CA Telon® Application Generator

Implementation Guide

r5.1

CA Product References

This document references the following CA products:

- CA Telon® Application Generator
- CA Librarian®
- CA InterTest®
- CA Panvalet®
- CA Realia®
- CA Endevor Software Change Manager (CA Endevor SCM)

Contact CA

Contact Technical Support

For your convenience, CA provides one site where you can access the information you need for your Home Office, Small Business, and Enterprise CA products. At http://ca.com/support, you can access the following:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

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Contents

Chapter 1: Introduction

Now that CA Telon is installed at your site, it is important to have a CA Telon coordinator onsite to manage the product's use and to ensure that training is provided so that your site uses CA Telon most effectively.

For optimal performance, this guide describes basic information about defining the production environment and customizing the CA Telon Design Facility (TDF), and the CA Telon Application Generator. Guidelines are also provided for general implementation tips and descriptions of the INSTALL data set members on the CA Telon mainframe installation tape.

Note: Information on using the utilities is also provided.

We recommend having one or more people at your installation who are responsible for coordinating all CA Telon-related activity. Every CA Telon installation is different, so your DP shop must ultimately determine the best flow of communication for your site. The suggestions made in this chapter are based on the experiences of CA technical field personnel.

This chapter takes you through the need for coordination, a description of the CA Telon coordinator role, and the advantages of having a CA Telon coordinator. These ideas are by no means comprehensive, but seek to draw out the most important issues for you to consider.

Again, there are no hard and fast rules on coordinating CA Telon activity at your site, but it is important to think through these issues. Consult with your CA Telon field technical representative about any questions you have concerning CA Telon coordination or for specific guidelines in establishing CA Telon coordination at your site.

This section contains the following topics:

Use CA Telon

CA Telon is a complex product to implement because it performs multiple tasks and is flexible. Flexibility means that CA Telon is used differently in different environments. Since CA Telon enables you to perform multiple tasks, it most likely has an impact on a large number of users in a DP shop.

Manage Technical Considerations

CA Telon's flexibility means that large and small data processing shops use CA Telon, and so no absolute rules of coordination can be made.

Some shops have multiple databases, multiple TDFs or multiple target environments. These complexities plus differing shop sizes mean that CA Telon is implemented differently in each environment.

However, certain concepts of coordination can be extracted from this diversity.

Some examples of technical considerations that the CA Telon coordinator could address are:

- Implementing new fixes, refreshes, and releases of CA Telon
- Environment-specific problems (for example, a TSO development problem or an OS/390 or z/OS target environment problem)
- DBMS problems (for example, DB2 or VSAM problems)
- Language problems (for example, a PL/I problem or a Custom Code problem in COBOL)
- Interface problems

A CA Telon coordinator can help manage technical issues. If a person has a problem or question, they can contact the CA Telon coordinator and find out where to go to fix the problem or answer the question. Managing fixes, refreshes, and releases of CA Telon is also an important coordination process.

Manage Users

The multiple tasks that CA Telon performs usually means that there are multiple users. Multiple users means that there is a need for communication.

Some companies have CA Telon users located in different sites. Often several departments or sub-groups within departments are involved.

Some companies have all CA Telon users located in the same building. But even close proximity does not diminish the need for coordinating information.

Some examples of user issues that the CA Telon coordinator could address are:

- User training
- Documentation distribution
- User authorization
- Communication between users
- Problem determination

A CA Telon coordinator can help manage user issues. Communication is enhanced by a central coordination point. Although the coordinator might not know the answer, that person should know where to get the answer.

Coordination Structure

The CA Telon coordinator can be a team of people, one full-time person, or one or more part-time people. Larger and more complex environments need more coordination than smaller, simpler environments.

The CA Telon coordinator acts as a facilitator. The emphasis is on the operational aspects of the CA Telon environment. The CA Telon coordinator does not need specific product expertise, but needs to know the structure of your company.

Responsibilities

The responsibilities of a CA Telon coordinator vary significantly from one company to another. However, this topic shows responsibilities that are often given to the CA Telon coordinator. Analyze those given here to determine what would be best suited for a CA Telon coordinator at your site.

Coordinating training

The CA Telon coordinator often guides the training process including:

- Who receives training
- Scheduling training sessions
- Facilities to use for training
- Correspondence with CA on training
- Notification of people involved in training
- Distribute training material (for example, pre-training exercise)

Facilitating adherence to in-house standards

The CA Telon coordinator needs to be well-acquainted with company and departmental standards. This could include things such as signature authorization, key people to notify, use of forms, diskette distribution, authorization of new users, and security authorization.

Distribute Tapes and Documentation

An important coordination function is the distribution of product tapes and documentation. CA sends tapes or documentation to a specified person in the company, and this person makes sure that the information gets passed on to the appropriate person or department.

Communicating with CA

As discussed earlier, CA has a contact person at a company for CA Telon-related information. This could be for an alpha or beta agreement or a contact point for resolving customer questions or problems.

The coordinator can also serve as a provider of enhancement requests. This information is vital for strategic planning of future CA Telon releases.

Communicating within the team

One person or a group of people perform this centralized role of coordinating CA Telon activity on a site. Without a coordinator, people may get isolated or information may not get distributed. CA Telon can impact many groups within an organization, so some sort of coordination is important.

Participating in user groups

The CA Telon coordinator participates in local CA Telon user groups or attends the International User's Conference. This keeps people aware of the latest enhancements to the product or insights from other users.

Guiding the implementation process

A technically trained coordinator can help guide the implementation process. Perhaps there are backup procedures to verify, or checkpoints for achieving implementation goals.

Advantages

There are many advantages to designating a person or team as CA Telon coordinator at your site including:

- **Improving communication lines** between many people and departments. Isolationism can develop without proper communication channels. The larger the environment, the more the CA Telon coordination function is needed, though some coordination is necessary for all shop sizes.
- **Providing centralization and visibility** by providing a contact point for CA Telon-related activity. This helps a company both interdepartmentally and intradepartmentally and also helps CA. Some coordination is necessary for a large product like CA Telon, so it makes sense to have a visible coordinator.
- **Enhancing efficiency** by the appropriate time. Incorrect, missing, or late information causes problems leading to inefficiency. Lack of coordination wastes valuable time. A good coordinator enhances efficiency in the entire environment because the information flow is better and less time is wasted.
- **Promoting order and unity** onsite. People will know where to go to get pertinent information. The individual members will feel like part of a team.

Audience

This guide is for users responsible for implementing CA Telon for production in the mainframe or CA Telon PWS environment.

Chapter 2: Basic Procedures

There is an indistinct line between installation and implementation. Installation flows into implementation. However, the basic distinction made in CA Telon documentation is that installation is directed toward unloading the product from the tape and setting up the Training environment, whereas implementation means setting up the production environment.

Since some companies incorporate *implementation procedures* during installation, you should be familiar with the procedures discussed in CA Telon (for the mainframe).

This chapter describes some of the basic procedures of implementation. Many of the components and procedures described in this chapter were probably at your site during the installation of the product. Therefore some procedures and components require verifications rather than initial setup.

This section contains the following topics:

Customization

As part of the CA Telon installation process, a site may tailor CA Telon to suit in-house standards and conventions. This tailoring is done against each of the following CA Telon components, which are each addressed in more detail next:

- CA Telon Design Facility (TDF)
- CA Telon Application Generator

This chapter also provides:

- A description of how to customize mainframe and PWS environment defaults
- Information about how to define program abnormal termination parameters
- Product and project setup checklists for you to use in your implementation

Design Facility Customization

Several of the CA Telon Design Facility parameters are tailored from the Installation submenu panel. This screen allows a CA Telon Administrator to:

- Enter and change the install password
- Change an installation's naming convention
- Change the default environment
- Change CA Telon source code format
- Customize user access (user types)
- Customize function access (function restriction)
- Include a custom security module
- List application Header information
- Modify Installation Profile defaults

During application development, the CA Telon Design Facility Data Administration function can be used to further tailor CA Telon to your needs by allowing you to control and set up standards for all program data accesses. Other Data Administration functions include:

- Directly importing DB2 tables, Stored Procedures and IMS database definitions
- Allowing specified users to set up sequential and VSAM file definitions that can then be shared by all CA Telon application developers
- Defining data elements such as:
  - Name of alternate record definition COPY book (or equivalent)
  - Alternate I/O Area name
  - CA Telon SQL row and table views
  - List of available SSAs CA Telon file groups
  - VSAM file type
  - Record length (minimum and maximum)

This section provides information about how to:

- Test the TDF
- Access the TDF installation menu
- Customize naming conventions (optional)
- Customize the program format and environment (optional)

- Customize the security environment (optional)
- List headers
- Modify information profile defaults (optional)

Test the TDF

Test the TDF installation by executing one of the following, depending on your installation:

Environment	Action
Mainframe TSO	Execute the TSO CLIST @TDF
Mainframe CICS	Execute CICS transaction TDF
PWS	Access the CA Telon Design Facility from the Telon menu tool bar.

Installation-specific considerations

- **For DB2 installations**: Before you test the TDF, you must create and import the Training DB2 tables. See the *Installation* guide for more information.
- **For COBOL II installations**: Set the COBOL II parameter LIBKEEP to YES (LIBKEEP = YES) to maximize performance of the online TDF.

Mainframe CICS only

You should have already modified your CICS startup JCL to include DD statements for the training files to be created as described in the *Installation* guide. If you are running the TDF under CICS, you must either make sure the statements are commented out or first perform the step described in the *Installation* guide. If you fail to do so, you are not able to bring up your CICS region. Instead, you receive a JCL error.

For CICS TDF installations, you must have performed your CICS modifications prior to this step.

Checking TDF operation

After allocating several files, the TDF displays the TDF Main Menu. To test the TDF to be sure it operates as documented, see the *Design Facility Reference* guide.

If the TDF does not operate as documented, check all job completion messages and any custom modifications you have made to any JCL or command file to make sure that all jobs have completed successfully and that you have not introduced any errors.

Access the TDF Installation Menu

To execute the remaining steps in TDF initialization, you must first access the TDF Installation menu.

When the TDF Main Menu is displayed, enter **INSTALL** in the COMMAND field. The TDF displays this screen:

```
TDF INSTALLATION MENU **************  ***************************************
COMMAND ==>_____________________________________________________________________

FUNCTION: __   UP-UPDATE    PU-PURGE    LI-LIST

ITEM      __   IP-INSTALLATION PROFILE   US-USERS   PW-PASSWORD   RE-RESTRICT
               HD-HEADERS   WF-TDF WIP   WD-TDD WIP   WX-TDX WIP
               PC-RESTRICT PWS DESKTOP SECURITY

PASSWORD

ENTER VALUE FOR SPECIFIC ITEM TO BE PROCESSED:
1. INSTALL          2  4      (HEADER AND ID LENGTHS)
                    4  0      (APPLID REQ/OPTIONAL AND ITS LENGTH)
                    Y  TSO___ (FORMATTING - COMPRESSION AND ENVIRONMENT)
                    _  (U/I)  (TELON DATE FORMAT - U.S./INTERNATIONAL)
                    _______   (INSTALLATION SECURITY MODULE NAME)
                    ________________________________________
                              (TDF IDENTIFICATION)

2. USER             _______   (USER ID)
                    _         (C-CONTROLLER P-PROGRAMMER A-ANALYST)
3. PASSWORD                   (NEW PASSWORD)
                              (SAME NEW PASSWORD TO MINIMIZE KEYING ERRORS)
4. RESTRICT         _         (C-CONTROLLER P-PROGRAMMER A-ANALYST)
```

To exit this screen without performing any action, enter **CANCEL** in the COMMAND field.

From the TDF Installation menu you can:

- Enter and change the install password
- Change naming conventions
- Change the default environment
- Change CA Telon source code format
- Provide TDF identification
- Customize user access
- Customize function access
- Include a custom security module
- List header information
- Modify installation Profile defaults

Install password

To make changes from the TDF Installation menu, you must first enter:

- **UP** in the FUNCTION field
- **IP** in the ITEM field
- The current password in the PASSWORD field that appears in the top half of the screen

The PASSWORD fields are non-display fields. The TDF is delivered with the Install password CSIMK. If you enter an incorrect password, the TDF displays the message INCORRECT PASSWORD and allows you to re-enter the password.

Once you successfully enter the password, you can change it by entering:

- **UP** in the FUNCTION field
- **PW** in the ITEM field

You must enter the new password twice in the PASSWORD field in the bottom half of the screen to verify it. The new password must be 5 characters long. To enter a shorter password, enter spaces at the end so that the total of characters entered is five. If the second entry you make in the PASSWORD field matches the first, the update is successful, and the TDF displays PASSWORD CHANGED AND PROFILE SAVED. If they are not identical, the TDF displays NEW PASSWORD FIELDS DO NOT MATCH and does not update the password.

Note: If you change the password and forget your new password, call Customer Support.

Customize Naming Conventions (Optional)

The naming convention customization described here is optional. If you decide to keep the default naming conventions, see Customize the Program Format and Environment (Optional) (see page 24)

TDF program design information and CA Telon generated programs depend on two items to generate names: header and ID. You can also use an optional APPLID to identify application groups. By default, header is two characters long and ID is four characters long. As delivered, the header and ID work together to make program names.

Delivered header and ID program names

In the next table, *hh* is the two-character header and *nnnn* is the four-character ID. arrange='1 2 3 3 / 1 2 4 5'.

Target	Program control block	Generated name	
		COBOL	PL/I
IMS/DC	TSO Program	*hh*TM*nnnn*	*hh*T*nnnn*
	IMS Dynamic Program	.*hh*IM*nnnn*	*hh*I*nnnn*
	IMS Driver Program	*hh*IM*nnn*	*hh*M*nnnn*
	.IMS Alias	*hh*XM*nnnn*	*hh*X*nnnn*
	IMS Static Link Program	*hh*SM*nnnn*	*hh*S*nnnn*
	BATCH	*hh*BP*nnnn*	*hh*B*nnnn*
	IMS PSB	*hh*IM*nnnn*	*hh*I*nnnn*
	DIF/DOF	*hh*D*nnnn*	*hh*D*nnnn*
	MID	*hh*I*nnnn*	*hh*I*nnnn*
	MOD	*hh*O*nnnn*	*hh*O*nnnn*
CICS	CICS	*hh*CP*nnnn*	*hh*P*nnnn*
	Non-terminal	*hh*NP*nnnn*	B*Nnnnnhh*
	BMS Control Block	*hh*Z*nnnn*	*hh*Z*nnnn*
CICS Client	Client program	*hh*CC*nnnn*	—
	Server program	*hhnnnn*	—
BATCH	Batch program	*hh*BP*nnnn*	*hh*B*nnnn*
STORED	Stored Procedure Program	*hh*SP*nnnn*	*hh*2*nnnn*

Changing the header and ID

You can change the length of the header and ID on the TDF Installation menu as long as their combined length does not exceed six characters. However, before making any changes to header and ID size, discuss your plans with your CA Telon technical representative or call Customer Support. All load modules, control blocks, and mapping names are also generated by these items. For example:

- The code must reflect the same header and ID length you supply here
- CA Telon training members are impacted by any modification of header and ID lengths, as described in the *Installation* guide or in the appropriate CA Telon target documentation

To change the header and ID lengths on the TDF Installation menu, enter the lengths on the first line of the INSTALL field. The header and ID lengths are highlighted in this example:

```
TDF INSTALLATION MENU **************  ****************************************

COMMAND ==>_____________________________________________________________________


FUNCTION: __   UP-UPDATE    PU-PURGE    LI-LIST


ITEM      __   IP-INSTALLATION PROFILE   US-USERS   PW-PASSWORD   RE-RESTRICT

               HD-HEADERS   WF-TDF WIP   WD-TDD WIP   WX-TDX WIP

               PC-RESTRICT PWS DESKTOP SECURITY


PASSWORD


ENTER VALUE FOR SPECIFIC ITEM TO BE PROCESSED:

1. INSTALL          3  3      (HEADER AND ID LENGTHS)

                    1  3      (APPLID REQ/OPTIONAL AND ITS LENGTH)

                    N  TSO___ (FORMATTING - COMPRESSION AND ENVIRONMENT)

                    _  (U/I)  (TELON DATE FORMAT - U.S./INTERNATIONAL)

                    _______   (INSTALLATION SECURITY MODULE NAME)
```

```
                    ___________________________________

                                (TDF IDENTIFICATION)


2. USER              _______    (USER ID)

                     _          (C-CONTROLLER P-PROGRAMMER A-ANALYST)

3. PASSWORD                     (NEW PASSWORD)

                                (SAME NEW PASSWORD TO MINIMIZE KEYING ERRORS)
```

4. RESTRICT _ (C-CONTROLLER P-PROGRAMMER A-ANALYST)

4. RESTRICT _ (C-CONTROLLER P-PROGRAMMER A-ANALYST)If you attempt to set a combined length of more than 6 characters to header and ID, the TDF displays SUM OF HEADER AND ID IS GREATER THAN 6 and makes no changes.

The APPLID

The APPLID is an optional application identifier that defines the names for programs.

APPLID can be as many as seven characters in length. Its length is independent of the header and ID length. You can specify **0** only when the APPLID REQUIRED/OPTIONAL field value is 4.

The APPLID REQUIRED/OPTIONAL field in the TDF must contain one of the following values:

Value	Meaning
1	Application ID required for online and batch programs
2	Application ID required for online programs; not allowed for batch programs
3	Application ID required for batch programs; not allowed for online programs
4	Application ID optional for online and batch programs
5	Application ID required for batch

Value	Meaning
	programs; optional for online programs
6	Application ID required for online programs; optional for batch programs

The APPLID REQ/OPTIONAL field is used in conjunction with APPLID LENGTH to decide whether to display and allow an APPLID value. A length of 0 means that APPLID is not allowed; this is the default. In the preceding example of the TDF Installation menu, LENGTH has been changed to 3 and REQ/OPTIONAL is set at 1.

If you try to add an APPLID longer than seven characters, the TDF responds by highlighting the field and displaying the message HIGHLIGHTED FIELD IN ERROR.

Customize the Program Format and Environment (Optional)

Use this step to customize the following:

- Format of generated CA Telon source
- Default target environment for CA Telon programs
- Default format for display of data in CA Telon

Format of generated source

You can set the format of the generated CA Telon source code that is exported from the TDF using one of the following formats:

- Y—Compressed. Condenses the source code listing of the parameters into as few lines as possible. Also creates short listings with more than one parameter per line.
- N—Noncompressed. Writes one parameter per line of source code forming longer, but more readable members than the compressed version.

Default target environment

You can set the default environment to IMS/DC, TSO, CICS, or BATCH. This default can be overridden on an individual program basis and in JCL.

Select your default environment as follows:

CICS

CICS generation for production or for test under the CA InterTest or other testing tools.

IMS

IMS generation for production.

TSO

IMS generation for Test under TSO

BATCH

Batch generation for production or for test execution under TSO

To specify the default CA Telon source code output to non-compressed and the default environment on the TDF Installation menu, enter:

- UP in the FUNCTION field
- IP in the ITEM field
- Values as appropriate in the fields preceding (FORMATTING - COMPRESSION AND ENVIRONMENT)

In the next example, the highlighted values show that compression is off and the default environment is CICS:

```
TDF INSTALLATION MENU **************  ************************************

COMMAND ==>_____________________________________________________________


FUNCTION: __   UP-UPDATE    PU-PURGE    LI-LIST


ITEM      __                              US-USERS   PW-PASSWORD   RE-RESTRICT

               HD-HEADERS   WF-TDF WIP   WD-TDD WIP   WX-TDX WIP

               PC-RESTRICT PWS DESKTOP SECURITY


PASSWORD


ENTER VALUE FOR SPECIFIC ITEM TO BE PROCESSED:

1. INSTALL          2  4      (HEADER AND ID LENGTHS)

                    4  0      (APPLID REQ/OPTIONAL AND ITS LENGTH)

                    N  CICS_  (FORMATTING - COMPRESSION AND ENVIRONMENT)

                    _  (U/I)  (TELON DATE FORMAT - U.S./INTERNATIONAL)

                    _______   (INSTALLATION SECURITY MODULE NAME)

                    ____________________________________

                              (TDF IDENTIFICATION)


2. USER             _______   (USER ID)

                    _         (C-CONTROLLER P-PROGRAMMER A-ANALYST)

3. PASSWORD                   (NEW PASSWORD)

                              (SAME NEW PASSWORD TO MINIMIZE KEYING ERRORS)

4. RESTRICT         _         (C-CONTROLLER P-PROGRAMMER A-ANALYST)
```

Customize the TDF date display format

TDF screens that display date information can do so in U.S. format (*mmddyy*) or in International format (*ddmmyy*).

The default is U.S.

To specify the international date display format, enter:

- UP in the FUNCTION field
- IP in the ITEM field
- I in the field preceding CA Telon DATE FORMAT

TDF Identification

You can optionally provide a label to identify your TDF Database. This identification label is displayed on the TDF main menu screen.

Customize Security Environment (Optional)

Use this step to set three separate security parameters:

- User type
- Function restriction
- Custom security module installation

Each item progressively provides you with security.

User security

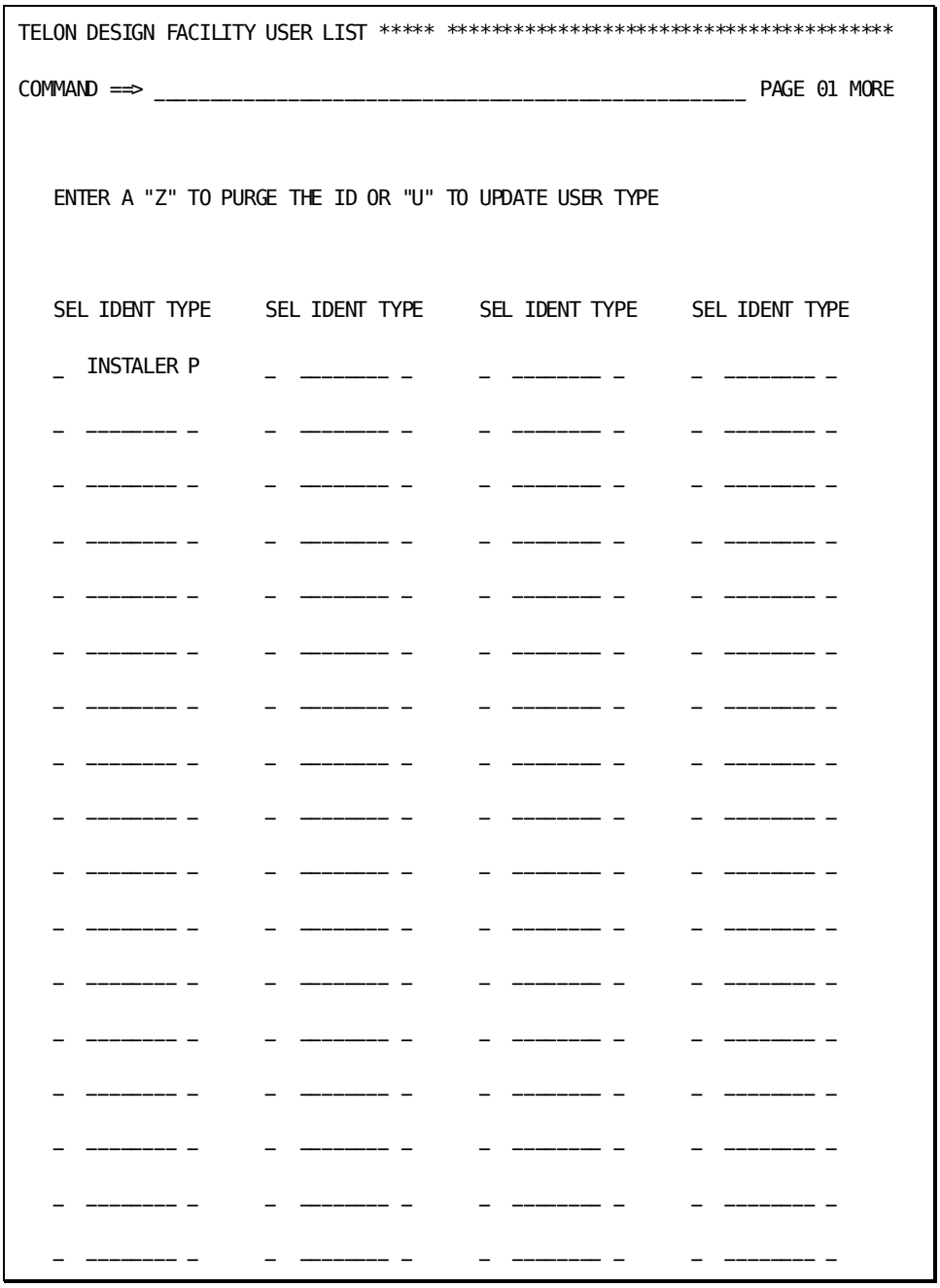
There are three types of TDF users:

- C—Controllers
- A—Analysts
- P—Programmers

Each group is restricted separately and independently, as outlined next. You can tailor the security of each type differently.

When a user signs on to the TDF for the first time, the user is automatically added to the system as a programmer type. The installer can add a new user to the system or change a user's type by accessing the List TDF Users screen from the TDF Installation sub-menu menu and entering:

- **LI** in the FUNCTION field
- **US** in the ITEM field



This illustration shows the screen in the way it appears just after the initial installation of CA Telon. Your user ID appears in place of INSTALER.

To add a new user, enter the user ID in any available IDENT field. To specify the user type different from the default, **P** (programmer) enter **A** (analyst) or **C** (controller) in the associated TYPE field.

To change the type of an existing user, enter **U** in the associated SEL field and **A**, **C**, or **P** in the TYPE field. Press PF3 to save new or changed user data and return to the TDF Installation menu.

Alternatively, you can update a single user directly from the TDF Installation screen by entering:

- **UP** in the FUNCTION field
- **US** in the ITEM field
- *Userid* in the 2. USER field
- A user type value in the second line of the 2. USER field

Function restriction

As delivered, all three user types have total access to all TDF functions. You can tailor each type independently to your installation's requirements by restricting the functions each type of user can perform.

To restrict a user type, on the TDF Installation menu enter: enter the following on the Install screen:

- **UP** in the FUNCTION field
- **RE** in the ITEM field
- A user type value of C, A, or P in the 4. RESTRICT field

The TDF displays the Update Installation Restrictions screen:

```
*PROGRMR UPDATE INSTALLATION RESTRICT ****************************************

COMMAND ==> _____________________________________________________________

             **    P R I M A R Y    F U N C T I O N S    **

DATA ADMINISTRATION  Y                PROGRAM DEFINITIONS Y ONLINE   Y BATCH

PANEL SPECIFICATIONS Y                UTILITY FUNCTIONS   Y

TSO COMMAND ACCESS   Y                PROTOTYPING         Y

             **  D A T A    A D M I N I S T R A T I O N  **

ITEM            CR  UP  SH  PU  LI      ITEM         CR  UP  SH  PU  LI

DBD        (DL) Y   Y   Y   Y   Y       PSB     (PS) Y   Y   Y   Y   Y

SQL     (TB/TJ) Y   Y   Y   Y   Y       CICS  (CQ/CJ) Y   Y   Y   Y   Y

FGRP, VSAM, SEQ  Y   Y   Y   Y   Y
```

```
                    **  P A N E L / P R O G R A M  **

        ** S P E C I F I C A T I O N ** ** U T I L I T Y  M E N U **

ITEM            CR  UP  SH  PU  LI          CO  RE  LI  PR  XP  XR

IMAGE     (PI)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

PANEL     (PD)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

SCREEN    (SD)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

REPORT    (RD)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

DRIVER    (DR)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

NONTERM   (ND)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

BATCH     (BD)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y

STORED    (SP)  Y   Y   Y   Y   Y           Y   Y   Y   Y   Y   Y
```

The first word in the title displayed on the screen is the user type represented by your entry in the 4. RESTRICT field on the TDF Installation menu. The title of the sample screen shown abov indicates that you can define restrictions for the programmer user type.

The functions you can restrict are:

- Data administration—Controls access to named DBMS types from the Data Administration menu.
- Panel specification—Controls access to the named entity type from wherever in the TDF they are accessible. For example, a panel definition (PD) can be reached through panel specification, online program definition, and batch definition. In each case, access is controlled by the PD indicators.
- Program definition—Controls access to online and batch program definition functions that are not controlled by panel specification restrictions.
- Prototyping—Controls access to the Prototyping facility. commands. Valid for the mainframe TSO TDF only.
- Utility functions—Controls access to the named entity type from the Utilities menu.

In the field associated with each major function, you can turn a restriction on or off by entering one of these values:

- **Y**—User type is allowed to perform the function
- **N**—User type is not allowed to perform the function

Note: The options you set on this screen do not take effect until you exit the TDF and then re-enter it.

The Installation Restrictions screen works as follows. If you enter **N** in the major function field, the values entered in the matrix are ignored. If you enter **Y** in the major function field, the values entered in the matrix are respected, and you can selectively restrict what the user type can do by entering **N** as appropriate in the matrix fields:

- To restrict individual panel specification and batch and online program definition functions, use the fields identified in the next table:

TDF function	Restrict field
CREATE/COPY/RENAME	CR
UPDATE/DESCRIPTION UPDATE	UP
SHOW/VIEW	SH
PURGE/ZAP	PU
LIST	LI

- Individual utility functions that you can restrict for the entity type names on the Installation Restriction screens are:

TDF function name	Restrict field
COPY	CO
RENAME	RE
LIST	LI
PRINT	PR
EXPORT	XP
EXPORT/REPLACE TELON STATEMENTS	

- Prototyping restrictions are determined by panel specification restrictions, as follows:

TDF function name	Restrict field
VIEW AP (View active presentation store)	UP for IMAGE
VIEW PS (View presentation store)	UP for PANEL
LIST AP (List active presentation store)	LI for IMAGE

TDF function name	Restrict field
LIST PS (List presentation store)	LI for PANEL

- Within Data Administration (Option 2), the z/OS-specific special function CA (DB2 tables) are controlled as follows:

TDF function name	Restrict field
CA (Catalog Import)<%	DB2 CREATE

Custom security module

You may require non-functional security that is more restrictive than just keeping types of users from certain TDF functions. For example, you may want to restrict certain programmer user IDs from accessing particular headers in the TDF.

To implement this type of security, you must write a custom security module.

If you are running the TDF under TSO, you must link the security module REUSABLE and place it in your CA Telon execution LOAD library. If you are running the TDF under CICS, you must link it RESUSABLE and place it in your CA Telon CICS LOAD library.

In either case, you must also update the TDF installation. On the TDF Installation menu, enter:

- **UP** in the FUNCTION field
- **IN** in the ITEM field
- *Module-name* in the INSTALLATION SECURITY MODULE NAME field

This causes the TDF to call the module from every TDF menu and from most of the list screens.

List Headers

You can list all the headers used in the system. This is not a task in the installation/customization process, but it is a utility that allows the installer to track system usage. On the TDF Installation menu, enter:

- **LI** in the FUNCTION field
- **HD** in the ITEM field

The TDF displays the List Headers screen, as shown next. The displayed list of headers vary; this is a sample display. For more information, see Test the TDF (see page 17).

```
TDF ****** LIST OF HEADERS ********** ************************************

COMMAND ==>



                    ***  H   E   A   D   E   R   S   ***

  AA      AD      CM      CS      DG      DR      DV      ED      FR      GK

  HL      JG      JS      KD      LH      LS      MB      MM      OE      PM

  PP      PS      SS      TC      TN      TR      TU      WF      WS
```

Modify Installation Profile Defaults (Optional)

CA Telon provides a predefined set of installation profile defaults. These defaults can be modified globally by the installer. Each user can also modify his or her profile defaults.

To modify the installation profile defaults globally so that each new user receives a new set of defaults, do the following:

- On the TDF Main Menu, enter **1** in the FUNCTION field
- On the User Profile Maintenance menu, select any option, specify new defaults on the display screen, and return to the menu
- Repeat the preceding step for other options, as needed
- Return to the TDF Main Menu and enter **INSTALL** on the COMMAND line
- On the TDF Installation menu, enter:
  - **UP** in the FUNCTION field
  - **IP** in the ITEM field

  You receive a message saying that the installation profile has been updated.

From this point on, all new users who enter the CA Telon Design Facility have the modified installation profile merged into their user profile. You can verify this process by looking at a new user's profile defaults.

To apply the modified installation defaults to an established user, purge the user from the TDF. The next time the user enters the CA Telon Design Facility, they receive the modified installation defaults.

Note: Do not purge any user who is currently in session.

The installation profile is determined by values in these fields:

- On the Update Program Definition Defaults screen:
  - LANG
  - OUTIFIL
  - ALARM
  - HELP
  - EOFKEY
  - HOLD

- On the Update Environment Definition Defaults screen:
  - CICS:
    - PSBSCHD
    - TRACE
    - LINEOPT
    - BMS
    - SPASTG
    - IOASTG
    - TPBSTG
  - IMS:
    - LINKOPT
    - CONVERS

Note: You can specify similar environment definition defaults for the BATCH, and STORED environments.

- On the Update PF Keys Definition screen, all PF/PA key definitions
- On the Update Session Controls screen:
  - All IMAGE CHARACTER fields
  - All FIELD SELECTION fields
  - FORMAT and PSB (within ENVIRONMENT)
  - DITTO CHARACTER
  - PANEL SIZE
  - USER MODE
  - PDSCOPY DSNAME
  - DG SEPARATORS

Clean Up Work-In-Progress (WIP) Files

The clean-up functions for WIP files are described in this section.

Important! You should be aware that these purge options completely eliminate all information for the selected WIP files.

