.

```
DEFINE TERMINAL(ttt1) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn1)...

DEFINE TERMINAL(ttt2) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn2)...

DEFINE TERMINAL(ttt3) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn3)...

DEFINE TERMINAL(ttt4) GROUP(g) POOL(poolid)
       TASKLIMIT(nn) TYPETERM(xxxxxxxx)
       NETNAME(nnnnnnn4)...

DEFINE TYPETERM(xxxxxxxx) GROUP(g)
       DEVICE(3600|3650) SESSIONTYPE(PIPELINE)
```

PRINTEDMSG(NO|YES)
This specifies whether or not messages are to be sent to a printer associated with the report controller. The default is NO.

You can override this temporarily by using the “Printer Messages” field of the report controller CEMS or CEOS printer characteristics panel.

PRINTER(name)
The name of the primary 3270 printer to be used to respond to an ISSUE PRINT command, or a PRINT request from an operator pressing a program access (PA) key. The name may be up to four characters in length. The name is the TERMINAL name on the definition for the printer. If you name a PRINTER here, the TYPETERM referenced by this TERMINAL definition must have PRINTADAPTER(NO).

The printer you name must be owned by the same CICS system that owns this TERMINAL definition.

You may also name an ALTPRINTER which will be used as an alternative, if this PRINTER is unavailable.

You can name a PRINTER if this TERMINAL definition is for one of the following:

- A 3270 display without the printer-adapter feature
- A 3270 display attached to a 3274 control unit
- A 3276 control unit display station
- A 3790 in 3270 compatibility mode

If you want to specify the hardware COPY feature, specify PRINTERCOPY(YES) on this TERMINAL definition.

Note that SNA character string (SCS) printers accept only 3790 data streams; they do not accept 3270 data streams. They therefore cannot be used to print the contents of a display unit’s buffer.

If you use a program attention key (for example, PA1) to print the contents of the screen on an associated VTAM printer, the screen size of the printer will be chosen according to the SCRNSIZE operand as defined in the CICS-supplied default profile DFHCICST. This profile is defined with SCRNSIZE(DEFAULT), and if you want to use the alternate screen size of the printer, you will have to change the profile entry for transaction CSPP.

Note: In a VTAM transaction routing environment, the PRINTER name on the TOR overrides the PRINTER name on the AOR. The PRINTER value on the TOR is initially taken from the terminal, but can be amended using the EXEC CICS SET TERMINAL PRINTER command.

PRINTERCOPY({NO|YES})
YES specifies that the hardware COPY feature is to be used to satisfy a print request on the PRINTER named in this TERMINAL definition.

CICS will use the hardware COPY feature of the 3270 to perform the print, unless a task is currently attached to the display.

You need not specify COPY(YES) on the TYPETERM definition, because this is implied by PRINTERCOPY(YES) on the TERMINAL definition.

If you have named an ALTPRINTER as well as a PRINTER, you may specify ALTPRINTCOPY(YES).

To use the COPY feature, both the printer and the display terminal must be on the same 3270 control unit. Otherwise, either the COPY may fail, raising an error condition, or, if the display device address is valid for the printer’s control unit, copying might be performed from a different display.

The COPY command is invalid for a 3270 compatibility mode display.

PRINTIMMED(NO|YES)
Specifying YES will result in an end of report indicator being sent to the terminal for each report processed by the Report Controller print task. This parameter is only applicable when the terminal printer is a simulated device on a programmable workstation (for example, an IBM PS/2). Do not specify YES for real terminal devices as some processing overhead is incurred. For more information, see the *CICS Report Controller Planning Guide*.

REMOTENAME(name)
The name by which the terminal is known in the system or region that owns the terminal. The name can be up to four characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

REMOTESYSNET(name)
The network name (APPLID) of the region that owns the terminal. The name can be up to eight characters in length. It follows assembler language rules, and must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

REMOTESYSNET is used where there is no direct link between the region in which this definition is installed and the terminal-owning region. You do not need to specify REMOTESYSNET if either of the following is true:

- You are defining a local terminal (that is, REMOTESYSTEM is not specified, or specifies the name of the local system).
- REMOTESYSTEM names a direct link to the terminal-owning region. However, there is one special case: if the terminal-owning region is a member of a VTAM generic resources group and the direct link is an APPC connection, you **do** need to specify REMOTESYSNET.

REMOTESYSTEM(name)
The name that identifies the intercommunication link to the system that owns the terminal. The name can be up to four characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

This is the CONNECTION name on the CONNECTION definition for the intercommunication link. If it is not specified, or if it is specified as the name of the local system, then this terminal will be local to this system. If the name is that of another system, the terminal will be remote. You can therefore use the same definition for the terminal in both the local system and a remote system.

If there are intermediate systems between this CICS and the terminal-owning region, REMOTESYSTEM should specify the first link in the path to the TOR. If there is more than one possible path, it should specify the first link in the preferred path.

REMOTESYSTEM is ignored if you specify AUTINSTMODEL(YES) or (ONLY).

SECURITYNAME(name)
The security name of the remote system.

In a CICS system with security initialized (system initialization parameter SEC=YES), the security name is used to establish the authority of the remote system.

Note: If USERID is specified in the session definition (DEFINE SESSIONS command) associated with the connection definition, it will override the userid specified in the SECURITYNAME parameter, and will be used for link security.

The security name (or USERID on the sessions definition) must be a valid ESM userid on your system. Access to protected resources on your system is based on the ESM user profile and its group membership.

SPOOLDEST(name)
You use this in the definition of a **printer device** for the resource manager. It specifies the default **destination** name to be associated with the printer. You can associate more than one printer with a single destination. The destination defined like this can be overridden when the printer is started. You can use a resource manager panel to do this.

If SPOOLDEST is not specified and a destination is not specified when the printer is started, the TERMINAL name is used as the destination.

Use a name that is meaningful to the end users who are going to use the resource manager transactions to control their printing. The name can be up to eight characters in length. The acceptable characters are: A-Z, 0-9, $, @, and #. Lowercase characters are converted to uppercase.

In VSE/POWER terms, a destination is a user identifier (user ID). VSE/POWER uses user IDs for a number of different purposes (see the *VSE/POWER Administration and Operation manual* for more details). You must always ensure that the names you give to your CICS destinations are not reserved by POWER, and are not being used by POWER for some other purpose.

The reserved name `**SYSPRT` is appropriate for fast terminal printers intended for printing ‘system’ type data: typically, output from batch programs. `**SYSPRT` causes the resource manager to obtain a larger buffer for data transfer from VSE/POWER.

SPOOLFCB(*name*)
Specifies a default FCB name for the printer, to be used if a report has no associated FCB. If this parameter is omitted, the installation or CICS default FCB will be used. See the *CICS Report Controller Planning Guide* for further information.

SPOOLPRTRSL({0|value|PUBLIC})
Use this attribute in the definition of a printer device, to authorize control of the printer by users of the report controller.

Users are only allowed to control the printer if they have been given READ access to the FACILITY resource CICSRCF.RSLnn (where nn represents the same value as SPOOLPRTRSL). See the *CICS Report Controller Planning Guide* for further information.

0 This means that if the resource manager transactions are used as supplied, with RESSEC(YES), no user can control the printer using the report controller.

value
The resource security value, in the range 1–24. Only a user with READ access to the FACILITY resource CICSRCF.RSLnnn (where nn is the same as *value*) can control this printer using the report controller.

PUBLIC
Any user can control the printer using a report controller transaction, regardless of whether security checking is being used.

SPOOLPRTTO (0|number)
The time period in minutes for which a printer associated with the Report Controller Feature remains inactive before being released for bids by other print tasks. If

SPOOLPRTTO is not specified, the default is 0; the printer is not released. SPOOLPRTTO is a numeric value in the range 0 through 59, and is valid for printers only.

SPOOLTO(name)
You use this in the definition of a **display device** that is to be used to create reports to be printed under the control of the resource manager. It specifies the **default destination** that is allocated to reports created at this display. The reports can be printed by any printer that is associated with the destination. (See SPOOLDEST, the attribute used for associating printers with destinations.)

The default destination can be overridden, for any specific report, by the program that creates the report. A resource manager user with the correct security keys can change the destination of both reports and printers.

Use the name `**SYSPRT`, if reports are to be printed on a fast printer. Generally, this is a channel-attached device controlled by VSE/POWER, although in some configurations could be a high-speed terminal device attached to CICS, and defined as `SPOOLDEST(**SYSPRT)`.

If reports are to be printed on any other printer, use the destination name associated with the printer. The name can be up to eight characters in length. The acceptable characters are: A-Z, 0-9, $, @, and #. Lowercase characters are converted to uppercase. Note that you must not use the name `LOCAL`.

In VSE/POWER terms, a destination is a user identifier (user ID). VSE/POWER uses user IDs for a number of different purposes (see the *VSE/POWER Administration and Operation manual* for more details). You must always ensure that the names you give to your CICS destinations are not reserved by POWER, and are not being used by POWER for some other purpose.

TASKLIMIT(<u>NO</u>|number)
The number of concurrent tasks allowed to run in a pipeline session or in a pool of pipeline sessions. The number can be in the range 1 through 32767.

When you define a 3600 pipeline logical unit, you generate a TCTTE which is associated with a pool of TCTTEs. As messages enter CICS from the 3600 pipeline logical unit, a task is attached to process this message, using as anchor block one of the TCTTEs from the pool. In this way, consecutive messages sent via the pipeline logical unit can be processed concurrently, the number of concurrent transactions being limited by the number of TCTTEs in the pool. The number of TCTTEs in the pool should represent the high water mark of inquiry activity. In this way, the pipeline facility allows less TCTTEs to be defined to CICS than the total number of pipeline inquiry terminals.

TERMINAL(name)
This is the terminal identifier.

- The name can be up to four characters in length. If the name supplied is fewer than four characters, it is left-justified and padded with blanks up to four characters.
- The acceptable characters are: A-Z a-z 0-9 $ @ # . / _ % & ¢ ? ! : | " = ¬ , ; < and >.

  These characters are only valid for terminals. For LU6.2 terminals the valid characters are those defined for CONNECTION(name), they are listed in “Defining a CONNECTION” on page 136.
- The value CERR is reserved for the identification generated for the error console.
- The value specified in the SYSIDNT system initialization parameter (this has a default value of CICS) is also reserved for the identification of the local system entry.
-

  Note: If you use a comma (,) in a name, you will be unable to use those commands such as

  `CEMT INQUIRE TERMINAL(`*`value1`*`,`*`value2`*`)`

  where the comma serves as a list delimiter. See the information about using lists of resource identifiers.
- The name that you specify becomes the name of the TCT entry (the TCTTE), when this TERMINAL definition is installed. For this reason the TERMINAL name must be unique, but remember that CONNECTIONs are also defined by entries in the TCT (TCSEs) so the names of CONNECTION definitions must also be taken into account when choosing unique names.
- If you specify AUTINSTMODEL(ONLY), you need not worry about making the TERMINAL name unique, as it will **not** be used as the name of a TCT entry. If you specify AUTINSTMODEL(YES), the TERMINAL name will be used as the name of the TCT entry that is installed in the TCT when the TERMINAL definition is installed; the names of the TCT entries for the autoinstalled terminals will be determined by the autoinstall user program.
- If you are coding this operand for a 3270 display, the only CICS functions the operator is able to invoke, other than this transaction, are paging commands and print requests.
- If the terminal is to be associated with a transient data destination, then the terminal name and the destination identification in the DCT must be the same.

TERMPRIORITY({<u>0</u>|number})
Establishes the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, not to exceed 255.)

TRANSACTION(name)

Code this with a 1-to 4-character transaction name. The acceptable characters are: A-Z 0-9 $ @ and #. For VTAM non-3270 devices, a TRANSACTION name of less than four characters requires a delimiter.

It specifies the name of the transaction that is to be initiated each time input is received from the terminal when there is no active task. For guidance on what happens when a transaction is initiated, see the *CICS Application Programming Guide*.

If you code this operand for a 3270 display, the only CICS functions the operator will be able to invoke, other than this transaction, are paging commands and print requests.

You are unlikely to code the TRANSACTION parameter for a 3270 display or SCS printer. It is optional for 3601 logical units, but is mandatory for 3614 logical units.

If this operand is coded for a 3790 Communication System, and multiple sessions are used to connect the same 3791, the same TRANSACTION name should be specified for all sessions.

TYPETERM(name)

The name of the TYPETERM definition to be associated with this TERMINAL definition. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

The TYPETERM definition specifies many attributes for a number of similar terminals.

All TERMINAL definitions used to define pooled consoles (those with a CONSNAME of DFHCONxx) should specify the same TYPETERM. For more information, see Chapter 24, “TYPETERM” on page 213 and “Installing resource definitions” on page 19. This attribute is mandatory for all TERMINAL definitions.

The TYPETERM definition should already be installed when you install this TERMINAL definition.

USERID(name)

A user identifier used for signon and referred to in security error messages, security violation messages and the audit trail. It must be a valid userid defined to the security manager.

This is the only way to specify a user identifier for devices such as printers that are unable to sign on using CESN. You can also specify USERID for a display device; if so, the display is permanently signed on. Operators are unable to sign on. All access to protected resources depends on USERID.

For an APPC single session terminal, this USERID overrides any SECURITYNAME that you have specified for the connection.

The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

Preset Security, if defined for pooled consoles (those with a CONSNAME of DFHCONxx) will allow each pooled console to be assigned only once as each will then be permanently signed-on. This means that, once used, each pool entry will not be returned to the pool but will be permanently assigned to the console name which first used it. Preset security, if used for pooled consoles, should be defined with the same level of security for all consoles in the pool as any pooled console may be selected for use when an unknown console requires a transaction to be run.

USEDFLTUSER({<u>NO</u>|YES}) (APPC only)

<u>NO</u> Indicates that each inbound attach FMH will be checked for the presence of those fields required by the ATTACHSEC option and if the required fields are not present a protocol violation message will be issued and the attach will fail. NO is the default.

YES Indicates that some checks on the validity of the attach FMH are bypassed. This provides the same level of security as in previous releases of CICS. See 'Attach Time Security and the USEDFLTUSER option' in the *CICS Security Guide*.

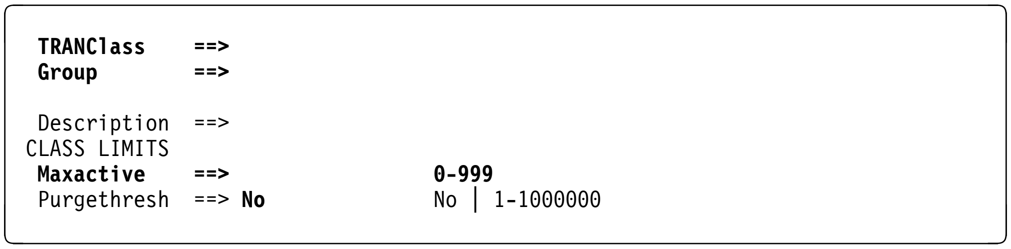
Chapter 22. TRANCLASS

The TRANCLASS definition allows you to define a transaction class. Transactions that are defined as belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. If transactions belonging to an active transaction class are already running, any new transactions are queued. Use the MAXACTIVE attribute to specify the maximum number of transactions that you want to run. To limit the size of the queue, you can use the PURGETHRESH attribute.

By putting your transactions into transaction classes you can control how CICS dispatches tasks. For example, you can separate transactions into those which are heavy resource users and those which are of lesser importance, such as the “Good morning” broadcast messages. You can then use the attributes on the TRANCLASS definition to control the number of active tasks allowed from each transaction class.

The DEFINE panel for TRANCLASS is shown in Figure 39.

Defining a TRANCLASS



```
 TRANClass    ==>
 Group        ==>

 Description  ==>
CLASS LIMITS
 Maxactive    ==>                 0-999
 Purgethresh  ==> No              No | 1-1000000
```

Figure 39. The DEFINE panel for TRANCLASS

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

MAXACTIVE(value)
This is the maximum number of transactions in this TRANCLASS that are allowed to be active. You must specify a MAXACTIVE value when you define a TRANCLASS, in the range 0 through 999.

New transactions attached when the number of active transactions has reached the MAXACTIVE limit are considered for queueing subject to the PURGETHRESH limit.

Defining a TRANCLASS with a zero MAXACTIVE value signifies that **all** tasks are to be queued.

PURGETHRESH({NO|number})
This is an optional purge threshold for the transaction class; it defines a threshold number at which transactions queuing for membership of the transaction class are purged. Specify it if you want to limit the number of transactions queueing in this transaction class. It can have the following values:

NO
The size of the queue is unlimited (other than by the storage available to attach tasks).

number
The purge threshold number in the range 1—1 000 000.

If you specify this as 1, no transactions are allowed to queue. If you specify it as any other number (*n*), the size of the queue is restricted to *n–1*. All new transactions attached after the limit of *n–1* is reached are purged.

Example of PURGETHRESH: In the case of a transaction class where the maximum number of active tasks (MAXACTIVE) is set to 50, and the purge threshold (PURGETHRESH) is set to 10 to limit queuing transactions, CICS begins to abend new transactions for the class when:

- The number of active transactions reaches 50, and
- The number of transactions queuing for membership of the transaction class has reached 9.

CICS accepts new transactions for this transaction class queue only when the number queued falls below the maximum size of the queue (9 in our example).

TRANCLASS(name)
is the name of the transaction class. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The reserved TRANCLASS name DFHTCL00 is used to indicate that the transaction does not belong to any transaction class.

For compatibility with releases that support a TCLASS attribute, CICS provides the following TRANCLASS equivalents:

TCLASS	TRANCLASS
NO	DFHTCL00
1	DFHTCL01
2	DFHTCL02
3	DFHTCL03
4	DFHTCL04
5	DFHTCL05
6	DFHTCL06
7	DFHTCL07
8	DFHTCL08
9	DFHTCL09
10	DFHTCL10

Sample definitions for these transaction classes are in group DFHTCL, supplied as part of DFHLIST.

Note: If a transaction is run and its associated TRANCLASS definition is not installed, the transaction will run without any of the scheduling constraints specified in the TRANCLASS. Message DFHXM0212 is issued as a warning.

TRANCLASS can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters.

Chapter 23. TRANSACTION

A CICS application consists of one or more programs written to perform a specific function. A particular invocation of such an application is known as a **transaction**, and the CICS transaction manager identifies it by its transaction identifier (TRANSID). You tell CICS how you want your transaction to run, primarily in a TRANSACTION definition. The name of this definition, the TRANSACTION name, is the same as the TRANSID.

In the TRANSACTION definition you specify options related to functions provided by CICS itself. The transaction priority, security key, and the length of the transaction work area (TWA) are examples of these options.

You also link the transaction with other resources by coding the names of their definitions in the TRANSACTION definition. These other resources are PROGRAM, PROFILE, PARTITIONSET, REMOTESYSTEM, and TRANCLASS.

PROGRAM
You specify options related to the software implementation of your application in the PROGRAM definition. This defines the program to which control is to be given to process the transaction. The TRANSACTION definition references the PROGRAM definition.

PROFILE
You do ***not*** have to specify, for each transaction, the options that will control the interaction with a terminal or logical unit. Instead, the TRANSACTION definition references a PROFILE definition, which specifies them for a number of transactions.

REMOTESYSTEM
For transaction routing, instead of specifying a PROGRAM name in the TRANSACTION definition, you specify the name of a REMOTESYSTEM. This can be the name of another CICS system, which itself is defined to this CICS system in a CONNECTION definition of the same name.

If you name a REMOTESYSTEM, you may also supply a REMOTENAME, which is the name of the ***transaction*** to be run in the remote system. The remote system decides which program it will give control to.

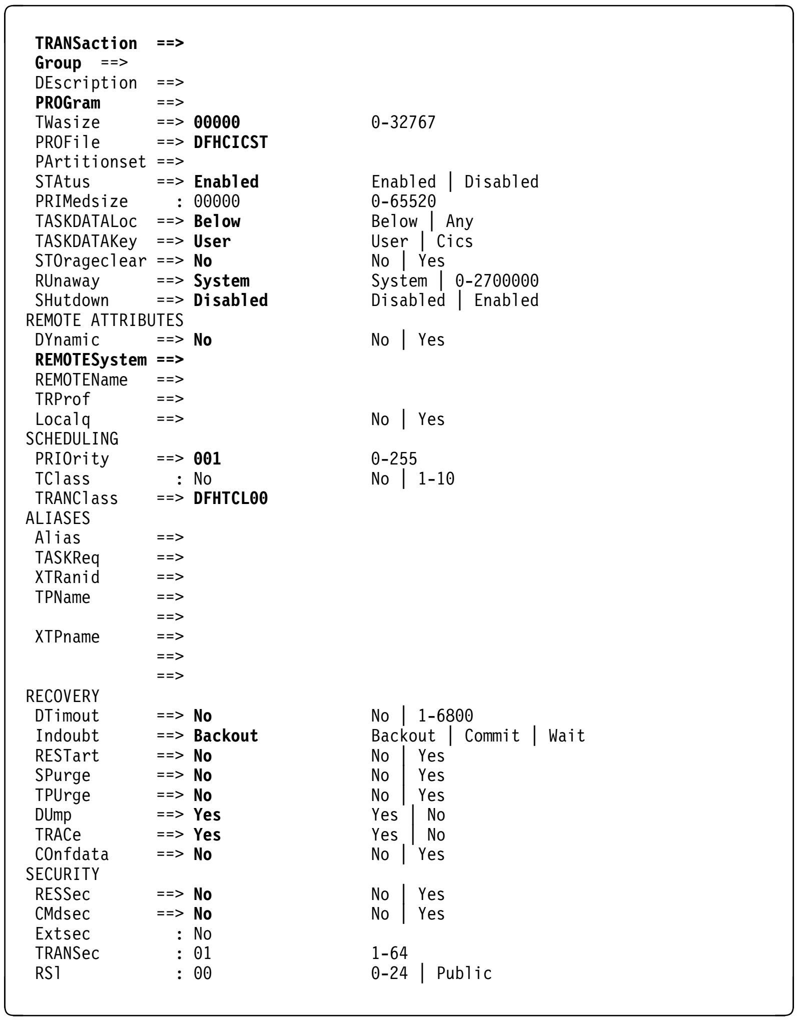
If you specify a REMOTESYSTEM name that corresponds to the system in which the install has been made, CICS installs a local transaction resource definition. Otherwise CICS installs a remote transaction resource definition.

TRANCLASS
This specifies the name of the transaction class to which the transaction belongs. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The constraints are specified in the associated TRANCLASS definition. A full description of the TRANCLASS attribute can be found on page 211.

The TRANSACTION definition is thus the central resource definition for an application. The related resource definitions are discussed below. Figure 1 on page 9 shows how all the resource definitions relate to each other.

Defining a TRANSACTION

Figure 40 shows the CEDA DEFINE TRANSACTION screen.



```
 TRANSaction  ==>
 Group  ==>
 DEscription  ==>
 PROGram      ==>
 TWasize      ==> 00000               0-32767
 PROFile      ==> DFHCICST
 PArtitionset ==>
 STAtus       ==> Enabled             Enabled | Disabled
 PRIMedsize     : 00000               0-65520
 TASKDATALoc  ==> Below               Below | Any
 TASKDATAKey  ==> User                User | Cics
 STOrageclear ==> No                  No | Yes
 RUnaway      ==> System              System | 0-2700000
 SHutdown     ==> Disabled            Disabled | Enabled
REMOTE ATTRIBUTES
 DYnamic      ==> No                  No | Yes
 REMOTESystem ==>
 REMOTEName   ==>
 TRProf       ==>
 Localq       ==>                     No | Yes
SCHEDULING
 PRIOrity     ==> 001                 0-255
 TClass         : No                  No | 1-10
 TRANClass    ==> DFHTCL00
ALIASES
 Alias        ==>
 TASKReq      ==>
 XTRanid      ==>
 TPName       ==>
              ==>
 XTPname      ==>
              ==>
              ==>
RECOVERY
 DTimout      ==> No                  No | 1-6800
 Indoubt      ==> Backout             Backout | Commit | Wait
 RESTart      ==> No                  No | Yes
 SPurge       ==> No                  No | Yes
 TPUrge       ==> No                  No | Yes
 DUmp         ==> Yes                 Yes | No
 TRACe        ==> Yes                 Yes | No
 COnfdata     ==> No                  No | Yes
SECURITY
 RESSec       ==> No                  No | Yes
 CMdsec       ==> No                  No | Yes
 Extsec         : No
 TRANSec        : 01                  1-64
 RSl            : 00                  0-24 | Public
```

Figure 40. The DEFINE panel for TRANSACTION

ALIAS
Allows you to specify an alias transaction name for this transaction. The name may be up to four characters in length. This is of use if you wish to run on a terminal defined with UCTRAN(NO), or a transaction that allows mixed case input (PROFILE UCTRAN(NO)). For example, you can invoke via alias(**abcd**) the same transaction as **ABCD**.

CMDSEC({NO|YES})
Code this if you want security checking on system programming commands. For programming information on the system programming commands, see the *CICS System Programming Reference* manual.

NO
No checks. The commands are always executed.

YES
A call is made to the external security manager (ESM). CICS will either authorize or prevent access depending on this; if the ESM cannot identify the resource or resource type, access is not authorized.

CONFDATA(NO|YES)
Indicates whether CICS is to suppress user data from CICS trace entries when the CONFDATA system initialization parameter specifies HIDETC. If the system initialization parameter specifies CONFDATA=SHOW, CONFDATA on the transaction definition is ignored.

If the system initialization parameter specifies CONFDATA=HIDETC, the following options are effective:

NO
CICS does not suppress any user data. VTAM and MRO initial user data is traced in trace point AP

FC92. FEPI user data is traced in the normal CICS FEPI trace points.

YES
CICS suppresses user data from the CICS trace points.

DESCRIPTION(text)
You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

DTIMOUT({NO|value})
Specifies whether deadlock time-out will be applied to the task. If the execution of the task gets suspended (for example, through lack of storage), a purge of the task is initiated if the task stays suspended for the longer than the DTIMOUT value. If the purge leads to a transaction abend, the abend code used depends on which part of CICS suspended the task. When using CEDF, the user task should, if possible, specify DTIMOUT(NO), or a large value.

Note: When using CEDF, if any DTIMOUT value has been specified for the user task, the DTIMOUT value is ignored while the user task is suspended and a CEDF task is active. Therefore the suspended user task cannot terminate with a deadlock timeout (abend AKCS) while a CEDF task is waiting for a user response.

For DTIMOUT to be effective, SPURGE must be set to YES.

CICS inhibits deadlock time-out at certain points.

DTIMOUT is not triggered for terminal I/O waits. Because the relay transaction does not access resources after obtaining a session, it has little need for DTIMOUT except to trap suspended allocate requests. However, for I/O waits on a session, the RTIMOUT option can be specified on PROFILE definitions for transaction routing on mapped APPC connections.

It is important that you define some transactions with a DTIMOUT value, because deadlock time-out is the mechanism that CICS uses to deal with SOS (short on storage) situations.

NO
The deadlock time-out feature is not required.

value
The length of time (MMSS for minutes and seconds) after which the deadlock time-out facility will terminate a suspended task. The maximum value that you can specify is 68 minutes; this is accurate to intervals of one second.

DUMP({YES|NO})
Indicates whether a call is made to the dump domain to produce a transaction dump if the transaction terminates abnormally.

YES
A call is made to the dump domain to produce a transaction dump. Note that the final production or suppression of the transaction dump is controlled by the transaction dump table. For more information about the dump table, see the *CICS Problem Determination Guide*.

If no transaction dump table entry exists for the given dump code when a transaction abends, a temporary entry is created for which the default is to produce a transaction dump.

You control dump table entries for transaction dumps using the CEMT transaction (for more information see the *CICS-Supplied Transactions* manual) or the EXEC CICS SET TRANDUMPCODE command (for programming information, see the *CICS System Programming Reference* manual).

NO
No call is made to the dump domain, suppressing any potential transaction dump.

Note: This operand has no effect on the following:

- An EXEC CICS DUMP command, which always produces a dump.
- The system dumps for dump codes AP0001 and SR0001 that CICS produces in connection with ASRA, ARSB, or ASRD abends. If you specify NO on the transaction DUMP option, CICS suppresses the transaction dump, but not the system dump.

DYNAMIC({NO|YES})
Indicates whether or not the transaction can be dynamically routed to a remote region, using the CICS dynamic transaction routing facility.

NO
Creates a local or remote definition according to the REMOTESYSTEM attribute.

YES
Allows the dynamic transaction routing program to determine the local or remote status dynamically at invocation time. For programming information about the dynamic transaction routing program, see the *CICS Customization Guide.*

EXTSEC({NO|YES})
The EXTSEC keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for more information.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is

installed. For more information about groups, see “How the CSD is organized—groups and lists” on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDOUBT({BACKOUT|COMMIT|WAIT})
Indicates the action required if the transaction is using intercommunication, and abends at a critical time during syncpoint or abend processing. For guidance on using the INDOUBT option, see the *CICS Intercommunication Guide*.

BACKOUT
The effects of the transaction will be backed-out. This must be specified for recoverable files.

COMMIT
The effects of the transaction will be committed. You should use INDOUBT(COMMIT) if you do not want dynamic transaction backout.

WAIT
Changes to recoverable temporary storage are locked until the session is recovered. The resources are then committed or backed out in step with the remote system.

LOCALQ({NO|YES})
Indicates whether queuing on the local system is to be performed.

NO
No local queuing is to be performed.

YES
Local queuing can be attempted for an EXEC START NOCHECK request when the system is not available and the system name is valid. A system is defined as not available when:

- The system is OUT OF SERVICE when the request is initiated.
- The attempt to initiate any session to the remote system fails and the corrective action taken by the abnormal condition program (DFHZNAC) or the node error program (DFHZNEP) is to place the system OUT OF SERVICE.
- No sessions to the remote system are immediately available, and your XISCONA global user exit program specifies that the request is not to be queued in the issuing region.

Local queuing should be used only for those EXEC START commands that represent time independent requests. The delay implied by local queuing will affect the time at which the request is actually started. It is your responsibility to ensure that this condition is met.

You can use the intersystem communication program global user exit XISLCLQ to override the setting of the LOCALQ attribute. For programming information on the user exits in the intersystem communication program, see the *CICS Customization Guide*.

PARTITIONSET(name|KEEP|OWN)
The name of the partition set that is to be the default application partition set. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

Note that you should delete a previously specified name by pressing the ERASE EOF key, if you are not specifying a new name.

If you do not specify a partition set name, or either of the reserved names, CICS will destroy existing partitions prior to the first BMS output to the terminal from the transaction.

name
If you specify a name, CICS will destroy existing partitions and will load the named partition set before the first BMS output to the terminal from the transaction. (Existing partitions are not destroyed if the terminal partition set matches the application partition set.)

This name must not be the same as that specified in PROGRAM(name).

KEEP
If you specify the reserved name KEEP, the transaction will use the application partition set for this terminal, whatever it may be. This option is normally used for successor transactions in a chain of pseudo-conversational transactions.

OWN
If you specify the reserved name OWN, the transaction will perform its own partition management.

PRIMEDSIZE({0|value})
The PRIMEDSIZE attribute is obsolete in CICS Transaction Server for VSE/ESA Release 1, but is supported to provide CSD compatibility for earlier releases of CICS where it is still valid. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for more information.

PRIORITY({1|value})
The transaction priority. This one-to three-digit decimal value from 0 to 255 is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, not to exceed 255.)

PROFILE({DFHCICST|name})
The name of the PROFILE definition that specifies the processing options used in conjunction with the terminal that initiated the transaction. The name can be up to eight characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

The processing options provided by the default DFHCICST are shown in "PROFILE definitions in group DFHISC" on page 333. Note that DFHCICST is not suitable for use with a distributed program link. You should specify instead DFHCICSA, which has INBFMH(ALL).

PROGRAM(name)
The name of the program to which CICS gives control to process this transaction. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

You should ensure that this name is not the same as that specified in PARTITIONSET(name).

Note: If a name is specified for REMOTESYSTEM, and it differs from that of the current system, no name need be specified for PROGRAM. If, in these circumstances, a name is specified for PROGRAM, it may be ignored.

If this transaction definition is for use on a remote program link request, the program name you specify on this parameter must be the name of the CICS mirror program, DFHMIRS. See the TRANSID option on the PROGRAM resource definition on page 174.

REMOTENAME({local-name|remote-name})
The name of this transaction as it is known in a remote system, if it is to be executed in a remote system or region using intersystem communication. The remote system can be another CICS region or an IMS system. REMOTENAME can be one through four characters in length if the REMOTESYSTEM parameter specifies another CICS region, or one through eight characters in length if REMOTESYSTEM specifies an IMS system. IMS uses 8-character names, and if REMOTENAME is less than 8, IMS will translate it into a useable format. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

If you specify REMOTESYSTEM and omit REMOTENAME, the value of REMOTENAME defaults to the local name; that is, the TRANSACTION name on this definition. Note that the transaction need not necessarily reside on the remote system or region.

REMOTESYSTEM(name)
The name of the CONNECTION definition of the intercommunication link on which the transaction attach request will be sent. The name can be up to 4 characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

This attribute is used for CICS function request shipping (asynchronous processing and transaction routing). For more details of these methods of intercommunication, see the *CICS Intercommunication Guide*.

RESSEC({NO|YES})
Code this to indicate whether resource security checking is to be used for resources accessed by this transaction.

NO
All resources will be available to any user who has the authority to use this transaction.

YES
An external security manager will be used. For more details about external security checking, see the *CICS Security Guide*.

RESTART({NO|YES})
Indicates whether the transaction restart facility is to be used to restart those tasks that terminate abnormally and are subsequently backed out by the dynamic transaction backout facility.

If RESTART(YES) is specified, the task that failed is restarted from the beginning of the initial program. If dynamic transaction backout fails, or if restart is suppressed dynamically, DFHPEP will be invoked in the normal way. The transaction restart facility is especially useful in such situations as a program isolation deadlock, where the task can be restarted automatically rather than resubmitted manually. For more details of automatic transaction restart, see the *CICS Recovery and Restart Guide*.

NO
The restart facility is not required.

YES
The restart facility is to be used.

RSL({0|value|PUBLIC})
The RSL keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, "Obsolete attributes retained for compatibility" on page 317 for information.

RUNAWAY(SYSTEM|number)
The amount of time, in milliseconds, for which any task running under this transaction definition can have control of the processor before it is assumed to be in a runaway condition (logical loop). When this interval expires, CICS can abnormally terminate the task.

SYSTEM
Specifies that CICS is to use the ICVR system initialization parameter value as the runaway time limit for this transaction.

number
Specifies the runaway time limit in the range 0—2 700 000.

If you specify 0 (zero) it means there is no limit and that no runaway task detection is required for the transaction.

SHUTDOWN(DISABLED|ENABLED)
applies to transactions associated with a terminal, and indicates whether the transaction can be run during CICS shutdown. This supplements the XLT option on EXEC CICS PERFORM SHUTDOWN, so in order for a transaction to be attached during shutdown it must either be defined as SHUTDOWN(ENABLED) or named in the XLT specified in the EXEC CICS SHUTDOWN command.

DISABLED
The transaction is disabled from running during CICS shutdown.

ENABLED
The transaction is enabled to run during CICS shutdown.

SPURGE({NO|YES})
Indicates whether the transaction is initially “system purgeable” or not.

SPURGE(NO) prevents a transaction being purged by the deadlock time-out (DTIMOUT) facility, an EXEC CICS ... PURGE command, TWAOCT (Cancel Task) being set in the node error program (NEP), or a CEMT SET ... PURGE command.

SPURGE(YES) allows such purges to go ahead as far as the user is concerned. CICS may, however, prevent the purge if it is not safe to allow a purge at the point the transaction has reached.

Note that SPURGE(NO) does not prevent a transaction being purged by the read time-out (RTIMOUT) facility, an EXEC CICS SET ... FORCEPURGE command, or a CEMT SET TRANSACTION(tranid) FORCEPURGE command. SPURGE only determines the initial value, which can be changed by the transaction while it is running.

NO
The transaction is not initially system purgeable.

YES
The transaction is initially system purgeable.

STATUS({ENABLED|DISABLED})
The transaction status.

ENABLED
Allows the transaction to be executed normally.

DISABLED
Prevents the transaction being executed.

STORAGECLEAR(NO|YES)
indicates whether task-lifetime storage for this transaction is to be cleared or not upon release. This can be used to prevent other tasks accidentally viewing any confidential or sensitive data that was being stored by this transaction in task lifetime storage.

TASKDATAKEY(USER|CICS)
This specifies the storage key of the storage CICS allocates at task initialization for the duration of the task (task-lifetime storage), and which is accessible by the application. These storage areas are the EXEC interface block (EIB) and the transaction work area (TWA).

TASKDATAKEY also specifies the key of the storage that CICS obtains on behalf of all programs that run under the transaction. The program-related storage that CICS allocates in the specified key includes:

- The copies of working storage that CICS obtains for each execution of an application program
- The storage CICS obtains for the program in response to implicit and explicit GETMAIN requests. For example, the program can request storage by a GETMAIN command, or as a result of the SET option on other CICS commands.

You must specify TASKDATAKEY(USER) if any of the programs in the transaction are defined with EXECKEY(USER). If you specify TASKDATAKEY(CICS) for a transaction, an attempt to run any program in user key under this transaction leads to a task abend, with abend code AEZD.

USER
CICS obtains user-key storage for this transaction. Application programs executing in any key can both read and modify these storage areas.

For more information about task storage protection, see the description of the EXECKEY option on the PROGRAM definition on page 172.

CICS
CICS obtains CICS-key storage for this transaction. Application programs executing in CICS key can both read and modify these storage areas. Application programs executing in user key can only read these storage areas.

TASKDATALOC({BELOW|ANY})
This specifies whether task life-time storage acquired by CICS for the duration of the transaction can be located above the 16MB line in virtual storage. These areas, which relate to specific CICS tasks, include the EXEC Interface Block (EIB) and the Transaction Work Area (TWA).

You must specify TASKDATALOC(BELOW) if any of the programs that make up the transaction runs in 24-bit addressing mode (this also applies to task-related user exits running on behalf of the transaction).

For transactions that do not satisfy this condition, you can specify ANY to obtain the associated virtual storage constraint relief.

CICS polices the use of TASKDATALOC(ANY). In particular:

- An attempt to invoke an AMODE(24) program running under a transaction defined with TASKDATALOC(ANY) results in an AEZC abend.
- An attempt to issue an EXEC CICS command or call a task related user exit whilst running AMODE(24) with TASKDATALOC(ANY) specified, results in an AEZA abend.
- An AMODE 31 program running as a transaction with TASKDATALOC(ANY) that attempts to invoke a task related user exit that is forced to run AMODE(24), results in an AEZB abend.
- If a task-related user exit that is forced to run in AMODE(24) is enabled for task start, CICS forces TASKDATALOC(BELOW) for all transactions for the remainder of the CICS run.

BELOW
Storage areas that CICS acquires for the transaction must be located below the 16MB line.

ANY
Storage areas that CICS acquires for the transaction can be located above the 16MB line in virtual storage.

TASKREQ(value)
This allows a transaction to be initiated by pressing a PF key, by using a light pen, or by using a card. Possible values are:

PA1, **PA2**, or **PA3** - for PA keys.
PF1 through **PF24** - for PF keys.
OPID - for the operator identification card reader.
LPA - for a light-pen-detectable field on a 3270 device.
MSRE - for the 10/63 character magnetic slot reader.

Here are some notes on the use of PF and PA keys:

- If a PA or PF key is specified in the PRINT system initialization parameters you cannot use the same PF key as the TASKREQ to initiate a transaction.
- PA or PF keys specified in the SKRxxxx system initialization parameter as page retrieval keys will be interpreted as such during a page retrieval session. You can use the same keys to initiate transactions at other times. The keys should be defined with the following values:

```
TASKREQ=key-id
PROGRAM=DFHTPR
TWASIZE=1024
TPURGE=NO
SPURGE=NO
```

- If you define a transaction with PROGRAM(DFHTPR), and a TASKREQ key, the key will initiate the transaction and open the page retrieval session at the same time.

Note: For transactions that had a TASKREQ but no TRANSID before migration to RDO, there may be an incompatibility in the use of EIBTRNID by application programs. (See the *CICS Application Programming Guide* for information.)

TCLASS({NO|value})
As a result of the introduction of TRANCLASS, the TCLASS attribute is obsolete in CICS Transaction Server for VSE/ESA Release 1 If you already use TCLASS, you can still access it by using compatibility mode (see “Compatibility mode (CSD sharing)” on page 19 for information). See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for a description of TCLASS.

TPNAME(name)
The name of the transaction that may be used by an APPC partner if the 4 character length limitation of the TRANSACTION parameter is too restrictive. This name can be up to 64 characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. If this range of characters is not sufficient for a name that you wish to specify, you may use the XTPNAME attribute instead of TPNAME.

TPURGE({NO|YES})
Indicates (for non-VTAM terminals only) that the transaction can be purged because of a terminal error.

NO
The task cannot be purged when a terminal error occurs. Manual intervention by the master terminal operator will be required when this happens.

YES
The task can be purged when a terminal error occurs.

TRACE({YES|NO})
Indicates whether the activity of this transaction is to be traced.

YES
Trace the activity for this transaction.

NO
Do not trace the activity for this transaction.

Note: The CICS-provided transaction definitions for CEDF and CSGM have TRACE(NO) coded.

TRANCLASS(DFHTCL00|name)
is the name of the transaction class to which the transaction belongs. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The reserved TRANCLASS name DFHTCL00 is used to indicate that the transaction does not belong to any transaction class.

In previous releases of CICS, you could specify a transaction class by using the now obsolete TCLASS attribute. TCLASS specified the value of the associated class. Compatibility with these classes is preserved if you specify the following TRANCLASS equivalents:

TCLASS	TRANCLASS
NO	DFHTCL00
1	DFHTCL01
2	DFHTCL02
3	DFHTCL03
4	DFHTCL04
5	DFHTCL05
6	DFHTCL06
7	DFHTCL07
8	DFHTCL08
9	DFHTCL09
10	DFHTCL10

Note: If a transaction is run and its associated TRANCLASS definition is not installed, the transaction will run without any of the scheduling constraints specified in the TRANCLASS. Message DFHXM0212 is issued as a warning.

TRANCLASS can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters.

TRANSACTION(name)
The name of the transaction, or transaction identifier (TRANSID). The name can be up to 4 characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. Do not use transaction names beginning with C because this character is reserved for use by CICS.

Note: If you use a comma (,) in a name, you will be unable to use those commands such as

`CEMT INQUIRE TRANSACTION(`*`value1`*`,`*`value2`*`)`

where the comma serves as a list delimiter. See the *CICS-Supplied Transactions* manual for information about using lists of resource identifiers.

If you wish to use other special characters in a transaction identifier, use the XTRANID attribute to specify another name which can be used to initiate the transaction. You must also specify a TRANSACTION name, because this is the name by which the TRANSACTION definition is known on the CSD.

When defining a transaction you must also name either a PROGRAM or a REMOTESYSTEM.

TRANSEC
The TRANSEC keyword is not valid in CICS Transaction Server for VSE/ESA Release 1. See Appendix A, “Obsolete attributes retained for compatibility” on page 317 for more information.

TRPROF=(name)
The name of the PROFILE for the session that will carry intersystem flows during ISC transaction routing. The name can be up to eight characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

You can specify this only for remote transactions.

TWASIZE({0|value})
The size (in bytes) of the transaction work area to be acquired for this transaction. Specify a one-to five-digit decimal value in the range 0 through 32767.

Notes:

1. Your storage may be corrupted if your TWASIZE is too small.
2. Do not change the TWASIZE of the CICS-supplied transactions.

XTPNAME(value)
This attribute may be used as an alternative to TPNAME. Enter a hexadecimal string up to 128 characters in length, representing the name of the transaction that may be used by an APPC partner. All hexadecimal combinations are acceptable **except X'40'**. In order to specify an XTPNAME over 72 characters long to DFHCSDUP, put an asterisk in column 72. This causes the following line to be concatenated.

XTRANID(value)
You can use this optional attribute to specify another name to be used instead of the TRANSACTION name for initiating transactions. The name may be up to eight hexadecimal digits in length. Because XTRANID is specified in hexadecimal code, you can use a name which contains unprintable characters, or characters not allowed for TRANSACTION names.

(See also TASKREQ, another transaction alias that can be specified.)

value
A 4-byte transaction identifier in hexadecimal notation (the identifier therefore uses up to eight hexadecimal digits). If you specify fewer than eight hexadecimal digits, the identifier will be padded on the right with blanks. XTRANID should not begin with `X'C3'`, or anything less than or equal to `X'40'` and should not end with `X'FFFFFF'`, as all these values are reserved for use by CICS. A value of `X'00000000'` is also not allowed.

Chapter 24. TYPETERM

A TYPETERM definition is an extension of a TERMINAL definition; it specifies a set of attributes common to a group of terminals. The TYPETERM attributes are listed on page 221. If you have a number of terminals with the same properties, you would define one TYPETERM with the required values, name that TYPETERM in each TERMINAL definition (or in the autoinstall model definition if you are using autoinstall).

Every TERMINAL definition must name a TYPETERM definition. This single attribute represents many other characteristics, and thus can save considerable effort, and reduce the chance of making mistakes. TYPETERMs make it easier to define your terminals if you have many terminals of the same kind.

Two TYPETERM attributes are worthy of note here, because they further simplify the terminal definition process:

- DEVICE
- QUERY

DEVICE

DEVICE specifies the **device type** that the TYPETERM represents. This is a key attribute, because the default values for a number of other attributes depend on the value you supply for it. You must supply a value for the DEVICE attribute, because there is no default.

Some attributes are always the same for every device of the same type. You do not need to define all these attributes yourself, because RDO knows what they are. All you need to tell RDO is the device type of your terminals, when you define the TYPETERM for them. Values for the fixed attributes are supplied automatically.

For a list of terminals supported by RDO, see “Devices supported” on page 217. There is also a list of valid values for the DEVICE attribute of TYPETERM in Table 14 on page 215. This shows you the other attribute values supplied for different device types. In some cases, these values depend also on your values for SESSIONTYPE and TERMMODEL, but these too have defaults that depend on the DEVICE specified.

Apart from ordinary display devices, printers, and other more specialized input and output devices, you can create a TYPETERM definition for your CICS consoles.

QUERY

The QUERY attribute allows you to leave some features of your terminals undefined until they are connected. Information about these attributes can then be obtained by CICS itself using the QUERY structured field.

The attributes for which you can use QUERY are all TYPETERM attributes. They are:

ALTPAGE
ALTSCREEN
APLTEXT
BACKTRANS
CGCSGID
COLOR
EXTENDEDDS
HILIGHT
MSRCONTROL
OBFORMAT
OUTLINE
PARTITIONS
PROGSYMBOLS
SOSI
VALIDATION

The use of QUERY overrides any values that are explicitly defined for all the TYPETERM attributes listed above, **except ALTSCREEN**. QUERY-supplied ALTSCREEN values are used only if no ALTSCREEN values are explicitly defined in the TYPETERM.

You can use QUERY for 3270 devices with the extended 3270 data stream. The DEVICE types for which you can use QUERY are:

3270
3270P
LUTYPE2
LUTYPE3
SCSPRINT

You can specify that QUERY be used in one of two ways:

- QUERY(COLD) specifies that the QUERY is only to be issued when the terminal is first connected after a cold start.
- QUERY(ALL) specifies that the QUERY is to be issued each time the terminal is connected.

The QUERY function is particularly useful with configurable devices, such as the IBM Personal System/2 (PS/2) and the IBM 3290. It enables you to reconfigure the device between logging off and logging on to CICS, without having to change any resource definitions.

The QUERY function is also particularly useful when used in conjunction with autoinstall.

Note that the QUERY facility obtains only the information required by CICS. If an application program needs to determine other device characteristics, it still needs to send a QUERY structured field and analyze the reply.

To summarize, you may need only one TYPETERM definition for each device type. If the attributes that can be determined by QUERY differ among the terminals, you still need only one TYPETERM for each device type. If other attributes of your terminals vary, you may need more than one TYPETERM definition for a device type.

There are some CICS-supplied TYPETERM definitions suitable for the more frequently used terminals. These are described in “TYPETERM definitions in group DFHTYPE” on page 340.

Terminal definition—summary

Now you have seen that, if all your terminals are basically the same, you could get away with having only one TYPETERM definition, and one TERMINAL definition with AUTINSTMODEL(YES). You might, perhaps, use QUERY to deal with different features used by your terminals.

Dependent default values

See “Dependent default values” on page 26 for an explanation of dependent default values.

Table 14 (Page 1 of 2). Default values for different devices

Values specified by you:			Default values supplied by RDO:					
DEVICE	**SESSION TYPE**	**TERM MODEL**	**DEF. SCRN.**	**PAGE SIZE**	**AUTO PAGE**	**BRAC -KET**	**BUILD CHAIN**	**ROUTD MSGS**
3270 (3277, L3277) (a)		1	12,40	12,40	N	Y	N	All
3270		2 (dft)	24,80	24,80	N	Y	N	All
3275		1	12,40	12,40	N	Y	N	All
3275		2 (dft)	24,80	24,80	N	Y	N	All
3270P (3284, L3284, 3286, L3286) (b)		1	12,40	12,40	Y	Y	N	All
3270P		2 (dft)	24,80	24,80	Y	Y	N	All
APPC			0,0	1,40	Y	Y⋆	Y⋆	None⋆
LUTYPE2		1	12,40	12,40	N	Y⋆	Y⋆	All
LUTYPE2		2 (dft)	24,80	24,80	N	Y⋆	Y⋆	All
LUTYPE3		1	12,40	12,40	Y	Y⋆	N	All
LUTYPE3		2 (dft)	24,80	24,80	Y	Y⋆	N	All
LUTYPE4			0,0	50,80	Y	Y⋆	N	All
BCHLU	(dft)		0,0	12,80	Y	Y⋆	N	All
BCHLU	BATCHDI		0,0	12,80	Y	Y⋆	N	All
BCHLU	USERPROG		0,0	12,80	Y	Y⋆	N	All
INTLU			0,0	12,80	Y	Y	N	All
SCSPRINT			0,0⋆	24,80	Y	Y⋆	N	All
TLX or TWX	CONTLU (dft)		0,0	1,40	Y	Y	N	All
TLX or TWX	INTLU		0,0	1,40	Y	Y	N	All
3600	(dft)		0,0	1,40	Y	Y	N	All
3600	PIPELINE		0,0	6,30	Y	Y	N	All
3614			0,0	1,40	Y	Y	N	All
3650	USERPROG (dft)		0,0	3,80	Y	Y	N	All
3650	3270		12,40	23,80	Y	Y	N	All
3650	3653		0,0	6,30	Y	Y	N	All
3650	PIPELINE		0,0	6,30	Y	Y	N	All
3767			0,0	12,80	Y	Y⋆	N	All
3767C			0,0	12,80	Y	Y⋆	N	All
3767I			0,0	12,80	Y	Y⋆	N	All
3770	(dft)		0,0	12,80	Y	Y⋆	N	All
3770	USERPROG		0,0	12,80	Y	Y⋆	N	All
3770	BATCHDI		0,0	12,80	Y	Y⋆	N	All
3770B	(dft)		0,0	12,80	Y	Y⋆	N	All
3770B	BATCHDI		0,0	12,80	Y	Y⋆	N	All
3770B	USERPROG		0,0	12,80	Y	Y⋆	N	All
3770C			0,0	12,80	Y	Y⋆	N	All
3770I			0,0	12,80	Y	Y⋆	N	All

Table 14 (Page 2 of 2). Default values for different devices

Values specified by you:			Default values supplied by RDO:					
3790	(dft)		0,0	1,40	Y	Y⋆	N	None⋆
3790	SCSPRINT		0,0	24,80	Y	Y⋆	N	All
3790	USERPROG		0,0	12,80	Y	Y⋆	N	All
3790	BATCHDI		0,0	12,80	Y	Y⋆	N	All
3790	3277CM (c)	1	12,40	12,40	N	Y⋆	Y⋆	All
3790	3277CM (d)	2 (dft)	24,80	24,80	N	Y⋆	Y⋆	All
3790	3284CM (e)	1	12,40	12,40	Y	Y⋆	N	All
3790	3284CM (f)	2 (dft)	24,80	24,80	Y	Y⋆	N	All
3790	3286CM (e)	1	12,40	12,40	Y	Y⋆	N	All
3790	3286CM (f)	2 (dft)	24,80	24,80	Y	Y⋆	N	All

Notes:
* denotes that this value is forced; it is not just a default but it is mandatory for the DEVICE type.
(a) 3277 and L3277 are converted by RDO to 3270.
(b) 3284, 3286, L3284, and L3286 are converted to 3270P.
(dft) indicates the default SESSIONTYPE or TERMMODEL value assigned by RDO if you specify the DEVICE only.
(c) is converted to DEVICE(LUTYPE2) TERMMODEL(1).
(d) is converted to DEVICE(LUTYPE2) TERMMODEL(2).
(e) is converted to DEVICE(LUTYPE3) TERMMODEL(1).
(f) is converted to DEVICE(LUTYPE3) TERMMODEL(2).

Devices supported

This chapter lists the device names that you can use on the TYPETERM.

Table 15 is a list of terminal types supported by RDO. If you have devices other than those shown, you may be able to install them on an earlier version of CICS (before CICS/VSE 2.3) and use transaction routing.

To use Table 15, find the family number of your device in the leftmost column (headed **Terminal or System Type**). Then look across at the second column (headed **Units**) to see if your type of units are specifically mentioned. Next look at the third column (headed **Attachment**) to see what device type you should use on your TYPETERM definition.

There is further explanation of the information in Table 15 in the notes that follow. The following abbreviations have been used:

local	channel or adapter attached
s/s	start/stop transmission
SDLC	synchronous data link control
sw	switched
BSC	binary synchronous
nonsw	non-switched communications.

Table 15 (Page 1 of 2). VTAM terminals and subsystems supported by RDO

Terminal or System Type	Units	Attachment	Notes
3101		Supported as TWX 33/35	1,10
3230		Supported as 2741 (BSC/BTAM) or INTLU (VTAM)	1
3270	3178, 3179, 3180, 3262, 3271, 3272, 3274, 3276, 3290	local, SDLC, BSC nonsw	1,2, 3
	3275 3277, 3278, 3279, 3284, 3286, 3287, 3288, 3289	BSC sw or nonsw	3
3270PC	3270PC, 3270PC/G, 3270PC/GX	Supported as 3270	
3287	models 11, 12	SDLC supported as SCSPRT	13
3600	3601, 3602, 3690, 3604, 3610, 3612, 3618, 3614, 3624	SDLC, BSC nonsw	1,4,5,14
3630	3631, 3632, 3643, 3604	attached as 3600	4,11
3640	3641, 3644, 3646, 3647	SDLC attached as INTLU	13
	3642	SDLC attached as SCSPRT	13
	3643	SDLC supported as LUTYPE2	13
	3645	SDLC supported as SCSPRT	13
3650	3651, 3653, 3275, 3284	SDLC	4
3680	3684	Supported as 3790/3650	4
3730	3791	Supported as 3790	4
3767		SDLC s/s supported as 2740/2741	1
3770	3771, 3773, 3774	SDLC	1,4,6
	3775, 3776, 3777	BSC supported as 2770	
3790	3791	SDLC or local	4,7

Table 15 (Page 2 of 2). VTAM terminals and subsystems supported by RDO

Terminal or System Type	Units	Attachment	Notes
4300	4331, 4341, 4361, 4381	BSC or SDLC	4,8
4700	4701-1	Supported as 3600	1,4,5
5280		Supported as 3741 (BSC/BTAM) or 3270 (BTAM or VTAM)	1
5520		SDLC supported as 3790 full-function LU BSC supported as 2770 SDLC attached as APPC	1,4
5550		Supported as 3270	
5937		SDLC/BSC attached as 3270	1,3
6670		SDLC BSC supported as 2770	1
8100	8130/8140 processors with DPCX	Supported as 3790	4
	DPPX/BASE using Host Presentation Services or Host Transaction Facility	Attached as 3790	4
	DPPX/DSC or DPCX/DSC (including 8775 attach)	Supported as 3270	4,12
8775		SDLC supported as LUTYPE2	
8815		Supported as APPC	
Displaywriter		Supported as APPC SNA for EDDS Supported as 3270; attached as 2741 (s/s) or 3780 (BSC) SDLC attached as APPC	1
Personal Computer		Supported as 3270 and as APPC	1,14
PS/2		Supported as 3270 and as APPC	1,14
Scanmaster		Supported as APPC	
Series/1		Attached as System/3; supported as 3650 Pipeline (VTAM) or 3790 (full function LU)	1,4
System/32	5320	SDLC supported as 3770	1,4,9
		BSC supported as 2770	4
System/34	5340	SDLC supported as 3770 BSC attached as System/3	1,4,9 4
System/36™		Supported as System/34 SDLC attached as APPC	1
System/38	5381	SDLC attached as 3770 SDLC attached as APPC BSC attached as System/3	1,4,9 4
AS/400	5381	SDLC attached as 3770 SDLC attached as APPC BSC attached as System/3	1,4,9 4
System/370™		BSC or SDLC and APPC	1,4,8
System/390®		BSC or SDLC and APPC	1,4,8
TWX 33/35		VTAM (via NTO) ss sw BTAM ss sw	1,10
WTTY		VTAM (via NTO) ss nonsw BTAM ss sw	1,10

Notes:

1. These devices are also supported by BTAM and you may connect them to CICS by using transaction routing from CICS releases before CICS Transaction Server for VSE/ESA Release 1.
2. CICS supports the 3290 through both the terminal control and the BMS interfaces. The 3290 can be in one of three states: default, alternate, or partitioned. Up to 16 partitions can be defined. The 3290 also has the programmed symbols and extended highlighting features, as well as two kinds of data validation feature, mandatory fill and mandatory enter. A 3290 terminal can be configured as from one to five logical units. You define the size of each logical unit when setting up the 3290. You must ensure that the resource definitions of each logical unit match the set-up size, to prevent unpredictable results. Up to four interactive screens in any configuration can be active at the same time, but only one interactive screen can be defined as having programmed symbols at any time; that is, all programmed symbol sets must be assigned to the interactive screen.

   To display long lines of data, such as the 132-character lines of CEMT output, you should specify a default screen width of 132 characters.