List Programs for WIP Files

You can list all programs currently in WIP. This is not a task in the installation/customization process, but it is a utility that allows the purging of WIP files. On the TDF Installation menu, enter:

- **LI** in the FUNCTION field
- **WF** in the ITEM field

The TDF displays the Purge WIP Program Records screen, as shown next sample. The displayed list of programs vary.

```
LIST DEFINITIONS ******************  ***************************************

 COMMAND ==>                                                    PAGE 00


 * ***NAME************** ************DESCRIPTION**************   USER   UPDATE

   TNNWPI.SD             NEW PI                                FOWDE01  060496
```

Enter **Z** in the Select column to purge the program from the file.

List Data Administration Records for WIP Files

You can list all data administration records currently in WIP. This is not a task in the installation/customization process, but it is a utility that allows the purging of WIP files. On the TDF Installation menu, enter:

- **LI** in the FUNCTION field
- **WD** in the ITEM field

The TDF displays the Purge WIP Data Administration Records screen, as shown in the next sample. The displayed list of records varies.

```
LIST DATA ADMINISTRATION INFO ******* ***************************************

COMMAND ==>                                                     PAGE 00


* ***NAME************** ************DESCRIPTION**************   USER   UPDATE

  NEWDL/D               NEW DL                                FOWDE01  060496
```

Enter **Z** in the Select column to purge the record from the file.

List SQL Records for WIP Files

You can list all SQL records currently in WIP. This is not a task in the installation/customization process, but it is a utility that allows the purging of WIP files. On the TDF Installation menu, enter:

- **LI** in the FUNCTION field
- **WX** in the ITEM field

The TDF displays the Purge WIP SQL Records screen, as shown in the next sample. The displayed list of SQL records will vary.

```
LIST SQL ************************** ***************************************

COMMAND ==>                                                      PAGE 00


* ******SQL QUAL.NAME******* ************DESCRIPTION************  *TLNNAME* DB

  DATACOM.TRGEMPL            CREATED BY DATC CATALOG EXTRACT       TRGEMPLC  DC

  TLNIDMS.JOIN               IDMS TABLE JOIIN                      IDMSJOIN  ID
```

Enter **Z** in the Select column to purge the SQL record from the file.

Generator Customization

The CA Telon Generator is the facility that translates your CA Telon source code exported from the TDF into COBOL II, COBOL for z/OS and PL/I source code. From there it directs the program's compilation into an executable load module.

CA Telon's Application Generator is tailored by modifying a number of the supplied installation-modifiable parameters. With little effort, a site can tailor the Application Generator to perform the following operations:

- Customize the load module naming conventions
- Customize the MFS and BMS module naming conventions
- Force installation-defined COBOL and PL/I code into predetermined locations in the generated programs
- Open up additional Custom Code entry points
- Define user-written screen field edits
- Define system/environment defaults
- Establish standard application ABEND handling procedures

Modify CA Telon for an application

The CA Telon code Generator is easily customized for specific applications in your site. If an application needs its own naming conventions, standard code, work area, additional Custom Code entry points, transfer area or transfer area size, these can best be handled by using the facility provided by the TELONIIS macro.

The TELONIIS macro is found in your site's MACLIB and uses another macro called TLNIIS in which all of these parameters can be set. In TELONIIS, code is available to choose the correct TLNIIS for the program being generated during the generation procedure. As shipped, TELONIIS has optional code to select the correct TLNIIS by the program's header or application ID. See Further Customization of Macro Libraries (see page 85) for more information about modifying CA Telon for an application.

This section describes how to customize the CA Telon Generator. The steps you must take to customize and test the CA Telon Generator are:

1. Copy PGMNAMES from PGMNAMED
2. Customize naming conventions (optional)
3. Customize user edit usage (optional)
4. Customize system defaults (optional)
5. Customize environment defaults (optional)

Even if you decide to retain all delivered default options, you should become familiar with the optional as well as required steps for Generator customization and testing.

Generator Overview

The Generator uses the TELONIIS macro to call the TLNIIS macro.

Environment considerations

If you are implementing CA Telon on the mainframe, the macros are members in the *pdsqual.*MACLIB data set. If you are implementing CA Telon on the PWS, the Generator uses *path*\MACLIBT that contains the macros intended for customization.

TLNIIS contains most of the code that customizes your generated COBOL II, COBOL for z/OS and PL/I programs. TLNIIS calls the PGMNAMES and USREDITS macros to control naming conventions and user-written edits. These macros are accessed by each of the generating procedures (PROCs).

The code in TLNIIS sets the following functions:

- System defaults with the SETSYS statement
- Default language level with the CA Telon statement
- An edit subroutine table by extracting data from the member EDITTBL macro
- Generated program names, BMS, and DL/I control blocks by copying data from the PGMNAMES macro
- Environmental defaults using the SETENV statement

To control these functions, you must maintain the following macros:

Macro	Description
PGMNAMES	Sets default naming conventions
USREDITS	Holds the edit subroutine table for this installation
TLNIIS	Holds the system (SETSYS) and environment (SETENV) defaults to be incorporated into the generated programs and calls PGMNAMES and USREDITS
TELONIIS	Calls TLNIIS and can be customized to access more than one version of TLNIIS for different customization of various applications

The remainder of this chapter explains how these members operate and how you can customize them to your particular environment.

Copy PGMNAMES from PGMNAMED

To assure a clean backup copy of PGMNAMES, CA supplies you with the PGMNAMED macro so that you can create PGMNAMES.

To set up your release of Generator, make a copy of the PGMNAMED macro, assigning it the name **PGMNAMES** in the data set (for the mainframe) or the directory (for PWS) that you use as your macro "execution" library.

PGMNAMES is the member that Generator uses for naming conventions. In subsequent customization and testing steps discussed in this section, you will modify the PGMNAMES member. All subsequent references to PGMNAMES refer to this newly-created member.

5.0 mainframe considerations

If you are implementing CA Telon r5 on the mainframe, you cannot modify *pdsqual*.TGTMAC(PGMNAMES) directly, since this dataset is under SMP/E control. If you want to use *pdsqual*.TGTMAC, you must perform this macro customization as an SMP/E USERMOD.

Customize Naming Conventions (Optional)

This step involves modifying the PGMNAMES macro which sets the Generator's naming conventions. These naming conventions involve:

- IMS/DC, CICS, TSO, BATCH, and STORED program name.
- BMS map names
- MFS names
- PSB names
- Transaction codes
- Application work area
- Application update area
- PF-key processing copy member names

Setting Up Names

To set up program names, complete the following:

1. Determine member naming conventions
2. Specify whether the SCREEN/APPLID parameter is required
3. Set the program header name and length
4. Set the program trailer name and length
5. Set the program ID and length
6. Set MFS control block names (if any)
7. Set program names
8. Set application COPY and/or %INCLUDE names

Each of these steps is discussed in detail next.

Step 1—Determine member naming conventions

Determine the naming conventions for each member by laying out the combination of header, program ID, and trailer that you need. Consider the following when you set up naming conventions:

- Header and program ID are required.
- You can supply as many as two characters for the header. If you need a longer header, use the optional parameter on the SCREEN statement.
- Program ID must be four characters on the SCREEN statement, but you can use a substring of the program ID to compose the names.

Names generated

The names generated have the following format:

hhxxnnnnaaaaaaa where:

1. *hhxx* is the program header and *xx* is a character constant. Some examples are:
   - For IMS/DC—TM, IM, SM, or XM
   - For CICS, Z
   - For Batch, BP
2. *nnnn* is the program ID
3. *aaaaaaa* is the application ID (APPLID)

Note: The APPLID is not used for STORED programs.

The names generated for all modules may be user-defined. These names consist of the following parameters of the SCREEN statement combined with constant values:

- &SHEADER.—Header
- &SAPPLID.—Application ID
- &SCRNR.—Program ID

Any combination of these global parameters is allowed. As delivered, PGMNAMES uses only the two-character header and the four-character program ID. All other characters are constants. Note that the application ID is not used as delivered.

You can assign as many as eight characters to program names in COBOL and seven characters for PL/I. The APPLID is not used as delivered. Its length defaults to zero. For more information, see Customize Naming Conventions (Optional) (see page 39).

The parts of the program name come into play only when actually establishing and coding the naming conventions into PGMNAMES.

For example, consider a COBOL program made from a TDF screen definition with a header of TR and a TDF screen ID of MENU. In an IMS/DC environment, the CA Telon Generator creates a name TRIMMENU. For a CICS environment the CA Telon Generator creates a name of TRCPMENU. For more information, see Customize Naming Conventions (Optional) (see page 39).

If the naming conventions above do not meet your naming standards, you can define an entirely different method of generating names. See the PGMNAMES macro.

Step 2—Specify if SCREEN/APPLID required

If you use the &SAPPLID. parameter, specify edits indicating whether it is required and its length. As delivered, the &SAPPLID. parameter is not used. It is included in the SCREEN macro that is set in the APPLID parameter on the SCREEN statement.

To require APPLID on the SCREEN statement, delete the AGO line. Delete the next AGO if APPLID is required or optionally for online, batch, or both. If APPLID is not used in your generated names, leave the AGO as is. The AGO line is provided next:

```
AGO .GLOBAPP
```

Specify whether the APPLID is required for online and batch, online only, or batch only by including or deleting the AIF lines shown next, as follows:

- If the APPLID is required for online and batch, use the first AIF line (1) and delete the other lines (2 and 3)
- If the APPLID is required for online only, use the second AIF line (2) and delete the other lines (1 and 3)
- If the APPLID is required for batch only, use the third AIF line (3) and delete the other lines (1 and 2)

```
(1)  AIF ('&SAPPLID'. NE '').GLOBAPP
(2)  AIF ('&SAPPLID'. NE '' OR &BATCH).GLOBAPP
(3)  AIF ('&SAPPLID'. NE '' OR NOT &BATCH).GLOBAPP
     MNOTE 16,'GLOBALS - REQUIRED PARAMETER OMITTED: APPLID '
```

Step 3—Set program header name and length

This section provides examples of how to set:

- COBOL names
- PL/I execution time options
- PL/I names

Specifying the program language

To specify the program language, include the following AIF line immediately after the .GLOBAPP ANOP line:

```
       AIF  ('&PGMLANG'. EQ 'PLI').STPLNM
```

Setting COBOL program header name and length

The sample code displayed next shows how to set a COBOL program header name and its length.

Note: The variable &HDRLTH. contains the length of the entity header.

```
&PGMBHDR.  SETC  '&SHEADER.BP'      PROGRAM HEADER BATCH
&PGMTHDR.  SETC  '&SHEADER.TM'      PROGRAM HEADER TSO TEST
&PGMDHDR.  SETC  '&SHEADER.IM'      PROGRAM HEADER IMS DRIVER
&PGMIHDR.  SETC  '&SHEADER.IM'      PROGRAM HEADER IMS DYNAMIC
&PGMSHDR.  SETC  '&SHEADER.SM'      PROGRAM HEADER IMS STATIC SUBPROGRAM
&PGMLHDR.  SETC  '&SHEADER.XM'      PROGRAM HEADER IMS ALIAS
&PGCPHDR.  SETC  '&SHEADER.CP'      PROGRAM HEADER CICS
&PGCCHDR.  SETC  '&SHEADER.CC'      PROGRAM HEADER CICS CLIENT
&PGCSHDR.  SETC  '&SHEADER'.        PROGRAM HEADER CICS SERVER
&PGNPHDR.  SETC  '&SHEADER.NP'      PROGRAM HEADER CICS NONTERM
&PGSPHDR.  SETC  '&SHEADER.SP'      PROGRAM HEADER STORED PROCEDURE
&PGMBHDL.  SETA   K'&PGMBHDR.       PROGRAM HEADER LENGTH BATCH
```

```
&PGMTHDL.  SETA   K'&PGMTHDR.       PROGRAM HEADER LENGTH TSO
&PGMDHDL.  SETA   K'&PGMDHDR.       PROGRAM HEADER LENGTH IMS DRIVER
&PGMIHDL.  SETA   K'&PGMIHDR.       PROGRAM HEADER LENGTH IMS DYNAMIC
&PGMSHDL.  SETA   K'&PGMSHDR.       PROGRAM HEADER LENGTH IMS STATIC
&PGMLHDL.  SETA   K'&PGMLHDR.       PROGRAM HEADER LENGTH IMS ALIAS
&PGCPHDL.  SETA   K'&PGCPHDR.       PROGRAM HEADER LENGTH CICS
&PGCCHDL.  SETA   K'&PGCCHDR.       PROGRAM HEADER LENGTH CICS CLIENT
&PGCSHDL.  SETA   K'&PGCSHDR.       PROGRAM HEADER LENGTH CICS SERVER
&PGNPHDL.  SETA   K'&PGNPHDR.       PROGRAM HEADER LENGTH CICS NONTERM
&PGSPHDL.  SETA   K'&PGSPHDR.       PROGRAM HEADER LENGTH STORED PROC
           AGO    .PGN5000
.PGN4000   ANOP
```

Setting PL/I default program options

The following sample code shows how to set PL/I default program options.

```
PLIXOPT TSO,STORAGE=STATIC,REORDER=NO,ALIGN=UNALIGNED
PLIXOPT IMS,STORAGE=STATIC,REORDER=NO,ALIGN=UNALIGNED
PLIXOPT BATCH,STORAGE=STATIC,REORDER=NO,ALIGN=UNALIGNED
```

Setting PL/I program header name and length

The following sample code shows how to set the PL/I program header name and length.

```
&PGMBHDR.  SETC  '&SHEADER.B'       PROGRAM HEADER BATCH
&PGMTHDR.  SETC  '&SHEADER.T'       PROGRAM HEADER TSO TEST
&PGMDHDR.  SETC  '&SHEADER.I'       PROGRAM HEADER IMS DRIVER
&PGMIHDR.  SETC  '&SHEADER.I'       PROGRAM HEADER IMS DYNAMIC
&PGMSHDR.  SETC  '&SHEADER.S'       PROGRAM HEADER IMS STATIC
&PGMLHDR.  SETC  '&SHEADER.X'       PROGRAM HEADER IMS ALIAS
&PGCPHDR.  SETC  '&SHEADER.P'       PROGRAM HEADER CICS
&PGNPHDR.  SETC  '&SHEADER.N'       PROGRAM HEADER CICS NONTERM
&PGSPHDR.  SETC  '&SHEADER.2'       PROGRAM HEADER STORED PROCEDURE
&PGMBHDL.  SETA   K'&PGMBHDR.       PROGRAM HEADER LENGTH BATCH
&PGMTHDL.  SETA   K'&PGMTHDR.       PROGRAM HEADER LENGTH TSO
&PGMDHDL.  SETA   K'&PGMDHDR.       PROGRAM HEADER LENGTH IMS DRIVER
&PGMIHDL.  SETA   K'&PGMIHDR.       PROGRAM HEADER LENGTH IMS DYNAMIC
&PGMSHDL.  SETA   K'&PGMSHDR.       PROGRAM HEADER LENGTH IMS STATIC
&PGMLHDL.  SETA   K'&PGMLHDR.       PROGRAM HEADER LENGTH IMS ALIAS
&PGCPHDL.  SETA   K'&PGCPHDR.       PROGRAM HEADER LENGTH CICS
&PGCCHDL.  SETA   K'&PGCCHDR.       PROGRAM HEADER LENGTH CICS CLIENT
&PGCSHDL.  SETA   K'&PGCSHDR.       PROGRAM HEADER LENGTH CICS SERVER
&PGNPHDL.  SETA   K'&PGNPHDR.       PROGRAM HEADER LENGTH CICS NONTERM
&PGSPHDL.  SETA   K'&PGSPHDR.       PROGRAM HEADER LENGTH STORED PROC
.PGN5000   ANOP
```

Step 4—Set program trailer name and length

The following sample code shows how to set the program trailer name and length.

```
&PGMBTRA.  SETC   ''              PROGRAM TRAILER BATCH
&PGMTTRA.  SETC   ''              PROGRAM TRAILER TSO TEST
&PGMDTRA.  SETC   ''              PROGRAM TRAILER IMS DRIVER
&PGMITRA.  SETC   ''              PROGRAM TRAILER IMS DYNAMIC
&PGMSTRA.  SETC   ''              PROGRAM TRAILER IMS STATIC
&PGMLTRA.  SETC   ''              PROGRAM TRAILER IMS ALIAS
&PGCPTRA.  SETC   ''              PROGRAM TRAILER CICS
&PGNPTRA.  SETC   ''              PROGRAM TRAILER CICS NONTERM
&PGSPTRA.  SETC   ''              PROGRAM TRAILER STORED PROCEDURE
&PGMBTRL.  SETA    0              PROGRAM TRAILER LENGTH BATCH
&PGMTTRL.  SETA    0              PROGRAM TRAILER LENGTH TSO
&PGMDTRL.  SETA    0              PROGRAM TRAILER LENGTH IMS DRIVER
&PGIDTRL.  SETA    0              PROGRAM TRAILER LENGTH IMS DYNAMIC
&PGMSTRL.  SETA    0              PROGRAM TRAILER LENGTH IMS STATIC
&PGMLTRL.  SETA    0              PROGRAM TRAILER LENGTH IMS ALIAS
&PGCPTRL.  SETA    0              PROGRAM TRAILER LENGTH CICS
&PGNPTRL.  SETA    0              PROGRAM TRAILER LENGTH CICS NONTERM
&PGSPTRL.  SETA    0              PROGRAM TRAILER LENGTH STORED PROC
```

Step 5—Set program ID and length

Set the default program ID from the &SCRNR. program ID entered on the SCREEN statement. If required, you can use a substring of the &SCRNR. global parameter, as follows:

```
&PGMNR.  SETC '&SCRNR'(1.,3)          USE FIRST THREE CHARACTERS
 &PGMNRL. SETA 3                      SET SCREEN ID LENGTH TO 3
```

Alternatively, you can use the &SCRNR. parameter "as-is:"

```
 &PGMNR.    SETC   '&SCRNR'.          PROGRAM SCREEN ID
 &PGMNRL.   SETA   4                  PROGRAM SCREEN ID LENGTH
 &PGMNRLC.  SETA   4                  PROGRAM SCREEN ID LENGTH CICS CLIENT
 &PGMNRLS.  SETA   6                  PROGRAM SCREEN ID LENGTH CICS SERVER
```

Step 6—Set MFS control block names

The following sample code shows how to set MFS control block names

```
 &DIFNAME.  SETC   '&SHEADER.&PGMNR'.          DOF/DIF NAME
 &MIDNAME.  SETC   '&SHEADER.I&PGMNR'.         MID NAME
 &MODHDR.   SETC   '&SHEADER.O'                MOD HEADER
 &MODTLR.   SETC   ''                          MOD TRAILER
 &MODNAME.  SETC   '&MODHDR.&PGMNR.&MODTLR'.   MOD NAME
 &BMSMAPN.  SETC   '&SHEADER.Z&PGMNR'.         BMS MAP NAME
```

Step 7—Set program names

The following sample code shows how to set program names. Note that in this step you use the global parameters that you set in the preceding steps. The formula for each name does not require change.

```
&BCHNAME.  SETC   '&PGMBHDR.&PGMNR.&PGMBTRA'.     PGM NAME - BATCH
&TSONAME.  SETC   '&PGMTHDR.&PGMNR.&PGMTTRA'.     PGM NAME - TSO TEST
           AIF    (&DRIVER).PGN4000
&IMSNAME.  SETC   '&PGMIHDR.&PGMNR.&PGMITRA'.     PGM NAME - IMS DYNAMIC
           AGO    .PGN5000
.PGN4000   ANOP
&IMSNAME.  SETC   '&PGMDHDR.&PGMNR.&PGMDTRA'.     PGM NAME - IMS DRIVER
.PGN5000   ANOP
&IMSNAME.  SETC   '&PGMIHDR.&PGMNR.&PGMITRA'.     PGM NAME - IMS/PSB
&STANAME.  SETC   '&PGMSHDR.&PGMNR.&PGMSTRA'.     PGM NAME - IMS STATIC
&IMLNAME.  SETC   '&PGMLHDR.&PGMNR.&PGMLTRA'.     PGM NAME - IMS ALIAS
&STPNAME.  SETC   '&PGSPHDR.&PGMNR.&PGSPTRA'.     PGM NAME - STORED PROC
&CICSNMP.  SETC   '&PGCPHDR.&PGMNR.&PGCPTRA'.     PGM NAME - CICS SCREEN
&CICSNMC.  SETC   '&PGCCHDR.&PGMNR.&PGCPTRA'.     PGM NAME - CICS CLIENT
&CICSNMS.  SETC   '&PGCSHDR.&PGMNR.&PGCPTRA'.     PGM NAME - CICS SERVER
&CICSNMN.  SETC   '&PGNPHDR.&PGMNR.&PGNPTRA'.     PGM NAME - CICS NONTERM
&PGIMTRN.  SETC   '&IMSNAME'.                     PGM IMS TRAN NAME DEFAULT
&CICSTRN.  SETC   '&PGMNR'.                       CICS TRANSACTION CODE
&PGCTSUF.  SETC   'SPA'                           CICS TS QUEUE SUFFIX
```

Step 8—Set application COPY and/or %INCLUDE names

The names generated for all modules may be user-defined. These names consist of the following parameters of the SCREEN statement combined with constant values:

- &SHEADER.—Header
- &SAPPLID.—Application ID
- &SCRNR.—Program ID

Any combination of these global parameters is allowed. As delivered, PGMNAMES uses only the two-character header and the four-character program ID.

The following sample code shows how to set the names for the *HHPCBS*, *HH*PROC, *HH*WKAREA, and *HH*UPDTA COPY/INCLUDE names used in generating CA Telon programs.

```
&TLNPCBS.  SETC   '&SHEADER.PCBS'          HHPCBS
&TLNPROC.  SETC   '&SHEADER.PROC'          HHPROC
&TLNWORK.  SETC   '&SHEADER.WKAREA'        HHWKAREA
&TLNUPDT.  SETC   '&SHEADER.UPDTA'         HHUPDTA
&TLNPFK.   SETC   '&SHEADER.PFK'           HHPFKEY
```

You must ensure that any changes that you make to the length of the program header, ID, or APPLID (for IMS/DC) are reflected in the TDF naming customization. For more information, see Customize Naming Conventions (Optional).

You can use the same basic elements to design the names the Generator builds for standard copy members:

Target	Elements
IMS/DC	■ Screen, driver, report, or batch header ■ A character constant ■ APPLID ■ Screen, driver, report, or batch ID
CICS	■ Screen, a client nonterminal, or batch header ■ Character constant PLIXOPT CICS,STORAGE=AUTO,REORDER =NO,ALIGN=UNALIGNED ■ APPLID ■ Screen, nonterminal, or batch ID
CICS Server	■ Server header ■ APPLID parameters are listed in the following chart. ■ Server ID
BATCH	■ Batch header ■ Character constant ■ APPLID parameters are listed in the following chart. ■ Batch ID
STORED	■ Stored procedure header ■ Character constant ■ Stored procedure ID

Since standard copy members often are global to an entire application, parameters are listed in the following chart. You seldom need to use the program ID in the copy member name.

The delivered Generator creates and uses the following copy member names where *hh* is the program head and *ppp* is the three-character PF key name specified with the SCREEN PFKEYS parameter:

Copy Member	Generated Name
Application work area	*hh*WKAREA
Application update area	*hh*UPDTA
PF key copy members	*hh*PFK*ppp*

Note: The generated names are the same for both COBOL and PL/I.

You can change these standards to meet your conventions. For details on how to do this, see the instructions in the PGMNAMES macro.

Customize User Edit Usage (Optional)

You can perform this step optionally to define user-defined FIELD FLDTYPE edit routines in the USREDITS macro.

1. Place user-defined edit routines in a load library identified by the USERSUBR parameter in the generate, compile, and link procedures. See User-Defined Subroutines (see page 120) for more information about user-defined subroutines in the mainframe environment.
2. Identify these custom routines in the USREDITS macro. You must identify numeric edits and all edits requiring extended parameters. You do not have to identify alpha edits that use only standard parameter lists. But as an option, you can require that all edits be identified in USREDITS. You control this with the edit error global &EDTERR. set in USREDITS.

The purpose of USREDITS is to maintain consistency in CA Telon and to prevent the duplication of effort in writing field edits by multiple systems in an installation. You should check any new field edit requirements for a specific system against this edit table. If a new field is needed, an entry from USREDITS is placed in this table.

All CA Telon-supplied FLDTYPE edit subroutines are identified in the EDITTBL macro. Because the generated programs use information in EDITTBL and USREDITS, you must define all numeric edits, and all edits that require more than the default number of parameters, by modifying USREDITS. If not, a compile error results in the generated program.

You can set your own level of severity for flagging field edits that are not found in the USREDITS table by setting the value for the global &EDTERR. parameter, discussed later in this section.

Follow the next steps to modify USREDITS.

Step 1—Define &EDTERR. values

To specify whether all field-type edits are required, set the &EDTERR. global parameter to the desired error severity for assemblies in which field-type edits are called but not defined in this table. Valid values are:

- **0**—No condition code set, fields using undefined edits are flagged as undefined.
- **4**—Condition code 4&semi. field is flagged and condition code set. The compile step is still executed.
- **16**—Condition code 16&semi. fields are flagged and condition code set. The compile step is not executed.

The &EDTERR. parameter, as it appears in the USREDITS macro, is shown next:

```
&EDTERR.  SETA  0     < SET THIS VALUE TO CONDITION CODE DESIRED
```

Note: The &EDTERR. may also be customized in your TLNIIS macro using the SETSYS parameter SEDTERR. If a value is specified for SEDTERR. If a value is specified for SEDTERR, that value overrides the &EDTERR. value specified in USREDITS. SEDTERR gives you the option of using different versions of TLNIIS for diferent appplications and specifying different EDTERR values for each, as appropriate.

Step 2—Code DFNWKFLD

Code a DFNWKFLD statement to define alternative numeric WORKFLDs that numeric edits use. All DFNWKFLD statements must precede DFNEDIT statements. Coding is in the table-standard macro Assembler. The DFNWKFLD statement is shown next:

```
DFNWKFLD WKFLDID=N,COBPIC='COBOL PIC',PLIPIC='PLI DEFINITION'
```

Parameters for the DFNWKFLD statement are:

- **WKFLDID**—The identifier for the work field. Valid values are the numbers 1 through 10.
- **COBPIC**—The COBOL picture clause for the field. You must enclose the actual picture clause in single quotes, for example:

  ```
  COBPIC='S9(16)V9(2) COMP-3'
  ```

- **PLIPIC**—The PL/I definition for the field. You must enclose this definition in single quotes, for example:

  ```
  PLIPIC='FIXED DECIMAL (14,2)'
  ```

  For any parameter value that contains a single quote, code a double quote, for example:

  ```
  PLIPIC='PIC ''(10)9V(4)9T'' '
  ```

The field name generated is WORKFLD-NUMERIC-&WKFLDID. After the work field is defined you can reference it in a DFNEDIT statement.

The USREDITS edit table definition begins with DFNWKFLD statements. In the DFNWKFLD statement shown next, note that the default DFNWKFLD is supplied in the EDITTBL macro. You can use this workfield by referencing WKFLDID=1. To add numeric workfields, start at WKFLDID=2.

```
DFNWKFLD WKFLDID=1,
      COBPIC='S9(16)V9(2)',                          ... C
      PLIPIC='PIC ''(13)9V9T'''                      ... C
```

Step 3—Code DFNEDIT

After generating a work field, code the DFNEDIT statement to define an edit to the system. Coding is in table-standard macro Assembler.

```
DFNEDIT NNNNNNN,
      OIUSE=OUTPUT/INPUT/OUTIN
      LANG=COB/PLI/ASM  OR (LANG OUT,LANG IN)
      DATATYP=NUMERIC/ALPHA/BIT  OR (TYP OUT,TYP IN)
      WKFLDID=P,
      EXTCNT=(X,Y),
      OEXDFLT=(OEX1,OEX2,..OEXN),
      IEXDFLT=(IEX1,IEX2,..IEXN)
```

Parameters for the DFNEDIT statement are:

- **NNNNNNN** —A one- to seven-byte edit name, except for PL/I where the maximum length is six bytes, where NNNNNNN is the load module name&semi. valid formats for input and output edit load module names are:
  - **INNNNNNN**—Input edit load module name
  - **ONNNNNNN**—Output edit load module name

  Note: The edit name in the sample above does not contain the I or O prefix.
- **OIUSE** —The edit type&semi. values are:
  - **OUTPUT**—Output edit
  - **INPUT**—Input edit
  - **OUTIN**—OUTIN edit
- **LANG** —The language in which the edit is written&semi. values are:
  - **COB**—COBOL
  - **ASM**—Assembler
  - **PLI**—PL/I

  For OUTIN edits written in an output language of COBOL and an input language of Assembler, code the following LANG= parameter:

  ```
  LANG=(COB,ASM)
  ```
- **DATATYP** —The datatype of an intermediate workfield to be used by the edit subprogram&semi. possible values are:
  - **ALPHA**—CA Telon's alpha workfield
  - **NUM**—CA Telon's numeric workfield
  - **BIT**—Bit string (PL/I only)

  For OUTIN edits written with an output datatype of ALPHA and an input datatype of numeric, code the following DATATYP= parameter:

  ```
  DATATYP=(ALPHA,NUM)
  ```

- **TPICHK** —A parameter indicating that a check for blanks will be made before an edit is performed&semi. values are:
  - **Y**—A check for blanks is made prior to performing the edit
  - **N**—An edit occurs unconditionally, regardless of whether the input buffer is blank
- **WKFLDID** —The WKFLDID of the intermediate workfield that the edit uses. Valid values are the numbers 1 through 10.

  You must define the WKFLDID with a DFNWKFLD statement before referencing it on a DFNEDIT statement. Code this parameter only if the edit uses a definition different from the default workfield definitions delivered with CA Telon, which are:
  - **COBOL**—S9(11)V9(7)
  - **PL/I**—PIC '(10)9V(4)9T'
- **LOCATION** —The identifiers where the edit will be executed.
  - **C**—The edit is on the client.
  - **S**—The edit is on the server.
  - **B**—The edit is on both the client and the server.
- **EXTCNT** —The number of input and output extensions to the parameter list for the edit, where:
  - X is the number (0-9) of output extensions to the parameter list for this edit. The default is 0.
  - Y is the number (0-9) of input extensions to the parameter list for this edit. The default is 0.

  If the field edit is not an OUTIN type or if the extension count is equal to the input extension count, you need to code only one parameter for EXTCNT, for example:

  ```
  EXTCNT=2
  ```

- **OEXDFLT** —The default output parameter extensions for the field edit.

  If the EXTCNT parameter for an edit is not 0, you must code the number specified in the EXTCNT parameter for this edit. If valid datanames are not available for extension defaults, the defaults specified should represent the field type for documentation purposes, for example:

  ```
  OEXDFLT=(DATABASE-PCB,SEGMENT-IOAREA)
  ```

- **IEXDFLT** —The default input parameter extensions for the field edit.

  If the EXTCNT parameter for an edit is not 0, you must code the number specified in the EXTCNT parameter for this edit. If valid datanames are not available for extension defaults, the defaults specified should represent the field type for documentation purposes, for example:

  ```
  IEXDFLT=(DATABASE-PCB,SEGMENT-IOAREA)
  ```

The next sample shows an input edit definition, written in COBOL, that accesses a database to determine if the department number is valid.

```
DFNEDIT  DEPT,OIUSE=INPUT,LANG=COB,DATATYP=ALPHA,       ... C
      EXTCNT=1,IEXDFLT=DEPT-PCB,TPICHK=N
```

Customize System Defaults (Optional)

Use this step to modify parameters in the SETSYS statements in the TLNIIS macro. These parameters set installation defaults for the overall environment CA Telon is working in.

Review the following parameters and their defaults. As needed, you can change them in the TLNIIS macro.

For a list of all SETSYS parameters and the environments in which they are used, see the appendix, "SETSYS Parameters."

SETSYS Statement

The SETSYS statement sets system default values pertaining to all programs generated in all CA Telon environments (for example, IMS/DC, CICS, BATCH, STORED). For more information about SETSYS parameters and the environments in which they are used, see the appendix, "Implementation Issues." The SETSYS parameters are described next.

ABTDPGM=(lang, program, [, lang, program])

Abnormal termination level-2 default program parameter. Used to specify the default program to be invoked dynamically to handle the abend situation for the CA Telon program language defined.

ABTERRM=

Abnormal termination level-2 default error message parameter. Used when ABTMODE=ERRM. Contains the name of a variable to contain the error message.

ABTMODE=ABEND/ERRM/XFER

Abnormal termination level-2 mode parameter. Valid values are:

- **ABEND**—Allow the system to handle the error
- **ERRM**—Display an error message on the current screen, where ABTERRM points to a variable name to contain the error message.
- **XFER**—Transfer to a program ID specified in ABTXFER when the error is found.

ABTPRM=(parm1,parm2,..)

Abnormal termination level-2 ADLAABT (or ADMAABT) additional parameters. Used if ABTPRMG has a value of Y.

ABTPRMG=Y/N

Abnormal termination level-2 ADLAABT (or ADMAABT) additional parameter flag. Valid values are:

- **Y**—Add parameters specified in ABTPRM to ADLAABT (or ADMAABT calls)
- **N**—Leave ADLAABT (or ADMAABT) calls with default parameter list

ABTXFER=program-name

Abnormal termination level-2 transfer program. Contains the name or the program ID to which to transfer when an error is found and when ABTMODE=XFER.

ALARM=Y/N

Indicates whether the terminal alarm sounds automatically when an error highlighting attribute is set in the program output buffer. Values are:

- **Y**—Yes; you can override ALARM in all CA Telon programs
- **N**—(Default) The terminal alarm does not sound automatically

BRCSRCK=Y/N

Indicates whether a code should be generated for a CURSOR OPEN during a BROWSE (SQL only). Values are:

- **Y**—Yes
- **N**—(Default) No

CLISERV=Y/N

Indicates whether the CICS program should be generated as a client/server. Values are:

- **Y**—Yes
- **N**—(Default) No

COBVERS=2/3—Specifies which version of COBOL CA Telon should generate for. Valid values are:

- **2**—COBOL II
- **3**—(Default) COBOL FOR z/OS

Note: It is also possible to specify a value for COBVERS through the SYSPARM in JCL. If COBVERS is set through the SYSPARM, that value takes precedence over all others. See the *Installation* guide for additional information about SYSPARM.