   If you intend to use the large buffer, you might have to specify a much larger value for IOAREALEN (see page 227). Whether you need to do this depends on whether operators are likely to modify, or enter, large quantities of data. If a terminal is used for inquiry only, or for limited data entry, IOAREALEN need not be large.
3. SDLC 3270s are supported only through VTAM, and the switched BSC 3275 (feature #3440) is supported only through BTAM. Printers attached to local or SDLC 3274s and SDLC 3276s are supported through VTAM either as LU Type 3 using the 3270 printer data stream or as LU Type 1 using the SCS data stream (which is a subset of that used for SDLC 3767, 3770, and 3790 printers). The 3288 is supported as a 3286 Model 2. CICS supports the 3270 copy feature (#1550).
4. Devices and features supported by a system or programmable controller are generally transparent to CICS. In some cases, CICS provides specific device support, in which case the units are listed.
5. SDLC is supported through VTAM. BSC attachment (RPQ 8K0598) is supported through BTAM. The 3614 is supported both for loop attachment to the 3601 and SDLC attachment to the host via a 3704/3705 Communications Controller.

   The 3614 is supported by CICS as BSC only when loop-attached to the 3601/3602 Controllers. The 3624 is supported as a 3614.

   The 3690 is supported as a 3602.
6. CICS supports the Data Transfer Function of the SDLC Programmable Models of the 3770 Data Communication System. In using this function, you are responsible for allocating data sets and managing the program library.
7. CICS does not support the 3790/Data Entry Configuration using 3760s. The #9165 or #9169 configuration is required to support the CICS enhancement first made available in Version 1 Release 3.0.

   Printers on 3790 systems are supported with one of the following:

   - a function program provided by you, or
   - 3270 data stream compatibility with a 3270 printer data stream (LU3), or
   - an SCS data stream supporting a subset of that for SDLC 3767 (LU1).

   When operating in 3270 mode, the 3288 Model 2 is supported as a 3286 Model 2.
8. System/370 and 4300 attachment by BSC requires a suitable telecommunications program (for example, the VSE/3270 Bisync Pass Through Program) in the system connected to CICS. CICS is **not** a suitable program for the remote CPU. Attachment by SDLC is supported by CICS intersystem communication.
9. The System/32 with its SNA/SDLC workstation system utility program, and the System/34 and System/38, are supported as compatible versions of an appropriately

featured 3770 Communication System operating as a batch logical unit. The System/34 or System/38 user-written program is responsible for supporting the correct SNA sequences of the attached subsystem.

10. TWX and WTTY are supported through VTAM via the Network Terminal Option program product (5735-XX7), with attachments as defined by NTO.

    TWX (Line Control Type) is attached through BTAM on eight-level code at 110 bps on common-carrier switched 150 bps networks.

    WTTY is attached at 50 bps on common-carrier switched networks where the terminals supported are those interfacing through IBM World Trade Corporation Telegraph Terminal Control with Telegraph Line Adapter.

    The transmission code used is International Telegraph Alphabet No. 2 (CCITT No. 2). CICS does not support autocall or automatic host disconnect via WRITE break.
11. The 3643 is supported as a 3604.
12. 8775 support includes validation of mandatory fill and mandatory enter field attributes.
13. Attachment is via the Loop Adapter #4830, #4831, and Data Link Adapter #4840 of the 4331 processor.
14. 3270 support requires that the 3278/3279 Emulation Adaptor be installed in the Personal Computer or PS/2.
15. The 3600 pipeline logical unit is designed to provide high throughput for particular types of transaction, such as credit card authorization or general inquiry applications. To achieve a high throughput of inquiry messages and their replies, the CICS pipeline session uses a restricted set of the communication protocols that are used with the 3601 logical unit. These restrictions result in a full duplex message flow whereby many inquiry messages are outstanding at any one time, and the replies may flow back in a different order from that of the original inquiries. The 4700/3600 application program controlling the inquiry terminals is responsible for maintaining the protocols as well as correlating replies with inquiries and controlling message flow to the group of terminals associated with the pipeline logical unit.

Defining a TYPETERM

```
TYpeterm  ==>
    Group  ==>
    DEScription  ==>
   RESOURCE TYPE
    DEVice       ==>                   (See Table 14 on page 215)
    TERmmodel    ==>                   (See Table 14 on page 215)
    SESsiontype  ==>                   (See Table 14 on page 215)
    PRINTErtype  ==>
    LDclist      ==>
    SHippable    ==> No                  No | Yes
   MAPPING PROPERTIES
    PAGesize     ==> 024 , 080         0-999
    ALTPage      ==> 000 , 000         0-999
    ALTSUffix    ==>
    FMhparm      ==> No                No | Yes
    OBOperid     ==> No                No | Yes
   PAGING PROPERTIES
    AUTOPage     ==>                   No | Yes
   DEVICE PROPERTIES
    DEFscreen    ==> 000 , 000         0-999
    ALTSCreen    ==>     ,             0-999
    APLKybd      ==> No                No | Yes
    APLText      ==> No                No | Yes
    AUDiblealarm ==> No                No | Yes
    COLor        ==> No                No | Yes
    COPy         ==> No                No | Yes
    DUalcasekybd ==> No                No | Yes
    EXtendedds   ==> No                No | Yes
    HIlight      ==> No                No | Yes
    Katakana     ==> No                No | Yes
    LIghtpen     ==> No                No | Yes
    Msrcontrol   ==> No                No | Yes
    OBFormat     ==> No                No | Yes
    PARtitions   ==> No                No | Yes
    PRIntadapter ==> No                No | Yes
    PROgsymbols  ==> No                No | Yes
    VAlidation   ==> No                No | Yes
    FOrmfeed     ==> No                No | Yes
    HOrizform    ==> No                No | Yes
    VErticalform ==> No                No | Yes
    TEXTKybd     ==> No                No | Yes
    TEXTPrint    ==> No                No | Yes
    Query        ==> No                No | Cold | All
    OUtline      ==> No                No | Yes
    SOsi         ==> No                No | Yes
    BAcktrans    ==> No                No | Yes
    CGcsgid      ==> 00000 , 00000     0-65535
   SESSION PROPERTIES
    AScii        ==> No                No | 7 | 8
    SENdsize     ==> 00000             0-30720
    RECEivesize  ==>                   0-30720
    BRacket      ==> Yes               Yes | No
    LOGMODE      ==>
    LOGMODECom   ==> No                No | Yes
   DIAGNOSTIC DISPLAY
    ERRLastline  ==> No                No | Yes
    ERRIntensify ==> No                No | Yes
    ERRColor     ==> NO                NO | Blue | Red | Pink | Green
                                       | Turquoise  | Yellow | NEutral
    ERRHilight   ==> No                No  | Blink | Reverse | Underline
                                              continued...
```

Figure 41 (Part 1 of 2). The DEFINE panel for TYPETERM

```
...continued
OPERATIONAL PROPERTIES
 AUTOConnect  ==> No                  No | Yes | All
 ATi          ==> No                  No | Yes
 TTi          ==> Yes                 Yes | No
 CReatesess   ==> No                  No | Yes
 RELreq       ==> No                  No | Yes
 DIscreq      ==> Yes                 Yes | No
 Nepclass     ==> 000                 0-255
 SIgnoff      ==> Yes                 Yes | No | Logoff
 Xrfsignoff   ==> Noforce             Noforce | Force
MESSAGE RECEIVING PROPERTIES
 ROutedmsgs   ==>                     All | None | Specific
 LOGOnmsg     ==> No                  No | Yes
APPLICATION FEATURES
 BUildchain   ==> No                  No | Yes
 USerarealen  ==> 000                 0-255
 Ioarealen    ==> 00000 , 00000       0-32767
 UCtran       ==> No                  No | Yes | Tranid
RECOVERY
 RECOVOption  ==> Sysdefault          Sysdefault | Clearconv | Releasesess
                                      | Uncondrel | None
 RECOVNotify  ==> None                None | Message | Transaction
```

Figure 41 (Part 2 of 2). The DEFINE panel for TYPETERM

ALTPAGE({0|rows}, {0|columns})
Indicates the page size to be used by BMS for this terminal entry when ALTSCREEN has been selected as the screen size. The default is the same as PAGESIZE. The values for both rows and columns must be in the range 0 through 999.

Unexpected results will occur if the columns value of ALTPAGE is different from that of ALTSCREEN. The lines value of ALTPAGE can usefully be less than that of ALTSCREEN, perhaps to reserve the bottom line of the screen for error messages.

If you use the QUERY structured field (see page 213 for further details), the alternate page size used will be the size set up as the alternate screen size. For queriable terminals it is possible to have ALTPAGE set to zero and the ALTSCREEN value defined explicitly by the CINIT BIND. If ALTPAGE is not zero, it is possible to have different values for the ALTPAGE and the ALTSCREEN.

lines × columns must not exceed 32767.

ALTSCREEN(rows,columns)
Defines the 3270 screen size to be used for a transaction that has SCRNSIZE(ALTERNATE) specified in its profile. The values that can be specified are:

Device	Alternate Screen Size
3276-1, 3278-1	(12,80)
3276-2, 3278-2	(24,80)
3276-3, 3278-3	(32,80)
3276-4, 3278-4	(43,80)
3278-5	(27,132)
3279-2A, 3279-2B	(24,80)
3279-3A, 3279-3B	(32,80)

Note that there is no validity checking performed on the screen size selected, and that incorrect sizes may lead to unpredictable results.

For BSC devices, both the alternate and default screen sizes are determined by the device hardware. The alternate screen size is the maximum screen size. For the 3290 display, both the default and alternate screen sizes are determined by the customer setup procedure. For further guidance, see the *IBM 3290 Information Panel Description and Reference* manual, GA23-0021.

For SNA devices (LUTYPE2 and LUTYPE3), both alternate and default screen sizes can be any value chosen by yourself, up to the maximum physical screen size. In particular, both the alternate and default screen sizes can be the maximum screen size, or the default screen size can be the maximum screen size with no alternate screen size specified. The SNA bind is generated by CICS from this information. There is no need for you to provide logmode table entries, or to customize the device.

For non-SNA 3270 and LUTYPE2 devices, you can use the QUERY structured field to determine the alternate screen size that has been set up for the display. To use QUERY, you leave the DEFSCREEN to default to (24,80) and you leave ALTSCREEN unspecified. The alternate screen size will be the size set up by the terminal user. Otherwise, QUERY(COLD) or QUERY(ALL) will have no effect on the alternate screen size. Leaving ALTSCREEN not specified without using QUERY under the conditions above will result in an alternate screen size of (00,00). For more information about QUERY, see page 213.

If dual screen sizes are used, you can make CICS transactions use the alternate screen size by coding SCRNSIZE(ALTERNATE) in their associated profiles. If an application consists of several pseudo-conversationally linked transactions, you should specify SCRNSIZE(ALTERNATE) in the profiles for each of these transactions if the application uses the alternate screen size.

For 3287 and 3289 printers, the value specified must equal the buffer size of the particular device. For non-SNA 3287 and 3289 printers, the sizes depend on the feature ordered, not on the model number. For SNA printers, there are no features, and any two sizes can be specified from the list of valid sizes. When printing to a printer whose associated TERMINAL definition has PRINTERCOPY(YES) specified, the ALTSCREEN value should match the screen size of the terminal whose screen is to be printed. If the values differ, unpredictable results may occur.

ALTSUFFIX({blank|number})
A 1-character numeric suffix (specified in the SUFFIX operand of the application programmer's DFHMSD TYPE={DSECT|MAP} macro).

blank
Leave this attribute blank if you do not want a suffixed map set.

number
This suffix will be appended by BMS to map set names if the screen size being used is the same value as the alternate screen size, that is, if the transaction has SCRNSIZE(ALTERNATE) specified in the PROFILE definition, or if the default and alternate screen size are the same. In this case, BMS map selection routines will attempt to load the map set with the suffix specified in the ALTSUFFIX operand. If there is no such map set, BMS will try to load a map set suffixed with M or L and, if this load fails, BMS will try to load an unsuffixed map set version. If the transaction uses default screen size, BMS will first try to load a map set suffixed with M or L and, if this load fails, BMS will try to load an unsuffixed map set version.

To use a suffixed map set, you must code the system initialization parameter BMS=(,,,DDS).

APLKYBD({NO|YES})
Indicates whether the 3270 device has the APL keyboard feature.

APLTEXT({NO|YES})
Indicates whether the 3270 device has the APL text feature. Do not specify YES for a 3288 printer, with or without TEXTPRINT(YES). The APLTEXT feature is used in conjunction with the TEXTKYBD and APLKYBD operands.

You can use the QUERY structured field to determine whether the device is set up to use the APL text feature. (See page 213.)

ASCII({NO|7|8})
Indicates whether the terminal has an ASCII feature.

NO
This terminal does not have an ASCII feature. This is the default.

7 Specify this to communicate with ASCII-7 terminals. Devices configured with the ASCII-7 feature must be LUTYPE2 or LUTYPE3 without extended 3270 features. Only the following devices are supported:

3274 Model 1C and 51C
3276 Model 12
3278
3287.

Any terminal configured with the ASCII-7 option will have all FM data outbound from CICS converted to ASCII-7, and all FM data inbound to CICS converted to EBCDIC. Only FM request data will be translated. All other data in the RU such as LU status or sense data will be assumed to be in EBCDIC on output. ASCII-7 does ***not*** support data streams that contain extended attributes, such as structured fields and function management headers.

The ASCII-7 support is available on 3274-1C as an option on the configuration of the standard microcode. The use of the ASCII-7 option is determined at session initiation by BIND parameters set by CICS as a result of the TCT definition described above.

8 Specify this to communicate with ASCII-8 terminals. Devices configured with the ASCII-8 feature can be LUTYPE1, LUTYPE2, or LUTYPE3 with or without extended 3270 and SCS data stream features.

Any terminal configured with the ASCII-8 option will have all FM data outbound from CICS converted to ASCII-8, and all FM data inbound to CICS converted to EBCDIC. All FM request data will be translated. This will include the AID, cursor address, FM headers and structured fields. Any other form of the RU such as LU status or sense data will be assumed to be in EBCDIC on input and will be transmitted in EBCDIC on output.

Note that this ASCII-8 support is intended only for devices which will operate in EBCDIC but will translate or retranslate the data stream to or from ASCII-8 as is done by this CICS support. This is because the data stream is treated as a character string and any binary number fields will be translated byte by byte as though they were graphic characters, thus they may not represent their true value while in ASCII form.

The ASCII-8 support is available as a microcode RPQ on the 3274 and is mutually exclusive with the ASCII-7 option. The use of the ASCII-8 option is determined at session initiation by BIND parameters set by CICS as a result of the TCT definitions described above.

ATI({NO|YES})
Indicates whether transactions are allowed to be started at the terminal by automatic transaction initiation. ATI(YES) allows transactions to be started at the terminal by transient data control or by an EXEC CICS START command issued by another transaction. If there is already a transaction at the terminal, the ATI transaction is held until it ends.

If you specify ATI(YES), you must specify an IOAREALEN of at least one byte, except for DEVICE(APPC) when ATI and IOAREALEN have forced default values of YES and 0.

If ATI is specified as YES and CREATESESS is specified as YES then if a transaction is initiated when the terminal is not ACQUIRED, it will be automatically acquired.

See also the TTI attribute.

AUDIBLEALARM({NO|YES})
Specify this for the audible alarm feature for a 3270 display or for a 3270 printer attached to a 3651 controller.

AUTOCONNECT({NO|YES|ALL})
AUTOCONNECT(YES) or (ALL) specifies that the session with the terminal is to be established (that is, BIND is to be performed) during CICS initialization, or when communication with VTAM is started using the CEMT SET VTAM OPEN command. If the connection cannot be made at this time because the terminal is unavailable, the link must be subsequently acquired using the CEMT SET TERMINAL(termid) INSERVICE ACQUIRED command, unless the terminal becomes available in the meantime and itself initiates communications.

Note: If you use the VTAM LOGAPPL function, do not code AUTOCONNECT(YES), as this can lead to race conditions, causing errors or hung logical units.

NO
CICS will not attempt to bind sessions when the connection is established.

YES
CICS will attempt to bind as a contention winner session, when the connection is established.

ALL
Not applicable.

For background information about AUTOCONNECT, see the *CICS Intercommunication Guide*.

AUTOPAGE({NO|YES})
Indicates whether BMS autopaging is to be used. See page 185 for details. You should specify YES for printer TYPETERMs and NO for display device TYPETERMs. The default will depend on the value you specify for the DEVICE keyword: the default values are indicated in Table 14 on page 215.

BACKTRANS({NO|YES})
Indicates whether the device has the background transparency feature.

You can use the QUERY structured field to determine whether the device is set up to use the background transparency feature (see page 213 for further details).

BRACKET({YES|NO})
Specify this if bracket protocol is to be enforced for this logical unit. The default will depend on the value you specify for the DEVICE keyword (see Table 14 on page 215).

YES
Bracket protocol is to be used. This option is required for the 3790 inquiry and full function logical units. BRACKET(YES) is forced for many DEVICE types as indicated in Table 14 on page 215.

NO
Bracket protocol is not to be used. You must specify BRACKET(NO) for a 3614 logical unit and the 3650 Host Command Processor (HCP) session.

BUILDCHAIN({NO|YES})
Specify BUILDCHAIN(YES) if CICS is to perform chain assembly prior to passing the input data to the application program.

The default will depend on the value you specify for the DEVICE keyword (see Table 14 on page 215).

NO
Any TIOA received by an application program from this logical unit will contain one request unit (RU).

YES
Any terminal input/output area (TIOA) received by an application program from this logical unit will contain a complete chain.

CGCSGID({0,0|value1,value2})
The coded graphic character set global identifier (CGCSGID) enables application programs to determine the character set supported at the device.

This information may be obtained from a QUERY structured field for some devices (see page 213). For others, you must supply this information here, so that application programs can retrieve it using the EXEC CICS ASSIGN command.

0,0 No CGCSGID is specified.

value1,value2
The CGCSGID consists of 2 five-digit decimal numbers which can take values in the range 1 through 65535. value1 is the graphic character set global identifier (GCSGID) and value2 is a specification of the code points for the set, the code page global identifier (CPGID).

COLOR({NO|YES})

Indicates that the 3270 device or the SCS printer has the extended color feature, which allows colors to be selected for each field or character.

You can use the QUERY structured field to determine whether the device is set up to use the color feature. (See page 213.)

COPY({NO|YES})

COPY(YES) specifies that the copy feature for a 3270 display or printer is included in the 3270 control unit. Leave it to default to COPY(NO) for 3270 compatibility mode logical units, because COPY(YES) will be ignored.

See also the PRINTERCOPY and ALTPRINTCOPY attributes of the TERMINAL definition.

For further details about screen copying, see the *CICS 3270 Data Stream Device Guide*.

CREATESESS({NO|YES})

Indicates whether sessions are to be created.

NO

Specify this for a status that prevents internally generated session requests from actually creating a session. During CICS execution, this status can only be generated by a CEMT command.

CREATESESS(NO) prevents EXEC START requests and automatic transaction initiation (ATI) requests for this terminal causing a session to be created. This means that the requests are either queued or rejected when no session is currently established.

YES

Specify this for a status that allows internally generated session requests to create a session. During CICS execution, this status can only be generated by a CEMT command.

CREATESESS(YES) allows EXEC START requests and automatic transaction initiation (ATI) requests for this terminal to cause a session to be created automatically.

DEFSCREEN({rows|columns})

Defines the 3270 screen size or 3270 printer page size to be used on this device when attached to a transaction or used by BMS for which SCRNSIZE(DEFAULT) has been specified in the PROFILE definition. The default will depend on the value you specify for the DEVICE keyword (see Table 14 on page 215). The values that can be specified for a BSC 3270 are:

Device	Screen Size
3278-1	(12,40)
3278-2	(24,80)
3276-3, 3278-3	(24,80)
3276-4, 3278-4	(24,80)
3278-5	(24,80)
3279-2A, 3279-2B	(24,80)
3279-3A, 3279-3B	(24,80)

For BSC devices, both default and alternate screen sizes are determined by the terminal hardware. The default screen size is 24,80, except for the 3278-1 where it is 12,40.

For SNA devices (LUTYPE2 and LUTYPE3), both default and alternate screen sizes can be any value you choose, up to the maximum physical screen size (see ALTSCREEN). In particular, both default and alternate screen sizes can be the maximum screen size, or the default screen size can be the maximum screen size with no alternate screen size specified. The SNA bind is generated by CICS from this TCT information. You do not need to provide logmode table entries, or to customize the device.

DESCRIPTION(text)

You can provide a description of the resource you are defining in this field.

The DESCRIPTION text can be up to 58 characters in length. There are no restrictions on the characters that you may use. However, if you use parentheses, you should ensure that for each left parenthesis there is a matching right one.

DEVICE(name)

Specify the device type which this TYPETERM will define. This attribute is mandatory for all TYPETERM definitions.

If you type DEVICE(xxxx), where xxxx is a valid device type, on the command line, together with SESSIONTYPE and TERMMODEL if appropriate, other attributes will be given appropriate default values. For further guidance, see “Dependent default values” on page 26. Entering or overtyping the DEVICE, SESSIONTYPE, or TERMMODEL values on the overtype-to-modify panel will **not** provide these defaults. Using the ALTER command to change the DEVICE will leave you with the old defaults for the dependent attributes.

The valid keywords and the defaults for each device type are listed in Table 14 on page 215. The recommended keywords for non-SNA VTAM 3270 devices are 3270 and 3270P for displays and printers, respectively. The following keywords can also be specified and are retained for compatibility with previous releases:

- Displays: 3277 and L3277
- Printers: 3284 and L3284, 3286 and L3286.

For SNA VTAM 3270 devices use the LUTYPE2 or LUTYPE3 keyword as appropriate. LUTYPE2 logical units are those defined by SNA, which accept a 3270-display data stream. LUTYPE3 logical units are those defined by SNA, which accept a data stream similar to that for a 3270 printer.

For a list of device types supported by CICS, see "CICS terminals list" on page 301. See also Table 14 on page 215 for a list of valid device names and the default attributes that they generate.

DISCREQ=({<u>YES</u>|NO})
Indicates whether disconnect requests are to be honored.

<u>YES</u>
CICS is to honor a disconnect request for a VTAM device, and issue a VTAM CLSDST macroinstruction to terminate the VTAM session with that logical unit.

In addition, CESF LOGOFF or GOODNIGHT from the terminal will cause disconnection if you specify YES.

YES is essential if the TYPETERM definition is referenced by AUTINSTMODEL TERMINAL definitions, so that autoinstalled terminal entries can be deleted automatically.

NO
CICS is not to honor a disconnect request for a VTAM device.

DUALCASEKYBD({<u>NO</u>|YES})
Indicates whether a 3270 display has a typewriter keyboard or an operator console keyboard. Both uppercase and lowercase data can be transmitted with either of these keyboards.

ERRCOLOR({<u>NO</u>|color})
Indicates whether the error message will be displayed in color. Coding ERRCOLOR(color) implies ERRLASTLINE(YES).

The colors you can specify are:

BLUE
RED
PINK
GREEN
TURQUOISE
YELLOW
NEUTRAL.

ERRHILIGHT({ <u>NO</u>|BLINK|REVERSE|UNDERLINE})
Indicates whether the error message will be displayed with highlighting.

ERRINTENSIFY({<u>NO</u>|YES})
Indicates whether the error message will be displayed in an intensified field. Coding ERRINTENSIFY(YES) implies ERRLASTLINE(YES).

ERRLASTLINE({<u>NO</u>|YES})
Indicates where error messages will be displayed.

<u>NO</u>
An error message will be displayed at the current cursor position and without any additional attributes.

YES
An error message will be displayed starting at the beginning of the line nearest the bottom of the screen such that the message will fit on the screen.

Because all error messages occupy the same line, if the messages are received in quick succession they will overlay one another and the earlier messages may disappear before being read.

EXTENDEDDS({<u>NO</u>|YES})
Indicates whether the 3270 device or the SCS printer supports extensions to the 3270 data stream. EXTENDEDDS(YES) is implied if you specify YES for any one of the COLOR, HILIGHT, PROGSYMBOLS, QUERY, or VALIDATION (3270 only) attributes.

If extended data stream (EXTENDEDDS) is set to YES, the device will support the write structured field COMMAND and Outbound Query structured field.

You can use the QUERY structured field to determine whether the device is set up to use the extended data stream (see page 213 for further details).

Use of the QUERY structured field sets EXTENDEDDS to YES if query is valid.

FMHPARM({<u>NO</u>|YES})
BMS is to accept user-supplied parameters for inclusion in the function management header built by BMS. You should specify YES only if the DEVICE type is 3650.

FORMFEED({<u>NO</u>|YES})
If the devices for which you are defining this TYPETERM have the forms feed feature, you can specify FORMFEED(YES). If you specify FORMFEED(YES), BMS will use the forms feed character when formatting output documents.

If DEVICE(SCSPRINT) is specified, BMS inserts a form feed character at the beginning of the data stream. This causes the device to skip to the top margin of a new page before starting to print. The top margin is defined by a set vertical format (SVF) data stream, and may be a line number equal to or greater than one. If a SVF data stream has not been sent to the printer, the top margin is line one. The line counter in the device is set to 1 when the operator sets up the paper. Note that the device may also perform an automatic form feed if an attempt is made to print beyond a bottom margin. The bottom margin is also determined by the SVF data stream and will default to the maximum presentation line (MPL). The MPL is the last line on the page and its value represents the page or forms length in terms of a number of lines (that is, physical page size times the line density). Both the MPL and the line density can be determined by the SVF data stream. Otherwise the MPL (the number of lines) can be set up on the device by the operator.

If DEVICE(3270), DEVICE(3270P), DEVICE(LUTYPE2), or DEVICE(LUTYPE3) is specified, FORMFEED(YES) must be used in conjunction with the FORMFEED option in the BMS SEND commands. Use of form feed on display devices provides for a skip to a new page when the screen data is copied to a printer. The parameters discussed above for SCSPRINT operation do not apply when the devices are operating as 3270P or LUTYPE3 devices. In this case there is only the concept of a forms length, and this can only be set on the device by the operator. Refer to the *CICS Application Programming Reference* manual for programming information on the use of the FORMFEED option.

GROUP(groupname)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed. For more information about groups, see "How the CSD is organized—groups and lists" on page 15.

The GROUP name can be up to eight characters in length. The characters allowed are A-Z 0-9 @ # and $. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HILIGHT({<u>NO</u>|YES})
Indicates whether the 3270 device or SCS printer has the extended highlight facility, which enables fields or characters to be displayed in reverse-video, underline mode, or blink (3270 only).

You can use the QUERY structured field to determine whether the device is set up to use the extended highlight facility (see page 213 for further details).

HORIZFORM({<u>NO</u>|YES})
If the devices for which you are defining this TYPETERM have the horizontal form feature, you can specify HORIZFORM(YES). The devices that can use this feature are batch, batch data interchange, interactive, SCSPRT or LUTYPE4 logical units.

<u>NO</u>
The HTAB(tab,...) parameter in the BMS map definition will be ignored.

YES
BMS will use horizontal tabbing when formatting output documents.

IOAREALEN({<u>0</u>|value1},{ <u>0</u>|value2})
Indicates the terminal input/output area, length in bytes, to be passed to a transaction.

If you specify ATI(YES), you must specify an IOAREALEN of at least one byte.

(value1, value2)
Value1 specifies the minimum size of a terminal input/output area to be passed to an application program when a RECEIVE command is issued.

If value2 is not specified, or is less than value1, it defaults to the value of value1.

You can specify value2 as greater than or equal to value1. In this case, when the size of an input message exceeds value1, CICS uses a terminal input/output area value2 bytes long. If the input message size also exceeds value2, the node abnormal condition program sends an exception response to the terminal.

The maximum value that may be specified for IOAREALEN is 32767 bytes.

KATAKANA({<u>NO</u>|YES})
Indicates whether Katakana support is required. Katakana terminals cannot display mixed case output; uppercase characters appear as uppercase English characters, but lowercase characters appear as Katakana characters. If you have any Katakana terminals connected to your CICS system, you should therefore specify the system initialization parameter MSGCASE(UPPER). For further information about the MSGCASE parameter, see the *CICS System Definition Guide*.

<u>NO</u>
Katakana support is not required.

YES
Katakana support is required. All lowercase characters sent to the terminal from the following transactions will be translated to uppercase: CEBR, CECI, CEDA, CEDB, CEDC, CEDF, CEMT, CEOT, CESN, CEST, CMSG, CRTE, CSPG, CWTO.

LDCLIST(listname)
The name of a logical device code (LDC) list. The name may be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. The LDCLIST and its contents must be defined by macroinstruction(s).

A local LDC list is defined by:

```
listname  DFHTCT TYPE=LDCLIST,
LDC(aa=nnn,bb=nnn,....)
```

An extended local LDC list is defined by:

```
listname  DFHTCT TYPE=LDC,LOCAL=INITIAL
          DFHTCT TYPE=LDC=(aa=nnn)....
          DFHTCT TYPE=LDC=(bb=nnn)....
          DFHTCT TYPE=LDC,LOCAL=FINAL
```

You specify this **listname** as the value for the LDCLIST attribute on the TYPETERM definition.

This attribute applies only to 3600, 3770 batch, 3770 and 3790 batch data interchange, and LUTYPE4 logical units. The list specifies which LDCs are valid for this logical unit and, optionally, which device characteristics are valid for each LDC. The first LDC generated in this list is the default when CICS must choose a default LDC for a logical unit. For further guidance, see “Logical device codes” on page 289.

LIGHTPEN({<u>NO</u>|YES})
Indicates whether a 3270 display has the selector pen feature.

LOGMODE(blank|0|name)
This determines how CICS builds the BIND to be sent to the logical unit.

blank
CICS uses the BIND image generated by the CICS definitions for this device by means of this TYPETERM definition and its associated TERMINAL definitions.

name
This is the LOGMODE name from a VTAM logon mode table that has been set up for use by this logical unit. The name may be up to eight characters in length and must follow assembler language rules. The name must start with an alphabetic character. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase. This allows you to override the BIND image provided by CICS for the logical unit. For further information, see the appropriate CICS subsystem guide.

You can not code LOGMODE(*name*) when the terminal is a cross domain resource.

0 (zero).
This causes CICS to use some of the information from the BIND image contained in the CINIT coming from the logical unit. The BIND image in the CINIT was created by VTAM based on the LOGMODE entry defined for the logical unit requesting to log on to CICS. The NIB is built with LOGMODE(0) and BNDAREA(0). When the TYPETERM’s SENDSIZE and RECEIVESIZE have been specified as zero, CICS replaces them with the values from the LOGMODE’s RUSIZES.

Note: You should use LOGMODE(0) only in EXCEPTIONAL circumstances. Although the LU is bound with the VTAM definition, CICS keeps the main session characteristics from the CICS definition. For example, if a printer is defined to VTAM as LUTYPE1 but to CICS as an LUTYPE3 with LOGMODE(0), CICS accepts the bind but sends LUTYPE3 control characters to the printer, giving rise to incorrect results. This restriction does not apply to pipeline terminals.

LOGMODECOM({<u>NO</u>|YES})
indicates LOGMODE compatibility. It shows whether CICS is to make LOGMODE work the way it does in releases earlier than CICS Transaction Server for VSE/ESA Release 1.

Background In releases prior to CICS Transaction Server for VSE/ESA Release 1 the TYPETERM LOGMODE(0|name) parameter behaves differently. In the earlier releases, LOGMODE(0|name) for a terminal causes the TCTTE to be set up from TYPETERM fields such as SENDSIZE, RECEIVESIZE, BRACKETS etc. rather than from the specified LOGMODE.

In CICS Transaction Server for VSE/ESA Release 1 and later releases the TCTTEs for a terminal are set up from the bind specified in the LOGMODE.

There are a few isolated cases where the device does not obey the protocols and the user is unable to change the TYPETERM or VTAM LOGMODE to match each other in such a way that the device accepts them. For this reason the LOGMODECOM parameter is introduced to allow CICS to work as in earlier releases.

Guidance

Use this parameter only in exceptional circumstances - it should only be used for devices that do not obey the protocols and where you are unable to change the TYPETERM or the LOGMODE to make the device work with CICS, because

It is not intended to make this parameter available in releases later than CICS Transaction Server for VSE/ESA Release 1,

<u>NO</u>
causes LOGMODE(0|name) to work as described in this book.

YES
causes LOGMODE(0|name) to work as it did in releases before CICS Transaction Server for VSE/ESA Release 1. That is, the TCTTE is set up from the TYPETERM and not from the LOGMODE.

The effect of LOGMODECOM(YES) with LOGMODE(0|name) is as follows:

- The TCTTE is NOT updated to reflect the LOGMODE BIND image fields.
- For defined terminals this means that the TYPETERM definitions are used in the TCTTE.
- For autoinstalled terminals this means that initial incoming CINIT BIND fields override the equivalent fields in the TCTTE.
- Use of LOGMODECOM(YES) forces RECOVOPTION(NONE).

Note: If LOGMODE(0), LOGMODECOM(YES), SENDSIZE(0) and RECEIVESIZE(0) are all used, the TYPETERM SEND/RECEIVE sizes are used for a defined terminal - whereas, in earlier releases the RUSIZES from the CINIT were used. If this causes a problem modify the TYPETERM to specify the correct SEND and RECEIVE sizes.

When LOGMODE(blank) is specified, or LOGMODE is not supplied, LOGMODECOM(YES) is not valid.

LOGONMSG({NO|YES})
Indicates whether the 'good morning' transaction, specified in the system initialization parameter GMTRAN, will be automatically initiated when the logical unit is first logged on to CICS through VTAM. Note that if you have specified ERRLASTLINE(YES), the message written by the transaction will not overwrite the error message line.

NO
The 'good morning' transaction will not be initiated.

YES
The good morning transaction will be initiated. The transaction runs when the OPNDST exit is successfully completed and a session is established. Note that transaction is initiated by means of automatic task initiation (ATI) and competes with other ATI transactions for use of the terminal. You must specify ATI(YES) for this TYPETERM.

For a NON-SNA terminal (e.g. LU0 3270 devices) such as TELNET 3270, you must specify LOGONMSG(YES) if you want to automatically release the keyboard lock. (The 'good morning' transaction need only issue an EXEC CICS RETURN instruction.) If you do not specify LOGONMSG(YES), the terminal operator has to press the "RESET" key to release the keyboard lock.

MSRCONTROL({NO|YES})
Indicates whether the terminal, an 8775 or 3643, has a magnetic slot reader. This option is not valid for SCS printers.

You can use the QUERY structured field to determine whether the device is set up to use a magnetic slot reader see page 213 for further details.

NEPCLASS({0|value})
The node error program transaction class. This value acts as the default.

0 This will result in a link to the default node error program module.

value
The transaction-class for the (non-default) node error program module. The value can be in the range 1 through 255. For programming information about the node error program, see the *CICS Customization Guide*.

OBFORMAT({NO|YES})
OBFORMAT(YES) means that outboard formatting will be used. If the devices for which you are defining this TYPETERM use BMS outboard formatting, you can specify OBFORMAT(YES).

You can specify OBFORMAT(YES) for two DEVICE types only:

- 3650, SESSIONTYPE(3270)
- LUTYPE2, for an 8100 Information System using the DPPX operating system with DPPX/DPS Version 2 for presentation services.

For further information, see the *CICS/DOS/VS IBM 3650/3680 Guide*, the *CICS/DOS/VS IBM 3790/3730/8100 Guide*, or the *DPPX/Distributed Presentation Services Version 2: System Programming Guide*, SC33-0117.

You can use the QUERY structured field to determine whether the device is set up to use outboard formatting see page 213 for further details.

OBOPERID({NO|YES})
The outboard operator identifiers will be used by CICS in order to support the BMS routing facilities required for this terminal. This option only applies to the 3790 and 3770 batch data interchange logical units.

OUTLINE({NO|YES})
Indicates whether the device supports field outlining.

You can use the QUERY structured field to determine whether the device is set up to use field outlining see page 213 for further details.

PAGESIZE({rows|columns})
Indicates the default page size for this printer. The default page size is used by BMS when the default screen size has been selected in the DEFSCREEN parameter see page 225 for further details.

rows
Indicates the number of lines in the page. The PAGESIZE rows value can usefully be less than the DEFSCREEN rows value, perhaps to reserve the bottom line of a screen for error messages (see the ERRLASTLINE parameter), if the same BMS map is being used for both printing and display.

columns
Indicates the number of characters in each line. Unexpected results will occur if the columns value specified in PAGESIZE differs from the columns value specified in DEFSCREEN.

lines × columns must not exceed 32767.

The default value will depend on the value you specify for the DEVICE keyword. See Table 14 on page 215 for details.

BMS uses the page size values when preparing output data streams. The specified number of characters in each line of the page should not exceed the physical line width of the terminal. In the case of printers that automatically perform a new-line function on reaching the end of the carriage (for example, 3270 printers) the line width specified here should be less than the physical line width. This will ensure that the formatting of the output data is governed entirely by the new-line (NL) characters supplied by BMS or by you, not by new-line functions performed by the device itself, which would produce additional lines of output, resulting in a physical page depth greater than that specified here.

For 3270-type printers, the hardware limits the amount of data that BMS may transmit. If the map or application program request specifies L40, L64, or L80, or does not specify NLEOM on the SEND MAP command, the product of lines and columns specified in PAGESIZE must not be greater than the buffer size. If the BMS request specifies NLEOM, the page length may be any number of lines, but the product of lines and columns specified in the DEFSCREEN or the ALTSCREEN attributes must not exceed the buffer size of the device. In other words, the number of characters that BMS transmits must not exceed the physical buffer size of the printer.

Note: BMS divides a large page into smaller segments for transmission. PAGESIZE should therefore correspond to the required *logical* page size (linewidth x number of lines), and the DEFSCREEN value should correspond to the actual buffer size.

For a VTAM 3600, the PAGESIZE specified is used if a BMS page build operation is attempted without specifying a logical device code (LDC). A default device type of 3604 is assumed.

For 3770, LUTYPE4, or 3790 batch data interchange logical units, the PAGESIZE specified is used if a BMS page build operation is requested without specifying a logical device code (LDC). The default device type is the console printer. Take care when routing a message to a list of terminals. If the PAGESIZE you have defined (or allowed to default) is too small to accommodate the message, the transaction will abend.

For cumulative text processing, the maximum allowed buffer size is 32767. If this is exceeded, BMS will internally force a reduced page length to ensure that the PAGESIZE stays within the limit.

PARTITIONS({<u>NO</u>|YES})
Indicates whether a device is to use partitions. This option is not valid for SCS printers.

You can use the QUERY structured field to determine whether the device is set up to use partitions see page 213 for further details.

PRINTADAPTER({<u>NO</u>|YES})
For the 3275: specifies the printer adapter feature and corresponding 3284 Printer Model 3 on the 3275 Display Station. This feature makes the 3284 eligible for print requests through the PA key from the host 3275.

For LUTYPE2 logical units: specifies that for print requests initiated by the PRINT key or by an ISSUE PRINT command, printer allocation will be handled by the 3790, or by the 3274 or 3276, according to the printer authorization matrix for both VTAM and non-VTAM attachments. Further, 3270 printers attached to the same 3790 are available for print requests sent to the 3270-display logical unit by a terminal control print request or initiated by the operator. If PRINTADAPTER is NO, printer allocation is determined by the PRINTER and ALTPRINTER attributes of the TERMINAL definition.

If output is created on the screen by BMS requests with the PRINT option, by BMS requests with the NLEOM option, or by the CMSG command, the contents of the screen are automatically copied to a 3270 printer, whether or not the CICS-defined PRINT key (usually a PA key) was pressed.

PRINTERTYPE({3284|3286|3287|3288|3289|EPC})
This is used by the resource manager. If your printer does not support carriage return, but has a suppress index facility, specify 3288 (for instance, if it is a IBM 3262 Line Printer). If your printer does not automatically start a new line at maximum carriage width, specify 3289. If your printer has an early print complete (EPC) feature (for instance if it is an IBM 4245 Line Printer) specify EPC. Your EPC printer must support carriage return and must be configured to start a new line automatically at maximum carriage width. Otherwise, do not specify a value. (For all printer devices, if you do not specify a value, a value of 3284 is assumed. This covers devices that support carriage return and automatically do a new line at maximum carriage width.)

PROGSYMBOLS({<u>NO</u>|YES})
Indicates whether the programmed symbol (PS) facility can be used on this 3270 device or SCS printer. The facility enables up to six 191-character sets, with customer-defined and program-loaded fonts and codes, to be stored and accessed.

You can use the QUERY structured field to determine whether the device is set up to use programmed symbols (see page 213 for further details).

QUERY({<u>NO</u>|COLD|ALL})
Indicates whether the QUERY structured field is to be used to determine the characteristics of the device. For more information about this function, and a list of the attributes which can be determined by using it, see page 213.

<u>NO</u>
The QUERY function is not to be used.

COLD
The QUERY function will be used to determine the characteristics of the device only when the device is first connected after a cold start of CICS. The device characteristics will be stored in the CICS global catalog for use on subsequent warm and emergency starts.

ALL
The QUERY function will be used to determine the characteristics of the device each time the device is connected.

RECEIVESIZE(256]value)

Defined terminal (non-autoinstalled) For a non-autoinstalled terminal, you should specify this with the maximum size of a request unit that can satisfy a VTAM RECEIVE request. The RECEIVESIZE value is transmitted to the connected logical unit, and must be in the range 0 through 30720. It may be rounded down by CICS, because it must be transmitted in an architected form.

The effect of RECEIVESIZE depends on whether a RECEIVE RUSIZE is present in the VTAM LOGMODE table. Table 16 shows what RECEIVE RUSIZE is used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 16. RECEIVE RUSIZE for defined (non-autoinstalled) terminals

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE USED IN BIND
0	0	0
0	specified	TYPETERM RECEIVESIZE size
specified	0	This combination is invalid and results in a bind failure with message DFHZC2403
specified	specified	TYPETERM RECEIVESIZE size

Note: The exception to this table is LOGMODE(0). If you specify this in your TYPETERM definition, VTAM values are used, irrespective of what else is specified.

APPC terminal For an APPC (LUTYPE6.2) single session terminal, 256 would be a suitable value.

Autoinstalled terminal For an autoinstalled terminal, a non-zero value for RECEIVESIZE specifies either the maximum or actual RECEIVE RUSIZE value used in binding a session for a logical unit defined with this TYPETERM.

The effect of RECEIVESIZE depends on whether a RECEIVE RUSIZE is present in the VTAM LOGMODE table. Table 17 shows what RECEIVE RUSIZE is used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 17. RECEIVE RUSIZE for autoinstalled terminals

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE USED IN BIND
0	0 and BUILDCHAIN(YES)	256
0	0 and BUILDCHAIN(NO)	0
0	specified	TYPETERM RECEIVESIZE size
specified	0	VTAM RECEIVE RUSIZE size
specified less than or equal to TYPETERM RECEIVESIZE	specified	VTAM RECEIVE RUSIZE size
specified greater than TYPETERM RECEIVESIZE	specified	this combination is invalid and results in message DFHZC5963

RECOVNOTIFY({<u>NONE</u>|MESSAGE|TRANSACTION})
In a CICS region running with VTAM persistent sessions support, this specifies how a terminal end user is notified that their terminal session has been recovered. This option is for use in situations where a terminal user may have to take action, such as sign on again, after a CICS restart. Use RECOVNOTIFY to specify how such a user should be notified.

This option is not applicable to APPC sessions.

<u>NONE</u>
There is no notification that a takeover has occurred.

MESSAGE
A message is displayed on the screen to say that the system has recovered. The message is specified in two BMS maps; DFHXRC1 and DFHXRC2. These maps are in map set DFHXMSG. If reduced takeover time is important, use MESSAGE rather than TRANSACTION.

The terminal must be defined with the ATI(YES) option, and must be capable of displaying a BMS map.

TRANSACTION
A transaction is initiated at the terminal. The name of the transaction is specified by the RMTRAN system initialization parameter. (The default transaction for RMTRAN is the one specified in the GMTRAN system initialization parameter: the good-morning transaction.)

For the TRANSACTION operand, the terminal must be defined with the ATI(YES) option. If reduced takeover time is important, use MESSAGE rather than TRANSACTION.

RECOVOPTION({<u>SYSDEFAULT</u>|CLEARCONV|RELEASESESS|UNCONDREL|NONE})

This option applies to the recovery of sessions in a CICS region running with VTAM persistent sessions, or with XRF.

VTAM persistent sessions: In a CICS region running with persistent session support, this option specifies how you want CICS to recover the session, and return the terminal to service on system restart within the persistent session delay interval.

XRF: In a CICS region running with XRF support, this option specifies how you want CICS to recover the session, and return the terminal to service after an XRF takeover.

For all recovery options other than NONE, if the action taken is a VTAM UNBIND, the UNBIND is followed by a VTAM SIMLOGON.

<u>SYSDEFAULT</u>

VTAM persistent sessions: In a CICS region running with persistent session support, this specifies that CICS is to select the optimum procedure to recover a session on system restart within the persistent session delay interval, depending on the session activity and on the characteristics of the terminal.

Although sessions are recovered, any transactions in-flight at the time of the failure are abended and not recovered. Transactions are also abended if the recovered session is being used by another CICS region over an APPC connection.

CICS recovers the session with the least possible impact, in one of the following ways:

- If the terminal was not executing a transaction at the time of the CICS failure, no recovery action is required, and CICS takes the appropriate recovery notification action as defined by RECOVNOTIFY.
- If the terminal was busy (that is, executing a transaction) when CICS failed, CICS first tries to recover the session by sending a VTAM end-bracket indicator. If the end-bracket does not recover the session (for example, CICS may be in RECEIVE mode), CICS issues a CLEAR command. If the terminal does not support the CLEAR command, the recovery action taken is a VTAM UNBIND followed by a SIMLOGON.

  See the *CICS Recovery and Restart Guide* for more information about persistent sessions.

XRF: In a CICS region running with XRF support, this specifies that CICS is to select the optimum procedure to recover a busy session at takeover, depending on the session activity and on the characteristics of the terminal.

CLEARCONV

Prevents CICS from sending an end-bracket indicator to close an in-bracket session. Instead CICS sends a CLEAR request, to reset the conversation states. If the session does not support the CLEAR request, CICS sends an UNBIND request. The CLEAR or UNBIND is sent only if the session was busy at the time of system restart (in the case of persistent sessions) or the takeover (in the case of XRF).

RELEASESESS

Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent only if the session was busy at the time of system restart (in the case of persistent sessions), or the takeover (in the case of XRF). Following the UNBIND, the session is queued for SIMLOGON. If the session is not busy, the requested recovery notification is carried out.

UNCONDREL

Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent whether or not the session was busy at the time of system restart (in the case of persistent session support) or the takeover (in the case of XRF). Following the UNBIND, the session is queued for SIMLOGON.

NONE

VTAM persistent sessions: In a CICS region running with persistent session support, this specifies that the terminal session is not to be recovered at system restart within the persistent session delay interval: in effect, the terminal has no persistent session support. LU6.2 sessions are unbound but the latest negotiated CNOS value is returned to the CICS system after the restart. After system restart, the terminal is reconnected automatically if you specify AUTOCONNECT(YES), subject to the operation of the AIRDELAY system initialization parameter (AIRDELAY=0 overrides AUTOCONNECT(YES), and the terminal is not reconnected).

Specify RECOVOPTION(NONE) if this terminal or autoinstall model is to be used with persistent sessions but the terminal may be the subject of an EXEC CICS ISSUE PASS LUNAME() LOGONLOGMODE.

XRF: In a CICS region running with XRF support, this specifies that the logon state is not tracked by the alternate system, and the terminal session is not automatically recovered after a takeover; in effect, the terminal has no XRF support. After takeover, the terminal is reconnected automatically by the alternate system, if you specify AUTOCONNECT(YES).

RELREQ=({NO|YES})
Specify this to indicate whether CICS is to release the logical unit.

NO
CICS is not to release the logical unit upon request by another VTAM application program.

YES
CICS is to release the logical unit, if the logical unit is not currently part of a transaction.

ROUTEDMSGS({ALL|NONE|SPECIFIC})
This specifies which messages are to be routed to this terminal by an EXEC CICS ROUTE command. The default will depend on the value you specify for the DEVICE keyword. See Table 14 on page 215 for details.

ALL
BMS will route to this terminal messages that are destined for ***all*** terminals as well as those specifically destined for ***this*** terminal.

NONE
BMS will not route any messages to this terminal, whether they are destined for all terminals or for this terminal specifically.

SPECIFIC
BMS will route messages to this terminal when they are destined specifically for this terminal, but not when they are destined for ***all*** terminals.

SENDSIZE(0]value)
Defined terminal (non-autoinstalled) For a non-autoinstalled terminal, you should specify this with the maximum size of a request unit that can satisfy a VTAM RECEIVE request. The SENDSIZE value is transmitted to the connected logical unit, and must be in the range 0 through 30720. It may be rounded down by CICS, because it must be transmitted in an architected form.

The effect of SENDSIZE depends on whether a RECEIVE RUSIZE is present in the VTAM LOGMODE table. Table 18 shows what RECEIVE RUSIZE is used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 18. SEND RUSIZE for defined (non-autoinstalled) terminals

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE USED IN BIND
0	0	0
0	specified	TYPETERM SENDSIZE size
specified	0	This combination is invalid and results in a bind failure with message DFHZC2403
specified	specified	TYPETERM SENDSIZE size

Note: The exception to this table is LOGMODE(0). If you specify this in your TYPETERM definition, VTAM values are used, irrespective of what else is specified.

APPC terminal For an APPC (LUTYPE6.2) single session terminal, 256 would be a suitable value.

Autoinstalled terminal For an autoinstalled terminal, a non-zero value for SENDSIZE specifies either the maximum or actual SEND RUSIZE value used in binding a session for a logical unit defined with this TYPETERM.

The effect of SENDSIZE depends on whether a SEND RUSIZE is present in the VTAM LOGMODE table. Table 19 shows what SEND RUSIZE is used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 19. SEND RUSIZE for autoinstalled terminals

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE USED IN BIND
0	0	0
0	specified	TYPETERM SENDSIZE size
specified	0	VTAM SEND RUSIZE size
specified less than or equal to TYPETERM SENDSIZE	specified	VTAM SEND RUSIZE size
specified greater than TYPETERM SENDSIZE	specified	this combination is invalid and results in message DFHZC5963

SESSIONTYPE(type)
Indicates the type of session that can be used for a VTAM SNA logical unit. For details, see Table 14 on page 215.

SHIPPABLE({NO|YES})
Indicates whether the definition is allowed to be sent to a remote system if this device tries to initiate a remote

transaction. This function may be used for any terminal, whether autoinstalled, or with its own TERMINAL definition. The shipping will not work unless the terminal has a definition installed, by one of these methods, in the local system.

Using SHIPPABLE(YES) means that you do not need to ensure that a definition of the terminal exists on the remote system for a locally defined terminal to initiate a transaction in that system. This can be useful when the remote system cannot share the CSD file with the local system.

A definition for the terminal must already be installed in (or already shipped to) the remote system.

For guidance on deciding whether to use SHIPPABLE(YES), see "Terminals for transaction routing" on page 188.

NO
This definition cannot be shipped to a remote system.

YES
This definition can be shipped to a remote system.

SIGNOFF({YES|NO|LOGOFF})
Determines the actions taken when GNTRAN (CESF or user defined transaction) is attached and attempts to sign off the terminal. The TIMEOUT limit is specified in the CICS segment of the ESM.

YES
When the specified time has elapsed since the last input from the operator, the terminal is automatically signed off from CICS.

NO
The terminal will not be timed out.

LOGOFF
When the specified time has elapsed since the last input from the operator, the terminal is automatically signed off from CICS and then logged off from VTAM. LOGOFF is useful for an autoinstall model, because it has the effect that virtual storage is not wasted on entries for terminals that have been timed out.

Note: You cannot change the value of this attribute when DEVICE(APPC) is specified. The default value in that case is SIGNOFF(NO).

If GNTRAN fails to attach due to unprocessed data in the terminal buffer (resulting in a BID failure), then the terminal will be signed off and logged off. GNTRAN will not run and will have no effect.

SOSI({NO|YES})
Indicates whether the device supports mixed EBCDIC and double-byte character set (DBCS) fields.

You can use the QUERY structured field to determine whether the device is set up to use mixed EBCDIC and DBCS fields. (See page 213.)

TEXTKYBD({NO|YES})
Indicates whether the 3270 device has the text-keyboard feature.

TEXTPRINT({NO|YES})
Indicates whether the 3288 printer has the text-print feature.

TERMMODEL({1|2})
Specify this with the model number of the terminal. If the device is a component of the 3270 Information Display System, this operand must be specified as follows:

1 Specify 1 for the 3270 Model 1 displays and printers (for example, 3277 Model 1) with a default screen or buffer size of 12x40 (480 bytes/characters). TERMMODEL(1) is the default for 3270 Model 1 printers and displays.

Specify 1 for the 3275 Display Station Model 11. The CICS support obtained is identical to that obtained by coding TERMMODEL(1) for 3275 Display Station Model 1.

2 Specify 2 for the 3270 displays and printers (for example, 3278 Model 4) with a default screen or buffer size of 24x80 (1920 bytes/characters). TERMMODEL(2) is the default for the 3286 printer in 3270 compatibility mode.

Specify 2 for the 3275 Display Station Model 12. The CICS support obtained is identical to that obtained by coding TERMMODEL(2) for 3275 Display Station Model 2.

TTI({YES|NO})
Indicates whether transactions can be initiated at the terminal by a user.

YES
Transactions can be initiated at the terminal by a user. If you also specify ATI(YES), transactions can also be initiated automatically. In this case, the automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If both ATI and TTI are specified as YES, and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

For a terminal used in the processing of transactions such as inquiries or order entries, you would specify TTI(YES) and ATI(NO). This also applies to a display station or hard-copy terminal to which no messages are sent without a terminal request and through which transactions are entered. Note that this is the only specification allowed for 3790 inquiry logical units.

NO
Transactions cannot be initiated at the terminal by a user. If you specify NO, you should specify

ATI(YES) to allow transactions to be initiated automatically. An example of this type of terminal is one that is located in a remote location, such as a warehouse, and is unattended but may receive messages.

TYPETERM(name)
The name of this extension of terminal definitions. The name can be up to 8 characters in length. The acceptable characters are: A-Z 0-9 $ @ and #. Lowercase characters are converted to uppercase.

This name is referred to in all the TERMINAL definitions using this TYPETERM. Note that this TYPETERM definition must be installed before, or at the same time as the TERMINAL definitions that reference it.

UCTRAN({NO|YES|TRANID})
Indicates whether the input data stream from a terminal is to be translated to uppercase. The input data stream may include a transaction identifier as well as program data. CICS supports transaction identifier definition in mixed case, and the UCTRAN parameter can be used to ensure that the correct transaction is located.

NO
No uppercase translation is performed.

YES
All the data input from the terminal, both the transaction identifier if present and the program data, is translated to uppercase before any processing.

TRANID
When the input data stream includes a transaction identifier CICS will translate it to uppercase before attempting to locate its definition. However all the input data, both the transaction identifier and the program data, will be passed to the program without any translation.

Therefore both the YES and the TRANID parameters allow transaction identifiers to be defined in uppercase and to be entered from the terminal in either uppercase or lowercase, but the TRANID parameter causes the transaction identifier and program data to be passed to the program without any translation.

You can also request translation to uppercase at the transaction level on PROFILE definitions (see "Defining a PROFILE" on page 166), but you should be aware that a TYPETERM UCTRAN(YES) definition overrides a PROFILE UCTRAN(NO) definition. So, if you specify TYPETERM UCTRAN(YES), a PROFILE UCTRAN(NO) has no effect. Translation can be overridden by the application program for all RECEIVE requests except the first, by using the ASIS option.

Table 20 shows which portion of the terminal input is translated (transaction id and/or data) according to the setting of the UCTRAN on the PROFILE and TYPETERM resource definitions.

Table 20. The effect of UCTRAN parameters on tranid and data translation

Profile (PROFILE)	**Terminal (TYPETERM)**		
	UCTRAN (YES)	**UCTRAN (NO)**	**UCTRAN (TRANID)**
UCTRAN (YES)	Tranid: Yes Data: yes	Tranid: No Data: Yes	Tranid: Yes Data: Yes
UCTRAN (NO)	Tranid: Yes Data: Yes	Tranid: No Data: No	Tranid: Yes Data: No

USERAREALEN({0|number})
Specify this with the length, in bytes (0 to 255), of the user area for this terminal. It should be made as small as possible. The TCT user area is initialized to zeros when a terminal is installed.

The TCT user area may be located above or below the 16Mb line in virtual storage. Where it is located depends on the value of the TCTUALOC system initialization parameter. You should ensure that this is specified correctly to allow successful operation of any programs you may have that are not capable of handling 31-bit addressing.

VALIDATION({NO|YES})
Indicates whether the 8775 device has the extended validation feature, which allows fields to be defined as TRIGGER, MANDATORY FILL, or MANDATORY ENTER. Or the 3290 device has the validation feature, which allows fields to be defined as MANDATORY FILL or MANDATORY ENTER. This option is not valid for SCS printers. If VALIDATION(YES) is specified for an SCS printer an error message will be raised, but the option will not be generated.

You can use the QUERY structured field to determine whether the device is set up to use the validation feature (see page 213 for further details).

VERTICALFORM({NO|YES})
If the devices for which you are defining this TYPETERM have the vertical form feature, you can specify VERTICALFORM(YES). The devices that can use this feature are batch, batch data interchange, interactive, SCSPRT or LUTYPE4 logical units.

NO	The VTAB(tab,...) parameter in the BMS map definition will be ignored.
YES	BMS will use vertical tabbing when formatting output documents.

XRFSIGNOFF({NOFORCE|FORCE})
Sets the sign-on characteristics of a group of terminals.

If you have a collection of terminals in a security-sensitive area, for example, you might choose to force sign-off of those terminals after a takeover, to prevent the use of the terminal in the absence of the authorized user. (This could happen if the authorized user left the terminal during the takeover, and the terminal became active again while it was unattended.)

This option works in conjunction with the system initialization parameter XRFSOFF and the XRFSOFF entry in the CICS segment of the ESM. The relationship between them is explained on page 195.

Part 5. Macro reference information

This part gives reference information for the macros needed for each table. The information is divided into a number of chapters, one for each table, in alphabetic order as listed below.

Each chapter describes the function of the table and outlines the macros used to create it. The operands for each macro are given in a syntax box, which is followed by an explanation of each operand, in alphabetic order.

“Chapter 33, TCT—terminal control table” is further subdivided according to access method and type of device.

Chapter 25. Introduction to resource definition with macros

This chapter tells you which CICS system table defines each resource, and how to prepare the tables. You use macros to define:

- Non-VTAM networks
- Non-VTAM terminals
- VSAM and DAM files
- DL/I VSE Databases
- Journals
- Queues
- Monitoring resources
- System recovery resources

CICS uses an external security manager for all its security management.