COB88LV=SINGLE/MULTIPLE

Indicates how COBOL-88-level data definitions appear. Values are:

- **SINGLE**—Generate one COBOL-88 level data definition per line for compatibility with certain optimizers and compilers.
- **MULTIPLE**—(Default) Generate more than one COBOL-88 level data definition per line.

CONFCPY=copyname/NONE

The standard COBOL configuration section COPY member name.

This parameter adds *copyname*, a standard copy member, to the COBOL Configuration Section of every COBOL program generated. For example, you can use this to include custom code to change the decimal point to a comma for European numbers. Values are:

- *copyname*—COPY member name
- **NONE**—(Default) No COPY statement

DB2DATE= (###,date-format)

Indicates the date formats for SQL where:

- ### is the date format code&semi. Values are:
  - **USA**—(Default) MM/DD/YYYY
  - **EUR**—DD.MM.YYYY
  - **ISO**—YYYY-MM-DD
  - **JIS**—YYYY-MM-DD
  - **LOC**—Locally-defined

The date-format is required only for locally-defined formats to determine the length and initialization value for the SQL DATE data type.

DB2TIME=(###,time-format) Indicates the time formats for SQL where ### is the time format code. Values are:

- **USA**—(Default) HH:MM XM where XM is AM or PM
- **EUR**—HH.MM.SS
- **ISO**—HH.MM.SS
- **JIS**—HH.MM.SS
- **LOC**—Locally-defined

The time-format is required only for locally-defined formats to determine the length and initialization value for the SQL TIME data type.

DCPTCMA=Y/N

Indicates whether the system generates DECIMAL-POINT IS COMMA in the SPECIAL NAMES COPY member name. Values are:

- **Y**—Yes
- **N**—(Default) No

DFLTLOC=B/C/S

Indicates the default location for field edits in CICS client/server generation. Either one or two values may be specified. If two values are specified, then the first indicates the default location for output edits, and the second for input edits. For example (B,C) represents "Both Client or Server" for output and "Client only" for input. Valid values are:

- **B**—(Default) Both client and server
- **C**—Client only
- **S**—Server only

DLIVERS=CBLTDLI/PLITDLI/CEETDLI/AIBTDLI

Specifies which version of the DL/I CA Telon should generate. Valid values are:

- **CBLTDLI** (Default)
- **PLITDLI**
- **CEETDLI**
- **AIBTDLI**

Note: If DLIVERS is set to CBLTDLI for a PL/I program or PLITDLI for aCOBOL program, a warning MNOTE (TLMIIS44) is issued and the value is changed to match the language.

DRIVSSA=Y/N

Indicates whether the system generatex SSAs within a driver. Values are:

- **Y**—Generate SSAs within a driver
- **N**—(Default) Do not generate SSAs within a driver

DYNCALL=Y/N

Specifies whether CA Telon should generate COBOL calls to subroutines (field edits, screen I/O routines, abend routines, and so forth) as DYNAMIC or STATIC. A dynamic call references the called program using a variable name. A static call references the program name directly. Values are:

- **Y**—Generate dynamic calls
- **N**—(Default) Generate static calls

EOFKEY=Y/N

Indicates whether the system generates code to force the modified data tag for Input or Outin data to be turned on when the data is passed from the program to the terminal. Valid only for IMS/DC. Values are:

- **Y**—Yes. Forces all input data to be mapped from the terminal, allowing the application user to use the EOF key to erase a field without striking any other key. Also causes more line traffic, but assures correct data retrieval.
- **N**—No. Allows for efficient line traffic, but you cannot use the EOF key unless you strike another key in addition to it.

Note: In the CICS environment, the value of this parameter is meaningless. Enter **Y** or **N**.

FEATURE=

Level of the feature, defined for CA Telon Version 2.0 and above, to assure upward compatibility for major features across releases. The format of *features* is shown next:

```
PGMSTRUCT,#,MFSPSWD,#,FULLDLI,#ABNORMALT,#,
```

where # specifies the version of the CA Telon release feature used during generation of source code. Parameters are:

- **PGMSTRUCT,#** —In r1.4, the mainline structure of online TSO-, IMS/DC-, and CICS-generated programs allows for more flexibility, consistency, readability, and ease of control from user custom code through use of PGMSTRUCT.

  PGMSTRUCT involves both the structure of the generated mainline logic and the use of flow control variables. Values for # are as follows:

  - **1**—Causes CA Telon to generate programs with the pre-1.4 mainline structure and program control variables: PFKEY-RETURN-INDICATOR, FIELD-INPUT- ERRORS, and CONSIS-INPUT-ERRORS. Level 1 functions in both pre-1.4 and 1.4 generated programs, as long as the programs do not require the additional flow capabilities outlined in level 3.
  - **2**—Causes CA Telon to generate programs that use both the pre-1.4 variables of level 1 and the additional program control capabilities along with the variable CONTROL-INDICATOR generated by level 3. Level 2 provides upward compatibility for pre-1.4 programs.
  - **3**—(Default) Causes CA Telon to generate 1.4 programs that support none of the pre-1.4 flow-control variables. Those variables (listed under level 1) are replaced by the single control variable CONTROL-INDICATOR. This allows Input, Output, Error, and Screen transfer processing from any point within a CA Telon-generated program.

- **MFSPSWD,#** —The MPS password level. MFSPSWD specifies how to generate IMS/DC password handling in MFS. Values for # are:

  - **1**—(Default) CA Telon generates IMS/DC password fields as in pre-1.5 releases. CA Telon uses its input and output buffers to allocate space for the password field. CA Telon uses the input message field to pass the password value to the program.
  - **2**—CA Telon generates IMS/DC password fields as in pre-1.5 releases. CA Telon uses its input and output buffers to allocate space for the password field. CA Telon uses the input message field to pass spaces to the program. The IMS/DC password is not passed to the program and is not recorded on the IMS Log.
  - **3**—CA Telon does not generate any space in the program buffers for the IMS/DC password.

- **FULLDLI,#**—Specifies how CA Telon should generate DL/I function codes that were not available in previous releases. FULLDLI is delivered set to Y. If you have already coded programs with these DL/I functions in them, you must set FULLDLI to N. Values for # are:
  - **Y**—All online and batch programs include six DL/I functions that were not available prior to r2. These functions are as follows:
    - **PURGE**—Purge
    - **CHKP**—Checkpoint
    - **XSRT**—Restart
    - **SYNC**—Syncpoint
    - **ROLB**—Rollback
    - **ROLL**—Roll
  - **N**—Do not include these DL/I functions.
- **ABNORMALT,#** —Specifies how CA Telon should generate abnormal termination. There are three ABNORMALT level values. Values for # are as follows:
  - 1—To handle program logic problems. CA Telon generates calls to the supplied subroutine ADGADBER (ADGDBER for PL/I) in batch, IMS/DC and TSO programs. For CICS programs, 'EXEC CICS ABEND' statements are generated.
  - 2—CA Telon generates calls to ADMAABT in batch, IMS/DC and TSO programs, and ADLAABT for CICS programs. These two subroutines in turn call dynamically-invoked, language- and environment-specific subroutines. These subordinate subroutines (such as, ADCCABT for COBOL CICS, ADBPABT for PL/I batch), as delivered, can be customized to present the error information gathered by the abending program and passed by ADMAABT and ADLAABT. ADMAABT and ADLAABT are intended to run only in 24-bit mode, and the source, link cards and load modules (as delivered) all reflect this. Since the subordinate subroutines called by ADMAABT and ADLAABT are delivered with AMODE(31), RMODE(ANY), they need to be relinked AMODE(24), RMODE(24). If your applications run in 31-bit mode, you need to use ABNORMALT 3.

- 3—(Default) CA Telon generates calls to ADMAATR in batch, IMS/DC and TSO programs, and ADLAATR for CICS programs. These two subroutines in turn call the same dynamically-invoked, language- and environment-specific subroutines called with ABNORMALT 2. These subordinate subroutines (such as, ADCCABT for COBOL CICS, ADBPABT for PL/I batch), as delivered, can be customized to present the error information gathered by the abending program and passed by ADMAATR and ADLAATR. ADMAATR and ADLAATR are reentrant, so they are intended to run only in 31-bit mode, and the source, link cards and load modules (as delivered) all reflect this. The subordinate subroutines called by ADMAATR and ADLAATR are also delivered with AMODE (31), RMODE (ANY), so CA Telon as delivered (with a default ABNORMALT 3) requires no ABNORMALT customizations.

The following parameters are available for ABNORMALT is 2 and 3:

- **ABTMODE**—Indicates the default action for ABT situations. Values are:
  - **ABEND**—(Default) Abend
  - **ERRM** Issue error message in ABTERRM parameter
  - **XFER** Transfer to program in ABTXFER parameter
- **ABTERRM**—(Default) Error message issued if the ABTMODE parameter value is **ERRM**. Values are:
  - **NONE**—(Default) No error message
  - **HVNAME**—Host variable name
- **ABTXFER**—(Default) Program ID where the transfer occurs if the value of the ABTMODE parameter value is ERRM. Values are:
  - **NONE**—(Default) No default program ID
  - **HVNAME**—Program (host variable) name
- **ABTDPGM=(LANG,NAME,)**—(Default) Program ID to be invoked dynamically to handle the ABT situation for the CA Telon language specified. The default is NONE.
- **ABTPRM=(HVNAME1,...)**—Additional user host variable names to be passed to the ABTDPGM parameter. The default is NONE.
- **ABTPRMG**—Indicates whether the system suppresses the standard parameters that are passed automatically to the ABTDPGM parameter. The default is NONE.
- **3**—CA Telon generates code to call ADMAATR (ADLAATR in CICS) that dynamically invokes a CA-supplied routine specific to the environment and program type. The routines, as delivered, allow for multiple ways of treating the abnormal terminations.

EXEC DLI considerations for ABNORMALT 3

In the CICS environment using EXEC DLI services, ABNORMALT 3 captures the parameter list that is passed to DLI (including the DLI parameter count) rather than the parameter list passed to the EXEC DLI interface. This allows for the handling of EXEC DLI errors the same way as standard call DLI errors.

GENDTES=Y/N

Determines whether or not CREATE-DATE, UPDATE-DATE, -TIME and -USERID are generated in TELON-RELEASE-DATA.

- **Y**—Generate the additional variables
- **N**—(Default) Use PIC 99.

HELPDSP=Y/N

Determines whether help characters should be displayed when returning from the help display. Values are:

- **Y**—(Default) Data is overlayed with help characters.
- **N**—Retain user's last-entered data values.

INTCURR=Y/N

Indicates whether CA Telon generates currency with a period or comma.

- **Y**—Comma-delimited currency
- **N**—Period-delimited currency

The default is N when INTDATE is set to U. The default is Y when INTDATE is set to I. (See INTDATE, following.)

INTDATE=U/I

Applies when using FLDTYPE=DATE in the generated application program. Values are:

- **U**—(Default) Display format should be MMDDYY, MM-DD-YY, or MM/DD/YY.
- **I**—Display format should be DDMMYY, DD-MM-YY, or DD/MM/YY.

IOPCBM=Y/N

Specifies whether CA Telon generates the IOPCB group name and timestamp fields for the IOPCB mask (valid for IMS v6 and up). Values are:

- **Y**—Generate IOPCB group name and timestamp.
- **N**—(Default) Do not generate IOPCB group and timestamp

JCOLNMS=Y/N

Specifies whether CA Telon should generate the CK-, PK-, and SK-, names (for an SQL join browse) with join reference as part of the name, in order to ensure uniqueness. Values are:

- **Y**—Generate the field names with the join reference
- **N**—(Default) Do not generate the field names with the join reference.

LANG=COB/PL/I

Default language for all programs generated at an installation. Set this parameter to the correct language for single-language installations or to the predominant language at multi-language installations. You can override LANG in all CA Telon programs.

LINEOPT=1/2/3

Type of line optimization logic to be generated into COBOL or PL/I code. Values are:

- **1**—(Default) Generate a call to the CA Telon assembly language line optimization subroutine. This option is not supported in the PWS environment.
- **2**—Generate a CA Telon PL/I or COBOL source code equivalent of the CA Telon assembly subroutine into the generated program for line optimization.
- **3**—Do not generate any line optimization code. In this case, line optimization is the programmer's responsibility.

NXCSRCK=Y/N

Controls whether the cursor status check is done unconditionally.

- **Y**—Conditionally
- **N**—(Default) No conditions

OCSQLCD=Y/N

Indicates whether the SQLCODE should be tested for zero (and -502 for open, -501 for close) when CA Telon-generated code opens or closes the cursor. Values are:

- **N**—(Default) Do not test cursor
- **Y**—Test cursor

OUTATTR=Y/N

Indicates whether screen attributes are stored in the CA Telon screen image area located at the end of the Transfer Work Area of all CA Telon-generated programs. This causes a larger screen image, but is required when you use CA Telon Help or Hold or if you must refresh the screen. Values are:

- **Y**—(Default) Yes
- **N**—No

You can override OUTATTR in all CA Telon programs.

OUTIFIL=SPACE/NULL/UNDERLINE

Default character used to fill Input screen fields when the screen is first displayed to the terminal application user. You can override OUTIFIL inall CA Telon programs. Values are:

- **SPACE**—(Default) Displays blank characters in input fields.
- **NULL**—Allows the application user to input data in the insert mode; also minimizes the number of characters transmitted to the screen as a function of output processing.
- **UNDERLINE**—Displays an underline for all characters of fields where the application user can enter data.

PAGE999=Y/N

Indicates whether two- or three-byte numbers are generated for the PAGES-SAVED and PAGE-NUMBER-SAVE variables used in SEGLOOP processing. Values are:

- **Y**—Use PIC 999.
- **N**—(Default) Use PIC 99.

PCBCODE=Y/N

Indicates whether PCB status code names are generated with "-CODE" as a suffix. Values are:

- **Y**—(Default) Yes
- **N**—No

PGMCSTD=[(section1, copyname1,... [sectionn, copynamen])]

Name of the program exit point (*section*) in which to include a custom code copy member (*copyname*) in all CA Telon-generated programs. No PGMCSTD exits are defined when CA Telon is delivered.

PGMCUST=NONE/ANY/MAINLINE/(exit-list)

Controls the PGMCUST parameter used on the SCREEN and BATCH statements of CA Telon CICS and IMS/DC installations and the PGMCUST parameter used on CA Telon DRIVER and REPORT statements for IMS/DC only installations. The default is NONE.

Valid exit points are specified with a paragraph indicator followed by **I** for initialization or **T** for termination. For example: **K100T** indicates that there is a custom code member at the termination point for the K-100 generated paragraph.

PIOALGN=Y/N

Specifies whether CA Telon should generate PL/I IOAREA storage areas as ALIGNED or not. Values are:

- **Y**—Generate PL/IOAREA storage areas as ALIGNED
- **N**—(Default) Do not generate PL/IOAREA storage areas as ALIGNED

PLIVERS=1/2

Specifies which version of PL/I CA Telon should generate for. Values are:

- **1**—PL/I 2.3
- **2**—PL/I for z/OS

PSBPCBN=Y/N

Indicates whether the PCBNAME parameters should be generated on the PCB statement in a PSB. Values are:

- **Y**—(Default) Generate PCBNAME
- **N**—Do not generate PCBNAME

REFRESH=Y/N

Indicates whether you need the capacity to completely refresh the screen. Required if you use CA Telon Help or Hold. Values are:

- **Y**—(Default) Increase the screen image
- **N**—Do not increase the screen image

You can override REFRESH in all CA Telon programs.

SEDTERR=nn

One or two digit numeric override for the &EDTERR. value in user-customizable macro USREDITS. Determines the error level the generator is set to when it does not find a field edit definition in EDITTBL or USREDITS. The member indicated contains user-coded specifications to be added to the SPECIAL-NAMES section. The NOSPNM member name directs the Generator to suppress production of the SPECIAL-NAMES statement. Only needed if the user also included a CONFCPY member which contained the SPECIAL-NAMES statement.

SPNMCPY=NONE/copyname

Indicates whether a COPY statement should be generated to include a COBOL SPECIAL-NAMES copybook. Values are:

- **NONE**—(Default) No SPECIAL-NAMES copybook should be included in the program.
- **copyname**—A COPY statement should be generated for the named SPECIAL-NAMES copybook.

STGCSTD=member-name/NONE

Specifies whether a standard copy member (*member-name*) is to be included at the beginning of working storage for all CA Telon generated programs. Override this parameter on an environment by environment basis with the SETENV STGCSTD parameter. The default is NONE.

Note: To compile the training programs provided with the product, set this parameter to **TRSTGSTD**.

SYSLOW=0

Sets values used for low values in the generated COBOL variable VT-LOW-VALUES. Values are either binary zero (SYSLOW=0) or binary one (SYSLOW=1).

TRCSRCK=Y/N

Indicates whether code would be generated to check for CURSOR OPEN during a TRANSACT (SQL only). Values are:

- **Y**—Yes
- **N**—(Default) No

USETYPE=Y/N

Specifies generation of KEYPICs for SSAs. Valid values are:

- **Y**—Generate KEYPICs for SSAs
- **N**—(Default) Do not generate KEYPICs for SSAs

WNDWYR=yy

Specifies the cutoff date for dates in the 20th vs. 21st centuries. This value is used for CA Telon-supplied windowing date fields such as IWDATE and OWJULIAN (all environments). Any number less than the window year is considered to be in the 21st century; any number greater or equal is considered to be in the 20th. Values are 00-99. There is no default.

WNDWLNK=Y/N

Indicates whether the WORK-WINDOW-YEAR created by use of the WNDWYR parameter. Field should be created in LINKAGE or working STORAGE. Values are:

- **N**—(Default) Generate WORK-WINDOW-YEAR in LINKAGE.
- **Y**—Generate WORK-WINDOW-YEAR in working storage.

XFRCSTD=member-name/NONE

Specifies whether a standard copy member (*member-name*) is to be included at the top of the CA Telon Transfer Work Area immediately following any CA Telon required header fields. Use this parameter to incorporate standard transfer fields in all CA Telon generated programs. You can override it on an environment by environment basis with SETENV XFRCSTD parameter. The default is NONE.

Customize Environment Defaults (Optional)

Customizing environmental defaults is an optional step to modify the parameters of the SETENV statement in the TLNIIS macro. Review these parameters and their defaults in this section. If they are acceptable, continue to the next step. If not, change them in TLNIIS.

The SETENV statement sets system default values pertaining to programs generated for particular CA Telon environments (for example, CICS, IMS/DC, TSO, and batch). The SETENV parameters for each environment override general parameters set up by the SETSYS statement. You can specify more than one SETENV statement to set the environment for each of several environments used at your installation. For more information about SETENV parameters and the environments where they are used, see the appendix, "Implementation Issues."

If you are using CA Telon BATCH

If you are using CA Telon BATCH, you must include the following SETENV statement for the BATCH environment:

```
SETENV  BATCH,PGMCUST=MAINLINE
```

Although you can add other overrides, this PGMCUST override is the minimum adjustment to the batch environment.

SETENV Statement

The Environment parameter controls which parameters are used for the generation of the program. For more information, see the ENVIRONMENT= parameter discussed next.

Parameters for the SETENV statement are described next:

ABENDST=3500/nnnn

Indicates the starting user abend code number to be generated by ADGADBER (COBOL) or ADGDBER (PL/I) into the generated code to trace DL/I I/O errors that cause an abend condition, where *nnn* is the abend code value (under BATCH, IMS, or TSO). The value of each abend code increments by one for each DL/I CALL in the generated code. When set to 0, ABENDST does not issue an incremented abend code. Rather it issues a user code of 98. The default is 3500.

ABTDPGM=(lang,program,[,lang,program[)

Specifies Abnormal termination level 2 default program parameter. Used to specify the default program to be dynamically invoked to handle the abend situation for the CA Telon program language specified.

ABTERRM=

Specifies Abnormal termination level-2 error message parameter. Used when ABTMODE=ERRM. Contains the name of a variable to contain the error message.

ABTMODE=ABEND/ERRM/XFER

Specifies Abnormal termination level-2 mode parameter. Valid values are:

- **ABEND**—Allow the system to handle the error
- **ERRM**—Display an error message on the current screen, where ABTERRM points to a variable name to contain the error message
- **XFER**—Transfer to a program ID specified in ABTXFER when error is found

ABTPRM=(parm1,parm2,...)

Specifies Abnormal termination level-2 ADLAABT (or ADMAABT) additional parameters. Used if ABTPRMG has a value of Y.

ABTPRMG=Y/N

Specifies Abnormal termination level-2 ADLAABT (or ADMAABT) additional parameter flag. Valid values are:

- **Y**—Add parameters specified in ABTPRM to ADLAABT (or ABMAABT) calls.
- **N**—Leave ADLAABT (or ADMAABT) calls with default parameter list.

ABTXFER=program-name

Specifies Abnormal termination level-2 transfer program. Contains the name or the program ID to transfer to when an error is found, and ABTMODE=XFER.

APPLWKA=Y/N

(Valid for batch and CICS nonterminal environments only) Indicates whether the CA Telon application work area *hh*WKAREA is to be included in the generated program. Values are:

- **Y**—The CA Telon application work area, *hh*WKAREA is copied into the generated program. The Application Work Area, *hh*WKAREA, is automatically copied into all other programs of the group.
- **N**—(Default) *hh*WKAREA is not to be included in the generated program.

BLOCK0=Y/N

Indicates whether a "BLOCK CONTAINS 0 CHARACTERS" should be generated for Batch sequential files with no BLKSIZE specified. Values are:

- **N**—(Default) Do not generate "BLOCK CONTAINS 0 CHARACTERS"
- **Y**—Generate "BLOCK CONTAINS 0 CHARACTERS"

BMS=Y/N/NL/NC

Specifies the BMS usage option. Valid in CICS environments only. Values are:

- **Y**—(Default) Create a BMS map
- **N**—No; call TLRATIO (default):
  - **L**— Use a CICS LINK to get to the CA Telon subroutine TLRATIO
  - **C**— Use a CALL to get to the CA Telon subroutine TLRATIO

  Note: Because the programmer can override both of these parameters, you should set LINK/CALL to a default in case the programmer resets BMS to **N** in a particular program, even when you set BMS to **Y** for the default.

CHAPLID=PGMNAME/HEADER

CICS hold area APPLID indicator. Values are:

- **PGMNAME**—(Default) The CICS Hold Area APPLID uses the full program name
- **HEADER**—The CICS Hold Area APPLID uses just the program header

CLIPFKS=

Specifies PFkey copy members which are located in the CICS client program. All PFkeys not specified here are located in the CICS server program. This parameter only applies to CICS client/server generation.

CLISECT=

Specifies SECTION copy members which are located in the CICS client program. All SECTION copy members not specified here are located in the CICS server program. This parameter only applies to CICS client/server generation.

COBENT=DLITCBL

Specifies that all IMS dynamic and driver programs generated by CA Telon have an ENTRY statement for DLITCBL to adhere to installation standards. COBENT is valid only in an IMS environment. This parameter is not specified in the default installation. The default value is null. The system does not generate an ENTRY DLITCBL statement.

COBVERS=2/3

Specifies which version of COBOL CA Telon should generate for (all environments). Values are:

- **2**—COBOL II
- **3**—(Default) COBOL FOR z/OS

Note: It is also possible to specify a value for COBVERS through the SYSPARM in JCL. If COBVERS is set through the SYSPARM, that value takes precedence over all others. See the *Installation* guide for additional information about SYSPARM.

CONVERS=Y/N

IMS environments only. Indicates whether IMS is conversational or non-conversational. Values are:

- **Y**—(Default) IMS is conversational
- **N**—IMS is non-conversational

For more information on conversational and non-conversational systems, see the *Design Facility Reference Guide*.

This parameter can be overridden in individual programs.

CSOCKET=Y/N

Determines whether an "INCLUDE SYSLIB (EZACIAL)" link card should be generated, for support of CICS sockets.

- **Y**—Generate "INCLUDE SYSLIB (EZACIAL)" link card
- **N**—(Default) Do not generate "INCLUDE SYSLIB (EZACIAL)" link card

CURPOSN=Y/N

Determines whether code is generated to capture the screen cursor position. Valid only for CA Telon mapping (TLRATIO) for example, CICS and TSO (test) with LINEOPT=1. Values are:

- **Y**—Generate code to capture screen cursor position
- **N**—(Default) Do not generate code to capture screen cursor position

CURSCLS=Y/N

SQL/IMS only. Indicates whether the Browse Cursor is closed after OUTTERM in B-100. Values are:

- **Y**—Close DB2 Browse Cursor after OUTTERM in B-100
- **N**—(Default for IMS) The user is responsible for making sure that the Browse Cursor is closed

Note: CURSCLS=Y is mutually exclusive with D2CLSXT=Y.

D2LNGRT=DSNELI/DSNCLI/DFSLI000/NONE

The DB2 language interface routine name. If used, the routine is always executed in the generation of the link edit cards. If you omit this parameter, the DB2 language interface is included in the generation of the link edit cards based on the target environment and the existence of generated SQL in the TELON definition. Values are:

- **DSNELLI**—TSO and Batch with no DL/I and not a BMP.
- **DSNCLI**—CICS.
- **DFSLI000**—IMS BMPS and DL/I Batch. Also suppresses U-100-COMMIT and U-100-ROLLBACK Generation.
- **NONE**—(Default) If the SETENV parameter is set to NONE, no link-edit card is included for the DB2 language interface routine and users are responsible for making sure that their linkedit SYSLIB concatenation is correct when compiling.

Note: This parameter does not apply to IMSPGMs or IMSDRVs.

D2CLSXT=Y/N:

SQL only. Indicates whether the Browse Cursor must be closed after the B-100-OUTPUT-SEGLOOP-EXIT label. Values are:

- Y—Close DB2 Browse Cursor after B-100-OUTPUT-SEGLOOP-EXIT label
- N—The user is responsible for making sure that the Browse Cursor is closed

NOTE: D2CLSXT=Y is mutually exclusive with CURSLC=Y.

DEVICEP=(3270P,2)

IMS environments only. Indicates the default MFS device for printers using the online IMS report, representing a report of 55 x 120. See the IBM MFS documentation for other valid values. There is no default value.

DEVICET=(3270,n)

IMS environments only. Indicates the default MFS device for terminals. Values for *n* are:

- **2**—(Default) 24 x 80
- **1**—12 x 80
- **A3**—32 x 80
- **A4**—43 x 80
- **A7**—27 x 132

For more information about the TYPE parameter, see the *Design Facility Reference Guide*.

DIBUFSZ=

IMS environments only. Has default input buffer size (TPISIZE), set to 2000. The value can be changed here or overridden at the program level. See the *Design Facility Reference* guide for more information about TPISIZE.

DLITYPE=DLI/EXECDLI

CICS environments only. Indicates whether DL/I data access generation is requested. You use this parameter only if the program to be generated contains DL/I data access. Values are:

- **DLI**—DLI data access is generated
- **EXECDLI**—EXEC DLI data access is requested

DLIVERS=CBLTDLI/PLITDLI/CEETDLI/AIBTDLI

Specifies which version of the DL/I CA Telon should generate (CICS, IMS, TSO, and Batch only). Values are:

- **CBLTDLI** (Default)
- **PLITDLI**
- **CEETDLI**
- **AIBTDLI**

Note: If DLIVERS is set to CBLTDLI for a PL/I program or PLITDLI for aCOBOL program, a warning MNOTE (TLMIIS44) is issued and the value is changed to match the language.

DOBUFSZ=

IMS environments only. Indicates the default output buffer size (TPOSIZE), set to 3000. The value can be reset here or overridden at the program level. See the *Design Facility Reference* guide for more information about TPOSIZE.

DYNCALL=Y/N

Specifies whether CA Telon should generate COBOL calls to subroutines (field edits, screen I/O routines, abend routines, and so forth) as DYNAMIC or STATIC (all environments) IMS, TSO, and mainframe Batch only). Values are:

- **Y**—Generate dynamic calls
- **N**—(Default) Generate static calls

ENVIRONMENT=

Indicates the positional parameter that specifies the environment for SETENV defaults. This must be the first parameter after the SETENV statement. The SETENV macro that is invoked depends on the PGM statement in each program generated, as listed next:

- **ALL**—Values apply to all CA Telon environments
- **BATCH**—Values apply to batch program generation; invoked by BATCHPGM, and Stored Procedure programs, invoked by SPPGM
- **IMS**—Values apply to IMS program generation; invoked by IMSPGM or IMSDRV
- **TSO**—Values apply to TSO program generation (for IMS testing under TTF); invoked by TSOPGM
- **CICS**—Values apply to CICS program generation; invoked by CICSPGM

FEATURE=features

Functions the same way as the FEATURE parameter of the SETSYS statement. You can set this parameter to override the SETSYS value for a specific environment. For more information, see the discussion of the FEATURE parameter under SETSYS Statement (see page 52).

GENDTES=Y/N

Determines whether CREATE-DATE, UPDATE-DATE, -TIME and -USERID are generated in TELON-RELEASE-DATA.

- **Y**—Generate the additional variables
- **N**—(Default) Use PIC 99.

GENPCBS=Y/N

Indicates whether CA Telon generates PCB masks automatically in the program. Values are:

- **Y**—Automatically generate PCB masks in the program
- **N**—PCB masks must be included in the LNKCOPY and USGCOPY members

GENXPCB=Y/N

Indicates whether CA Telon automatically generates an XFER-PCB in the program (IMS only).

- **Y**—Automatically generate an XFER-PCB
- **N**—Do not automatically generate an XFER-PCB

HOLDSTG=MAIN/AUX

CICS environments only. Has values:

- **MAIN**—(Default) Generate Hold storage in Main storage
- **AUX**—Generate Hold storage Auxiliary storage

IDIRLNK=Y/N

Determines whether subroutines are called directly, or by the CA Telon supplied program ADRALNKC.

- **N**—(Default) Call subroutine using ADRALNKC
- **Y**—Called subroutine directly

Note: IMS/DC driver or Dynamic only. LINKDYN must be set to Yfor driver in program or TLNIIS.

INITPKS=Y/N

CICS online only. Determines whether code should be generated in B-100-OUTPUT-SEGLOOP-INIT to initialize the PAGES-SAVED and PAGE-KEY-SAVE(1) fields for COBOL II and above when PAGE-NUMBER-SAVE=1.

- **Y**—(Default) Generate code
- **N**—Do not generate code

INLINE=Y/N

Indicates whether the SQL AUTOEXEC BROWSE is generated inline. Values are:

- **Y**—(Default) SQL AUTOEXEC BROWSE generated inline
- **N**—SQL AUTOEXEC BROWSE generated calling Data Access

IOASTG=AUTO/STATIC

CICS environments only. Controls the location of the CA Telon generated SEGMENT-IO-AREA in a CICS COBOL program. Values are:

- **AUTO**—Automatic storage
- **STATIC**—(Default) Static

IOPCBM=Y/N

Specifies whether CA Telon generates the IOPCB group name and timestamp fields for the IOPCB mask. Valid for IMS v6 and up; environments IMS, TSO and mainframe Batch only). Values are:

- **Y**—Generate IOPCB group name and timestamp.
- **N**—(Default) Do not generate IOPCB group and timestamp

JCOLNMS=Y/N

Specifies whether CA Telon should generate the CK-, PK-, and SK-, names (for an SQL join browse) with join reference as part of the name, to ensure uniqueness (IMS and CICS screen only). Values are:

- **Y**—Generate the field names with the join reference
- **N**—(Default) Do not generate the field names with the join reference

LINKDYN=Y/N

IMS environments only. Indicates whether the system calls static subroutines dynamically in IMS drivers. Values are:

- **Y**—Drivers are dynamically linked to static online subroutines not specified in the LINKPGM, MSGPGM, MSGTBL, or MSGTRAN parameters of the CA Telon IMSPGM statement
- **N**—(Default) Statically call these subroutines

LINKOPT=D/S

IMS environments only. Indicates the type of IMS linking to occur with the generated online programs. The parameter determines whether to generate a program to be statically link-edited into a driver module or to generate a program that is dynamically accessed during execution. Values are:

- **D**—(Default) Generate a stand-alone online program that dynamically links to other online programs
- **S**—Generate a program that is to be statically linked to or called dynamically by an IMS driver module

MAPALGN=Y/N

CICS environments only. Indicates the BMS map alignment option. The value of this parameter must be the same as the value specified at CICS generation time for the DFHSG PROGRAM=BMS MAPALGN parameter. Values are:

- **Y**—BMS alignment is used
- **N**—(Default) BMS alignment is not used

MBUFSZ=nnnn

IMS environments only. Indicates the default maximum IMS message queue statement size (nnnn) allowed at your installation. This value is used to break messages up into segments. The default is 9000.

MFSEJCT=blank/BGNPP/ENDPP/BGNMSG/ENDMSG

If a value is entered for this parameter and the program being generated has a DEVICE TYPE of FIJP, FIBP, FIFP, or SCS1 (as entered on the TDF "Update IMSMFS (S163) screen), CA Telon generates IMS MFS DEV statements with PAGE=(nn,EJECT(value)) instead of PAGE=(nn,SPACE). Values are:

- **blank**—(Default) Generate PAGE=(nn,space)
- **value**—Generate PAGE=(nn,EJECT(value)) where "value" is the value specified in this parameter.

MFSALFA

Contains additional characters to append to the end of a IMSMFS "Alpha String".

PAGEB=(pf1,pf2)

The PF keys used for paging backward in generated programs with list screens. Delivered installation values are 07 and 19.

MFSEJCT

Controls whether to generate PAGE=(....,EJECT(xxxx)) or the default PAGE=....SPACE.

PAGEF=(pf1,pf2)

PF keys used for paging forward in generated programs with list screens. Delivered installation values are 08 and 20.

PAGE999=Y/N

Indicates whether two- or three-byte numbers are generated for the PAGES-SAVED and PAGE-NUMBER-SAVE variables used in SEGLOOP processing. Values are:

- **Y**—Use PIC 999.
- **N**—(Default) Use PIC 99.

PGMCSTD=(section1, copyname1 [,sectionn, copynamen,...])

The standard PGMCUST exit points. The default values are those specified in the SETSYS statement, discussed in SETSYS Statement (see page 52). This parameter functions in the same way as the PGMCSTD parameter of the SETSYS statement. If set in the SETENV statement, it overrides the SETSYS value for a particular environment. The default value is NONE.

PGMCUST=NONE/ANY/MAINLINE/(exit-list)

The allowable PGMCUST exit points. The default values are those specified in the SETSYS statement, discussed in SETSYS Statement (see page 52). This parameter functions in the same way as the PGMCUST parameter of the SETSYS statement. If set in the SETENV statement, it overrides the SETSYS value for a particular environment.

PIOALGN=Y/N

CICS, IMS, TSO and mainframe Batch only. Specifies whether CA Telon should generate PL/I IOAREA storage areas as ALIGNED or not. Values are:

- **Y**—Generate PL/IOAREA storage areas as ALIGNED
- **N**—(Default) Do not generate PL/IOAREA storage areas as ALIGNED

PLICALL=Y/N

(IMS PL/I only) Specifies whether CA Telon should generate a "PLICALLA" link card. Values are:

- **Y**—(Default) Generate "PLICALLA" link card
- **N**—Do not generate "PLICALLA" linkcard

PLIVERS=Y/N

(CICS, IMS, TSO and mainframe Batch only) Specifies which version of PL/I CA Telon should generate for. Values are:

- **1**—PL/I 2.3
- **2**—PL/I for z/OS

PSBPCBN=Y/N

Indicates whether the PCBNAME parameters should be generated on the PCB statement in a PSB. Values are:

- **Y**—(Default) Generate PCBNAME
- **N**—Do not generate PCBNAME

REALDBG=Y/N

Specifies if PP-LIST and PP-NOLIST directives are to be generated to allow for custom-code only with CA Realia. Values are:

- **Y**—Generate PP-LIST and PP-NOLIST CA Realia directives around all procedural custom code exit points
- **N**—Do not generate PP-LIST and PP-NOLIST CA Realia directives

RECVAR=Y/N

Indicates whether a "RECORD VARYING..." clause should be generated for a VSAM or sequential file's FD when the file's maximum LRECL is larger than its minimum LRECL. Values are:

- **N**—(Default) Do not generate a "RECORD VARYING..." clause
- **Y**—Generate a "RECORD VARYING..." clause

ROLBIND=Y/N

Specifies the IMS rollback I/O area option indicator. Values are:

- **Y**—(Default) I/O area is generated in the CBLTDLI ROLB-FUNC call
- **N**—I/O area is not generated in the CBLTDLI ROLB-FUNC call

SPASTG=(AUTO/STATIC, TSAUX/TSMAIN)

(CICS environments only) Indicates SPA area storage with optional use of temporary storage. This parameter controls the location for CA Telon to generate the Transfer Work Area definition in the CICS program. Values are:

- **AUTO**—Generate the area into the Linkage Section and do a GETMAIN for the area (if necessary) at program initialization.
- **STATIC**—(Default) Generate the area into Working Storage.
- **TSAUX**—Use CICS AUXILIARY TEMPORARY STORAGE instead of the DFHCOMMAREA for saving the transfer area information across screen iterations.
- **TSMAIN**—Use CICS MAIN TEMPORARY STORAGE instead of the DFHCOMMAREA for saving the transfer area information across screen iterations.

STGCSTD=member-name/NONE

Specifies the standard WORKING-STORAGE COPY member. Functions in the same way as the STGCSTD parameter of the SETSYS statement and overrides the SETSYS value for a particular environment. For more information about STGCSTD=, see SETSYS Statement (see page 52).

STGPROT=Y/N

Specifies whether CA Telon should generate fields TP_OUTPUT_TABLE, TP_LITERAL_TABLE and TELON_RELEASE_DATA as static or automatic for CICS storage protect (PL/I CICS only). Values are:

- **Y**—Generate fields as automatic
- **N**—(Default) Generate fields as static

TCDEOVR=

Allows you to override one or more CICS TRANCDE characters. Use $ to indicate that the character is unchanged. Any other character replaces the corresponding TRANCDE character. For example, TCDEOVR=$$C$ indicates that character 1, 2, and 4 of the TRANCDE remain the same, while character 3 becomes a C.

TMPHOLD=Y/N

Indicates whether to generate a TEMP-HOLD-AREA and related MOVEs for COBOL programs using CICS TS Queue for the HOLD area. The TEMP-HOLD-AREA is needed on the PC since successive 01 levels are not necessarily contiguous in memory. The TEMP-HOLD-AREA is not required in mainframe programs. Values are:

- **Y**—Generate the TEMP-HOLD-AREA
- **N**—(Default) Do not generate the TEMP-HOLD-AREA

TPBSTG=AUTO/STATIC

(CICS environments only) Specifies teleprocessing buffer storage. This parameter controls where CA Telon generates the TP-BUFFER storage in a CICS program. Values are:

- **AUTO**—Generate the area into the Linkage Section and do a GETMAIN at program initialization
- **STATIC**—(Default) Generate the area into Working Storage

TPICHK=Y/N

Indicates whether a check for blanks occurs prior to a move for ALPHA FLDTYPE. Values are:

- **Y**—(Default) Check for blanks prior to move for ALPHA FLDTYPE
- **N**—Do not check for blanks prior to move for ALPHA FLDTYPE

TRACE=Y/N

Indicates whether the system generates program trace logic. Values are:

- **Y**—(Default) Yes
- **N**—No

WNDWLNK=Y/N

Indicates whether the WORK-WINDOW-YEAR created by use of the WNDWYR parameter. Field should be created in LINKAGE or working STORAGE. Values are:

- **N**—(Default) Generate WORK-WINDOW-YEAR in LINKAGE.
- **Y**—Generate WORK-WINDOW-YEAR in working storage.

WNDWYR=yy

Specifies the cutoff date for dates in thee 20th versus 21st centuries. Used for CA Telon-supplied windowing date fields such as IWDATE and OWJULIAN (all environments). Any number less than the window year is considered to be in the 21st; any number greater or equal is considered to be in the 20th century. Values are 00-99. There is no default.

XFRCSTD=member-name/NONE

Specifies the standard transfer area copy member. This parameter functions in the same way as the XFRCSTD parameter of the SETSYS statement and overrides the SETSYS value for a particular environment. See the discussion of the XFRCSTD= parameter in SETSYS Statement (see page 52).

Load/Build Customizable Macros Feature (Optional)

The Load/Build Customizable Macros feature allows a user to modify settings in the TLNIIS, PGMNAMES and USREDITS macros without having to text-edit the macros manually. Macro initialization files may be created from existing macros, and the settings in these files may then be edited to propagate the desired changes in the three macros.

The macro initialization file is divided into the following sections, identified by the curly brackets (» º) on the mainframe or square brackets on the PWS ([ ]) enclosing each section name.

For TLNIIS:

```
{SETSYS}         SETSYS settings
{SETENV-BATCH}   SETENV settings for the Batch environment
{SETENV-CICS}    SETENV settings for the CICS screen environmen
{SETENV-IMSDRV}  SETENV settings for the IMS driver environment
{SETENV-IMSDYN}  SETENV settings for the IMS dynamic environment
{SETENV-IMSRPT}  SETENV settings for the IMS report environment
{SETENV-IMSSTAT} SETENV settings for the static environment
{SETENV-NONTERM} SETENV settings for the CICS non-terminal environment
{SETENV-STORED}  SETENV settings for the Stored Procedure environment
```

For PGMNAMES:

```
{PGMNAMES}       PGMNAMES settings
```

For USREDITS:

```
 {EDIT-eeeeeeee}
                 DFNEDIT settings, where "eeeeeeee" is the
                 field edit name.  The maximum number of field edits that
                 may be defined 300.

 {DFNWKFLD-n}     DFNWKFLD settings, where "n" is a number from 0 to 9.
```

For each section, the parameters are supplied with a simple assignment statement using an equal sign with no imbedded spaces. For example, LINEOPT=2. Thus, a portion of the SETSYS section might appear as follows:

```
{SETSYS}
ALARM=N
EOFKEY=Y
LANG=COB
LINEOPT=2
OUTATTR=Y
OUTIFIL=SPACE
REFRESH=Y
```

PLI/O PGMNAMES Parameters

To distinguish them from the COBOL settings, the parameter names in the macro initialization file for the PL/I HEADER settings begin with a "Q" rather than a "P". In the actual macro, these parameters appear with a "P" as the first byte. The names of the COBOL and the PL/I parameters are listed in the following chart.

COBOL Name	PL/I Name	Description
PGMBHDR	QGMBHDR	PROGRAM HEADER BATCH
PGMTHDR	QGMTHDR	PROGRAM HEADER TSO TEST
PGMIHDR	QGMIHDR	PROGRAM HEADER IMS DYNAMIC PROGRAM
PGMDHDR	QGMDHDR	PROGRAM HEADER IMS DRIVER
PGMSHDR	QGMSHDR	PROGRAM HEADER IMS STATIC
PGMLHDR	QGMLHDR	PROGRAM HEADER IMS ALIAS
PGCPHDR	QGCPHDR	PROGRAM HEADER CICS
PGCCHDR	n/a	PROGRAM HEADER CICS CLIENT
PGCSHDR	n/a	PROGRAM HEADER CICS SERVER
PGNPHDR	QGNPHDR	PROGRAM HEADER CICS NONTERM
PGSPHDR	QGSPHDR	PROGRAM HEADER STORED PROCEDURE
PGMBHDL	QGMPHDL	PROGRAM HEADER LENGTH BATCH
PGMTHDL	QGMTHDL	PROGRAM HEADER LENGTH TSO
PGMIHDL	QGMIHDL	PROGRAM HEADER LENGTH IMS DYNAMIC
PGMDHDL	QGMDHDL	PROGRAM HEADER LENGTH IMS DRIVER
PGMSHDL	QGMSHDL	PROGRAM HEADER LENGTH IMS STATIC

COBOL Name	PL/I Name	Description
PGMLHDL	QGMLHDL	PROGRAM HEADER LENGTH IMS ALIAS
PGCPHDL	QGCPHDL	PROGRAM HEADER LENGTH CICS
PGCCHDL	n/a	PROGRAM HEADER LENGTH CICS CLIENT
PGCSHDL	n/a	PROGRAM HEADER LENGTH CICS SERVER
PGNPHDL	QGNPHDL	PROGRAM HEADER LENGTH CICS NONTERM
PGSPHDR	QGSPHDR	PROGRAM HEADER STORED PROCEDURE
PGSPHDL	QGSPHDL	PROGRAM HEADER LENGTH STORED PROCEDURE

There are two processes that are divided to support the use of the macro initialization file:

- Load Customizable Macros
- Build Customizable Macros

During the Load Customizable Macros process, existing TLINIIS, PGMNAMES and USREDITS macros are parsed and macro initialization files are created, one for each macro. These files are loaded into the #PDSQUAL.MACROINI PDS, and the user may then text-edit those initialization files.

Note: If you made significant modifications to the delivered copies ofTNLIIS, PGMNAMES, and USREDITS, the Load/Build Customizable Macros do not carry forward those modifications. Carefully review the contents of output macros after running the utility.

When you have made the desired parameter modifications, run the Build Customizable Macros process to build new versions of TLNIIS, PGMNAMES, and USREDITS, with the updated settings. The macro creation process validates the parameter settings. If invalid parameter values are found, an error report is produced, and the macros are not built.

Note: There are some special considerations in the Load CustomizableMacros process in the case of TLNIIS IMS settings. If the TLNIIS being used as input contains only a single SETENV IMS invocation, the parser produces four IMS sections in the initialization file. If there are two SETENV IMS settings, the parser makes a best guess as to which section in the old version maps to a corresponding section in the new. You should carefully review any newly created macro initialization file.

Execution

JCL and procs to execute the Load Customizable Macros and Build Customizable Macros processes can be found in your #PDSQUAL.INSTALL PDS. JUMKINI invokes TLNUMKIN to produce the macro initialization files from existing macros. JUMKMAC invokes TLNUMKMC to produce macros from the macro initialization files.

Further Customization of Macro Libraries

The CA Telon Generator macro library used in your running system is referred to as MACLIB.

This discussion provides additional customization information to consider for the following members of this data set: TELONIIS, TLNIIS, and PGMNAMES, which you can use to:

- Define your naming conventions for generated programs
- Define your installation's environment

These environment and naming conventions were set to initial defaults during your product installation.

By maintaining multiple versions of TLNIIS and PGMNAMES or multiple versions of MACLIB, you can provide different applications groups with:

- Differing security
- Differing naming conventions
- Differing system or environment defaults
- Isolation from other groups

Security

It is not unusual for different application groups to have very different standard processing requirements. For example, to verify that the operator is authorized to execute a requested function, one system may require that a security module be called with every execution of the generated programs. A second system may only require transaction level security.

The security for the second system can be handled at the transaction level with existing system software. But transaction level security is not sufficient for the first system. That system requires a functional security that is executed at the beginning of every program.

This functional security, in the form of custom code, can be generated separately into every program. An easier way to do this is with the PGMCSTD parameter set in TLNIIS, you can tell the CA Telon Generator to include code at a particular point in every generated program.

PGMCUST must be authorized (for example, specified) in SETENV in MACLIB member TLNIIS for any program to use an exit name in the PGMCUST parameter. See TLNIIS member SETENV for BATCH in the CA Telon Training source (SOURCEC or SOURCEP) library for an example.

PGMCSTD tells the Generator to insert code into specific points of the program. Its format is shown next:

```
PGMCSTD=(exit-name1,member-name1[,exit-namen,member-namen ]....)
```

where:

- **Exit-name** is any of the exit point names described in the following list
- **Member-name** is a user-defined custom code member to be inserted at this point

The next table identifies the valid exit point names and their respective functions.

Note: An **I** at the end of an exit name indicates that the code is inserted at the beginning of the section. A **T** at the end indicates the code is inserted at the end of the section.

Exit name	Function
MAINI	To include custom code at the beginning of the program mainline
MAINLINE	To replace the program mainline of an SD, DR, or RD with custom code When this is coded the CA Telon Generator

Exit name	Function
	does not create a standard mainline
MAINT	To include custom code at the end of the program mainline
MAININPUTI	To include custom code at the beginning of the MAIN-INPUT section of an SD generated program
MAININPUTT	To include custom code at the end of the MAIN-INPUT section of an SD program
MAINOUTPUTI	To include custom code at the beginning of the MAIN-OUPUT section of an SD program
MAINOUTPUTT	To include custom code at the end of the MAIN-OUTPUT section of an SD program
MAINPROCESSI	To includce custom code at the beginning of the MAIN-PROCESS section of the program
MAINPROCESST	To include custom code at the end of the MAIN-PROCESS section of the program
section-idI	To include custom code at the beginning of Section section-id *
section-idT	To include custom code at the end of the Section section-id *
SRTINPUTLOOP	Replaces MAINOUTPUTI for batch mainline sort programs
SRTOUTPUTLOOP	Replaces MAINOUTPUTT for batch mainline sort programs

* section is the section/procedure letter/number combination identifying a procedural portion of the generated program. For example:

A100T

Refers to custom code to be put on the end of section A-100 OUTPUT-INITIALIZATION

C1000I

Refers to custom code to be put at the beginning of section C-1000-GET-TRANSACTION

Multiple TLNIIS Members

Returning to the differing security needs example, the first system would profit from having the Generator use the PGMCSTD parameter. In this way, custom code could always be inserted into the generated code to perform the security check or to call a security module. However, the second system does not need this generated security code.

So how would a single shop be able to meet these seemingly contradictory needs? One way would be to set up and use more than one version of the TLNIIS macro. The TELONIIS macro would also have to be modified in order to call the appropriate version of TLNIIS. In this way, you can modify TLNIIS to the specific needs of the application group using it.

For example, suppose the second system above, the one with transaction-level security requirements would be the norm at your installation. Furthermore, suppose you want to use PGMCSTD with the first system. How could you meet these differing needs? You could create a second TLNIIS in MACLIB and name it TLNIIShh, where *hh* is the header used by the application group needing the extra security. You would then modify this TLNIIShh to use PGMCSTD to include the security code.

To implement this TLNIIS, you would modify the following TELONIIS by removing ** and changing the 'hh' to the application Header of the group desiring the security. You would find and change these lines:

```
**          AIF ('&SHEADER'. EQ 'hh').HDRhh

HDRhh       ANOP
**          TLNIIShh &CALLER.
```

When you had finished, the *hh* would be replaced with your application header and the two occurrences of ** would be removed.

You would also need to update each specific customized TLNIIS member by setting the appropriate member name within it. If you do not, you receive the following Generator error messages:

```
IEV126 *** ERROR *** LIBRARY MACRO NAME INCORRECT —— MACRO - TLNISTR
```

```
IEV057 *** ERROR *** UNDEFINED OPCODE —— TELON/TLNIISTR.
```

For example, if you change TELONIIS to call TLNIISTR, you must then create the TLNIISTR macro. You also need to change the second line in your macro from:

```
TLNIIS &CALLER.
```

to

```
TLNIISTR &CALLER.
```

Include Standard Copy Members

To include a standard copy member at the beginning of working storage in generated programs, use the STGCSTD parameter in either the SETSYS or SETENV statements of TLNIIS.

Naming Conventions

Naming convention differences between applications can be treated in the same manner as security differences. For example, naming convention differences can occur when one group wants three-byte headers while another wants two-byte headers.

When you have naming convention differences, create new versions of the TLNIIS and PGMNAMES macros. Name the new TLNIIS as described in the prior example (TLNIIS*hh*) and assign PGMNAMES any name other than PGMNAMES.

For example, suppose you have customized your naming conventions in PGMNAMES but want to keep the delivered naming conventions for training (the Header is TR). You can accomplish this with the following steps:

1. Copy TLNIIS to TLNIISTR, leaving both in the MACLIB data set (on the mainframe) or directory (on PWS)
2. Modify TLNIISTR to call PGMNAMTR instead of PGMNAMES
3. Copy PGMNAMED (the default names member) to PGMNAMTR, leaving both in MACLIB
4. Modify TELONIIS as outlined above so that it calls TLNIISTR when '&SHEADER'. is TR

System Default Differences

Like the PGMCSTD parameter of TLNIIS, you can maintain separate versions of TLNIIS with differing SETSYS and SETENV parameters to specify differing environments, such as:

- An environment to be used when you are testing out the new program
- An environment reflecting the needs of a production version of the program in one installation
- An environment reflecting the needs of a different production installation

Multiple TELONIIS members

To maintain production defaults that are different from your test system defaults requires more than simply using different versions of TLNIIS. This is because there is no difference in the headers to indicate to TELONIIS which version of TLNIIS to call.

In this situation, you would need to create a second MACLIB PDS and place only the differing versions of TELONIIS, TLNIIS, and PGMNAMES into this new MACLIB. When you wanted to use these macros, you would use the TESTMAC parameter of the Generator procedures to point to this new MACLIB.

Maintenance

If you modify TELONIIS, TLNIIS, and PGMNAMES to suit your needs, you are responsible for maintaining and upgrading any TELONIIS, TLNIIS, or PGMNAMES macros that you create. When you receive a new release or Service Pack of CA Telon, you are responsible for determining its impact on your versions of TELONIIS, TLNIIS, and PGMNAMES. To help you, the release or Service Pack fix list describes the changes that affect these macros and all other changes.

We recommend that any new MACLIB data sets you create contain only the TELONIIS, TLNIIS, and PGMNAMES macros. The standard CA Telon macro library should contain all the unmodified macros.

Implementation Tips

Consider the following when implementing CA Telon:

- You may choose to limit the scope of a view to project-pertinent data.
- After your project has been completed, export all CA Telon source from the TDF and put it through your normal change control process. You are not required to keep the generated COBOL or PL/I code, but you must keep the CA Telon source.
- Let CA Telon generate as much code as possible. Custom code takes longer to maintain. Have a thorough knowledge of the CA Telon program structure charts so that you understand how much custom code is really needed and the best place in the program to use it.

Terminate a Program Abnormally

CA Telon provides standard routines for terminating a program abnormally. Whenever an I/O function is performed, CA Telon checks the return code. If an unexpected status is returned, abnormal termination is performed.

CA Telon provides four types of abnormal termination, that can be accessed by setting the ABNORMALT parameter in TLNIIS to 0, 1, 2, or 3. Setting the ABNORMALT parameter to 0 eliminates any abnormal termination handling and is not recommended.

Before r2, the only way to terminate a program abnormally was either calling ADGADBER or ADGDBER in IMS/DC or using an EXEC CICS ABEND in CICS.

CA Telon still provides these methods through the SETENV FEATURE ABNORMALT 1 in your MACLIB PDS member TLNIIS. As of r2, CA Telon provides an alternate method of terminating a program abnormally by means of the SETENV FEATURE ABNORMALT 2.

Abnormal Termination Feature 1

Functional description

CA Telon provides two standard ABEND routines (ADGADBER for COBOL and ADGDBER for PL/I) for processing unexpected error conditions such as an AI status code on a DL/I read.

These routines allow a program to:

- Perform DL/I database backout and recovery when an error has been detected
- Prohibit further processing

Processing options

TSO and IMS programs call the ABEND routine, but processing differs between the two cases based on the value of the PROGRAM TYPE field (T for TSO or Test mode, P for IMS or Production mode).

If PROGRAM TYPE is P, the routine passes control to a user written exit called ADUABNC for COBOL and ADUABNP for PL/I. A skeleton version of these routines is provided in pdsqual.SOURCE.

As delivered, these routines use only the first value in the parameter list and issue incremental user ABENDs. CA recommends that you modify these user exits to interface to your own standard IMS ABEND routine.

Interface requirements

A parameter list is passed to the ABEND routine that contains items that the user exits may use. This parameter list is for user exit processing only. The default routines do not use this list. The parameters are listed in the following tables and described on the pages immediately after the tables.

	COBOL / PL/I Name	Length	Description
1	PROGRAM-TYPE PROGRAM-TYPE-SUFFIX routine-ABEND-CODE	1 13 2	T (TEST) P (Production) Release level, program name Binary ABEND code
2	TRACE SECTION NAME	8	Current program section
3	IO PCB	40	IO-PCB
4	ABEND PCB	12	Either the XFER-PCB or a TPPCB generated with ABCALL=Y
5	SPA AREA	V	SPA-AREA

Parameters 6 - 9 vary depending on the type of abend. Those variations are described in the following tables.

DB Errors

The parameters are the first three parameters passed in the database call in error.

	COBOL / PL/I Name	Length
6	DL/I Function Code	4
7	Database PCB	V
8	Segment I/O Area	V

Invalid NEXT-PROGRAM-NAME

The parameters are as follows:

	COBOL / PL/I Name	Length	Description
6	XFER-ABEND-CODE	4	Set to XFER
7	NEXT-PROGRAM-NAME	8	Containing invalid program name

Dynamic links that fail

The parameters are as follows:

	COBOL / PL/I Name	Length	Description
6	XFER-ABEND-CODE	4	Set to XFER
7	NEXT-PROGRAM-NAME	8	Containing invalid program name
8	ALIAS-PROGRAM-NAME	8	Containing alias name used for the dynamic load
9	WORKFLD-NUMERIC	18 14	COB PLI Containing ABEND code converted

	COBOL / PL/I Name	Length	Description
			from hex to decimal. The most common ABENDS are: ■ **262**— System ABEND 106 ■ **1798**— System ABEND 706 ■ **2051**— System ABEND 80

Non-matching SPA Sizes

The parameters are:

	COBOL / PL/I Name	Length	Description
6	SPASIZE-ABEND-CODE	8	Set to SPASIZE
7	WORKFLD-NUMERIC	18 14	COB PLI Containing the length of the SPA received from IMS

Parameter Descriptions

A description of each parameter is provided next.

Parameter 1

The first parameter consists of three concatenated fields:

- **PROGRAM-TYPE** has a value of T for TSO programs and P for IMS programs.
- **PROGRAM-TYPE-SUFFIX** is a 12-byte character string that is generated after PROGRAM TYPE and has the following format:

  frrrnnnnnnnn

  where:

  - *f* is the literal X'FF' to indicate r1.2 format
  - *rrr* is the literal containing the CA Telon Release level
  - *nnnnnnnn* is the program name
- **routine ABEND-CODE** is a two-byte binary value that passes an ABEND code to the user ABEND exit. The ABEND CODE routine is named ADGADBER-ABEND-CODE for COBOL and ADGDBER-ABEND-CODE for PL/I programs. ABEND-CODE identifies each ABEND call within a program by a unique ABEND number. The number passed is based upon the value of the ABENDST parameter on the SETENV statement in member TLNIIS set at installation time.

  The ABENDST parameter specifies the ABEND code to be passed to the first generated call to the ABEND routines in a program. If ABENDST is set to 0, CA Telon passes the value of 98 to all calls.

  If the parameter is non-zero, CA Telon generates a move statement with the value of ABENDST for the first generated call and increments it by 1 for each successive generated call. This assists greatly in identifying where in the program the ABEND routine was called.

  IMS has reserved ABEND codes 3500 through 4094 for client ABEND codes. ABENDST as delivered has a value of 3500. If you want to pass ABEND codes in your Custom Code, CA recommends that you start with 4000 so that all ABEND codes issued are unique in the program.

  Note: The supplied user exit routines, ADUABNC and ADUABNP, issue an ABEND using the value in this field.

Parameter 2

TRACE SECTION NAME contains the section name if the program includes the generated trace logic. The TRACE parameter of the IMSPGM/IMSDRV statement requests this logic. The default value for the TRACE parameter is set on the SETENV statement in member TLNIIS at installation time. If the trace logic is not included in the program, this parameter still exists, but the value does not contain valid information.

Parameter 3

The IO PCB is the primary IMS/DC communication PCB between the application program, the terminal, and the message queue. It is the first parameter supplied to all application programs, and you can use it to respond to the terminal operator.

Parameter 4

ABEND PCB is a user-controlled PCB. To send messages from the ABEND routines, it is necessary to use an alternate PCB that specifies EXPRESS=YES. The default PCB passed is the XFER PCB. CA Telon uses this PCB primarily for message switching, which requires EXPRESS=NO for conversational systems.

If you need to specify EXPRESS=NO on the XFER PCB, and want to write a message from your user exit, you can pass a PCB that specifies EXPRESS=YES to the ABEND routines to do this, code a TPPCB statement with ABCALL=Y and EXPRESS=Y. The generated calls pass this PCB to the ABEND routines. If you do not code TPPCB with ABCALL, the XFER PCB is passed.

IMS Abnormal Termination 1 Example

```
*    GENERATED SEGMENT VALIDATION EDIT LISTCHK

     MOVE WS-START-BROWSE-KEY TO TRGEMPL-SSA-VALUE.

     MOVE '<=' TO TRGEMPL-SSA-OPCODE.

     MOVE 'TRGEMPL ' TO TRACE-SEGMENT-NAME.

     CALL 'CBLTDLI' USING GN-FUNC

                     EMPLOYEE-PCB

                     IOA-TRGEMPL-SEGMENT

                     TRGEMPL-SSA.

     MOVE EMPLOYEE-STATUS-CODE TO DA-STATUS-DLI

                               EMPLOYEE-TRGEMPL-STATUS.
```

```
     PERFORM U-100-SET-DA-STATUS-DLI.
     IF EMPLOYEE-STATUS-CODE NOT = SPACES
          AND EMPLOYEE-TRGEMPL-1 NOT = 'G'
        MOVE 3500 TO ADGADBER-ABEND-CODE
        CALL 'ADGADBER' USING PROGRAM-TYPE
                              TRACE-SECTION-NAME
                              IO-PCB
                              ABEND-PCB
                              SPA-AREA
                              GN-FUNC
                              EMPLOYEE-PCB
                              IOA-TRGEMPL-SEGMENT.
     MOVE '=' TO TRGEMPL-SSA-OPCODE.
     IF EMPLOYEE-STATUS-CODE NOT = SPACES
        MOVE DO-WRITE-LIT TO CONTROL-INDICATOR
        MOVE ERROR-ATTR TO TPO-STARTBR-ATTR
        MOVE '*** REQUESTED LIST IS EMPTY ***' TO TPO-ERRMSG1
        GO TO J-100-SELECT-RETURN.

     MOVE WS-START-BROWSE-KEY TO XFER-EMPL-ID.
     MOVE PROCESS-OUTPUT-LIT TO CONTROL-INDICATOR
                     ENTRY-CONTROL-INDICATOR.

*    SELECT/SCONSIS NOT CODED

*
*    SELECT/NEXTPGM
```

CICS Abnormal Termination 1 Example

```
        IF TPI-FUNCTION = '2' OR '5' OR '6'
           MOVE 'TRGEMPL ' TO TRACE-SEGMENT-NAME
*EXEC DLI GET UNIQUE USING PCB(1)
*       SEGMENT(TRGEMPL)
*          INTO(IOA-TRGEMPL-SEGMENT) SEGLENGTH(00600)
*                      WHERE(TRGEMKEY = XFER-EMPL-ID)
*            FIELDLENGTH(6)
*       KEYFEEDBACK(EMPLOYEE-KEY-FB-AREA)
*       FEEDBACKLEN(016)
*END-EXEC
              MOVE '  #0    DLI     02119  }    M ' TO DFHEIV0
              MOVE 1 TO DFHEIV11
              MOVE 'TRGEMPL' TO DFHEIV1
              MOVE 00600 TO DFHEIV12
              MOVE 016 TO DFHEIV13
              MOVE ' = ' TO DFHC0030

              MOVE 'TRGEMKEY' TO DFHEIV2
              MOVE 6 TO DFHEIV14
             CALL 'DFHEI1' USING DFHEIV0  DLZDIB DFHEIV11 DFHEIV1
           IOA-TRGEMPL-SEGMENT DFHEIV12 DFHDUMMY EMPLOYEE-KEY-FB-AREA
           DFHEIV13 DFHC0030 DFHEIV2  XFER-EMPL-ID DFHEIV14
             MOVE DIBSTAT TO EMPLOYEE-STATUS-CODE
```

```
            MOVE 'GHU' TO XDLI-FUNC

            MOVE EMPLOYEE-STATUS-CODE TO DA-STATUS-DLI

                                      EMPLOYEE-TRGEMPL-STATUS

            PERFORM U-100-SET-DA-STATUS-DLI

            IF EMPLOYEE-STATUS-CODE NOT = SPACES

                AND EMPLOYEE-TRGEMPL-1 NOT = 'G'

*EXEC CICS ABEND ABCODE('TLND')  END-EXEC

            MOVE '       - 02135    ' TO  DFHEIV0

            MOVE 'TLND' TO DFHEIV5

           CALL 'DFHEI1' USING DFHEIV0  DFHEIV5

         ELSE IF EMPLOYEE-STATUS-CODE = SPACES

           MOVE DO-WRITE-LIT TO CONTROL-INDICATOR

           MOVE ERROR-ATTR TO TPO-FUNCTION-ATTR TPO-ID-ATTR

           MOVE '*** EMPLOYEE DOES  EXIST ***' TO TPO-ERRMSG1

           GO TO X-100-CONSIS-EDITS-RETURN.
```

Abnormal Termination Feature 2

An abnormal termination situation arises in a CA Telon application when an "unexpected" event occurs. Examples of these are:

- TP environment has not been specified correctly
- DBMS responds with an unforeseen status code
- Next screen to be presented to the user is unavailable

CA Telon provides a standard method of handling these situations. Remember when an abnormal situation occurs, it is important in an online environment that:

- Any database activity be backed out
- Further processing be prevented
- This is accomplished by the user tailoring the ABT (ADxxABT) routine.

CA Telon invokes a routine to do the abnormal termination. The routine can simply ABEND, or it can provide an error message to be sent to the user (or other places) after CA Telon analyzes the problem. The flow of ABT processing that occurs is:

1. An abnormal situation is detected.
   - Specific data is collected into the ABT-AREA. If the cause of the error is eliminated, then flow will continue without any further ABT processing).
   - The CONTROL-INDICATOR is set to ABNORMAL-TERMINATION-LIT.
   - Control is immediately passed to the MAIN-LINE.
2. The Z-980-ABNORMAL-TERM is performed from the section where the error occurred.
3. Z-980-ABNORMAL-TERM:
   - Checks that an abnormal situation is not currently in progress (if it is, an immediate ABEND is issued)
   - Further initializes the ABT-area
   - Calls the ABT routine (ADMAABT for TSOPGMs, IMSPGMs, BATCHPGMs; ADLAABT for CICSPGMs)
   - If control is returned from the ABT routine, then normal CA Telon flow continues as indicated by the CONTROL-INDICATOR
4. The ABT routine (ADMAABT/ADLAABT) dynamically invokes a user routine to set up any debug information, effect any backout and recovery, and decide on the next action (ABEND, present error message, transfer to another application program). You can customize the name of the routine that the ABT routine invokes. The default routines are delivered by CA in source and load format.

Processing options

You can specify the options available to handle abnormal conditions by means of the SETENV or SETSYS statement in the TLNIIS macro. The parameters available are:

```
ABTMODE=ABEND/ERRM/XFER
ABTERRM=NONE/hvname
ABTXFER=NONE/id
ABTDPGM=((lang,name,...))
ABTPRM=(hvname1,...)
ABTPRMG=Y/N
```

In abnormal situations, the first decision to be made is: "What should the user see when the situation occurs?" You have the following options:

1. To ABEND and let the system handle the user, specify:

   ```
   ABTMODE=ABEND
   ```

2. To present an error message on the current screen, specify:

   ```
   ABTMODE=ERRM
   ABTERRM=hvname
   ```

   where **hvname** is the host variable name

3. To transfer to a "standard" screen that "explains" the situation, and the actions that are available, specify:

   ```
   ABTMODE=XFER
   ABTXFER=id
   ```

If options 2 or 3 are chosen then the second decision to be made is "What information should be returned?" CA Telon sets up a standard area (ABT-AREA described next) of information about the problem and passes this to the ABT routine along with other areas that may be involved in the problem. These standard parameters are described next.