BTAM is not supported in this version of CICS. To gain access to CICS Transaction Server for VSE/ESA Release 1 from BTAM terminals, define the BTAM terminals in a version of CICS earlier than CICS Transaction Server for VSE/ESA Release 1 and use transaction routing to gain access to the current release. BTAM terminals must be defined as remote resources in this release, and as local resources in the earlier release. This book contains information about the definition of remote BTAM terminals: information about the definition of local BTAM terminals can be found in the documentation for your earlier release of CICS.

You must use **resource definition online (RDO)** to define programs, map sets, partition sets, transactions, and profiles. You must also use RDO to define VTAM terminals, and links and sessions with MRO (multiregion operation) and ISC (intersystem communication) systems. RDO is described in Chapter 1, "Resource definition—an introduction" on page 3.

Introduction to CICS control tables and macros

CICS is configured under your control during system initialization. You select a system initialization table (SIT) and, through it, CICS selects other control tables. Each control table is created separately and may be recreated at any time before system initialization. You have to prepare the required control tables by coding the appropriate macros. For each table, the macros automatically generate the necessary linkage editor control statements.

This chapter gives you an outline description of the control tables.

You may need to read the *CICS System Definition Guide* for further information about the following areas related to control tables:

- A **system initialization table (SIT)** is required for the system to be operational. Other tables are needed only if you are using the corresponding CICS facilities.
- To determine the **job control language (JCL)** needed for the control tables, and to find out how to link-edit and assemble the macro statements that you have to code.
- For further information about whether CICS loads a table above or below the 16MB boundary. The CICS table macros contain linkage editor control statements that determines this; Table 21 on page 240 shows whether specific tables are loaded above or below the boundary.

The control tables that can be defined by macros are also shown in Table 21 on page 240.

Table 21. Control tables definable by macros. The last column shows whether the table is loaded above or below the 16MB line.

Control Table	What the table defines	Above the line?
Command list table	Sets of commands and messages for an XRF takeover	Yes
Destination control table	Extrapartition, intrapartition, and indirect destinations	Yes
File control table	VSAM and DAM files, VSAM LSRPOOLs, data tables, and DL/I databases	No
Journal control table	The system log and user journals	No
Monitoring control table	Monitoring activity	Yes
Program list table	Sets of related programs	Yes
System recovery table	Abend codes for which recovery will be attempted	Yes
Terminal control table	Non-VTAM terminal networks	No
Terminal list table	Sets of related terminals	No
Temporary storage table	Special processing for temporary storage	Yes
Transaction list table	Sets of related transactions	Yes
System initialization table	System initialization parameters. For details of the SIT, see the *CICS System Definition Guide*.	Yes

A brief description of each of these CICS control tables follows.

Command list table

The command list table (CLT) is used for XRF (extended recovery facility). If you are using XRF, you must have a CLT; it is used only by the alternate CICS system. The CLT contains a list of commands that are passed to POWER or VSE for execution. It also provides the authorization for canceling the active CICS system. See Chapter 26, “CLT—command list table” on page 245 for details of the CLT.

Destination control table

The destination control table (DCT) contains an entry for each extrapartition, intrapartition, and indirect destination. Extrapartition entries address data sets external to the CICS region. Indirect destination entries redirect data to a destination controlled by another DCT entry. Intrapartition destination entries contain the information required to locate the queue in the intrapartition data set. See Chapter 27, “DCT—destination control table” on page 247 for details of the DCT.

File control table

The file control table (FCT) describes files and data tables that are processed by file management. The files defined in the FCT can be VSAM or DAM. VSAM files can be defined with the resource definition online (RDO) facility described in Chapter 13, “FILE” on page 143. The FCT for VSAM and DAM files is assembled using the DFHFCT macros as described in Chapter 28, “FCT—file control table” on page 255.

The FCT also describes the databases processed by DL/I VSE.

Note: The FCT can be loaded above the 16MB line by overriding the CICS default of AMODE(24) RMODE(24).

Journal control table

The journal control table (JCT) describes the system log and user journals and their characteristics for access through journal management. See Chapter 29, “JCT—journal control table” on page 269 for details of the JCT.

Monitoring control table

The monitoring control table (MCT) describes the monitoring actions (data collection) to be taken at each user event monitoring point (EMP). Different actions can be specified for each monitoring class at each EMP. See Chapter 30, “MCT—monitoring control table” on page 275 for details of the MCT.

Program list table

The program list table (PLT) contains a list of related programs. You may want to generate several PLTs to specify a list of programs that are to be executed in the initialization programs phase of CICS startup, executed during the first or second quiesce stages of controlled shutdown, or both, or enabled or disabled as a group by a master terminal ENABLE or DISABLE command. See Chapter 31, “PLT—program list table” on page 281 for details of the PLT.

Terminal control table

The terminal control table (TCT) is retained to define non-VTAM terminal networks. See Chapter 33, “TCT—terminal control table” on page 287 for details of the TCT.

Terminal list table

The terminal list table (TLT) allows terminal or operator identifications, or both, to be grouped logically. A TLT is required by the supervisory terminal operation (CEST), to define and limit the effective range of the operation. It can also be used by a supervisory or master terminal operation (CEMT) to apply a function to a predetermined group of terminals. A TLT can be used, singly or in combination with other TLTs, to provide predefined destinations for message switching. See Chapter 34, “TLT (terminal list table)” on page 305 for details of the TLT.

Temporary storage table

Application programs can store data in temporary storage for later retrieval. For the data to be recoverable by CICS if the system terminates abnormally, data identifiers have to be specified in the temporary storage table (TST). A generic data identifier can be coded so that any unique temporary storage identifier (generated dynamically in a program) that begins with the same characters as the generic identifier (in the TST) can automatically acquire the same properties as the TST entries. Resource security level checking can be done on the temporary storage queues. See Chapter 35, “TST—temporary storage table” on page 307 for details of the TST.

Transaction list table

The transaction list table (XLT) is a list of logically-related transaction identifications. The XLT defines a list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination, or a group of transaction identifications that can be disabled or enabled through the master terminal. See Chapter 36, “XLT—transaction list table” on page 313 for details of the XLT.

Notes on other tables

The system initialization table (SIT) contains parameters used by the system initialization process. In particular, the SIT identifies (by suffix characters) the versions of CICS system control programs and CICS tables that you have specified are to be loaded. This book does not tell you how to code the SIT. For detailed information about the SIT, you should read the *CICS System Definition Guide*.

If the CICS system is using ISC to communicate with a member of the CICS family that runs on a hardware platform that does not use EBCDIC (such as CICS OS/2™ or CICS/6000® which use ASCII), then a data conversion table may be needed. The conversion table defines how data is to be changed from ASCII format at the workstation to EBCDIC format at the CICS host. The DFHCNV macros which you use to create the table are described in the *CICS Family: Communicating from CICS on System/390* manual.

Migrating tables

Although some tables are obsolete in CICS Transaction Server for VSE/ESA Release 1 (the PCT, PPT, and TCT for VTAM), the macros are still shipped to enable you to migrate your resource definitions to the CSD. For information on how to prepare your tables for migration, see Appendix G, “Migrating the TCT to the CSD” on page 375.

For information on the PCT, PPT, and TCT for VTAM macros, see the *Resource Definition (Macro)* manual for CICS/VSE 2.3 or earlier.

TYPE=INITIAL

Most of the tables must start with a TYPE=INITIAL macro. For some tables you can provide information that applies to the whole table, on the TYPE=INITIAL macro.

The TYPE=INITIAL macro establishes the control section (CSECT) for the CICS system table, and produces the necessary linkage editor control statements. CICS automatically generates the address of the entry point of each table through the DFHVM macro that is generated from each TYPE=INITIAL macro. The entry point label of the table is DFHxxxBA. Only the END statement need be specified.

Naming and suffixing the tables

The tables are named as follows:

Table 22. Names of the control tables

Table	Name
Command list table	DFHCLTxx
Destination control table	DFHDCTxx
File control table	DFHFCTxx
Journal control table	DFHJCTxx
Monitoring control table	DFHMCTxx
Program list table	DFHPLTxx
System recovery table	DFHSRTxx
Terminal control table	DFHTCTxx
Terminal list table	DFHTLTxx
Temporary storage table	DFHTSTxx
Transaction list table	DFHXLTxx

The first six characters of the name of each table are fixed. You can specify the last two characters of the name, using the SUFFIX operand. The SUFFIX operand is specified on the TYPE=INITIAL macro for each table.

Suffixes allow you to have more than one version of a table. A suffix may consist of one or two characters. Valid characters are @, and the ranges A through Z and 0 through 9. (Note, however, that you should not use **NO** or **DY**.) You select the version of the table to be loaded into the system during system initialization, by specifying the suffix in the appropriate operand in the SIT.

For example:

```
DFHSIT...,FCT=MY,...
```

Note: The TYPE=INITIAL macros have a STARTER operand that is not listed in the descriptions of the individual macros in the main body of this book. Coding STARTER=YES enables you to use the $ character in your table suffixes. The default is STARTER=NO. This operand should be used only with starter system modules.

TYPE=FINAL

Most of the tables, again with the single exception of the SIT, must end with a TYPE=FINAL macro. The TYPE=FINAL macro creates a dummy entry to signal the end of the table. It must be the last statement before the assembler END statement. The format is always like this:

	DFHxxT	TYPE=FINAL

Format of macros

The CICS macros are written in assembler language and, like all assembler language instructions, are written in the following format:

Name	Operation	Operand	Comments
blank or symbol	DFHxxxxx	One or more operands separated by commas	

The operand field is used to specify the services and options to be generated. Operands are always in a keyword format and any parameters are specified according to the following general rules:

- If the parameter associated with the operand is shown entirely in capital letters (for example, TYPE=INITIAL), the operand and parameter must be specified exactly as shown.
- If the parameter associated with the operand is shown in lowercase letters (for example, FILE=name), the operand must be specified exactly as shown and a value, address, or name must be substituted for the lowercase letters.
- Commas and parentheses must be specified exactly as shown, except that a comma following the last operand specified must be omitted.
- The parentheses may be omitted when only one parameter of a particular operand is used.
- Because a blank character indicates the end of the operand field, the operand field must not contain blanks except within quotes, after a comma on a continued line, or after the last operand of the macro. The first operand on a continuation line must begin in column 16.
- When a CICS macro is written on more than one line, each line containing part of the macro (except the last line) must contain a character (for example, an asterisk) in column 72, indicating that the macro is continued on the next line.

Syntax notation

The symbols [ ], { }, | and ,... are used in this book to show the operands for the macros as clearly as possible. ***Do not use these symbols in your specifications***. They act only to indicate how a command or macro can be written; their definitions are given below:

[ ] indicates optional operands. You may or may not need to specify the operand enclosed in the brackets (for example, [FB]), depending on whether the associated option is desired. If more than one item is enclosed within brackets (for example, [BLOCKED|UNBLOCKED]), you can specify either one or none. Any default value available is indicated like this: <u>default</u>. The default will be taken if you do not specify an option from the group.

{ } indicates that a choice must be made. One of the operands from the list within braces separated by a | symbol (for example, {YES|NO}) must be specified, depending on which of the associated services is desired. Any default value is indicated like this: <u>default</u>.

| indicates that a choice must be made between the operands that are separated by this symbol.

,... indicates that more than one set of operands can be designated.

To simplify the syntax notation in the case where one or more operands may be specified, the notation:

```
PARM=([A][,B][,C][,D])
```

indicates that any number or none of A, B, C, or D may be specified. Do not code a leading comma. If you specify only one operand, you need not code the enclosing parentheses.

For example:

```
PARM=A
PARM=(A,B)
PARM=(B,D)
PARM=(C)
```

are all valid interpretations of the above notation.

The default value of an operand is shown like this: <u>default</u>. For example:

PARM={<u>A</u>|B|C}

means that you can code A, B, or C as the value for this operand. If you do not code the operand at all, the value A is assumed.

Chapter 26. CLT—command list table

The command list table (CLT) is used by the **extended recovery facility** (XRF). The CLT contains a list of VSE system commands and messages to the operator, to be issued during takeover. Typically, the function of these commands is to tell alternate systems to take over from their actives in the same MRO-connected configuration. It also contains the name of the alternate system, with the jobname of the active system that it is allowed to cancel. (See DFHCLT TYPE=LISTSTART FORALT operand.) This provides a security check against the wrong job being canceled, when the alternate system takes over. In addition, the DFHCLT TYPE=INITIAL macro gives POWER routing information, needed to send cancel commands to the appropriate VSE system. If you are using XRF, you **must** have a CLT: it is used only by the alternate CICS system.

For virtual storage constraint relief considerations, you should link-edit using a MODE control statement specifying AMODE(31),RMODE(ANY). The table should be link-edited as reentrant. The CLT is not loaded into the CICS nucleus.

For guidance on the use of CLTs in various configurations, see the *CICS XRF Guide*.

Your CLT can contain the following statements:

- DFHCLT TYPE=INITIAL
- DFHCLT TYPE=LISTSTART
- DFHCLT TYPE=COMMAND
- DFHCLT TYPE=WTO
- DFHCLT TYPE=LISTEND
- DFHCLT TYPE=FINAL (described on page 243)

Note: Although the CLT may be shared by a number of alternate systems, take care that VSE is not given too many redundant commands during takeover. For example, in multiregion operation, using one CLT with commands for several regions, region 1 would send valid commands to other regions, but they would in turn send redundant commands to region 1 and to each other.

Control section—DFHCLT TYPE=INITIAL

The DFHCLT TYPE=INITIAL macro establishes the entry point and the beginning address of the CLT being defined.

Table 23. DFHCLT TYPE=INITIAL

label	DFHCLT	TYPE=INITIAL [,SUFFIX=xxx]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL” on page 242.

Specifying alternate systems—DFHCLT TYPE=LISTSTART

This macro defines the start of the set of commands and messages that the alternate CICS issues when it takes over from the active CICS. (There may be no commands or messages, but you still need a CLT, so that authorization checks can be made.)

Table 24. DFHCLT TYPE=LISTSTART

label	DFHCLT	TYPE=LISTSTART ,FORALT=((applid1,jobname1) [,(applid2,jobname2),...])

FORALT=((applid1,jobname1)[,(applid2,jobname2),...])
Specifies pairs of alternate and active CICS systems.

applid1
The name of the alternate CICS that will issue the set of commands and messages when it takes over. This name must be the **specific APPLID**, defined in the SIT APPLID operand. It is used as an authorization check.

jobname1
The name of the active CICS from which the alternate is taking over. This name must be the **POWER JOBNAME** for the active CICS. It is used as a security check, to ensure that the alternate system does not attempt to cancel any job other than one of that name.

You may extend this, using more pairs of applid and jobname, so that you can use one CLT for several alternate CICS systems.

Specifying takeover commands—DFHCLT TYPE=COMMAND

This macro allows you to specify the commands to be used by the alternate CICS system during takeover.

Table 25. DFHCLT TYPE=COMMAND

label	DFHCLT	TYPE=COMMAND ,COMMAND=command-string

COMMAND=command-string
Defines a command that is passed to VSE for execution. CICS does not interpret this command.

The command that is issued in this way most frequently is `CEBT PERFORM TAKEOVER`. See the *CICS-Supplied Transactions* manual for further information about the CEBT commands.

In multiregion operation (MRO), where there is a simple hierarchy of **master** and **dependent** regions, a failing master region can issue this command to each of its dependent regions, if it is necessary that they also move to another CPC.

In a more complex multiregion operation, a failing master region can issue this to its **coordinator** region, and the coordinator can issue the same command to other masters and dependents in the same hierarchy of regions. Hence, many MRO-connected regions can move together to another CPC, without operator intervention.

Here are some examples:

- A master region without a coordinator sends a command to a dependent region:

  ```
  DFHCLT TYPE=COMMAND,
          COMMAND='MODIFY CICSDEP,CEBT PERFORM
          TAKEOVER'
  ```

  “CICSDEP” must be a CICS POWER job name.
- A master region sends a command to its coordinator region:

  ```
  DFHCLT TYPE=COMMAND,
          COMMAND='MODIFY CICSCRD,CEBT PERFORM
          TAKEOVER'
  ```
- A coordinator region sends commands to master and dependent regions:

  ```
  DFHCLT TYPE=COMMAND,
          COMMAND='MODIFY CICSMAS,CEBT PERFORM
          TAKEOVER'
  DFHCLT TYPE=COMMAND,
          COMMAND='MODIFY CICSDEP,CEBT PERFORM
          TAKEOVER'
  ```
- You can also issue other commands to any other job running under VSE:

  ```
  DFHCLT TYPE=COMMAND,
          COMMAND='MODIFY jobname,command
          string'
  ```

Messages to the operator—DFHCLT TYPE=WTO

These two instructions define a message that is written to the system operator.

Table 26. DFHCLT TYPE=WTO

label	DFHCLT	TYPE=WTO ,WTOL=addr
addr	WTO	'message to operator' [,ROUTCDE=(number)] [,DESC=(number)] ,MF=L

WTOL=addr
Specifies the address of a list format WTO macro that defines the message and any associated route codes and descriptor codes.

The MF (macro format), ROUTCDE (routing code), and DESC (descriptor) operands of the WTO macro are described in the *VSE/ESA System Macros Reference* manual.

An example is to send a request to the operator:

```
          DFHCLT TYPE=WTO,
                WTOL=wtoad
wtoad     WTO   'switch local terminals, please',
                 MF=L
```

Closing the command list—DFHCLT TYPE=LISTEND

This instruction defines the end of the set of commands and messages issued by an alternate system when it takes over from an active system.

Table 27. DFHCLT TYPE=LISTEND

label	DFHCLT	TYPE=LISTEND

Chapter 27. DCT—destination control table

The destination control table (DCT) contains an entry for each **transient data destination**. A destination can be intrapartition, extrapartition, indirect, or remote. You code different DFHDCT macros for each type. The macros specify the symbolic name for each destination, and also other information that CICS needs.

CICS uses several destinations for its own purposes. These entries must be included in the generation of the DCT, if the associated functions are being used. See "Required entries in the destination control table" on page 253 for details of the required entries.

DFHDCT macro types

The following macros define transient data destinations:

- DFHDCT TYPE=INITIAL establishes the control section and necessary linkage editor control statements for the DCT.
- DFHDCT TYPE=SDSCI defines the data control block (DCB), for an extrapartition destination.
- DFHDCT TYPE=EXTRA defines an extrapartition destination: a destination that is outside the CICS region.
- DFHDCT TYPE=INDIRECT defines an indirect destination: a logical destination that points to another destination. (This allows several logical destinations to be merged into one physical destination.)
- DFHDCT TYPE=INTRA defines an intrapartition destination: a destination that is within the CICS region.
- DFHDCT TYPE=REMOTE defines a destination that is owned by another CICS system.
- DFHDCT TYPE=FINAL concludes the DCT (see page 243).

Control section—DFHDCT TYPE=INITIAL

The DFHDCT TYPE=INITIAL macro establishes the entry point and beginning address for the DCT being defined.

Table 28. DFHDCT TYPE=INITIAL

	DFHDCT	TYPE=INITIAL [,SUFFIX=xx] [,USERID=name]

For general information about TYPE=INITIAL macros, see "TYPE=INITIAL" on page 242.

SUFFIX=xx
Two characters that will be concatenated with `DFHDCT` to create the name of the destination control table.

USERID=name
Code this with the userid that you want CICS to use for security checking for any trigger-level TYPE=INTRA entry that does not specify its own userid.

If you omit the userid from a trigger-level entry, and also from this TYPE=INITIAL macro, CICS uses the CICS default userid, specified on the DFLTUSER system initialization parameter.

See the USERID description for the TYPE=INTRA macro for information about surrogate user checking.

Data set control information—DFHDCT TYPE=SDSCI

This macro defines the data control block (DCB) for an extrapartition transient data destination.

You must also code a DFHDCT TYPE=EXTRA macro, to define the destination.

Extrapartition data sets can be blocked or unblocked, of fixed or variable length.

Table 29. DFHDCT TYPE=SDSCI

	DFHDCT	TYPE=SDSCI ,DSCNAME=name [,BLKSIZE=length] [,BUFNO={<u>1</u>|2}] [,CTLCHR={YES|ASA}] [,DEVADDR=symbolic-address] [,DEVICE={<u>DISK</u>|TAPE |printer-number}] [,ERROPT={<u>IGNORE</u>|SKIP}] [,FILABL={<u>NO</u>|STD}] [,RECFORM={FIXUNB|FIXBLK |VARBLK|VARUNB}] [,RECSIZE=length] [,REWIND={NORWD|RELOAD}] [,TPMARK={YES|NO}] [,TYPEFLE={<u>INPUT</u>|OUTPUT| RDBACK}]

TYPE=SDSCI
Indicates that this DCT entry contains data set control information.

BLKSIZE=length
Code this with the length of the block, in bytes.

For V format data sets, each block consists of a block descriptor word followed by one or more logical records. The value coded for BLKSIZE must include four bytes for the block descriptor word, and also make allowance for the largest possible logical record (which, itself, includes 4 bytes of record descriptor word).

If the data set already exists, BLKSIZE can be omitted. However, if BLKSIZE is coded for an input data set it should match the data set BLKSIZE.

BUFNO={1|2}
Code this with the number of buffers to be provided. Any value other than 2 defaults to 1.

CTLCHR={YES|ASA}
Code this with the type of control character to be used for printer devices. The control character must be the first byte of the user-supplied record. It is **not** supplied by CICS. If the control character is not specified this is the default.

DEVADDR={symbolic-address}
Code this with the symbolic unit address. This operand is not required for disk data sets when the symbolic address is provided through the EXTENT system control statement.

DEVICE={DISK|TAPE|printer-number}
Code this to specify the device type.

DISK
Code DISK if your destination is on disk. This is valid for all disk device types.

TAPE
Code TAPE if your destination is on tape.

printer-number
If your destination is a printer, 1403, 1404, 1443, 1445, 3211, and 5203 are valid values.

DSCNAME=name
Code this with the 1- to 7-character data set control name. This name must be the same as that coded in the DSCNAME operand of any associated DFHDCT TYPE=EXTRA macro.

The name used for DSCNAME must be used as the filename on the DLBL statement, and will also be used as the name for the DTF that is created.

The name must not start with the letters “DFH”, which are reserved for use by CICS, unless it is describing one of the standard destinations listed under “Required entries in the destination control table” on page 253. Use of the prefix “DFH” may cause assembly errors and future compatibility problems, because the DSCNAME parameter becomes an externally-specified name.

ERROPT={IGNORE|SKIP}
Code this with the error option to be performed if an I/O error occurs.

IGNORE
The block that caused the error is accepted.

SKIP
The block that caused the error is skipped.

FILABL={NO|STD}
Code this with the type of label on tape data sets.

NO
The tape data sets do not have standard labels.

STD
The tape data sets have standard labels.

FILABL=NO is required if TPMARK=NO is coded.

RECFORM={FIXUNB|FIXBLK|VARBLK|VARUNB|}
Code this with the record format of the data set.

FIXUNB
Fixed unblocked records

FIXBLK
Fixed blocked records

VARBLK
Variable blocked records

VARUNB
Variable unblocked records

RECSIZE=length
Code this with the length of the record, in bytes.

For V format data sets, each logical record consists of a record descriptor word followed by a data record. The value coded for RECSIZE must include 4 bytes for the record descriptor word (or LLBB), and also make allowance for the largest possible data record.

RECSIZE=length need be coded only for RECFM=FIXBLK.

REWIND={NORWD|RELOAD}
Code this with the disposition of a tape data set.

NORWD
The tape is to be rewound.

RELOAD
The current tape is to be rewound and unloaded.

TPMARK={YES|NO}
Code this if no tapemark is to be written at the beginning of a data set (file). When TPMARK=NO is coded, FILABL=NO is also required.

TYPEFLE={INPUT|OUTPUT|RDBACK}
Code this with the type of data set.

INPUT
An input data set.

OUTPUT
An output data set.

RDBACK
An input data set that is to be read backward.

An extrapartition SDSCI can be either input or output, not both.

For more information on the above operands, see the *VSE/ESA System Macros Reference* manual.

Extrapartition destinations—DFHDCT TYPE=EXTRA

Destinations outside the CICS region (but which are allocated to CICS) are specified in the DFHDCT TYPE=EXTRA macro. This macro must be generated once for every extrapartition destination.

Extrapartition destinations are used for:

- Sending data outside the CICS region; for example, data created by a transaction, for processing by a batch program
- Retrieving data from outside the region; for example, data received from terminals, as input to a transaction.

Extrapartition data is sequential and is managed by QSAM.

Table 30. DFHDCT TYPE=EXTRA

	DFHDCT	TYPE=EXTRA ,DESTID=name ,DSCNAME=name [,OPEN={<u>INITIAL</u>|DEFERRED}]

Although it is possible to code LENGTH, RMTNAME and SYSIDNT on a TYPE=EXTRA macro, users should use TYPE=REMOTE.

TYPE=EXTRA
Indicates an extrapartition destination.

DESTID=name
Code this with the symbolic name of the extrapartition destination. The symbolic name is used in the transient data operations to specify the destination.

Any DESTID of more than four characters is truncated on the right.

The DESTID should not start with the letter C, which is reserved for defining the destinations required by some CICS facilities. This applies to DFHDCT TYPE=EXTRA, TYPE=INDIRECT, and TYPE=INTRA. See “Required entries in the destination control table” on page 253 for a list of these destinations.

You must not use special characters, lower case, or mixed case characters in a DESTID name. The DESTID name should not start with a ‘C’ unless the name is known to CICS.

DSCNAME=name
Code this with the same file name you used in DFHDCT TYPE=SDSCI.

If two or more extrapartition destinations refer to the same SDSCI, only one destination can be open at the same time.

If OPEN=INITIAL is specified for each of these destinations, the choice of destination to be opened will be arbitrary. To avoid this, define one of the destinations as extrapartition and the others as indirect on the first.

OPEN={<u>INITIAL</u>|DEFERRED}
Code this with the initial status of the data set.

<u>INITIAL</u>
The data set is to be opened by system initialization.

DEFERRED
The data set remains closed until you indicate that you want to open it by using the CEMT OR EXEC CICS INQUIRE|SET TDQUEUE commands.

Indirect destinations—DFHDCT TYPE=INDIRECT

An indirect destination is specified by the DFHDCT TYPE=INDIRECT macro. The indirect destination does not point to an actual data set, but to another destination. This may be extrapartition, intrapartition, or remote. It may even be another indirect destination.

For example, you can give a different symbolic name (DESTID) to each of several different message types. You then have the flexibility to send all these message types to the same physical destination (INDDEST), or to send them to different physical destinations.

The DFH$TDWT sample program demonstrates how you can use indirect destinations to send different categories of message to the same terminal. For programming information about DFH$TDWT, see the *CICS Customization Guide*.

If you use EXEC CICS INQUIRE TDQUEUE, information will always be returned about an indirect queue. (This does not, however, guarantee that the inquiry transaction will be able to use EXEC CICS INQUIRE TDQUEUE for the ultimate target queue.)

If the QUEUE operand of an EXEC CICS WRITEQ TD (or READQ or DELETEQ) command specifies an indirect queue, access is determined by the security setting of the ultimate target queue.

Table 31. DFHDCT TYPE=INDIRECT

	DFHDCT	TYPE=INDIRECT ,DESTID=name ,INDDEST=name

TYPE=INDIRECT
Indicates an indirect destination.

DESTID=name
Code this with the 1- through 4-character symbolic name of the indirect destination. The symbolic name is used when writing to the destination.

You must not use special characters, lower case, or mixed case characters in a DESTID name.

INDDEST=name
Code this with the name (DESTID) of a transient data destination. The destination can be intrapartition, extrapartition, remote, or indirect. If there is no DCT entry for the destination with this name, an assembly error results.

Intrapartition destinations—DFHDCT TYPE=INTRA

This macro specifies a destination for data that is to be stored temporarily.

An intrapartition destination may be a terminal, a file, or another system. A single data set, managed by VSAM, is used to hold the data for all intrapartition destinations. This macro must be coded once for every intrapartition destination.

You can specify a transaction to process the records and a **trigger level** for each intrapartition destination. The trigger level represents a number of records. When this number of records has been accumulated, the specified transaction is initiated.

The intrapartition destination may be defined as logically recoverable, physically recoverable, or not recoverable.

Logically recoverable destinations are restored (after individual transaction failures and after total system failures) to the status they had at the end of the last completed LUW. (A **logical unit of work (LUW)** begins at start of task or at a **synchronization (sync) point**, and ends at end of task or at a syncpoint.)

Physically recoverable destinations are restored (after a total system failure) to the status they had when the system failure occurred.

Recovery does not occur if DCT=(,COLD) is coded in the DFHSIT macro or in the system initialization overrides.

Table 32. DFHDCT TYPE=INTRA

	DFHDCT	TYPE=INTRA ,DESTID=name [,DESTFAC={(TERMINAL[,trmidnt])| FILE[,USERID=name]| (SYSTEM,sysidnt)}] [,DESTRCV={NO|PH|LG}] [,TRANSID=name] [,TRIGLEV={1 number}]

Although it is possible to code LENGTH, RMTNAME and SYSIDNT on a TYPE=INTRA macro, users should use TYPE=REMOTE.

TYPE=INTRA
Indicates an intrapartition destination.

DESTID=name
Code this with the symbolic name of the intrapartition destination. The symbolic name is used to identify the intrapartition queue for I/O operations. It must not be more than four characters in length.

You must not use special characters, lower case, or mixed case characters in a DESTID name. The DESTID name should not start with a ‘C’ unless the name is known to CICS.

DESTFAC={(TERMINAL[,trmidnt]) | FILE[,USERID=name]|(SYSTEM,sysidnt)}
Code this with the type of destination that the queue represents.

(TERMINAL[,trmidnt])
The transient data destination is to be associated with the terminal identified by trmidnt. The terminal must be defined to CICS using the RDO TERMINAL definition.

If you do not specify trmidnt, it defaults to the value of DESTID. If ATI is used, as specified in the TRANSID and TRIGLEV operands, the transaction that is initiated is associated with the specified terminal, which must be available before the transaction can be initiated.

FILE
The transient data destination is to be used as a file of data records that are not associated with a particular terminal or system. ATI does not require a terminal to be available.

USERID={name}
Code this with the userid that you want CICS to use for security checking for the trigger-level transaction specified on the TRANSID operand. USERID is valid only when the destination is defined as DESTFAC=FILE.

The trigger-level transaction runs under the authority of the specified userid, which must be authorized to all the resources used by the transaction.

If you omit the userid from a qualifying trigger-level entry, CICS uses the userid specified on the TYPE=INITIAL macro. If you omit the userid from the TYPE=INITIAL macro also, CICS uses the CICS default userid, specified on the DFLTUSER system initialization parameter. You must ensure that the CICS region userid of any CICS region in which this DCT is installed, is defined as a surrogate for all the userids specified in the DCT. This is because, during initialization, CICS performs a surrogate user security check against the CICS region userid. If the surrogate security check fails, CICS deactivates automatic transaction initiation by trigger-level for the intrapartition queue for which the surrogate check failed.

(SYSTEM,sysidnt)
The transient data destination is to be associated with a system identified by sysidnt. The system must be defined to the local CICS system using an RDO CONNECTION definition.

The primary purpose of coding DESTFAC=SYSTEM,sysidnt is to initiate a distributed transaction processing (DTP) session. For details of DTP considerations in application programming, see the *CICS Application Programming Guide*.

DESTRCV={NO|PH|LG}
Code this to indicate the recoverability attributes of the destination in the event of an abnormal termination of either CICS or the transaction processing the destination.

NO
This destination is not recoverable, and automatic logging is not to be performed to keep track of accesses to this destination (the default).

Queue records are held on one or more control intervals (CIs); each CI is released as soon as the last record on it has been read.

PH This destination is physically recoverable, and automatic logging is to be performed to keep track of accesses by application programs. If emergency restart occurs, this destination is to be recovered to its status at the time CICS terminated.

Queue records are held on one or more control intervals (CIs); each CI is released as soon as the last record on it has been read.

LG This destination is logically recoverable, and automatic logging is to be performed to keep track of accesses by application programs. If a transaction that accessed this destination was in-flight at the time of abnormal termination, in the subsequent emergency restart or dynamic transaction backout this destination is restored to the status it had before the in-flight unit of work modified it.

When this destination is accessed, the task that issued the WRITEQ TD or READQ TD command is enqueued upon the input or output end of the transient data queue, respectively. This enqueue will be maintained until the task terminates or issues a syncpoint request to signal the end of a logical unit of work. This is necessary to ensure the integrity of the data being accessed. Because the enqueues are thus maintained for a longer period of time, an enqueue lockout is possible if an application program that accesses this destination performs what is effectively more than one logical unit of work against it without defining each separate logical unit of work to CICS by issuing the syncpoint request. Furthermore, when a DELETEQ request is issued for a logically recoverable destination, ***both*** the input and output ends of the queue are enqueued upon. This increases the probability of an enqueue lockout.

Queue records are held on one or more control intervals (CIs); each CI is marked for release as soon as the last record on it has been read. However, the release does not occur until the end of task or until after the next user syncpoint.

TRANSID=name
Code this to identify the transaction that is to be automatically initiated when the trigger level is reached. The purpose of transactions that are initiated in such a way is to read records from the destination. If this operand is omitted, or if TRIGLEV=0 is coded, some other means must be used to schedule transactions to read records from the destinations.

This transaction must not reside in a remote CICS system, or be defined as dynamic. If it does, the transaction initiation fails and a warning message is issued to the console.

TRIGLEV={1|number}
Code this with the number of records to be accumulated before a task is automatically initiated to process them. (This number is known as the **trigger level**.) If you code the TRANSID operand, TRIGLEV defaults to 1. The maximum TRIGLEV is 32767.

If you have coded DESTFAC=TERMINAL, the task is not initiated until the terminal is available.

If you have coded DESTFAC=FILE, no terminal is necessary for the task to be initiated. For a non-terminal destination, if a **maximum task**, **short-on-storage** or **no-space** condition exists, the task is not initiated. This is also true during stages 1 and 2 of initialization, and during the final stage of shutdown. It is initiated when the stress condition no longer exists and a subsequent TD WRITE occurs.

If a VTAM terminal is defined, with TRIGLEV=1, as the destination for CSTL on two ISC CICS systems, a performance problem may arise when both systems repeatedly acquire and release the terminal in order to write out the session started and session ended messages.

During CICS operation, the trigger level can be changed using the CEMT transaction. If the trigger level is reduced to a number that is equal to or less than the number of records accumulated so far, the task is initiated when the next record is put to the destination.

Remote destinations—DFHDCT TYPE=REMOTE

The DFHDCT TYPE=REMOTE macro defines a transient data destination that is owned by another CICS system or region. The destination must also have a complete definition in the system or region in which it resides.

Note that if a transient data request includes the SYSID operand, CICS does not refer to the DCT but identifies the specified destination as remote.

Table 33. DFHDCT TYPE=REMOTE

	DFHDCT	TYPE=REMOTE ,DESTID=name ,SYSIDNT=name [,LENGTH=length] [,RMTNAME=name]

TYPE=REMOTE
Indicates that this DCT entry identifies a remote transient data destination.

DESTID=name
Code this with a 4-character name by which the destination is known to application programs in the local CICS system. For further information, see the RMTNAME operand below.

You must not use special characters, lower case, or mixed case characters in a DESTID name. The DESTID name should not start with a ‘C’. **CICS supplied queue names cannot be defined as remote.**

SYSIDNT=name
Code this with the 4-character alphanumeric name of the system or region in which the remote transient data destination resides. The name specified must be the same as that given in the CONNECTION name of the RDO definition. (For more guidance information about the CONNECTION option, see Chapter 12, “CONNECTION” on page 131.)

LENGTH=length
Code this with the length in bytes of fixed records for a remote destination. The value specified must correspond to that specified for the DCT in the CICS system in which the destination resides. If a value is not specified for the LENGTH operand, the LENGTH parameter must be given in READQ or WRITEQ requests in the application program.

RMTNAME=name
Code this with the 4-character name by which the destination is known in the system or region in which that destination resides. If this operand is omitted (the normal case), the name specified in the DESTID operand is used.

If more than one system or region has a destination with the same name, the DESTID operand allows the definition of an alias that routes a transient data request to a specific system or region. RMTNAME defines the common name, SYSIDNT defines the system or region, and DESTID defines the unique alias. A transient data request using the alias identifies the remote name ***and*** the system or region to which the request is shipped.

Examples:

1. Destination *A001* is owned by system *A*.

SYSTEM	*DESTID*	*RMTNAME*
A	A001	A001
B	B001	A001
D	D001	A001
E	E001	A001

In system *A*, both RMTNAME and DESTID are *A001*. In systems *B*, *D*, and *E*, RMTNAME is *A001*, but DESTID must be different.

2. Four systems *A*, *B*, *D*, and *E* each own a different destination, but each destination has the same name *X001*.

Each system has a definition for its local destination and each of the three remote destinations.

SYSTEM	*DESTID*	*SYSIDNT*	*RMTNAME*
A	A002	A	X001
A	B002	B	X001
A	D002	D	X001
A	E002	E	X001

Each remote definition in system *A*:

- Has the RMTNAME *X001*
- Defines the remote system with the SYSIDNT parameter *B*, *D*, or *E*
- Uses the DESTID parameter to define a unique alias for use by application programs in the local region.

DFHDCT examples

Figure 42 on page 253 shows an example of the coding for a DCT. This DCT includes an extrapartition destination and three intrapartition destinations.

```
DFHDCT TYPE=INITIAL
DFHDCT TYPE=SDSCI,DSCNAME=AAAXTRA,  *
       RECFORM=FIXUNB               *
DFHDCT TYPE=EXTRA,DSCNAME=AAAXTRA,  *
       DESTID=BETA
DFHDCT TYPE=INTRA,DESTID=GAMA
DFHDCT TYPE=INTRA,DESTID=SAMA
DFHDCT TYPE=INTRA,DESTID=DAMA,      *
       TRIGLEV=5,DESTFAC=TERMINAL,  *
       TRANSID=AUTO
DFHDCT TYPE=FINAL
END
```

Figure 42. Extrapartition and intrapartition destinations

Required entries in the destination control table

The following destinations are used by some of the CICS-supplied transactions. The copybook DFH$DCTR in the VSE/ESA sublibrary, PRD1.BASE contains the macros for these destinations. This contains the TYPE=EXTRA entries. The TYPE=SDSCI entries are contained in DFH$DCTD, which should also be used. The copybook, DFH$DCTF, contains sample definitions for the Report Controller destinations CSPA and CSPW.

- These entries must be included in the generation of the DCT, if the associated functions are being used.
- These destinations must always be enabled. If you define any of them as indirect destinations, their final target destination and any associated transactions (if applicable) must also be enabled.
- These entries may ***not*** be coded as remote destinations, either directly or by using the DFHDCT TYPE=INDIRECT macro to make the final destination remote.
- You must ***not*** code these destinations, either directly or indirectly, as logically recoverable intrapartition destinations.
- You ***may*** code these destinations as physically recoverable. The advantage of this is that the contents of the transient data queue are not lost across an emergency restart and may provide useful diagnostic information (for example, the CSMT destination). The disadvantage is that emergency restart may take longer because more data has to be read from the log (in extreme cases, CICS may not be able to make an emergency restart).
- Except where noted otherwise, data records written to these destinations will have a variable length of up to 120 bytes.

  If you define these destinations as extrapartition then the associated SDSCI definition must specify V format records with a minimum BLKSIZE of 128 bytes.

DESTID=CADL (needed to log VTAM resource definitions)
For VTAM resources, this destination keeps a log of each RDO definition installed in the active CICS system. The log records both the installation of entries in the TCT, and the deletion of autoinstalled entries from the TCT. It records definitions installed by each of the following methods:

- Autoinstall
- CEDA INSTALL
- At system initialization.

For details about how to define CADL, see the *CICS System Definition Guide*.

DESTID=CAIL (needed to log autoinstall terminal model definitions)
The autoinstall terminal model manager (AITM) uses this destination to log all autoinstall terminal model entries installed in, and deleted from, the TCT.

DESTID=CCPI (needed for CPI Communications messages)
The common programming interface for communications (CPI Communications) writes messages to this destination.

DESTID=CDUL (needed for transaction dump messages)
CDUL is the destination for transaction dump messages. If a transaction dump is requested, for example after a transaction abend, a message will be written to this destination to show that a dump has been taken or to give a reason if the dump was suppressed.

DESTID=CESE (needed for run-time output from Language Environment for VSE/ESA).
This destination is used for Language Environment for VSE/ESA run-time output, such as messages, dumps, and reports. This queue is also used by ‘C’ for stderr output and by PL/I for stream output data.

DESTID=CESO (needed for run-time output from Language Environment for VSE/ESA).
This destination is used for ‘C’ stderr stream output. This destination is only required if you use ‘C’.

DESTID=CMIG (needed for migration log)
CMIG is a **migration log**, that receives messages reporting the use of functions that are no longer supported in CICS Transaction Server for VSE/ESA Release 1 (for example, the EXEC CICS ADDRESS CSA command). You can define CMIG as an intrapartition, extrapartition, or indirect destination.

DESTID=CRDI (needed to log program resource definitions)
This destination provides a log of installed resource definitions for programs, transactions, maps, and mapsets.

DESTID=CSCS (needed for the signon transaction)
CSCS receives a message giving details of each signon and sign-off. It also receives a message about each

rejected attempt at sign on and each resource authorization failure. This destination can be of any type.

DESTID=CSDL (needed to log RDO commands)
The resource definition online (RDO) transactions write to this destination all commands that result in changes to the CICS system definition (CSD) file or active CICS system.

CSDL is required only if you use RDO and want to keep a log of commands.

The maximum length of data records written to CSDL is 128 bytes. If you define CSDL as extrapartition, then the associated SDSCI definition should specify V format records with a minimum BLKSIZE of 136 bytes. If you are directing the output to a disk device (the default), you should code BLKSIZE=144.

For more information about defining CSDL, see the *CICS System Definition Guide*.

DESTID=CSFL (needed to log file resource definitions)
CSFL is a log of all file resource definitions installed in the active CICS system. Deletions of file resource entries are also logged here.

DESTID=CSKL (needed to log transaction and profile resource definitions)
CSKL is a log of all transaction and profile resource definitions installed in the active CICS system. Deletions are also logged here.

DESTID=CSML (needed for the sign-off transaction)
CICS sign-off writes data to this destination.

DESTID=CSMT (needed for terminal error and abend messages)
The terminal abnormal condition program (DFHTACP) and abnormal condition program (DFHACP) write terminal error and ABEND messages, respectively, to this destination. You may code this destination as extrapartition, intrapartition, or indirect.

DESTID=CSNE (needed for node error messages)
The node abnormal condition program (DFHZNAC) and the node error program (DFHZNEP) write terminal error messages and data to this destination. You can code this destination as extrapartition, intrapartition, or indirect.

DESTID=CSPA (optional, for the report controller)
The report controller uses this destination to keep an audit trail. It keeps a record of all changes to the characteristics or status of reports and printers, made using the report controller. It also records each report printed on each printer. See *CICS Report Controller Planning Guide* for more information on this facility.

DESTID=CSPL (needed to log program resource definitions)
CSPL is a log of all program resource definitions installed in the active CICS system. Deletions are also logged here.

DESTID=CSPW (optional, for the report controller)
Action messages from the CICS print task, CEPW, and severe error messages from the report controller are recorded here. The following events are recorded:

Request for change of forms
Completed change of forms
Printer interruption
Abend when a report in escape format is printing.

DESTID=CSRL (needed to log partner resource definitions)
CSRL is a log of all partner resources installed in the active CICS system. Deletions are also recorded here. For more information about partner resources, see Chapter 17, “PARTNER” on page 161.

DESTID=CSSL (needed for recovery utility statistics)
The recovery utility program (DFHRUP) writes statistics to this destination. This destination needs a minimum logical record length of 132 bytes and a minimum blocksize of 136 bytes.

If you code this destination as extrapartition and direct the output to a disk device (the default), a minimum blocksize of 144 bytes is required.

DESTID=CSTL (needed for terminal I/O error messages)
The terminal abnormal condition program (DFHTACP) writes terminal I/O error messages to this destination. You may code this destination as extrapartition, intrapartition, or indirect.

DESTID=CSZL (needed for the Front End Programming Interface)
If you have installed the CICS FEPI feature, CSZL is used as the destination for FEPI messages. For information on FEPI transient data destinations, see the *CICS Front End Programming Interface User’s Guide*.

DESTID=CSZX (needed for the Front End Programming Interface)
If you have installed the CICS FEPI feature, CSZX is intended for use with a triggered transaction. For information on FEPI transient data destinations, see the *CICS Front End Programming Interface User’s Guide*.

Chapter 28. FCT—file control table

The file control table (FCT) describes to CICS the user files that are processed by file management. CICS user files correspond to physical data sets that must have been defined to VSE and allocated to the CICS system before they are used. Because CICS file management processes only VSAM and DAM data sets, any sequential data sets must be defined as extrapartition destinations by using the DFHDCT macro.

To define VSAM files, data tables, and VSAM local shared resource pools, you could also use CEDA or DFHCSDUP. See Chapter 13, "FILE" on page 143 for information on defining VSAM files and data tables, and Chapter 14, "LSRPOOL" on page 151 for information on defining VSAM local shared resource pools.

DFHFCT macro types

The following macros specify file characteristics, and some of the characteristics of data sets referenced by the files:

- DFHFCT TYPE=INITIAL establishes the beginning of the FCT.
- DFHFCT TYPE=FILE defines the characteristics of a file, such as record characteristics and types of service allowed. (Note that TYPE=DATASET is retained for compatibility with previous releases, and means exactly the same as TYPE=FILE.)
- DFHFCT TYPE={CICSTABLE|USERTABLE} defines a data table.
- DFHFCT TYPE=GROUP is used to migrate file definitions to the CSD.
- DFHFCT TYPE=REMOTE defines a file that is owned by another system or region.
- DFHFCT TYPE=SHRCTL defines the size and characteristics of a VSAM local shared resource pool. The resources so defined are shared by those files that have a matching local shared resource pool identifier (LSRPOOL), which can be specified in the DFHFCT TYPE=FILE or DFHFCT TYPE={CICSTABLE|USERTABLE}.
- DFHFCT TYPE=FINAL (described on page 243) concludes the FCT.

Control section—DFHFCT TYPE=INITIAL

The DFHFCT TYPE=INITIAL macro establishes the control sections into which the FCT is assembled, and must be coded as the first statement in the source used to assemble the FCT.

Table 34. DFHFCT TYPE=INITIAL

	DFHFCT	TYPE=INITIAL
		[,SUFFIX=xxx]
		[,MIGRATE={
		YES|COMPLETE}]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL" on page 242.

MIGRATE={YES|COMPLETE}
This operand controls the building of FCT entries for VSAM files that are **eligible** for resource definition online (RDO). The only way RDO-eligible resources may be moved to the CSD from the macro source is to use DFHCSDUP, as described under "YES" below. For more detailed guidance, see "MIGRATE macro-defined resource definitions from tables to the CSD" on page 95.

YES
Indicates that you want to generate the necessary data to migrate your RDO-eligible resources. The records generated from the macro source are designed to be used as input to the DFHCSDUP utility program. An MNOTE warning message is issued for each RDO-eligible resource. The DFHCSDUP MIGRATE command will convert them into resource definitions on the CSD. These can then be managed using RDO.

COMPLETE
Use of COMPLETE means that FCT entries are not generated from the macro source for any RDO-eligible resources. For each one, the assembly produces an MNOTE. This means that you can keep your FCT macro source code after you have migrated your definitions.

If you continue to assemble an FCT for DAM data sets, you should continue to use MIGRATE=COMPLETE.

Local files—DFHFCT TYPE=FILE

The DFHFCT TYPE=FILE macro describes to CICS file control the physical and operational characteristics of a file. This macro includes operands that provide information about the access method, record characteristics, and the types of service allowed for the file. This information is used to generate control information used by CICS as well as a DTF or ACB.

The FCT entry defining a VSAM file requires a minimum of specific information. Such values as logical record length and key length are obtained when the file is opened and placed in the CICS portion of the FCT.

```
DFHFCT  TYPE=FILE
        ,ACCMETH={DAM|DLI|VSAM,(KEY|ADR)}
        ,FILE=name
        [,FILSTAT=({ENABLED|DISABLED|UNENABLED}
                       ,{OPENED|CLOSED})]
        [,JID={NO|SYSTEM|nn}]
        [,JREQ={ALL|(request[,request,...])}]
        [,LOG={NO|YES}]
        [,RECFORM=([{UNDEFINED|VARIABLE|FIXED}]
                        [,{BLOCKED|UNBLOCKED}]
                        [,DCB])]

        DAM Only

        [,BLKKEYL=length]
        [,BLKSIZE=length]
        [,EXTENT=number]
        [,KEYLEN=length]
        [,LRECL=length]
        [,RELTYPE={DEC|HEX}]
        [,RKP=number]
        [,SRCHM=YES]
        [,VERIFY=YES]

        VSAM Only

        [,BUFND=number]
        [,BUFNI=number]
        [,LSRPOOL={1|number|NONE}]
        [,DSNSHR={ALL|UPDATE}
        [,BASE=name]
        [,PASSWD=password]
        [,STRNO={1|number}]
```

TYPE=FILE
Indicates that this macro describes the characteristics of a file. (Note that TYPE=DATASET is retained for compatibility with previous releases, and means exactly the same as TYPE=FILE.)

ACCMETH={DAM|DLI|(VSAM[,KEY|ADR])}
Specifies the access method to be used for the data set.

DAM
Direct Access Method. BDAM is also accepted to mean Direct Access Method.

DLI
If your CICS system is to access DL/I databases, code a DFHFCT TYPE=FILE,ACCMETH=DLI macro for each DL/1 database descriptor (DBD) that corresponds to a physical, logical and index database.

VSAM
Virtual Storage Access Method. You specify this for VSAM files and for ISAM files that have been converted to VSAM format. (ISAM is not supported by CICS.)

KEY (VSAM only)
Keyed update ACB option. This option is only used by CICS file control if the data set associated with the FCT entry is a VSAM KSDS defined with the SHROPT(4) attribute.

Specifying KEY causes the ACB to indicate that the data set is updated by KEY.

ADR (VSAM only)
Addressed update ACB option. This option is only used by CICS file control if the data set associated with the FCT entry is a VSAM KSDS with the SHROPT(4) attribute.

Specifying ADR causes the ACB to indicate that the data set is updated by RBA.

For compatibility with previous releases, you can still code ESDS, KSDS, or RRDS for a VSAM data set. You do not **need** to code these values, but you **might** still do so. For example, you can code:

```
ACCMETH=(VSAM,KSDS,ADR)
```

BASE=name (VSAM only)
Code this to group together FCT entries that are to refer to the same data set. It is mandatory for files which are to use data set name sharing.

The value specified for the base operand is purely symbolic and need not refer to any particular FCT entry. Files with the same BASE=name are grouped together for the VSAM BSTRNO calculation. If an FCT entry has this name as its FILE=name, it is included in the grouping whether or not BASE= is specified for that entry.

The BASE operand value is not used by CICS to determine that FCT entries refer to bases and paths, or how they are related to each other. Such information is obtained by CICS from the VSAM catalog at the time each FCT entry is opened.

BLKKEYL=length (DAM only)
Code this with a decimal value in the range 1 through 255, which represents the length of the physical key in the DAM physical record. You must code this operand only for files that refer to data sets with physical keys (that is, those with SERVREQ=KEY specified). Blocked records in a data set can be unblocked by specifying the logical key length with the KEYLEN operand. This imbeds a logical key within each logical record.

If necessary, CICS can place a record under exclusive control by building an DFHKC TYPE=ENQ argument by concatenating the data set name, the block reference, and the physical key. An ENQ uses a maximum of 255 bytes of this argument. If the argument exceeds 255 bytes in length, the ENQ places a range of keys under exclusive control.

BLKSIZE=length (DAM only)
Code this with the length of the block, in bytes. The way you calculate the BLKSIZE depends on the RECFORM.

For undefined-format or variable-length blocks, the length must be the maximum user-defined block size plus 8. For fixed-length blocks, you calculate the BLKSIZE as follows:

`BLKSIZE = (LRECL + BLKKEYL)` for unblocked records.

`BLKSIZE = (LRECL x blocking factor + BLKKEYL)` for blocked records.

BUFND=number (VSAM only)
For VSAM only, code this with the number of buffers to be used for data. The minimum specification is the number of strings plus one. For further information. see the STRNO operand on page 260.

For VSAM files that do not share resources, this determines the number of buffers allocated by VSAM when the file is opened.

For VSAM files sharing resources (LSRPOOL=1-15), this number is not used. For a dynamically calculated resource pool, requirements are calculated based on the STRNO value.

BUFNI=number (VSAM only)
For VSAM only, code this with the number of buffers to be used for the index. The minimum specification is the number of strings coded in the STRNO operand.

For VSAM files sharing resources (LSRPOOL=1–15), this number is not used. For a dynamically calculated resource pool, requirements are calculated based on the STRNO value.

DSNSHR={ALL|UPDATE} (VSAM only)
Code this to indicate whether data set name sharing is to be used for read requests on the VSAM file. You must code this option if you require data set name sharing; there is no default. Using data set name sharing allows multiple files to be open concurrently for update operations on the data set It provides read and write integrity between all the files using a single data set.

ALL
Data set name sharing is set in the ACB when the file is opened.

UPDATE
Data set name sharing is set in the ACB when the file is opened only if a SERVREQ of DELETE, ADD, or UPDATE is set.

Note: When specifying DSNSHR=ALL on an input file, CICS will force the first open as output. This is necessary because the control block structure is built by VSAM with the first open. Subsequent opens against the structure can be either for INPUT or for OUTPUT.

EXTENT=number (DAM only)
Code this with the maximum number of extents that are specified for a data set. The presence of the EXTENT operand indicates that relative addressing (as opposed to actual addressing) is being used, and so you must also code the RELTYPE operand.

FILE=name
Code this with a symbolic name (1–7 characters) by which this FCT entry is to be identified. This name is known as the file name and is used by CICS or by CICS application programs to refer to the data set with which this FCT entry has been associated. (Note that the DATASET operand is retained for compatibility with previous releases, and means exactly the same as the FILE operand.)

As well as identifying the FCT entry, this name is also used as the DLBL name when the associated data set is allocated to CICS. The 7-character file name is associated with a 44-character file-id specified on the disk label (DLBL).

CICS allows a VSAM data set to be processed either via the base directly or via any alternate index path that might be defined over it. A separate FCT entry is required for each base or path that is to be accessed in this way. The file-id associated with each such FCT entry is the name of the VSAM data set or object that is to be accessed.

CICS also allows a VSAM data set to be processed via a path defined to VSAM as an alias for the base data set. It is also possible for more than one FCT entry to be associated with the same base data set directly, by associating the FCT entry with the same file-id. In all such cases, CICS recognizes that the FCT entry relates to a single base data set and sets up its control block structure accordingly. Note that the file-id must be unique, because CICS cannot differentiate between VSAM data sets with the same file-id, even if they reside on different volumes.

CICS does not support the processing of an alternate index as a user data set; that is, AIX is never coded as an option in the ACB. If a data set name for an alternate index were to be associated with an FCT entry, the alternate index would be processed by CICS as if it were a base data set.

An example of how to create a VSAM data set with an alternate index and an alternate index path and how to define the corresponding FCT entries for the base and the path can be found in Figure 49 on page 268.

You must not use file names that start with the character string ‘DFH’ for your own files, because CICS reserves the right to use any file name beginning with ‘DFH’. In addition, using the character string FCT for a file name prefix can cause assembly errors.

FILSTAT=({ENABLED|DISABLED|UNENABLED}, {OPENED|CLOSED})
Code this to set the initial status of the file. Do **not** use this operand for DL/I databases.

The first operand determines the initial enablement state of the file. It is used only during a cold start. (On a warm or emergency start, the file state is determined by the state at the time of the previous shutdown.)

The second operand {OPENED|**CLOSED**} specifies whether an attempt is to be made to open the file at the end of CICS initialization. It applies to cold, warm, and emergency starts.

An explicit OPENED/CLOSED request can either be CEMT SETFILE=OPEN or EXEC CICS SETFILE=OPEN.

ENABLED
Normal processing is to be allowed against this file.

DISABLED
Any request against this file from a command-level application program causes the DISABLED condition to be passed to the program. A request from a macro-level program against this file causes the program to terminate abnormally.

UNENABLED
This option is valid only with the CLOSED option. It might be used to prevent the file being opened on first reference. An attempt to access the file in this state raises the NOTOPEN condition.

OPENED
The file is opened by an automatically initiated CICS transaction (CSFU) after CICS initialization. (On a warm or emergency start, a file remains UNENABLED, if that was its state at the time of the previous shutdown. CSFU ignores an OPENED option on an UNENABLED file, and leaves the file closed.)

CLOSED
The file is to remain closed until a request is made to open it by the master terminal function, by a DFHOC macro in an application program, by an EXEC CICS SET command, or by an implicit open.

For each combination of initial states, files are opened as follows:

(ENABLED,CLOSED)
The file is opened on first reference. This is the default.

(ENABLED,OPENED)
The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has opened it first.

(DISABLED,OPENED)
The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has ***explicitly*** opened it first.

(DISABLED,CLOSED)
The file is opened only by an explicit OPEN request (for example, from the master terminal transaction).

(UNENABLED,CLOSED)
The file is opened only by an explicit EXEC CICS OPEN request. The file state after it has been opened is (ENABLED,OPENED).

JID={NO|SYSTEM|nn}
Code this if automatic journal activity is to take place for this FCT entry, and to identify the journal to be used to record the journaled data. The operations that cause data records to be journaled are specified in the JREQ parameter.

NO
Journal activity does not occur for this file.

SYSTEM
The system log is to be used for journaling.

nn The journal identification. You can code a value in the range 2 through 99.

Note: Automatic journaling can be specified to record file activity for subsequent processing by yourself (for example, user-written data set I/O recovery).

JREQ={ALL|(request[,request,...])}
Code this with the file operations that are to be automatically journaled, and whether the journaling operation is to be **synchronous** or **asynchronous** with file activity.

When a synchronous journal operation is executed for an EXEC CICS READ request, control is not returned to the program that issued the file control request until the data read is written in the journal data set. When a synchronous journal operation is executed for an EXEC CICS WRITE request, the output operation to the data set is not initiated until the data is written in the journal data set.

When an asynchronous journal operation is executed for an EXEC CICS READ request, control can be returned as soon as the data read is moved to the journal I/O buffer. When an asynchronous journal operation is executed for an EXEC CICS WRITE request, the output operation to the data set can be initiated as soon as the data is moved to the journal I/O buffer.

Synchronization defaults provide asynchronous operation for EXEC CICS READ requests and synchronous operation for EXEC CICS WRITE requests.

If you have requested automatic journaling, the contents of the journal might not accurately reflect the actual changes to a data set, because the request is journaled before the response from the I/O operation is tested.

If this operand is omitted and JID is coded, JREQ defaults to JREQ=(WU,WN).

ALL
Journal all file activity with EXEC CICS READ asynchronous and EXEC CICS WRITE synchronous.

ASY
Asynchronous journal operation for EXEC CICS WRITE operations.

RO
Journal EXEC CICS READ operations.

RU Journal EXEC CICS READ UPDATE operations.

SYN
Synchronous journal operation for EXEC CICS READ operations.

WN
Journal EXEC CICS WRITE operations.

WU
Journal EXEC CICS REWRITE operations.

KEYLEN=length (DAM only)
Code this with the length of the logical key for the deblocking of the DAM data set to which this file refers.

The logical key for DAM data sets is embedded and located through the use of the RKP operand. The length of the physical key is coded in the BLKKEYL operand, and can be different from the value specified for KEYLEN.

This operand must always be coded when logical keys are used in blocked DAM data sets.

LOG={<u>NO</u>|YES}
This operand specifies the recovery attributes of the file. Specify LOG=YES if you want automatic logging. This enables backout (recovery) of incomplete changes to the data set referenced by this file, in the event of an emergency restart or transaction abend. Whenever a change–update, deletion, or addition–is made to the data set, the “before” image is automatically recorded in the CICS system log. (Automatic logging should not be confused with automatic journaling.)

<u>NO</u>
Automatic logging is not to be performed.

YES
Automatic logging is to be performed.

When a request is made to change the contents of the data set referred to by the file, the record being updated, added, or deleted is enqueued on, using the record identification together with the address of the CICS control block representing the base data set. This enqueue is maintained until the task terminates or the application issues a syncpoint request to signal the end of a logical unit of work. This ensures the integrity of the altered data. Because the enqueues are thus maintained for a longer period of time, an enqueue lockout can occur if an application program that accesses this data set performs what is effectively more than one logical unit of work against it, without defining each separate logical unit of work to CICS by issuing a syncpoint request. Also, long-running tasks could tie up storage resources.

LRECL=length (DAM only)
Code this with the maximum length (in bytes) of the logical record. The value specified is also the length of records in a fixed-length remote file. See “Remote files—DFHFCT TYPE=REMOTE” on page 263 for more information about remote files.

LSRPOOL={<u>1</u>|number|NONE}(VSAM only)
Code this to specify whether this file is to be associated with a local shared resource pool.

number
The number of the local shared resource pool (defined by a DFHFCT TYPE=SHRCTL entry) with which this file is to be associated. The number of the pool must be in the range 1 through 15 to assign a file to one of the available 15 pools, or NONE if LSR is not to be used. The default is **<u>1</u>**.

You must specify the same LSRPOOL value for all files that refer to the same base cluster (including files referring to alternate index paths over that base).

NONE
The file is not associated with a local shared resource pool.

OPEN={<u>INITIAL</u>|DEFERRED}(DL/I only)
Code this to specify when a DL/I database under VSE is to be opened.

<u>INITIAL</u>
The DL/I database is opened automatically during DL/I initialization.

DEFERRED
The DL/I database remains closed until the STRT system call is issued.

PASSWD=password (VSAM only)
Code this with a password (1–8 characters), which VSAM uses to verify the user access to the data set. It should be the highest-level password required for the type of access: it should be either the READ password, if the file is never to be used for update, or the MASTER password. If less than eight characters are coded, the password is padded to the right with blanks. If this operand is omitted and the data set is password protected, the console operator might be asked to provide the appropriate password.

**RECFORM=([UNDEFINED|VARIABLE|FIXED]
[,BLOCKED|UNBLOCKED][,DOSISAM])**
Code this to describe the format of physical records in the data set. The default is UNDEFINED for DAM data sets and VARIABLE,BLOCKED for VSAM data sets.

For DAM data sets, **blocking** refers to CICS blocking, and has no meaning for DAM. You must specify

BLOCKED or UNBLOCKED for all DAM data sets of FIXED or VARIABLE format.

BLOCKED
: **For DAM** Each DAM physical record is to be viewed by CICS as a block consisting of more than one logical record.

  For VSAM All data sets are VSAM data sets.

FIXED
: Records are fixed length. For VSAM data sets, code this only if the VSAM access method services definition specifies fixed-size records (that is, the average size is equal to the maximum size), and all the records in the data set are of that size.

UNBLOCKED
: **For DAM** Specify this option when no CICS block structure is to be used. That is, when there is one CICS logical record for each DAM physical record.

  For VSAM Specify this option for data sets that have been converted from unblocked ISAM data sets. This specification is used to indicate ISAM compatibility, which returns records in an FIOA (rather than an FWA) for read-only, macro-level, move-mode GET requests.

UNDEFINED (DAM only)
: Records are of undefined length. (If you specify a data set as UNDEFINED, you must allow for an additional 8 bytes for the count field, when calculating the BLKSIZE.)

VARIABLE
: Records are variable length.

RELTYPE={DEC|HEX}(DAM only)
: Code this if relative addressing is being used in the block reference portion of the record identification field of the DAM data set referred to by this file. If the RELTYPE operand is omitted, absolute addressing is assumed (that is, MBBCCHHR). The EXTENT parameter must also be coded if RELTYPE is used.

  DEC The zoned decimal format is being used.

  HEX The hexadecimal relative track and record format is being used.

RKP=number (DAM only)
: Code this with the starting position of the key field in the record relative to the beginning of the record (position zero for DAM data sets). With variable-length records, this operand must include the four byte LLbb field at the beginning of each logical record. This operand must always be coded for data sets that have keys within each logical record, or when browsing.

SRCHM=YES (DAM only)
: Code this if multiple track search for keyed records is to be provided. This operand applies only to DAM keyed data sets. SRCHM=YES must be coded if fixed-length records with keys are to be added to the file.

STRNO={1|number} (VSAM only)
: Code this with the number of concurrent requests that can be processed against the file. The value must be in the range 1 through 255. When the number of requests reaches the STRNO value, CICS automatically queues any additional requests until one of the active requests terminates. This applies to files whether or not they use shared resources.

  When coding STRNO, be aware that a proportion of the specified number of strings is reserved by CICS for use in read-only requests. ***This proportion is normally 20% of the specified number. If, however, the number you specify is less than 5, CICS does not reserve any strings for read-only requests.***

  For VSAM files using shared resources, this number is not used by VSAM. It is used by CICS, not only as described above, but also to calculate the default value in the buffer pool definition, if a DFHFCT TYPE=SHRCTL macro has not been coded for the pool (or if the STRNO operand has been omitted from the DFHFCT TYPE=SHRCTL macro).

  CICS VSAM shared resource statistics help you to determine the optimum STRNO value for this particular configuration. Guidance on how to choose the optimum value for STRNO can be found in the *CICS Performance Guide*.

VERIFY=YES (DAM only)
: Code this if you want to check the parity of disk records after they are written. If this operand is omitted, records are not verified after a write request.

Configurator: This section is intended to help you use the DFHFCT TYPE=FILE macro to define your files. Each TYPE=FILE instruction describes the characteristics of the file, and of the data set referenced by the file, including information about the access method (DAM or VSAM).

Table 35. DFHFCT TYPE=FILE instructions

	VSAM	BDAM			
		Blocked		Unblocked	
		With key	Without key	With key	Without key
BLKKEYL		R		R	
EXTENT		R	R	R	R
SRCHM		O		O	
VERIFY		O	O	O	O
RELTYPE		R[1]	R[1]	R[1]	R[1]
LRECL		R	R	R	R
BLKSIZE		R[3]	R	R[2]	R
KEYLEN		R[5]			
RKP		R[4]		R[4]	
RECFORM	O	O	O	O	O
FILSTAT	O	O	O	O	O
SERVREQ	O	R[6]	O	R[6]	O
BUFNI	O				
BUFND	O				
STRNO	O				
PASSWD	O				
BASE	O				

Notes:

R	Required
O	Optional

1. Required if relative type addressing is to be used.
2. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be BLKSIZE + BLKKEYL for unblocked records.
3. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be LRECL x blocking factor + BLKKEYL for blocked records.
4. Required if key exists within logical records.
5. Required if deblocking by key for DAM
6. SERVREQ=KEY is required.

DFHFCT TYPE={CICSTABLE|USERTABLE}

The DFHFCT TYPE={CICSTABLE|USERTABLE} macro is used to define a data table.

DFHFCT TYPE={CICSTABLE|USERTABLE} indicates whether the data table is CICS-maintained or user-maintained. The SIZE operand is used to limit the number of entries in the table. Apart from these three operands, the FCT entries remain the same as those used to define the source data set (the original VSAM KSDS file from which the table extracts its data) and are the same as you would code for a standard TYPE=FILE entry.

The migration utility program DFHCSDUP, which converts macro resource definitions into RDO definitions recorded in the CSD file, will convert table definitions as well as normal file definitions when converting the FCT.

You should specify LSR, because CICS makes use of the extra degree of integrity that results from VSAM not allowing data to be read from control intervals that are being modified by other requests at the same time.

Table 36. DFHFCT TYPE={CICSTABLE|USERTABLE} syntax

	DFHFCT	TYPE={CICSTABLE|USERTABLE}
		,ACCMETH=VSAM
		,FILE=name
		[,SIZE={100000|number}]
		[,FILSTAT=({ENABLED|DISABLED|
		UNENABLED} ,{OPENED|CLOSED})]
		[,JID={NO|SYSTEM|nn}]
		[,JREQ={ALL|(request[,request,...])}]
		[,LOG={NO|YES}]
		[,RECFORM=[{(VARIABLE|FIXED}
		BLOCKED)]
		[,SERVREQ=(request[,...request])
		[,DSNSHR={ALL|UPDATE}]
		[,BASE=name]
		[,LSRPOOL={1|number}]
		[,PASSWD=password]
		[,STRNO={1|number}]

TYPE={CICSTABLE|USERTABLE}

CICSTABLE
Defines a CICS-maintained data table.

USERTABLE
Defines a user-maintained data table.

ACCMETH=VSAM
Specifies the access method of the source data set. Only VSAM is allowed for data tables.

JREQ=ALL|request
Journaling is performed only for those data table requests that result in VSAM I/O requests. The journaled data is in the format of the VSAM record, and not the data table entry format, which could possibly be different.

LOG=YES|NO
This operand is used to specify the recovery characteristics of data tables.

YES
For CICS-maintained data tables, LOG=YES specifies that the data table and its source data set are recoverable. They will both be updated in step and, if required, recovered in step.

For user-maintained data tables, LOG=YES only specifies dynamic backout. ***No*** log records are written.

NO
The default is NO for both types of tables.

Note: The recovery characteristics of this type of table are independent of the recovery characteristics of the source data set, when the latter is referenced by other files.

LSRPOOL=number|1
This operand is used to specify the number of the local shared resource pool (defined by a TYPE=SHRCTL macro) with which this data table is to be associated. Specification of LSRPOOL is required because CICS uses the LSR integrity function which prevents concurrent reading and updating of the same VSAM data by multiple users. For data tables the LSR value must be in the range 1 through 15. If LSRPOOL is not specified, it defaults to LSRPOOL=1.

RECFORM=VARIABLE|FIXED
RECFORM is allowed for CICS-maintained data tables but invalid for user-maintained data tables. All user-maintained data tables are VARIABLE length. UNBLOCKED is not allowed.

SERVREQ=request
REUSE is not allowed for data tables. READ is always assumed by default.

SIZE=number
The SIZE parameter specifies the maximum number of entries to be accommodated in the table. The minimum allowed is 16 and the theoretical maximum is 16 777 215, although this must be considered in conjunction with practical limitations on virtual storage. If SIZE is omitted on the DFHFCT macro, a default of 100 000 is used.

The remainder of the CICS file definition defines the VSAM KSDS and is the same as would have been coded for a standard TYPE=FILE entry. For a more detailed description of the DFHFCT TYPE={CICSTABLE|USERTABLE} operands which are common to both macros, refer to the appropriate entries under DFHFCT TYPE=FILE.

Example of a CICS-maintained data table definition: Figure 43 on page 263 shows the partial definition of a CICS-maintained data table. Only the relevant parameters are shown.

```
DFHFCT TYPE=CICSTABLE,                          *
       SIZE=10000,                              *
       VSIZE=2048,                              *
       FILE=TOLFREE,                            *
       DSNSHR=ALL,                              *
       BASE=TELE,                               *
       ACCMETH=VSAM,                            *
       LSRPOOL=2,                               *
       RECFORM=(FIXED,BLOCKED),                 *
       FILSTAT=(ENABLED,OPENED),                *
       SERVREQ=(ADD,DELETE,READ,UPDATE),        *
       LOG=YES
```

Figure 43. Example of a CICS-maintained data table definition

FCT entries that refer to the same source data set also use DSNSHR=ALL or UPDATE, BASE=TELE, LSRPOOL=2.

Example of a user-maintained data table definition: The following example shows the partial definition of a user-maintained data table. Only the relevant parameters are shown.

```
DFHFCT TYPE=USERTABLE,                          *
       SIZE=10000,                              *
       VSIZE=512,                               *
       FILE=LOSTCDS,                            *
       ACCMETH=VSAM,                            *
       LSRPOOL=5,                               *
       FILSTAT=(ENABLED,CLOSED),                *
       SERVREQ=READ,                            *
       LOG=YES
```

Figure 44. Example of a user-maintained data table definition

Migrating FCT definitions—DFHFCT TYPE=GROUP

Use this macro to name the groups into which FCT definitions will be put when you migrate to resource definition online. This macro can appear as many times as required and at any point in the macro source. Each time it appears, it defines the CSD group into which subsequent definitions will be put until the next DFHFCT TYPE=GROUP macro occurs.

Table 37. DFHFCT TYPE=GROUP

	DFHFCT	TYPE=GROUP [,GROUP=name]

GROUP=name
Code this with the name of the group to which subsequent definitions will be migrated. The name can be up to eight alphanumeric characters, but must not begin with DFH. The default name is FCTxx where xx is the value coded for SUFFIX in the DFHFCT TYPE=INITIAL macro. If an error is found, the existing group name continues.

If a group with the name you specify does not already exist, it will be created. If it does exist, subsequent definitions will be added to it.

GROUP=name
Code this with the name of the group to which subsequent definitions will be migrated. The name can be up to eight alphanumeric characters, but must not begin with DFH. The default name is FCTxx where xx is the value coded for SUFFIX in the DFHFCT TYPE=INITIAL macro. If an error is found, the existing group name continues.

If a group with the name you specify does not already exist, it will be created. If it does exist, subsequent definitions will be added to it.

For details on how to migrate your FCT to the CSD, see the *CICS Operations and Utilities Guide*.

Remote files—DFHFCT TYPE=REMOTE

The DFHFCT TYPE=REMOTE macro defines a file that resides in a remote system or region. You can use function request shipping to access this file from the local system. The remote definition that this macro creates gives less information than is needed for the local definition created by the TYPE=FILE macro. Each file that you define using TYPE=REMOTE also has a TYPE=FILE entry in its own system.

You name the system that owns the file using the SYSIDNT operand. The file may be known by a different name in the system that owns it; in this case, you need to code the RMTNAME operand.

Table 38. DFHFCT TYPE=REMOTE

	DFHFCT	TYPE=REMOTE ,SYSIDNT=name [,KEYLEN=length] [,LRECL=length] [,RMTNAME=name]

TYPE=REMOTE
Indicates that this FCT entry identifies a file that resides in a remote system or region.

FILE=name
Code this with a 1-to 7-character file name, which is the name used by the application programs in the same system as this FCT. (Note that the DATASET operand is retained for compatibility with previous releases, and means exactly the same as the FILE operand.)

KEYLEN=length
Code this with the default key length for a file control request that is sent to a remote system.

For DAM, the value must be equal to the total length of the RIDFLD option required to access the file. In the case of remote blocked files, this length must be the length of the RIDFLD option required to deblock by key. If you do not code this operand, the KEYLENGTH option must be specified in the application program that refers to this file.

KEYLEN=length
Code this with the default key length for a file control request that is sent to a remote system.

For DAM, the value must be equal to the total length of the RIDFLD option required to access the file. In the case of remote blocked files, this length must be the length of the RIDFLD option required to deblock by key. If you do not code this operand, the KEYLENGTH option must be specified in the application program that refers to this file.

LRECL=length
Code this with the default data length (in bytes) for a READ WRITE or REWRITE request that is sent to a remote system.

RMTNAME=name
Code this with a 1-to 7-character name by which the file is known to the system or region in which it resides. If this operand is omitted (the normal case), the name coded in the FILE operand will be used.

Note: If the file resides in a CICS/ESA or CICS Transaction Server for OS/390 system, its name can be up to 8 characters long.

This allows a single file to be known by different names in different systems. For example, A001 is owned by system A. On the definition in system A, both FILE and RMTNAME are A001. In systems B, C, and D the RMTNAME is always A001, but the FILE may be B001, C001, or any other name.

In addition, this allows each system to own a different file with the same name. For example, system A has a local definition for X002, which it owns. System A also has definitions for B002, C002, and D002. These three files, however, are each owned by another system, and the RMTNAME in each of the definitions in system A is X002. In the system that owns it, each of the four files is known as X002, but in each system, transactions can distinguish between the four, using a different file for each.

SYSIDNT=name
Code this with the 4-character alphanumeric name of the system or region in which the file is resident. The name given must be the name of the CONNECTION definition for the system, or the SYSIDNT in an explicit remote request in an application program.

Example

Figure 45 illustrates the coding that is required to create an FCT entry for a DAM file.

```
DFHFCT TYPE=FILE,                                            *
       FILE=DAM83,                                           *
       ACCMETH=DAM,                                          *
       SERVREQ=(READ,BROWSE,KEY),                            *
       BLKSIZE=172,                                          *
       RECFORM=(FIXED,BLOCKED),                              *
       LRECL=86,                                             *
       RELTYPE=HEX,                                          *
       KEYLEN=6,                                             *
       BLKKEYL=6,                                            *
       RKP=0,                                                *
       FILSTAT=(ENABLED,OPENED)
```

Figure 45. File control table example—DAM file

VSAM shared resources control—DFHFCT TYPE=SHRCTL

The DFHFCT TYPE=SHRCTL macro is used to define the size and characteristics of a VSAM local shared resources (LSR) pool. In a production system, you are recommended to include this macro to avoid a delay that might occur while the pool requirements are being calculated.

Up to fifteen DFHFCT TYPE=SHRCTL statements can be coded, each defining a separate pool identified by the LSRPOOL operand. The files defined in the TYPE=FILE entries with the corresponding LSRPOOL operand values will, during execution, share the resources of the pool.

The resource pool is built at the time the first file belonging to the pool is opened. At that time, the values of STRNO, BUFFERS, and KEYLEN must be known to enable the pool to be built. The values are obtained from the DFHFCT TYPE=SHRCTL statement. If they have not been specified, or if the DFHFCT TYPE=SHRCTL statement has not been coded, the values are calculated by accumulating the requirements of the individual files in the FCT.

If files in the FCT are not allocated when the pool is built, the data set names are not known to CICS. If, in addition, the DFHFCT TYPE=SHRCTL statement has not been coded, the requirements of the LSR pool may not be known completely at the time the pool is built. In this case, the pool will be built based on the information available, but the subsequent performance of the system may suffer or files may fail to open. Use of the EXEC CICS SET FILE LSRPOOLID command to allocate additional files to a pool will have the same effect.

Table 39. DFHFCT TYPE=SHRCTL

	DFHFCT	TYPE=SHRCTL [,BUFFERS=(size(count)[,...])] [,KEYLEN=number] [,LSRPOOL={**1**|number}] [,RSCLMT=number] [,STRNO=number]

TYPE=SHRCTL
Indicates that the entry required to control the sharing of VSAM resources is to be generated.

BUFFERS=(size(count)[,...])
Code this to override part of the CICS resource calculation. Each pair of values specifies a buffer size and a number of buffers of this size to be allocated.

size
Each buffer size must be one of the following values: 512, 1024, 2048, 4096, 8192, 12288, 16384, 20480, 24576, 28672, or 32768. If a given buffer size is not defined and it is required, the next larger buffer size is used.

count
For each buffer size, you must specify the number of buffers you require. The number of buffers of each size must be at least in the range 3 through 32 768.

When this parameter is coded, it overrides all of the buffer requirement calculation. The value specified in this operand is exactly what is passed to VSAM when the request is made to build the resource pool.

If this operand is not coded, CICS determines the buffer sizes required and the maximum number of buffers of each size and allocates the percentage specified or implied via the RSCLMT operand.

KEYLEN=number
Code this to override part of the CICS resource calculation. It specifies the maximum key length in bytes of any of the files that are to share resources. If not coded, CICS determines the maximum key length.

LSRpool={1|number}
Code this to specify which local shared resource pool is being defined. The number can be in the range 1 through 15, and the default is 1. Up to 15 DFHFCT TYPE=SHRCTL macros can be coded, to define the 15 available pools.

RSCLMT=number
Code this if CICS is to calculate the maximum amount of resources required by the VSAM files that are to share resources. Because these resources are to be shared, some percentage of this maximum amount of resources must be allocated. The RSCLMT operand specifies, as an integer, the percentage of the maximum amount of VSAM resources to be allocated. If this parameter is omitted, fifty percent of the maximum amount of resources are allocated. If both the STRNO and BUFFERS parameters are coded, RSCLMT has no effect.

The number can be any value in the range 1 through 100.

STRNO=number
Code this to override part of the CICS resource calculation. It specifies the total number of strings to be shared among the files that are to share resources. The value must be in the range 1 through 255. If a number is not specified for STRNO, CICS determines the maximum number of strings and allocate the percentage specified or implied in the RSCLMT parameter.

DFHFCT examples

Figure 46 gives an example of the coding required to create an FCT entry for a DAM file.

Figure 47 gives an example of the coding required to create an FCT entry for a VSAM file.

Figure 48 on page 267 gives an example of how to define a VSAM base and VSAM alternate index using access method services (AMS), and how to load data into the VSAM base data set. The file definition consists of four stages:

1. Defining the base data set
2. Putting records into the base data set
3. Defining the alternate index path and the alternate index
4. Building the alternate index from the base data set

Figure 50 on page 268 shows an FCT entry that defines a VSAM local shared resources (LSR) pool.

```
DFHFCT TYPE=FILE,                                             *
       FILE=DAM83,                                            *
       ACCMETH=DAM,                                           *
       SERVREQ=(READ,BROWSE,KEY),                             *
       BLKSIZE=172,                                           *
       RECFORM=(FIXED,BLOCKED),                               *
       LRECL=86,                                              *
       RELTYPE=HEX,                                           *
       KEYLEN=6,                                              *
       BLKKEYL=6,                                             *
       RKP=0,                                                 *
       FILSTAT=(ENABLED,OPENED),                              *
       EXTENT=2
```

Figure 46. Example of coding to create an FCT entry for a DAM file

```
DFHFCT TYPE=FILE,                                             *
       BASE=V1BASE,                                           *
       DSNSHR=ALL,
       FILE=VSAM1,                                            *
       ACCMETH=VSAM,                                          *
       SERVREQ=(UPDATE,DELETE,ADD),                           *
       FILSTAT=(ENABLED,OPENED),                              *
       RECFORM=FIXED,                                         *
       BUFNI=10,                                              *
       BUFND=11,                                              *
       STRNO=10,                                              *
       PASSWD=LETMEIN
```

Figure 47. Example of coding to create an FCT entry for a VSAM file

```
// JOB VSAM10
*
* STEP1 - CREATE BASE FILE VSAM10B AND
*         PUT RECORDS FROM DATA SET ISAM4
*         INTO BASE FILE VSAM10B.
*
// DLBL IJSYSUC,'FCEN',,VSAM
// EXTENT SYS014,FVPK01
// ASSGN SYS014,X'380'
// DLBL BISAM4,'FCEN.ISAM4',99/001,ISE
// EXTENT SYS006,FVPK02,4,1,117,1
// EXTENT SYS006,FVPK02,1,2,76,38
// ASSGN SYS006,X'332'
// DLBL VSAM10A,'FCEN.VSAM10A',,VSAM
// DLBL VSAM10B,'FCEN.VSAM10B',,VSAM
// EXEC IDCAMS,SIZE=AUTO
 DELETE (FCEN.VSAM10B) -
        FILE(VSAM10B) -
        PURGE -
        CLUSTER
 DEFINE CLUSTER(NAME(FCEN.VSAM10B) -
        VOL(FVPK01) -
        RECORDS(500,50)  -
        KEYS(10,14) -
        FREESPACE(20,10)  -
        SHAREOPTIONS(2)  -
        RECORDSIZE(100,300))
 REPRO  INFILE(BISAM4,            -
               ENV(RECFM(FB),     -
                   BLKSZ(210),    -
                   RECSZ(210)))   -
        OUTFILE(VSAM10B)
/*
* STEP2 - CREATE AND BUILD ALTERNATE INDEX VSAM10A
*         AND DEFINE ALTERNATE INDEX PATH VSAM10P
*         OVER THAT ALTERNATE INDEX.
*
// EXEC IDCAMS,SIZE=AUTO
         DEFINE ALTERNATEINDEX(NAME(FCEN.VSAM10A) -
               FREESPACE(20,10)  -
               KEYS(10,31)  -
               RECORDS(500,50)  -
               RECORDSIZE(30,1500)  -
               RELATE(FCEN.VSAM10B) -
               NONUNIQUEKEY  -
               UPGRADE  -
               SHAREOPTIONS(2)  -
               VOLUMES(FVPK01))
```

Figure 48 (Part 1 of 2). Example of job code to create a VSAM base and alternate index path

```
         DEFINE PATH(NAME(FCEN.VSAM10P) -
               PATHENTRY(FCEN.VSAM10A))
         BLDINDEX INFILE(VSAM10B) -
               OUTFILE(VSAM10A)
/*
/&
```

Figure 48 (Part 2 of 2). Example of job code to create a VSAM base and alternate index path

```
FCTBW    DFHFCT TYPE=INITIAL,                                  *
               SUFFIX=BW
*
* FCT ENTRIES FOR BASE VSAM10B AND ALTERNATE INDEX
* PATH VSAM10P.
* SHAREOPTIONS 2 AND BOTH OPEN FOR UPDATE,
* THEREFORE USING DATA NAME SET SHARING
*
         SPACE 1
         PRINT NOGEN
*
VSAM10B  DFHFCT TYPE=FILE,                                     *
               FILE=VSAM10B,                                   *
               DSNAME=FCEN.VSAM10B,                            *
               ACCMETH=VSAM,                                   *
               DSNSHR=ALL,                                     *
               SERVREQ=(READ,ADD,BROWSE,DELETE,UPDATE),        *
               BUFNI=8,                                        *
               BUFND=9,                                        *
               LSRPOOL=NONE,                                   *
               RECFORM=(FIXED,BLOCKED),                        *
               STRNO=8,                                        *
               FILSTAT=(OPEN,ENABLED)                          *
VSAM10P  DFHFCT TYPE=FILE,                                     *
               FILE=VSAM10P,                                   *
               DSNAME=FCEN.VSAM10P,                            *
               ACCMETH=VSAM,                                   *
               DSNSHR=ALL,                                     *
               SERVREQ=(BROWSE,UPDATE),                        *
               BUFNI=5,                                        *
               BUFND=6,                                        *
               LSRPOOL=NONE,                                   *
               STRNO=5,                                        *
               FILSTAT=(CLOSED,ENABLED)
         DFHFCT TYPE=FINAL
         END   DFHFCTBA
```

Figure 49. File control table to define a VSAM base and alternate index path

```
DFHFCT TYPE=SHRCTL,                                            *
      KEYLEN=50,                                               *
      STRNO=3,                                                 *
      BUFFERS=(512(12),2048(12))
```

Figure 50. File control table entry for a VSAM local shared resources (LSR) pool

Chapter 29. JCT—journal control table

The journal control table (JCT) describes the system log and user journals to CICS, for access through journal management. The JCT contains control information and operating system control blocks for each journal.

Elements of DFHJCT

You define the journal control table with the following macro instructions:

- Control Section—DFHJCT TYPE=INITIAL
- Journal Entries—DFHJCT TYPE=ENTRY
- End of journal control table—DFHJCT TYPE=FINAL (described on page 243)

Journal devices

A journal may reside on tape or disk and may occupy either one or two tape drives or disk data sets. The DMF data set may be used for user journals (see “Data management facility (DMF)” on page 270). This is specified through the JTYPE keyword of the DFHJCT TYPE=ENTRY macro. If you use a disk drive, you are recommended to dedicate it to the use of journaling. (However, if XRF is to be used, the CICS system journal must be on two disk data sets.)

Journal tapes are normally rewound and unloaded at end-of-volume or when the journal is closed. If two tape drives are assigned to a journal, the device is automatically switched at end-of-volume.

Journal data sets on disk are reused when filled. If two data sets are specified, the system switches back and forth between them. If JOUROPT=PAUSE is specified through the DFHJCT TYPE=ENTRY macro instruction, a data set will not start to be reused until the console operator allows it. This protects the data until the operator verifies that it is no longer needed; the operator may wish to dump the data to tape or process it in some other way before it is destroyed.

Journal archive support is obtained by coding JOUROPT=AUTOARCH. This invokes automatic journal archiving for the journal specified by JFILEID.

All disk data sets for journaling use must be preformatted using the DFHJCJFP utility prior to use in a CICS execution. Similarly, tapes must be preformatted using the DFHFTAP utility prior to their first use. After this has been done, both data sets and tapes can be reused for successive CICS executions without reformatting.

See the *CICS Operations and Utilities Guide* for more information about the DFHJCJFP and DFHFTAP utility programs.

Journal buffers

Journal records are blocked, variable-length records. CICS writes a block label record as the first record of each block and adds a system prefix to each journal record written.

Each journal defined to CICS employs two, equally-sized, buffers. The buffering system works like this:

1. Records are added to buffer 1 until a write-to-disk (or write-to-tape) operation is required. This happens when the buffer is full, or when a record requiring immediate output (STARTIO) is placed in the buffer.
2. Subsequent records are added to buffer 2.
3. After the first write operation has completed successfully, the next is instigated from buffer 2, when this becomes necessary.
4. Subsequent records are added to buffer 1, overwriting the original contents; and so on.

Buffer size: The size of each of the two buffers for each journal is specified by the BUFSIZE operand of the corresponding DFHJCT TYPE=ENTRY macro.

The minimum buffer size is 512 bytes or the sum of the following:

- 46 bytes for the block length field and the block label record
- 30 bytes for the record length field and the common root of the system prefix
- The length of the variable portion of the system prefix
- Sufficient space to satisfy the largest journal output request made through the journal control request, including:
  - The length of the user prefix (plus two bytes) if specified by the PFXLGTH operand in the journal control output request
  - The length of the journal record as specified by the JCDLGTH operand in the journal control output request.

The maximum buffer size is 32760, or the track capacity, whichever is the smaller. Users of SMF 110 type records and SMF data sets should read “Data management facility (DMF)” on page 270.

Other factors that need to be considered in selecting buffer size include:

- The amount of logging being done for file control files. File control makes both synchronous and asynchronous journal requests without specifying STARTIO. In a lightly loaded system, large journal buffers can delay tasks because the buffers are not being written out often enough.

- If DL/I logging is being done through CICS journaling, the minimum buffer size that can be specified is 1100 bytes.
- The volume of records to be written.
- The lengths of the records.
- The percentage of synchronous requests. (When a synchronous request is made, the record is moved to the output area and the block is written regardless of its length. Control is not returned to the program that issued the journal output request until the data is recorded on the journal device.)
- The minimum buffer size that can be specified is 512.
- If VTAM is in use, the system log must be defined with a minimum buffer size of 1600 bytes.

The following statistics are gathered for each journal to assist in tuning:

- The number of output requests made
- The number of blocks written
- The average length of blocks written
- The number of times the current buffer (that is, the one to which records were currently being added) was physically full and therefore ready to perform a write operation, but was delayed because the alternate buffer had not completed its own output.

Each journal task acquires space for a TCA, a JCA, and the specified buffer size at the time it is created during system initialization. The TCA has a TWA length of zero.

Data management facility (DMF)

CICS user journals that are used for output only (except the system log) can optionally use the system management facility (SMF) 110 type record and the DMF dataset to record data instead of tapes and disks. To do this, you will need to create the necessary journal control table (JCT) entries by specifying FORMAT=SMF and JTYPE=SMF on the DFHJCT TYPE=ENTRY macro instruction.

When using DMF data sets the maximum buffer size is 32756.

Control section—DFHJCT TYPE=INITIAL

The control section into which the JCT is assembled is established by the DFHJCT TYPE=INITIAL macro instruction. This macro must be coded as the first statement in the source used to assemble the journal control table.

Table 40. DFHJCT TYPE=INITIAL

	DFHJCT	TYPE=INITIAL [,SUFFIX=xxx]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL" on page 242.

Journal entries—DFHJCT TYPE=ENTRY

Each journal referred to during CICS execution must have a JCT entry as generated by the DFHJCT TYPE=ENTRY macro.

Table 41. DFHJCT TYPE=ENTRY

	DFHJCT	TYPE=ENTRY ,JFILEID={SYSTEM|nn} ,BUFSIZE=nnnnn ,DEVADDR=(SYSnnn[,SYSmmm]) [,ARCHJCL={DFH$ARCH|member}] [,FORMAT=SMF] [,JOUROPT=([CRUCIAL][,RETRY] {[,AUTOARCH]| [,PAUSE]]})] [,JTYPE={TAPE1|TAPE2|DISK1| DISK2|SMF}] [,OPEN={INITIAL|DEFERRED}] [,SYSWAIT={STARTIO|ASIS}]

TYPE=ENTRY
Indicates that an entry is to be generated in this table.

ARCHJCL={DFH$ARCH|member}
Code this with the name of the VSE/ESA sublibrary member to be used for this journal when submitting an archive job. It should not be coded if JOUROPT=AUTOARCH is not coded.

The VSE/ESA sublibrary containing the archive job must be defined in the LIBDEF SOURCE,SEARCH statement for the CICS job.

BUFSIZE=nnnnn
Code this with a decimal number indicating the size of each buffer (in bytes) to be used for journal I/O operations. (Note that the two buffers associated with each journal are identical in size. Coding BUFSIZE defines the size of both.) The minimum size is 512. The maximum is 32760 for tape. For CKD disk devices the maximum is the lesser of the maximum track capacity of the device and 32760. For DL/I logging, the CICS system log must have a minimum buffer size of 1100 bytes.

For a discussion of buffer size, see "Buffer size" on page 269.

DEVADDR=(SYSnnn[,SYSmmm])
Specifies the user's logical unit address for the journal data set.

SYSnnn
Specifies the logical unit address, of the first (or only) device, where the nnn is a 3-digit number in the range 000 through 254.

SYSmmm
Specifies the other logical unit when two devices (tape or disk) are to be used for the journal data sets. Like nnn, mmm is a 3-digit number in the range 000 through 255. For a journal on tape, mmm cannot be equal to nnn.

FORMAT=SMF
Code this if journal records will be written in SMF format. If JTYPE=SMF, you must code FORMAT=SMF.

JFILEID={SYSTEM|nn}
Code this with the journal identification for this entry.

SYSTEM
Code this if the journal being defined is the CICS system log. The system log is required if CICS is to perform automatic logging of changes to CICS resources, to provide for emergency restart or an XRF takeover.

The CICS system log must have an associated BUFSIZE value of at least 1100 bytes if DL/I is used.

nn A decimal number between 2 and 99 that identifies the user journal to be used.

JOUROPT=([CRUCIAL][,RETRY]{[,AUTOARCH]|[,PAUSE]]})
Code this with the journaling option or options that are to apply to the journal represented by this entry.

For details about these options, see the *CICS Recovery and Restart Guide*.

AUTOARCH
Code this to invoke automatic journal archiving for the journal specified by the JFILEID operand. If AUTOARCH is coded, JTYPE=DISK2 ***must*** be coded. Use of AUTOARCH ensures that data sets are archived promptly and are not overwritten until archived. The AUTOARCH option is particularly useful if you use the VSAM recovery and backout utilities, because automatic archiving offers greater security and reduces the possibility of a delay caused by archiving just before you use an offline utility.

If you code AUTOARCH, you cannot code LRU, EXTA, or PAUSE.

CRUCIAL
The CRUCIAL option determines what action CICS takes on encountering an I/O error for a journal.

The action that CICS takes depends on the kind of I/O error encountered.

- If an **unrecoverable output I/O error** occurs for a journal, CICS issues a message suggesting that you initiate a non-immediate shutdown of CICS. If the journal has been specified as CRUCIAL, CICS then issues another message asking you to acknowledge the shutdown request. Transactions attempting to use the journal will terminate abnormally. The journal task for the specified journal terminates abnormally in this error situation, and if you have not specified the CRUCIAL option, or if you do not perform the shutdown at this time, CICS execution will continue, but the journal will remain unavailable for the remainder of the run.
- If the I/O error occurs during **end of volume processing**, and you have specified the CRUCIAL option for the journal, CICS execution is abnormally terminated with a dump. If you have not specified the CRUCIAL option, execution continues and the journal is unavailable for the duration of the run; the journal task of the journal is abnormally terminated.

PAUSE
You code this to ensure that a journal data set is not reused until the operator authorizes it. If you do not code this option, the data set is automatically reused, thus overwriting the previous journal records. If you code AUTOARCH, you cannot code PAUSE.

Disk journals:

If PAUSE is specified and the journal is defined as a ***single*** data set, CICS closes the journal when it is full, and issues messages DFHJC4583 and DFHJC4584. Message DFHJC4583 indicates that the journal is closed and ready to be copied, and DFHJC4584 tells the operator that CICS is waiting for a reply. All tasks using the journal are held up until CICS receives a reply, which gives the operator an opportunity to copy the data set before allowing it to be overwritten. Any transactions that cause output to the journal will be held up until the copy operation is complete and the operator has replied to the message. So if you use single-data-set journals, make sure they are large enough to hold all the journal output for a given CICS run.

If PAUSE is specified for a journal defined as a ***pair of data sets***, message DFHJC4583 is issued when the current data set becomes full and is closed by CICS. The other data set is opened, message DFHJC4508 is issued, and journal activity to the data set continues without waiting for a reply to DFHJC4583. The operator can then schedule (concurrently with CICS) a batch program to copy the data set to an archive data set. When the copy is complete, the operator replies to DFHJC4583, indicating to CICS that it can reuse the first data set. If a reply is not received before CICS is ready to switch back again, CICS issues message DFHJC4584 to remind the operator that it is still waiting for a reply.

Tape journals:

For tape journals, specify the PAUSE option, otherwise the volume at load point on the specified tape drive is automatically used for journal output.

RETRY
Output I/O errors are to be retried automatically on a new output volume before taking the action indicated by the CRUCIAL option.

RETRY indicates that if an I/O error is detected on output, journal control is to close the current data set (tape reel or disk data set), switch data sets, and try to write the block on the other data set. If the retry also fails (or if RETRY is not specified) a permanent I/O error condition will exist.

JTYPE={TAPE1|TAPE2|DISK1|DISK2|SMF}
Code this with the type of journal being defined.

TAPE1
A journal on one tape drive.

TAPE2
A journal on two tape drives.

DISK1
A journal on disk that has one data set to be reused when full.

DISK2
A journal on disk that has two data sets to be used alternately. You should specify this to minimize operator involvement during a takeover. For XRF, the system log must be on disk, and you must specify JTYPE=DISK2. Similarly, when automatic archiving has been specified, the journal must be on disk, and you must specify JTYPE=DISK2.

SMF
Journal records will be sent to DMF (data management facility) data sets, provided that the FORMAT=SMF operand is coded.

OPEN={INITIAL|DEFERRED}
Code this to indicate when the journal is to be opened.

INITIAL
The journal is to be opened for output by system initialization.

DEFERRED
The opening of the journal is to be deferred until after system initialization. This option can be used for journals opened by transactions that are executing under CICS or by programs that are specified in the program list table (PLT). This option can be used to save system and operator overhead when a journal is not needed for every CICS run.

You cannot use this option for the system log, or when the AUTOARCH option is also specified.

Note: The journal may be opened at any time in the run, by an application program.

SYSWAIT={STARTIO|ASIS}
Code this if I/O is to be initiated immediately on synchronizing requests, (PUT, (WRITE,WAIT), or WAIT) to this journal from CICS management modules. Note that this operand has no effect on user journaling requests. For guidance on the performance implications of this operand, see the *CICS Performance Guide*.

STARTIO
I/O is to be initiated immediately on synchronizing requests from CICS management modules to the journal. This option has the same effect as STARTIO=YES coded on all such requests.

ASIS
The option coded in the STARTIO keyword in the macro request is to be honored for synchronizing requests to the journal from CICS management modules. In almost all cases, this will be STARTIO=NO. You should code SYSWAIT=ASIS only if the frequency of requests to the journal is so high that the device becomes overloaded.

DFHJCT example

Figure 51 illustrates the coding to create a JCT:

- The system log, allocated two disk data sets
- Journal 2, allocated one disk data set
- Journal 3, allocated two disk data sets
- Journal 4, allocated two tape drives
- Journal 5, allocated two tape drives

Note that, for XRF, the system log ***must*** be on disk, and you must specify JTYPE=DISK2. Similarly, when automatic archiving has been specified, the journal must be on disk, and you must specify JTYPE=DISK2.

```
DFHJCT TYPE=INITIAL
*
DFHJCT TYPE=ENTRY,          SYSTEM LOG    *
       JFILEID=SYSTEM,                    *
       JTYPE=DISK2,                       *
       BUFSIZE=1500,                      *
       JOUROPT=(RETRY,CRUCIAL,AUTOARCH),  *
       ARCHJCL=DFH$ARCH
*
DFHJCT TYPE=ENTRY,                        *
       JFILEID=2,                         *
       JTYPE=DISK1,                       *
       BUFSIZE=1500,                      *
       JOUROPT=(RETRY,PAUSE)
*
DFHJCT TYPE=ENTRY,                        *
       JFILEID=3,                         *
       JTYPE=DISK2,                       *
       JOUROPT=(RETRY,AUTOARCH),          *
       ARCHJCL=DFH$ARCH,           *
       BUFSIZE=1000
*
DFHJCT TYPE=ENTRY,         (USER JOURNAL) *
       JFILEID=4,                         *
       JTYPE=TAPE2,                       *
       FORMAT=SMF,                        *
       BUFSIZE=1500
*
DFHJCT TYPE=ENTRY,                        *
       JFILEID=5,                         *
       JTYPE=TAPE2,                       *
       BUFSIZE=1500,                      *
       JOUROPT=(RETRY,CRUCIAL)
*
DFHJCT TYPE=FINAL
END
```

Figure 51. Journal control table—example

Chapter 30. MCT—monitoring control table

The monitoring control table (MCT) defines the user data fields in performance class monitoring records, and describes how they are to be manipulated at the user-coded event monitoring points (EMPs). It also controls which system-defined performance class data fields are recorded. See the *CICS Performance Guide* for details of the MCT and performance.

Note: When you assemble an MCT without any user event monitoring points, a return code of 4 will be produced by the linkage editor, and the error message '2158I NO CSECT LENGTH SUPPLIED' will be produced. This return code and error message may be ignored if the assembly of the MCT completed without error.

The MCT is necessary only if you have coded user EMPs in your application programs, or if you need to exclude specific system-defined fields from being recorded. If no MCT is present, the following defaults are assumed:

- All monitoring classes available (exception and performance).
- All CICS Transaction Server for VSE/ESA system-defined data fields will be collected.

You code user EMPs in application programs using the EXEC CICS MONITOR command.

Elements of DFHMCT

The MCT consists of the following macro instructions:

- Control section—DFHMCT TYPE=INITIAL
- User event monitoring points—DFHMCT TYPE=EMP
- Control data recording—DFHMCT TYPE=RECORD
- End of monitoring control table—DFHMCT TYPE=FINAL (described on page 243)

Control section—DFHMCT TYPE=INITIAL

The control section name for the MCT is established by the DFHMCT TYPE=INITIAL macro. This macro also creates the necessary linkage editor control statements for subsequent link-editing.

Table 42. DFHMCT TYPE=INITIAL

	TABLE	TYPE=INITIAL [,SUFFIX=xx] [,SURROGATE=(YES|NO)]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL” on page 242.

SURROGATE=(YES|NO)
Indicates if the TERM field of the performance monitoring record should contain the surrogate terminal ID for a transaction routed task running in an AOR directly connected to the TOR.

User event monitoring points—DFHMCT TYPE=EMP

The DFHMCT TYPE=EMP macro allows you to specify how the user data fields in performance class data records are to be added to or changed at each user event monitoring point. One TYPE=EMP macro must be coded for each user EMP at which user data is required.

The TYPE=EMP macro must be coded between the TYPE=INITIAL macro and the first TYPE=RECORD macro instruction.

Table 43. DFHMCT TYPE=EMP

	TABLE	TYPE=EMP ,CLASS=PERFORM ,ID={number|(PP,number)| entryname.number} [,CLOCK=(number,name1[,name2,...])] [,COUNT=(number,name1[,name2,...])] [,FIELD=(1,name)] [,PERFORM=(option[,...])]

TYPE=EMP
Indicates that this macro defines the user data to be collected at a user event monitoring point.

CLASS=PERFORM
Code this with the monitoring classes for which user data is to be collected at this user EMP. The value PERFORM must be coded. The corresponding PERFORM operand must also be coded.

ID={number|(PP,number)|entryname.number}
Code this with the identifier of the user event monitoring point at which the user data defined in this macro is to be collected. Note that if one of the forms ‘number’ or (PP,number) is coded, a default entry name, “USER”, is provided.

number
A decimal integer in the range 1 through 255. Identification numbers between 1 and 199 are available for user EMPs. Numbers between 200 and 255 are reserved for IBM program product EMPs and should be coded if you require to collect user data at EMPs that have been defined in the code of IBM program products.

(PP,number)
An IBM program product EMP identification number. It is equivalent to specifying an ID value of 199 + number. The value of ‘number’ is a decimal integer in the range 1 through 56.

entryname.number
Allows multiple use of number, a decimal integer in the range 1 through 255. Thus ‘UNIQUE.3’, ‘DSN.3’, and ‘3’ are three different EMPs. A maximum of 98 entrynames can be specified against any particular number. Furthermore, any counts, clocks, or byte-offsets referred to by one of them will be different objects from those referred to by any other.

In the following descriptions, any reference to a constant means a hexadecimal constant of up to eight hexadecimal digits; any shorter string is padded on the left with zeros. For example, to add or subtract decimal 14, the constant would be coded as 0000000E or just E (no quotation marks are required).

Any reference to the fields DATA1 and DATA2 means the two binary fullwords supplied by the user EMP coded in the application program. These are specified by the DATA1 and DATA2 operands of the EXEC CICS MONITOR command for defining user EMPs. Depending on the options coded, the DATA1 and DATA2 fields can be interpreted as numbers, masks for performing logical operations, or pointers to further information.

Any reference to a number means a decimal integer in the range defined in the description of the option.

CLOCK=(number,name1[,name2,...])
Assigns an informal name to one or more clocks. The informal name of any clock will appear in its dictionary entry and will be available to a postprocessor for use as, for example, a column heading.

The character string, name1, will be assigned to the clock specified by number at MCT generation. If specified, name2 will be assigned to the clock number+1. Similarly, any subsequent names will be assigned to subsequent clocks. Any clock not named by this option will receive the entry name value from the ID operand (the default is USER).

Number must be in the range 1 through 256. The names specified must each be a character string up to 8 characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

COUNT=(number,name1[,name2,...])
Assigns an informal name to one or more count fields. The informal name of any count field will appear in its dictionary entry and will be available to a postprocessor for use as, for example, a column heading.

The character string, name1, will be assigned to the count field specified by number at MCT generation. If specified, name2 will be assigned to the count field number+1. Similarly, any subsequent names will be assigned to subsequent count fields. Any count fields not named by this option will receive the entry name value from the ID operand (the default is USER).

Number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

FIELD=(1,name)
Assigns an informal name to the user byte-string field. The informal name of the user byte-string field will appear in its dictionary entry and will be available to a postprocessor for use as, for example, a column heading.

Name must be a character string up to 8 characters long. If it contains one or more blanks or commas, it must be enclosed in quotes.

PERFORM=(option[,...])
This operand must be coded when CLASS=PERFORM is coded. It specifies that information is to be added to or changed in the user fields of the performance class data record at this EMP.

The user fields for each user distinguished by a separate entry name in the ID operand can comprise:

1. Up to 256 counters
2. Up to 256 clocks, each made up of a 4-byte accumulator and 4-byte count
3. A byte string of up to 8192 bytes

Note: The combined sizes of the objects (clocks, counts, and fields) implied in the specified options must not exceed 16384 bytes. If they do, assembly-time errors will occur. You can avoid this by using fewer objects, either by collecting less data, or by clustering references to clocks and counts to avoid implied, but unused, objects.

EMP warning

Defining user event monitoring point data extends the size of all CICS performance class monitoring records. Each CICS monitoring record will be the same size as the largest record; you should bear this in mind when specifying user data fields.

Actions will be performed on the user fields according to the options specified. PERFORM can be abbreviated to PER.

Valid options for the PERFORM operand are:

ADDCNT(number,{constant|DATA1|DATA2})
The value of the user count field specified by number is to be incremented by the specified constant or by the value of the field DATA1 or DATA2. Number is a decimal integer in the range 1 through 256.

SUBCNT(number,{constant|DATA1|DATA2})
The value of the user count field specified by number is to be decremented by the specified constant or by the value of the field DATA1 or DATA2. Number is a decimal integer in the range 1 through 256.

NACNT(number,{constant|DATA1|DATA2})
A logical AND operation is to be performed on the value of the user count field specified by number, using the specified constant or the value of the field DATA1 or DATA2. Number is a decimal integer in the range 1 through 256.

EXCNT(number,{constant|DATA1|DATA2})
A logical exclusive OR operation is to be performed on the value of the user count field specified by number, using the specified constant or the value of the field DATA1 or DATA2. Number is a decimal integer in the range 1 through 256.

ORCNT(number,{constant|DATA1|DATA2})
A logical inclusive OR operation is to be performed on the value of the user count field specified by number, using the specified constant or the value of the field DATA1 or DATA2. Number is a decimal integer in the range 1 through 256.

MLTCNT(number1,number2)
A series of adjacent user count fields are to be updated by adding the values contained in adjacent fullwords in an area addressed by the DATA1 field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

The user count fields that are to be updated start at the field specified by number1. The number of user count fields that are updated is the smaller of the values of number2 and the DATA2 field. If the DATA2 field is zero, the value of number2 will be used. The series of adjacent fullwords used to add into the user count fields starts at the address specified in the DATA1 field. Successive fullwords will be added into successive user count fields.

Number1 and number2 are decimal integers in the range 1 through 256. The number of user counts generated is (number1 + number2 – 1). This value must also be in the range 1 through 256.

Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro.

SCLOCK(number)
The clock specified by number is to be started. The value of the 4-byte count in the user clock field will be incremented by 1 and flagged to show its running state. Number is a decimal integer in the range 1 through 256.

PCLOCK(number)
The clock specified by number is to be stopped. The 4-byte count in the user clock field will be flagged to indicate that the clock is now stopped. The accumulator is set to the sum of its contents before the previous SCLOCK and the elapsed period between that SCLOCK and this PCLOCK. Number is a decimal integer in the range 1 through 256.

SCPUCLK(number)
This option performs the same function as SCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

PCPUCLK(number)
This option performs the same function as PCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

MOVE(number3,number4)
A string of data is to be moved into the user byte-string field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

The user byte-string field is updated starting at the offset specified by number3. The data to be moved starts at the address supplied in the DATA1 field. The maximum length of data that can be moved is given by number4 (in bytes), and the actual length of data that is to be moved is given by the value of the DATA2 field. If the value of DATA2 is zero, then the length of the data given by number4 is moved.

Number3 is a decimal integer in the range 0 to 8191, and number4 is a decimal integer in the range 1 to 8192. The maximum length of the user character field is (number3 + number4), and must be in the range 1 to 8192.

Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro instruction.

DELIVER
Performance class data accumulated for this task up to this point is delivered to the monitoring buffers. Any running clocks are stopped. The performance class section of the monitoring area for this task is reset to `X'00'`, except for the key fields (transid, termid). Any clocks that were stopped by this option are restarted from zero for the new measurement period. The “high-water-mark” fields are reset to their current values.

Control data recording—DFHMCT TYPE=RECORD

The DFHMCT TYPE=RECORD macro identifies the performance class data fields which have been selected for monitoring.

Table 44. DFHMCT TYPE=RECORD

		,CLASS=PERFORM [,EXCLUDE={ALL|(n1[,...])}] [,INCLUDE=(m1[,...])]

TYPE=RECORD
Indicates that monitoring data for selected performance class data fields will be recorded.

CLASS=PERFORM
This operand is necessary if selectivity of performance class data fields is in use.

PERFORM
Performance class data is to be recorded. PERFORM can be abbreviated to PER.

EXCLUDE={ALL|(n1[,...])}
Code this to prevent one or more CICS fields from being reported by the monitoring facility. By default, all documented performance class fields are reported.

The EXCLUDE operand will always be honored before the INCLUDE operand, regardless of the order in which they are coded. (The INCLUDE operand is only relevant when the EXCLUDE operand is coded.)

ALL
This prevents all fields that are eligible for exclusion from being reported. Note that the following fields cannot be excluded:

1, 2, 4, 5, 6 and 89.

You can use the INCLUDE operand at the same time as EXCLUDE=ALL if you want to include some fields but exclude the majority.

Table 45 shows the fields that are eligible for exclusion. Each field has a group name associated with it, which identifies the group of fields to which it belongs. Each field also has its own numeric field identifier.

To exclude a group of fields you code the name of the group (a character string) as n1, for example, EXCLUDE=(DFHTASK).

To exclude a single field you code the numeric identifier of the field as n1, for example, EXCLUDE=(98,70). *Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion.*

You can code combinations of names and numeric identifiers, for example, EXCLUDE=(DFHFILE,DFHTERM,112,64).

Table 45 (Page 1 of 2). This table shows the data groups and fields that can be excluded/included

Group Name	Field Id	Description
DFHCICS	103	Transaction exception wait time
DFHCICS	112	Performance record type
DFHCICS	130	Transaction routing sysid
DFHDEST	41	TD get count
DFHDEST	42	TD put count
DFHDEST	43	TD purge count
DFHDEST	91	TD total count
DFHDEST	101	TD I/O wait time
DFHFEPI	150	FEPI Allocate count
DFHFEPI	151	FEPI Receive count
DFHFEPI	152	FEPI Send count
DFHFEPI	153	FEPI Start count
DFHFEPI	154	FEPI CHARS sent
DFHFEPI	155	FEPI CHARS received
DFHFEPI	156	FEPI Suspend time
DFHFEPI	157	FEPI Allocate time-out count
DFHFEPI	158	FEPI Receive time-out count
DFHFEPI	159	FEPI Total count
DFHFILE	36	FC get count
DFHFILE	37	FC put count
DFHFILE	38	FC browse count
DFHFILE	39	FC add count
DFHFILE	40	FC delete count
DFHFILE	63	FC I/O wait time
DFHFILE	70	FC access-method count
DFHFILE	93	FC total count
DFHJOUR	10	JC I/O wait time
DFHJOUR	58	JC put/write count
DFHMAPP	50	BMS MAP count
DFHMAPP	51	BMS IN count
DFHMAPP	52	BMS OUT count
DFHMAPP	90	BMS total count
DFHPROG	55	Program LINK count
DFHPROG	56	Program XCTL count
DFHPROG	57	Program LOAD count
DFHPROG	71	Program name
DFHPROG	113	Original abend code
DFHPROG	114	Current abend code
DFHPROG	115	Program load time
DFHSTOR	33	User-storage high-water-mark (UDSA)
DFHSTOR	54	User-storage get-count (UDSA)
DFHSTOR	87	Program-storage high-water-mark - total
DFHSTOR	95	User-storage-occupancy (bytes-ms) (UDSA)
DFHSTOR	105	User-storage get-count–above 16MB line (EUDSA)
DFHSTOR	106	User-storage high-water-mark–above 16MB line (EUDSA)
DFHSTOR	107	User-storage-occupancy (bytes-ms)–above 16MB line (EUDSA)
DFHSTOR	108	Program-storage high-water-mark–below 16MB line

Table 45 (Page 2 of 2). This table shows the data groups and fields that can be excluded/included

Group Name	Field Id	Description
DFHSTOR	116	User-storage high-water-mark–below 16MB line (CDSA)
DFHSTOR	117	User-storage get-count–below 16MB line (CDSA)
DFHSTOR	118	User-storage-occupancy (bytes-ms)–below 16MB line (CDSA)
DFHSTOR	119	User-storage high-water-mark–above 16MB line (ECDSA)
DFHSTOR	120	User-storage get-count–above 16MB line (ECDSA)
DFHSTOR	121	User-storage-occupancy (bytes-ms)–above 16MB line (ECDSA)
DFHSTOR	122	Program-storage high-water-mark (ERDSA)
DFHSTOR	139	Program-storage high-water-mark–above 16MB line
DFHSTOR	142	Program-storage high-water-mark (ECDSA)
DFHSTOR	143	Program-storage high-water-mark (CDSA)
DFHSTOR	160	Program-storage high-water-mark (SDSA)
DFHSTOR	161	Program-storage high-water-mark (ESDSA)
DFHSTOR	162	Program-storage high-water-mark (RDSA)
DFHSYNC	60	Sync point count
DFHTASK	7	User-task dispatch time
DFHTASK	8	User-task CPU time
DFHTASK	14	User-task suspend time
DFHTASK	31	Task number
DFHTASK	59	IC put/initiate count
DFHTASK	64	Error flag field
DFHTASK	97	Network name of the originating terminal or system
DFHTASK	98	Unit-of-work id on the originating system
DFHTASK	102	User-task wait-for-dispatch time
DFHTASK	109	Transaction priority
DFHTASK	125	First dispatch delay time
DFHTASK	126	First dispatch delay time due to TRANCLASS
DFHTASK	127	First dispatch delay due to MXT
DFHTASK	129	Task ENQ delay time
DFHTASK	170	Resource Manager Interface–elapsed time
DFHTASK	171	Resource Manager Interface–suspended time
DFHTEMP	11	TS I/O wait time
DFHTEMP	44	TS get count
DFHTEMP	46	TS put auxiliary count
DFHTEMP	47	TS put main count
DFHTEMP	92	TS total count
DFHTERM	9	TC I/O wait time
DFHTERM	34	TC principal facility input messages
DFHTERM	35	TC principal facility output messages
DFHTERM	67	TC alternate facility input messages
DFHTERM	68	TC alternate facility output messages
DFHTERM	69	TC allocate count
DFHTERM	83	TC principal facility CHARS input
DFHTERM	84	TC principal facility CHARS output
DFHTERM	85	TC alternate facility CHARS input
DFHTERM	86	TC alternate facility CHARS output
DFHTERM	100	IR I/O wait time
DFHTERM	111	VTAM terminal LU name
DFHTERM	133	TC I/O wait time - LU6.1
DFHTERM	134	TC I/O wait time - LU6.2
DFHTERM	135	TC alternate facility input messages - LU6.2
DFHTERM	136	TC alternate facility output messages - LU6.2
DFHTERM	137	TC alternate facility CHARS input - LU6.2
DFHTERM	138	TC alternate facility CHARS output - LU6.2

INCLUDE=(m1[,...])