Generally, the areas allow the ABT routines to present a standard message to the user. Furthermore, the installation has the option to add additional parameters or substitute a completely different set of parameters. This is done by using SETENV or SETSYS parameter ABTPRM to list the parameters to be passed to the ABT routine.

If ABTPRMG=Y is specified then the ABTPRM list is added to the standard parameter list. If ABTPRMG=N is specified then the ABTPRM list replaces the standard parameter list.

The use of additional parameters or the need for tailoring the messages or the process requires you to modify or replace subroutines that ADMAABT/ADLAABT dynamically invokes. Customers often do this type of customization and that is why the source code for all ABT routines is delivered with the product in pdsqual.source. The routines that customers most commonly modify are:

Environment	COBOL Routine	PL/I Routine
TSO	ADTCABT	ADTPABT
IMS	ADICABT	ADIPABT
CICS	ADCCABT	ADCPABT
BATCH	ADBCABT	ADBPABT

You can use the SETENV or SETSYS parameter ABTDPGM to change the name of the module that ADMAABT/ADLAABT dynamically invokes. To ease installing new releases of CA Telon, the system has been designed so that you should not have to modify ADMAABT/ADLAABT. If you do not modify these modules, then the dynamic modules that have been modified can be called and used as is with new releases.

Interface requirements

CA Telon calls the ADMAABT/ADLAABT routines with one of the following parameter lists based on what you specify in the TLNIIS macro for the SETENV/SETSYS parameters.

- **ABTPRM and ABTPRMG =omitted (Default)** When you do not specify these parameters in the TLNIIS macro, you receive the following parameter list shown next. This is the default setting. The sample ADxxxABT routines delivered with the product are set up to expect this format.

```
ABT-AREA
IO-PCB                  dummy-parm (CICS)
XFER-PCB                dummy-parm (CICS)
SQLCA (SQL call issued) dummy-parm (no SQL)
XFER-AREA               dummy-parm (BATCH)
TP-BUFFER               dummy-parm (BATCH)
TPO-ERRMSG1             dummy-parm (BATCH)
```

- **ABTPRM=(hvname1,...) and ABTPRMG=Y or omitted** Adding these parameters to TLNIIS allows you to specify additional parameters to be passed to ADMAABT/ADLAABT. Using this feature requires changes to the ADMAABT/ADLAABT module by changing the NBRUSRP equate to reflect the number of names specified.

```
ABT-AREA
IO-PCB                  dummy-parm (CICS)
XFER-PCB                dummy-parm (CICS)
SQLCA (SQL call issued) dummy-parm (no SQL)
XFER-AREA               dummy-parm (BATCH)
TP-BUFFER               dummy-parm (BATCH)
TPO-ERRMSG1             dummy-parm (BATCH)
(user parms from SETENV or SETSYS ABTPRM)
```

- **ABTPRM=(hvname1,...) and ABTPRMG=N** Adding these parameters to TLNIIS allows you to replace the standard parameter list with the variables specified in ABTPRM. The ABT-AREA must still be the first parameter passed to ADMAABT/ADLAABT, since it contains the name of the dynamic ABEND routine to invoke. If you use this feature, you need to modify the ADMAABT/ADLAABT module by updating the NBRSTDP equate to be 0.

```
ABT-AREA
IO-PCB                  dummy-parm (CICS)
XFER-PCB                dummy-parm (CICS)
SQLCA (SQL call issued) dummy-parm (no SQL)
```

```
XFER-AREA                dummy-parm (BATCH)
TP-BUFFER                dummy-parm (BATCH)
TPO-ERRMSG1              dummy-parm (BATCH)
(user parms from SETENV or SETSYS ABTPRM)
```

The ABT area contains the following information:

- Error function
- Name of dynamic routine
- Program type
- Program name
- CA Telon ABEND code
- Control indicator
- DBMS-specific information

This area is documented in detail in each of the dynamically-invoked subroutines (ADxxABT), in the SOURCE PDS data set.

Note: If your installation is running an RDBMS, uncomment the references marked '<DB2>' in the following source members and recompile:

```
ADBCABT     ADIPABT
ADBPABT     ADTCABT
ADICABT     ADTPABT
```

CA Telon passes additional environment and/or DBMS-specific information to the ADxxABT routines. They are captured in the ABT-AREA or by the calls to ADMAAB0/ADMAAB1/ADLAAB0/ADLAAB1 (alternate entry points to ADMAABT/ADLAABT).

Parameters saved by the alternate entry points are appended to the parameter list passed to ADMAABT/ADLAABT. These additional parameters do not have to be accepted by the ADxxABT routines.

If you do not want to use them, simply remove them as parameters in the ADxxABT routines. A maximum of 17 additional parameters are possible. The environment or DBMS-specific information passed is:

Environment	DBMS	Parameters
TSO	DL/I	■ Call function code ■ Call PCB ■ Call IO area ■ Call SSAs

Environment	DBMS	Parameters
	DB2	■ SQLCA ■ Call function code ■ Call IO area
IMS/DC	All	■ IO PCB ABEND PCB
	DL/I	■ Call function code ■ Call PCB ■ Call IO area ■ Call SSAs
	Any RDBMS	■ SQLCA ■ Call function code ■ Call IO area
CICS	VSAM	■ Call function ■ Call data set name ■ Call IO area
	DL/I	■ Call function code ■ Call PCB ■ Call IO area ■ Call SSAs
	Any RDBMS	■ SQLCA ■ Call function mode ■ Call IO area
BATCH	VSAM	■ Call function ■ Call data set name ■ Call IO area
	DL/I	■ Call function code ■ Call PCB ■ Call IO area ■ Call SSAs
	Any RDBMS	■ SQLCA ■ Call function code

Environment	DBMS	Parameters
		■ Call IO area

Note: Most of the abnormal termination functionality described above does not apply to stored procedures.

This list is documented in detail in each of the dynamically-invoked subroutines, (ADxAATR) in the SOURCE data set.

Save Parameters example

The next example shows Abnormal Termination 2. This termination saves parameters from a previous I/O.

```
        IF TPI-FUNCTION = '2' OR '5' OR '6'
           MOVE 'TRGEMPL ' TO TRACE-SEGMENT-NAME
*EXEC   DLI GET UNIQUE USING PCB(1)
*        SEGMENT(TRGEMPL)
*           INTO(IOA-TRGEMPL-SEGMENT) SEGLENGTH(00600)
*                         WHERE(TRGEMKEY = XFER-EMPL-ID)
*              FIELDLENGTH(6)
*        KEYFEEDBACK(EMPLOYEE-KEY-FB-AREA)
*        FEEDBACKLEN(016)
*END-EXEC
          MOVE '  #0      DLI     02238    }   M  ' TO DFHEIV0
          MOVE 1 TO DFHEIV11
          MOVE 'TRGEMPL' TO DFHEIV1
          MOVE 00600 TO DFHEIV12
          MOVE 016 TO DFHEIV13
          MOVE ' = ' TO DFHC0030
          MOVE 'TRGEMKEY' TO DFHEIV2
          MOVE 6 TO DFHEIV14
         CALL 'DFHEI1' USING DFHEIV0  DLZDIB DFHEIV11 DFHEIV1
      IOA-TRGEMPL-SEGMENT DFHEIV12 DFHDUMMY EMPLOYEE-KEY-FB-AREA
      DFHEIV13 DFHC0030 DFHEIV2  XFER-EMPL-ID DFHEIV14
         MOVE DIBSTAT TO EMPLOYEE-STATUS-CODE

         MOVE 'GHU' TO XDLI-FUNC
         MOVE EMPLOYEE-STATUS-CODE TO DA-STATUS-DLI
```

```
                                    EMPLOYEE-TRGEMPL-STATUS
         PERFORM U-100-SET-DA-STATUS-DLI
         IF EMPLOYEE-STATUS-CODE NOT = SPACES
               AND EMPLOYEE-TRGEMPL-1 NOT = 'G'
            MOVE 3500    TO ABT-ERROR-ABEND-CODE
            MOVE XDLI-FUNC TO ABT-DA-FUNCTION
            MOVE 'DB  '  TO ABT-DA-FUNC-PCB-TYPE
            MOVE 'XDLI'  TO ABT-ERROR-ACTIVITY
            MOVE 'TRGEMPL '  TO ABT-DA-ACCESS-NAME
            CALL 'ADLAAB0'
            PERFORM Z-980-ABNORMAL-TERM
          ELSE IF EMPLOYEE-STATUS-CODE = SPACES
            MOVE DO-WRITE-LIT TO CONTROL-INDICATOR
            MOVE ERROR-ATTR TO TPO-FUNCTION-ATTR TPO-ID-ATT
            MOVE '*** EMPLOYEE DOES  EXIST ***' TO TPO-ERRMSG1
```

ADLAABT example

The following example shows an Abnormal Termination 2 call to ADLAABT.

```
MOVE 'Y' TO ABT-IN-PROGRESS
        ELSE
*EXEC   CICS ABEND  ABCODE('TABT')  END-EXEC.
            MOVE '        - 02359    ' TO DFHEIV0
            MOVE 'TABT'  TO DFHEIV5
           CALL 'DFHEI1' USING DFHEIV0    DFHEIV5


        MOVE  TRACE-SECTION-NAME  TO  ABT-PROGRAM-FUNCTION
        MOVE  SPACE              TO  ABT-U100-SUB.
        IF ABT-ERROR-SECTION-NAME = 'U-100'
```

```
           MOVE ABT-ERROR-SECTION-SUB TO ABT-U100-SUB
           IF SEC-INDEX GREATER +1
             MOVE SECTION-NAME-TABLE(SEC-INDEX - 1)  TO
                 ABT-PROGRAM-FUNCTION.
        MOVE DA-STATUS TO ABT-DA-GENERIC-STATUS.


        MOVE SPACES TO ABT-ERROR-MESSAGE.
        MOVE ' ' TO ABT NEXT PROGRAM NAME ID.
****************************************************************
*  NOTE:  ADDITIONAL PARAMETER ADDRESSES HAVE BEEN "PASSED"      *
*         TO ADLAABT  BY USE OF ITS ENTRY POINTS ADLAAB0         *
*         AND ADLAAB1                                           *
****************************************************************
        CALL  'ADLAABT'  USING  ABNORMAL-TERMINATION-AREA
                                IO-PCB
                                XFER-PCB
                                ABNORMAL-TERMINATION-AREA
                                SPA-XFER-WORK-AREA
                                TP-BUFFER
                                TPO-ERRMSG1.
        IF ABT-DO-WRITE
           MOVE ABT-ERROR-MESSAGE TO TPO-ERRMSG1
           MOVE DO-WRITE-LIT TO CONTROL-INDICATOR
           SET SEC-INDEX TO 1
           PERFORM N-100-CURSOR-POSITION
TRCPCCEM         9.09.17        JUL 28,2001
           GO TO MAIN-PROCESS-RETURN
        ELSE
```

```
IF ABT-DO-TRANSFER
```

Abnormal Termination Feature 3

Abnormal Termination Feature 3 is the 31-bit reentrant version of Abnormal Termination for CA Telon. The reentrant versions of the interface modules are ADMAATR in the TSO, IMS, MVS Batch environments and ADLAATR in the CICS environment.

Functionally, Abnormal Termination 3 works exactly like Abnormal Termination 2 with a few exceptions, as described next.

Exceptions for IMS and MVS Batch

CA Telon calls an entry point ADMAATX in the interface routine before COBOL GOBACKs and PLI RETURNS. This entry point frees up the parameter capture area used by the entry points ADMAAT0 and ADMAAT1.

ADMAATR works in a similar manner to ADLAATR, but it uses GETMAIN and FREEMAIN macros rather than CICS macros to establish and release reentrant storage. The entry points for ADMAATR are:

Entry Point	Description
ADMAAT0	Captures non-DL/I parameters.
ADMAAT1	Captures the DL/I parameter list.
ADMAATX	Establishes addressability to the parameter list and ABP storage
ADMAATR	Uses the GETMAIN macro to obtain storage below the 16M line. This storage is used as working storage for the ABT interface program. ADMAATR then: 1. Sets up the save area chain and uses a GETMAIN to obtain storage below the line for the ABP area. 2. Determines if you are running under XA. If you are not under XA, ADMAATR passes control to the appropriate Dynamic Program. If you are running under XA, ADMAATR may call ADRALAR (which is the linkage assist

Entry Point	Description
	routine) before giving control to the Dynamic Program. ADRALAR performs a series of tests before passing control to the Dynamic Program. ADRALAR checks to see if: ■ The program is loaded above the line. If it is, ADRALAR issues ABEND U4010 and produces a dump. ■ The parameter list is loaded above the line. If it is, ADRALAR issues ABEND U4011 and produces a dump. Only one of the parameters in the parameter list is loaded above the line. In this case, ADRALAR issues ABEND U4012 and produces a dump

Exceptions for CICS

CA Telon calls entry points ADLAATI and ADLAATX to initialize and free the parameter capture area used by the entry points ADLAAT0, ADLAAT1, and ADLAAT2.

Release 2.1 added entry point ADLAAT2 to capture the DL/I parameter list (including the parameter count parm) after EXEC DLI calls. This differs from Abnormal Termination Feature 2 in that Feature 2 captures the parameters from the last token call to the EXEC DLI interface.

The dynamically-invoked interface routine can now treat error situations from EXEC DLI calls as standard DL/I calls that take into account that the first parameter received is the fullword parameter count field.

An abnormal termination situation arises in a CA Telon application when an unexpected event occurs. Examples of these are the:

- TP environment has not been specified correctly
- DBMS responds with an unforeseen status code
- Next screen to be presented to the user is unavailable

CA Telon provides a standard method of handling these situations. Remember that when an abnormal situation occurs, it is important in an online environment that:

- Any database activity be backed out

- Further processing be prevented

This is accomplished by the user tailoring the ABT (ADxxABT) routine.

CA Telon invokes a routine to do the abnormal termination. The routine can simply ABEND, or it can provide an error message to be sent to the user (or other places) after CA Telon analyzes the problem. The flow of ABT processing that occurs is:

1. An abnormal situation is detected.
   - Specific data is collected into the ABT-AREA
   - The CONTROL-INDICATOR is set to ABNORMAL-TERMINATION-LIT.
   - Control is immediately passed to the MAIN-LINE.
2. The Z-980-ABNORMAL-TERM is performed from the section where the error occurred.
3. Z-980-ABNORMAL-TERM:
   - Checks that an abnormal situation is not currently in progress (if it is, an immediate ABEND is issued)
   - Further initializes the ABT-area
   - Calls the ABT routine (ADMAATR for TSOPGMs, IMSPGMs, BATCHPGMs; ADLAATR for CICSPGMs)
   - If control is returned from the ABT routine, then normal CA Telon flow continues as indicated by the CONTROL-INDICATOR
4. The ABT routine (ADMAATR/ADLAATR) dynamically invokes a user routine to set up any debug information, effect any backout and recovery, and decide on the next action (ABEND, present error message, transfer to another application program). You can customize the name of the routine that the ABT routine invokes. The default routines are delivered by CA in source and load format.

Processing options

You can specify the options available to handle abnormal conditions by means of the SETENV or SETSYS statement in the TLNIIS macro. The parameters available are:

```
ABTMODE=ABEND/ERRM:XFER
ABTERRM=NONE/hvname
ABTXFER=NONE/id
ABTDPGM=((lang,name,...))
ABTPRM=(hvname1,...)
```

```
ABTPRMG=Y/N
```

In abnormal situations, the first decision to be made is "What should the user see when the situation occurs?" You have the following options:

1. To ABEND and let the system handle the user, specify:

   ```
   ABTMODE=ABEND
   ```

2. To present an error message on the current screen, specify:

   ```
   ABTMODE=ERRM
   ABTERRM=hvname
   ```

   where **hvname** is the host variable name

3. To transfer to a "standard" screen that "explains" the situation and the actions that are available, specify:

   ```
   ABTMODE=XFER
   ABTXFER=id
   ```

If options 2 or 3 above are chosen then the second decision to be made is "What information should be returned?" CA Telon sets up a standard area (ABT-AREA described next) of information about the problem and passes this to the ABT routine along with other areas that may be involved in the problem. These standard parameters are described next.

Generally, the areas allow the ABT routines to present standard message to the user. Furthermore, the installation has the option to add additional parameters or substitute a completely different set of parameters. This is done by using SETENV or SETSYS parameter ABTPRM to list the parameters to be passed to the ABT routine.

If ABTPRMG=Y is specified then the ABTPRM list is added to the standard parameter list. If ABTPRMG=N is specified then the ABTPRM list will replace the standard parameter list.

The use of additional parameters or the need for tailoring the messages or the process requires you to modify or replace subroutines that ADMAATR/ADLAATR dynamically invokes. Customers often do this type of customization and that is why the source code for all ABT routines is delivered with the product. The routines that customers modify most commonly are listed in the next table.

Environment	COBOL Routine	PL/I Routine
TSO	ADTCABT	ADTPABT
IMS	ADICABT	ADIPABT
CICS	ADCCABT	ADCPABT
BATCH	ADBCABT	ADBPABT

Note: Most of the abnormal termination functionality described abovedoes not apply to stored procedures.

You can use the SETENV or SETSYS parameter ABTDPGM to change the name of the module that ADMAATR/ADLAATR dynamically invokes. To ease installing new releases of CA Telon, the system has been designed so that you should not have to modify ADMAATR/ADLAATR. If you do not modify these modules, then the dynamic modules that have been modified can be called and used as is with new releases.

CA Telon calls the ADMAATR/ADLAATR routines with one of the following parameter lists based on what you specify in the TLNIIS macro for the SETENV/SETSYS parameters.

- **ABTPRM and ABTPRMG omitted (Default)** When you do not specify these parameters in the TLNIIS macro, you receive the following parameter list. This is the default setting. The sample ADxxxABT routines delivered with the product are set up to expect this format.

```
ABT-AREA
IO-PCB                  dummy-parm (CICS)
XFER-PCB                dummy-parm (CICS)
SQLCA (SQL call issued) dummy-parm (no SQL)
XFER-AREA               dummy-parm (BATCH)
TP-BUFFER               dummy-parm (BATCH)
TPO-ERRMSG1             dummy-parm (BATCH)
```

- **ABTPRM=(hvname1,...) and ABTPRMG=Y or omitted** Adding these parameters to TLNIIS allows you to specify additional parameters to be passed to ADMAABT/ADLAABT. Using this feature requires changes to the ADMAABT/ADLAABT module by changing the NBRUSRP equate to reflect the number of names specified.

```
ABT-AREA
IO-PCB                  dummy-parm (CICS)
XFER-PCB                dummy-parm (CICS)
SQLCA (SQL call issued) dummy-parm (no SQL)
XFER-AREA               dummy-parm (BATCH)
TP-BUFFER               dummy-parm (BATCH)
TPO-ERRMSG1             dummy-parm (BATCH)
(user parms from SETENV or SETSYS ABTPRM)
```

- **ABTPRM=(hvname1,...) and ABTPRMG=N** Adding these parameters to TLNIIS allows you to replace the standard parameter list with the variables specified in ABTPRM. The ABT-AREA must still be the first parameter passed to ADMAABT/ADLAABT, since it contains the name of the dynamic ABEND routine to invoke. If you use this feature, you need to modify the ADMAABT/ADLAABT module by updating the NBRSTDP equate to be 0.

```
ABT-AREA
IO-PCB                    dummy-parm (CICS)
XFER-PCB                  dummy-parm (CICS)
SQLCA (SQL call issued)   dummy-parm (no SQL)
XFER-AREA                 dummy-parm (BATCH)
TP-BUFFER                 dummy-parm (BATCH)
TPO-ERRMSG1               dummy-parm (BATCH)
(user parms from SETENV or SETSYS ABTPRM)
```

The ABT area contains the following information:

- Error function
- Name of dynamic routine
- Program type
- Program name
- CA Telon ABEND code
- Control indicator
- DBMS-specific information

This area is documented in detail in each of the dynamically-invoked subroutines (ADxxABT), in the SOURCE data set.

Note: If your installation is running DB2, uncomment the references marked '<DB2>' in the following source members and recompile:

```
ADBCABT     ADIPABT
ADBPABT     ADTCABT
ADICABT     ADTPABT
```

CA Telon passes additional environment and/or DBMS-specific information to the ADxxATR routines. They are captured in the ABT-AREA or by the calls to ADMAAB0/ADMAAB1/ADLAAB0/ADLAAB1 (alternate entry points to ADMAATR/ADLAATR).

Parameters saved by the alternate entry points are appended to the parameter list passed to ADMAATR/ADLAATR. These additional parameters do not have to be accepted by the ADxxATR routines.

If you do not want to use them, simply remove them as parameters in the ADxxATR routines. A maximum of 17 additional parameters are possible. The environment and/or DBMS-specific information passed is:

Environment	DBMS	Parameters
TSO	DL/I	■ Call function code

Environment	DBMS	Parameters
		■ Call PCB ■ Call IO area Call SSAs
	DB2	■ SQLCA ■ Call function code Call IO area
IMS/DC	All	■ IO PCB ABEND PCB
	DL/I	■ Call function code ■ Call PCB ■ Call IO area Call SSAs
	Any RDBMS	■ SQLCA ■ Call function code Call IO area
CICS	VSAM	■ Call function ■ Call data set name Call IO area
	DL/I	■ Call function code ■ Call PCB ■ Call IO area Call SSAs
	Any RDBMS	■ SQLCA ■ Call function mode Call IO area
BATCH	VSAM	■ Call function ■ Call data set name Call IO area
	DL/I	■ Call function code ■ Call PCB ■ Call IO area

Environment	DBMS	Parameters
		■ Call SSAs
	Any RDBMS	■ SQLCA ■ Call function code ■ Call IO area

Note: Most of the abnormal termination functionality described above does not apply to stored procedures.

This list is documented in detail in each of the dynamically-invoked subroutines, (ADxAATR) in the SOURCE data set.

ADLAAT2 Abnormal Termination 3 Example

The next example shows an ADLAAT2 call to capture EXEC DLI parameters in Abnormal Termination 3.

```
        IF  TPI-FUNCTION = '2' OR '5' OR '6'
            MOVE 'TRGEMPL ' TO TRACE-SEGMENT-NAME
*EXEC   DLI GET UNIQUE USING PCB(1)
*        SEGMENT(TRGEMPL)
*           INTO(IOA-TRGEMPL-SEGMENT)  SEGLENGTH(00600)
*                       WHERE(TRGEMKEY = XFER-EMPL-ID)
*              FIELDLENGTH(6)
*        KEYFEEDBACK(EMPLOYEE-KEY-FB-AREA)
*        FEEDBACKLEN(016)
*END-EXEC
            MOVE '  #0    DLI     02241    }  M  ' TO  DFHEIV0
            MOVE 1 TO DFHEIV11
            MOVE 'TRGEMPL' TO DFHEIV1
            MOVE 00600 TO DFHEIV12
            MOVE 016 TO DFHEIV13
            MOVE ' = ' TO DFHC0030
            MOVE 'TRGEMKEY' TO DFHEIV2
            MOVE 6 TO DFHEIV14
           CALL 'DFHEI1' USING DFHEIV0  DLZDIB  DFHEIV11  DFHEIV1
        IOA-TRGEMPL-SEGMENT DFHEIV12  DFHDUMMY  EMPLOYEE-KEY-FB-AREA
        DFHEIV13 DFHC0030  DFHEIV2   XFER-EMPL-ID  DFHEIV14
           MOVE DIBSTAT  TO  EMPLOYEE-STATUS-CODE

           MOVE 'GHU'  TO  XDLI-FUNC
           MOVE EMPLOYEE-STATUS-CODE  TO  DA-STATUS-DLI
                                          EMPLOYEE-TRGEMPL-STATUS
           PERFORM U-100-SET-DA-STATUS-DLI
           IF EMPLOYEE-STATUS-CODE NOT = SPACES
                 AND EMPLOYEE-TRGEMPL-1 NOT = 'G'
```

```
            MOVE 3500        TO ABT-ERROR-ABEND-CODE
            MOVE XDLI-FUNC   TO ABT-DA-FUNCTION
            MOVE 'DB  '      TO ABT-DA-FUNC-PCB-TYPE
            MOVE 'XDLI'      TO ABT-ERROR-ACTIVITY
            MOVE 'TRGEMPL '  TO ABT-DA-ACCESS-NAME
            CALL 'ADLAAT2'
            PERFORM Z-980-ABNORMAL-TERM
         ELSE IF EMPLOYEE-STATUS-CODE = SPACES
            MOVE DO-WRITE-LIT TO CONTROL-INDICATOR
            MOVE ERROR-ATTR  TO TPO-FUNCTION-ATTR TPO-ID-ATTR
            MOVE '*** EMPLOYEE DOES    EXIST ***' TO TPO-ERRMSG1
```

ADLAATR example

The next example shows an ADLAATR call to perform ABEND processing.

```
*   NOTE:   ADDITIONAL PARAMETER ADDRESSES HAVE BEEN "PASSED" TO
*
*           ADLAATR BY USE OF ITS ENTRY POINTS ADLAAT0   ADLAAT1
*
*           AND ADLAAT2
*
*****************************************************************
         CALL 'ADLAATR' USING DFHEIBLK
                              DFHCOMMAREA
                              ABNORMAL-TERMINATION-AREA
                              IO-PCB
                              XFER-PCB
                              ABNORMAL-TERMINATION-AREA
                              SPA-XFER-WORK-AREA
                              TP-BUFFER
                              TPO-ERRMSG1.

         IF ABT-DO-WRITE
            MOVE ABT-ERROR-MESSAGE TO TPO-ERRMSG1
            MOVE DO-WRITE-LIT  TO  CONTROL-INDICATOR
TRCPCCEM           12.27.47        JUL 28,2005
                                        SET SEC-INDEX TO 1
                                        PERFORM N-100-CURSOR-POSITION
                                        GO TO MAIN-PROCESS-RETURN
         ELSE
         IF ABT-DO-TRANSFER
            MOVE ABT-NEXT-PROGRAM-NAME  TO  NEXT-PROGRAM-NAME
            MOVE DO-TRANSFER-LIT  TO  CONTROL-INDICATOR
            SET SEC-INDEX  TO  1
            GO TO MAIN-PROCESS-RETURN
```

```
           ELSE
           IF ABT-CONTINUE-PROCESS
              MOVE 'N' TO ABT-IN-PROGRESS
           ELSE
*EXEC CICS ABEND ABCODE('TABT') END-EXEC.
              MOVE '     - 02406 ' TO  DFHEIV0
              MOVE 'TABT' TO DFHEIV5
             CALL 'DFHEI1'  USING  DFHEIV0  DFHEIV5
 Z-980-ABNORMAL-TERM-RETURN.
      EXIT.
TRCPCCEM       12,27.47            JUL 28,2008
 Z-990-PROGRAM-ERROR SECTION.
*************************************************************************
```

Chapter 3: Manage the CA Telon Environment

Suggestions on different ways to manage your CA Telon environment are provided to assist you in tailoring your installation according to any special needs. This chapter discusses how to:

- Set up and maintain user-defined subroutine data sets
- Maintain TDF VSAM data sets
- Maintain multiple CA Telon VSAM data sets under TSO
- Reorganize, clear, backup, restore, and verify the CA Telon VSAM data sets
- For CICS shops, use the TDF in a CICS/VS Multiple Region Operation environment
- Review the product and project setup checklists for mainframe CA Telon implementation

This section contains the following topics:

User-Defined Subroutines

During the installation of CA Telon, the data set USERSUBR might have been allocated as an additional load library, designed to hold your compiled, link-edited, and custom field-edit subroutines.

If not, you might want to allocate pdsqual.USERSUBR as a load library for your site.

If you choose to store your custom field edits in a different load library, you must change the USERSUBR parameter in the LKED step of all CA Telon generate, compile, and link procs. (See the *Installation* guide for all PROC name variations.) You can change the parameter using one of the following methods:

- Manually change each PROC
- Adjust members $010 and #CUSTCTL in the INSTALL PDS and run #CUSTCTL (also located in INSTALL)
- Use a parameter override in the job stream instead of changing the procs manually

In each of these procedures, the parameter, USERSUBR, references the USERSUBR PDS.

TDF VSAM Data Set Maintenance

The CA Telon Design Facility (TDF) is made up of nine VSAM data sets:

- Four permanent VSAM data sets for application development information:
  - vsamqual.TNTDD holding:
    - Session profile information
    - Installation profile information
    - Data administration information - DBD and PSB definitions
  - vsamqual.TNTDF holding program, and panel (or report) information maintained by TDF options 3, 4, 5 and 6, excluding custom code
  - vsamqual.TNTCCL holding custom code, including presentation store information maintained by TDF Option 6
  - vsamqual.TNTDX holding SQL Table information
- Three VSAM data sets holding data currently undergoing change. These are temporary, work-in-progress files:
  - vsamqual.TNTDDW holding the work-in-progress version of TNTDD and TNTCCL
  - vsamqual.TNTDFW holding the work-in-progress version of TNTDF
  - vsamqual.TNTDXW holding the SQL work-in-progress version of TNTDX
- vsamqual.TNHOLD the TDF Hold file to support split session processing
- vsamqual.TNHELP the TDF Help message file

  Note: TDF Data Sets can be accessed across systems and to do this VSAM share options must be (4,4).

Reorganization and Clearing

These data sets are maintained in groups as they are laid out above.

Permanent data sets

The first four VSAM data sets from the list above (TNTDD, TNTDF, TNTDX, and TNTCCL) contain application definition information in TDF format. You should reorganize these data sets nightly to improve TDF performance.

If you fail to reorganize these data sets often enough, "TLDxxx" error messages will be output to the TDF. These messages can occur at any time and indicate that these data sets must be reorganized immediately. These same messages occur when the CA Telon TDF VSAM files run out of space. If you run out of space, you must allocate more space by modifying INSTALL(CREPROD). As delivered this reorganization job has the following space allocations:

- TNTCCL - CYLINDERS(6 1)
- TNTDD - CYLINDERS(3 1)
- TNTDF - CYLINDERS(6 1)
- TNTDX - CYLINDERS(3 1)

To reorganize these data sets:

1. Submit job stream pdsqual.INSTALL(JREORGDL). This deletes any sequential, unloaded format TDF data left over from previous reorganizations. If you fail to do this, the following JREORGPR JOB will end in error "Duplicate Name on Direct Access File" in job step SYSBR14.
2. Submit job stream INSTALL(JREORGPR). This unloads these four VSAM data sets into sequential format, deletes the four VSAM files, defines them, then reloads them from the sequential file it just created. All condition codes being zero indicates a successful completion of the job.

For more information on U901 abends, see the appendix "Mainframe TDF Abends."

Work files

You should clear TNTDDW, TNTDFW, and TNTDXW *every night.* If that is not possible, you must do so at least once a week to assure acceptable performance.

To clear these data sets, submit INSTALL(JREORGWK). This deletes, defines, and reinitializes TNTDDW, TNTDFW and TNTDXW.

Hold file

The TNHOLD VSAM data set has less interaction than the other CA Telon data sets. As a result, you might not need to clear this data set as often as the others. However, CA recommends that you incorporate this data set's reorganization into a standard nightly or weekly job.

To clear the TNHOLD data set, submit INSTALL (JREORGHD). This deletes, defines, and reinitializes TNHOLD.

Help file

The TNHELP data set generally is used for read-only processing. As such, you do not have to do any clearing or reorganization maintenance on it.

See the topic, Maintaining TDF Help Screens, later in this chapter for information about changing TNHELP.

Back Up TDF VSAM Data Sets

You can back up the TDF VSAM data sets using any standard VSAM backup procedures you already have in place. We strongly recommend using your own back-up procedures to back up your CA Telon data sets daily. This ensures optimum recovery capability should an unexpected disaster occur.

If you are not familiar with creating and implementing data set backup procedures, you might want to obtain assistance from your site's system programmer. However, if you do not have such procedures to back up VSAM data sets, CA Telon provides you with job streams, procedures, and control cards to assist you.

Verifying TDF VSAM Data Sets

If you have any question about the integrity of your TDF VSAM data sets, you can run the job stream INSTALL(JVERFY). This job stream verifies a single TDF VSAM data set. JVERFY has the following parameters:

Parameter	Description
KEYLEN=10 / 13 / 18 / 32	Key length of the TDF VSAM file to be verified. Values are: ■ 13 - TNHELP ■ 18 - TNTDD, TNTDDW, and TNTCCL ■ 32 - TNTDX and TNTDXW **Note:** In the event of U901 abends in the TDF, we recommend that you run the JVERFY job to look for bad or missing blocks. For more information, see Recommendations for Handling U901 Abends in the appendix "Abends with TDF on the Mainframe" or see the *Message Reference Guide*. If this is the case, rerun the VERIFY job, specifying a KEYLEN value of: KEYLEN = 'Key length value, DELETE' The DELETE parameter deletes the bad root.
OPTION=0 / 2 / 3 / 8	File option you want JVERFY to process. Values are: ■ 2 - process a TNTDX or TNTDXW file ■ 3 - process a TNHELP file 8 - process a TNTDD or TNTDDW
TDFFILE=vsamqual.filename	Name of the TDF VSAM data set you want to process. You must include the high level VSAM qualifier.
TLNLOAD=lib-name	Name of the CA Telon LOAD library.