Code this to enable one or more CICS fields to be reported by the monitoring facility. By default, all documented performance class fields are reported, so this operand is relevant only if you code the EXCLUDE operand in the same macro.

The fields that are eligible to be coded for inclusion on this operand are the same as those that are eligible for exclusion. (See the description of the EXCLUDE operand.) Each field has a numeric field identifier associated with it. To include a field you code m1 as the numeric identifier of the field. You can code multiple numeric identifiers. *Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion, and that are therefore included by default.*

The EXCLUDE operand is always honored first. The INCLUDE operand, if coded, then overrides some of its effects. For example, coding:

```
EXCLUDE=DFHFILE,
INCLUDE=(37,93),
```

would secure the collection and reporting of file control PUTs and the total number of file control requests, while file control browse count and other file control fields would be excluded.

If you want to exclude the majority of fields, but include a few, you can code, for example:

```
EXCLUDE=ALL,
INCLUDE=(DFHTERM,34,35)
```

This is more convenient than coding individually all the fields you want to exclude.

Three sample monitoring control tables are provided in the VSE/ESA sublibrary, PRD1.BASE:

- For terminal-owning region (TOR) - DFHMCTT$
- For application-owning region (AOR) - DFHMCTA$
- For file-owning region (FOR) - DFHMCTF$

These samples show how to use the EXCLUDE and INCLUDE operands to reduce the size of the performance class record in order to reduce the volume of data written by CICS to DMF.

DFHMCT example

Figure 52 illustrates the coding to create a monitoring control table (MCT) for two user event monitoring points (EMPs).

```
DFHMCT   TYPE=INITIAL
DFHMCT   TYPE=EMP,                                                  *
         ID=180,                                                    *
         CLASS=PERFORM,                                             *
         PERFORM=(SCLOCK(1),ADDCNT(2,1)),                           *
         ACCOUNT=ADDCNT(1,1)
DFHMCT   TYPE=EMP,                                                  *
         ID=181,                                                    *
         CLASS=PERFORM,                                             *
         PERFORM=PCLOCK(1)
DFHMCT   TYPE=FINAL
         END
```

Figure 52. Monitoring control table—example

Chapter 31. PLT—program list table

A program list table (PLT) contains a list of related programs. You may wish to generate several PLTs for one or more of the following reasons:

- To specify a list of programs that you wish to be executed in the second and/or third initialization stages of CICS startup. For more detail about the initialization stages, see the *CICS Recovery and Restart Guide*. For programming information about restrictions on using programs in the initialization stages, see the *CICS Customization Guide*. The selected list should be specified at initialization time by the PLTPI=xx system initialization parameter, where xx is the suffix of the PLT that contains the required list of programs.

  For convenience, the list of programs selected for execution during initialization is referred to as the 'PLTPI' list.
- To specify a list of programs that you wish to be executed during the first and/or second quiesce stages of controlled shutdown. The selected list should be specified at initialization time by the PLTSD=xx system initialization parameter, where xx is the suffix of the PLT that contains the required list of programs.

  The PLT specified in the PLTSD system initialization parameter can be overridden at shutdown time by the PLT option in the CEMT PERFORM SHUTDOWN command.

  The shutdown PLT is normally loaded as CICS is being shutdown. However it is possible to use the same PLT for both initialization and shutdown, and under these circumstances the PLT will be loaded during initialization and CICS will not need to reload it during shutdown. It should be noted that if this is the case and the PLT is updated whilst CICS is operational, then a CEMT SET PROGRAM NEWCOPY command must be issued for the PLT to ensure that the updated version is used when CICS is shutdown.

  For convenience, the list of programs selected for execution during shutdown is referred to as the 'PLTSD' list.
- To specify a list of programs that you wish to have enabled or disabled as a group by a master terminal ENABLE or DISABLE command. This use of PLTs means that a master terminal operator can enable or disable a set of programs with just one command, instead of using a separate command for each program.

Any number of PLTs can be generated for the above purposes, provided that:

1. Each PLT has a unique suffix
2. Each program named in a PLT either has a program resource definition entry in the CSD, or is capable of being autoinstalled (that is, the appropriate system initialization parameters have been specified for program autoinstall).

PLTs must be placed in a sublibrary of the LIBDEF search chain for the CICS job. However, CICS scans the SVA for phase 1 PLTPI programs if they are not already installed.

Elements of DFHPLT

The following macros are available to define the PLT entries:

- Control section—DFHPLT TYPE=INITIAL
- Entries in program list table—DFHPLT TYPE=ENTRY
- End of Program List Table—DFHPLT TYPE=FINAL (described on page 243)

Control section—DFHPLT TYPE=INITIAL

Table 46. DFHPLT TYPE=INITIAL

	DFHPLT	TYPE=INITIAL [,SUFFIX=xx]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL" on page 242.

TYPE=INITIAL
Generates the PLT control section.

Note that a program entry for each PLT generated must have a definition in the CSD.

SUFFIX=xx
Code this with the suffix character(s) that uniquely identify this particular table.

Note: The PLT suffix is referenced by:

- CEMT {INQUIRE|SET} PROGRAM CLASS(suffix)
- CEMT or EXEC CICS PERFORM SHUTDOWN PLT(suffix)
- System initialization parameters PLTPI and PLTSD keywords

Entries in program list table—DFHPLT TYPE=ENTRY

Entries are specified in the PLT as follows:

Table 47. DFHPLT TYPE=ENTRY

	DFHPLT	TYPE=ENTRY ,PROGRAM=(program [,program,...])

TYPE=ENTRY
Indicates that one or more program names are to be listed in this table.

Note: As shown below, a TYPE=ENTRY macro is also needed to specify the PROGRAM=DFHDELIM entry.

PROGRAM=program name
Code this with a program name of up to eight characters. Each program must either have a definition in the CSD or must be capable of being autoinstalled (that is, the appropriate SIT parameters must be specified for program autoinstall). Undefined programs before the DFHDELIM statement are system autoinstalled.

For PLTPI and PLTSD lists, only **initial** programs should be named: other programs that are linked to by initial programs should not be listed (but must be defined or be capable of being autoinstalled). For programming information about restrictions on using PLT programs during initialization, see the *CICS Customization Guide*.

Table 48. DFHPLT TYPE=ENTRY

	DFHPLT	TYPE=ENTRY ,PROGRAM=DFHDELIM

PROGRAM=DFHDELIM
Code this to delimit the programs to run in the first or second passes of PLTPI or PLTSD.

Note that:

- Programs listed ***before*** the PROGRAM=DFHDELIM entry in a PLTPI are executed during the ***second*** stage of initialization. These are to enable user exit programs needed during recovery. The user exit programs should be defined in the CSD. Failure to do so will cause difficulty in accessing the programs after CICS initialization is complete, for example in EXEC CICS DISABLE commands. However, note that the properties defined by RDO have no effect during the second stage of initialization.
- Programs listed ***after*** the PROGRAM=DFHDELIM entry in a PLTPI are executed during the ***third*** stage of initialization. If these programs are used to enable user exits, the user exit programs ***must*** also be defined in the CSD or must be capable of being autoinstalled.
- Programs listed ***before*** the PROGRAM=DFHDELIM entry in a PLTSD are executed during the ***first*** quiesce stage of shutdown.
- Programs listed ***after*** the PROGRAM=DFHDELIM entry in a PLTSD are executed during the ***second*** quiesce stage of shutdown.

Note: The DFHDELIM entry is not a program – it serves as a delimiter only.

Second stage initialization and second stage quiesce PLT programs do not require program resource definitions. If they are not defined they will be system autoinstalled (irrespective of the program autoinstall SIT options). This means that the autoinstall exit is not called to allow the definition to be modified. The programs are defined with the following attributes:

```
CEDF(NO)
DATALOCATION(BELOW)
EXECKEY(CICS)
EXECUTIONSET(FULLAPI)
LANGUAGE(ASSEMBLER)
STATUS(ENABLED)
```

Third stage initialization and first stage quiesce PLT programs can be defined using program autoinstall, depending upon the program autoinstall SIT options. See Chapter 11, “Autoinstall for programs, mapsets, and partitionsets” on page 125 for further information. If program autoinstall is not used, they must have program resource definitions in the CSD.

Table 49. DFHPLT TYPE=ENTRY

	DFHPLT	TYPE=ENTRY ,PROGRAM=DLZSTP00

PROGRAM=DLZSTP00
Code this to quiesce the DL/I online system. On receiving control, this program verifies that there are no active DL/I tasks, and then closes the DL/I database log and DL/I databases. After execution of this program, all requests for DL/I services are ignored.

DFHPLT example

Figure 53 and Figure 54 illustrate the coding required to generate a PLT.

```
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* INITIALIZATION.
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTPI=I1
*
  DFHPLT TYPE=INITIAL,              (DFHPLTI1 SHOULD ALSO BE DEFINED
         SUFFIX=I1                  BY RDO)
*
*  The following programs are run in the first pass of PLTPI
*
  DFHPLT TYPE=ENTRY,PROGRAM=TRAQA   EXECUTED DURING 2ND INIT. PHASE
  DFHPLT TYPE=ENTRY,PROGRAM=TRAQB   (PROGRAMS SHOULD ALSO BE DEFINED
  DFHPLT TYPE=ENTRY,PROGRAM=TRAQC   BY RDO)
*
  DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the second pass of PLTPI
*
  DFHPLT TYPE=ENTRY,PROGRAM=TRASA   EXECUTED DURING 3RD INIT. PHASE
  DFHPLT TYPE=ENTRY,PROGRAM=TRASB   (PROGRAMS MUST ALSO BE DEFINED
  DFHPLT TYPE=ENTRY,PROGRAM=TRASC   BY RDO)
  DFHPLT TYPE=FINAL
*
  END
```

Figure 53. PLTPI program list table—example

```
*
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* TERMINATION
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTSD=T1
*
  DFHPLT TYPE=INITIAL,              (DFHPLTT1 MUST ALSO BE DEFINED
         SUFFIX=T1                  BY RDO)
*
*  The following programs are run in the 1st pass of PLTSD
*
*
  DFHPLT TYPE=ENTRY,PROGRAM=TRARA   EXECUTED DURING 1st QUIESCE PHASE
  DFHPLT TYPE=ENTRY,PROGRAM=TRARB   (PROGRAMS MUST ALSO BE DEFINED
  DFHPLT TYPE=ENTRY,PROGRAM=TRARC   BY RDO)
*
  DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the 2nd pass of PLTSD
*
  DFHPLT TYPE=ENTRY,PROGRAM=TRAFA   EXECUTED DURING 2nd QUIESCE PHASE
  DFHPLT TYPE=ENTRY,PROGRAM=TRAFB   (PROGRAMS MUST ALSO BE DEFINED
*                                   BY RDO)
  DFHPLT TYPE=FINAL
*
  END
```

Figure 54. PLTSD program list table—example

Chapter 32. SRT—system recovery table

The system recovery table (SRT) contains a list of abend codes that are intercepted. After a listed code is intercepted, CICS attempts to remain operational by causing the offending task to abend.

You can modify the default recovery action by writing your own recovery program. You do this by means of the XSRAB global user exit point within the System Recovery Program (SRP). (See the *CICS Customization Guide* for programming information about the XSRAB exit.)

Note that recovery is only attempted if a user task (**not** a system task) is in control at the time the abend occurs.

DFHSRT macro types

The following macros may be coded in a system recovery table:

- DFHSRT TYPE=INITIAL establishes the control section
- DFHSRT TYPE=SYSTEM|USER specifies the abend codes that are to be handled
- DFHSRT TYPE=FINAL concludes the SRT (see page 243)

Control section—DFHSRT TYPE=INITIAL

The DFHSRT TYPE=INITIAL macro generates the system recovery table control section.

Table 50. DFHSRT TYPE=INITIAL

	DFHSRT	TYPE=INITIAL [,SUFFIX=xx]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL” on page 242.

Abend codes—DFHSRT TYPE=SYSTEM|USER

Table 51. DFHSRT TYPE=SYSTEM|USER

	DFHSRT	TYPE={SYSTEM|USER} ,ABCODE=(abend-code,...) [,RECOVER={YES|NO}]

TYPE={SYSTEM|USER}
Indicates the type of abend code to be intercepted.

SYSTEM
The abend code is a VSE/ESA cancel code or an OS/390 system abend code.

USER
The abend code is a user (including CICS) abend code. This corresponds to an VSE Unnnn abend code.

ABCODE=(abend-code,...)
Code this with the abend code (or codes) to be intercepted.

If you code TYPE=SYSTEM, then this abend code must be either a two hexadecimal digit VSE cancel code or three hexadecimal digits (xxx) representing the OS/390 system abend code Sxxx. (See the *VSE/ESA Messages and Codes Volume 1* manual for details of cancel codes and system abend codes which VSE/ESA can produce.)

RECOVER={YES|NO}
This keyword is optional. If you omit **RECOVER**, the effect is the same as if you had coded **RECOVER=NO** (that is, the specified codes are removed from the SRT).

YES
Code this to add the specified codes to the SRT.

NO
Code this to remove the specified codes from the SRT.

Notes:

1. The following VSE cancel codes are intercepted automatically and recovery will be attempted.
```
09,13,17,20,21,22,25,26,27,2B,
30,32,33
```
2. The following OS/390 system abend codes are intercepted automatically and recovery will be attempted. (Most of these are not currently generated by VSE.)
```
001,002,013,020,025,026,030,032,
033,034,035,036,037,03A,03B,03D,
100,113,137,213,214,237,283,285,
313,314,337,400,413,437,513,514,
613,614,637,713,714,737,813,837,
913,A13,A14,B13,B14,B37,D23,D37,
E37
```
To obtain recovery for the standard abend codes above, the system recovery table (SRT) can be coded simply as follows:
```
DFHSRT  TYPE=INITIAL
DFHSRT  TYPE=FINAL
END
```
There is no need to list the standard codes individually.
3. If you want CICS to handle other errors, you can code the SRT as follows:

```
DFHSRT  TYPE=INITIAL
DFHSRT  TYPE=SYSTEM,or USER,
        ABCODE=(user or system codes),
        RECOVER=YES
DFHSRT  TYPE=FINAL
END
```

4. If you do not want CICS to attempt recovery after one or more of the above standard abend codes occurs, specify the code(s) with **RECOVER=NO**, or without the **RECOVER** parameter.
5. Recovery is attempted only if a user task (**not** a system task) is in control at the time the abend occurs.

DFHSRT example

Figure 55 illustrates the coding required to generate a SRT.

```
         DFHSRT TYPE=INITIAL,             *
                SUFFIX=K1
         DFHSRT TYPE=SYSTEM,              *
                ABCODE=(28,777)           *
                RECOVER=YES
         DFHSRT TYPE=USER,
                ABCODE=(888,999),         *
                RECOVER=YES
         DFHSRT TYPE=USER,                *
                ABCODE=020
         DFHSRT TYPE=FINAL
         END
```

Figure 55. System recovery table—example

Chapter 33. TCT—terminal control table

This chapter describes the terminal control table and the macro instructions you use to create it.

All VTAM connected terminals, intersystem communication links, and multiregion operation links must be defined using **resource definition online (RDO)**. See “Devices supported” on page 217 for details of VTAM terminals supported by RDO.

How this chapter is organized

This chapter begins with an introduction to the TCT and its macros, followed by the reference information for the TYPE=INITIAL and TYPE=GROUP macros. The chapter is then divided into sections (or sub-topics), according to the telecommunications access method.

The sections are as follows:

- Logical device codes (page 289)
- Sequential devices (page 294)
- Remote terminals for transaction routing (page 298)

Introduction to the TCT

A CICS system can communicate with terminals, sequential devices, logical units, and other systems. The TCT defines each of the devices in the configuration. Each TCT entry defines the optional and variable features of the device to CICS, and specifies what optional and variable features of CICS are to be used.

CICS uses a **telecommunication access method** to communicate with terminals. This may be **VTAM** or **SAM**; you may use one or both of these in your system. Note that logical units supporting logical device codes require DFHTCT macros, even though they are VTAM devices.

A **terminal** can be a telecommunication device, for example, an IBM 3279 Color Display Station, or a subsystem, for example an IBM 4700 Finance Communication System. Terminals can be local (channel-attached) or remote (link-attached).

You can use a **sequential device** to simulate a CICS terminal. You can define a card reader or punch, line printer, direct access storage device (disk drive), or magnetic tape drive as a sequential device.

A **logical unit (LU)** is a port through which a user of an SNA network gains access to the network facilities.

A **system** can be, for example, another CICS system, an IBM 8815 Scanmaster, an IBM Displaywriter, or an APPC/PC. Intercommunication with CICS systems can be:

- Between different processors (**intersystem communication** or **ISC**), using the LUTYPE 6.1 or LUTYPE 6.2 protocols, or using an intermediate system as an **indirect link**. (Intercommunication with non-CICS systems also uses ISC.)
- Within the same processor (**multiregion operation** or **MRO**), using interregion communication (IRC). (You can also use LUTYPE 6.2 ISC within the same processor.)

There are three ways in which you can create TCT entries, and install them in the TCT.

1. By coding **DFHTCT macros**, assembling them, and selecting the resulting TCT by using the TCT operand at system initialization. This way, TCT entries can be installed at system initialization only.
2. By using **resource definition online (RDO)** to create resource definitions in the CICS system definition (CSD) file. However, you ***must*** use RDO for VTAM-connected terminals (local and remote), for VSE consoles, and for MRO and ISC links and sessions. See Chapter 21, “TERMINAL” on page 183 for more information on defining terminals using RDO.
3. By using RDO and **autoinstall** (for VTAM-connected terminals only). See Chapter 9, “Autoinstall for VTAM terminals” on page 107 for information about autoinstall for terminals.

If you have terminals connected by other access methods, you ***must*** use DFHTCT macros, which are described here.

DFHTCT macro types

The DFHTCT macros you code depend on the device you are defining, and on the access method you are using. You always start with one of these:

`DFHTCT TYPE=INITIAL,...` (See page 288)

There is a special macro to use when you assemble the TCT to migrate RDO-eligible definitions to the CSD:

`DFHTCT TYPE=GROUP,...` (See page 289)

You can define your devices in any order you want. Each device needs one or more macros, and these sometimes have to be in a particular order. We tell you when this is the case. The macros you need for each type of device or system are as follows:

Table 52. DFHTCT macro types

VTAM terminals.	For guidance, see Chapter 21, "TERMINAL" on page 183.

Logical device codes.	`DFHTCT TYPE=LDC,...`
	`DFHTCT TYPE=LDCLIST,...`

Remote terminals, for transaction routing.	`DFHTCT TYPE=REMOTE,...`
	
	or:
	`DFHTCT TYPE=REGION,...`
	`DFHTCT TYPE=TERMINAL,...`

At the very end of your macros you code:

```
DFHTCT TYPE=FINAL
END       (This macro is described on page 243.)
```

Note on SYSIDNT and TRMIDNT operands: CICS accepts both uppercase and lowercase characters for SYSIDNT and TRMIDNT, but the lowercase characters are not checked for duplication. Assembling a TCT containing lowercase SYSIDNT or TRMIDNT will result in an MNOTE.

If you want duplicate checking, you should use only uppercase characters for SYSIDNT and TRMIDNT.

Note on assembling the TCT: The assembly and link-edit of a TCT will lead to the creation of two separate load modules. Assembly of a suffixed TCT (source name DFHTCTxx) produces a single text file. However, when this is link-edited into a load library, two members are created:

1. DFHTCTxx, which contains the non-RDO-eligible definitions in control block format
2. DFHRDTxx, which contains the RDO-eligible (VTAM terminal and system) definitions in RDO command format

This will happen, *whether or not you intend to use RDO*. You need to be aware of the existence of these two tables if you have to copy or move assembled TCT tables between load libraries.

If you reassemble the TCT after starting CICS, any changes will be picked up at a warm or emergency start.

Control section—DFHTCT TYPE=INITIAL

You code one DFHTCT TYPE=INITIAL macro before all the macros that define your resources. The TYPE=INITIAL macro has two purposes:

1. To establish the area of storage into which the TCT is assembled
2. To specify information that applies to the whole TCT, or to the individual non-VTAM entries (and any VTAM-LDC definitions)

Table 53. DFHTCT TYPE=INITIAL

	DFHTCT	TYPE=INITIAL [,ACCMETH=(<u>[VTAM,]NONVTAM</u>] [[,ERRATT={<u>NO</u>|([LASTLINE] [,INTENSIFY] [,{BLUE|RED|PINK|GREEN |TURQUOISE|YELLOW|NEUTRAL}] [,{BLINK|REVERSE|UNDERLINE}])}] [,MIGRATE={<u>YES</u>|COMPLETE} [,SUFFIX=xx] <u>Intercommunication Only:</u> [,SYSIDNT=name]

Note: For general information about TYPE=INITIAL macros, see "TYPE=INITIAL" on page 242.

ACCMETH=(<u>[VTAM,]NONVTAM</u>)
This specifies the access methods required in the running CICS system.

<u>VTAM</u>
Specify this if you are using VTAM as an access method, even though you must define VTAM devices with the CEDA transaction.

<u>NONVTAM</u>
Specify this if you are using telecommunications access methods other than VTAM, that is, BSAM (for sequential devices).

Note: The default is to assume *both* VTAM and NONVTAM.

ERRATT={<u>NO</u>|([LASTLINE][,INTENSIFY] [,{BLUE|RED|PINK|GREEN|TURQUOISE|YELLOW| NEUTRAL}][,{BLINK|REVERSE| UNDERLINE}])}
Indicates the way error messages are displayed on all 3270 display screens. You can either leave it to default to NO, or specify any combination of LASTLINE, INTENSIFY, one of the colors, and one of the highlights. Specifying INTENSIFY, one of the colors, or one of the highlights forces LASTLINE.

Any attributes that are not valid for a particular device will be ignored.

<u>NO</u>
Any error message is displayed at the current cursor position and without any additional attributes.

LASTLINE
Any error message is displayed starting at the beginning of the line nearest the bottom of the screen, such that the message will fit on the screen.

Warning: If messages are received in quick succession, they will overlay one another. The earlier messages may disappear before the operator has read them.

INTENSIFY
Error messages are intensified, and are placed on the last line of the screen.

BLUE|RED|PINK|GREEN|TURQUOISE|YELLOW|NEUTRAL
Error messages are shown in the color specified, and on the last line of the screen.

BLINK|REVERSE|UNDERLINE
Error messages are highlighted, and on the last line of the screen.

MIGRATE={YES|COMPLETE}
This operand controls the building of TCT entries for VTAM devices that are **eligible** for resource definition online (RDO). The only way RDO-eligible resources may be moved to the CSD from the macro source is to use DFHCSDUP, as described under YES below. For information about migrating macro definitions to the CSD, see the *CICS Migration Guide*.

YES
YES indicates that you want to generate the necessary data to migrate your RDO-eligible resources. The records generated from the macro source are designed to be used as input to the DFHCSDUP utility program. An MNOTE warning message is issued for each RDO-eligible resource. The DFHCSDUP MIGRATE command will convert them into resource definitions on the CSD. These can then be managed using RDO.

COMPLETE
Use of COMPLETE means that TCT entries are not generated from the macro source for any RDO-eligible devices. For each one, the assembly produces an MNOTE. This means that you can keep your TCT macro source code after you have migrated your definitions.

If you continue to assemble a TCT for resources that are not eligible for RDO, you should continue to use MIGRATE=COMPLETE.

SYSIDNT={CICS|name}
This 1- to 4-character name is a private name that the CICS system uses to identify itself. If you use DFHTCT TYPE=REGION macros to define remote terminals, you must code this operand. It is used to determine whether a remote or a local TCT terminal entry will be generated from each TYPE=TERMINAL macro following the TYPE=REGION macro. If the SYSIDNT on the TYPE=REGION macro is the same as the SYSIDNT on the TYPE=INITIAL macro, a local definition will be generated. If the SYSIDNT on the TYPE=REGION macro is different from the SYSIDNT on the TYPE=INITIAL macro, a remote definition will be generated.

The value you code for this operand is used to define the name of the local region during assembly of the TCT only. You must also define the name of the local region, for execution purposes, using the SYSIDNT parameter of the DFHSIT macro or as an initialization override.

Migrating TCT definitions—DFHTCT TYPE=GROUP

Use this macro to name the groups into which TCT definitions will be put when you migrate to resource definition online. This macro can appear as many times as required and at any point in the macro source. Each time it appears, it defines the CSD group into which subsequent definitions will be put until the next DFHTCT TYPE=GROUP macro occurs.

Table 54. DFHTCT TYPE=GROUP

	DFHTCT	TYPE=GROUP [,GROUP=name]

GROUP=name
Code this with the name of the group to which subsequent definitions will be migrated. The name can be up to eight alphanumeric characters, but must not begin with DFH. The default name is TCTxx where xx is the value coded for SUFFIX in the DFHTCT TYPE=INITIAL macro. If an error is found, the existing group name continues.

If a group with the name you specify does not already exist, it will be created. If it does exist, subsequent definitions will be added to it.

For details of how to migrate your TCT to the CSD, see Appendix G, “Migrating the TCT to the CSD” on page 375.

Logical device codes

Certain types of logical unit may be used to gain access to more than one resource within a subsystem. For example, a card punch device may be attached to a 3770 logical unit: the CICS application program can direct punch output, through BMS, via the 3770 to the card punch device. The facility provided by CICS to permit communication to devices within logical units of this type is the logical device code (LDC).

Although these are VTAM units, they require macro definition, unlike other VTAM devices.

The logical units that support LDCs are:

3601 logical unit
3770 batch logical unit
3770 batch data interchange logical unit
3790 batch data interchange logical unit
LUTYPE 4 logical unit

To reference such a device in a CICS application program, or in the CMSG transaction for message switching, you specify an LDC mnemonic which CICS will translate into a numeric LDC value. When CICS sends an output data stream to the logical unit, it includes the LDC value in the function management header (FMH). When the logical unit receives the data stream, it uses the LDC value to determine which component is to receive the output, or to perform some standard action.

Each LDC mnemonic to be referenced must be defined in the TCT, optionally with its associated LDC value and certain device characteristics for use by BMS functions. Such LDC information is contained in either the **system LDC table**, or in an **extended local LDC list**. You code the following DFHTCT macros to specify the system LDC table or an extended local LDC list:

- Code DFHTCT TYPE=LDC macro(s) to generate entries in the system LDC table. You may generate certain default LDC entries provided by CICS. For example,

  ```
  DFHTCT TYPE=LDC,LDC=SYSTEM
  ```

  will generate the following entries in the system LDC table:

Table 55. System LDC table entries

LDC mnem-onic	LDC value	Device	Pagesize (row,column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

You may also define LDCs specifically to add LDC entries to the system LDC table. For example,

```
DFHTCT TYPE=LDC,
       LDC=XX,
       DVC=BLUPRT,
       PGESIZE=(12,80),
       PGESTAT=PAGE
DFHTCT TYPE=LDC,
       LDC=YY,
       DVC=BLUPCH,
       PGESIZE=(1,80),
       PGESTAT=AUTOPAGE
```

will add the following entries to the system LDC table:

Table 56. System LDC table entries defined by LDCs

LDC mnem-onic	LDC value	Device	Pagesize (row,column)	PGESTAT
XX	48	Batch LU printer	12,80	PAGE
YY	32	Batch LU card output	1,80	AUTOPAGE

- Instead of the system LDC table, you may code the following series of DFHTCT TYPE=LDC macros to create an extended local LDC list. Default entries may also be generated. For example,

  ```
  LDC1  DFHTCT TYPE=LDC,LOCAL=INITIAL
  *  the next line generates default CO,R1,H1,P1 LDCs
     DFHTCT TYPE=LDC,LDC=BCHLU
     DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,PGESIZE=(6,30)
     DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,PGESIZE=(1,80)
     DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,PGESIZE=(1,132)
     DFHTCT TYPE=LDC,LOCAL=FINAL
  ```

  will generate an extended local LDC list named LDC1 containing the following entries:

Table 57. Extended local LDC list entries

LDC mnem-onic	LDC value	Device	Pagesize (row,column)
CO	0	Console medium or default printer data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
AA	48	BLUPRT batch LU printer	6,30
BB	32	BLUPCH batch LU card output	1,80
CC	0	BLUCON batch LU console printer	1,132

When you are defining a logical unit in the TCT, you can specify its LDCs in either of two ways:

1. Code a DFHTCT TYPE=LDCLIST macro to define a local list of LDC mnemonics (and optionally their LDC values); for example,

```
LDC2 DFHTCT TYPE=LDCLIST,
            LDC=(DS,JP,PB=5,LP,MS)
```

In the RDO TYPETERM resource definition for the logical unit, you specify in the LDCLIST keyword the name of the local list as defined by the DFHTCT TYPE=LDCLIST macro. For example:

```
CEDA DEFINE TYPETERM(3600)
     GROUP(name)
     LDCLIST(LDC2)
     and any other parameters you require
```

has associated the LDCs DS, JP, PB, LP, and MS with the 3601 logical unit which you are defining. The LDC values may either be specified in the local list, or are obtained from the system LDC table. If BMS uses these LDC mnemonics, their page size and page status must also be available from the system LDC table.

Note: A local list defined by a DFHTCT TYPE=LDCLIST macro may be shared by a number of 3601, LUTYPE 4 and batch logical units.

2. In the RDO TYPETERM resource definition for the logical unit, you specify in the LDCLIST keyword the name of an extended local LDC list. For example:

```
LDC1 DFHTCT TYPE=LDC,LOCAL=INITIAL
     DFHTCT TYPE=LDC,LDC=BCHLU
     DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
        PGESIZE=(6,30)
     DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
        PGESIZE=(1,80)
     DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
        PGESIZE=(1,132)
     DFHTCT TYPE=LDC,LOCAL=FINAL
```

has associated the LDCs CO, R1, H1, P1, AA, BB, CC with the batch logical unit that you are defining. Their LDC values and device characteristics for BMS functions are described in the extended local LDC list that is named LDC1.

When CICS requests an output or message switching operation using a particular LDC mnemonic for a logical unit, resolution of the mnemonic is attempted from the list (whichever form) as specified by the LDCLIST keyword of the RDO TYPETERM resource definition. If the LDC is not located in the local list or in the extended local list, the LDC specified is not valid for that terminal entry. In this case, X'00' is inserted in the logical device code portion of the FMH, and no destination name is inserted.

When a BMS function is requested for an LDC, and the LDC mnemonic is successfully resolved, the device characteristics (for example, device name and destination name) are accessed for the BMS function. If the LDC is in an extended local LDC list, these characteristics lie in the located extended local list entry. Otherwise, the system LDC table is searched for the LDC and the associated device characteristics.

Logical device codes—DFHTCT TYPE=LDC macro

The DFHTCT TYPE=LDC macro may only be used with 3600, LUTYPE4, 3770 batch logical unit, and 3770/3790 batch data interchange logical units.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is specified in the TCT definition.

Table 58. DFHTCT TYPE=LDC

	DFHTCT	TYPE=LDC [,DSN=destination-name] [,DVC=(device-type,sub-address)] [,LDC={<u>SYSTEM</u>|LUTYPE4|3600| BCHLU|(aa[=nnn])} [,LOCAL={INITIAL|FINAL}] [,PGESIZE=(row,column)] [,PGESTAT={<u>AUTOPAGE</u>|PAGE}]

name
Code this with the name of the extended local LDC list. It should be the same as that specified in the LDCLIST keyword of the RDO TYPETERM resource definition, and is only required if LOCAL=INITIAL is coded.

TYPE=LDC
Code this if an LDC is being defined to the system LDC table or to the extended local LDC list.

DSN=destination-name
Code this with the name to be used by BMS for destination selection for the batch data interchange logical unit. See the relevant CICS subsystem guides for further information on destination selection.

DVC=(device-type,sub-address)
Code this with the device type associated with the LDC to be used for a BMS request. This operand can only be coded in conjunction with the LDC=aa[=nnn] operand.

device-type
May be coded as follows:

Table 59. DVC=device-type entries

Device type	Explanation
3604	Keyboard display
3610	Cut-forms document printer or journal printer (including the document/journal printer of a 3612)
3612	Passbook portion of a 3612
3618	Currently selected carriage
3618P	Primary carriage
3618S	Secondary carriage
3618B	Both carriages
BLUCON	Batch logical unit console printer
BLUPRT	Printer component of a batch logical unit
BLURDR	Card input component of a batch logical unit
BLUPCH	Card output component of a batch logical unit
WPMED1	Word processing medium 1
WPMED2	Word processing medium 2
WPMED3	Word processing medium 3
WPMED4	Word processing medium 4

The device types BLUPRT, BLURDR, BLUPCH, and BLUCON are devices attached to a batch, batch data interchange, or LUTYPE4 logical unit.

The WPMED1, 2, 3, and 4 options apply to LUTYPE4 logical units only. The component to which these options apply is defined by the particular type 4 logical unit implementation.

sub-address
Code this with the media sub-address. The range is 0 through 15, with a default of 0. A value of 15 indicates any sub-address. The sub-address differentiates between two units of the same device type (for example, BLUPRT,0 and BLUPRT,1), which could be two print components attached to one logical unit.

LDC={<u>SYSTEM</u>|LUTYPE4|3600|BCHLU|(aa[=nnn])}
Code this with the LDC mnemonic and numeric value to be defined. Only the LDC=aa[=nnn] option can be used in conjunction with the DVC, PGESIZE, and PGESTAT operands.

<u>SYSTEM</u>
The following system-default LDCs for 3600, batch, and LUTYPE4 logical units are to be established:

Table 60. System default LDCs

LDC mnem-onic	LDC value	Device	Pagesize (row, column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

LUTYPE4
System-default LDC mnemonics are to be established for an LUTYPE4 (word processing) logical unit. These consist of the CO, R1, P1, H1, W1, W2, W3, and W4 mnemonics, the corresponding LDC values, and the appropriate page sizes.

3600
System-default LDC mnemonics for the 3600 are to be established. These consist of the DS, JP, PB, LP, and MS mnemonics, the corresponding LDC values, and the appropriate page-size and page-status.

BCHLU
System-default LDC mnemonics for a batch logical unit are to be established. These consist of the CO, R1, P1, and H1 mnemonics, the corresponding LDC values, and the appropriate page-size and page-status.

aa The two-character mnemonic to be used for this LDC.

nnn
The numeric value to be associated with the LDC in the system or extended local LDC list. The value in the system list is used as a default value for this LDC if a value is not found in a local LDC list (that is not extended) associated with a TCTTE. A value must be specified for

3600 devices. A value need not be specified for batch, batch data interchange, or LUTYPE4 logical units, but if one is specified it must correspond to the LDC value for the device type.

LOCAL={INITIAL|FINAL}
An extended local LDC list is to be generated.

INITIAL
This is the start of an extended local LDC list.

FINAL
This is the end of an extended local LDC list.

Note: LOCAL=INITIAL or FINAL may not be coded in the same DFHTCT TYPE=LDC macro as other operands. All DFHTCT TYPE=LDC entries coded after LOCAL=INITIAL and before LOCAL=FINAL will form part of one extended local LDC list; the entries coded outside the structure of this group will be added to the system LDC table. See the extended local LDC list example below.

The following is an example of an extended local LDC list:

```
LDCA   DFHTCT TYPE=LDC,LOCAL=INITIAL
       DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,      *
       PGESIZE=(6,30)
       DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,      *
       PGESIZE=(1,80)
       DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,      *
       PGESIZE=(1,132),PGESTAT=AUTOPAGE
       DFHTCT TYPE=LDC,LOCAL=FINAL
```

PGESIZE=(row,column)
Code this with the logical page size to be used with this LDC when BMS requests are processed.

row × column must not exceed 32767.

PGESTAT={<u>AUTOPAGE</u>|PAGE}
Indicates whether the device is to use autopaging or not. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page, before requesting the next page to be delivered.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET, does not use autopaging.

AUTOPAGE
Specify this for printers.

PAGE
Specify this for displays.

If the default PGESIZE or PGESTAT values provided by the LDC operand are to be overridden, a specific LDC should be coded with the mnemonic to be overridden. This overriding LDC must be coded in the LDC table prior to the LDC operand being coded.

PGESTAT=AUTOPAGE may be used to override the AUTOPAGE(NO) specification of the RDO TYPETERM resource definition.

Logical device codes—DFHTCT TYPE=LDCLIST

The DFHTCT TYPE=LDCLIST macro, which may be used with 3600, LUTYPE4, and batch logical units, allows you to build a common list of logical device codes (LDCs) to be shared by more than one TCTTE.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is coded in the TCT definition.

Table 61. DFHTCT TYPE=LDCLIST

listname	DFHTCT	TYPE=LDCLIST ,LDC=(aa [=nnn][,bb[=nnn][,cc[=nnn],...)

listname
Is the required name of the LDC list. This name is referenced by TCTTEs through the LDCLIST keyword of the RDO TYPETERM resource definition.

TYPE=LDCLIST
An LDC list is being defined.

LDC=(aa[=nnn][,bb[=nnn]][,cc[=nnn]][,...])
Code this with the LDCs (mnemonics and, optionally, the LDC numeric value) in this list.

(aa[=nnn][,bb[=nnn]] [,cc[=nnn]][,...])
Generates the LDCs in the list.

aa,bb,cc...
The two-character mnemonics of the LDCs in this list.

nnn
A decimal value in the range 1 through 255 to be associated with an LDC. If a value is not specified, the system default value from the table defined by the DFHTCT TYPE=LDC macro, is used for this LDC. This value need not be coded for a batch or LUTYPE4 logical unit, but if it is, it must correspond to the LDC value for the device. LDCs for devices attached to a batch or LUTYPE4 logical unit are listed under the LDC parameter of the DFHTCT TYPE=LDC macro.

LDC TCT examples

The IBM 3770 Data Communication System and the IBM 6670 Information Distributor: The *CICS/OS/VS IBM 3767/3770/6670 Guide* provides information for CICS users who intend to install a CICS system that communicates with an IBM 3767 Communication Terminal, a 3770 Communication System, or a 6670 Information Distributor.

LDCs for 3770 batch logical unit TCT example

```
DFHTCT TYPE=LDC,                           *
       LDC=XX,                             *
       DVC=BLUPRT,                         *
       PGESIZE=(12,80),                    *
       PGESTAT=PAGE
DFHTCT TYPE=LDC,                           *
       LDC=YY,                             *
       DVC=BLUPCH,                         *
       PGESIZE=(1,80),                     *
       PGESTAT=AUTOPAGE
DFHTCT TYPE=LDC,                           *
       LDC=SYSTEM
```

Figure 56. LDCs for 3770 batch logical unit TCT example

6670 LUTYPE 4 TCT example You must use RDO to define the terminal. For guidance, refer to the LDCLIST keyword of the TYPETERM option on page 227.

```
LDCS   DFHTCT  TYPE=LDC,LDC=SYSTEM
LDC1   DFHTCT  TYPE=LDC,LOCAL=INITIAL
       DFHTCT  TYPE=LDC,DVC=(BLUCON,01),             *
               PROFILE=DEFAULT,LDC=PC,               *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPRT,02),             *
               PROFILE=BASE,LDC=PP,                  *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPRT,08),             *
               PROFILE=BASE,LDC=P8,                  *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPRT,08),             *
               PROFILE=DEFAULT,LDC=DP,               *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPCH,03),             *
               PROFILE=JOB,LDC=PM,                   *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPCH,03),             *
               PROFILE=DEFAULT,LDC=DM,               *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED1,04),             *
               PROFILE=WPRAW,LDC=P1,                 *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED1,04),             *
               PROFILE=DEFAULT,LDC=D1,               *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED2,05),             *
               PROFILE=OII1,LDC=P2,                  *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED2,05),             *
               PROFILE=DEFAULT,                      *
               LDC=D2,PGESIZE=(50,80),               *
               PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED3,06),             *
               PROFILE=OII2,                         *
               LDC=P3,PGESIZE=(50,80),               *
               PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED4,07),             *
               PROFILE=OII3,LDC=P4,                  *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,LOCAL=FINAL
```

Figure 57. 6670 Lutype 4 TCT example

Sequential devices

CICS uses BSAM to control sequential devices such as card readers, line printers, magnetic tape units, and DASD to simulate terminals. Only unblocked data sets can be used with BSAM.

These “sequential terminals” may be used before actual terminals are available, or during testing of new applications.

To define a sequential device, code the following macro instructions:

```
DFHTCT TYPE=INITIAL,
       ACCMETH=(NONVTAM)    defining the access
                            method
```

(Define the following macro instructions contiguously.)

```
DFHTCT TYPE=SDSCI,
       DSCNAME=isadscn,     defining the input
       DEVADDR=SYSmmm        data set
DFHTCT TYPE=SDSCI,
       DSCNAME=osadscn,     defining the output
       DEVADDR=SYSnnn        data set
DFHTCT TYPE=LINE,
       ISADSCN=isadscn,
       OSADSCN=osadscn, ...
DFHTCT TYPE=TERMINAL,
       TRMIDNT=name, ...
```

The two data sets defined by the DFHTCT TYPE=SDSCI macros simulate a CICS terminal known by the name specified in the TRMIDNT operand of the DFHTCT TYPE=TERMINAL macro. The DSCNAMEs of the input and output data sets must be specified in the ISADSCN and OSADSCN operands of the DFHTCT TYPE=LINE macro respectively.

The end of data indicator (EODI) for sequential devices may be altered using the SIT parameter EODI.

JCL for sequential devices

The DEVADDR operands on the DFHTCT TYPE=SDSCI macros specify the symbolic unit address of the ASSGN job control statements that you must provide in the CICS startup job stream:

```
//  ASSGN SYSmmm ...                input data set
//  ASSGN SYSnnn ...                output data set
```

where SYSmmm is the data set where input from the simulated terminal is submitted, and SYSnnn is the data set where output to the simulated terminal is sent.

If DASD data sets are used to simulate a CICS terminal, you must also provide DLBL and EXTENT job control statements. The DSCNAME operands of the DFHTCT TYPE=SDSCI macros specify the file names of the input and output data sets respectively.

```
//  DLBL   isadscn, ...       )    input
//  EXTENT SYSmmm,  ...       )     data
//  ASSGN  SYSmmm,  ...       )     set

//  DLBL   osadscn, ...       )    output
//  EXTENT SYSnnn,  ...       )     data
//  ASSGN  SYSnnn,  ...       )     set
```

If you use the DFHTCT TYPE=GPENTRY macro, SYSmmm and SYSnnn as specified in the GPSEQLU operands are the symbolic unit addresses of the input and output data sets respectively. If DASD data sets are used to simulate a CICS terminal, INname and OUTname as specified in the GPNAME operands specify the file names of the input and output data sets respectively.

Sequential devices—DFHTCT TYPE=SDSCI

Table 62. DFHTCT TYPE=SDSCI

	DFHTCT	TYPE=SDSCI ,DEVICE=device ,DSCNAME=name ,DEVADDR=SYSnnn [,BLKSIZE=length]

BLKSIZE=length
Code this with the maximum length (in bytes) of a block.

The default is BLKSIZE=0. If this operand is omitted, the block size can be specified in the data definition (DD) statement associated with the data set. A more detailed explanation of this operand is given in the *VSE/ESA System Macro Reference* manual.

DEVICE=device
One of the following values may be coded:

- For card readers: **{1442|2501|2520|2540|2560|2596| 3505|3525|5425}**
- For line printers: **{1403|1404|1443|1445|3203|3211|5203}**
- For disk (DASD): **{2314|3330|3340|3350|DASD|DISK}**
- For tapes: **TAPE**.

  The TAPE specification generates tape work files for both the input and the output data sets. Note that if an input tape with an expired label is used, the header may be rewritten, causing the first data records to be destroyed.

DSCNAME=name
The name of either the input or the output data set. If you are defining the input data set, ISADSCN on the DFHTCT TYPE=LINE macro must match the name that you specify: if you are defining the output data set, OSADSCN on the DFHTCT TYPE=LINE macro must match it.

Sequential devices—DFHTCT TYPE=LINE

Table 63. DFHTCT TYPE=LINE

	DFHTCT	TYPE=LINE ,ACCMETH={SAM|BSAM| SEQUENTIAL} ,INAREAL=length ,ISADSCN=input-name ,OSADSCN=output-name ,TRMTYPE={U/R|CRLP|DASD|TAPE} [,LINSTAT='OUT OF SERVICE'] [,TCTUAL={0|length}]

ACCMETH={SAM|BSAM|SEQUENTIAL}
Specify SAM, BSAM, or SEQUENTIAL—they are equivalent in CICS.

INAREAL=length
Code this with the message input area length. The value should be equal to the length of the longest initial logical record of a transaction that may include multiple physical records.

ISADSCN=name
The name of the input data set. The TYPE=SDSCI DSCNAME operand for the input data set must match this.

LINSTAT='OUT OF SERVICE'
The line is to be initiated with an 'out of service' status.

The default is 'in service'.

OSADSCN=name
The name of the output data set. The TYPE=SDSCI DSCNAME operand for the output data set must match this.

TCTUAL={0|length}
Indicates the length, in bytes (0 through 255), of the user area (the process control information field or PCI) for all terminal entries (TCTTEs) associated with this line. It should be made as small as possible. The TCT user area is initialized to zeros at system initialization. If fields of different (variable) lengths are desired, the TCTUAL value can be specified in one or more TYPE=TERMINAL macro instructions for terminals associated with this line.

TRMTYPE=(U/R|CRLP|DASD|TAPE)
Indicates the sequential device type:

U/R	Any reader or printer.
CRLP	A card reader and a line printer.
DASD	A direct access storage device.
TAPE	A magnetic tape device.

Sequential devices—DFHTCT TYPE=TERMINAL

Table 64. DFHTCT TYPE=TERMINAL

	DFHTCT	TYPE=TERMINAL [,LPLEN={120|value}] [,PGESIZE=9lines,columns)] [,TCTUAL= {number-specified-in-TYPE=LINE| number}] [,TRANSID= transaction-identification-code] [,TRMPRTY={0|number}] [,TRMSTAT={TRANSACTION| (status[,s,...)}] [,USERID=userid]

LPLEN={120|value}
Controls the length of the print line for SAM output line printers. If no NL symbols are found in a segmented write, the print line length is the LPLEN value. The default is LPLEN=120.

PGESIZE=(lines,columns)
The default page size for a 1403 or CRLP terminal is (12,80). You must code PGESIZE if BMS is required for a device that has TRMTYPE=DASD specified. In this case, you must specify the number of lines and columns you wish to use. These two values multiplied together must equal the value specified for INAREAL.

lines × columns must not exceed 32767.

TCTUAL={number-specified-in-TYPE=LINE |number}
Indicates the length, in bytes (0 through 255), of the user area (the process control information field or PCI) for the terminal entry (TCTTE) associated with this terminal. It should be made as small as possible. The TCT user area is initialized to zeros at system initialization.

Use the TCTUAL operand of the DFHTCT TYPE=TERMINAL macro if fields of different (variable) lengths are desired for terminals associated with this line. In any case, the PCI field is generated for each terminal after the last terminal entry of the last line. The address of the PCI field is located at TCTTECIA; the length is located at TCTTECIL.

TRANSID=transaction-identification-code
Code this with a 1-to 4-character transaction code. This code specifies a transaction that is to be initiated each time input is received from the terminal when there is no active task.

If a TRANSID is not specified in the TCTTE, the TRANSID in a RETURN command from the previous transaction will be used. Otherwise, the first one to four characters of the data passed in the TIOA are used as the transaction code. A delimiter is required for transaction identifications of less than four characters.

TRMIDNT=name
Code this with a unique 4-character symbolic identification of each terminal. The identification supplied will be left-justified and padded with blanks to four characters if less than four characters are supplied.

The value CERR is reserved, as this is the identification generated for the error console.

TRMPRTY={0|number}
Establishes the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, and must not exceed 255.)

TRMSTAT={TRANSACTION|(status,...)}
Code this with the types of activity that may occur at a given terminal. This terminal status is initially set in the TCTTE and is a combination of the processing status and the service status. The default is TRMSTAT=TRANSACTION.

TRANSACTION
A terminal with TRANSACTION status is used in the processing of transactions such as inquiries or order entries. A display station or a hard-copy terminal, to which no messages are sent without a terminal request, and through which transactions are entered, is a TRANSACTION terminal.

INPUT
Indicates a terminal that can send messages to, but cannot receive messages from, CICS.

Note: System messages may be routed to an input terminal under conditions such as invalid transaction identification and ATP batch count. This causes DFHTACP to be scheduled. To handle this situation, you should code a DFHTEP to perform any user-required action.

'OUT OF SERVICE'
Indicates a terminal that can neither receive messages nor transmit input. Such terminals are not polled by CICS. The 'OUT OF SERVICE' parameter can be used in combination with any status setting.

All terminals except the master terminal can be designated as 'OUT OF SERVICE'. When appropriate, the terminals can be placed in service by the master terminal and polling will be resumed.

RECEIVE
Indicates a terminal to which messages are sent but from which no input is allowed. An example of this type of terminal is one that is located in a remote location, such as a warehouse, and is unattended, but may receive messages. Automatic transaction initiation is implemented as for TRANSCEIVE, below.

TRANSCEIVE
A terminal with TRANSCEIVE status is a TRANSACTION terminal to which messages are sent automatically. The automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If the terminal status is TRANSCEIVE and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

USERID=userid
Code this to specify a user identifier for devices such as printers that are unable to sign on using CESN. (You can also specify USERID for a display device, in which case the display is permanently signed on. Operators are unable to sign on.) You must code this operand if you want to use preset security with this device. All access to protected resources depends on USERID.

The userid is referred to in security error messages, security violation messages, and the audit trail. It must be defined to the security manager.

Userid must be a unique 1-to 8-character user identification. (A–Z 0–9 # $ and @ are acceptable characters.)

Sequential devices method 2—DFHTCT TYPE=GPENTRY

```
DFHTCT      TYPE=GPENTRY
            ,GPBLKSZ=(nnnnn,nnnnn)
            ,GPTYPE=(input-type,output-type)
            ,LININL=number
            [,GPNAME=(INname,OUTname)]
            [,GPSEQLU=(nnn,nnn)]
            [,TRMIDNT=xxxx]
            [,TRMSTAT=[{T|I|A|R}][X]]
            [,TRMUAL={0|number}]
```

GPBLKSZ=(nnnnn,nnnnn)
Code this to specify the block sizes of the input and output files respectively. The range is 20 through 32 000. For unit record devices, the block size specified must be the same as the device buffer size.

GPNAME=(INname,OUTname)
This code applies only to DASD sequential devices, and specifies the input and output VSE file names for DASD files. The name specified must be the same as in the DLBL job control statements.

GPSEQLU=(nnn,nnn)
This code applies to sequential devices except DASD, and specifies the system logical unit number to be assigned to the input and output files respectively. IPT and LST can be coded for unit record devices.

GPTYPE=(input-type,output-type)
Code this to specify the input and output device types.

- For tape, input and output: **TAPE**
- For DASD, input and output: **{3350|DISK|FBA}**

  The DISK keyword can be used for all DASD, but **must** be used for new DASD devices.
- For unit record devices:

  input-type: **{1442|2520|2540|3505|3525}**
  output-type: **{1403|1404|5203|1443|1445|3211}**

LININL=number
Code this to specify the terminal input area length. The number specified should be large enough to handle 80% of the input messages. The value in LININL must be greater than that in GPBLKSZ if the application program reuses the same message area for output.

TRMIDNT=xxxx
TYPE=TERMINAL
Code this with a unique four-character symbolic identification for each terminal. The terminal identification supplied is left-aligned and padded with blanks to four characters if fewer than four characters are supplied.

The name and destination identification in the destination control table, when applicable to terminal destinations, must be the same.

TRMSTAT=[{T|I|A|R}][X]
TYPE=TERMINAL
Code this with the types of activity that might occur at a given terminal. This terminal status is initially set in the TCTTE and is a combination of the processing status and the service status. The default is TRMSTAT=TRANSACTION.

For a description of the different types of status available, see the description for the TRMSTAT operand on page 296.

TRMUAL={0|number}
Code this to indicate the size of the terminal control table user area (TCTUA), if the TCTUA is to be used by application programs. Any information stored in the TCTUA is available to all transactions originated by this terminal. The maximum TRMUAL size is 255 bytes. It should be made as small as possible.

Example:

```
TRMUAL=(50)
```

2540 card reader-punch/1403 printer example

```
         DFHTCT TYPE=SDSCI,                                  *
                DEVADDR=SYSIPT,                              *
                DEVICE=2540,                                 *
                DSCNAME=READER
         DFHTCT TYPE=SDSCI,                                  *
                DEVADDR=SYSLST,                              *
                DEVICE=1403,                                 *
                DSCNAME=PRINTER
         DFHTCT TYPE=LINE,                                   *
                ACCMETH=BSAM,                                *
                TRMTYPE=CRLP,                                *
                ISADSCN=READER,                              *
                OSADSCN=PRINTER,                             *
                INAREAL=80
         DFHTCT TYPE=TERMINAL,                               *
                TRMIDNT=SAMA,                                *
                TRMSTAT=TRANSCEIVE
```

Figure 58. Example of coding to create TCT entries to define a 2540 card reader-punch

2314 disk example

```
         DFHTCT TYPE=SDSCI,                                  *
                DEVADDR=SYS001,                              *
                DEVICE=2314,                                 *
                DSCNAME=DISKIN1
         DFHTCT TYPE=SDSCI,                                  *
                DEVADDR=SYS006,                              *
                DEVICE=2314,                                 *
                DSCNAME=DISKOT1
         DFHTCT TYPE=LINE,                                   *
                ACCMETH=SEQUENTIAL,                          *
                TRMTYPE=DASD,                                *
                ISADSCN=DISKIN1,                             *
                OSADSCN=DISKOT1,                             *
                INAREAL=80
         DFHTCT TYPE=TERMINAL,                               *
                TRMIDNT=SAMB,                                *
                TRMPRTY=11,                                  *
                TRMSTAT=(TRANSCEIVE,'OUT OF SERVICE')
```

Figure 59. Example of coding to create TCT entries to define a 2314 disk

Remote terminals for transaction routing

CICS can communicate with other systems that have similar communication facilities. We have called this sort of communication **CICS intercommunication**. You can read about it in the *CICS Intercommunication Guide*.

We sometimes refer to the **local** system and the **remote** system. When you are concerned with resource definition, the system where the TCT is installed is the local system. The system that is being defined in the TCT is the remote system.

Transaction routing enables terminals in one CICS system to invoke transactions in another CICS system. You can use transaction routing between systems connected by MRO or by an LUTYPE 6.2 link. There are two possible methods of defining the terminals using macros. (There is another method, only possible using RDO, called ‘shipping terminal definitions’. See “Terminals for transaction routing” on page 188.) The two macro methods are described below.

Creating remote definitions for terminals for transaction routing

The two methods of creating remote definitions for terminals to be used for transaction routing are:

- Method 1:

```
DFHTCT TYPE=REGION, ...   (one for each region)

DFHTCT TYPE=SDSCI, ...    (for non-VTAM terminals
                           only; ignored for remote
                           definitions)

DFHTCT TYPE=LINE, ...     (for non-VTAM terminals
                           only)

DFHTCT TYPE=TERMINAL, ... (for non-VTAM: one for
                           each terminal)
```

- Method 2:

```
DFHTCT TYPE=REMOTE, ...     (one for each terminal)
```

In method 1, you can use copybooks to include the same source code in the TCTs for local and remote systems. The information not needed (that is, the whole of the TYPE=SDSCI macro, and some of the TYPE=LINE and TYPE=TERMINAL macros) is discarded for remote entries.

Method 2 employs a single DFHTCT TYPE=REMOTE macro.

CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand, either on the TYPE=REGION, or on the TYPE=REMOTE macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) will be local. If they are different, the definition(s) will be remote.

These terminals cannot use transaction routing and therefore cannot be defined as remote:

- IBM 2260 terminals
- Pooled 3600 or 3650 Pipeline Logical Units
- VSE console

Note: BTAM is not supported in this release. To gain access to this release of CICS from BTAM terminals, define the BTAM terminals in an earlier release of CICS, and use transaction routing to gain access to the current release. BTAM terminals must be defined as remote resources in this release, and as local resources in the earlier release. More information about the definition of local BTAM terminals can be found in the documentation for earlier releases of CICS.

Remote terminals, method 1—DFHTCT TYPE=REGION

The DFHTCT TYPE=REGION macro introduces information about the named region. The information consists of DFHTCT TYPE=LINE and TYPE=TERMINAL macros. These macros must follow the DFHTCT TYPE=REGION macro. For a remote region, the DFHTCT TYPE=LINE macro will not generate a TCT line entry (TCTLE). Every terminal that will participate in transaction routing must be defined. Only certain DFHTCT macro types and operands are relevant in remote region definitions; all others will be ignored. The operands that are relevant are those listed in “Remote terminals, method 2—DFHTCT TYPE=REMOTE” on page 300.

Table 65. DFHTCT TYPE=REGION

	DFHTCT	TYPE=REGION
		,SYSIDNT={name|LOCAL}

SYSIDNT={name|LOCAL}
: Indicates the 4-character name of the system or region whose information starts or resumes here. SYSIDNT=LOCAL can be specified to indicate that the TYPE=TERMINAL definitions following it refer to the home region, as do all definitions preceding the first DFHTCT TYPE=REGION macro. The name of the home region (that is, the region in which this terminal control table will be used) is the value of the SYSIDNT operand of the DFHTCT TYPE=INITIAL macro. The name can instead be that of a previously defined MRO link or ISC link.

Remote terminals, method 1—DFHTCT TYPE=TERMINAL

Note: The DFHTCT TYPE=LINE macro and the additional operands of the DFHTCT TYPE=TERMINAL macro are valid, but are ignored if the SYSIDNT operand on the preceding DFHTCT TYPE=REGION macro indicates a remote region. (For details of the DFHTCT TYPE=LINE macro, see “Sequential devices” on page 294.)

Table 66. DFHTCT TYPE=TERMINAL

	DFHTCT	TYPE=TERMINAL ,ACCMETH=access-method ,SYSIDNT=name ,TRMIDNT=name ,TRMTYPE=terminal-type ,[,RMTNAME= {<u>name-specified-in-TRMIDNT</u>}]

ACCMETH=access-method
: Code this with the access method of the remote terminal.

RMTNAME={<u>name-specified-in-TRMIDNT</u>|name}
: Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal. (That is, in the TCT of the **other** system.) If this operand is omitted the name in the TRMIDNT operand is used.

SYSIDNT=name
: Indicates the 4-character name of the system or region that owns this terminal. This may be the local system or region (that is, the name defined in the TYPE=INITIAL macro), in which case the TCT entry created will be a local definition. It may be the name of a different system or region, in which case the TCT entry created will be a remote definition. This SYSIDNT must be the same as

the SYSIDNT on the TYPE=REGION macro that precedes this macro.

TRMIDNT=name
Specifies the 1- to 4-character name by which the terminal is known in ***this*** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
Code this with the terminal type.

Remote terminals, method 2—DFHTCT TYPE=REMOTE

Terminal entries for remote systems or regions can be defined to CICS using the DFHTCT TYPE=REMOTE macro as an alternative to defining them using DFHTCT TYPE=TERMINAL macro instructions in conjunction with a DFHTCT TYPE=REGION macro.

The expansion of the DFHTCT TYPE=REMOTE macro is independent of the region currently referenced.

Note: If the SYSIDNT operand indicates that the terminal is owned by the **home** region then all the operands of the DFHTCT TYPE=TERMINAL macro become valid on the DFHTCT TYPE=REMOTE macro and have the same meaning as for TYPE=TERMINAL. However, if (as is normally the case) the SYSIDNT operand indicates a remote region, the additional operands of DFHTCT TYPE=TERMINAL are valid on the DFHTCT TYPE=REMOTE macro, but are ignored. (For details of the DFHTCT TYPE=TERMINAL macro, see the *Resource Definition (Macro)* manual for CICS/VSE 2.3.

Table 67. DFHTCT TYPE=REMOTE

	DFHTCT	TYPE=REMOTE ,ACCMETH=access-method ,SYSIDNT=name ,TRMIDNT=name ,TRMTYPE=terminal-type ,[,RMTNAME= {name-specified-in-TRMIDNT}]

ACCMETH=access-method
Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT|name}
Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal. (That is, in the TCT of the ***other*** system.) If this operand is omitted the name in the TRMIDNT operand is used.

SYSIDNT=name
Specifies the name of the system or region that owns this terminal. The name must be the same as that used in the SYSIDNT operand of a previous TYPE=SYSTEM macro, or the TYPE=INITIAL macro.

TRMIDNT=name
Specifies the 1- to 4-character name by which the terminal is known in ***this*** system, that is, in the local system that owns this TCT, and that owns the transactions.

TRMTYPE=terminal-type
Code this with the terminal type.

CICS terminals list

This release of CICS is able to communicate with almost all previously supported terminals, either *directly* or *indirectly*, as described below.

New or current terminals will be directly supported by CICS Transaction Server for VSE/ESA Release 1 if they conform to the VTAM interface.

Because of the removal of support for BTAM, certain device types are not able to connect directly to CICS Transaction Server for VSE/ESA Release 1. CICS Transaction Server for VSE/ESA Release 1 provides support for such devices indirectly, through transaction routing from an earlier release of CICS.

The BTAM terminals affected are listed in Table 68 and described in more detail in “Details of BTAM terminals supported” on page 302.

Table 68 summarizes how terminals are supported in CICS Transaction Server for VSE/ESA Release 1.

Table 68 (Page 1 of 2). Summary of terminal support. List of IBM terminals and system types and how they are supported by CICS Transaction Server for VSE/ESA Release 1.

Directly supported by CICS Transaction Server for VSE/ESA Release 1 using VTAM	**Supported using transaction routing through earlier CICS; (BTAM Terminals).**
*3101 Display Terminal	1050 Data Communication System
*3230 Printer	2740 Communication Terminal
3268 Printer	2741 Terminal controller
*3270 Information Display System	2770 Data Communication System
3270 PC	2780 Data Transmission Terminal
3270 PC/G	2980 General Banking Terminal System
3270 PC/GX	3660 Supermarket System
3287 Printer	3735 Programmable Buffered Terminal
*3600 Finance Communication System	3740 Data Entry System
3630 Plant Communication System	3780 Data Communications Terminal
3640 Plant Communication System	5100 Portable Computer
3650 Retail Store System	5110 Portable Computer
3680 Programmable Store System	5230 Data Collection System
3730 Distributed Office Communication System	5260 Retail System
*3767 Communication Terminal	Communicating Magnetic Card
*3770 Data Communication System	Selectric Typewriter (CMCST)
3790 Communication System	Office System/6
4300 Processors	Series/1
*4700 Finance Communication System	System/3
*5280 Distributed Data System	System/7
*5520 Administrative System	System/23
5550 Administrative System	
*5937 Rugged Terminal	
*6670 Information Distributor	
8100 Information System	
8775 Display Terminal	
8815 Scanmaster	
*Displaywriter	
*Personal Computer, PS/2, PS/55	
*System/32	
*System/34	
*System/36	
*System/38	
AS/400	
*System/370 (inc 303x, 308x, and 3090™ processors)	
Teletypewriter Exchange Service (TWX 33/35)	

Table 68 (Page 2 of 2). Summary of terminal support. List of IBM terminals and system types and how they are supported by CICS Transaction Server for VSE/ESA Release 1.

Directly supported by CICS Transaction Server for VSE/ESA Release 1 using VTAM	**Supported using transaction routing through earlier CICS; (BTAM Terminals).**
World Trade Typewriter Terminal (WTTY)	
Note: * These terminals are also supported by BTAM.	

Details of BTAM terminals supported

This section provides a detailed account of the BTAM terminals supported by CICS Transaction Server for VSE/ESA Release 1. For information on how to connect them to CICS Transaction Server for VSE/ESA Release 1 using transaction routing, see "Remote terminals for transaction routing" on page 298. The following abbreviations have been used:

local	channel or adapter attached
s/s	start/stop transmission
SDLC	synchronous data link control
sw	switched
BSC	binary synchronous
nonsw	non-switched communications

Table 69 (Page 1 of 2). IBM BTAM terminals. Detailed list of BTAM terminals and subsystems supported by transaction routing from an earlier release of CICS.

Terminal /System Type	**Units**	**Attachment**	**Notes**
1050	1051,1052,1053,1056	s/s sw or nonsw	
2740		s/s sw or nonsw	
2741		s/s sw or nonsw	
2770	2772,0545,1053,2213,2265,2502	BSC sw or nonsw	1 on page 303
2780		BSC sw or nonsw	2 on page 303
2980	2972,2980	BSC nonsw	3 on page 303
3660	3651,3661	BSC sw	4 on page 303
3735		BSC sw	
3740	3741	BSC sw or nonsw	6 on page 303
3780		BSC, sw or nonsw	7 on page 303
5100		s/s supported as 2741	4 on page 303
5110		BSC attached as 2770	4 on page 303
5230	5231	BSC supported as 3741	
5260	5265	BSC attached as 3741	
CMCST		Supported as 2741	
Office System/6	6640,6670	Supported as 2770	

Table 69 (Page 2 of 2). IBM BTAM terminals. Detailed list of BTAM terminals and subsystems supported by transaction routing from an earlier release of CICS.

Terminal /System Type	**Units**	**Attachment**	**Notes**
Series/1		Attached as System/3; supported as 3650 Pipeline (VTAM) or 3790 (full function LU)	4 on page 303
System/3	5406,5408,5410,5412,5415	BSC sw or nonsw	4 on page 303
System/7	5010	s/s or BSC, sw or nonsw	4 on page 303 4 on page 303, 5 on page 303
System/23		Attached as 3741 (BSC)	

Notes:

1. CICS 2770 support includes optional 2772 features #3650 (EBCDIC Transparency), #9936 (WACK response), #1490 (Buffer Expansion), #1910 (Conversational Mode), #1340 (Automatic Answering), #4610 (Identification), #6310 (Security Identification), and #5010 (Multipoint).
2. 6-bit transcode is not supported. Support includes optional features #8030 (EBCDIC transparency) and #1340 (Automatic Answering), or #5020 (Multipoint).
3. 2980 support is for 2972 Model 8 (RPQ 858160) or Model 11 (RPQ 8582311) with 2980 Model 1 (RPQ 835504), Model 2 (RPQ 835505) or Model 4 (RPQ 858147), including options RPQ 858188 (Auditor key for Model 2) and RPQ 858165 (Buffer Expansion).
4. Devices and features supported by a system or programmable controller are generally transparent to CICS. In some cases CICS provides specific device support, in which case the units are listed.
5. Non-switched as a multipoint device: System/7 Remote IPL is supported. Switched and as a Point-to-Point Device: Remote IPL is not supported.
6. 3740 support includes optional features #7850 (Terminal Identification), #1685 (Multipoint), #5450 (Operator ID Card Reader), and #1680 (Expanded Communications).
7. 3780 support includes features #3601 (EBCDIC Transparency), #9936 (WACK), #5010 (Multipoint), or #7651 (Switched), #1601 (Component Selection).

The terminals listed above are all BTAM and are not supported by VTAM. There are other terminals which are supported by both BTAM and VTAM, and which can be used for transaction routing. For a detailed list of all VTAM terminals, see the “Devices supported” on page 217. Some BTAM terminals can not be used for transaction routing from an earlier release of CICS to CICS Transaction Server for VSE/ESA Release 1. The terminals are:

2260
2265
7770

VTAM terminals

For a detailed list of VTAM-supported terminals, and how to define them to CICS, see “Devices supported” on page 217.

Chapter 34. TLT (terminal list table)

A terminal list table (TLT) generated by the DFHTLT macro allows terminal and operator identifications to be grouped logically. A TLT:

- Is ***required*** for use by the supervisor terminal transaction (CEST), to define and limit the effective range of the operation. For example:

  ```
  CEST SET TERMINAL(*) SUPRID(CG) OUTSERVICE
  ```

  sets all terminals defined in DFHTLTCG out of service.
- Can be used by CEST or CEMT (the master terminal transaction) to apply an operation to a predetermined group of terminals. (For a CEST operation, this TLT must define a subset of the TLT specified by SUPRID.) For example:

  ```
  CEST SET TERMINAL(*) SUPRID(CG) CLASS(EM) INSERVICE
  CEMT SET TERMINAL(*) CLASS(EM) INSERVICE
  ```

  both set all terminals defined in DFHTLTEM in service.
- Can be used singly or in combination with other TLTs to provide predefined destinations for message switching. For example:

  ```
  CMSG ROUTE=PG,'PRODUCTION MEETING AT 11.00 IN
              ROOM 2124',SEND
  ```

  sends a message to all terminals or operators defined in DFHTLTPG.

There must be an RDO PROGRAM resource definition for each terminal list table to be used.

The same TLT can be used for message switching and for supervisory or master terminal functions. For example, a TLT that defines the terminals that are under control of a supervisory terminal, could also be used as a destination list for sending messages to those terminals.

For some logical units, logical device code (LDC) mnemonics that might be associated with each table entry, are used for message switching and are ignored for master and supervisory terminal operations.

In an intercommunication network, all the terminals in a terminal list table must be owned by the system on which the table is used.

Elements of DFHTLT

The following macros define the TLT entries:

- Control section—DFHTLT TYPE=INITIAL
- Entries in terminal list table—DFHTLT TYPE=ENTRY
- End of terminal list table—DFHTLT TYPE=FINAL (described on page 243)

Control section—DFHTLT TYPE=INITIAL

The entry point and the address of the start of the terminal list table being defined are established by the DFHTLT TYPE=INITIAL macro.

```
DFHTLT       TYPE=INITIAL
             [,LDC=aa]
             [,SUFFIX=xx]
```

Note: For general information about TYPE=INITIAL macros, see "TYPE=INITIAL" on page 242.

LDC=aa
Code this with a 2-character logical device code (LDC) mnemonic. This is associated with every logical unit identification, except for those for which an LDC mnemonic is specified on a DFHTLT TYPE=ENTRY macro.

SUFFIX=xx
The module name of the TLT is DFHTLTxx, where xx is a 1- or 2-character suffix. This provides unique identification for each TLT used. Because the names TLTBA, TLTBB, TLTBC, and TLTEA are used within the TLT, suffixes BA, BB, BC, and EA must not be used.

A TLT must have a suffix to be used by the message switching transaction, CMSG.

Entries in terminal list table—DFHTLT TYPE=ENTRY

Entries are coded in the TLT as follows:

```
DFHTLT       TYPE=ENTRY
             ,TRMIDNT=([termid-1[*ldc-1]][/opid-1]
             [,termid-2[*ldc-2][/opid-2],...])
```

TYPE=ENTRY
Code this if one or more entries are to be generated in this table, up to a maximum of 1000 entries.

TRMIDNT=([termid-1[*ldc-1]] [/opid-1][, termid-2[*ldc-2][/opid-2],...])
Code this with a list of start-stop or BSC terminal or logical unit identifications, or operator identifications, or any of these. A logical unit identification can be qualified by an LDC mnemonic.

termid
indicates a start-stop or BSC terminal or logical unit identification (1–4 characters).

Note: A 3614 attached to a communication controller can be used in master or supervisory terminal operations but should not be used in message switching operations. (A 3614 is not valid for a message destination.)

ldc
indicates a 2-character LDC mnemonic, which must be preceded by an asterisk (*) and is only used following a termid value.

opid
indicates an operator identification (1–3 characters) that must be preceded by a slash (/).

Any terminal or operator identification specified should also be specified in the TRMIDNT operand of the DFHTCT macro and in your external security manager, respectively.

Any LDC mnemonic specified should also be specified in the LDC operand of the DFHTCT TYPE=LDC and DFHTCT TYPE=TERMINAL macros.

Supervisory and master terminal functions use all terminal and logical unit identifications included in the TLT, but ignore all references to LDC mnemonics and operator identifications.

DFHTLT example

Figure 60 gives examples of coding to create a terminal list table.

Example 1

```
DFHTLT TYPE=INITIAL,                                   *
       SUFFIX=AA
DFHTLT TYPE=ENTRY,                                     *
       TRMIDNT=(NYC,CHI,LA,WDC)
DFHTLT TYPE=ENTRY,                                     *
       TRMIDNT=SF
DFHTLT TYPE=ENTRY,                                     *
       TRMIDNT=(BSTN/OP1,ATL/OP5,/OP9,DNVR)
DFHTLT TYPE=ENTRY,                                     *
       TRMIDNT=/OP6
DFHTLT TYPE=FINAL
END
```

Example 2

```
DFHTLT TYPE=INITIAL,                                   *
       SUFFIX=XX
DFHTLT TYPE=ENTRY,                                     *
       TRMIDNT=(NYC,T361*LP,T362*LP/OP1)
DFHTLT TYPE=ENTRY,                                     *
       TRMIDNT=(T363/OP2,T364/OP5,T365)
DFHTLT TYPE=FINAL
END
```

Figure 60. Examples of coding to create terminal list tables

Chapter 35. TST—temporary storage table

The temporary storage table (TST) is a list of generic names (or prefixes) used to identify sets of temporary storage queues. Generic names are formed from the leading characters of the appropriate queue names and can be up to seven characters long.

- The generic names coded on a DFHTST TYPE=RECOVERY macro identify queues for which CICS provides backout of changes in the event of transaction failure or protection against system failure.
- The generic name coded on a DFHTST TYPE=REMOTE macro identifies queues for which CICS routes the temporary storage request to a remote CICS region, unless the remote system name (SYSIDNT) is the same as that of the local CICS. If SYSIDNT is the same name as the local CICS, the queues specified by the DATAID option are treated by CICS as local queues.
- The generic name coded on a DFHTST TYPE=LOCAL macro identifies queues as local queues that reside in the CICS region in which the TST is installed.
- The generic name coded on a DFHTST TYPE=SECURITY macro identifies queues for which resource security checking is required.

Note: DATAIDs using all eight characters define unique temporary storage queue names.

Choose a naming convention for queue names that enables you to define many queues with only a few generic names. This reduces considerably the task of TST definition.

Note: CICS searches the TST for the first prefix that satisfies the particular search criteria. For example, if CICS searches for temporary storage queue ABCDEFGH, and the TST contains prefix A followed by prefix AB, A is selected. To avoid this, define the less-generic entries to the TST before any more-generic entries, so that the first to be found is the least generic of all possible matches.

Note that when CICS is looking for DATAIDs to match against a TS queue name, it searches only the types of entry in which it is interested for that particular search. CICS searches:

- Local *and* remote entries when determining whether a queue is remote. Thus, local and remote entries are regarded as one search category when CICS is matching a queue name against generic names.
- Recovery and remote entries when determining whether a queue is recoverable. However, if the leading characters of a queue name match **both** TYPE=RECOVERY and TYPE=REMOTE generic names, TYPE=REMOTE takes precedence, and the recovery option must be redefined in the local region in which the queue resides.
- Security entries only when determining whether a queue is subject to security.

When a task modifies temporary storage data designated as recoverable, the data is protected from modification by a concurrent task by enqueuing on the queue name. The queue name is not dequeued until the task terminates or issues a task syncpoint request to designate the end of a logical unit of work. At this time a log record is written to the system log data set to provide external information sufficient to recover the data if the system subsequently terminates abnormally.

Elements of DFHTST

The following macros are available to define the TST entries:

- Control section—DFHTST TYPE=INITIAL
- Recoverable temporary storage—DFHTST TYPE=RECOVERY
- Local temporary storage—DFHTST TYPE=LOCAL
- Remote temporary storage—DFHTST TYPE=REMOTE
- Temporary storage security checking—DFHTST TYPE=SECURITY
- End of temporary storage table—DFHTST TYPE=FINAL (see page 243).

Control section—DFHTST TYPE=INITIAL

The entry point and the beginning address for the temporary storage table being defined are established by the DFHTST TYPE=INITIAL macro.

Table 70. DFHTST TYPE=INITIAL

	DFHTST	TYPE=INITIAL [,SUFFIX=xx] [,TSAGE={<u>0</u>|number}]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL” on page 242.

TSAGE={<u>0</u>|number}
Defines the aging limit of temporary storage data used by the temporary storage recovery program (DFHTSRP) during emergency restart of CICS. Data that is older than the specified limit will not be recovered. The value is specified in days with a maximum value of 512. A value of zero indicates that no data is to be purged on this basis.

Recoverable temporary storage—DFHTST TYPE=RECOVERY

The generic names used to specify temporary storage queues for which recovery is applicable, are specified by the DFHTST TYPE=RECOVERY macro.

Table 71. DFHTST TYPE=RECOVERY

	DFHTST	TYPE=RECOVERY ,DATAID=(*character-string [,character-string,...]*)|()

TYPE=RECOVERY
Code this to identify the temporary storage queue names that are recoverable. If a temporary storage queue name is such that it is defined by both a remote **and** a recovery DATAID, it is considered to be remote. Recoverability can only be specified in the CICS region in which the queue is local.

Note: TYPE=ENTRY is retained for compatibility with previous releases, and means exactly the same as TYPE=RECOVERY.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names that you want to be recoverable, where each name can be up to 8 characters in length. (See page 307 for information about generic names and matching criteria.)

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queues names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name. Some CICS-generated TS queue names that you should consider for recovery are:

- "DF" refers to temporary storage queues used by CICS interval control for START commands with data, but which do not specify a REQID.
- "**" refers to temporary storage queues used by the BMS ROUTE command, and to those commands that use the PAGING operand.
- "$$" refers to temporary storage queues used by the BMS CMSG transaction when the PROTECT=YES option operand is specified on a START TRANSID command.

()
This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Notes:

1. If a TST is generated with no TYPE=RECOVERY entries, no recovery processing is performed.
2. If an EXEC CICS START command is issued with any of the FROM, RTRANSID, RTERMID, or QUEUE parameters specified, and a REQID is not specified, CICS generates request identifications starting with the prefix "DF". If recovery is required for these requests, the TST should be generated with the corresponding generic name.
3. All temporary storage queues used by restartable transactions (those defined with RESTART(YES) in the transaction resource definition) should be made recoverable (including those with the default DF prefix).
4. Only data on auxiliary storage can be made recoverable. Data written to main storage is not recoverable, regardless of any recovery options that you may specify.

Local temporary storage—DFHTST TYPE=LOCAL

The DFHTST TYPE=LOCAL macro defines temporary storage queue names that reside in the local CICS region in which the TST is installed. This macro enables you to define local queues without knowing the SYSIDNT (see the SYSIDNT option on the DFHTST TYPE=REMOTE macro for more information).

Used in conjunction with the all-generic DATAID specified on the TYPE=REMOTE macro for remote queues, this macro can help you to simplify greatly the task of defining local and remote queues.

Table 72. DFHTST TYPE=LOCAL

	DFHTST	TYPE=LOCAL ,DATAID=(*character-string [,character-string,...]*)|()

TYPE=LOCAL
Indicates that this TST entry defines a set of local temporary storage queues.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8 characters in length.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queue names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

()

This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If certain queues, which reside in another region, are specified on a TYPE=REMOTE macro with suitable generic DATAIDs, you can define all other queues as local by specifying DATAID=() on the TYPE=LOCAL macro.

This null option on the TYPE=LOCAL macro is mutually exclusive with DATAID=() on the TYPE=REMOTE macro, and the TST macro returns an assembly error if it is specified on both local and remote entries. Thus, if you specify DATAID=() on local TS queue entries, the TYPE=LOCAL macros must follow all TYPE=REMOTE macros.

Remote temporary storage—DFHTST TYPE=REMOTE

The DFHTST TYPE=REMOTE macro defines temporary storage queue names that reside in remote CICS regions when CICS intercommunication facilities are being used.

Table 73. DFHTST TYPE=REMOTE

	DFHTST	TYPE=REMOTE ,DATAID=(*character-string [,character-string,...]*)|() ,SYSIDNT=name [,RMTNAME=character-string]

TYPE=REMOTE
Indicates that this TST entry defines a set of remote temporary storage queues.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8 characters in length. Use 1 to 7 leading characters from the leading characters of queue names to form generic names of those queues for which requests are to be routed to a remote region. (See page 307 for information about generic names and matching criteria.)

Note: You cannot use the list form of the DATAID operand when RMTNAME is specified. If you specify the RMTNAME parameter, the syntax for DATAID is DATAID=*character-string*.

character-string
Each character string can represent a generic queue name, or a unique TS queue name.

Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

()

This special operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If the queues with names beginning with letters L, M, and N are local, and these are specified on a TYPE=LOCAL macro with suitable generic DATAIDs, you can define all other queues as remote by specifying DATAID=() on the TYPE=REMOTE macro, as follows:

```
         DFHTST TYPE=LOCAL,      *
                DATAID=(L,M,N)
*
         DFHTST TYPE=REMOTE,     *
                DATAID=()
```

The DATAID=() option on the TYPE=REMOTE macro is mutually exclusive with DATAID=() on the TYPE=LOCAL macro, and the TST macro returns an assembly error if it is specified on both local and remote entries.

DATAID=() must be the last entry in a set of local and remote entries. Thus, if you use DATAID=() on remote TS queue entries, the TYPE=REMOTE macros must follow any TYPE=LOCAL macros.

SYSIDNT=name
Identifies the region in which the remote temporary storage queues reside. For a remote queue owned by another CICS region, the 4-character alphanumeric name specified must be the same as the name of the CONNECTION resource definition for the link to the remote system.

You can use this parameter to specify the name of the local region in which the TST is installed. When the SYSIDNT operand matches the SYSIDNT specified on the system initialization parameter, the TS queues that match the DATAIDs are treated as local queues.

RMTNAME=character-string
Code this with the 1- to 8-character prefix that is to be used by CICS to replace that specified in the DATAID operand when a reference to the temporary storage queue is transmitted to a remote system or region. This operand defaults to the character string specified in the DATAID operand. The length of the character string specified in this operand must be the same as that in the DATAID operand. This mechanism allows access to a temporary storage queue in the remote system with the same name as one in the local system.

Temporary storage security checking—DFHTST TYPE=SECURITY

The DFHTST TYPE=SECURITY macro indicates that security checking is required for the temporary storage queues specified in the TST.

Table 74. DFHTST TYPE=SECURITY

	DFHTST	TYPE=SECURITY ,DATAID=(*character-string* *[,character-string,...]*)|()

TYPE=SECURITY
Indicates that this TST entry defines a set of temporary storage queues that require security checking. You are recommended to code this operand for each temporary storage queue that can be browsed by the CEBR transaction.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8 characters in length. Use 1 to 7 leading characters from the leading characters of queue names to form generic names of those queues that are subject to security checking. (See page 307 for information about generic names and matching criteria.)

Notes:

1. When this macro is used, a suitable profile must be defined to the external security manager (ESM) to control access to the TSQ. Otherwise, the macro will not have the intended effect.
2. The full TSQ name, rather than the DATAID, is passed to the external security manager (earlier releases passed the DATAID).

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

()
This null operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

DFHTST example

Figure 61 illustrates an example of the coding necessary to create a CICS TST.

```
     DFHTST TYPE=INITIAL,              LIST OF GENERIC NAMES OF QUEUES *
            SUFFIX=01                  THAT ARE RECOVERABLE, REMOTE,
*                                      LOCAL, OR REQUIRE SECURITY
*                                      CHECKING.
*
*  The following macro specifies that all LOCAL queues with
*  names beginning with the letter 'R' are RECOVERABLE:
*
     DFHTST TYPE=RECOVERY,                                             *
            DATAID=R
*
*  The following macro specifies that queues with names
*  beginning with C,D,E, and X are local queues:
*
     DFHTST TYPE=LOCAL,                                                *
            DATAID=(C,D,E,X)
*
*  The following macro specifies that queues with names
*  beginning with AB,L,M,N are remote queues on system RSYS:
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(AB,L,M,N),                                         *
            SYSIDNT=RSYS,              Queue names on remote system    *
            RMTNAME=LC                 begin with letters LC
*
*
*  The following macro specifies that queues with names
*  beginning with SAQ require security checking.
*
*    Note that the full TS queue name is passed to the ESM.
*
     DFHTST TYPE=SECURITY,                                             *
            DATAID=SAQ
*
     DFHTST TYPE=FINAL
     END
```

Figure 61. Temporary storage table—example

Chapter 36. XLT—transaction list table

The transaction list table (XLT), generated by the DFHXLT macro instruction, is a list of logically related transaction identifications. The XLT can be used to define:

- A list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination. If there are no PLT programs to execute, the first quiesce time can be short, thus giving little time to enter any XLT program before going into the second quiesce stage. You specify the suffix of the table to be used by means of the XLT system initialization parameter. The master terminal operator can change the suffix at system termination, using the XLT option of the CEMT PERFORM SHUTDOWN command. In addition to the transactions listed in the XLT, the CEMT and CESF CICS-supplied transactions can be initiated from terminals during the first quiesce stage, as can any transactions defined with SHUTDOWN(ENABLED).

  Note: You can also define the XLT as a PROGRAM if you would rather use RDO than macro. See Chapter 19, "PROGRAM" on page 171 for information on defining programs. Defining it as a program also means that it can be autoinstalled; see Chapter 11, "Autoinstall for programs, mapsets, and partitionsets" on page 125 for information on autoinstall for programs.
- A group of transaction identifications to be disabled or enabled through the master terminal. The master terminal operator specifies the suffix of the table to be used, using the CLASS option of the CEMT SET TRANSACTION command. For details of the CEMT commands, see the *CICS-Supplied Transactions* manual.

Figure 62 on page 314 illustrates the coding to create a XLT.

Elements of DFHXLT

The following macros are available to define the XLT entries:

- Control section—DFHXLT TYPE=INITIAL
- Entries in transaction list table—DFHXLT TYPE=ENTRY
- End of transaction list table—DFHXLT TYPE=FINAL (described on page 243)

Control section—DFHXLT TYPE=INITIAL

The DFHXLT TYPE=INITIAL macro establishes the entry point and start address of the XLT being defined:

Table 75. DFHXLT TYPE=INITIAL

	DFHXLT	TYPE=INITIAL [,SUFFIX=xx]

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL" on page 242.

Entries in transaction list table—DFHXLT TYPE=ENTRY

Table 76. DFHXLT TYPE=ENTRY

	DFHXLT	TYPE=ENTRY
		{,TASKREQ=(kkkk[,kkkk],...)}
		{,TRANSID=(xxxx[,xxxx],...)}

TYPE=ENTRY
Code this if one or more entries are to be generated in the XLT.

TASKREQ=(kkkk[,kkkk],...)
Represents one of the following 3270 special keys that can be used to initiate a task: PA1 through PA3, and PF1 through PF24. LPA (light pen attention) indicates that a transaction is to be initiated when a light pen detectable field is selected. OPID (operator identification card reader) indicates that a transaction will be initiated when the appropriate operator's identity badge has been read in. TASKREQ=MSRE indicates that transactions will be initiated when the 10/63 character magnetic slot reader is used.

You must DEFINE each TASKREQ on the CSD, and INSTALL it in the running system. (For further information, see the description of TASKREQ on page 211.)

TRANSID=(xxxx[,xxxx],...)
Represents a 1- to 4-character transaction code. You must DEFINE each TRANSID on the CSD, and INSTALL it in the running system. (For further information, see the description of TRANSACTION on page 212.)

If the TRANSID contains a special character, for example, a comma, then the TYPE=ENTRY instruction must contain only one TRANSID, which must have quotation marks as delimiters.

Note: TASKREQ and TRANSID are mutually exclusive parameters.

DFHXLT example

```
   DFHXLT TYPE=INITIAL,                    LIST OF TRANSACTIONS     *
          SUFFIX=IN                        THAT WILL BE ACCEPTED
*                                          DURING THE FIRST QUIESCE
*                                          PHASE OF SYSTEM
*                                          TERMINATION.
   DFHXLT TYPE=ENTRY,TASKREQ=PF5           (TASKREQ MUST ALSO BE
*                                          DEFINED IN THE CSD AND
*                                          INSTALLED IN THE RUNNING
*                                          CICS SYSTEM. AN ENTRY FOR
*                                          THE XLT MUST BE MADE IN
   DFHXLT TYPE=ENTRY,TRANSID=(USR1,USR2)   THE CSD.)
   DFHXLT TYPE=ENTRY,TRANSID='AA,1'
   DFHXLT TYPE=ENTRY,TRANSID='AA,2'
   DFHXLT TYPE=FINAL
   END

   DFHXLT TYPE=INITIAL,                    LIST OF LOGICALLY RELATED*
          SUFFIX=G1                        TRANSIDS TO BE ENABLED OR
*                                          DISABLED BY MASTER
*                                          TERMINAL.
   DFHXLT TYPE=ENTRY,TRANSID=(TSSA,TSRA)   (TRANSIDS MUST ALSO BE
   DFHXLT TYPE=ENTRY,TRANSID=(TDSA,TDRA)   DEFINED IN THE CSD AND
   DFHXLT TYPE=ENTRY,TRANSID=ICSA          INSTALLED IN THE RUNNING
   DFHXLT TYPE=FINAL                       CICS SYSTEM.)
   END
```

Figure 62. Transaction list table—example

Part 6. Appendixes

Appendix A. Obsolete attributes retained for compatibility

The attributes described in this appendix are not valid in CICS Transaction Server for VSE/ESA Release 1, but are supported to provide CSD compatibility for earlier releases of CICS where they are still valid. See “Compatibility mode (CSD sharing)” on page 19 for more information on compatibility mode.

Table 77 on page 320 shows which resource or resources each attribute is associated with, and which release or releases it was supported in.

EXTSEC({<u>NO</u>|YES})
Indicates whether an external security manager (ESM) is to be used for transaction security or resource security checking.

<u>NO</u>
Only the security facilities provided by CICS will be used by this transaction.

YES
An external security manager may be used by this transaction.

INSERVICE({YES|NO})
Indicates whether the session(s) can be used for communication. This attribute applies only to LUTYPE 6.1 ISC sessions. It is invalid for LUTYPE 6.2, and is ignored for MRO sessions. For MRO the status (in service or out of service) is determined by the status of the corresponding MRO CONNECTION.

YES
Transactions may be initiated and messages may automatically be sent across the session(s).

NO
The session(s) can neither receive messages nor transmit input.

OPERID(code)
The 3-character operator identifier associated with the sessions. You should use OPERID if you are not specifying SECURITYNAME on the CONNECTION definition. Specifying OPERID is the **only** way of having an operator identifier if you have preset security (by specifying OPERRSL and OPERSECURITY).

OPERPRIORITY({<u>0</u>|number})
The operator priority code to be used to determine the task processing priority for each transaction attached to the sessions. The code may be any value from 0 through 255. You should use OPERPRIORITY if you are not specifying SECURITYNAME on the CONNECTION definition. Specifying OPERPRIORITY is the **only** way of having an operator priority code if you have preset security (by specifying OPERRSL and OPERSECURITY).

OPERRSL({<u>0</u>|number[,...]})
The resource security key for these sessions.

number[,...]
The preset resource security keys for these sessions. The OPERRSL keys are checked to see that they include the resource RSL value, by transactions that request RSL checking (RSLC(YES)). They are referenced for function shipping and distributed transaction processing requests. The OPERRSL keys comprise one or more decimal values from 1 through 24. You can specify more than one value as an inclusive range, using a dash, for example: `5-12` , or as a series of numbers separated by commas, for example: `5,6,7,8,9,10,11,12.` These two examples are equivalent. You can use dashes and commas in the same specification if you need to.

You should specify OPERRSL keys if you are not specifying SECURITYNAME on the CONNECTION definition. However, you should be aware that if you specify

OPERRSL keys for the sessions, you cannot have a sign-on, using SECURITYNAME, when the link is established. (For more information, see the *CICS Intercommunication Guide*.) Note that the OPERRSL keys give access only to resources with the RSL values actually specified in the OPERRSL keys, not to resources with lower RSL values.

0 The sessions have no OPERRSL keys specified and will not have access to any resources through transactions with RSLC(YES), except resources with RSL(PUBLIC).

OPERSECURITY({ 1|number[,...]})
The preset transaction security keys for the device. The transaction security keys are checked to see that they include the security value (TRANSEC) for a transaction about to be attached. They are referenced for function shipping and distributed transaction processing requests.

The security keys comprise one or more decimal values from 1 through 64. You can specify these values in the same way as for OPERRSL, above. In addition to the values you specify, a value of 1 will also be assumed. The default value of 1 gives access to all unsecured transactions, because the default TRANSEC value is 1. For example: `5-10,12` is translated into: `1,5,6,7,8,9,10,12.`

You should use OPERSECURITY if you are not specifying SECURITYNAME on the CONNECTION definition. However, you should be aware that if you specify OPERSECURITY keys for the sessions, you cannot have a sign-on, using SECURITYNAME, when the link is established. (For more information, see the *CICS Intercommunication Guide*.)

PRIMEDSIZE({0|value})
The primed storage allocation size in bytes.

0 CICS will take care of the storage for the control blocks.

Note: You should leave PRIMEDSIZE as 0 if this TRANSACTION definition has been migrated with ANTICPG=YES.

value
This value must not exceed 65520 bytes and, if specified at all, must include an allowance of 2800 bytes for CICS control blocks, and an allowance for the size of the TWA.

Storage acquired by a GETMAIN within the primed storage area is never freed (that is, the corresponding FREEMAIN is ignored).

Note that storage accounting areas within the primed storage allocation are doubleword-aligned, instead of the normal double-doubleword-aligned.

RSL
Enter the resource security value to be associated with this resource. This operand is used when an EXEC command is executed within a transaction that has been defined with RSLC(YES), and the command is attempting to reference the partition set.

0 This means that any transaction defined with RSLC(YES) will not be allowed access to the partition set.

value
The resource security value, in the range 1 through 24. When a transaction defined with RSLC(YES) attempts to reference this partition set, the value is checked against the keys derived either from the RSLKEY in the sign-on table, or from the OPERRSL on the TERMINAL definition. If one of these keys matches the RSL value, the transaction is allowed access to the partition set.

PUBLIC
Any transaction is allowed access to the partition set, regardless of whether no security checking or RSL checking is specified. However, if an external security

manager is in force, it checks access authorities no matter what RSL value (including PUBLIC) has been defined for the resource.

TCLASS({NO|value})
The class associated with the task.

NO
No class is assigned to the task.

value
A value (from decimal 1 to 10) of the class associated with a task.

Note: You must not specify a TCLASS for CICS-supplied transactions because their initiation could be inhibited if the class threshold was reached.

TRANSACTION(name)
This allows the one transaction specified to be initiated from this device.

The name can be up to 4 characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >.

If you code this operand for a 3270 display, the only CICS functions the operator will be able to invoke – other than this transaction – are paging commands and print requests.

TRANSEC
The transaction security value, in the range 1 through 64. When a user attempts to initiate the transaction, or when it is automatically initiated (through transient data or interval control), this value is matched against the user's security keys defined in the DFHSNT SCTYKEY operand or, if the user is not signed on, the security keys defined in OPERSECURITY on the TERMINAL definition. If the TRANSEC value is present in the security keys, the transaction is initiated.

Because all users and terminals have a security key of 1, any transaction with the default TRANSEC value of 1 is an unsecured transaction, and as such, it can be initiated by any user on the CICS system, whether they are signed on or not.

Obsolete attributes

Table 77 shows which resource or resources each attribute is associated with.

Table 77. Obsolete attributes

Attribute	**Resource type**
EXTSEC	TRANSACTION
INSERVICE	SESSION
OPERID	SESSION TERMINAL
OPERPRIORITY	SESSION TERMINAL
OPERRSL	SESSION TERMINAL
OPERSECURITY	SESSION TERMINAL
PRIMEDSIZE	TRANSACTION
RSL	MAPSET PARTITIONSET PROGRAM TRANSACTION
TCLASS	TRANSACTION
TRANSACTION	SESSION
TRANSEC	TRANSACTION

Appendix B. CICS-supplied resource definitions, groups, and lists

This appendix lists the resource definitions, groups, and lists supplied by IBM, as follows:

- “DFHLIST definitions” on page 322
- “CICS-supplied groups not in DFHLIST” on page 324
- “CICS-supplied compatibility groups” on page 325
- “CICS transactions supplied by IBM” on page 326
- “The sample application program groups” on page 329
- “Model definitions in group DFHPGAIP” on page 332
- “PROFILE definitions in group DFHISC” on page 333
- “PROFILE definitions in group DFHSTAND” on page 333
- “TYPETERM definitions in group DFHTYPE” on page 340
- “Model TERMINAL definitions in group DFHTERM” on page 337

You initialize the CSD file by using the DFHCSDUP INITIALIZE command. (This command has no operand.) Following initialization, the CSD file contains two categories of resource definition groups:

1. Groups named in DFHLIST, essential for using RDO and other CICS-supplied transactions
2. Groups of definitions for the sample application programs

DFHLIST definitions

Table 78 (Page 1 of 2). DFHLIST resource definitions

Group Name	Description	Programs (mapsets, profiles, terminals, tranclasses or typeterms as indicated)	Transactions
DFHAKP	Activity keypoint	DFHAKP	CSKP
DFHBACK	Dynamic backout	DFHDBP1$ DFHDBP2$	---
DFHBMS	Basic mapping support	DFHTPQ DFHTPR DFHTPS	CSPG CSPQ CSPS
DFHCLNT	CICS Clients	DFHZCT1 DFHZCN1 **Tranclass**: DFHCOMCL	CCIN CTIN
DFHCONS	Write to CPU console	DFHCWTO	CWTO
DFHEDF	Execution diagnostic facility	DFHDBMS DFHEDFBR DFHEDFD DFHEDFE DFHEDFP DFHEDFR DFHEDFX DFHEIGDS DFHEITAB DLZHLPI **Map set**: DFHEDFM	CEBR CEDF
DFHFE	FE terminal test facility	DFHFEP DFHTRAP	CSFE
DFHFEPI	Front End Programming Interface	DFHEITSZ DFHSZRMP	CSZI
DFHHARDC	3270 Printer - VTAM	DFHP3270	CSPP
DFHINQUI	Command definition	DFHEITBS	---
DFHINTER	Command interpreter	DFHECID DFHECIP DFHECSP	CECI CECS
DFHISC	Intersystem communication	DFHCLS3 DFHCLS4 DFHCCNV DFHCHS DFHCNV DFHCNVJP DFHCNVKO DFHCNVSC DFHCNVTC DFHCRNP DFHCRQ DFHCRR DFHCRS DFHCRSP DFHCRT DFHDYP DFHLUP DFHMIRS DFHMXP DFHRTC DFHRTE DFHUCNV DFHZLS1 **Profiles**: DFHCICSF DFHCICSR DFHCICSS	CEHP CEHS CLS1 CLS2 CLS3 CMPX CLS4 CPMI CRSQ CRSR CRTE CRTX CSMI CSM1 CSM2 CSM3 CSM5 CSNC CSSF CXRT CVMI
DFHJRNL	Journal control	DFHJCBSP DFHJCC DFHJCEOV DFHJCI DFHJCIOE DFHJCKOJ DFHJCO DFHJCSDJ	---
DFHMISC	Miscellaneous programs	DFHPEP DFHREST	---
DFHMSWIT	Message switching program	DFHMSP	CMSG
DFHOPCLS	Dynamic open/close program	DFHFCU	CSFU
DFHOPER	Operator programs	DFHCETRA DFHCETRB DFHCETRC DFHCETRD DFHEITMT DFHEITOT DFHEITST DFHEMTA DFHEMTD DFHEMTP DFHEOTP DFHESTP **Map sets**: DFHCTRH DFHCTRM	CEMT CEOT CEST CETR

Table 78 (Page 2 of 2). DFHLIST resource definitions

Group Name	Description	Programs (mapsets, profiles, terminals, tranclasses or typeterms as indicated)	Transactions
DFHPGAIP	Autoinstall for programs	DFHPGADX DFHPGAHX DFHPGALX DFHPGAOX DFHPGAPG **Map set**: DFHPGAMP **Partition set**: DFHPGAPT	---
DFHRMI	Resource manager interface	DFHRMSY	CRSY
DFHRSEND	VTAM resend program	DFHZRSP	CSRS
DFHRSPLG	VTAM response logging	DFHZRLG	CSLG
DFHSIGN	Sign-on/sign-off programs and table	DFHCESC DFHCEGN DFHSFP DFHSNP **Map sets**: DFHSNLE DFHSNSE	CESC CESF CEGN CESN
DFHSPI	Resource definition online	DFHAMP DFHDMP DFHEDAD DFHEDAP DFHEITSP DFHPUP DFHTBS DFHTOR DFHZATA DFHZATD DFHZATDX DFHZATMD DFHZATMF DFHZATR DFHZATS DFHZCQ DFHZCTDX DFHZDTDX DFHZPTDX	CATA CATD CATR CDTS CEDA CEDB CEDC CFTS CITS CMTS CRMD CRMF
DFHSTAND	Standard CICS application programs	DFHACP DFHCXCU DFHPSIP DFHQRY DFHSTP DFHTACP DFHTEP DFHTEPT DFHTFP DFHZXCU DFHZXRE DFHZXST **Profiles**: DFHCICSA DFHCICSE DFHCICSP DFHCICST DFHCICSV DFHPPF01 DFHPPF02 **Map set**: DFHXMSG	CQRY CSAC CSTE CXCU CXRE
DFHTCL	Compatibility TRANCLASS definitions	**Tranclasses:** DFHTCL00 DFHTCL01 DFHTCL03 DFHTCL04 DFHTCL05 DFHTCL06 DFHTCL07 DFHTCL08 DFHTCL09 DFHTCL10	---
DFHTERM	Model TERMINAL definitions	**Terminals**: LU2 LU3 LU62 SCSP 3270 3284 3767 L0E2 L0M2 L0M3 L0M4 L0M5 L2E2 L2E3 L2E4 L2E5 L2M2 L2M3 L2M4 L2M5	---
DFHTYPE	TYPETERM definitions	**Typeterms**: DFHCONS DFHLU2 DFHLU3 DFHLU62T DFHSCSP DFH3270 DFH3270P DFH3767 DFHLU0E2 DFHLU0M2 DFHLU0M3 DFHLU0M4 DFHLU0M5 DFHLU2E2 DFHLU2E3 DFHLU2E4 DFHLU2E5 DFHLU2M2 DFHLU2M3 DFHLU2M4 DFHLU2M5	---
DFHVTAM	VTAM programs	DFHGMM DFHZNAC DFHZNEP	CSGM CSNE
DFHVTAMP	VTAM terminal control print key function	DFHCPY DFHEXI DFHPRK DFHRKB	CSCY CSPK CSRK

Note: The DFHTYPE typeterm definitions match the VTAM-supplied LOGMODE definitions. If you are not using the supplied VTAM LOGMODES, you may need to modify the DFHTYPE TYPETERM definitions. For programming information on VTAM LOGMODE definitions, see the *CICS Customization Guide*.

CICS-supplied groups not in DFHLIST

Table 79. Resource definitions not in DFHLIST

Group Name	Description	Programs (mapset, connection, session or tranclass as indicated)	Transactions
DFHAI62	Starter APPC connections	**Program**: DFHZATDY **Connections**: CBPS CBSS CCPS **Sessions**: CBPS CBSS CCPS	---
DFHISCT	Intersystem Communication	DFHTCLSX	CLS1 CLS2
Note: DFHISCT can be used to control the number of CLS1 and CLS2 transactions concurrently executing, via the TCLASS mechanism.			
DFHMISC3	Miscellaneous group	DFHNET	---

CICS-supplied compatibility groups

If, after upgrading a CSD file to CICS Transaction Server for VSE/ESA, you plan to share the CSD file with earlier releases of CICS, you must include the appropriate DFHCOMP*x* compatibility groups in your startup group list. The contents of these groups are listed in Table 80.

Table 80. Group definitions supplied for compatibility with CICS/VSE 2.3

Group Name	Description	Programs	Mapsets	Transactions
DFHCOMP1	Required for compatibility with CICS/VSE 2.3.	DFHCCMF DFHCMON DFHCRP DFHCSSC DFHDMP DFHEDCP DFHEIQDS DFHEIQDU DFHEIQIR DFHEIQRQ DFHEIQSA DFHEIQSC DFHEIQSJ DFHEIQSK DFHEIQSM DFHEIQSP DFHEIQSQ DFHEIQST DFHEIQSX DFHEIQTR DFHEIQVT DFHEMA DFHEMB DFHEMC DFHEMD DFHEME DFHEMF DFHEMG DFHEMH DFHEMI DFHETRX DFHFCS DFHFEDI DFHFED2 DFHFELG DFHEOP DFHFERR DFHFETX DFHMTPA DFHMTPB DFHMTPC DFHMTPD DFHMTPE DFHMTPF DFHMTPG DFHNEP DFHOCP DFHRTY DFHSNT DFHSTKC DFHSTLK DFHSTPD DFHSTSP DFHSTTD DFHSTTR DFHTAJP DFHTRNSM DFHTRNSN DFHUAKP DFHZCQ IBMBCCLA IBMBEOCA IBMBETAA IBMBETBA IBMBETCA IBMBETIA IBMBETOA IBMBETPA IBMBETQA IBMBETTA IBMDCCRA IBMFEFCA IBMFESMA IBMFESNA IBMFKCSA IBMFKMRA IBMFKPTA IBMFKTBA IBMFKTCA IBMFKTRA IBMFPGDA IBMFPMRA IBMFSTVA	---	CAUT CCMF CDTS CECI CECS CEDA CEDB CEDC CEDF CEHP CEHS CEMT CEOT CEST CFTS CITS CLS1 CMSG CMTS CPMI CQRY CRSR CSCY CSFE CSFR CSIR CSJC CSMT CSNC CSNE CSOT CSPG CSPK CSPP CSPQ CSPS CSRK CSRS CSSC CSSF CSSN CSST CSTA CSTT CVMI CWTO CXCU 8888 9999
DFHCOMP2	Required by users of the report controller	DFH$CRPS DFH$CSRE DFHEMSJB DFHEMSPR DFHEMSRE DFHEMSTD DFHPSBRS DFHPSEC DFHPSEE DFHPSEG DFHPSEK	DFHPSJC DFHPSJE DFHPSJG DFHPSJK DFHPSMC DFHPSME DFHPSMG DFHPSMK DFHPSNC DFHPSNE DFHPSNG DFHPSNK DFHPSQC DFHPSQE DFHPSQG DFHPSQK DFHPS0C DFHPS0E DFHPS0G DFHPS0K	FRPS

CICS transactions supplied by IBM

Here is a list in alphabetical order of the CICS transactions supplied by IBM, together with the name of the program that the transaction invokes.

Table 81 (Page 1 of 3). CICS transactions supplied by IBM

Transaction	Group	Program
AADD	DFH$AFLA	DFH$AALL
AADD	DFHMROFA	DFH$AALL
AADD	DFHMROFT	
ABRW	DFH$AFLA	DFH$ABRW
ABRW	DFHMROFA	DFH$ABRW
ABRW	DFHMROFT	
ACCT	DFH$ACCT	ACCT00
ACEL	DFH$ACCT	ACCT03
ACLG	DFH$ACCT	ACCT03
AC01	DFH$ACCT	ACCT01
AC02	DFH$ACCT	ACCT02
AC03	DFH$ACCT	ACCT03
AC05	DFH$ACCT	ACCT03
AC06	DFH$ACCT	ACCT03
AC2A	DFH$CTXT	DFH0VSAS
AC2C	DFH$CTXT	DFH0VHLP
AC2D	DFH$CTXT	DFH0VAB
AC2E	DFH$CTXT	DFH0VHP
AC2F	DFH$CTXT	DFH0VABT
AC20	DFH$CTXT	DFH0VT1
AC21	DFH$CTXT	DFH0VOL
AC22	DFH$CTXT	DFH0VOPN
AC23	DFH$CTXT	DFH0VLST
AC24	DFH$CTXT	DFH0VNEW
AC25	DFH$CTXT	DFH0VBRW
AC26	DFH$CTXT	DFH0VUPD
AC27	DFH$CTXT	DFH0VDEL
AC28	DFH$CTXT	DFH0VPRT
ADDS	DFH$CFLA	DFH0CALL
AINQ	DFH$AFLA	DFH$AALL
AINQ	DFHMROFA	DFH$AALL
AINQ	DFHMROFT	
AMNU	DFH$AFLA	DFH$AMNU
AMNU	DFHMROFA	DFH$AMNU
AMNU	DFHMROFT	
AORD	DFH$AFLA	DFH$AREN
AORD	DFHMROFA	DFH$AREN
AORD	DFHMROFT	
AORQ	DFH$AFLA	DFH$ACOM
AORQ	DFHMROFA	DFH$ACOM
AORQ	DFHMROFT	
AREP	DFH$AFLA	DFH$AREP
AREP	DFHMROFA	DFH$AREP
AREP	DFHMROFT	
AUPD	DFH$AFLA	DFH$AALL
AUPD	DFHMROFA	DFH$AALL
AUPD	DFHMROFT	
BRWS	DFH$CFLA	DFH0CBRW
CATA	DFHSPI	DFHZATA
CATD	DFHSPI	DFHZATD
CATR	DFHSPI	DFHZATR
CCIN	DFHCLNT	DFHZCN1
CDTS	DFHSPI	DFHZATS
CEBR	DFHEDF	DFHEDFBR
CECI	DFHINTER	DFHECIP
CECS	DFHINTER	DFHECSP
CEDA	DFHSPI	DFHEDAP

Table 81 (Page 2 of 3). CICS transactions supplied by IBM

Transaction	Group	Program
CEDB	DFHSPI	DFHEDAP
CEDC	DFHSPI	DFHEDAP
CEDF	DFHEDF	DFHEDFP
CEGN	DFHSIGN	DFHCEGN
CEHP	DFHISC	DFHCHS
CEHS	DFHISC	DFHCHS
CEMT	DFHOPER	DFHEMTP
CEOT	DFHOPER	DFHEOTP
CESC	DFHSIGN	DFHCESC
CESF	DFHSIGN	DFHSFP
CESN	DFHSIGN	DFHSNP
CEST	DFHOPER	DFHESTP
CETR	DFHOPER	DFHCETRA
CFTS	DFHSPI	DFHZATS
CITS	DFHSPI	DFHZATS
CLS1	DFHISC/DFHISCT	DFHZLS1
CLS2	DFHISC/DFHISCT	DFHLUP
CLS3	DFHISC	DFHLUP
CLS4	DFHISC	DFHCLS4
CMPX	DFHISC	DFHMXP
CMSG	DFHMSWIT	DFHMSP
CMTS	DFHSPI	DFHZATS
CPMI	DFHISC	DFHMIRS
CQRY	DFHSTAND	DFHQRY
CRMD	DFHSPI	DFHZATMD
CRMF	DFHSPI	DFHZATMF
CRSQ	DFHISC	DFHCRQ
CRSR	DFHISC	DFHCRS
CRSY	DFHRMI	DFHRMSY
CRTE	DFHISC	DFHRTE
CRTX	DFHISC	########
CSAC	DFHSTAND	DFHACP
CSCY	DFHVTAMP	DFHCPY
CSFE	DFHFE	DFHFEP
CSFU	DFHOPCLS	DFHFCU
CSGM	DFHVTAM	DFHGMM
CSKP	DFHAKP	DFHAKP
CSLG	DFHRSPLG	DFHZRLG
CSMI	DFHISC	DFHMIRS
CSM1	DFHISC	DFHMIRS
CSM2	DFHISC	DFHMIRS
CSM3	DFHISC	DFHMIRS
CSM5	DFHISC	DFHMIRS
CSNC	DFHISC	DFHCRNP
CSNE	DFHVTAM	DFHZNAC
CSPG	DFHBMS	DFHTPR
CSPK	DFHVTAMP	DFHPRK
CSPP	DFHHARDC	DFHP3270
CSPQ	DFHBMS	DFHTPQ
CSPS	DFHBMS	DFHTPS
CSRK	DFHVTAMP	DFHRKB
CSRS	DFHRSEND	DFHZRSP
CSSF	DFHISC	DFHRTC
CSTE	DFHSTAND	DFHTACP
CSZI	DFHFEPI	DFHSZRMP
CVMI	DFHISC	DFHMIRS
CWTO	DFHCONS	DFHCWTO
CXCU	DFHSTAND	DFHCXCU
CXRE	DFHSTAND	DFHZXRE
CXRT	DFHISC	DFHCRT
CZBC	DFH$0BZ	DFH0AZBC
CZPA	DFH$0VZ	DFH0AZPA
CZPA	DFH$0AZ	DFH0VZPA

Table 81 (Page 3 of 3). CICS transactions supplied by IBM

Transaction	Group	Program
CZPS	DFH$0VZ	DFH0AZPS
CZBC	DFH$0AZ	DFH0VZPS
CZQS	DFH$0VZ	DFH0AZQS
CZQS	DFH$0AZ	DFH0VZQS
CZTD	DFH$0VZ	DFH0AZTD
CZTD	DFH$0AZ	DFH0VZTD
CZTK	DFH$0VZ	DFH0CZTK
CZTK	DFH$0CZ	DFH0PZTK
CZTK	DFH$0PZ	DFH0VZTK
CZTR	DFH$0VZ	DFH0VZTR
CZTS	DFH$0VZ	DFH0VZTS
CZUC	DFH$0VZ	DFH0VZUC
CZUU	DFH$0VZ	DFH0VZUU
CZUX	DFH$0VZ	DFH0VZUX
CZXS	DFH$0VZ	DFH0AZXS
CZXS	DFH$0AZ	DFH0CZXS
CZXS	DFH$0CZ	DFH0VZXS
DADD	DFH$DFLA	DFH$DALL
DBRW	DFH$DFLA	DFH$DBRW
DELQ	DFH$CTXT	DFH0VDQ
DINQ	DFH$DFLA	DFH$DALL
DMNU	DFH$DFLA	DFH$DMNU
DORD	DFH$DFLA	DFH$DREN
DORQ	DFH$DFLA	DFH$DCOM
DREP	DFH$DFLA	DFH$DREP
DUPD	DFH$DFLA	DFH$DALL
EXCI	DFH$EXCI	DFH$MIRS
GNIT	DFH$GNIT	DFH0GNIT
IFBL	DFH$ICOM	DFH$IFBL
IFBR	DFH$ICOM	DFH$IFBR
INQY	DFH$CFLA	DFH0CALL
IQRD	DFH$ICOM	DFH$IQRD
IQRL	DFH$ICOM	DFH$IQRL
IQRR	DFH$ICOM	DFH$IQRR
IQXL	DFH$ICOM	DFH$IQXL
IQXR	DFH$ICOM	DFH$IQXR
MENU	DFH$CFLA	DFH0CMNU
OREN	DFH$CFLA	DFH0CREN
OREQ	DFH$CFLA	DFH0CCOM
PADD	DFH$PFLA	DFH$PALL
PBRW	DFH$PFLA	DFH$PBRW
PINQ	DFH$PFLA	DFH$PALL
PMNU	DFH$PFLA	DFH$PMNU
PORD	DFH$PFLA	DFH$PREN
PORQ	DFH$PFLA	DFH$PCOM
PPKO	DFH$BMSP	DFH$PPKO
PPLA	DFH$BMSP	DFH$PPLA
PREP	DFH$PFLA	DFH$PREP
PUPD	DFH$PFLA	DFH$PALL
REPT	DFH$CFLA	DFH0CREP
STAT	DFH$STAT	DFH0STAT
TDWT	DFH$UTIL	DFH$TDWT
UPDT	DFH$CFLA	DFH0CALL
XPKO	DFH$BMSP	DFH0CPKO
XPLA	DFH$BMSP	DFH0CPLA

The sample application program groups

These resource definitions are needed to run the sample application programs supplied with CICS. The groups are not named in DFHLIST.