Once you have set these parameters, submit JVERFY. The output of the job looks like the following:

```
                    DL/S Verify

Root                Number of blocks          Status


TRADDS.PD                 1                     OK

TRADDS.PI                 1                     OK

TRMENU.SD                 1                     OK



_____________________________________


Total Distinct Roots                596

Total Blocks                        605

Total Roots with Bad Blocks           0

Total Missing Blocks                  0

Total Invalid Block Numbers           0
```

Multiple TDF VSAM Data Sets

Maintaining separate sets of these VSAM data sets for use by different groups at your installation allows you to:

- Isolate application groups by data set so you can use RACF/ACF2 type security
- Maintain unique system defaults, like, setting TNTDF with differing export format or programming language defaults
- Optimize response time because:
  - Each set of files are smaller so retrieval and updating time are improved
  - There are fewer lockouts due to enqueue processing on control intervals
  - The indexes are less fragmented due to lower volume

Considerations

Before making your final decisions on which of these TDF data sets to duplicate, consider the following points:

- TNTDD, TNTDF, TNTCCL, TNTDX - Create one version per application since they contain all permanent data for the application.
- TNTDDW, TNTDFW, TNTDXW - Create one version per application. If necessary, you can create one per group of applications provided you delete, define, and repro on a nightly basis as outlined in this chapter under TDF VSAM Data Set Maintenance.
- TNHOLD - Generally one version of this file is sufficient for all application groups. However, if your programmers frequently use the CA Telon TSO/PDF or split screen holding, you can improve performance by maintaining multiple versions of this file.
- TNHELP - Maintain one version of this file for all application groups. Sharing TNHELP files among different TDFs is not supported because TNHELP is an input-output file that allows the TDF help messages to be customized.

Procedure

You can create multiple versions of the TDF VSAM data sets when you are using the TDF under TSO. TDFs operating in different CICS regions can also refer to different TDF VSAM data sets. To implement a new TDF VSAM data set, complete the following steps:

- Create a new high level qualifier (vsamqual) and copy the TDF VSAM data sets you are duplicating into this new qualifier or customize member CTDFVSAM in your INSTALL PDS to allocate empty files
- Modify the CLISTs in one of the following ways:
  - Create a separate set of INSTALL(CLISTS) with all the CLISTS in it pointing to the appropriate TDF VSAM data sets
  - Modify the existing @TDF CLIST so that it can accept input to control the high level VSAM qualifier of the desired version of the TDF
- For CICS, alter the start-up JCL or FCT data set names to point to the desired TDF VSAM files.

Monitoring

Whether you maintain one or several versions of the TDF VSAM data sets, you must monitor their status regularly. To do this, submit the INSTALL(JULSTCAT) job stream, which executes the IBM AMS LISTCAT utility on TNTDD, TNTDF, TNTDX, and TNTCCL. This utility reports on file disposition. There are three important items to note on both the data and the index portions of these files. They are EXTENT NUMBER, SPLITS-CI, and SPLITS-CA:

- EXTENT NUMBER - Ideally this number should be zero, but it must be set to whatever is practical for your site. As this number rises, the performance of the file decreases. Disk pack fragmentation can be partially responsible for the size of this number. If this number is too high, reorganize the file to allocate a larger data or index portion depending on which portion showed an abnormally high number.
- SPLITS-CI and SPLITS-CA - As these numbers increase, your performance degrades. File reorganization should eliminate this problem.

If you follow the reorganization schedule recommended in this chapter under the TDF VSAM Data Set Maintenance topic, you should not experience these extent, CI, and CA file split file problems.

Maintain TDF Help Screens

The Help messages used by the TDF are stored in vsamqual.TNHELP. You can maintain and change these messages in two ways: online interactively and through a batch job stream. These allow you to modify your TDF Help messages to suit the needs of your particular installation.

Online Help Message Modifications

It is easy to modify the TDF Help messages from within the TDF. You must have the TDF Install password in order to identify yourself to the TDF as having Install authorization. Once you have the password, you can follow these steps to update any help screen.

1. If you are not in the TDF, execute the appropriate CLIST to start it. For CICS shops, you can execute the appropriate CICS transaction.
2. Type INSTALL on the command line of the TDF main menu.
3. When the TDF displays the Install Menu, enter the Install password in the PASSWORD field after entering:

   FUNCTION: **UP**
   ITEM : **IP**

4. Press PF3 to return to the Main Menu. You are now authorized to update Help messages for the remainder of this TDF session.

   See the *Installation* guide for more information about the Install Menu screen.

5. To modify a particular hHelp message, bring up the screen that requests that message.
6. Enter the Help character in the field for a field level Help message and press Enter or press the Help PFKEY (default is PF1) for a screen level Help message.
7. When you are viewing the message you want to change, type **UPDATE** on the Command line at the top of the Help message screen. Press Enter.
8. At this point the message is unprotected so that you can enter your changes over the existing messages. The message key is displayed in the upper left corner. The next example shows you the Help message screen for the FUNCTION field on the TDF Main Menu in this unprotected state with the key in the upper left corner.

```
EDIT ----  F100=1FUNCTIO          MEMBER 001 OF 001    SIZE  000043  COL 01

COMMAND ===>                                           SCROLL ===> CSR

****** ******************************** TOP OF DATA ********************

000001 TITLE=FUNCTIONS AVAILABLE FOR TELON DESIGN FACILITY

000002 SHORT=

000003 DESCR=FUNCTIONS AVAILABLE FOR TELON DESIGN FACILITY

000004  1 -- USER PROFILE MAINTENANCE allows the user to set definition defaults
,
```

```
000005       PFKEY usage during design, and session controls.  You can directly
000006       access definition defaults by entering 1D, session controls by
000007       entering 1S, and PFKEYs by entering 1P.
000008
000009  2 -- DATA ADMINISTRATION allows the user to CREATE, UPDATE, PURGE,
000010       LIST, and SHOW data entities, including File Groups, PSB's, DBDs,
000011       SQL Tables and Joins, VSAM Files, Sequential Files, CICS Queues,
000012       and CICS Journals.
000013
000014  3 -- PANEL SPECIFICATION allows the user to CREATE, UPDATE, PURGE,
000015       LIST, and SHOW - IMAGES, PANELS, FIELDS, CONSISTENCY EDITS, and
000016       SEGLOOP data.


000018  4 -- ONLINE PROGRAM DEFINITION allows the user to CREATE, UPDATE, PURGE,
000019       PURGE, LIST, and SHOW the ITEMs requested by the user (SCREEN ,
000020       DRIVER, REPORT, NONTERMINAL, ENVIRONMENT, DATA GROUP, or CUSTOM
000021       CODE) under a specified HEADER and ID.  (NOTE: 4N and 4S
000022       take you to the ONLINE PROGRAM DEFINITION menu.)
000023
000024
000025  5 -- BATCH PROGRAM DEFINITION allows the user to CREATE, UPDATE, PURGE,
000026       and SHOW the ITEM's requested by the user (BATCH, PANEL IMAGE,
000027       PANEL DEFINITION, ENVIRONMENT, DATA GROUP, CUSTOM CODE, and
000028       under specified HEADER and ID.
```

Note: Under ONLINE PROGRAM DEFINITION, LIST, PURGE, and SHOW are not applicable to USER-IO.

Enter your changes, then press PF3 to save your message. The vsamqual.TNHELP is updated by the TDF.

Note: Seven pages (149 lines) is the maximum CA Telon allows for each HELP message.

9. The TDF displays the message USER UPDATED to indicate that this particular message has been changed. To protect your unique messages, the batch update described next does not write over a help message tagged as USER UPDATED.
10. If you have other messages to update, repeat Steps 5 through 10 until all have been updated.

Batch Help Message Update

When you have several Help screens to update, you can use the batch job stream INSTALL(JUHLOAD) to modify vsamqual.TNHELP. You can also use this job when you have modified your Help messages. We issue updates to TNHELP for new releases. The batch job has built-in functions to prevent overwriting USER UPDATED messages.

As delivered, this job uses the contents of pdsqual.HELPUPDT to update vsamqual.TNHELP. Edit messages in pdsqual.HELPUPDT and apply them by running this job.

Batch update record format

The input file containing the actual Help message update records is by default pdsqual.HELPUPDT. It is identified in the job with the DD name TNHLPIN.

There are two types of records in the input file: key and text. Both are fixed-length, 80 bytes long.

- The **key record** is used to identify the help message being created or updated. It is broken down as follows:

Columns	Description
1 - 8	Must be the characters HELPMSG=
9 - 21	Actual key of the Help message to be updated with the following records. It is the key that appears in the upper left corner of the online update screen
22 - 80	Description of the message.

- The **text record** contains the help message text to be placed in the help message identified by the key. You can only use columns 1 through 79 because an attribute byte is added to column one of each text line when the message is displayed by the TDF.

Batch operation

To update the files by using the batch job stream, submit JUHLOAD and check the messages printed in the SYSOUT data set. There are three possible messages:

- CA UPDATED HELP MSG ==> P100 SCREEN1

  Indicates that the key matched an existing key and the Help message was not flagged as USER UPDATED and TNPCHLOD updated TNHELP.

- CLIENT UPDATED HELP MSG ==> F100NAFUNCTIO -REPLACE NOT ATTEMPTED FOR THIS MSG

  Indicates that the key matched an existing key and the Help message was flagged as USER UPDATED. TNPCHLOD did not update TNHELP. You must analyze this new message against your custom message and update your message online if you want the new version.

- CA ADDED HELP MSG ==> KD10 SCREEN1

  Indicates the key did not match any record already in TNHELP. In this case, the JUHLOAD batch job adds the message as a new Help screen.

Help screens for new product releases

When we release a new CA Telon product release, the help screens for TNHELP are delivered with both an (vsamqual.VSAMINIT(TNHELP)), unloaded help file that you can IDCAMS repro into your existing TNHELP file and as a HELPUPDT file.

If you are an existing customer but have never updated your Help messages, you can use the repro version and replace the entire TNHELP file with the contents from VSAMQUAL.VSAMINIT(TNHELP) member. On the other hand, if you do change your Help messages, use the HELPUPDT file along with JUHLOAD to guarantee that you do not overlay custom messages you may have created. Any USER UPDATED messages are not changed. This allows you to selectively overwrite your own Help messages.

TDF and Multiple Region Operation

For CICS shops only

CICS/VS Multiple Region Operation (MRO) allows you to share resources and terminals among CICS/VS regions located in the same processor.

MRO supports function shipping so that your applications can access resources owned by other regions. These resources can be:

- Files or DL/I databases
- Temporary storage or a transient data queue
- Another transaction through a start request

MRO also supports transaction routing, also known as terminal sharing. This allows a terminal owned by one region to enter a transaction to be routed by a CICS program to another CICS region for execution.

Product and Project Set-Up Checklist

A checklist is provided in this section of what you should verify before using CA Telon to develop a project, and the types of data sets you would set up for a typical project. See the *Installation* guide for a detailed checklist, including many optional implementation steps, for installing the CA Telon product.

Checklist

1. Allocate project-specific data sets using the training system data sets as a guide for space and DCB Information. Use the following data sets as an example of what you will create for a typical project.
   - **SOURCE**— Used to store CA Telon source code for your project. (Do not confuse this with the source library created during the product installation.) CA Telon source is created by a CA Telon export. CA Telon source is used as input to the CA Telon generator.
   - **COPYLIB**— Used to store copybook definitions defined externally to CA Telon and which will be used in your CA Telon programs.
   - **DBDLIB**— Used to store DBD source code in an IMS/DB environment. (You can use existing DBDLIBs here.)
   - **PSBLIB**— Used to store user-defined or CA Telon-generated PSB source code.
   - **PROCPDS**— Where CA Telon JCL and PROCs reside. Created in the installation process and is documented in the *Installation*.
   - **LOADLIB**— Used to store link-edited application modules to be executed. This would include COBOL/PL/I application programs, DBD's and PSBs.
   - **TESTMAC**— Used to store CA Telon macros which have been customized in keeping with in-house or project-specific criteria.
   - **ACBLIB**— Used in an IMS/DB environment when executing under CICS or IMS, or BTS as a DB2 application.
   - **DCLLIB**— Library containing DCLGEN members to describe each DB2 table layout (DB2 option only).
2. Verify that #CUSTJCL was run against #CUSTCTL to create your site-customized JCLLIB. You can update the appropriate pdsqual.INSTALL members and rerun #CUSTJCL as needed to include new project-specific libraries. CA recommends that you always make a backup copy of the pdsqual.INSTALL data set before running #CUSTJCL.
3. Verify that you have allocated and initialized the appropriate TDF VSAM files.
4. Verify that you have implemented the appropriate security for these files.
5. If your shop uses DB2 and is licensed for the DB2 option, verify the installation of the "DB2I" module. Create views of the DB2 catalog which apply to your project only.
6. Apply the appropriate CICS modifications.
7. Define the following copybooks in COPYLIB while maintaining generic naming conventions to meet in-house standards. These copybooks can be customized by changing the PGMNAMES macro. See the Copy PGMNAMES from PGMNAMEd, Customize Naming Conventions (Optional) and Setting Up Names sections in this chapter for information about modifying PGMNAMES.

- TRANSFER Work Area
- hhWKAREA
- hhUPDTA
- hhPFKNNN (if you are ready at this point)
- Segment/Record/DCLGEN layouts

8. Copy and edit the appropriate CA Telon macros from MACLIB to TESTMAC to conform to in-house standards. Typically, the only macros customized should be TLNIIS, PGMNAMES, and USREDITS.
9. Prepare TDF Data Administration:
   - Import DBDs and PSBs
   - Define VSAM and Sequential File Information
   - Import SQL table definitions
   - Apply necessary overrides for your project on above items
   - Create additional DLIDSCs for DL/I and CA Telon rows for SQL
10. Determine and schedule the appropriate nightly TDF backup/reorganization processing for system recovery and performance during new development and later during production implementation.
11. Plan your development and production cutover processes and coordinate progress with all appropriate personnel.

Chapter 4: Implementing CA Telon Online

This chapter covers items concerning the operation of your CA Telon-generated programs in an IMS/DC environment. The first half of this chapter discusses structure options and WORKSPA processing. The remainder of the chapter explains conversational processing and non-conversational processing.

This section contains the following topics:

IMS/DC Environment

After review, or maybe as a part of the review, decisions about the type of IMS/DC environment (IMS/DC characteristics of the application) to be generated are made. Some of the key decisions are:

- Conversational versus non-conversational processing
- Non-conversational processing without using the WORKSPA database
- Dynamic versus static structure
- Methods of passing control from program to program
- Transaction code specification
- Hold database characteristics

The environmental characteristics above are covered in more detail in this chapter. Once these decisions are made, use the Update TSO/IMS Screen Environment screen to define them to CA Telon and then submit the job to generate and compile those components. The Hold database is described in the *Programming Concepts* guide.

Generate an IMS/DC System

To generate the IMS/DC program, MFS control blocks, or PSB, you must define the IMS/DC environment, and each item generated (IMS/DC program, MFS, or PSB) must be requested when the screen definition is exported (using the Utilities Menu, or in JCL).

Note: The Generator produces native COBOL and PL/I source code so, the generated program must still be compiled and link edited. CA Telon generates the MFS and PSB statements as members of a library, but they must still be processed by the normal IMS utility functions.

You can specify parameters on the generation JCL to control where generated PSB and MFS members are moved. These parameters are documented within the JCL procedure and are not covered in this chapter.

Conversation Modes

All CA Telon applications are generally defined as "pseudo-conversational." The only exception to this rule, is covered later in "Non-conversational processing without a WORKSPA database." Pseudo-conversational means that information is passed from screen to screen and must be saved by CA Telon applications while the application user is "conversing" with the application. The information to be saved consists of:

- CA Telon control information
- Transfer Work Area data
- Screen Image data

The technical mechanisms used to save the above data are:

- IMS/DC Scratch Pad Area (SPA)
- Special database (WORKSPA), or
- Combination of a SPA and WORKSPA
- Special non-conversational processing without a WORKSPA database techniques discussed later in this chapter

Potential Errors that Occur in IMS/DC

Most errors encountered in the IMS/DC environment are related to coordinating the "conversational" parameters in the IMS/DC GEN to the "conversational" parameters used in CA Telon. The following list of problems can sometimes occur with the IMS/DC programs.

- If the SPA/WORKSPA size is larger than that of the Transfer Work Area definition, code can be overlaid in the IMS/DC programs. If overlaying appears to be a problem in an IMS/DC program dump, verify that the size is correct for the Transfer Work Area definition (SPA/WORKSPA requirements and size calculations are discussed in more detail later in this chapter).
- If the SPA/WORKSPA size is smaller than that of the Transfer Work Area definition, some of the Transfer Work Area is not saved across iterations of screens. Verify that the SPA/WORKSPA size defined in the IMS/DC GEN is adequate.
- The WORKSPA database is improperly defined in the DATABAS and SEGMENT statements or in the IMS/DC DBD/PSB control blocks.
- Information that must be passed from the output side of the program to the input side is not defined in the Transfer Work Area.
- Information in working storage that must be initialized on input is not done, so that the screen does not handle multiple users on the same scheduling. This shows up when the Program Limit Count is greater than one.
- Under IMS/DC, sync points occur with each screen iteration. Thus, PCB position may be maintained across the output side of a screen iteration.
- Transfer information required by CA Telon-generated code and by the application must be saved when non-conversational processing without a WORKSPA database is used. A more complete discussion of the techniques available are provided in the Non-Conversational Processing without a WORKSPA Database topic later in this chapter.

Structure Options

In designing and programming an application under CA Telon, you must view the system from a screen perspective. Within this perspective, consider only the logical organization of the system, without regard to the physical organization that is implemented when the system is generated for the IMS/DC environment.

When the system for the IMS/DC environment is finally generated, you must make decisions about that structure. Two major decisions are:

1. How to structure the modules.
2. How to transfer control from screen program to screen program within these modules.

CA Telon provides two structures and three control passing mechanisms, described next.

Dynamic Program Structure

The dynamic program structure packages the system as independent load modules (one per screen) with multiple transactions and PSBs. When a transaction involves the input from one screen and the output to another, control must be passed between two load modules.

The first load module gets control from IMS/DC when the transaction is scheduled. The second load module gets control in one of two ways, depending on how the IMS/DC environment was defined. These considerations are discussed later.

Message Switching

You can request an IMS/DC message switch from the first program to the next. This causes the first program to process the screen input, write to the message queue, check for any other messages in the queue and then terminate. The second program gets scheduled under its own PSB, reads the message queue, processes output to the terminal, checks for any other messages in the queue and also terminates. The advantages and disadvantages to this technique follow.

Advantages:

- More scheduling control and IMS/DC statistics since there is only one transaction per PSB and program
- Fairly small load module sizes
- Simple PSB interfacing as each program always runs under its own PSB (compare with dynamic link shown next)
- Facilitates transfer to non-CA Telon programs since, with message switch, the only requirement for the interface is that the Transfer Work Area and message layout are properly formatted between the two modules

Disadvantages:

- Large numbers of transactions and PSBs must be defined for an application
- Processing overhead results from the extra transaction schedule per terminal message

Message switch implementation

Since you can combine the message switch option with dynamic link when the environment for a screen definition is specified, you not only request that the dynamic program structure be used (LINKOPT value D on Update TSO/IMS screen environment screen) but also which screen IDs are processed through a message switch.

Therefore, for a screen definition, the environment defines which other screen IDs must be passed control through a message switch. All screen IDs for which a given screen is to pass control must be accounted for either in message switch or dynamic link, described next. When specifying message switch, use one of the following parameters.

- MSGPGM - Use this field to specify the ID of the screen to receive control by means of a message switch. The transaction codes for the IDs listed here must conform to your installation naming standard. That is, the transaction code generated cannot be overridden. If the name is to be overridden, the next option must be used.

- MSGTRAN - Similar to MSGPGM except this variation allows for transaction codes different from the generated standard. In this case, for each screen ID you must enter a pair of values: a screen ID and the corresponding transaction code for that ID.
- MSGTBL - Similar to MSGTRAN except it allows the pairs of variables to be defined in a table. The table must be made up of pairs of values, and its name defined in this parameter. The table must be defined as custom code for this screen definition or as COPY code in a library.

  You request it to be copied into this program by specifying the copy name in the WKAREA field of the 5.0 Create/Update screen definition screen. For large systems implementing message switching, this technique is recommended over MSGTRAN for maintainability. Sample entries for COBOL and PL/I follow.

  For COBOL:

```
10 FILLER         PIC X(n)  VALUE 'pgmid'.
10 FILLER         PIC X(8)  VALUE 'IMStrancd'.

10 PGM_ID_1       CHAR(n)  INIT ('pgmid'),
10 TRANS_1        CHAR(8)  INIT ('IMStrancd'),
```

  Where *n* is the length of each Screen ID, *pgmid* is the Screen ID to be switched to, and *IMStrancd* is the associated IMS transaction code.
- MSGPGM ANY - If you specify ANY in the MSGPGM field, the generated code does a message switch to NEXT-PROGRAM-NAME when the NEXT-PROGRAM-NAME-ID is not detected in the search of the LINKPGM, MSGTRAN or MSGTBL entries. It is a simple way to message switch to any ID, but requires that you use the default transaction code structure. It is mutually exclusive with LINKPGM ANY.

Dynamic Link

You can also request what CA Telon calls a dynamic link to a screen ID. Do not confuse this with COBOL dynamic link, which is quite different. In CA Telon dynamic link, when the program processing the input from a terminal message determines that control must be passed to another program, it issues an OS load to an alternate entry point in the second program and then branches to it.

When the second program finishes processing the output to the terminal, it returns to the first program, which then checks the message queue for another transaction. The advantages and disadvantages of this technique are shown following.

Advantages

- More scheduling control and IMS/DC statistics since there is only one transaction per PSB and program
- Fairly small load module sizes
- Single IMS transaction schedule per terminal message

Disadvantages

- Since two programs execute off the same PSB, it requires a similar PSB structure for each program.

  Note: The compatibility of PSBstructures is only between the first program and the output part of the second. Any databases accessed on the input part of the second program do not have to be included in the PSB of the first program.
- Two OS loads are issued per terminal message, one by IMS/DC on the schedule and the second by CA Telon.

Dynamic link implementation

Specifying dynamic link transfer is similar to the MSGPGM parameter above in that you must list the screen IDs for which a given program can transfer to by means of a dynamic link. There is only one field in the environment screen, the LINKPGM field. The IDs of all screens that can be passed control by means of a dynamic link are listed in this field.

LINKPGM field

Like the MSGPGM field, the LINKPGM field simply lists the IDs of the screens to gain control by means of a dynamic link. This parameter can be combined with the MSGPGM, MSGTRAN, and MSGTBL fields described above. Specifying a value of ANY in this field causes a dynamic link to any ID not specified in the MSGPGM, MSGTRAN, or MSGTBL fields.

Transaction code initiation

If the conversation is initiated by entering the IMS transaction code, you simply specify the transaction code for each screen definition (using the TRANCDE field on the Update TSO/IMS Screen Environment screen.) The initial transaction code starts execution of the correct program and from that point on the CA Telon-generated program sets the transaction code in the SPA for the next iteration from the TRANCDE value. If the TRANCDE field is left blank, your installation default transaction code is used.

/FORMAT initiation

If the conversation is initiated by entering a /FORMAT command, you specify the transaction code (TRANCDE field) for each screen definition, as for the case above. You can also specify for the screen(s) which initiate the conversation that /FORMAT can be used (TRANMFS is "Y" on the Update TSO/IMS Screen Environment screen). CA Telon automatically adjusts the input buffer so that the program can start the conversation or be used in the middle of the conversation.

Static Program Structure

The static program structure packages the system as either one or a few large load modules, where each screen program is really a subroutine link edited to a driver module; or a controlling driver load module, dynamically loading screen programs as necessary.

In either case, an application driver is created which contains all I/O areas and accesses to the message queues. The screen programs are generated without either I/O areas or message queue access and run under the control of the driver. Considerations for this option are discussed next.

Static CALL Statements

For passing control by means of a CALL statement, the key concept is that the application ends up as one load module (or a few load modules), made up of a driver, the screen programs as hard linked subroutines, and any other subroutines called (such as field edits). When the transaction is scheduled, the driver determines what screen program gets control and simply branches to that routine.

The screen program returns control back to the driver when processing is complete. The driver then determines whether the message is written back to the terminal or if another screen program must be called. If the driver load module is preloaded, no program load is necessary on a program schedule. The advantages and disadvantages of this technique are shown following.

Advantages

- One transaction and PSB per application, simplifying the IMS/DC definition.
- Best performance, if load module is preloaded. The single PSB minimizes PSB pool activity and the single transaction code maximizes the number of messages processed for a single transaction schedule.
- Minimizes memory requirements when preload is used.
- A custom driver can assist in interfacing non-CA Telon programs with CA Telon programs.

Disadvantages

- Very large load modules are created
- Large module load times if application is not preloaded
- No individual IMS transaction statistics or scheduling control
- A program change requires a relink of the load module
- The single PSB for the application does not allow individual PSB control per screen

CALL Statement Implementation

You implement the Static Program Structure using a CALL statement by first requesting the Static option for each screen program and then defining a driver using the LINKPGM field. These two steps are defined next.

Step 1. Screen program compilation

Compile and link each screen program, specifying a LINKOPT value of "S", along with the correct CONVERS characteristic (IMS/DC conversational or not). If you want to override the IMS transaction code, you also need to define the TRANCDE parameter, explained under "Transaction Code Specification" later in this chapter. The OS Linkage Editor options must include NCAL to ensure that no programs called are included in the created load module (this is the common OS practice when compiling any subroutine).

Since each screen program is a subroutine using the PCB list passed from the driver, the PCB structure of the generated program must match that passed by the driver, which is the same as the order of PCBs in the PSB. This can be done in two ways:

1. The PCB list can be generated correctly in the screen program by including the DATABAS statements in the same order for each screen definition as for the driver. This is most easily accomplished when defining a Data Group for a screen definition by requesting a PSB to define the initial structure or by requesting a BASE to be used from another screen definition.
2. You may define and use an external definition of the PSB structure. For this case, the hhPCBs and hhPROC members are used to define the structure of the PSB (discussed later in this chapter). If the structure changes, those two members are modified and the programs are regenerated. When generating the IMS/DC program, you request this option by specifying the GENPCBS field on the Update TSO/IMS Screen Environment screen.

Step 2. Driver compilation

Create a driver definition for the application. This definition specifies the characteristics of the driver module, the structure of data accessed (data group) and the screen programs to be called. Creation of a driver is requested using the TDF Program Specification option (same as for creation of a screen definition). The driver is created for an application header and must have a unique ID. In response to a request to create a driver, CA Telon returns the IMS/DC driver definition screen so that you can specify the driver characteristics.

After the initial driver characteristics are defined, you request creation of a data group, the same as for a screen definition. The only DATABAS and SEGMENT statements that must be completed are for WORKSPA database use. If you want a PSB generated from the driver definition, you must also specify PROCOPT characteristics (using the Create/Update PSB,File Group screen).

The last driver definition step is to specify the environment characteristics for the generated driver program. You can use the TDF HELP facility for a detailed explanation of each field on the environment screen. To use the CALL statement interface, the IDs of all screen definition programs to be passed control by means of a CALL statement are listed in the LINKPGM field. If it is necessary to message switch to programs in other drivers for this application, the MSGPGM, MSGTRAN, and MSGTBL fields can be used.

Static Dynamic Link

For passing control from the driver to the individual screen programs by means of a dynamic link, the key concept is that the application ends up as one driver load module, which is usually preloaded, and several individual screen load modules.

On a transaction schedule, the driver gets control and determines which screen program is to process the message. The correct load module for that program is then loaded and control passed to it for input processing. When that program terminates, it passes control back to the driver, which determines whether to load another program or if the response is to be sent back to the terminal.

When the response is sent back to the terminal, the driver issues a read to the message queue for another transaction. The advantages and disadvantages of this technique are shown following.

Advantages

- One transaction and PSB per application, simplifying the IMS/DC definition.
- Good performance, though not quite as good as Static with a CALL statement as described above. Its characteristics are much the same, except it trades off the page faults that result from a single preloaded module against the extra OS loads for the Screen load modules.
- Can be mixed with CALL statement structure.
- Custom Driver can assist in interfacing non-CA Telon programs with CA Telon programs.

Disadvantages

- Extra OS loads as compared to Static CALL statement structure
- No individual transaction statistics or scheduling control
- Single PSB for the application does not allow individual PSB control per screen

Static Dynamic Link Implementation

To implement a Static structure using a dynamic link to each screen program, first request the Static option for each screen program and then define a driver, similar for the CALL statement option above. The following two differences occur with this option.

Step 1. Screen program compilation

When each screen program is generated and compiled, the OS linkage editor options must not include NCAL as for the first case above. This is because each screen program is an independent executing load module and must have all subroutines link edited as a part of it.

Step 2. Driver compilation

The driver definition is the same as for the CALL statement option above, except that the screen IDs are not defined through the LINKPGM parameter. Instead, you must specify 'Y' in the LINKDYN field on the Update IMS/DC driver environment screen.

Transaction code initiation

When using the static program structure and initiating the conversation by entering the IMS/DC transaction code, you should specify the TRANCDE field on all screen definitions. This is not only a good documentation practice, but can prevent errors in online execution (if the TRANCDE length does not match the default generator TRANCDE length).

In this case, the same transaction code (specified for the static screen definitions) is also defined for the driver and remains the same from iteration to iteration. If the driver is to message switch to another driver, it modifies the SPA accordingly. Thus, you specify the TRANCDE field for the driver.

/FORMAT initiation

When the conversation is initiated by entering a /FORMAT command, the TRANCDE field should be specified on all screen definitions, the same as for the case above. For the screen(s) which initiate the conversation, you must also specify that /FORMAT can be used (TRANMFS field is "Y" on the Update TSO/IMS Screen Environment screen). As a result, CA Telon puts the screen/driver's transaction code in the MID for that screen and makes the proper input buffer adjustments. You can also specify the same transaction code for the driver as for the case above.

Dynamic Program Structure

The dynamic program structure allows an application to be generated as a load module for each screen. For each load module, there is a unique transaction code and PSB. This might be considered the traditional IMS/DC architecture with an application being composed of many transaction codes, PSBs, and programs.

For this structure, you must decide how to pass control from program to program for a transaction execution. This issue arises because a terminal message, which is input from one screen and output to another, involves the execution of two programs (load modules). The question then is how to pass control between those two modules. CA Telon provides two options for this dynamic program structure: message switching and dynamic link.

Static Program Structure

The static program structure allows an application to be generated with a driver. For this structure, CA Telon generates one or more driver modules (usually one) to control the individual screen programs. The screen programs are actually subroutines under the driver and do not contain I/O areas or accesses to the message queue.

Instead, the driver accesses the message queue, SPA and WORKSPA as necessary and passes those areas, including a work area used for I/O processing and the PCB list, to the screen programs. The screen programs do all logical screen processing, including edits and database I/O, and pass control back to the driver when they are finished.

The driver determines if another screen program is to be executed to handle output for the terminal message and, if so, gives that program control. If the screen program just executed has formatted the response back to the terminal, the driver writes the message and then checks to see if another transaction is queued for processing before terminating.

When the IMS/DC system is to be generated, you have two tasks:

1. Generate the individual screen programs
2. Generate the driver program.

The individual screen programs are very easy for this option as the only environment characteristics specified are the conversational/non-conversational characteristics and the program is generated Static.

The only other considerations are the linkage editor options described next. There are several considerations when defining a driver. These are described later in this chapter.

When generating an application, you can use two techniques for passing control:

1. Use a CALL statement, causing the OS Linkage Editor to link the screen program in the same load module as the driver. This passes control through a branch instruction without a program load.
2. Use a dynamic link, causing the driver to issue an OS load at execution time to the screen program and then pass control through a branch instruction.

Considerations for the use of these two options follow.

WORKSPA Processing

WORKSPA definitions apply only to IMS/DC and are ignored in TSO programs.

The WORKSPA database serves one of the following functions in CA Telon applications:

- If the maximum IMS/DC SPA size in an IMS/DC installation is smaller than the transfer requirements for a newly developed application, the WORKSPA database can be used to lengthen the size of the transfer area.
- In non-conversational applications, the WORKSPA database replaces the IMS/DC SPA used in conversational applications.

Note: For TSO programs, the transfer area is maintained by the test system and WORKSPA processing is omitted.

In the IMS/DC environment with dynamic program structure, the WORKSPA reads and replaces are contained in the screen programs. In the IMS/DC environment with static program structure, the reads and replaces are contained in the driver program.

Database Concepts

The WORKSPA database should be a simple keyed HDAM database of one or more hierarchical levels. The most common key used for this database is the IMS/DC logical terminal name passed to application programs in the I/O PCB (IOPCB-LTERM label in a CA Telon-generated program). WORKSPA databases with multiple hierarchical levels must contain unkeyed no-twin segments at each level under the root.

CA Telon programs retrieve the WORKSPA segments through the use of IMS path calls for as many levels as are defined to the application program. By making the WORKSPA database hierarchical in design, the database can be used by several CA Telon applications, each with different transfer area requirements.

At the start of a CA Telon conversation, CA Telon automatically retrieves or inserts the WORKSPA segments, depending on whether they exist. At the termination of a CA Telon conversation, CA Telon automatically deletes any WORKSPA segments used in the conversation.

User Call

CA Telon normally accesses the WORKSPA automatically. Defining the WORKSPA for this case is defined next. Sometimes, you want to use an existing database for use as a WORKSPA. For this case, CA Telon allows you to add custom code through the WKSPAIO fields on the Update TSO/IMS Screen Environment screen. You must define a WORKSPA database for this case, but its definition is for the existing database. The custom code then does the necessary access for that database.

Creation/Deletion

The automatic I/O generated for the WORKSPA is a get and a replace. If the WORKSPA segments do not exist at the start of a conversation, CA Telon automatically initializes and inserts the WORKSPA segments. Likewise, at the end of the conversation, CA Telon automatically deletes the WORKSPA segments.

Though CA Telon performs initialization of the WORKSPA, it is possible for WORKSPA database segments to be left over from a previous CA Telon conversation. Therefore, you should perform application initialization of the WORKSPA in the first program of each CA Telon conversation.