Table 82 (Page 1 of 3). CICS sample applications – resource definitions

Group Name	Language	Description	Resources Defined
DFH$ACCT	COBOL	*CICS Application Programming Primer (VS COBOL II)* samples	**File**: ACCTFIL ACCTTIX **Map set**: ACCTSET **Programs**: ACCT00 ACCT01 ACCT02 ACCT03 ACCT04 **Transactions**: ACCT ACEL ACLG AC01 AC02 AC03 AC05 AC06
DFH$AFLA	Assembler	FILEA sample applications	**Map sets**: DFH$AGA DFH$AGB DFH$AGC DFH$AGD DFH$AGK DFH$AGL **Programs**: DFH$AALL DFH$ABRW DFH$ACOM DFH$AMNU DFH$AREN DFH$AREP **Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFH$BMSP	COBOL & PL/I	BMS partition support applications	**Partitionset**: DFH0PS **Map sets**: DFH0CGP DFH$PGP **Programs**: DFH0CPKO DFH0CPLA DFH$PPKO DFH$PPLA **Transactions**: PPKO PPLA XPKO XPLA
DFH$CFLA	COBOL	FILEA sample applications	**Map sets**: DFH0CGA DFH0CGB DFH0CGC DFH0CGD DFH0CGK DFH0CGL **Programs**: DFH0CALL DFH0CBRW DFH0CCOM DFH0CMNU DFH0CREN DFH0CREP **Transactions**: ADDS BRWS INQY MENU OREN OREQ REPT UPDT

Table 82 (Page 2 of 3). CICS sample applications – resource definitions

Group Name	Language	Description	Resources Defined
DFH$CTXT	COBOL	CUA® text model application	**Files**: DFH0FCAI DFH0FCUS DFH0FHLP **Map sets**: DFH0AB DFH0ABT DFH0BRW DFH0DEL DFH0FPD DFH0HLP DFH0HP DFH0HPD DFH0LST DFH0NEW DFH0OPN DFH0PRT DFH0SAS DFH0T1 DFH0UPD **Programs**: DFH0VAB DFH0VABT DFH0VBRW DFH0VDEL DFH0VDQ DFH0VHLP DFH0VHP DFH0VLIO DFH0VLST DFH0VNEW DFH0VOL DFH0VOPN DFH0PRT DFH0VRIO DFH0VSAS DFH0VTBL DFH0VT1 DFH0VUPD **Profile**: DFH$CUA2 **Transactions:** AC2A AC2C AC2D AC2E AC2F AC20 AC21 AC22 AC23 AC24 AC25 AC26 AC27 AC28 DELQ
DFH$DFLA	C	FILEA sample applications	**Map sets**: DFH$DGA DFH$DGB DFH$DGC DFH$DGD DFH$DGK DFH$DGL **Programs**: DFH$DALL DFH$DBRW DFH$DCOM DFH$DMNU DFH$DREN DFH$DREP **Transactions**: DADD DBRW DINQ DMNU DORD DORQ DREP DUPD
DFH$EXCI		EXCI batch call interface samples	**Connections**: EXCG EXCS **Program**: DFH$AXCS **Sessions**: EXCG EXCS **Transaction**: EXCI
DFH$FILA		FILEA samples	**File:** FILEA
DFH$ICOM	Assembler	Intersystem communication (ISC)	**Map sets**: DFH$IGB DFH$IGC DFH$IGS DFH$IGX DFH$IG1 DFH$IG2 **Programs**: DFH$ICIC DFH$IFBL DFH$IFBR DFH$IMSN DFH$IMSO DFH$IQRD DFH$IQRL DFH$IQRR DFH$IQXL DFH$IQXR **Transactions**: ICIC IFBL IFBR IMSN IMSO IQRD IQRL IQRR IQXL IQXR
DFHMROAR		Starter MRO systems	**Connections**: CICD CICT **Sessions**: CICSRD CICSRT
DFHMRODR		Starter MRO systems	**Connection**: CICA **Session**: CICSRA

Table 82 (Page 3 of 3). CICS sample applications – resource definitions

Group Name	Language	Description	Resources Defined
DFHMROFA		Starter MRO systems	**File**: FILEA **Map sets**: DFH$AGA DFH$AGB DFH$AGC DFH$AGD DFH$AGK DFH$AGL **Programs**: DFH$AALL DFH$ABRW DFH$ACOM DFH$AMNU DFH$AREN DFH$AREP **Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFHMROFD		Starter MRO systems	**File**: FILEA
DFHMROFT		Starter MRO systems	**Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFHMROTR		Starter MRO systems	**Connection**: CICA **Session**: CICSRA
DFH$PFLA	PL/I	FILEA sample applications	**Map sets**: DFH$PGA DFH$PGB DFH$PGC DFH$PGD DFH$PGK DFH$PGL **Programs**: DFH$PALL DFH$PBRW DFH$PCOM DFH$PMNU DFH$PREN DFH$PREP **Transactions**: PADD PBRW PINQ PMNU PORD PORQ PREP PUPD
DFH$UTIL	Assembler	Transient data utility	**Programs**: DFH$TDWT **Transactions**: TDWT
DFH$VTAM		Terminal definitions	**Typeterms**: DFH$L77 DFH$L78 DFH$L79 DFH$L86 **Terminals**: L77C L77D L78A L79A L86A
DFH$SXP	Assembler	Message domain exits	**Programs**: DFH$SXP1 DFH$SXP2 DFH$SXP3 DFH$SXP4 DFH$SXP5 DFH$SXP6
DFH$STAT	Assembler	Statistics	**Program**: DFH$STED

Model definitions in group DFHPGAIP

The CICS-supplied CSD group DFHPGAIP contains the following model definitions for use with autoinstall for programs.

DFHPGAPG

This is the default PROGRAM definition for program autoinstall.

The definition is as follows:

```
PROGRAM(DFHPGAPG)  GROUP(DFHPGAIP)
DESCRIPTION(default program for program autoinstall)
RELOAD(NO)         RESIDENT(NO)          STATUS(ENABLED)
CEDF(YES)          DATALOCATION(BELOW)   EXECKEY(USER)
```

Figure 63. DFHPGAGP program definition

DFHPGAMP

This is the default MAPSET definition for program autoinstall.

The definition is as follows:

```
MAPSET(DFHPGAMP)  GROUP(DFHPGAIP)
DESCRIPTION(default mapset for program autoinstall)
RESIDENT(NO)      STATUS(ENABLED)
```

Figure 64. DFHPGAMP mapset definition

DFHPGAPT

This is the default PARTITION definition for program autoinstall.

The definition is as follows:

```
PARTITIONSET(DFHPGAPT)  GROUP(DFHPGAIP)
DESCRIPTION(default partitionset for program autoinstall)
RESIDENT(NO)       USAGE(NORMAL)
USESVACOPY(NO)     STATUS(ENABLED)
```

Figure 65. DFHPGAPT partitionset definition

PROFILE definitions in group DFHISC

The CICS-supplied CSD group DFHISC contains the following PROFILE definitions for intersystem communication sessions.

DFHCICSF

CICS uses this profile for the session to the remote system or region when a CICS application program issues a function shipping request.

The definition is as follows:

```
PROFILE(DFHCICSF)  GROUP(DFHISC)
                    DVSUPRT(ALL)    INBFMH(ALL)    LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)    NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)    RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 66. DFHCICSF profile definition

DFHCICSR

CICS uses this profile in transaction routing for communication between the user transaction (running in the application-owning region) and the interregion link or APPC link.

The definition is as follows:

```
PROFILE(DFHCICSR)  GROUP(DFHISC)
                    DVSUPRT(ALL)    INBFMH(ALL)    LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)    NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)    RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 67. DFHCICSR profile definition

DFHCICSS

CICS uses this profile in transaction routing for communication between the relay transaction (running in the terminal-owning region) and the interregion link or APPC link. You can specify a different profile by means of the TRPROF option on the TRANSACTION definition.

The definition is as follows:

```
PROFILE(DFHCICSS)  GROUP(DFHISC)
                    DVSUPRT(ALL)    INBFMH(ALL)    LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)    NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)    RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 68. DFHCICSS profile definition

PROFILE definitions in group DFHSTAND

The CICS-supplied CSD group DFHSTAND contains the following PROFILE definitions.

DFHCICSA

This is the default profile for alternate facilities acquired by the application program ALLOCATE command. A different profile can be named explicitly on the ALLOCATE command.

The definition is as follows:

```
PROFILE(DFHCICSA)
GROUP(DFHSTAND)
                    DVSUPRT(ALL)    INBFMH(ALL)    LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)    NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)    RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 69. DFHCICSA profile definition

DFHCICSE

This is the error profile for principal facilities. CICS uses this profile to pass an error message to the principal facility when the required profile cannot be found.

The definition is as follows:

```
PROFILE(DFHCICSE)
GROUP(DFHSTAND)
                    DVSUPRT(ALL)    INBFMH(NO)     LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)    NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)    RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 70. DFHCICSE profile definition

DFHCICSP

This is the default profile for the page retrieval transaction CSPG. You can specify a different profile for a particular transaction by means of the PROFILE option on the TRANSACTION definition.

The definition is as follows:

```
PROFILE(DFHCICSP)
GROUP(DFHSTAND)
                    DVSUPRT(ALL)    INBFMH(NO)         LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)        NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)        RAQ(NO)
                    RECOVERY        SCRNSIZE(DEFAULT)  UCTRAN(YES)
```

Figure 71. DFHCICSP profile definition

DFHCICST

This is the default profile for principal facilities. You can specify a different profile for a particular transaction by means of the PROFILE option on the TRANSACTION definition.

The definition is as follows:

```
PROFILE(DFHCICST)
GROUP(DFHSTAND)
                    DVSUPRT(ALL)    INBFMH(NO)         LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)        NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)        RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 72. DFHCICST profile definition

DFHCICSV

This is the profile for principal facilities, when the transaction supports only VTAM devices.

The definition is as follows:

```
PROFILE(DFHCICSV)
GROUP(DFHSTAND)
                    DVSUPRT(VTAM)   INBFMH(NO)         LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)        NEPCLASS(0)
                    ONEWTE(NO)      PROTECT(NO)        RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 73. DFHCICSV profile definition

DFHPPF01 and DFHPPF02

Profiles DFHPPF01 and DFHPPF02 are used during CICS initialization, for tasks that are attached before the CSD file definitions have been installed.

The definitions are as follows:

```
PROFILE(DFHPPF01)
GROUP(DFHSTAND)
                    DVSUPRT(VTAM)   INBFMH(NO)         LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)        NEPCLASS(000)
                    ONEWTE(NO)      PROTECT(NO)        RAQ(NO)
                    SCRNSIZE(DEFAULT)


PROFILE(DFHPPF02)
GROUP(DFHSTAND)
                    DVSUPRT(ALL)   INBFMH(NO)         LOGREC(NO)
                    MSGINTEG(NO)    MSGJRNL(NO)        NEPCLASS(000)
                    ONEWTE(NO)      PROTECT(NO)        RAQ(NO)
                    SCRNSIZE(DEFAULT)
```

Figure 74. DFHPPF01 and DFHPPF02 profile definitions

Model TERMINAL definitions in group DFHTERM

The CICS-supplied CSD group DFHTERM contains the following model TERMINAL definitions for automatic installation:

LU2	SNA 3270 Model 2 display using TYPETERM DFHLU2
LU3	SNA 3270 Model 2 printer using TYPETERM DFHLU3
SCSP	SNA 3278 Model 2 printer using TYPETERM DFHSCSP
3270	Non-SNA 3270 Model 2 display using TYPETERM DFH3270
3284	Non-SNA 3270 Model 2 printer using TYPETERM DFH3270P
LU62	APPC (LU6.2) single session terminal using TYPETERM DFHLU62T
L0E2	Non-SNA Model 2 display using TYPETERM DFHLU0E2
L0M2	Non-SNA Model 2 display using TYPETERM DFHLU0M2
L0M3	Non-SNA Model 3 display using TYPETERM DFHLU0M3
L0M4	Non-SNA Model 4 display using TYPETERM DFHLU0M4
L0M5	Non-SNA Model 5 display using TYPETERM DFHLU0M5
L2E2	SNA LU2 Model 2 display using TYPETERM DFHLU2E2
L2M2	SNA LU2 Model 2 display using TYPETERM DFHLU2M2
L2E3	SNA LU2 Model 3 display using TYPETERM DFHLU2E3
L2M3	SNA LU2 Model 3 display using TYPETERM DFHLU2M3
L2E4	SNA LU2 Model 4 display using TYPETERM DFHLU2E4
L2M4	SNA LU2 Model 4 display using TYPETERM DFHLU2M4
L2E5	SNA LU2 Model 5 display using TYPETERM DFHLU2E5
L2M5	SNA LU2 Model 5 display using TYPETERM DFHLU2M5

The following figures show the contents of each definition.

```
TERMINAL(LU2)       GROUP(DFHTERM)      TYPETERM(DFHLU2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2)
```

Figure 75. LU2 model TERMINAL definition—SNA LU type 2. This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, 3290, 3270PC, 3270PC/G, 3270PC/GX, 8775, and 5550.

```
TERMINAL(LU3)       GROUP(DFHTERM)      TYPETERM(DFHLU3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU3)
```

Figure 76. LU3 model TERMINAL definition—SNA LU type 3. This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3284, 3286, 3287, 3288, 3289, and 5550.

```
TERMINAL(SCSP)      GROUP(DFHTERM)      TYPETERM(DFHSCSP)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHSCSP)
```

Figure 77. SCSP model TERMINAL definition—SNA LU type 1. This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3287, 3289, and 5550.

```
TERMINAL(3270)      GROUP(DFHTERM)      TYPETERM(DFH3270)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFH3270)
```

Figure 78. 3270 model TERMINAL definition—locally attached (non-SNA). This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, and 3290.

```
TERMINAL(3284)      GROUP(DFHTERM)      TYPETERM(DFH3270P)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFH3270P)
```

Figure 79. 3284 model TERMINAL definition—locally attached (non-SNA). This definition is for a 3284 Model 2 printer. It is suitable for the following devices: 3262, 3268, 3284, 3287, 3288, 3289, and 5550.

```
TERMINAL(LU62)      GROUP(DFHTERM)       TYPETERM(DFHLU62T)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU62T)
```

Figure 80. LU62 model TERMINAL definition—APPC (LU6.2) terminal. This definition is for an APPC single session terminal and is also suitable for the following devices: DISPLAYWRITER, SCANMASTER, and SYSTEM/38.

```
TERMINAL(L0E2)      GROUP(DFHTERM)       TYPETERM(DFHLU0E2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0E2)
```

Figure 81. L0E2 model TERMINAL definition. Non-SNA model 2 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE NSX32702.

```
TERMINAL(L0M2)      GROUP(DFHTERM)       TYPETERM(DFHLU0M2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M2)
```

Figure 82. L0M2 model TERMINAL definition—non-SNA model 2. This definition matches the VTAM supplied LOGMODE D4B32782.

```
TERMINAL(L0M3)      GROUP(DFHTERM)       TYPETERM(DFHLU0M3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M3)
```

Figure 83. L0M3 model TERMINAL definition—non-SNA model 3. This definition matches the VTAM supplied LOGMODE D4B32783.

```
TERMINAL(L0M4)      GROUP(DFHTERM)        TYPETERM(DFHLU0M4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M4)
```

Figure 84. L0M4 model TERMINAL definition—non-SNA model 4. This definition matches the VTAM supplied LOGMODE D4B32784.

```
TERMINAL(L0M5)      GROUP(DFHTERM)        TYPETERM(DFHLU0M5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M5)
```

Figure 85. L0M5 model TERMINAL definition—non-SNA model 5. This definition matches the VTAM supplied LOGMODE D4B32785.

```
TERMINAL(L2E2)       GROUP(DFHTERM)         TYPETERM(DFHLU2E2)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2E2)
```

Figure 86. L2E2 model TERMINAL definition. SNA LU type 2 model 2 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE SNX32702.

```
TERMINAL(L2M2)       GROUP(DFHTERM)         TYPETERM(DFHLU2M2)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2M2)
```

Figure 87. L2M2 model TERMINAL definition—SNA LU type 2 model 2. This definition matches the VTAM supplied LOGMODE D4A32782.

```
TERMINAL(L2E3)       GROUP(DFHTERM)         TYPETERM(DFHLU2E3)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2E3)
```

Figure 88. L2E3 model TERMINAL definition. SNA LU type 2 model 3 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE SNX32703.

```
TERMINAL(L2M3)       GROUP(DFHTERM)         TYPETERM(DFHLU2M3)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2M3)
```

Figure 89. L2M3 model TERMINAL definition—SNA LU type 2 model 3. This definition matches the VTAM supplied LOGMODE D4A32783.

```
TERMINAL(L2E4)       GROUP(DFHTERM)         TYPETERM(DFHLU2E4)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2E4)
```

Figure 90. L2E4 model TERMINAL definition. SNA LU type 2 model 4 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE SNX32704.

```
TERMINAL(L2M4)       GROUP(DFHTERM)         TYPETERM(DFHLU2M4)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2M4)
```

Figure 91. L2M4 model TERMINAL definition—SNA LU type 2 model 4. This definition matches the VTAM supplied LOGMODE D4A32784.

```
TERMINAL(L2E5)       GROUP(DFHTERM)         TYPETERM(DFHLU2E5)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2E5)
```

Figure 92. L2E5 model TERMINAL definition. SNA LU type 2 model 5 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE LSX32705.

```
TERMINAL(L2M5)       GROUP(DFHTERM)         TYPETERM(DFHLU2M5)
AUTINSTMODEL(ONLY)   AUTINSTNAME(DFHLU2M5)
```

Figure 93. L2M5 model TERMINAL definition—SNA LU type 2 model 5. This definition matches the VTAM supplied LOGMODE D4A32785.

TYPETERM definitions in group DFHTYPE

The CICS-supplied CSD group DFHTYPE contains the following TYPETERM definitions:

DFHCONS	VSE console
DFHLU2	SNA logical unit type 2 (3270 displays)
DFHLU3	SNA logical unit type 3 (3270 printers)
DFHSCSP	SNA logical unit type 1 (3270 SCS printers)
DFH3270	Locally attached (non-SNA) 3270 displays
DFH3270P	Locally attached (non-SNA) 3270 printers
DFHLU62T	SNA logical unit type 6.2 (APPC) single session terminal.
DFHLU0E2	Non-SNA model 2 with extended data stream (Query)
DFHLU0M2	Non-SNA model 2
DFHLU0M3	Non-SNA model 3
DFHLU0M4	Non-SNA model 4
DFHLU0M5	Non-SNA model 5
DFHLU2E2	SNA LU type 2 model 2 with extended data stream (Query)
DFHLU2M2	SNA LU type 2 model 2
DFHLU2E3	SNA LU type 2 model 3 with extended data stream (Query)
DFHLU2M3	SNA LU type 2 model 3
DFHLU2E4	SNA LU type 2 model 4 with extended data stream (Query)
DFHLU2M4	SNA LU type 2 model 4
DFHLU2M5	SNA LU type 2 model 5
DFHLU2E5	SNA LU type 2 model 5 with extended data stream (Query)

The following figures show the contents of each definition.

```
TYPETERM(DFHCONS)  GROUP(DFHTYPE)
DEVICE(CONSOLE)
PAGESIZE(1,124)    AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(NONE)
UCTRAN(YES)
```

Figure 94. DFHCONS TYPETERM definition—VSE console

```
TYPETERM(DFHLU2)   GROUP(DFHTYPE)
DEVICE(LUTYPE2)    TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
SENDSIZE(1536)     RECEIVESIZE(256)    IOAREALEN(256,4000)
ERRLASTLINE(YES)   ERRINTENSIFY(YES)   ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)      QUERY(ALL)          CREATESESS(NO)
```

Figure 95. DFHLU2 TYPETERM definition—SNA LU type 2. This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, 3290, 3270PC, 3270PC/G, 3270PC/GX, 8775, and 5550.

```
TYPETERM(DFHLU3)   GROUP(DFHTYPE)
DEVICE(LUTYPE3)    TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(256)      RECEIVESIZE(256)    IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(NO)                           CREATESESS(NO)
```

Figure 96. DFHLU3 TYPETERM definition—SNA LU type 3. This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3284, 3286, 3287, 3288, 3289, and 5550.

```
TYPETERM(DFHSCSP)  GROUP(DFHTYPE)
DEVICE(SCSPRINT)
PAGESIZE(24,80)    AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(256)      RECEIVESIZE(256)    IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(NO)                           CREATESESS(NO)
```

Figure 97. DFHSCSP TYPETERM definition—SNA LU type 1. This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3287, 3289, and 5550.

```
TYPETERM(DFH3270)  GROUP(DFHTYPE)      SHIPPABLE(YES)
DEVICE(3270)       TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
SENDSIZE(0)        RECEIVESIZE(0)      IOAREALEN(512,0)
ERRLASTLINE(YES)   ERRINTENSIFY(YES)   ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)      QUERY(ALL)          CREATESESS(NO)
```

Figure 98. DFH3270 TYPETERM definition—locally attached (non-SNA). This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, and 3290.

```
TYPETERM(DFH3270P) GROUP(DFHTYPE)
DEVICE(3270P)      TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(0)        RECEIVESIZE(0)      IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(NO)                           CREATESESS(NO)
```

Figure 99. DFH3270P TYPETERM definition—locally attached (non-SNA). This definition is for a 3284 Model 2 printer. It is suitable for the following devices: 3262, 3268, 3284, 3287, 3288, 3289, and 5550.

```
TYPETERM(DFHLU62T) GROUP(DFHTYPE)
DEVICE(APPC)       PAGESIZE(1,40)      AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(NONE)
SENDSIZE(2048)     RECEIVESIZE(2048)   IOAREALEN(0,0)
ATI(YES) TTI(YES)  LOGONMSG(NO)        CREATESESS(NO)
```

Figure 100. DFHLU62T TYPETERM definition—APPC (LU6.2) terminal. This definition is for an APPC single session terminal and is also suitable for the following devices: DISPLAYWRITER, SCANMASTER, and SYSTEM/38.

```
TYPETERM(DFHLU0E2) GROUP(DFHTYPE)
DEVICE(3270)       TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
ALTSCREEN(0,0)     ALTPAGE(0,0)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
RECEIVESIZE(0)     SENDSIZE(0)         IOAREALEN(512,0)
ERRASTLINE(YES)    ERRINTENSIFY(YES)   QUERY(ALL)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)      CREATESESS(NO)
ATI(YES)           TTI(YES)
```

Figure 101. DFHLU0E2 TYPETERM definition. Non-SNA model 2 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE NSX32702

```
TYPETERM(DFHLU0M2)  GROUP(DFHTYPE)
DEVICE(3270)        TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)    PAGESIZE(24,80)     AUTOPAGE(NO)
ALTSCREEN(0,0)      ALTPAGE(0,0)
BRACKET(YES)        BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)   EXTENDEDDS(NO)      UCTRAN(YES)
RECEIVESIZE(0)      SENDSIZE(0)         IOAREALEN(512,0)
ERRLASTLINE(YES)    ERRINTENSIFY(YES)   QUERY(NO)
DISCREQ(YES)        RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)       CREATESESS(NO)
ATI(YES)            TTI(YES)
```

Figure 102. DFHLU0M2 TYPETERM definition. Non-SNA model 2 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE D4B32782

```
TYPETERM(DFHLU0M3)  GROUP(DFHTYPE)
DEVICE(3270)        TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)    PAGESIZE(24,80)     AUTOPAGE(NO)
ALTSCREEN(32,80)    ALTPAGE(32,80)
BRACKET(YES)        BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)   EXTENDEDDS(NO)      UCTRAN(YES)
RECEIVESIZE(0)      SENDSIZE(0)         IOAREALEN(512,0)
ERRLASTLINE(YES)    ERRINTENSIFY(YES)   QUERY(NO)
DISCREQ(YES)        RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)       CREATESESS(NO)
ATI(YES)            TTI(YES)
```

Figure 103. DFHLU0M3 TYPETERM definition—non-SNA model 3. This definition matches the VTAM supplied LOGMODE D4B32783.

```
TYPETERM(DFHLU0M4)     GROUP(DFHTYPE)
DEVICE(3270)           TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(NO)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(0)         SENDSIZE(0)            IOAREALEN(512,0)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 104. DFHLU0M4 TYPETERM definition—non-SNA model 4. This definition matches the VTAM supplied LOGMODE D4B32784.

```
TYPETERM(DFHLU0M5)     GROUP(DFHTYPE)
DEVICE(3270)           TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(NO)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(0)         SENDSIZE(0)            IOAREALEN(512,0)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 105. DFHLU0M5 TYPETERM definition—non-SNA model 5. This definition matches the VTAM supplied LOGMODE D4B32785.

```
TYPETERM(DFHLU2E2)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(0,0)         ALTPAGE(0,0)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(YES)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 106. DFHLU2E2 TYPETERM definition. SNA LU type 2 model 2 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE SNX32702.

```
TYPETERM(DFHLU2M2)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(0,0)         ALTPAGE(0,0)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(1536)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 107. DHLU2M2 TYPETERM definition—SNA LU type 2 model 2. This definition matches the VTAM supplied LOGMODE D4A32782.

```
TYPETERM(DFHLU2E3)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(32,80)       ALTPAGE(32,80)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(YES)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 108. DFHLU2E3 TYPETERM definition. SNA LU type 2 model 3 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE SNX32703.

```
TYPETERM(DFHLU2M3)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(32,80)       ALTPAGE(32,80)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 109. DFHLU2M3 TYPETERM definition—SNA LU type 2 model 3. This definition matches the VTAM supplied LOGMODE D4A32783.

```
TYPETERM(DFHLU2E4)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)          SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)       AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(YES)       ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(YES)       UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)        IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)     QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)           AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 110. DFHLU2E4 TYPETERM definition. SNA LU type 2 model 4 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE SNX32704.

```
TYPETERM(DFHLU2M4)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)          SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)       AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(YES)       ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)        IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)     QUERY(NO)
DISCREQ(YES)           RELREQ(YES)           AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 111. DFHLU2M4 TYPETERM definition—SNA LU type 2 model 4. This definition matches the VTAM supplied LOGMODE D4A32784.

```
TYPETERM(DFHLU2E5)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)          SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)       AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(YES)       ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3480)        IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)     QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)           AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

Figure 112. DFHLU2E5 TYPETERM definition—SNA LU type 2 model 5. SNA LU type 2 model 5 with extended data stream (Query). This definition matches the VTAM supplied LOGMODE LSX32705.

```
TYPETERM(DFHLU2M5)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)         ATI(YES)
TTI(YES)
```

Figure 113. DFHLU2M5 TYPETERM definition—SNA LU type 2 model 5. This definition matches the VTAM supplied LOGMODE D4A32785.

```
TYPETERM(DFH3767)      GROUP(DFHTYPE)
DEVICE(3767)           SENDSIZE(256)          RECEIVESIZE(256)
ATI(YES)               RELREQ(YES)            DISCREQ(YES)
IOAREALEN(256,0)
```

Figure 114. DFH3767 TYPETERM definition—SNA LU type 1.. This definition is for a 3767. It is used by NETVIEW OPCTL sessions.

Appendix C. Keyword cross-reference tables

This appendix contains two cross-reference tables relating macro operands (past and present) to RDO keywords.

Macro operand to RDO keyword

This list is in alphabetic order of macro operands, giving the equivalent RDO keyword. “RDO keyword to macro operand” on page 352 gives the same list in order of RDO keyword.

MACRO OPERAND	RESOURCE TYPE	RDO ATTRIBUTE
ACCMETH=INDIRECT	Connection	ACCESSMETHOD(INDIRECT)
ACCMETH=IRC	Connection	ACCESSMETHOD(IRC)
ACCMETH=VTAM	Connection	ACCESSMETHOD(VTAM)
ACCMETH=(KEY|ADR)	File	SHR4ACCESS(KEY|RBA)
ALTPGE	Typeterm	ALTPAGE
ALTPRT(,COPY)	Terminal	ALTPRINTCOPY
ALTPRT(label,)	Terminal	ALTPRINTER
ALTSCRN	Typeterm	ALTSCREEN
ALTSFX	Typeterm	ALTSUFFIX
ANTICPG	See note 2.	
BASE	File	NSRGROUP
BMSFEAT (see note 5)	Typeterm	ROUTEDMSGS(ALL)
BMSFEAT=FMHPARM	Typeterm	FMHPARM(YES)
BMSFEAT=NOROUTE	Typeterm	ROUTEDMSGS(NONE)
BMSFEAT=NOROUTEALL	Typeterm	ROUTEDMSGS(SPECIFIC)
BMSFEAT=OBFMT	Typeterm	OBFORMAT(YES)
BMSFEAT=OBOPID	Typeterm	OBOPERID(YES)
BRACKET	Typeterm	BRACKET
BUFFER	Typeterm	SENDSIZE
BUFFER	Sessions	SENDSIZE
BUFFERS=(1K(count))	Lsrpool	DATA1K
BUFFERS=(2K(count))	Lsrpool	DATA2K
BUFFERS=(4K(count))	Lsrpool	DATA4K
BUFFERS=(8K(count))	Lsrpool	DATA8K
BUFFERS=(12K(count))	Lsrpool	DATA12K
BUFFERS=(16K(count))	Lsrpool	DATA16K
BUFFERS=(20K(count))	Lsrpool	DATA20K
BUFFERS=(24K(count))	Lsrpool	DATA24K
BUFFERS=(28K(count))	Lsrpool	DATA28K
BUFFERS=(32K(count))	Lsrpool	DATA32K
BUFFERS=(512(count))	Lsrpool	DATA512
BUFND	File	DATABUFFERS
BUFNI	File	INDEXBUFFERS
CATNAME	File	CATNAME
CHNASSY	Sessions	BUILDCHAIN
CHNASSY	Typeterm	BUILDCHAIN
CONNECT	Typeterm	AUTOCONNECT
CONNECT	Connection	AUTOCONNECT
CONNECT	Sessions	AUTOCONNECT
DATASTR	Connection	DATASTREAM
DEFSCRN	Typeterm	DEFSCREEN
DISCREQ	Typeterm	RELREQ=(,NO|YES)
DSNAME	File	DSNAME
DSNSHR	File	DSNSHARING
DTB=NO	See note 4.	

MACRO OPERAND	RESOURCE TYPE	RDO ATTRIBUTE
DTB=YES	Transaction	INDOUBT(BACKOUT)
DTB=YES,NO	Transaction	INDOUBT(COMMIT)
DTB=YES,WAIT	Transaction	INDOUBT(WAIT)
DTIMOUT	Transaction	DTIMOUT
DUMP	Transaction	DUMP
DVSUPRT	Profile	DVSUPRT
ERRATT=BLINK	Typeterm	ERRHILIGHT(BLINK)
ERRATT=color	Typeterm	ERRCOLOR
ERRATT=INTENSIFY	Typeterm	ERRINTENSIFY
ERRATT=LASTLINE	Typeterm	ERRLASTLINE
ERRATT=REVERSE	Typeterm	ERRHILIGHT(REVERSE)
ERRATT=UNDERLINE	Typeterm	ERRHILIGHT(UNDERLINE)
EXTSEC	See note 9.	
FDUMP	See note 3.	
FEATURE=APLKYBD	Typeterm	APLKYBD
FEATURE=APLTEXT	Typeterm	APLTEXT
FEATURE=ASCII-7	Typeterm	ASCII(7)
FEATURE=ASCII-8	Typeterm	ASCII(8)
FEATURE=AUDALARM	Typeterm	AUDIBLEALARM
FEATURE=BTRANS	Typeterm	BACKTRANS
FEATURE=COLOR	Typeterm	COLOR
FEATURE=COPY	Typeterm	COPY
FEATURE=DCKYBD	Typeterm	DUALCASEKYBD
FEATURE=EXTDS	Typeterm	EXTENDEDDS
FEATURE=HILIGHT	Typeterm	HILIGHT
FEATURE=KATAKANA	Typeterm	KATAKANA
FEATURE=MSRCNTRL	Typeterm	MSRCONTROL
FEATURE=OUTLINE	Typeterm	OUTLINE
FEATURE=PARALLEL	Connection	SINGLESESS(NO)
FEATURE=PARTNS	Typeterm	PARTITIONS
FEATURE=PTRADAPT	Typeterm	PRINTADAPTER
FEATURE=PS	Typeterm	PROGSYMBOLS
FEATURE=QUERYALL	Typeterm	QUERY(ALL)
FEATURE=QUERYCOLD	Typeterm	QUERY(COLD)
FEATURE=SELCTPEN	Typeterm	LIGHTPEN
FEATURE=SINGLE	Connection	SINGLESESS(YES)
FEATURE=SOSI	Typeterm	SOSI
FEATURE=TEXTKYBD	Typeterm	TEXTKYBD
FEATURE=TEXTPRINT	Typeterm	TEXTPRINT
FEATURE=UCTRAN	Typeterm	UCTRAN
FEATURE=VALIDATION	Typeterm	VALIDATION
FF	Typeterm	FORMFEED
FILE	File	FILE
FILSTAT=ENABLED|DISABLED	File	STATUS
FILSTAT=OPENED|CLOSED	File	OPENTIME
GMMSG	Typeterm	LOGONMSG
HF	Typeterm	HORIZFORM
INBFMH	Profile	INBFMH
INDSYS	Connection	INDSYS
JFILEID	Profile	JOURNAL
JID	File	FWDRECOVLOG
JID=SYSTEM	File	JOURNAL(1)
JREQ=WN	File	JNLADD
JREQ=RU	File	JNLREAD(UPDATEONLY)
JREQ=RO	File	JNLREAD(READONLY)
JREQ=SYN	File	JNLSYNCREAD
JREQ=ASY	File	JNLSYNCWRITE(NO)
JREQ=WU	File	JNLUPDATE
KEYLEN	File	KEYLENGTH
KEYLEN	Lsrpool	MAXKEYLENGTH

MACRO OPERAND	RESOURCE TYPE	RDO ATTRIBUTE
LDC	Typeterm	LDCLIST
LOCALQ	Transaction	LOCALQ
LOG=YES	File	RECOVERY
LOGMODE	Typeterm	LOGMODE
LOGREC	Profile	LOGREC
LRECL	File	RECORDSIZE
LSRPOOL	File	See note 8
MAPSET	Mapset	MAPSET
MAXSESS	Sessions	MAXIMUM
MODENAM	Profile	MODENAME
MODENAM	Sessions	MODENAME
MODENAM	Terminal	MODENAME
MSGJRNL	Profile	MSGJRNL
MSGPOPT=(,CCONTRL)	See note 1.	
MSGPOPT=(,MSGINTEG)	See note 1.	
MSGPOPT=(,ONEWTE)	See note 1.	
MSGPOPT=(,PROTECT)	See note 1.	
MSGPREQ=(,CCONTRL)	Profile	CHAINCONTROL
MSGPREQ=(,MSGINTEG)	Profile	MSGINTEG
MSGPREQ=(,ONEWTE)	Profile	ONEWTE
MSGPREQ=(,PROTECT)	Profile	PROTECT
NATLANG	Terminal	NATLANG
NEPCLAS	Profile	NEPCLASS
NEPCLAS	Typeterm	NEPCLASS
NETNAME	Connection	NETNAME
NETNAME	Terminal	NETNAME
NETNAMQ	Sessions	NETNAMEQ
PARTSET	Partitionset	PARTITIONSET
PARTSET	Transaction	PARTITIONSET
PASSWD	File	PASSWORD
PGESIZE	Typeterm	PAGESIZE
PGESTAT=AUTOPAGE	Typeterm	AUTOPAGE(YES)
PGESTAT=PAGE	Typeterm	AUTOPAGE(NO)
PGMLANG	Program	LANGUAGE
PGMSTAT	Mapset	STATUS
PGMSTAT	Partitionset	STATUS
PGMSTAT	Program	STATUS
PIPELN	Terminal	POOL
PRINTIM	Terminal	PRINTIMMED
PRINTTO(,COPY)	Terminal	PRINTERCOPY
PRINTTO(label,)	Terminal	PRINTER
PRTDMSG	Terminal	PRINTEDMSG
PRTTYPE	Typeterm	PRINTERTYPE
PRMSIZE	See note 1	
PROFILE	Profile	PROFILE
PROGRAM	Program	PROGRAM
PROGRAM	Transaction	PROGRAM
PTRCOMP	Profile	PRINTERCOMP
RAQ	Profile	RAQ
RECEIVE=(,n)	Sessions	RECEIVECOUNT
RECEIVE=(x,)	Sessions	RECEIVEPFX
RECFM	Connection	RECORDFORMAT
RECFORM=U|V|F)	File	RECORDFORMAT
RELOAD	Program	RELOAD
RELREQ=(,NO|YES)	Sessions	DISCREQ
RELREQ=(NO|YES,)	Sessions	RELREQ
RELREQ=(,NO|YES)	Typeterm	DISCREQ
RELREQ=(NO|YES,)	Typeterm	RELREQ
RES=ALIGN	See note 1.	
RES=FIX	See note 1.	

MACRO OPERAND	RESOURCE TYPE	RDO ATTRIBUTE
RES=NO	Program	RESIDENT(NO)
RES=PAGEOUT	See note 1.	
RES=YES	Mapset	RESIDENT(YES)
RES=YES	Partitionset	RESIDENT(YES)
RES=YES	Program	RESIDENT(YES)
RESTART	Transaction	RESTART
RMTNAME	File	REMOTENAME
RMTNAME	Terminal	REMOTENAME
RMTNAME	Transaction	REMOTENAME
RNOTIFY	Typeterm	RECOVNOTIFY
ROPTION	Typeterm	RECOVOPTION
RSCLMT	Lsrpool	SHARELIMIT
RTIMOUT	Profile	RTIMOUT
RUSIZE	Sessions	RECEIVESIZE
RUSIZE	Typeterm	RECEIVESIZE
SCRNSZE	Profile	SCRNSIZE
SEND=(,n)	Sessions	SENDCOUNT
SEND=(x,)	Sessions	SENDPFX
SERVREQ=ADD	File	ADD
SERVREQ=BROWSE	File	BROWSE
SERVREQ=DELETE	File	DELETE
SERVREQ=READ	File	READ
SERVREQ=UPDATE	File	UPDATE
SESTYPE	Typeterm	SESSIONTYPE[5]
SIGNOFF	Typeterm	SIGNOFF
SIZE=number	File	MAXNUMRECS
SPLDEST	Terminal	SPOOLDEST
SPLPRTO	Terminal	SPOOLPRTTO
SPOOLTO	Terminal	SPOOLTO
SPRTRSL	Terminal	SPOOLPRTRSL
SPURGE	Transaction	SPURGE
STRNO	File	STRINGS
STRNO	Lsrpool	STRINGS
SYSIDNT	Connection	CONNECTION
SYSIDNT	File	REMOTESYSTEM
SYSIDNT	Sessions	CONNECTION
SYSIDNT	Terminal	REMOTESYSTEM
SYSIDNT	Transaction	REMOTESYSTEM
TASKNO	Terminal	TASKLIMIT
TASKREQ	Transaction	TASKREQ
TCLASS	Transaction	TCLASS
TCTUAL	Sessions	USERAREALEN
TCTUAL	Typeterm	USERAREALEN
TIOAL	Sessions	IOAREALEN
TIOAL	Typeterm	IOAREALEN
TPURGE	Transaction	TPURGE
TRACE	Transaction	TRACE
TRANSID	Terminal	TRANSACTION
TRANSID	Transaction	TRANSACTION
TRMIDNT	Sessions	SESSNAME
TRMIDNT	Terminal	TERMINAL
TRMMODL	Typeterm	TERMMODEL
TRMPRTY	Sessions	SESSPRIORITY
TRMPRTY	Terminal	TERMPRIORITY
TRMSTAT (see note 6)	Typeterm	ATI(NO) and TTI(NO)

[5] Not relevant for LU6.1

MACRO OPERAND	RESOURCE TYPE	RDO ATTRIBUTE
TRMSTAT (see note 7)	Typeterm	CREATESESS(YES)
TRMSTAT=INPUT	See note 1.	
TRMSTAT=INTLOG	Typeterm	CREATESESS(YES)
TRMSTAT=NOINTLOG	Typeterm	CREATESESS(NO)
TRMSTAT=‘OUT OF SERVICE’	Connection	INSERVICE(No)
TRMSTAT=‘OUT OF SERVICE’	Sessions	INSERVICE(No)
TRMSTAT=‘OUT OF SERVICE’	Terminal	INSERVICE(No)
TRMSTAT=RECEIVE	Typeterm	ATI(YES) and TTI(NO)
TRMSTAT=TRANSACTION	Typeterm	ATI(NO) and TTI(YES)
TRMSTAT=TRANSCEIVE	Typeterm	ATI(YES) and TTI(YES)
TRMTYPE	Connection	PROTOCOL
TRMTYPE	Sessions	PROTOCOL
TRMTYPE	Typeterm	DEVICE
TRNPRTY	Transaction	PRIORITY
TRNSTAT	Transaction	STATUS
TRPROF	Transaction	TRPROF
TWASIZE	Transaction	TWASIZE
TYPE=CICSTABLE|USERTABLE	File	TABLE
USAGE=MAP	Mapset	USAGE
USAGE=MAP	Partitionset	USAGE
USAGE=MAP	Program	USAGE
USERID	Sessions	USERID
USERID	Terminal	USERID
USERSEC	Connection	ATTACHSEC
USERSEC	Terminal	ATTACHSEC
VF	Typeterm	VERTICALFORM
XSNAME	Connection	SECURITYNAME
XSNAME	Terminal	SECURITYNAME
XTRANID	Transaction	XTRANID

Notes:

1. No RDO equivalent is provided.
2. There is no equivalent attribute in RDO because anticipatory paging is no longer supported.
3. There is no RDO equivalent of FDUMP. Control over the production of dumps is available by manipulating the system dump table.
4. The equivalent of DTB=NO is not supported by RDO; the equivalent of DTB=YES is forced for those transactions migrated from the PCT to RDO.
5. The RDO equivalent of not specifying either NOROUTE or NOROUTEALL for BMSFEAT is ROUTEDMSGS(ALL).
6. The RDO equivalent of not specifying any of TRANCEIVE, RECEIVE, or TRANSACTION is ATI(NO), TTI(NO).
7. The RDO equivalent of not specifying either INTLOG or NOINTLOG for TRMSTAT is CREATESESS(YES).
8. The RDO equivalent of the macro keyword LSRPOOL is LSRPOOLID on CEDA DEFINE LSRPOOL or on CEDA DEFINE FILE.
9. Security checking is now mandatory for all transactions.

RDO keyword to macro operand

This list is in alphabetic order of RDO keyword, giving the equivalent macro operand. “Macro operand to RDO keyword” on page 347 gives the same list in order of macro operand.

RDO ATTRIBUTE	RESOURCE TYPE	MACRO OPERAND
ACCESSMETHOD	Connection	ACCMETH
ADD	File	SERVREQ=ADD
ALIAS	Transaction	See note 1.
ALTPAGE	Typeterm	ALTPGE
ALTPRINTCOPY	Terminal	ALTPRT(,COPY)
ALTPRINTER	Terminal	ALTPRT(label,)
ALTSCREEN	Typeterm	ALTSCRN
ALTSUFFIX	Typeterm	ALTSFX
APLKYBD	Typeterm	FEATURE=APLKYBD
APLTEXT	Typeterm	FEATURE=APLTEXT
ASCII(7)	Typeterm	FEATURE=ASCII-7
ASCII(8)	Typeterm	FEATURE=ASCII-8
ATI(NO) and TTI(YES)	Typeterm	TRMSTAT=TRANSACTION
ATI(YES) and TTI(NO)	Typeterm	TRMSTAT=RECEIVE
ATI(YES) and TTI(YES)	Typeterm	TRMSTAT=TRANSCEIVE
ATTACHSEC	Connection	USERSEC=IDENTIFY
ATTACHSEC	Connection	USERSEC=LOCAL
ATTACHSEC	Connection	USERSEC=MIXIDPE
ATTACHSEC	Connection	USERSEC=PERSISTENT
ATTACHSEC	Connection	USERSEC=VERIFY
ATTACHSEC	Terminal	USERSEC=IDENTIFY
ATTACHSEC	Terminal	USERSEC=LOCAL
ATTACHSEC	Terminal	USERSEC=MIXIDPE
ATTACHSEC	Terminal	USERSEC=PERSISTENT
ATTACHSEC	Terminal	USERSEC=VERIFY
AUDIBLEALARM	Typeterm	FEATURE=AUDALARM
AUTINSTMODEL	Terminal	See note 1.
AUTINSTNAME	Terminal	See note 1.
AUTOCONNECT	Connection	CONNECT
AUTOCONNECT	Sessions	CONNECT
AUTOCONNECT	Typeterm	CONNECT
AUTOPAGE(NO)	Typeterm	PGESTAT=PAGE
AUTOPAGE(YES)	Typeterm	PGESTAT=AUTOPAGE
BACKTRANS	Typeterm	FEATURE=BTRANS
BINDPASSWORD	Connection	BINDPWD
BINDPASSWORD	Terminal	BINDPWD
BRACKET	Typeterm	BRACKET
BROWSE	File	SERVREQ=BROWSE
BUILDCHAIN	Sessions	CHNASSY=YES
BUILDCHAIN	Typeterm	CHNASSY
CATNAME	File	See note 1.
CEDF	Program	See note 1.
CGCSGID	Typeterm	See note 1.
CHAINCONTROL	Profile	MSGPREQ=CCONTRL
CMDSEC	Transaction	See note 1
COLOR	Typeterm	FEATURE=COLOR
CONFDATA	Transaction	See note 1.
CONNECTION	Connection	SYSIDNT
CONNECTION	Sessions	SYSIDNT
CONNTYPE	Connection	See note 1.
COPY	Typeterm	FEATURE=COPY
CREATESESS(NO)	Typeterm	TRMSTAT=NOINTLOG
CREATESESS(YES)	Typeterm	See note 2.
DATABUFFERS	File	BUFND
DATASTREAM	Connection	DATASTR

RDO ATTRIBUTE	RESOURCE TYPE	MACRO OPERAND
DATA1K	Lsrpool	BUFFERS=(1K(count))
DATA2K	Lsrpool	BUFFERS=(2K(count))
DATA4K	Lsrpool	BUFFERS=(4K(count))
DATA8K	Lsrpool	BUFFERS=(8K(count))
DATA12K	Lsrpool	BUFFERS=(12K(count))
DATA16K	Lsrpool	BUFFERS=(16K(count))
DATA20K	Lsrpool	BUFFERS=(20K(count))
DATA24K	Lsrpool	BUFFERS=(24K(count))
DATA28K	Lsrpool	BUFFERS=(28K(count))
DATA32K	Lsrpool	BUFFERS=(32K(count))
DATA512	Lsrpool	BUFFERS=(512(count))
DEFSCREEN	Typeterm	DEFSCRN
DELETE	File	SERVREQ=DELETE
DEVICE	Typeterm	TRMTYPE
DISCREQ	Sessions	RELREQ=(,NO|YES)
DISCREQ	Typeterm	RELREQ=(,NO|YES)
DSNAME	File	DSNAME
DSNSHARING	File	DSNSHR
DTIMOUT	Transaction	DTIMOUT
DUALCASEKYBD	Typeterm	FEATURE=DCKYBD
DUMP	Transaction	DUMP
DVSUPRT	Profile	DVSUPRT
DYNAMIC	Transaction	See note 1
ERRCOLOR	Typeterm	ERRATT=color
ERRHILIGHT(BLINK)	Typeterm	ERRATT=BLINK
ERRHILIGHT(REVERSE)	Typeterm	ERRATT=REVERSE
ERRHILIGHT(UNDERLINE)	Typeterm	ERRATT=UNDERLINE
ERRINTENSIFY	Typeterm	ERRATT=INTENSIFY
ERRLASTLINE	Typeterm	ERRATT=LASTLINE
EXTENDEDDS	Typeterm	FEATURE=EXTDS
FILE	File	FILE
FMHPARM(YES)	Typeterm	BMSFEAT=FMHPARM
FORMFEED	Typeterm	FF
FWDRECOVLOG	File	JID
GROUP	Terminal	See note 1.
GROUP	Tranclass	See note 1.
GROUP	Typeterm	See note 1.
HILIGHT	Typeterm	FEATURE=HILIGHT
HORIZFORM	Typeterm	HF
INBFMH	Profile	INBFMH
INDEXBUFFERS	File	BUFNI
INDEX1K	Lsrpool	See note 1.
INDEX2K	Lsrpool	See note 1.
INDEX4K	Lsrpool	See note 1.
INDEX8K	Lsrpool	See note 1.
INDEX12K	Lsrpool	See note 1.
INDEX16K	Lsrpool	See note 1.
INDEX20K	Lsrpool	See note 1.
INDEX24K	Lsrpool	See note 1.
INDEX28K	Lsrpool	See note 1.
INDEX32K	Lsrpool	See note 1.
INDEX512	Lsrpool	See note 1.
INDOUBT(BACKOUT)	Transaction	DTB=YES
INDOUBT(COMMIT)	Transaction	DTB=YES,NO
INDOUBT(WAIT)	Transaction	DTB=YES,WAIT
INDSYS	Connection	INDSYS
INSERVICE (No)	Connection	TRMSTAT=‘OUT OF SERVICE’
INSERVICE (No)	Sessions	TRMSTAT=‘OUT OF SERVICE’
INSERVICE (No)	Terminal	TRMSTAT=‘OUT OF SERVICE’
IOAREALEN	Sessions	TIOAL

RDO ATTRIBUTE	RESOURCE TYPE	MACRO OPERAND
IOAREALEN	Typeterm	TIOAL
JNLADD(BEFORE)	File	JREQ=WN
JNLREAD(UPDATEONLY)	File	JREQ=RU
JNLREAD(READONLY)	File	JREQ=RO
JNLSYNCREAD	File	JREQ=SYN
JNLSYNCWRITE(NO)	File	JREQ=ASY
JNLUPDATE	File	JREQ=WU
JOURNAL	File	JID
JOURNAL	Profile	JFILEID
KATAKANA	Typeterm	FEATURE=KATAKANA
KEYLENGTH	File	KEYLEN
LANGUAGE	Program	PGMLANG
LDCLIST	Typeterm	LDC
LIGHTPEN	Typeterm	FEATURE=SELCTPEN
LOCALQ	Transaction	LOCALQ
LOGMODE	Typeterm	LOGMODE
LOGMODECOM	Typeterm	See note 1.
LOGONMSG	Typeterm	GMMSG
LOGREC	Profile	LOGREC
LSRPOOL	Lsrpool	See note 1
LSRPOOLID	File	LSRPOOL
LSRPOOLID	Lsrpool	See note 4
MAPSET	Mapset	MAPSET
MAXACTIVE	Tranclass	See note 1.
MAXIMUM	Sessions	MAXSESS
MAXKEYLENGTH	Lsrpool	KEYLEN
MAXNUMRECS	File	SIZE
MAXQTIME	Connection	See note 1.
MODENAME	Profile	MODENAM
MODENAME	Sessions	MODENAM
MODENAME	Terminal	MODENAM
MSGINTEG	Profile	MSGPREQ=(,MSGINTEG)
MSGJRNL	Profile	MSGJRNL
MSRCONTROL	Typeterm	FEATURE=MSRCNTRL
NATLANG	Terminal	NATLANG
NEPCLASS	Profile	NEPCLAS
NEPCLASS	Sessions	See note 1
NEPCLASS	Typeterm	NEPCLAS
NETNAME	Connection	NETNAME
NETNAME	Terminal	NETNAME
NETNAMEQ	Sessions	NETNAMQ
NSRGROUP	File	BASE
OBFORMAT(YES)	Typeterm	BMSFEAT=OBFMT
OBOPERID(YES)	Typeterm	BMSFEAT=OBOPID
ONEWTE	Profile	MSGPREQ=(,ONEWTE)
OPENTIME	File	FILSTAT=OPEN|CLOSED
PASSWORD	File	PASSWD
POOL	Terminal	PIPELN
PRIMEDSIZE	Transaction	PRMSIZE
PRINTADAPTER	Typeterm	FEATURE=PTRADAPT
PRINTEDMSG	Terminal	PRTDMSG
PRINTER	Terminal	PRINTTO(label,)
PRINTERCOMP	Profile	PTRCOMP
PRINTERCOPY	Terminal	PRINTTO(,COPY)
PRINTERTYPE	Typeterm	PRTTYPE
PRINTIMMED	Terminal	PRINTIM
PRIORITY	Transaction	TRNPRTY
PROFILE	Profile	PROFILE
PROGRAM	Program	PROGRAM
PROGRAM	Transaction	PROGRAM

RDO ATTRIBUTE	RESOURCE TYPE	MACRO OPERAND
PROGSYMBOLS	Typeterm	FEATURE=PS
PROTECT	Profile	MSGPREQ=(,PROTECT)
PROTOCOL	Connection	TRMTYPE
PROTOCOL	Sessions	TRMTYPE
PSRECOVERY	Connection	See note 1.
PURGETHRESH	Tranclass	See note 1.
QUERY(ALL)	Typeterm	FEATURE=QUERYALL
QUERY(COLD)	Typeterm	FEATURE=QUERYCOLD
QUEUELIMIT	Connection	See note 1.
RAQ	Profile	RAQ
READ	File	SERVREQ=READ
RECEIVECOUNT	Sessions	RECEIVE=(,n)
RECEIVEPFX	Sessions	RECEIVE=(x,)
RECEIVESIZE	Sessions	RUSIZE
RECEIVESIZE	Typeterm	RUSIZE
RECORDFORMAT	Connection	RECFM
RECORDFORMAT	File	RECFORM=(U|V|F)
RECORDSIZE	File	LRECL
RECOVERY	File	LOG=YES
RECOVNOTIFY	Typeterm	RNOTIFY
RECOVOPTION	Sessions	ROPTION
RECOVOPTION	Typeterm	ROPTION
RELOAD	Program	RELOAD
RELREQ	Sessions	RELREQ=(NO|YES,)
RELREQ	Typeterm	RELREQ=(NO|YES,)
REMOTENAME	Connection	RMTNAME
REMOTENAME	File	RMTNAME
REMOTENAME	Terminal	RMTNAME
REMOTENAME	Transaction	RMTNAME
REMOTESYSNET	Connection	See note 1.
REMOTESYSTEM	Connection	SYSIDNT
REMOTESYSTEM	File	SYSIDNT
REMOTESYSTEM	Terminal	SYSIDNT
REMOTESYSTEM	Transaction	SYSIDNT
RESIDENT	Mapset	RES
RESIDENT	Partitionset	RES
RESIDENT	Program	RES
RESSEC	Transaction	RSLC
RESTART	Transaction	RESTART
ROUTEDMSGS(NONE)	Typeterm	BMSFEAT=NOROUTE
ROUTEDMSGS(SPECIFIC)	Typeterm	BMSFEAT=NOROUTEALL
ROUTEDMSGS(ALL)	Typeterm	See note 3.
RTIMOUT	Profile	RTIMOUT
RUNAWAY	Transaction	See note 1.
SCRNSIZE	Profile	SCRNSZE
SECURITYNAME	Connection	XSNAME
SECURITYNAME	Terminal	XSNAME
SENDCOUNT	Sessions	SEND=(,n)
SENDPFX	Sessions	SEND=(x,)
SENDSIZE	Sessions	BUFFER
SENDSIZE	Typeterm	BUFFER
SESSIONS	Sessions	See note 1.
SESSIONTYPE	Typeterm	SESTYPE
SESSNAME	Sessions	TRMIDNT
SESSPRIORITY	Sessions	TRMPRTY
SHARELIMIT	Lsrpool	RSCLMT
SHR4ACCESS	File	ACCMETH=(,KEY|ADR)
SHIPPABLE	Typeterm	See note 1.
SHUTDOWN	Transaction	See note 1.
SIGNOFF	Typeterm	SIGNOFF

RDO ATTRIBUTE	RESOURCE TYPE	MACRO OPERAND
SINGLESESS	Connection	FEATURE=SINGLE
SOSI	Typeterm	FEATURE=SOSI
SPOOLDEST	Terminal	SPLDEST
SPOOLFCB	Terminal	See note 1.
SPOOLPRTRSL	Terminal	SPRTRSL
SPOOLPRTTO	Terminal	SPLPRTO
SPOOLTO	Terminal	SPOOLTO
SPURGE	Transaction	SPURGE
STATUS	File	FILSTAT=ENABLED|DISABLED
STATUS	Mapset	PGMSTAT
STATUS	Partitionset	PGMSTAT
STATUS	Program	PGMSTAT
STATUS	Transaction	TRNSTAT
STORAGECLEAR	Transaction	See note 1.
STRINGS	File	STRNO
STRINGS	Lsrpool	STRNO
TABLE	File	TYPE=CICSTABLE|USERTABLE
TASKDATAKEY	Connection	See note 1.
TASKLIMIT	Terminal	TASKNO
TASKREQ	Transaction	TASKREQ
TERMINAL	Terminal	TRMIDNT
TERMMODEL	Typeterm	TRMMODL
TERMPRIORITY	Terminal	TRMPRTY
TEXTKYBD	Typeterm	FEATURE=TEXTKYBD
TEXTPRINT	Typeterm	FEATURE=TEXTPRINT
TPURGE	Transaction	TPURGE
TRACE	Transaction	TRACE
TRANCLASS	Tranclass	See note 1.
TRANCLASS	Transaction	See note 1.
TRANSACTION	Terminal	TRANSID
TRANSACTION	Transaction	TRANSID
TRPROF	Transaction	TRPROF
TTI(NO) and ATI(YES)	Typeterm	TRMSTAT=RECEIVE
TTI(YES) and ATI(NO)	Typeterm	TRMSTAT=TRANSACTION
TTI(YES) and ATI(YES)	Typeterm	TRMSTAT=TRANCEIVE
TYPETERM	Terminal	See note 1.
TYPETERM	Typeterm	See note 1.
TWASIZE	Transaction	TWASIZE
UCTRAN	Typeterm	FEATURE=UCTRAN
UPDATE	File	SERVREQ=UPDATE
USAGE	Mapset	USAGE=MAP
USAGE	Partitionset	USAGE=MAP
USAGE	Program	USAGE=MAP
USESVACOPY	Mapset	SHR=YES
USESVACOPY	Partitionset	SHR=YES
USESVACOPY	Program	SHR=YES
USERAREALEN	Sessions	TCTUAL
USERAREALEN	Typeterm	TCTUAL
USERID	Sessions	USERID
USERID	Terminal	USERID
VALIDATION	Typeterm	FEATURE=VALIDATION
VERTICALFORM	Typeterm	VF
XRFSIGNOFF	Typeterm	See note 1
XTRANID	Transaction	XTRANID

Notes:

1. There is no macro equivalent.
2. CREATESESS(YES) is equivalent to not specifying either INTLOG or NOINTLOG for TRMSTAT.
3. ROUTEDMSGS(ALL) is equivalent to not specifying either NOROUTE or NOROUTEALL for BMSFEAT.
4. The macro equivalent of the LSRPOOLID keyword on CEDA DEFINE LSRPOOL is LSRPOOL on the DFHFCT macro.