Defining the WORKSPA

You define the WORKSPA similarly as you define the SEGMENT I/O for any database, except fewer parameters are required. The major steps are:

- Specify the segments to be used by changing the DUMMY definitions to WORKSPA. It can simplify the listing to delete the DUMMY segments remaining.
- Specify the key to be used in accessing the WORKSPA in the SEGKEY field. Usually the value is IOPCB-LTERM, to request using the LTERM value. If this value is left blank, IOPCB-LTERM is assumed.

Since defining the WORKSPA is required for WORKSPA processing when the non-conversational and dynamic program structure options are used, you can simplify the process if you create a base screen definition with the WORKSPA already defined. Then you need not specify the WORKSPA for each screen definition.

SPA/WORKSPA Relationship

In applications using both the IMS SPA and a WORKSPA database for saving the transfer area, the WORKSPA segments are used to save data starting immediately after the end of the IMS/DC SPA area. In order to make the WORKSPA KEY transparent to the transfer area definition, the WORKSPA KEY overlaps the IMS/DC SPA area.

Any transfer information stored in the overlap area is saved prior to the WORKSPA read and restored after the read for application use. A sample layout of the SPA/WORKSPA combination with a SPA size of 1000 and a WORKSPA size of 1000 follows. For COBOL:

```
01  SPA-AREA             PIC X(1992).
01  TELON-SPA-WORKSPA    REDEFINES SPA-AREA.
    02 FILLER            PIC X(992).
    02 WORKSPA-KEY       PIC X(8).
01  TELON-SPA-AREA       REDEFINES SPA-AREA.
    02 SPA-HEADER        PIC X(8).
       -
       -
    02 SPA-XFER-WORK-AREA.
       COPY XFERWORK.
```

For PL/I:

```
DCL     SPA_AREA             CHAR(1992);
DCL  1  TELON_SPA_WORKSPA BASED(ADDR(SPA_AREA)),
        02 SPA_FILL1         CHAR(992),
        02 WORKSPA_KEY       CHAR(8);
DCL  1  TELON_SPA_AREA    BASED(ADDR(SPA_AREA)),
        02 SPA_HEADER        CHAR(8),
           -
           -
        02 SPA_XFER_WORK_AREA,
           %INCLUDE XFERWORK;
```

Conversational Processing

CA Telon applications can run as either conversational or non-conversational transactions under IMS/DC. In conversational transaction processing, IMS/DC maintains a conversation with the terminal through the use of an IMS/DC SPA. While in conversation with IMS/DC, the transaction code is maintained by IMS/DC until modified by the application program by means of message switching or setting to spaces to terminate the conversation. For the sake of clarity, this chapter uses:

- IMS/DC CONVERSATIONAL to mean processing using the IMS/DC SPA
- NON-CONVERSATIONAL to mean processing using a WORKSPA database in place of the IMS/DC SPA
- CA Telon CONVERSATION to mean either:
  - IMS/DC CONVERSATIONAL or
  - NON-CONVERSATIONAL processing

Transaction Code Specification

You can implement the transaction code specified to IMS/DC in a number of different ways as described next. Which technique you use depends on your installation's current standards and the operating characteristics of each option. The considerations differ considerably between conversational and non-conversational IMS/DC implementations. A brief background of the IMS/DC options for conversational is given and then the CA Telon implementation for each option is presented.

IMS/DC conversational background

There is no transaction code formatted on the screen or in the MFS control blocks. To start the conversation, enter a transaction code which is passed to the program in the SPA. On subsequent iterations, the program sets up the transaction code for the next iteration in the SPA just before it sends the message back to the screen.

There is one exception to the above, however. That exception exists when you want to start the conversation by means of a /FORMAT command instead of keying in a transaction code. For this case the following paragraph applies.

The transaction code must exist in the MFS control blocks, probably as a constant in the MID of the screen for which the /FORMAT is entered. If the same format is used in the middle of the conversation, this creates a programming problem. The problem exists because if the format starts a conversation, the transaction code is stripped out of the input message passed to the program and is included in the SPA.

Whereas if the format is used during the conversation, the transaction code in the MID is treated as any regular field and is contained in the input message. Thus, the program has to be able to detect the two conditions and adjust the buffer fields accordingly.

IMS/DC Conversational Implementation

Two fields specified on the Update TSO/IMS Screen Environment screen are required for conversational implementation. These are discussed next. Following the description of those fields, the various IMS/DC combinations for conversational processing are presented with a description of the transaction code options for that combination.

- TRANCDE - Identifies the transaction code as a constant. If this field is used with the TRANMFS parameter, specified as N, then no transaction code is generated in the MFS control blocks. This means you can start the conversation by entering a transaction code, but not by entering a /FORMAT command.

  If TRANCDE is used with the TRANMFS parameter, specified as Y, then the transaction code is generated in the MFS (MID). In this case, you can start the conversation by entering either a transaction code or a /FORMAT command. If neither field is used, then the first case above is assumed with the system default transaction code.

- TRANMFS - Identifies that the conversation can be started by entering a /FORMAT command for the screen being defined. Its relationship to TRANCDE is explained above.

Dynamic structure transaction code initiation

If the conversation is initiated by entering the IMS/DC transaction code and the dynamic program structure is used, you simply specify the transaction code for each screen definition (TRANCDE field on the Update TSO/IMS screen environment screen). The initial transaction code starts execution of the correct program and from that point on the CA Telon- generated program sets the transaction code in the SPA for the next iteration from the TRANCDE value. If the TRANCDE field is left blank, your installation default transaction code is used.

Static structure transaction code initiation

If the conversation is initiated by entering the IMS/DC transaction code and the Static Program Structure is used, you should specify the TRANCDE on all screen definitions. This is not only a good documentation practice, but can prevent errors in online execution (if the TRANCDE length does not match the default generator TRANCDE length).

In this case, the same transaction code (specified for the static screen definitions) is also defined for the driver and remains the same from iteration to iteration. If the driver is to message switch to another driver, it modifies the SPA accordingly. Thus, you specify the TRANCDE field for the driver.

Dynamic structure /FORMAT initiation

If the conversation is initiated by entering a /FORMAT command and the dynamic program structure is used, you specify the transaction code (TRANCDE field) for each screen definition, as for the first case above. You also specify for the screen(s) that initiate the conversation that /FORMAT can be used (TRANMFS is "Y" on the TSO/IMS Screen Environment screen). CA Telon automatically adjusts the input buffer so that the program can start the conversation or be used in the middle of the conversation.

Static structure /FORMAT initiation

If the conversation is initiated by entering a /FORMAT command and the static structure is used, you should specify the TRANCDE on all screen definitions, the same as for the second case above. For the screen(s) which initiate the conversation, you must also specify that /FORMAT can be used (TRANMFS field is "Y" on the Update TSO/IMS Screen Environment screen).

As a result, CA Telon puts the screen/driver's transaction code in the MID for that screen and makes the proper input buffer adjustments. Additionally, you specify the same transaction code for the driver as for the second case above.

Transaction code constant not on screen

If the transaction code is not to be modified by the application user and is to remain constant for the screen (the most common implementation), you simply specify the transaction code for each screen definition (TRANCDE field above).

If the dynamic program structure is used, the transaction code specified for each screen is for the program generated for that screen definition. (For this case, the TRANCDE field can be left blank if the application uses your installation default transaction code.) If the static program structure is used, the transaction code specified is for the driver. For this case, you also specify the transaction code when generating the driver.

Transaction code on screen initialized by program

If the transaction code is to exist on the screen, but its value is to be set up as a variable by the program, you specify a value for the TRANFLD field and leave the TRANCDE field blank. The field name (FIELD label) specified by TRANFLD identifies the field on the screen containing the transaction code. That field must be specified as an OUTIN field with DBNAME identifying the field in the program (usually in the Transfer Work Area) containing the transaction code to be put on the screen. That transaction code value had to be set up by the program, usually in OINIT2.

Usually the transaction code field is protected (ATTRPRO field for FIELD definition) so the application user cannot modify it. Sometimes it is made "nondisplay," but this is not recommended as the display of its value can be valuable in problem situations.

Transaction code on screen initialized by constant

If you want to allow the application user to modify the transaction code or change it to an IMS/DC command, you specify values for two fields:

- TRANCDE - Identifies the value of the transaction code field on the screen after initialization.
- TRANFLD - The field name (FIELD label) of the transaction code field on the screen. Define the field as an INPUT field with no DBNAME or with a FLDTYPE of NONE.

TRANCDE label field

For upward compatibility with earlier CA Telon releases, the Transaction Code on Screen Initialized by Constant option above can be implemented using an alternate technique. Using this technique, the INPUT field defining the transaction code has the special field name TRANCDE. This generates the same code as the TRANCDE and TRANFLD parameter combination. You should use the TRANCDE/TRANFLD combination.

SPA/WORKSPA Considerations

All CA Telon applications must be at least "pseudo-conversational." The information to be saved consists of:

- CA Telon control information
- Transfer Work Area data
- Screen Image data

The technical mechanism used to save the above data is:

- The IMS/DC Scratch Pad Area (SPA)
- A special database (WORKSPA), or
- A combination of a SPA and WORKSPA

When generating the IMS/DC program, the size of the IMS/DC SPA or WORKSPA must be specified on the Update TSO/IMS Screen Environment screen. When the application is to be conversational with a disk SPA, the size specified in the IMS/DC GEN must be used here to define the SPA size (SPASIZE field).

When the application is to be generated conversational with both a SPA and a WORKSPA, you must specify both sizes. How to determine the size for the SPA or the number of segments for the WORKSPA is defined next.

SPA/WORKSPA size calculation

When generating a CA Telon TSO program, a program summary is printed as an aid in planning the IMS/DC conversion. The following shows the part of the summary used for SPA/WORKSPA size calculations.

SPA/Transfer Area Requirements:

```
SPA HEADER                                14
APPLICATION TRANSFER AREA SIZE          +
                                         _______
IMS/DC SCREEN IMAGE SIZE                +   166
                                         _______
TOTAL IMS/DC TRANSFER AREA REQUIREMENTS  =
                                         ________
```

Where:

- The value of SPA HEADER varies based on IMS conversationality and system link options.
- The APPLICATION TRANSFER AREA SIZE is filled in based on the compiler given size for the Transfer Work Area definition.

- The value of IMS/DC SCREEN IMAGE SIZE varies based on extended attributes, refresh options, modifiable attributes, line optimization, and so forth.

Starting/Terminating a CA Telon Conversation

Starting a CA Telon conversation

You can start a CA Telon conversation in two ways:

- By entering the transaction code for the first screen. This causes the output section of the program to be executed and the screen sent to the terminal from the program.
- By entering a /FORMAT command to bring up the format of the first screen. This causes the input section of the program to be executed when the application user presses ENTER at the terminal.

Application initialization of the SPA differs for each of these techniques and considerations for each are defined next.

Note: Upon entering the program for the first time (starting the conversation), the IMS/DC SPA is set to LOW-VALUES. The CA Telon WORKSPA database is usually set to LOW-VALUES at this time, so care must be taken in maintaining this database.

Starting by means of transaction code

Key the transaction code for the first screen in the conversation. This causes IMS/DC to schedule the transaction and execute the output section of the appropriate application program. If the Transfer Work Area requires application initialization, you should do this in the OINIT1 or OINIT2 special processing sections. If output processing of that screen does not require the transfer area to be initialized first, initialization can also be done on input processing using PFKEY or ININIT special processing code.

Starting by means of /FORMAT

You can start a CA Telon conversation by using the IMS/DC /FORMAT command to bring up the screen format of the first screen in an application. To use this technique in IMS/DC conversational processing, you must specify the correct transaction code environment values.

In using the /FORMAT technique, the input section of the program is executed first; the output side is bypassed by the /FORMAT command. If the Transfer Work Area requires application initialization, you should do it in the PFKEY or ININIT special code.

Terminating a CA Telon conversation

Move spaces to the transaction code in the SPA area for the last program executed. Do this on the last screen to be sent to the terminal notifying the application user that the conversation is terminated. Note that this last screen must be a display only screen and should have no input fields.

To continue IMS/DC operation, the application user must clear the screen and enter the next transaction or IMS/DC command. You can move spaces to the SPA transaction code by including the following statement within the OINIT1 or OINIT2 special processing code sections of the display screen.

COBOL:

```
MOVE SPACES TO SPA-TRANSACTION-CODE.
```

PL/I:

```
SPA_TRANSACTION_CODE = ' ';
```

Note: If the application is generated non-conversational, terminating the conversation is still valid, but not required. If a non-conversational program requests the termination of the conversation, the WORKSPA database segments (if any) for that terminal are deleted.

Non-conversational Processing

As mentioned earlier, CA Telon applications can run as either conversational or non-conversational transactions under IMS/DC. With non-conversational processing, the transaction code is sent to IMS/DC each time the enter key or any PF keys are pressed by the application user.

When non-conversational is used, CA Telon optionally (recommended) maintains a pseudo-conversation with IMS/DC through the use of a WORKSPA database. This is done by using the SPA-TRANSACTION-CODE field in the transfer work area in the same way that IMS/DC uses this field in the IMS/DC SPA. Recall the following explanation of terms:

- IMS/DC CONVERSATIONAL refers to processing using the IMS/DC SPA
- NON-CONVERSATIONAL refers to processing using a WORKSPA database in place of the IMS/DC SPA
- CA Telon CONVERSATION refers to either:
  - IMS/DC CONVERSATIONAL or
  - NON-CONVERSATIONAL processing

Transaction Code Specification

The transaction code specified to IMS/DC can be implemented in a number of different ways as described next. Which technique is used depends on your installation's current standards and the operating characteristics of each option.

The following discussion is for non-conversational IMS/DC implementations. A brief background of IMS/DC options is given and then the CA Telon implementation for each option is presented.

Dynamic structure transaction code initiation

If the CA Telon conversation is initiated by entering the IMS/DC transaction code and the dynamic program structure is used, you simply specify the transaction code for each screen definition. (TRANCDE field on the Update TSO/IMS Screen Environment screen.)

The initial transaction code starts execution of the correct program and from that point on the CA Telon-generated program sets the transaction code in the SPA for the next iteration from the TRANCDE value. If the TRANCDE field is left blank, your installation default transaction code is used.

Static structure transaction code initiation

If the CA Telon conversation is initiated by entering the IMS/DC transaction code and the static program structure is used, you should specify the TRANCDE on all screen definitions. This is not only a good documentation practice, but can prevent errors in online execution (if the TRANCDE length does not match the default generator TRANCDE length).

In this case, the same transaction code (specified for the static screen definitions) is also defined for the driver and remains the same from iteration to iteration. If the driver is to message switch to another driver, it modifies the SPA accordingly. Thus, you specify the TRANCDE field for the driver. (See Static Program Structure earlier in this chapter, for more information.)

Dynamic structure /FORMAT initiation

If the CA Telon conversation is initiated by entering a /FORMAT command and the dynamic program structure is used, you specify the transaction code (TRANCDE field) for each screen definition, as for the first case above. In addition, you also specify for the screen(s) which initiate the conversation that /FORMAT can be used (TRANMFS is "Y" on the Update TSO/IMS Screen Environment screen).

Static structure /FORMAT initiation

If the CA Telon conversation is initiated by entering a /FORMAT command and the static program structure is used, you should specify the TRANCDE on all screen definitions, the same as for the second case above. For the screen(s) which initiate the conversation, you must also specify that /FORMAT can be used (TRANMFS field is "Y" on the Update TSO/IMS Screen Environment screen). As a result, CA Telon puts the driver's transaction code in the MID for that screen. In addition, you specify the same transaction code for the driver as for the second case discussed previously.

IMS/DC Non-conversational Background

The following considerations on non-conversational processing are important to know.

- Usually you want to have a single transaction code exist for a program and have it simply included as a constant in the MID (TRANMFS=Y). This allows the program to be started either by using a transaction code or a /FORMAT statement. Also the application user never has to be concerned about a transaction code on the screen.
- Sometimes you want to have the transaction code appear on the screen and allow the application user to modify it or change it to an IMS/DC command. For this case, the code field on the screen can either be left blank so that the application user is required to enter it (probably never done) or initialized to a constant.

  The application user often enters data in the screen format, expecting the program to process it on input. At other times the application user is just expecting a new format (output processing for the transaction code) to be returned.
- Occasionally you want to have the transaction code appear on the screen but be somehow modified by the program on output so that a different transaction code is executed on different executions of the screen. This allows the same program to execute under different PSBs. Though not used very often, it allows some complex implementations, such as supporting multiple copies of the same database structure when a database gets too big to be supported as a single copy.
- Applications are sometimes developed such that the transaction code is composed of one or more fields on the screen along with some constants. In this case the application user is not aware of a transaction field, but in effect modifies the transaction code based on data entered. This technique has a problem in that if the application user enters invalid data, an unknown transaction code message is returned. Since this technique is not reliable, CA Telon does not support it.

IMS/DC Non-conversational Implementation

Two fields, TRANCDE and TRANFLD, from the Update TSO/IMS Screen Environment screen are required for non-conversational implementation.

- TRANCDE— Identifies the transaction code which is set up as a constant in the MFS control blocks, either in the MID or MOD, depending on the TRANFLD option.
- TRANFLD— Identifies a field on the screen (in the screen definition) which is to contain the transaction code to be executed. Depending on the use of the TRANCDE field above, the transaction code field is either initialized to the constant specified by TRANCDE or initialized by the program when the screen is formatted.

The various IMS/DC combinations for non-conversational processing are presented next with a description of the transaction code options for that combination.

Transaction code constant not on screen

If the transaction code is not modified by the application user and is to remain constant for the screen (the most common implementation), you simply specify the transaction code for each screen definition (TRANCDE field on the previous page).

If the dynamic structure is used, the transaction code specified for each screen is for the program generated for that screen definition. (For this case, if the application uses your installation default transaction code, the TRANCDE field can be left blank.) If the static structure is used, the transaction code specified is for the driver.

For this case, the transaction code is also specified when generating the driver. (See "Static Program Structure", described earlier in this chapter, for the definition of a driver.)

WORKSPA Considerations

All CA Telon applications must be at least "pseudo-conversational." The information to be saved consists of:

- CA Telon control information
- Transfer Work Area data
- Screen Image data

The technical mechanism used to save the data displayed previously is:

- Special database (WORKSPA), or
- Special non-conversational processing without a WORKSPA database techniques discussed later in this chapter

When generating the IMS/DC program, you must specify the size of the WORKSPA on the Update TSO/IMS Screen Environment screen. When the application is generated non-conversational, the size of the WORKSPA record (sum of segment sizes defined) must be used (WKSPASZ field). Determining the size for the number of segments for the WORKSPA is defined next.

WORKSPA Size Calculation

When generating a CA Telon TSO program, a program summary is printed as an aid in planning the IMS/DC conversion. The following example shows the part of the summary used for WORKSPA size calculations.

```
WORKSPA/TRANSFER AREA REQUIREMENTS:

    WORKSPA HEADER                              14
    APPLICATION TRANSFER AREA SIZE             +
                                                ------
    IMS/DC SCREEN IMAGE SIZE                   +  166
                                                ------
    TOTAL IMS/DC TRANSFER AREA REQUIREMENTS    =
                                                ------
```

Where:

- The value of WORKSPA HEADER varies based on IMS conversationality and system link options.
- The APPLICATION TRANSFER AREA SIZE is filled in based on the compiler given size for the Transfer Work Area definition.
- The value of IMS/DC SCREEN IMAGE SIZE varies based on extended attributes, line optimization, and so forth.

Non-conversational Processing without a WORKSPA Database

Non-conversational processing without a WORKSPA database (and the saving of transfer data) can be done, but requires several special design considerations. Since transfer data is not saved between screen iterations and across certain types of screen transfers, this data must be specially handled.

The following topics are presented to simplify the design and implementation of IMS/DC non-conversational processing without the use of the CA Telon WORKSPA database:

- General CA Telon considerations
- Transfer data handling between:
  - a: output and input of a single screen
  - b: screens when IMS/DC Message Switching is used
  - c: screens when CA Telon Dynamic Link is used
  - d: screens in the DRIVER/STATIC Link environment
- Special DRIVER/STATIC Link considerations
- Special SEGLOOP considerations

General considerations

The next table shows the CA Telon parameters that are required to implement an IMS/DC non-conversational system without a WORKSPA database.

Statement	Parameter	Value	Screen
DRIVER	HELP	N	Create/Update IMS Driver Definition
	HOLD	N	Create/Update IMS Driver Definition
SCREEN	HELP	N	Update Screen Parameters
	HOLD	N	Update Screen Parameters
	REFRESH	N	Update Screen Parameters
	EOFKEY	Y	Update Screen Parameters
	OUTIFIL	Space	Update Screen Parameters
	ALARM	N	

Statement	Parameter	Value	Screen
SEGLOOP	PAGE	N	Update Screen Parameters
IMSPGM	LINEOPT	3	Update TSO/IMS Screen Environment
IMSDRV	LINEOPT	3	Update IMS//DC Driver Environment

Note: PAGE=N is not required, but it is recommended for simplicity in implementation and maintenance.

SCREEN/XFERWKA

To simplify the definition of data to be saved and transferred across iterations and between screens, you should still use the XFERWKA parameter of the SCREEN statement. Though this data is not automatically saved, it isolates the information in one area and makes design of passing the information easier.

Transfer data handling

Some transfer data is required for the system to function correctly. To minimize design and implementation time, you should keep this type of data to a minimum. Following are techniques you can use to pass data across screen iterations and between screens in the IMS/DC environment.

Passing data between screen iterations

Information required on both the output and input side of a screen must be passed from output to input processing through the screen itself. If the data is transfer data only (not for display), it can be passed as an OUTIN field which is protected and non-display (for example, ATTRPRO=Y and ATTRINT=BLANK).

This is the only technique available for passing data between output and input when neither an IMS/DC SPA nor an IMS/DC database is used. Use this technique to pass keys to databases being processed in the application.

Passing data by using IMS/DC message switching

Data that needs to be transferred between screens when message switching is used can be passed in the IMSPGM/IMSDRV MSGBUF COPY member. This member can be common to the application or unique to each screen. Once passed, this information is received in the INPUT BUFFER of the receiving screen, so provision must be made to move the data passed to its correct destination for subsequent processing. Therefore, it makes sense for the MSGBUF member to be common to the application.

You can use the TPI-MSG-SWITCH-IND to simplify determination of a message switch in the receiving program. The input buffer of each screen message switched to must be large enough to hold the application's MSGBUF definition.

Passing data with dynamic link

Since dynamic links to the output side of a receiving program are done without the termination of the IMS/DC transaction, data stored in the transfer work area is passed unaltered. This is another reason for using the SCREEN/XFERWKA parameter for the definition of transfer data. The concepts mentioned previously on passing data between output and input of a single screen still apply in this case.

Passing data with static link

Like the dynamic link situation, transfers between the input side of one program and the output side of the next are done within the processing of a single IMS/DC transaction. Therefore, if the SCREEN/XFERWKA COPY member is used to store this information, it is automatically passed without any special considerations. Passing the data through the screen is still required across screen iterations.

Special static link considerations

There is one unique requirement to the CA Telon DRIVER/STATIC link environment. The SPA-NEXT-PROGRAM-NAME field automatically defined in all CA Telon drivers and static programs must be maintained by the driver in order for the system to function correctly. A good technique for handling this situation is to pass each screen's program name as the first MIDONLY field in the input message and for the driver to set the SPA-NEXT-PROGRAM-NAME from this field.

This technique works as long as the system is brought up by using the /FORMAT command and no message switching between drivers is involved. If either of the above assumptions does not hold, special handling of invocation by means of transaction code (and the validation of the message program name field) and message switching must be done.

Special SEGLOOP considerations

There are several fields used in SEGLOOP processing which have to be passed on the screen if they are used.

- LAST-LINENO - Must be defined and saved across screen iterations if SAVEKEY/SELKEY processing is used
- PAGE-AREA-START - Must be defined and saved across screen iterations if paging is used
- SAVEKEY table - Must be defined and saved across screen iterations if SAVEKEY/SELKEY processing is used.

Appendix A: Implement Batch

Using the information provided in this appendix, you will learn how to use the following in batch mode:

- Extract files
- IMS/VS message queue support
- IMS/VS checkpoint/restart support
- GSAM support
- CA Telon batch subroutines

This section contains the following topics:

Extract Files

You can define extract files using the DATASET/DATABAS and RECORD, ROW, or SEGMENT statements with any User Exec statements required for creating extract output.

Creation of the extract file can then be done in the PRCTRAN custom code (or any other copy code exit) by simply performing the appropriate U-100-USER EXEC section defined for extract purposes.

IMS/VS Message Queue Support

You can read from or write to the IMS/VS message queue using the READ and CREATE User Exec statements specifying IO-PCB, XFER-PCB, or any defined TPPCB name as the segment name to be accessed. You can use the FUNC parameter to override the default function in the call (GU for READ and ISRT for CREATE). You can use the TPPARMS parameter to specify IOareas to be passed in the call list after the PCB.

Section names generated from user exec accessing a teleprocessing PCB follow the same U-100 naming standards used in accessing database or data set segments.

IMS/VS Checkpoint/ Restart Support

IMS/VS checkpoint/restart is supported in CA Telon batch through the use of a combination of generated fields, Copy Code exits, and generated User Execs to the IO-PCB.

Where to checkpoint

Checkpoint and extended restart calls in CA Telon Batch can be generated by using the READ and CREATE User Exec statements against the IO-PCB. The BATCH/INIT Custom Code should include a perform for the generated XRST call, and the CHKP call should be done using the BATCH/GETTRAN Copy Code.

Note: The BATCH/GETTRAN Copy Code comes in immediately following automatic TRANSACT segment IO. This Auto Exec should not be used if checkpointing is required. Proper checkpointing calls should take place following the successful processing of one transaction and prior to retrieval of a new one. If automatic TRANSACT logic is desired, the checkpoint call should be included in the program by using the C1000I PGMCUST exit.

Following each successful checkpoint call in IMS, PCB positioning for all non-GSAM PCBs is no longer set and must be reset using either the key feedback area in the PCB or some other equally suitable method. This positioning can be generated with CA Telon User Exec, but must be performed in Custom Code.

Generated checkpoint variables

There are five generated variables in CA Telon Batch to assist in coding checkpoint logic. For those installations that use DL/I queue space weighting as a determination of when to checkpoint, the following four variables are defined in the system work area for this purpose:

- DLI-ACCUM-WEIGHT— A four-byte packed decimal field that is incremented by the appropriate weighting factor for each generated DL/I ISRT, REPL, and DLET call.
- ISRT-FUNC-WEIGHT— A two-byte packed decimal field initialized to 3 to represent the weighting factor of queue space taken up by each DL/I insert call. This factor can be reset in INIT Custom Code if a different weighting value is preferred at a particular installation.

- REPL-FUNC-WEIGHT— A two-byte packed decimal field initialized to 1 to represent the weighting factor of queue space taken up by each DL/I REPL call. You can reset this factor in INIT Custom Code if a different weighting value is preferred at your installation.
- DLET-FUNC-WEIGHT— A two-byte packed decimal field initialized to 3 to represent the weighting factor of queue space taken up by each DL/I DLET call. The space taken up by each DLET call depends on the number of segments deleted by that call and the weighting factor should be set accordingly for each DLET call based on the average number of segments deleted by that call.

When using the DLI-ACCUM-WEIGHT to determine whether to checkpoint, you must reset this variable each time a checkpoint call is done.

The fifth variable made available for checkpointing in CA Telon Batch is a length field for the BATCH-WORK-AREA. It is a four-byte binary field that you can use in the checkpoint/restart calls to save the current values of the batch control variables. The name of this field generated at the end of the BATCH-WORK-AREA is BWA-AREA-LTH.

You need not checkpoint this area unless report output is to be written to a GSAM database. There are no other generated fields in the batch program which should need to be checkpointed. User-defined areas can be checkpointed by simply including them in the TPPARMS list on the checkpoint User Exec.

GSAM Support

Define GSAM databases in CA Telon programs using the standard DATABAS statement used for other IMS databases. The TYPE parameter on this DATABAS statement must specify GSAM. The only valid GSAM User Exec functions are READ and CREATE. The only valid parameters for a GSAM DATABAS statement are COPY, COPYLV1, COPYLVL, IOAREA, IGNORE, and PROCOPT.

GSAM user exec

You can define user exec for GSAM SEGMENTs to open/close GSAM databases, and reading/writing GSAM databases. Each GSAM user exec is defined through the use of the CA Telon READ and CREATE statements. You need not issue an OPEN and CLOSE of a GSAM database except under special circumstances.

The only reason one would need to use OPEN and CLOSE functions with a GSAM database would be to close the GSAM database in the middle of processing and open it up again to read from the beginning. All other OPEN and CLOSE functions are taken care of by CA Telon automatically.

To open a GSAM database other than with the automatic OPEN, simply define a READ USER-EXEC access with a function of 'OPEN.' You can specify the IOAREA parameter as 'NONE' to omit the passing of open options to GSAM. If open options are desired, specify them using the IOAREA parameter. A GSAM RSA is automatically generated whenever a GSAM database is defined and is used as necessary in User Exec calls.

To close a GSAM database other than the automatic CLOSE, simply define a READ USER-EXEC access with a function of 'CLSE.'

To sequentially READ a GSAM database, specify the READ USER-EXEC statement with a function of GN. A call is generated using either the defaulted segment IOAREA, or one specifically mentioned in the IOAREA of this call. An additional parameter that you can use in this call is IGNORE. Additionally, an RSA is used in the call. This RSA captures the location of the record read on the DATABAS and can be used in a User Exec READ call with FUNC=GU to place yourself at a specific place in the GSAM DATABAS.

To write to GSAM databases, specify the CREATE USER-EXEC. Since an IOAREA is necessary for a CREATE, one can be separately specified or defaulted from the SEGMENT statement.

GSAM DBDs and PSBs containing GSAM PCBs can still be imported into the CA Telon Design Facility. These are generated in the same manner as they previously were.

If batch report output is to be written to a GSAM database rather than a sequential file, you must specify an OUTPUT REPORT DESTINATION with the same name as the GSAM DBNAME. If this is the case, all of the proper code for moving fields to the RFL-FIELD of the same name in the B-5000 and B-6000 sections of the batch program is generated, formatting title and all other proper lines.

After the proper RFL-LINE is moved to the RFL-WRITE-LINE, C-2000 is performed, where the actual GSAM database is inserted with the proper RFL-WRITE-LINE. CA Telon does all of this processing automatically.

You can also specify CREATE User Exec and generate a paragraph to ISRT to the GSAM database whenever needed.

Batch Subroutines

You can implement CA Telon batch programs as a subroutine in one of two ways:

1. As a subroutine to be called once by a driving batch program to produce a complete report from beginning to end
2. As a subroutine to be called multiple times by a driving batch program to produce report details one at a time

In the first case, you can use CA Telon batch programs as currently generated to accomplish this function. A common use for this structure would be a driving program that extracts records from a database, sorts them for the called subroutine, and then calls the subroutine to produce the report from sorted extract.

You can define any special linkages required for calling the batch program as a subroutine by using the BATCHPGM statement's LNKCOPY and USGCOPY parameters.

The second case is more complex in the batch definition process. In short, the subroutine defined is called once for program initialization, once for each detail that it is to process, and once for termination. This structure is created through a technique called mainline inversion, and inserted into the CA Telon batch program through the use of the MAINLINE PGMCUST custom exit. The BATCHPGM statement's LNKCOPY and USGCOPY parameters also have to be defined.

Note: Since some CA Telon ABEND routines are called dynamically, be aware that when you execute CA Telon-generated programs in a JCL procedure, the CA Telon load library must be concatenated into the STEPLIB DD statement. See the example below. Replace the lowercase entries according to your installation standards.

```
// stepname  EXEC PGM='pgmname'
// STEPLIB   DD  DSN='application loadlib',
//               DISP=SHR
//           DD  DSN='telon loadlib',
//               DISP=SHR
```

The following is the standard mainline generated in all CA Telon batch programs.

```
------------------------------------------------------------------------
MAIN SECTION.
    SET SEC-INDEX TO 1.
    MOVE 'TELON ID TO TELON-RELEASE-EYECATCH.
    PERFORM Q-1000-PROGRAM-INIT.
    IF END-TRAN
       NEXT SENTENCE
    ELSE
       PERFORM C-1000-GET-TRAN.
    IF END-TRAN
       NEXT SENTENCE
    ELSE
       PERFORM MAIN-PROCESS-LOOP UNTIL END-TRAN
       PERFORM B-2000-END-REPORT.
    PERFORM T-1000-PROGRAM-TERM.
    GOBACK.

MAIN-PROCESS-LOOP SECTION.
    PERFORM A-1000-PROCESS-TRAN.
    IF PROCESS-DETAIL
       PERFORM B-1000-PROCESS-DETAIL.
    IF GET-TRAN
       PERFORM C-1000-GET-TRAN.

    IF GET-TRAN OR END-TRAN OR PROCESS-DETAIL
       NEXT SENTENCE
    ELSE
       CALL 'ILBOABN0' USING FALLOUT-ABEND-CODE.
```

An inverted format of the above mainline to be inserted in the MAINLINE PGMCUST exit appears as follows:

```
   IF LINK-XFER-PROCESS-REQUEST = 'INIT'
      PERFORM Q-1000-PROGRAM-INIT.

   IF LINK-XFER-PROCESS-REQUEST = 'PROCESS'
      PERFORM C-1000-GET-TRAN
      PERFORM A-1000-PROCESS-TRAN
      IF PROCESS-DETAIL
         PERFORM B-1000-PROCESS-DETAIL.

   IF LINK-XFER-PROCESS-REQUEST = 'TERM'
      PERFORM B-2000-END-REPORT
      PERFORM T-1000-PROGRAM-TERM.
```

The variable LINK-XFER-PROCESS-REQUEST is the control variable passed down from the driving batch program. It is set to 'INIT' in the calling programs Q-1000-PROGRAM-INIT section prior to calling the inverted subroutine for initialization processing. It is then set to PROCESS for invocation of the subroutine for each detail selected for the subroutine.