Appendix D. Migrating the FCT to the CSD

This appendix describes the process of converting DFHFCT macro definitions into their RDO equivalents. Before you read further, note that you can use RDO for the FCT only for the definition of VSAM files, remote files, and VSAM LSRPOOLs (DFHFCT TYPE=SHRCTL) entries.

The needs of your installation may introduce various complications into the migration process. You may want to migrate your DFHFCT macros in a test environment first or, instead of migrating, continue to use your existing macros, adding new file definitions with RDO.

Whatever your choices, the result will be an FCT built from one or both of the following:

- Entries defined using DFHFCT macros
- Entries defined and installed using RDO and the GRPLIST system initialization parameter.

Entries of both kinds can coexist, so that you can keep your existing tables and try the new function in parallel.

If you define the same file with both RDO and the macro method, be aware that the macro definitions are installed during cold start first, and then the RDO-defined files attempt to override the equivalent macro-defined files when they are installed (using CEDA install or during group list install on a cold start). A new file definition can be installed only if the existing file is closed disabled, or is closed unenabled. If the macro definition of a file specifies the file as enabled, a subsequent attempt to install the file during RDO group list processing will fail.

If you migrate your FCT in stages, you should try to complete the whole process quickly rather than drawing it out over weeks or months. This helps to avoid confusion and errors that could arise because of duplication of definitions in macro and RDO, and these definitions getting out of step with one another.

Summary of implementation

Having decided to migrate at least some of your table entries to RDO, you have to do the following:

1. Edit your existing DFHFCT source.
2. Assemble and link-edit the edited source.
3. Process the link-edited table using the MIGRATE command of the DFHCSDUP utility.
4. Check the output produced by the MIGRATE command.
5. Use the DFHCSDUP ADD command to create a list of groups on your CSD. Name this list in the GRPLIST system initialization parameter for your CICS job.
6. Modify your macro source so that it no longer generates table entries that have been migrated, then reassemble it to produce the non-VSAM part of your FCT (if any).
7. Start up your system with the non-VSAM FCT (if any) and the list you have created. Use CEDA to make further modifications to your list and perhaps to regroup and rename migrated definitions.
8. When you have used RDO for long enough to feel confident, remove migrated definitions from the macro source. If you have only VSAM files, you can abandon your DFHFCT macros altogether.

The rest of this section discusses each of these steps in turn.

Editing your existing DFHFCT source

The first step in migrating your DFHFCT macros to the CSD is to assemble the source. If your FCT is large, you might find it more convenient to assemble small segments of the source individually.

Each resource definition on the CSD must belong to a CSD group. DFHCSDUP MIGRATE places all definitions in groups as it processes them.

You probably already have good reasons for grouping resources. For example, you might like to group file definitions according to the applications that use them, or according to the department or function of the people using them. For more guidance on resource management see “Installing resource definitions” on page 19.

You can specify the names to be given to groups of definitions generated from your DFHFCT macros. You do this by adding special macroinstructions to the table source. The rules for group names are given on page 147. The form of each macroinstruction is:

```
DFHFCT TYPE=GROUP,GROUP=xxxxxxxx           (up to 8 characters)
```

All definitions following a particular TYPE=GROUP macro statement are migrated into the named group in the CSD file. A new TYPE=GROUP statement overrides all previous ones.

If you don’t insert such macros into your source, the whole table is migrated into the same group on the CSD. That group is, by default, named FCTxx, a substring of your table’s name DFHFCTxx.

It is better to create many small groups for your files than one vast group. Try to have no more than 100 resource definitions in any one group. (See “How many resource definitions should a group contain?” on page 18.)

Assembling and link-editing

When you have edited your file control table source, assemble it, using the CICS Transaction Server for VSE/ESA Release 1 macro library, then link-edit the assembler output. If you get a return code greater than 4, remove the cause of the error and reassemble. (For example, internally duplicated entries are not acceptable.)

You must assemble and link-edit your tables into your CICS load library. See the *CICS System Definition Guide* for details of how to do this.

Using the MIGRATE command

After assembling it and link-editing it, you migrate the revised part of your table using the DFHCSDUP MIGRATE command. The form of the command is:

```
MIGRATE TABLE(DFHFCTxx)
```

For guidance about the JCL for DFHCSDUP, see the *CICS Operations and Utilities Guide*.

The migration process triggered off by this MIGRATE command results in the creation of CSD records for the following:

- File definitions
- LSRPOOL definitions.

If you want to know which properties of resources these definitions represent, see Chapter 13, “FILE” on page 143 and Chapter 14, “LSRPOOL” on page 151.

For the RDO equivalents of macro operands, see “Macro operand to RDO keyword” on page 347.

For the macro equivalents of RDO attribute keywords, see “RDO keyword to macro operand” on page 352.

The most important points about these definitions, for the purposes of migration, are described here.

One definition record is created on the CSD for each FCT entry.

File definition records are created for both TYPE=FILE and TYPE=REMOTE macros, LSRPOOL definitions are created for TYPE=SHRCTL macros.

File definitions are created from TYPE=FILE macros only when the access method is VSAM. DAM files are not migrated. You must continue to use the DFHFCT macro for any DAM file definitions.

File definitions are also created for all TYPE=REMOTE macros, but only the keywords relevant to a remote file are set. When these file definitions are installed they are installed as REMOTE files.

Note: If the FCT source contains a definition of the CICS resource definition file DFHCSD then it will **not** be migrated. You must now define your CSD via system initialization parameters. See the *CICS System Definition Guide* for guidance on this.

Checking the output from MIGRATE

When you have migrated some table entries you should check that the process has worked satisfactorily.

The output listing from the MIGRATE utility lists all definitions successfully migrated to the CSD. The listing contains diagnostic messages for resources that should have been migrated but that failed to do so for some reason. For example, you may have files whose DSNAMEs contain characters not acceptable to RDO (see DSNAME on page 146).

You can use RDO to define resources that have failed to migrate. You should make sure that you define these resources on the CSD, and make any changes to application programs or JCL that depended on DSNAMEs that you have had to change, **before** you reassemble the FCT with MIGRATE=COMPLETE.

Using DFHCSDUP or RDO to add migrated groups to a list

Before CICS can use the migrated resource definitions, they must be installed as table entries in the FCT. Following the migration, every resource definition is a member of a group. To have these groups installed at initialization:

1. Use DFHCSDUP or RDO to add each group to a list.
2. Name this list in the GRPLIST system initialization parameter.

Alternatively, you can wait until you have initialized CICS, and then use RDO to install the groups you want CICS to use. But you must initialize CICS with at least the groups contained in DFHLIST, in order to use RDO. For more information on how to do this, see “How to set up lists for initialization” on page 22.

If you wish to load tables from the FCT load library, you must code FCT=YES or FCT=xx for a suffixed table, as a system initialization parameter.

If you do not wish to load FCT entries from the load library, you should code FCT=NO as a system initialization parameter. In this case all file resource definitions will be derived from the CSD file.

Intermediate modification of the macro source

You will probably not want to edit your macro source to remove all migrated definitions, immediately after migrating. You may prefer to leave these definitions in the source in case you need, for any reason, to return to using them.

You can continue to use the modified source yet avoid the overhead of generating migrated definitions if you specify MIGRATE=COMPLETE on the DFHFCT TYPE=INITIAL macro.

Assembling with MIGRATE=COMPLETE

Assembling with MIGRATE=YES|COMPLETE in the DFHFCT macro source, has two functions:

- You can use MIGRATE=YES before doing the migration to identify FCT entries eligible for migration. This will help you to plan your migration.
- You should use MIGRATE=COMPLETE after migration to suppress the assembly of RDO-eligible FCT entries. Note that it will suppress the entries, whether or not they have actually been migrated to the CSD, so be careful if you are intending to use the resulting FCT. Suppression of migrated macro definitions will avoid any problems of CICS attempting to install a file definition twice (once for the macro definition and once for RDO).

Operations after migration

When you are happy that you have no problems using RDO, how you continue depends on whether you can completely abandon the use of the FCT.

You must continue to use an FCT containing resource definition macros, if you have a need to define any DAM files.

If you cannot abandon your FCT, follow the advice in “Final modification of the macro source.” If you can abandon your FCT, follow the advice in “Abandoning the use of DFHFCT macros (if possible).”

Final modification of the macro source

If you need to retain an FCT to manage resources that you cannot define using RDO, you should eventually remove from your FCT source all the definitions that have been successfully migrated to the CSD. This will save time on table assemblies.

After reducing the FCT source to a bare minimum, you should reassemble it to ensure that you have not made any mistakes.

You must continue to suffix the FCT, and code FCT=xx as a system initialization parameter, where xx is the table name suffix.

Abandoning the use of DFHFCT macros (if possible)

If you are able to use RDO to manage ***all*** the resources formerly defined using the DFHFCT macroinstructions, you can now abandon your DFHFCT macro source altogether. You should adopt the following procedure:

1. First check that the assembly with MIGRATE=COMPLETE (as produced in “Intermediate modification of the macro source”) confirms that all the definitions in the FCT were eligible for RDO.
2. Check, again, that the CSD now contains all the definitions needed for operation with RDO.

3. If the CSD does now contain all the necessary definitions, you should code the system initialization parameter FCT=NO.

Appendix E. Migrating the PCT to the CSD

This appendix describes the process of converting transaction and profile definition macros into their RDO equivalents.

The DFHPCT macro is available only as input to the migration utility program in DFHCSDUP. This means that it is essential to migrate your PCT to the CSD for this release as PCT macro definitions are no longer supported online. A PCT assembled and migrated will allow the transfer to the CSD of those attributes not supported in earlier releases.

Summary of implementation

To perform the migration, you have to do the following:

1. Edit your existing DFHPCT source.
2. Assemble and link-edit the edited source.
3. Process the link-edited table using the MIGRATE command of the DFHCSDUP utility.
4. Check the output produced by the MIGRATE command, possibly regrouping and renaming the migrated definitions.
5. Initialize CICS with the migrated definitions.

Editing your existing DFHPCT source

The first step in migrating your DFHPCT macros to the CSD is to assemble the source. If your PCT is large, you might find it more convenient to assemble small segments of the source individually.

Each resource definition on the CSD must belong to a CSD group. DFHCSDUP MIGRATE places all definitions in groups as it processes them.

You probably already have good reasons for grouping resources. For example, you might like to group transaction definitions according to the department or function of the people using them. For more guidance on resource management see “Installing resource definitions” on page 19.

You can specify the names to be given to groups of definitions generated from your DFHPCT macros. You do this by adding special macroinstructions to the table source instructions. The rules for group names are given on page 207. The form of each macroinstruction is:

```
DFHPCT TYPE=GROUP,GROUP=xxxxxxxx   (xxxxxxxx - up to 8 characters)
```

All definitions following a particular TYPE=GROUP macro statement are migrated into the named group in the CSD file. A new TYPE=GROUP statement overrides all previous ones.

If you do not specify a group for a definition, that definition is migrated to the group specified by the TOGROUP parameter of the MIGRATE command. If you do not specify a TOGROUP parameter, the definition is migrated to the default group, named PCTxx. This is derived from the name of your table, which is DFHPCTxx.

You can force definitions to be migrated to the group specified by TOGROUP (or by default, the default group), by adding the following macroinstruction before the definition:

```
DFHPCT TYPE=GROUP,GROUP=*DEFAULT
```

If you do not insert TYPE=GROUP macros into your source, the whole table is migrated into the group specified by the TOGROUP parameter of the MIGRATE command. If you do not specify a TOGROUP parameter, the whole table is migrated into the default group, PCTxx.

It is better to create many small groups for your files rather than one vast group. Try to limit groups to 100 resource definitions. (See "How many resource definitions should a group contain?" on page 18.)

You can migrate tables with up to 4000 definitions. Larger tables than this must be split up before migration.

Assembling and link-editing

When you have edited your program control table source, assemble it, using the CICS Transaction Server for VSE/ESA Release 1 macro library, then link edit the assembler output. If you get a return code greater than 4, remove the cause of the error and reassemble. (For example, internally duplicated entries are not acceptable.)

You must assemble and link-edit your tables into your CICS load library. See the *CICS System Definition Guide* for details of how to do this.

Using the MIGRATE command

To convert the table entries into resource definitions, use the MIGRATE command of the DFHCSDUP offline utility program. The form of the command is:

```
MIGRATE TABLE(DFHPCTxx) TOGROUP(xxxxxxxx)
```

For details of the MIGRATE command, see "MIGRATE macro-defined resource definitions from tables to the CSD" on page 95, and for further guidance on using DFHCSDUP, see the *CICS System Definition Guide*.

The migration process triggered off by this MIGRATE command results in definitions for profiles and transactions being added to the CSD.

PROFILE definitions (terminal control processing options)

If your PCT contains any non-IBM supplied profiles, they will be migrated to the CSD file as PROFILE definitions. Profiles can also be created automatically from transaction entries (see below). The automatically-created ones are interchangeable with the others, both in the way they can be associated with transactions, and in the context of the EXEC CICS ALLOCATE command.

The CICS-supplied profiles (DFHCICST, DFHCICSV, and so on) are created on the CSD file by the DFHCSDUP INITIALIZE command, so definitions of these will not normally be migrated from your tables.

Profile properties of macro-defined transactions

Some of the properties that, before RDO, were attributes of a transaction are now handled as attributes of a profile. In a system with RDO, every transaction now has an associated profile that contains most of the terminal-related properties. A profile can be used by any number of transactions.

When you migrate a transaction entry, a check is made on those fields of the PCT entry that have become *profile* properties. They are compared with the properties of the default profile DFHCICST. If they match, DFHCICST is taken as the associated profile, and no new profile is generated. Otherwise, they are compared with the properties of two other CICS-supplied profiles (DFHCICSV and DFHCICSA) in a similar way. If the properties do not match any of these three standard profiles, a new profile is created automatically. It will be given the name XXXXtttt, where tttt denotes the transaction name. The profile called XXXXtttt is automatically associated with transaction tttt.

When the next transaction entry is migrated, the newly-created profile will be used for comparison, along with DFHCICST, DFHCICSV, and DFHCICSA. The properties may match any of these four profiles. As this process continues, several new profiles may be generated, and several transactions may become associated with a generated profile XXXXtttt.

In the very unlikely event of the name of a generated profile XXXXtttt clashing with a user-defined profile (created with a TYPE=PROFILE entry in the PCT), the latter will be migrated in the normal way. This situation will be diagnosed and reported on in the listing from the MIGRATE command. It is your responsibility to use RDO afterwards to ensure that the transaction that caused this to happen is correctly defined and associated with a suitable profile, which you must define yourself.

TRANSACTION definitions

For every migrated transaction, a TRANSACTION definition will be created, and possibly a PROFILE definition as well. Whether that happens depends on the values of those transaction properties that are now handled as profile attributes.

All transactions will be migrated with the following properties:

```
DTB=YES (or DTB=(YES,WAIT) or DTB=(YES,NO), where appropriate)
ANTICPG=NO
```

You cannot use RDO to change these properties, as there are no RDO attributes equivalent to them.

If the transaction being migrated had properties that differ from the list above, DFHCSDUP MIGRATE tells you.

Note that DTB=NO is not supported in RDO. All transactions defined in the macro with DTB=NO will be handled in RDO as if DTB=YES had been specified. The INDOUBT attribute in RDO relates only to the use of the transaction in a system using ISC. INDOUBT will be assigned the value BACKOUT, unless DTB=(YES,WAIT) or DTB=(YES,NO) was coded in the macro.

RDO TRANSACTION definitions have a DUMP attribute, which takes the place of the DUMP attribute in DFHPCT. If TRANSACTION DUMP is set to YES, the effect is the same as setting DUMP=YES in the PCT. If it is set to NO, the effect is the same as setting DUMP=NO in the PCT. There is no RDO equivalent of the PCT FDUMP attribute.

The attributes that were specified on the DFHPCT TYPE=OPTGRP macro have been simplified. This affects the migration of the MSGPREQ and MSGPOPT options to RDO. The information formerly specified on the TYPE=OPTGRP macro now appears on the RDO PROFILE definition as the attributes MSGINTEG, ONEWTE, PROTECT and CHAINCONTROL.

In RDO there is no support for the MSGPOPT options, so these attributes will not be migrated. The equivalent function is provided by the MSGPREQ options (see above).

The CLASS and PRIVATE operands of the DFHPCT macro are no longer supported, whether you define your transaction with a macro or with RDO, so you may have to change your macros before migrating to RDO.

SPURGE as specified on RDO TRANSACTION resource definitions has changed its meaning. Formerly, it was used to indicate whether a transaction could be purged by CICS in a stall situation. The stall purge mechanism no longer exists. SPURGE now indicates whether a transaction is “system purgeable.” If the transaction definition specifies SPURGE(NO), the transaction will be protected from deadlock timeout purge and purge requests (but not force purge requests) issued by applications or the master terminal.

Transaction names

A transaction is migrated to the CSD file only if its name conforms to the rules for a transaction name acceptable to RDO. (See page 212.) Lowercase transaction names are permitted, and these will be migrated with lowercase names. Mixed uppercase and lowercase names will also be preserved. Transactions with names containing unacceptable characters (for example, * and +) will not be migrated to the CSD file. You can use RDO to define these with names that are valid, using the XTRANID alias to cope with special characters.

Transaction aliases

In a system with RDO, every transaction must have a primary TRANSACTION name (TRANSID). This may not be the case for all the transactions currently in your PCT. Some may be referred to only by a TASKREQ key identifier. If so, a name is automatically assigned to the transaction when the PCT entry is migrated.

The name assigned to the transaction will be one of:

```
PA1, PA2, PA3    - for PA keys
PF1 through PF24 - for PF keys
OPID             - for the operator identification card reader
LPA              - for the 3270 light pen field
MSRE             - for the magnetic stripe reader
```

If a migrated transaction is assigned one of these names, it may clash with another transaction in your table with the same name. If so, the latter will be migrated. The one with the name derived from a TASKREQ identifier will not be migrated, and you can use CEDA afterwards to define this transaction with a name that avoids the duplication.

This may affect application programs that reference an executing transaction via the EIBTRNID field. Before migration, for a transaction with no TRANSID, the EIBTRNID field would have contained the hexadecimal representation of the TASKREQ (for example `X'F3FFFFFF'` for PF3). Now the EIBTRNID field will contain the name assigned by the migration process, (for example, `PF3`). So you will have to modify any program which references a transaction without a TRANSID through EIBTRNID.

If the TRANSACTION definition is not migrated, because of a name clash or invalid name, and you have to provide a TRANSACTION name for it, you will also have to modify any application programs affected.

What happens to table entries for CICS-supplied resources

If your tables contain entries for any CICS-supplied transactions or profiles, these will not normally be migrated to the group created by the MIGRATE command. This is because the definitions for these entries already exist in one of the CICS-supplied groups created by the INITIALIZE command.

However, if the properties of the resource as defined in your table differ from those of the CICS-supplied definition, your definition will be migrated. For example, for CICS-supplied transactions with security protection, where the security key supplied may not match the one specified in the DFHPCT TYPE=INITIAL macroinstruction. In this case, the definition will be migrated.

Checking the output from MIGRATE

Migration may have produced a number of messages indicating, for example, that certain transaction names have been created for transactions initiated by program function keys. Read these warning messages carefully. In most cases, they will warn you that some parameter specified for a definition is not supported by RDO, and no further action is needed. However, there may be messages that require corrective action, for example, those warning of duplication of definitions.

Bring up the CICS system, specifying the system initialization parameter GRPLIST=DFHLIST, and use RDO to examine the migrated resource definitions on the CSD file. The MIGRATE command will have created a group for each table. Such groups are not easily managed, and it is better to rearrange the resource definitions into logical groupings. For further information, see “Managing resource definitions” on page 16.

We suggest that you split groups containing many resource definitions (say, more than 100) into smaller groupings to avoid problems in the management of such large groups. Create lists that name the groups of resource definitions that must be installed together during CICS initialization.

When you have migrated both the PCT and the PPT, you will be able to create groups which contain all the related resource definitions used by one application, whether these are PPT or PCT resources. Use the COPY and DELETE commands to group related transactions, programs, and so on, into the same group.

You may have to use the RENAME command to change the name created by DFHCSDUP MIGRATE. Migration may also have created certain profile names because a PCT TYPE=ENTRY macro was split into a transaction definition and a profile definition referenced by the transaction definition. You may wish to rename these profiles. If so, you must alter the transaction definitions that refer to them.

The created profile definitions may differ in minor ways from the standard CICS-supplied definitions (DFHCICST). For example, the DFHCICST has INBFMH=NO, whereas the PCT-derived profiles may have INBFMH=EODS (because this was the default for the PCT). If this distinction does not matter to your installation, it would be better to replace all references to the derived profiles by references to DFHCICST. This is most easily done by using the generic capabilities of the RDO command ALTER.

When you have finished your reorganization, use the CHECK command to check each group. If you have some resource definitions in separate groups from other resource definitions that refer to them, you may find that checking a list of all groups involved would be helpful. (See “Checking groups and lists of resource definitions for consistency” on page 24.)

Initializing CICS after migration

Before CICS can use the migrated resource definitions, they must be installed. Following the migration, every resource definition is a member of a group. To have these groups installed at initialization:

1. Use DFHCSDUP or RDO to ADD each group to a list.
2. Name this LIST in the GRPLIST system initialization parameter.

Ensure that the list you intend to use names all required groups, including all the CICS-supplied groups that your system needs.

Alternatively, you can wait until you have initialized CICS, and then use RDO to INSTALL the groups you want CICS to use. But you must initialize CICS with at least DFHLIST, in order to use RDO (see “How to set up lists for initialization” on page 22).

After you have set up appropriate backup procedures for your CSD file (see the *CICS Operations and Utilities Guide*) and your production system is running successfully, you can delete your DFHPCT source and load module.

Appendix F. Migrating the PPT to the CSD

This appendix describes the process of converting program, map set, and partition set definition macros into their RDO equivalents.

It is essential to migrate your PPT to the CSD for this release, as PPT macro definitions are no longer supported online. A PPT assembled and migrated will allow the transfer to the CSD of those attributes not supported in earlier releases.

Summary of implementation

To perform the migration, you have to do the following:

1. Edit your existing DFHPPT source
2. Assemble and link-edit the edited source
3. Process the link-edited table using the MIGRATE command of the DFHCSDUP utility
4. Check the output produced by the MIGRATE command, possibly regrouping and renaming the migrated definitions
5. Initialize CICS with the migrated definitions.

Editing your existing DFHPPT source

The first step in migrating your DFHPPT macros to the CSD is to assemble the source. If your PPT is large, you might find it more convenient to assemble small segments of the source individually.

Each resource definition on the CSD must belong to a CSD group. DFHCSDUP MIGRATE places all definitions in groups as it processes them.

You probably already have good reasons for grouping resources. For example, you might like to group transaction definitions according to the department or function of the people using them. For more guidance on resource management see “Installing resource definitions” on page 19.

You can specify the names to be given to groups of definitions generated from your DFHPPT macros. You do this by adding special macroinstructions to the table source instructions. The rules for group names are given on page 172. The form of each macroinstruction is:

```
DFHPPT TYPE=GROUP,GROUP=xxxxxxxx   (xxxxxxxx - up to 8 characters)
```

All definitions following a particular TYPE=GROUP macro statement are migrated into the named group in the CSD file. A new TYPE=GROUP statement overrides all previous ones.

If you do not specify a group for a definition, that definition is migrated to the group specified by the TOGROUP parameter of the MIGRATE command. If you do not specify a TOGROUP parameter, the definition is migrated to the default group, named PPTxx. This is derived from the name of your table, which is DFHPPTxx.

You can force definitions to be migrated to the group specified by TOGROUP (or by default, the default group), by adding the following macroinstruction before the definition:

```
DFHPPT TYPE=GROUP,GROUP=*DEFAULT
```

If you do not insert TYPE=GROUP macros into your source, the whole table is migrated into the group specified by the TOGROUP parameter of the MIGRATE command. If you do not specify a TOGROUP parameter, the whole table is migrated into the default group, PPTxx.

It is better to create many small groups for your files rather than one vast group. Try to limit groups to 100 resource definitions. (See “How many resource definitions should a group contain?” on page 18.)

You can migrate tables with up to 4000 definitions. Larger tables than this must be split up before migration.

Assembling and link-editing

When you have edited your processing program table source, assemble it, using the CICS Transaction Server for VSE/ESA Release 1 macro library, then link-edit the assembler output. If you get a return code greater than 4, remove the cause of the error and reassemble. (For example, internally duplicated entries are not acceptable.)

You must assemble and link-edit your tables into your CICS load library. See the *CICS System Definition Guide* for details of how to do this.

Using the MIGRATE command

To convert the table entries into resource definitions, use the MIGRATE command of the DFHCSDUP offline utility program. The form of the command is:

```
MIGRATE TABLE(DFHPPTxx) TOGROUP(xxxxxxxx)
```

For details of the MIGRATE command, see “MIGRATE macro-defined resource definitions from tables to the CSD” on page 95, and for further guidance on using DFHCSDUP, see the *CICS Operations and Utilities Guide*.

The migration process triggered off by this MIGRATE command results in definitions for programs, map sets and partition sets being added to the CSD.

PROGRAM, MAPSET, and PARTITIONSET definitions

One definition record is created on the CSD file for each PPT entry migrated. When you prepare the DFHPPT macros to assemble your table, you can distinguish map sets and partition sets from programs by using the MAPSET=name or PARTSET=name parameters. If you have done this, the resulting resource definitions will always have the correct resource types.

If you don’t do this, and your map sets were identified by coding the PROGRAM=name parameter, the migration routine will normally create a PROGRAM definition. If, however, you coded the parameter USAGE=MAP, the migration routine assumes that the entry is intended for use as a map set, and creates a MAPSET definition. (This does not happen if you specified a language other than PGMLANG=ASSEMBLER.)

Note: If USAGE=MAP is coded in the PPT entry, the corresponding migrated definition will specify USAGE(TRANSIENT). Otherwise, USAGE(NORMAL) is specified in the imported definition. In summary, the resource types created from PPT entries are:

DFHPPT parameter coded	CSD file resource created
PROGRAM=name (without USAGE=MAP)	PROGRAM
PROGRAM=name (with USAGE=MAP)	MAPSET
MAPSET=name	MAPSET
PARTSET=name	PARTITIONSET

What happens to table entries for CICS-supplied resources

If your tables contain entries for any CICS-supplied programs, map sets or partition sets, these will not normally be migrated to the group created by the MIGRATE command. This is because the definitions for these entries already exist in one of the CICS-supplied groups created by the INITIALIZE command.

In special cases where the properties of the resource as defined in your table differ from those of the CICS-supplied definition, your definition will be migrated.

Checking the output from MIGRATE

Migration may have produced a number of messages which you should read carefully. In most cases, they will warn you that some parameter specified for a definition is not supported by RDO, and no further action is needed. However, there may be messages that require corrective action, for example, those warning of duplication of definitions.

Bring up the CICS system, specifying the system initialization parameter GRPLIST=DFHLIST, and use RDO to examine the migrated resource definitions on the CSD file. The MIGRATE command will have created a group for each table. Such groups are not easily managed, and it is better to rearrange the resource definitions into logical groupings.

For further information on using RDO, see “Managing resource definitions” on page 16.

We suggest that you split groups containing many resource definitions (say, more than 100) into smaller groupings to avoid problems in the management of such large groups. Create lists that name the groups of resource definitions that must be installed together during CICS initialization.

When you have migrated both the PCT and the PPT, you will be able to create groups which contain all the related resource definitions used by one application, whether these are PPT or PCT resources. Use the COPY and DELETE commands to group related transactions, programs, and so on, into the same group.

You may have to use the RENAME command to change the names created by the migration utility.

When you have finished your reorganization, use the CHECK command to check each group. If you have some resource definitions in separate groups from other resource definitions that refer to them, you may find that checking a list of all groups involved would be helpful. (See “Checking groups and lists of resource definitions for consistency” on page 24.)

Initializing CICS after migration

Before CICS can use the migrated resource definitions, they must be installed. Following the migration, every resource definition is a member of a group. To have these groups installed at initialization:

1. Use DFHCSDUP or RDO to ADD each group to a list.
2. Name this LIST in the GRPLIST system initialization parameter.

Make sure that the list you intend to use names all required groups, including all the CICS-supplied groups that your system needs.

Alternatively, you can wait until you have initialized CICS, and then use RDO to INSTALL the groups you want CICS to use. But you must initialize CICS with at least the groups contained in DFHLIST, in order to use RDO (see “Checking groups and lists of resource definitions for consistency” on page 24).

After you have set up appropriate backup procedures for your CSD file and your production system is running successfully, you can delete your DFHPPT source and load module. For further guidance about backup, see the *CICS Operations and Utilities Guide*.

Appendix G. Migrating the TCT to the CSD

This appendix describes the process of converting terminal and system definition macros for VTAM devices into their RDO equivalents. Before you read further, note that you **must** use RDO for the TCT if you use VTAM as your telecommunication access method for at least some of your resources, as VTAM TCTs are no longer supported online (other than LDCs).

Note also that there is a special facility, called **autoinstall**, that can remove the need for some migration. You may decide that you don't need to migrate all of your DFHTCT macros, because you are going to use autoinstall. It would be wise, nevertheless, to read the following section and maybe perform the migration process anyway. This will allow you to study the RDO definitions that the utility produces, and could help you decide how many different **autoinstall models** you will need. For more information, see Chapter 9, "Autoinstall for VTAM terminals" on page 107.

This chapter is divided into three sections:

1. The steps involved in the migration process
2. The steps involved in migrating remote terminal definitions, depending on the method of defining remote terminals you choose
3. Some notes on migrating different types of macro, including links and sessions with other systems.

The needs of your installation may introduce various complications into the migration process:

- You may wish to introduce autoinstall in stages, or for some terminals but not all
- If you have remote terminals for transaction routing, there are three approaches you could adopt toward migrating your terminal definitions, as described in "Migrating remote terminal definitions" on page 380.

Whatever your choices, you will finish up with a TCT built from one or more of the following:

- Entries built automatically through autoinstall, which are dynamic and will not be present in the TCT until autoinstalled
- Entries defined and installed using RDO and the the system initialization parameter GRPLIST for your CICS job.
- Entries for non-VTAM terminals defined using DFHTCT macros.

Autoinstalled TCT entries never override any others. If a table entry already exists for a given terminal, CICS will not try to autoinstall it. (For more information see Chapter 9, "Autoinstall for VTAM terminals" on page 107.)

Summary of implementation

To migrate to RDO, you have to do the following:

1. Edit your existing DFHTCT source.
2. Assemble and link-edit the edited source.
3. Process the link-edited table using the MIGRATE command of the DFHCSDUP utility.
4. Check the output produced by the MIGRATE command.
5. Use the DFHCSDUP ADD command to create a list of groups on your CSD. Name this list in the system initialization parameter GRPLIST for your CICS job.
6. Modify your macro source so that it no longer generates table entries that have been migrated, then reassemble it to produce the non-VTAM part of your TCT (if any).

7. Start up your system with the non-VTAM TCT (if any) and the list you have created. Use one of the terminals whose definition was included in the list to further modify your list and perhaps to regroup and rename migrated definitions.

The rest of this section discusses these steps in more detail.

Editing your existing DFHTCT source

The first step in migrating your DFHTCT macros to the CSD is to assemble the source. If your TCT is large, you might find it most convenient to assemble small segments of the source individually.

Each resource definition on the CSD must belong to a CSD group. DFHCSDUP MIGRATE places all definitions in groups as it processes them.

You probably already have good reasons for grouping resources. For example, you might like to group TERMINAL definitions according to the physical location of the terminals, or according to the department or function of the people using them.

You can specify the names to be given to groups of definitions generated from your DFHTCT macros. You do this by adding special macro instructions to the table source. The rules for group names are given on page 198. The form of each macro instruction is:

```
DFHTCT TYPE=GROUP,GROUP=xxxxxxxx           (up to 8 characters)
```

All definitions following a particular TYPE=GROUP macro statement will be migrated into the named group in the CSD file. A new TYPE=GROUP statement overrides all previous ones.

If you don’t insert such macros into your deck, the whole table will be migrated into the same group on the CSD. That group will, by default, be named TCTxx, a substring of your table’s name, DFHTCTxx.

It is better to create many small groups for your TERMINALs than one vast group. You should aim to have no more than 100 resource definitions in any one group. (See “How many resource definitions should a group contain?” on page 18.)

You must include ACCMETH=VTAM in your DFHTCT TYPE=INITIAL macro. This is to enable the necessary VTAM control blocks, for example the ACB, to be built as part of the TCT. Note that the default for the ACCMETH= operand is ACCMETH=NONVTAM.

Some information from the TYPE=INITIAL macro is not migrated, because it is now specified using the DFHSIT macro. For further guidance on this, see the *CICS System Definition Guide*.

Assembling and link-editing

When you have edited your terminal control table source, assemble it using the CICS Transaction Server for VSE/ESA Release 1 macro library specifying MIGRATE=YES on the DFHTCT TYPE=INITIAL macro, and then link-edit the assembler output.

The assembly and link-edit of a TCT will lead to the creation of two separate load modules. Assembly of a suffixed TCT (source name DFHTCTxx) produces a single text file. However, when this is link-edited into a load library, two members are created:

- DFHTCTxx, which contains the non-RDO-eligible definitions in control block format
- DFHRDTxx, which contains the RDO-eligible definitions in command format

You need to be aware of the existence of these two tables if you have to copy or move assembled TCT tables between load libraries.

If you get a return code greater than 4, remove the cause of the error and reassemble. (For example, internally duplicated entries are not acceptable.)

You must assemble and link-edit your tables into your CICS load library. See the *CICS System Definition Guide*. for details of how to do this.

Using the MIGRATE command

After assembling it and link-editing it, you migrate the revised part of your table using the DFHCSDUP MIGRATE command. The form of the command is:

```
MIGRATE TABLE(DFHTCTxx) [TYPESGROUP(tgrpname)]
```

For guidance on the JCL for DFHCSDUP, see the *CICS Operations and Utilities Guide*.

The migration process triggered off by this MIGRATE command results in the creation of CSD records for the following:

- TYPETERM definitions
- TERMINAL definitions
- SESSIONS definitions
- CONNECTION definitions

For the RDO equivalents of macro operands, see "Macro operand to RDO keyword" on page 347.

For the macro equivalents of RDO attribute keywords, see "RDO keyword to macro operand" on page 352.

The most important points about these definitions, for the purposes of migration, are described here.

TYPETERM definitions

These are derived from attributes of DFHTCT TYPE=TERMINAL macros which are often identical for many terminals.

They are put into the CSD group named in the TYPESGROUP parameter. If no TYPESGROUP is specified, they are put in the group currently being created, with the TERMINAL definitions.

The "typeterm" attributes of each DFHTCT TYPE=TERMINAL macro are checked with existing TYPETERM definitions and if they don't match with any of these, a new TYPETERM is added to the CSD.

The existing TYPETERMs checked are:

- TYPETERMs in the group currently being created
- TYPETERMs in the group specified in the TYPESGROUP parameter of the MIGRATE command

However, the scope of the checking is never extended to include any other TYPETERMs in other groups already on the CSD. Such groups may have been created using RDO or by a previous MIGRATE.

For this reason, it is a good idea to use the TYPESGROUP parameter to avoid creating duplicate TYPETERMs in different groups. It is convenient to keep the TYPETERMs in a separate group anyway.

TYPETERMs created on the CSD during the migration are named systematically, in a way related to the TRMTYPE parameter of the original terminal definition. The name will consist of a prefix (of 3-5 characters) with a 3-character suffix.

For example, a TYPETERM defining attributes for a 3270 printer will be named 3270P001. Variants with the same TRMTYPE will be named 3270P002, and so on. The migration process will ensure that this name is used as the TYPETERM parameter of every TERMINAL definition that references it.

Migration may produce some TYPETERM names that would be incomprehensible to those who will have to use them when defining terminals. You can later rename such TYPETERMs using the RDO command RENAME, and ALTER the TERMINAL definitions that refer to them. The naming rules for TYPETERM identifiers are given on page 235.

TERMINAL definitions

The operands of a DFHTCT TYPE=TERMINAL macro that are not accounted for by the TYPETERM named on the new TERMINAL definition, become the other attributes of the TERMINAL definition. The TERMINAL name comes from the old TRMIDNT. The naming rules for TERMINAL identifiers in RDO are given on page 201.

This means that if the existing TRMIDNT contains characters not belonging to this set, the definition will not be migrated from the TCT to the CSD, and you must define these resources with CEDA, using new names acceptable to RDO.

All the TERMINAL definitions created by the migration process have AUTINSTMODEL(NO) and they all point to a TYPETERM definition with SHIPPABLE(NO).

SESSIONS definitions

SESSIONS definitions created by migration are different for different types of links and sessions. They are described in “Migrating different macro types” on page 382. SESSIONS identifiers in RDO are subject to the same character set restrictions as TERMINAL identifiers.

CONNECTION definitions

CONNECTION definitions created by migration are different for different types of links and sessions. They are described in “Migrating different macro types” on page 382. CONNECTION identifiers in RDO are subject to the same character set restrictions as TYPETERM identifiers. This restriction has always applied to the SYSIDNT name in the DFHTCT macro.

Checking the output from MIGRATE

When you have migrated some table entries you should check that the process has worked satisfactorily.

The output listing from the MIGRATE utility tabulates all definitions successfully migrated to the CSD. The listing contains diagnostic messages for resources that failed to migrate for some reason. For example, you may have terminals whose TRMIDNTs contain characters not acceptable to RDO.

You can use RDO to DEFINE resources that have failed to migrate. You should make sure that you define these resources on the CSD, and make any changes to application programs that depended on TERMINAL names that you have had to change, **before** you reassemble the TCT with MIGRATE=COMPLETE.

Using DFHCSDUP to add migrated groups to a list

You must install some migrated definitions in the system when you initialize it. You do this by means of a list named in the system initialization parameter GRPLIST. The MIGRATE command created groups of resource definitions. You must create a list by using the ADD command to add some of your groups to it. For more information about this, see “ADD a group to a list” on page 44. You can choose a name for the list: you will specify this name in the GRPLIST operand.

To start off with, you need to include a group containing a definition of a terminal that you can use for RDO: to create other lists and groups, and to install other groups of definitions in the active CICS system. To enable you to use RDO, you also need to include in your list the CICS-supplied definitions for the resources RDO itself uses, and for the resources used by other CICS-supplied transactions, including CEMT, that you will want to use. The easiest way to do this is to use the APPEND command to append the list called DFHLIST to your own list. For more information about this, see “APPEND a list to another list” on page 84.

Operations after migration

When you are happy that you have no problems using RDO, how you continue depends on whether you can completely abandon the use of the TCT.

You must continue to use a TCT containing resource definition macros, if you have any of the following resources:

- BTAM terminals in a remote system
- Sequential devices
- Logical device codes (LDCs)

If you cannot abandon your TCT, follow the advice in “Final modification of the macro source.” If you can abandon your TCT, follow the advice in “Abandoning the use of DFHTCT macros (if possible).”

Final modification of the macro source

If you need to retain a TCT to manage resources that you cannot define using RDO, you should eventually remove from your TCT source all the definitions that have been successfully migrated to the CSD, or that are now being created by autoinstall. This will save time on table assemblies.

After reducing the TCT source to a bare minimum, you should reassemble it to ensure that you have not made any mistakes.

You continue to suffix the TCT, and code TCT=xx, where xx is the table name suffix on the system initialization parameter. If you have VTAM resources **and** DFHTCT macros, you must code ACCMETH=(VTAM,NONVTAM) in the TCT.

Abandoning the use of DFHTCT macros (if possible)

If you are able to use RDO, with or without autoinstall, to manage ***all*** the resources formerly defined using the DFHTCT macroinstructions, you can now abandon your DFHTCT macro source altogether. You should adopt the following procedure:

1. First check that the assembly confirms that all the definitions in the TCT were eligible for RDO.
2. Check again that the CSD now contains all the definitions needed for operation with RDO. If you are using autoinstall, make sure that the CSD contains all necessary model TERMINAL definitions.
3. If the CSD now contains all the necessary definitions, you should code the TCT=NO system initialization parameter. This will ensure that a “dummy” TCT (DFHTCTDY) is used.

   DFHTCTDY is supplied by IBM. It contains predefined values for the DFHTCT TYPE=INITIAL parameters. If you wish to use different DFHTCT TYPE=INITIAL parameters, you may code and assemble your own version of DFHTCTDY. Note that some of the old DFHTCT TYPE=INITIAL options are now coded as system initialization parameters. For further guidance on this, see the *CICS System Definition Guide*.

Where next?

If you have only straightforward terminal definitions to migrate, you can go ahead and migrate them now.

If you have remote terminal definitions for transaction routing, you will find more guidance about migrating them in the next section.

The chapter ends with a summary of the different types of TCT macro, showing what the migration process does with each type. You will find this particularly helpful in planning your migration if you have intercommunication resources.

Migrating remote terminal definitions

"Terminals for transaction routing" on page 188 describes three methods of defining terminals so that they can be used for transaction routing. If you use transaction routing using MRO or APPC ISC, you should read that section before migrating your TCT.

When you have decided which method you will use to define transaction routing terminals, you should follow the appropriate migration procedure, described below. What you actually have to do to perform the migration depends on the type of macros you have used to define your remote terminals. If you have TYPE=REMOTE entries, you may have to migrate them to become remote definitions, just as you migrate the ordinary TYPE=TERMINAL entries to become local definitions. If you have TYPE=REGION macros, you probably use copy book definitions for both local and remote entries, as shown in this example. We refer to the migration procedure for this example in the procedures below.

Table DFHTCTLA used for local system (ACIC)

```
DFHTCT TYPE=INITIAL,SUFFIX=LA,SYSIDNT=ACIC
   .
   .
   .
COPY COMTERMS
   .
   .
   .
DFHTCT TYPE=FINAL
```

Table DFHTCTRB used for remote system (BCIC)

```
DFHTCT TYPE=INITIAL,SUFFIX=RB,SYSIDNT=BCIC
    .
    .
    .
DFHTCT TYPE=REGION,SYSIDNT=ACIC
COPY COMTERMS
    .
    .
    .
DFHTCT TYPE=FINAL
```

Method 1. Maintaining local and remote definitions separately

To migrate your TCT definitions to one or more CSD files you should do the following:

1. Assemble the TCT for the terminal-owning system.
2. Assemble the TCT for the application-owning system. If you have more than one application-owning system, they may be able to share remote definitions, so you may not need to assemble more than one application-owning TCT.
3. Allocate definitions for different systems to different groups, if sharing a CSD between systems.

In the copy book example, if you use TYPE=GROUP macros to delimit groups within COMTERMS, you will have to edit COMTERMS after assembling DFHTCTLA and before assembling DFHTCTRB to change the TYPE=GROUP macros to name a different set of groups. (This will not apply if the tables are to be migrated to different CSD files.)

4. Use DFHCSDUP to migrate all the TCTs. The commands look like this:

   ```
   MIGRATE TABLE(DFHTCTLA) TYPESGROUP(TTS)
   MIGRATE TABLE(DFHTCTRB) TYPESGROUP(TTS)
   ```

   Migration of the remote terminals will normally create definitions that use the same TYPETERMs created for the corresponding local definitions.
5. Include the groups containing the local definitions in the GRPLIST for the terminal-owning system.
6. Include the groups containing the remote definitions in the GRPLIST for each application-owning system.

If there are only a small number of terminals that need more than one definition, it is probably best to migrate all the definitions in the terminal-owning TCT and then to use RDO to create the corresponding remote definitions with the required REMOTESYSTEM attribute. You can use the COPY and ALTER commands to do this.

Method 2. Sharing terminal definitions

To migrate your TCT definitions to the shared CSD file, you should do the following:

1. Suppress the assembly of remote definitions in all the TCTs to be migrated, by removing (or commenting-out) the TCT source for:
   - TYPE=REMOTE entries
   - TYPE=REGION and subsequent TYPE=TERMINAL entries
2. Assemble the TCT for the terminal-owning system, suppressing any macros for remote definitions that you may have if there is more than one terminal-owning system.
3. Assemble the TCT for the application-owning system, if it contains any definitions for local terminals. Again, you should suppress any macros for remote definitions, if you do need to assemble this TCT.
4. Use DFHCSDUP to migrate all the TCTs. The commands look like this:

   ```
   MIGRATE TABLE(DFHTCTLA) TYPESGROUP(TTS)
   MIGRATE TABLE(DFHTCTRB) TYPESGROUP(TTS)
   ```

   Migration of the remote terminals will normally create definitions that use the same TYPETERMs created for the corresponding local definitions.
5. Initialize the CICS terminal-owning system, installing at least one TERMINAL definition and other resource definitions necessary for using RDO.
6. Use the ALTER command to name the REMOTESYSTEM as the SYSIDNT of the terminal-owning system, on all the TERMINAL definitions that might be shared. You can probably use a generic name to do this in one command. For example:

   ```
   CEDA ALTER TERMINAL(*) GROUP(TTS) REMOTESYSTEM(ACIC)
   ```
7. Include the groups containing the definitions in the GRPLIST for each system, terminal-owning and application-owning.

Method 3. Making terminal definitions shippable

To migrate your TCT definitions to one or more CSD files you should do the following:

1. Suppress the assembly of remote definitions in all the TCTs to be migrated, by removing (or commenting-out) the TCT source for:
   - TYPE=REMOTE entries
   - TYPE=REGION and subsequent TYPE=TERMINAL entries

2. Assemble the TCT for the terminal-owning system, suppressing any macros for remote definitions that you may have if there is more than one terminal-owning system.
3. Assemble the TCT for the application-owning system, if it contains any definitions for local terminals. Again, you should suppress any macros for remote definitions, if you do need to assemble this TCT.
4. Use DFHCSDUP to migrate the TCT. The command looks like this:
   ```
        MIGRATE TABLE(DFHTCTLA) TYPESGROUP(tgrpname)
   ```
5. Initialize the CICS terminal-owning system, installing at least one TERMINAL definition and other resource definitions necessary for using RDO.
6. Use the ALTER command to change the SHIPPABLE attribute to YES, on all the TYPETERM definitions that might be used for shipping. You can probably use a generic name to do this in one command. For example:
   ```
   CEDA ALTER TYPETERM(*) GROUP(grpname) SHIPPABLE(YES)
   ```
7. Include the groups containing the definitions in the GRPLIST for the terminal-owning system.

Migrating different macro types

The following is a summary of the different types of TCT macro that you might have, and what the results of the RDO migration will be. Migration of macros for the following devices and systems is described:

- Remote terminals for transaction routing
- VSE consoles
- Pipeline terminals for VTAM pooled sessions
- Devices with LDC lists
- Terminals referencing printers
- MRO links and sessions
- LUTYPE6.1 CICS-CICS ISC links and sessions
- LUTYPE6.1 CICS-IMS links and sessions
- APPC (LUTYPE6.2) links and parallel sessions
- APPC (LUTYPE6.2) single session terminal
- INDIRECT connections

Remote terminals for transaction routing

You may have coded your macros in one of two ways:

- Individual terminals naming remote system:
  ```
  DFHTCT TYPE=REMOTE,SYSIDNT=ssss,TRMIDNT=tttt,TRMTYPE=.....
  ```
- Or a series of TYPE=TERMINAL macros not naming the SYSIDNT, but following a TYPE=REGION that names the SYSIDNT:
  ```
  DFHTCT TYPE=REGION,SYSIDNT=ssss
  DFHTCT TYPE=TERMINAL,TRMIDNT=ttt1,TRMTYPE=yyyy...
  DFHTCT TYPE=TERMINAL,TRMIDNT=ttt2,TRMTYPE=yyyy...
         ... and so on.
  ```

DFHCSDUP MIGRATE always produces a TERMINAL-TYPETERM pair of definitions:

```
DEFINE TERMINAL(tttt) GROUP(g) TYPETERM(xxxxxxxx)
       REMOTESYSTEM(ssss)
DEFINE TYPETERM(xxxxxxxx) GROUP(g) DEVICE(dddddddd)
```

Matching TYPETERMs are eliminated by DFHCSDUP MIGRATE, as described for ordinary terminals.

VSE consoles

The definition of an VSE console is essentially a special case of a local terminal definition. The TYPETERM in RDO identifies the device as a console, with the CONSOLE value for the DEVICE attribute. The console identifier for a particular console is specified on the TERMINAL definition as the CONSNAME attribute.

Pipeline terminals for VTAM pooled sessions

These terminals represent a special case of the definition of VTAM terminals.

A sequence of TYPE=TERMINAL macros is coded, the last one being tagged with PIPELN=LAST to indicate that the pool is complete:

```
DFHTCT TYPE=GROUP,GROUP=poolg
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt1,TRMTYPE=(3600|3650),
       NETNAME=nnnnnnn1,SESTYPE=PIPELN,PIPELN=POOL
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt2,TRMTYPE=(3600|3650),
       NETNAME=nnnnnnn2,SESTYPE=PIPELN,PIPELN=POOL
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt3,TRMTYPE=(3600|3650),
       NETNAME=nnnnnnn3,SESTYPE=PIPELN,PIPELN=POOL
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt4,TRMTYPE=(3600|3650),
       NETNAME=nnnnnnn4,SESTYPE=PIPELN,PIPELN=LAST,TASKNO=nn
```

When migrated using:

```
MIGRATE TABLE(DFHTCTxx) TYPESGROUP(typeg)
```

these macros result in the following definitions:

```
DEFINE TERMINAL(ttt1) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn1)
DEFINE TERMINAL(ttt2) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn2)

DEFINE TERMINAL(ttt3) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn3)
DEFINE TERMINAL(ttt4) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn4) TASKLIMIT(nn)
DEFINE TYPETERM(xxxxxxx1) GROUP(typeg) DEVICE(3600|3650)
       SESSIONTYPE(PIPELINE)
```

The POOL name is automatically generated using the NETNAME of the first TERMINAL in the POOL.

When the pool is installed, the terminal IDs are sorted in ascending alphabetic order. The first terminal to be installed will become the pool header.

Matching TYPETERMs are eliminated by DFHCSDUP MIGRATE, as described for ordinary terminals.

Devices with LDC lists

For 3600, 3770 batch, 3770 and 3790 batch data interchange, and LUTYPE4 logical units, you can specify the name of an LDC list (Logical Device Code list). In RDO this information is held on the TYPETERM definition.

You cannot define the LDC list itself using RDO. The LDC list and its contents must still be defined by the macro method. The TERMINAL and TYPETERM using the LDC list can be created in RDO, and the LDC list defined by using the macro is named by the LDCLIST attribute on the TYPETERM definition.

You cannot define a list of LDC codes explicitly on the TYPETERM definition.[6] This simplifies the interface to these facilities and allows tables to be migrated to the CSD. If you have a DFHTCT TYPE=TERMINAL macro with an LDC= specification of the form:

```
LDC=(aa=nnn,bb=nnn,...)
```

then the assembly will produce a level 8 MNOTE. This will tell you to recode the list either as a **local LDC list** or as an **extended local LDC list**. (See page 227.)

You should then recode the terminal entry in this form:

```
DFHTCT TYPE=TERMINAL,TRMIDNT=tttt,TRMTYPE=uuuuu,
       ACCMETH=VTAM,LDC=nnnnnnnn
```

where nnnnnnnn is the name you gave your LDC list when you defined it.

DFHCSDUP MIGRATE always produces a TERMINAL-TYPETERM pair of definitions:

```
DEFINE TERMINAL(tttt) TYPETERM(xxxxxxxx)
DEFINE TYPETERM(xxxxxxxx) DEVICE(dddddddd) LDCLIST(nnnnnnnn)
```

Terminals referencing printers

A pair of TCT entries could be related, when a terminal references a printer, by using the PRINTTO or ALTPRT operands in the TCT macro, which referred to the printer TCTTE by means of the assembler label of the printer entry.

In RDO, the terminal refers to its associated printer by the 4-character TERMINAL name (old TRMIDNT) of the definition for the printer. The corresponding keywords in RDO are PRINTER and ALTPRINTER.

```
        DFHTCT TYPE=TERMINAL,TRMIDNT=tttt,
               TRMTYPE=3270,PRINTTO=label1
label1  DFHTCT TYPE=TERMINAL,TRMIDNT=pppp,TRMTYPE=3270P
```

When migrated, this becomes:

```
DEFINE TERMINAL(tttt) TYPETERM(xxxxxxxx) PRINTER(pppp)
DEFINE TERMINAL(pppp) TYPETERM(xxxxxxxx)
```

Links and sessions - method 1

This method applies both to MRO and to LUTYPE6.1 CICS-CICS ISC links and sessions.

MRO links and sessions

An MRO link and a set of parallel sessions are defined by:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=IRC,
```

DFHCSDUP MIGRATE always produces a CONNECTION-SESSIONS pair of definitions:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(IRC)
DEFINE SESSIONS(sssssprp) CONNECTION(ssss) PROTOCOL(LU61)
       SENDPFX(sp)        SENDCOUNT(m)
       RECEIVEPFX(rp)     RECEIVECOUNT(n)
```

The SESSIONS name sssssprp is synthesized by concatenating the names of the SYSIDNT, SEND(sp) and RECEIVE(rp), for example:

```
SYSIDNT=BCIC,SEND=(SA,5),RECEIVE=(RA,3)
         =====>   SESSIONS(BCICSARA)
```

6 This also applies to the DFHTCT TYPE=TERMINAL macro, although earlier CICS releases allowed explicit definition of a list of LDC codes.

LUTYPE6.1 CICS-CICS ISC links and sessions

These are as for MRO, but with ACCESSMETHOD(VTAM).

LUTYPE6.1 CICS-CICS ISC links and sessions may also be defined and migrated as for method 2.

Links and sessions - method 2

This method applies to both LUTYPE6.1 CICS-CICS ISC and LUTYPE6.1 CICS-IMS links and sessions.

LUTYPE6.1 CICS-IMS links and sessions

The ISC link is defined by:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=VTAM
```

The parallel sessions for the link are defined individually by:

```
DFHTCT TYPE=TERMINAL,TRMIDNT=tttt,SYSIDNT=tttt,TRMTYPE=LUTYPE6,
       SESTYPE(SEND|RECEIVE),NETNAMQ=nnnnnnnn
```

DFHCSDUP MIGRATE produces a CONNECTION definition from the TYPE=SYSTEM macro:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(VTAM) PROTOCOL(LU61)
```

and a SESSIONS definition from each subsequent TYPE=TERMINAL macro.

For a SEND session:

```
DEFINE SESSIONS(sssstttt) CONNECTION(ssss) PROTOCOL(LU61)
       SESSNAME(tttt)     NETNAMEQ(nnnnnnnn)
       SENDCOUNT(1)
```

For a RECEIVE session:

```
DEFINE SESSIONS(sssstttt) CONNECTION(ssss) PROTOCOL(LU61)
       SESSNAME(tttt)     NETNAMEQ(nnnnnnnn)
       RECEIVECOUNT(1)
```

The SESSIONS name sssstttt is synthesized by concatenating the old SYSIDNT and TRMIDNT values.

The SESSNAME name tttt is the macro TRMIDNT value.

The NETNAMEQ name nnnnnnnn is the macro NETNAMQ value.

LUTYPE6.1 CICS-CICS ISC links and sessions

These are as for CICS-IMS but without NETNAMEQ.

LUTYPE6.1 CICS-CICS ISC links and sessions may also be defined and migrated as for method 1.

APPC (LUTYPE6.2) links and parallel sessions

For APPC, the sessions are grouped into modesets. Each modeset is defined in the macro method with a TYPE=MODESET macro, and the equivalent in RDO is one SESSIONS definition on the CSD.

The ISC link is defined by:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=VTAM,TRMTYPE=LUTYPE62
```

The parallel sessions for the link are defined collectively by:

```
DFHTCT TYPE=MODESET,MODENAM=mmmmmmmm,SYSIDNT=ssss,
       MAXSESS=(m1,m2)
```

DFHCSDUP MIGRATE produces a CONNECTION definition from the TYPE=SYSTEM macro:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
```

and a SESSIONS definition from the TYPE=MODESET macro:

```
DEFINE SESSIONS(xxxxxxx)  CONNECTION(ssss) PROTOCOL(APPC)
       MAXIMUM(m1,m2)     MODENAME(mmmmmmmm)
```

The SESSIONS name xxxxxxxx is derived from the old SYSIDNT value concatenated with a 3-character identifier generated using the same algorithm as the old macro, for example for SYSIDNT=SYS1:

```
MODESET1: MAXSESS=4  gives SESSIONS(SYS1AAC) (starting count)
MODESET2: MAXSESS=2  gives SESSIONS(SYS1AAG) (MODESET1 + 4)
MODESET3: MAXSESS=3  gives SESSIONS(SYS1AAI) (MODESET2 + 2)
```

The MODENAME name mmmmmmmm is the macro MODENAM value.

APPC (LUTYPE6.2) single session terminal

A single TYPE=SYSTEM macro is used:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=VTAM,TRMTYPE=LUTYPE62,
       FEATURE=SINGLE,MODENAM=mmmmmmmm
```

DFHCSDUP MIGRATE produces a CONNECTION definition and a SESSIONS definition:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
       SINGLESESS(YES)

DEFINE SESSIONS(xxxxxxx)  CONNECTION(ssss) PROTOCOL(APPC)
       MODENAME(mmmmmmmm) MAXIMUM(1,0)
```

The SESSIONS name xxxxxxxx is derived from the old SYSIDNT value concatenated with a 3-character identifier generated using a similar algorithm to the old macro, for example, for SYSIDNT=SYS1:

```
1st definition: gives SESSIONS(SYS1AAC) (starting count)
2nd definition: gives SESSIONS(SYS1AAF) ...
```

The MODENAME name mmmmmmmm is the macro MODENAM value.

You will not be able to autoinstall these CONNECTION and SESSIONS definitions. If you want to use autoinstall for your APPC single session terminals, you must redefine them as TERMINALs referencing a TYPETERM with DEVICE(APPC) (see page 187).

INDIRECT connections

The intermediate system is defined as:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=yyyy,ACCMETH=IRC|VTAM
```

This is migrated as any other TYPE=SYSTEM macro would be.

The indirect link is defined as:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=xxxx,ACCMETH=INDIRECT,INDSYS=yyyy,
       NETNAME=nnnnnnnn
```

The migration of the macro for the indirect link produces an RDO definition of the form:

```
DEFINE CONNECTION(xxxx) INDSYS(yyyy) ACCESSMETHOD(INDIRECT)
       NETNAME(nnnnnnnn)
```

Bibliography

CICS Transaction Server for VSE/ESA Release 1 library

Evaluation and planning	
Release Guide	GC33-1645
Migration Guide	GC33-1646
Report Controller Planning Guide	GC33-1941
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