Finally, the variable is set to 'TERM' and the subroutine is called one last time to do termination processing. Other than the inverted mainline, all other control of flow in the subroutine remains the same as a main batch program.

Appendix B: Install Members

Many of the members provided in the INSTALL data set on the CA Telon installation tape for the mainframe environment are listed in this appendix. Most of the commonly-used members are listed here but your installation may have members not shown. Generally, these unlisted members are either very old (applying to early versions of CA Telon) or were created to handle an environment-specific situation that would not apply to the overwhelming majority of the CA Telon user base.

Note: Option-specific members may be described in one of the other related guides of CA Telon.

This appendix contains:

- A cross-referenced listing of members by topic
- An alphabetical listing of members with descriptions

This section contains the following topics:

Cross-Reference Listing

The following cross-reference listing allows you to locate a member quickly when you have an idea of what it does. Each topic is followed by the names of any associated members and a brief description.

For more information, see the alphabetical listing under the appropriate environment heading in this appendix.

Automated Documentation

CIESEL:

Control Card that restricts scope of Extract File

CIPSEL:

Control Card that restricts scope of Extract File

CIRSEL:

Control Card that specifies which Automated Documentation reports you want

CIXSEL:

Control Card that restricts scope of Summary Automated Documentation reports

CIXSRT:

Control Card that specifies sort sequence for Global Cross Reference report

JUXREF:

Creates Summary Automated Documentation reports

JUXTRT:

Creates Summary Automated Documentation Extract Files

JUXXRF:

Creates Detail Automated Documentation reports

TLNUXREF:

Creates Summary Automated Documentation reports

TLNUXTRT:

Creates Summary Automated Documentation Extract Files

TLNUXXRF:

Creates Detail Automated Documentation reports

Backup

#CUSTBKP:

Customizes GDG backup procedures

BMS Mapping

JCPBMS:

Assembles BMS map from generated BMS source

TLNCPBMS:

Assembles BMS map from generated BMS source (CICS)

Customizing and Creating JCL and Procs

#CUSTCTL:

Customizes all members of INSTALL data set to your profile

#CUSTJCL:

Makes global changes to the INSTALL data set

#CIJSEL:

Control cards to customize and tailor generate, compile, and link procedures.

DBD

JUMDBD:

Imports DBD info into TDF from DBD source code

TLNUMDBD:

Imports DBD information into TDF

Education

See Training later in this section

Export

JUXDEF:

JCL for exporting PI, PD, SD, BD, ..., from TDF into CA Telon source code on PDSs (invokes TLNUXDEF)

JUXPAN:

Exports Screen, Report, Nonterminal, Driver Report Batch and Panel definition from the TDF to the Panvalet containing JCL for exporting PI, PD, SD, BD, ..., from TDF into CA Telon source code on CA Panvalet (invokes TLNUXPAN)

JUXDFE:

Exports Screen, Report, Nonterminal, Driver Report Batch and Panel defintitions from the TDF to CA Endevor SCM

TLMUXPAN:

Imports defintions from the TDF to the Panvalet

TLNUXDFE:

Exports defintions from the TDF to CA Endevor SCM

TLNUXDEF:

PROC for exporting PI, PD, SD, BD, ..., from TDF into CA Telon source code on PDSs

TLNUXPAN:

PROC for exporting PI, PD, SD, BD, ..., from TDF into CA Telon source code on CA Panvalet

Help

#$HELP:

Provides information on generate, compile, and link PROC

CTRSELCH:

Control Cards to unload sample HELP modules

CTRSELPH:

Control Cards to unload sample HELP modules

JUHLOAD:

Loads/updates new/existing Help messages

IDCAMS

JIDCAMS:

Model job stream for executing IBM's IDCAMS

Import

CINPTPCH:

Control Card to import CA Telon source code from a PDS into the TDF

JUMDFE:

Imports Screen, Nonterminal, Report, Driver, Batch and Panel definition from All Fusion Endevor Change Manager to the TDF

JUMPAN:

Imports Screen, Nonterminal, Report Driver Definitions from AllFusion CA-Panvalet to the TDF

JUVDFI:

Creates PC import file for CA Telon definition in AllFusion CA-Panvalet library

TLNUDDEF:

Deletes Screen, Nonterminal, Report, Driver and Panel Batch Definitions

TLNUMDBD:

Imports DBD information into TDF

TLNUMDEF:

Imports Screen, Nonterminal, Report, Driver Batch and Panel Definitions from CA Telon source

TLNUMDFE

Imports definitions from All Fusion Endevor Change Manager to the TDF

TLNUMPAN:

Imports definitions from AllFusion CA-Panvalet to the TDF

TLNUMPSB:

Imports PSB data into TDF from existing PSB source code

MFS Mapping

JIPMFS:

Assembles an MFS map from generated MFS source

TLNIPMFS:

Assembles MFS map from generated MFS source code

Non Terminal Programs

JASMPTBL:

Assembles printer carriage control table

System Load

JALLOC:

Allocates necessary non-VSAM data sets (IMS & CICS)

JALLOCC:

Allocates necessary non-VSAM data sets (CICS only)

JALLOCI:

Allocates necessary non-VSAM data sets (IMS only)

JLOADTP:

Loads non-VSAM data sets (IMS & CICS)

JLOADTPC:

Loads non-VSAM data sets (CICS)

JLOADTPI:

Loads non-VSAM data sets (IMS)

CA Telon Design Facility (TDF)

@TDF:

CLIST model for executing CA Telon Design Facility

JUCCCK

Searches for orphaned custom code segments in the TDF; reports, and optionally deletes them.

JUDDEF:

Deletes Screen, Report, Nonterminal, Driver and Panel Batch Definitions

JUPIMG:

Creates a formatted print of a TDF Panel Image

JUXPRT:

Prints Panel Images and Panel Definitions from TDF

JVERFY:

Verifies the integrity of TDF VSAM data sets

TLNUCCCK

Searches for orphaned custom code segments in the TDF; reports, and optionally deletes them.

TLNUPIMG:

Creates formatted print of TDF panel image

TLNUXPRT:

Prints PIs and PDs from the TDF

Training

#DB2APPL:

Notes on buildup DB2 sample solutions

#TRGAPPL

Notes on building CA Telon sample solutions

CTRDB2CR:

Control cards to create DB2 tables for training systems

CTRDB2gR:

Control cards to grant access to DB2 tables for training systems

CTRDB2IS:

Control cards to load rows into DB2 tables for training systems

CTRDB2L1:

Control cards to copy rows into DB2 table TRGEMPL for training systems

CTRDB2L2:

Control cards to copy rows into DB2 table TRGTASK for training systems

CTRDB2L3:

Control cards to copy rows into DB2 table TRGTIME for training systems

CTRDB2RE:

Control cards to reload rows into DB2 tables for training systems

CTRDCMLD:

JCL cards to load rows into CA-Datacom tables for training systems

CTRDCMTB:

JCL cards to create CA-Datacom tables for training systems

CTRISQLD:

Control cards to load IDMS/SQL Training and Help data

CTRISQPD:

Control cards to define IDMS/SQL physical database

CTRISQSC:

Control cards to define IDMS/SQL schema

CTRISQTB:

Control cards to define IDMS/SQL tables and indexes

CTRLIBC:

Control cards to define CICS/DL/I employee database

CTRLIBIM

Control cards to define IMS/DC/DL/I employee database

CTRVSMCI

Control cards to create and load VSAM files for CICS training systems

CVSAMBUF

Allocate DL/I databases for training systems

JLDLNKTC:

Unloads and links CICS training Load Library

JLDLNKTI:

Unloads and links IMS training Load Library

Training, Batch

CTRVSMBC:

Control Cards to define Batch VSAM employee database

JBCHTRAN:

Create transaction files for Batch sample solutions

JBCRUN:

Runs COBOL batch labs using DL/I database

JBPRUN:

Runs PL/I batch labs using DL/I database

JBSRUN:

Runs COBOL PL/I batch sample sort, match and merge sample solutions using sequential files

JBVRUN:

Runs COBOL PL/I batch using VSAM files

JB2RUN:

Runs COBOL PL/I batch sample solutions for DB2.

TLNBCRUN:

Executes COBOL batch sample solutions with DL/I

TLNBPRUN:

Executes the PL/I batch sample solutions using DL/I

TLNBSRUN:

Executes batch sort, match, and merge sample solutions with sequential files

TLNBVRUN:

Executes batch labs using VSAM files

VSAM Data Sets

CREORGHD:

Control Cards to reorganize and reload HELP database

CREORGWK, CREPRODD, CREPROLD, CREPUNLD:

Control Cards to clear and reinitialize the WORK files

CTDFCCL:

Control Cards to delete/define all TDF VSAM data sets

CTDFHELP:

Control Cards to delete/define the TDF HELP database

CTDFTDD:

Control Cards to delete/define the CA Telon TDF file

CTDFTDF, CTDFVSAM:

Control Cards to delete/define the CA Telon TDF file

JVERFY:

Verifies the integrity of TDF VSAM data sets

TLNVERFY:

Verifies the integrity of TDF VSAM data sets

Installation Members

The alphabetical listing of the members contains full information on each. If the additional information about the member is available elsewhere in the CA Telon documentation, the **Notes** item contains a reference.

Format of Entries

Each member in this list appears in the following format:

MEMBER NAME

This statement describes the purpose and function of the member. This statement if followed by more specific items:

Uses—A list of the members this member uses during its execution

Used by—A list of the members that use this member during their execution

Parameters—A list of the *most common* parameters set within this member. This often is not an exhaustive listing of parameters.

Notes—An expanded description of the module *or* a reference to further information elsewhere.

N/A after an information item indicates that the item *does not apply* to that particular member.

If you encounter any unexpected results in running these jobs, contact Customer Support according to the procedures established at your installation.

#CLISTS

This job creates a variable blocked CLIST data set with LRECL=255 and copies all CLIST members from the INSTALL data set into CLIST.

Uses—TLNCLIST

Used by—N/A

Parameters:

- OLDLIB—INSTALL data set with fixed block CLISTS
- NEWLIB—CLIST data set to be created

Notes—Only used when you require a variable blocked CLIST data set.

#CUSTBKP

This job stream customizes the GDG backup procedures. If you have standard VSAM backup procedures already in place, you do not have to use these procedures.

Uses—N/A

Used by—N/A

Parameters—NONE

For more information, see Managing the Environment.

#CUSTCTL

These control cards are used as SYSIN to #CUSTJCL job stream. You must edit these to customize all members of the INSTALL data set to your installation's profile.

Uses—N/A

Used by—#CUSTJCL

Parameters—NONE

Notes—These control cards *must be modified* for each installation.

#CUSTJCL

This job makes global changes to the INSTALL data set. Prior to executing this, make sure that you have modified both this member and the #CUSTCTL member and that neither contain any @ symbols.

Uses—Requires #CUSTCTL as SYSIN data set which specifies the changes to all the other members in the data set with the lowest level qualifier INSTALL.

Used by—N/A

Parameters—NONE

Notes—This must be modified.

#$HELP

This Help member provides further information about the CA Telon generate, compile, and link PROC generation options.

Uses—N/A

Used by—N/A

Parameters—N/A

@TDF

CLIST model used to execute the CA Telon Design Facility (TDF).

Uses—N/A

Parameters:

- PDSQUAL—High level qualifier for PDS
- VSQUAL—High level qualifier for VSAM file name
- DISP—Disposition of export PDS
- TDFPLAN—Name of the DB2 plan being used
- DSN—Name of the DB2 command processor being used

Notes—This CLIST is only used by installations operating the TSO TDF.

CIESEL

Control Card that restricts the scope of the TDF extract file used to produce the Detail Automated Documentation reports.

Uses—N/A

Used by—JUXXRF

Parameters—N/A

Notes—For more information, see the *Utilities Guide*.

CIJSEL

Control cards used to customize and tailor the CA Telon generate, compile and link PROC generation options.

Uses—N/A

Used by—#CUSTJCL

Parameters—N/A

CINPTPCH

IEBPTPCH control card that imports a partitioned data set (PDS) member into the TDF.

Uses—N/A

Used by—TLNUMDEF

Parameters—N/A

Notes—This control card contains a PUNCH statement with two operands: TYPORG=PO,MAXNAME=1. This statement converts the PDS member that is being imported into sequential form so that the actual import step can store the information on the appropriate TDF VSAM files.

CIPSEL

Control card that restricts the scope of the TDF extract file used to produce the Detail Automated Documentation reports.

Uses—N/A

Used by— JUXXRF, TLNUXXRF

Parameters—N/A

Notes—For more information, see the *Utilities Guide*.

CIRSEL

Control Card that specifies the Summary Automated Documentation reports that you want.

Uses—N/A

Used by—JUXREF, TLNUXREF

Parameters—N/A

Notes—For more information, see the *Utilities Guide*.

CIXSEL

Control Card that restricts the scope of the Summary Automated Documentation reports.

Uses—N/A

Used by—JUXTRT, TLNUXTRT

Parameters—N/A

Notes—For more information, see the *Utilities Guide*.

CIXSRT

Control Card that specifies the sort sequence for the Automated Documentation Global Cross-Reference Data file.

Uses—N/A

Used by—JUXXRF, TLNUXXRF

Parameters—N/A

Notes—This is the sort sequence required for the Detail Automated Documentation reports. For more information, see the *Utilities Guide*.

CREORGHD, CREORGWK, CREPRODD, CREPROLD, and CREPUNLD

Control Cards used during the reorganization and reloading of the TDF VSAM data sets.

Uses—N/A

Used by—JREORGPR, JREORGWK, JREORGHD

Parameters—N/A

Notes—The procedures that use these members are documented in TDF VSAM Data Set Maintenance in the chapter "Managing the CA Telon Environment."

CTDFCCL, CTDFHELP, CTDFTDD, CTDFTDF, and CTDFTDX

Control Cards used to delete/define the individual TDF VSAM data sets. Each member deletes and defines one subset of each of the TDF files.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

CTDFVSAM

Control cards used to delete/define all TDF VSAM data sets, including the work files.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

CTRDLIBC

IDCAMS uses these control cards to define the employee database for batch DL/I sample solutions.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

CTRDLICI

IDCAMS uses these control cards to define the employee database for CICS/DL/I sample solutions.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

CTRDLIIM

IDCAMS uses these control cards to define the employee database for IMS/DC/DL/I sample solutions.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

CTRVSMBC

IDCAMS uses these control cards to define the employee files for BATCH/VSAM sample solutions.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

CTRVSMCI

IDCAMS uses these Control Cards to define the training system's employee files for CICS/VSAM training classes.

Uses—N/A

Used by—JIDCAMS

Parameters—N/A

J*****L CA Telon Generate, Compile and Link JOB

After completing your installation, you will notice a number of jobs that were created by the installation process.

Each JOB is a variation of the CA Telon generate, compile, and link model described next. Each JOB is named according to the convention described next and generated to contain the appropriate parameters for the specific environment, language, teleprocessor, DBMS pre-compiler, and generator options requested by CIJSEL or CSELECT.

Format

J12345L

- **J**—CA Telon job literal
- **1**—DBMS pre-compiler (N,2,S,M) where N=none, 2=DB2 pre-compiler, S=IDMS SQL pre-compiler, M=Datacom pre-compiler
- **2**—Target environment (B,C,I,S) where B=Batch, C=CICS, I=IMS, S=CICS Client
- **3**—Location of CA Telon source (P,V,X) where P=PDS, V=CA PANVALET, X=TDF
- **4**—Generate (G,O) where G=generate host source
- **5**—Host Language (C,P,2) where C=LE/COBOL, P=PL/I, 2=COBOL II and above
- **L**—Link (L) where L=do link-edit

Example

J2IXGCL

- **J**—CA Telon job literal
- **2**—DB2 pre-compiler
- **I**—IMS target environment
- **X**—CA Telon source on TDF
- **G**—Generate host source
- **C**—COBOL
- **L**—Link

Uses—TL*****L

Used by—N/A

Parameters—Parameters vary according to each variation. See component member $010 in the INSTALL data set for all available parameters and #$HELP for more information about which parameters apply to a specific variation.

Notes—The parameters are only set in either the PROCedure or its associated JOB, not in both.

Within each of these PROCs, there are certain PARMs that can be used with the ADPACTLC program that start with @:

Parameter	Substituted value
@JULDATE	Current Julian Date—Format YYDDD
@G1DATE	Current Gregorian Date—Format MMDDYY
@G2DATE	Current Gregorian Date—Format MM/DD/YY
@JOBNAME	Name of Job invoking ADPACTLC
@JOBNUM	Job number (assigned by JES2) of Job invoking ADPACTLC

When you use an **@** in the Input card that is not part of a Parm, you must code it as **@@**. If you fail to do this, you get a return code of 16 and the error message **ADPACTLC SYNTAX ERROR IN PARM FIELD**.

Other JCL

The next few pages list other sets of JCL delivered CA Telon.

JASMPTBL

Job that assembles the printer carriage control table used by CICS nonterminal application programs that write reports directly to a printer.

Uses—N/A

Used by—N/A

Parameters—N/A

Notes—See the *Installation* guide for details.

JBCHTRAN

Job that creates the four transaction files for the Batch training classes.

Uses—N/A

Used by—N/A

Parameters—N/A

Notes—This is required for all CA Telon Batch training classes.

JBCRUN

Job that runs the COBOL Batch sample solutions using the DL/I employee databases.

Uses—TLNBCRUN

Used by—N/A

Parameters:

- TEAM—Team number (1 to 5)
- LAB—Lab number (1 to 4)
- PGMID—Program ID (for example, XX10, XX20)
- PSB—PSB name (for example, TRPSBCB)

Notes—Required for COBOL Batch sample solutions using DL/I databases.

JBPRUN

Job that runs the Batch PL/I class labs against the DL/I employee databases.

Uses—TLNBPRUN

Used by—N/A

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Batch Lab Assignment (1 to 4)
- PGMID—The Program ID to be Tested.
- PSB—PSB Name (i.e., TRPSBPB)

Notes—Required for PL/I Batch classes using DL/I databases.

JBSRUN

Job that runs the Batch training class labs using sequential files.

Uses—TLNBSRUN

Used by—N/A

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Batch Lab Assignment (1 to 4)
- LOADMD1—Load Module Name to be tested for Lab 1
- LOADMD2—Load Module Name to be tested for Lab 2
- LOADMD3—Load Module Name to be tested for Lab 3
- USRLOAD—User Training Load Library
- TLNLOAD—CA Telon Load Library

Notes—Required for the Batch training classes.

JBVRUN

Job that runs the Batch class sample solutions using the employee VSAM files.

Uses—TLNBVRUN

Used by—N/A

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Lab Number (1 to 4)
- PGMID—Program ID (for example, XX10, XX20)
- LANG—Language (1 = COBOL, 2 = PL/I)
- TLNLOAD—CA Telon Load Library

Notes—Required for the CA Telon Batch sample solutions using VSAM files.

JB2RUN

Job that runs the Batch class programs for DB2.

Uses—N/A

Used by—N/A

Parameters:

- PROGRAM—Load module of program being tested.
- PLAN—DB2 Plan Name
- LIB—Application Load Library

  Make sure all DELETE and EXTRACT DDnames contain the appropriate team file names.

Notes—Required for the Batch sample solutions.

JCPBMS

Job that assembles a BMS map from generated BMS source.

Uses—TLNCPBMS

Used by—N/A

Parameters:

- SRCLIB—PDS containing BMS source
- SRCMEM—BMS source member within SRCLIB
- BMSPARM—Type of BMS output (Default = MAP)

Notes—Required for all CICS installations using BMS mapping.

JIDCAMS

Job that is used as a model job stream for executing IBM's IDCAMS.

Uses—CTDFVSAM, CTDFHELP, CTDFCCL, CTDFTDD, CTDFTDF, or CTDFTDX.

Used by—N/A

Parameters—N/A

Notes—The INSTALL data set member JIDCAMS is initially set up to handle the loading of the TDF VSAM files. You can use it for any IDCAMS utility by changing the SYSIN reference at the end of the job stream.

JIPMFS

Job that assembles an MFS map from generated MFS source.

Uses—TLNIPMFS

Used by—N/A

Parameters:

- SRCLIB—PDS containing MFS source
- SRCMEM—MFS source member within SRCLIB

Notes—Required for all IMS installations using MFS for mapping.

- LOAD—Library to load the executable modules.
- Member—Member of the LINKCRDS PDS that contains the link CNTL cards for this Load Library.

Notes—Required for all installations before any CA Telon system processing, and must be run for the LOAD library.

JREORGHD

Job that is used to delete/define and reinitialize the CA Telon HOLD file.

Uses—CREORGWK, CREPRODD, CREPROLD, CREPUNLD

Used by—N/A

Parameters—none

JREORGPR

Job that is used to unload the CA Telon VSAM data sets, delete and redefine them, and reload them.

Uses—CREORGHD, CREPRODD, CREPROLD, CREPUNLD, CREORGWK

Used by—N/A

Parameters—none

JREORGWK

Job that deletes/defines and reinitializes the three CA Telon VSAM work files.

Uses—CREORGHD, CREORGWK, CREORGDD, CREORGLD, CREPUNLD

Used by—N/A

Parameters—none

JUBK1

Job that creates a model data set control block (DSCB). This is used when you use GDGs to back up CA Telon TDFs.

Uses—N/A

Used by—N/A

Parameters—N/A

JUBK2

JCL used to GDG initialization of the backup tapes used to back up CA Telon files.

Uses—TLNUBK2

Used by—N/A

Parameters—N/A

JUBK3

Job that creates the uncatalogued backup files from the TDF VSAM data sets.

Uses—TLNUBK3

Used by—N/A

Parameters—N/A

JUBK4A

Job that provides IBM IDCAMS delete/define and repro for TDF restoration from GDG backup files.

Uses—TLNUBK4A

Used by—N/A

Parameters—N/A

JUBK4B

Job used to do a partial restore from a backup tape to a TDF file.

Uses—TLNUBK4B

Used by—N/A

Parameters—N/A

JUCAD2

Job used to import DB2 tables in batch mode.

Uses—TLNUCAD2

Used by—N/A

Parameters:

- FUNCTION—I (Import), O (Overlay), A(Append)
- QUALIFIER—DB2 table qualifier
- TABLENAME—DB2 table name
- TLNNAME (optional)—(If omitted, TLNNAME defaults to first 8 characters of table name.)

JUCCCK

Job used to report on and optionally delete "orphan" custom code members found in the TNTCCL database. For example, custom code members left in the CA Telon Design Facility when the program to which they belong has been deleted.

Uses—TLNUCCCK

Used by—N/A

Parameters:

- DELFLAG—1=Delete "orphan" custom code members, 0=Do not delete "orphan" custom code members
- RPTOPT—S=Short format (list only "orphan" custom code members, L=Long format (list all custom code members)

JUCVDT

Job used to run the century-date conversion utility.

Uses—TLNUCVDT

Used by—N/A

Parameters:

- TPFRLIB—Transport library where source to be converted/reported on resides
- TPTOLIB—Transport library for output from conversion
- TPFRSRC—Transport source member to be converted/reported on
- TPTOSRC—Transport source member output from conversion

RUNTYPE—CONVERT or REPORT

JUDDEF

Job that deletes Screen, Report, Nonterminal, Driver, and Batch Definitions from the TDF.

Uses—TLNUDDEF

Used by—N/A

Parameters:

- TDFMEM—Screen, Report, Driver, Nonterminal, or Batch Definition name within TDF
- DEFTYPE—Type of TDF Definition to be deleted—PI, PD, SD, RD, DR, BD, or ND

JUHLOAD

Job used to load new help messages or update existing help messages.

Uses—PXXDLSGO

Used by—N/A

Parameters—N/A

For more information, see Maintain TDF Help Screens in the chapter "Manage the CA Telon Environment."

JULSTCAT

Job that executes the IBM IDCAMS LISTCAL utility against the four permanent CA Telon TDF files.

Uses—N/A

Used by—N/A

Parameters—N/A

JUMDBD

Job that imports DBD information from existing DBD source code into the TDF. Depending on Runtype, this job may overlay existing DBD information.

Uses—TLNUMDBD

Used by—N/A

Parameters:

- SRCLIB—PDS containing database definition source code
- SRCMEM—Database definition source member name in SRCLIB

For more information, see the *Utilities Guide*.

JUMDEF

Job that imports Screen, Nonterminal, Report, or Driver Definitions into the TDF from CA Telon source code.

Uses—TLNUMDEF

Used by—N/A

Parameters:

- SRCLIB—PDS containing CA Telon Screen, Report, or Driver Definition
- SRCMEM—CA Telon Screen, Nonterminal, Report, or Driver source member name in SRCLIB

For more information, see the *Utilities Guide*.

JUMDFE

Job that imports screen, nonterminal, report, driver, store procedure, and panel defintions into the TDF from CA Endevor SCM.

Uses—TLNUMDFE

Used by—N/A

Parameters

- SCRCMEM—CA Telon Definition member name in PANLIB
- NDVRENV—CA Endevor SCM Environment
- NDVRSTG—CA Endevor SCM stage for retrieval

- NDVRSUB—CA Endevor SCM subsystem
- NDVRSYS—CA Endevor SCM system
- NDVRTYP—CA Endevor SCM stage for retrieval

JUMPAN

Job that imports screen, nonterminal, report or driver definitions into the TDF from CA Panvalet.

Uses—TLNUMPAN

Used by—N/A

Parameters:

- PANLIB—CA Panvalet library containing the CA Telon screen, nonterminal, report, stored procedure, or driver definition
- SRCMEM—CA Telon Definition member name in PANLIB

For more information, see the *Utilities Guide*.

JUMPSB

Job that imports PSB data from existing PSB source code into the TDF.

Uses—TLNUMPSB

Used by—N/A

Parameters:

- SRCLIB—PDS containing the PSB source code
- SRCMEM—PSB source code member name in SRCLIB

For more information, see Import/Export Procedures in the *Utilities Guide*.

JUPIMG

Job that creates a formatted print of a TDF Panel Image

Uses—TLNUPIMG

Used by—N/A

Parameter

- TDFMEM—Header-ID of the TDF Panel Image to be printed

JUXDEF

Job that exports a screen, nonterminal, report, batch, stored procedure, driver definition or panel image or panel definition from the TDF into CA Telon source code in a PDS.

Uses—TLNUXDEF

Used by—N/A

Parameters:

- TDFMEM—Header-ID of the TDF Definition being exported
- DEFTYPE—Type of the Definition: SD, RD, DR, BD, PD, PI, ND
- SRCLIB—PDS into which the exported definition will be placed
- ENV—Export environment: T-TSO, C-CICS, I-IMS
- CMP—Export format: C-compressed, N-noncompressed

For more information, see the *Utilities Guide*.

JUXDFE

Job that exports Screen, Nonterminal, Report or Driver Definitions from the TDF to CA Endevor SCM

Uses—TLNUXDFE

Used by—N/A

Parameters:

- CMP—Export Format: C-compressed, N-noncompressed
- DEFTYPE—Type of the Definition: SD, RD, DR, BD, PD, PI, ND
- ENV—Export environment: T-TSO, C-CICS, I-IMS
- NDVRENV—CA-Endevor environment
- NDVRSUB—CA-Endevor substation
- NDVRSYS—CA-Endevor subsystem
- NDVRTYP—CA-Endevor type
- TDFMEM—Header-ID of the TDF Definition being exported

JUXPAN

Job that exports screen, nonterminal, report, stored procedure, or driver definitions from the TDF to CA Panvalet.

Uses—TLNUXPAN

Used by—N/A

Parameters:

- TDFMEM—Header-ID of the TDF Definition being exported
- DEFTYPE—Type of the Definition: SD, RD, DR, BD, PD, PI, ND, SP
- PANLIB—CA Panvalet library into which the exported definition will be placed
- ENV—Export environment: T-TSO, C-CICS, I-IMS
- CMP—Export format: C-compressed, N-noncompressed

For more information, see Import/Export Procedures in the *Utilities Guide*.

JUXPRT

Job used to print Panel Images and Program Definitions from the TDF.

Uses—TLNUXPRT

Used by—N/A

Parameters:

- TDFMEM—Header-ID of the TDF item being exported
- DEFTYPE—Type of above entity: SD, RD, DR, BD, PD, PI, ND, SP

JUXREF

Job that creates Summary Automated Documentation reports.

Uses—TLNUXREF, CIRSEL

Used by—N/A

Parameters:

- SELCTL—Selection Card DSname

For more information, see the *Utilities Guide*.

JUXTRT

Job that creates Summary Automated Documentation Extract Files.

Uses—TLNUXTRT, CIXSEL

Used by—N/A

Parameters:

- SELCTL—Selection Card DSname

For more information, see the *Utilities Guide*.

JUXXRF

Job that creates Detail Automated Documentation reports.

Uses—TLNUXXRF, CIESEL, CIPSEL, CIXSRT

Used by—N/A

Parameters:

- PDSn—Library to search for "data elements" n = 1 to 9.
- SELCTL—Entity Selection Card DSname
- SELPARM—CA Telon Parameter Selection Card DSNAME
- TITLE—Optional title to add to report title

For more information, see the *Utilities Guide*.

JVERFY

Job used to verify the integrity of TDF VSAM data sets.

Uses—TLNVERFY

Used by—N/A

Parameters:

- TDFFILE—DSN of TDF file being verified
- KEYLEN—Length of the key for the file being verified:
  - 10 for TNTDF and TNTDFW
  - 13 for TNTDD and TNTDDW
  - 18 for TNHELP and TNTCCL

- 32 for TNTDX and TNTDXW

  Note: Add the DELETE parameter to the length of the key for the file being verified to delete bad or missing blocks for that specific file. For example:

  ```
  KEYLEN = ##,DELETE
  ```

- OPTION—Processing option:
  - 0 if keylen=10
  - 2 is keylen=32
  - 3 if keylen=13
  - 8 if keylen=18

For more information, see Verify TDF VSAM Data Sets in the chapter, "Manage the CA Telon Environment."

JZAPLOGO

Job used in the installation to customize your company's logo on the first screen of the TDF. For more information, see the *Installation Guide*.

Uses—N/A

Used by—N/A

Parameters—N/A

TL*****L CA Telon Generate, Compile, and Link PROCedure

After completing your installation, you will notice a number of PROCs that were created by the installation process.

Each PROC is a variation of the CA Telon generate, compile, and link Paradigm described next. Each PROC is named according to the convention described next and generated to contain the appropriate parameters for the specific environment, language, teleprocessor, DBMS pre-compiler, and generator options requested by CIJSEL.

Format

TL12345L

- **TL**—CA Telon PROC Literal
- **1**—DBMS Pre-Compiler (N,2) where N=none, 2=DB2 pre-compiler
- **2**—Target Environment (B,C,I) where B=Batch, C=CICS, I=IMS
- **3**—Location of CA Telon Source (P,V,X) where P=PDS, V=CA-PANVALET, X=TDF
- **4**—Generate (G,O) where G=generate host source
- **5**—Host Language (C,P,2) where C=LE/COBOL, P=PL/I, 2=COBOL II
- **L**— Link (L) where L=do link-edit

Example

TLNIXGCL

- **TL**—CA Telon PROC Literal
- **N**—No DBMS Pre-Compiler
- **I**—IMS Target Environment
- **X**—CA Telon Source on TDF
- **G**—Generate Host Source
- **C**—COBOL for OS/390
- **L**—Link

Uses—N/A

Used by—J*****L

Parameters—Parameters vary according to each variation. For more information about which parameters apply to a specific variation, see component member $010 in the INSTALL data set for all available parameters and #$HELP.

Notes—The parameters are only set in either the PROCedure or its associated JOB, not in both.

Other JCL

The next few pages list other sets of JCL delivered with the CA Telon product.

TLNBCRUN

Procedure that executes the COBOL Batch sample solutions using DL/I databases.

Uses—N/A

Used by—JBCRUN

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Lab Number (1 to 4)
- PGMID—Program ID (for example, XX10)
- PSB—PSB Name (for example, TRPSBCB)
- USRLOAD—pdsqual.LOADTRGC

Notes—The above parameters are set in either this member or its associated job, not in both.

TLNBPRUN

Procedure that executes the PL/I Batch sample solutions using DL/I databases.

Uses—N/A

Used by—JBPRUN

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Lab Number (1 to 4)
- PGMID—Program ID (i.e., XX20)
- PSB—PSB Name (i.e., TRPSBPB)

- USRLOAD—User Training Load Library (LOADTRGC)

Notes—The above parameters are only set in either this member or its associated job, not in both.

TLNBSRUN

Procedure that runs the Batch sample solutions using sequential files.

Uses—N/A

Used by—JBSRUN

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Batch Lab Assignment (1 to 4)
- LOADMD1—Load module Name to be tested for Lab 1
- LOADMD2—Load module Name to be tested for Lab 2
- LOADMD3—Load module Name to be tested for Lab 3
- USRLOAD—User Training Load Library
- TLNLOAD—CA Telon Load Library

Notes—Required for the Batch training classes.

TLNBVRUN

Procedure that runs the Batch VSAM sample solutions.

Uses—N/A

Used by—JBVRUN

Parameters:

- TEAM—Team Number (1 to 5)
- LAB—Lab Number (1 to 4)
- PGMID—Program ID (i.e., XX10)
- USRLOAD—User Training Load (LOADTRGC)
- TLNLOAD—CA Telon Load Library

Notes—The above parameters are only set in either this member or its associated job, not in both.

TLNCLIST

Procedure that creates a variable blocked CLIST data set with LRECL = 255 and copies all CLIST members from the INSTALL data set.

Uses—N/A

Used by—#CLISTS

Parameters—OLDLIB=dsn (where dsn = the data set name of the INSTALL data set with fixed block CLISTS), NEWLIB = dsn (where dsn = the data set name of the CLIST data set to be created).

TLNCPBMS (CICS only)

Procedure that assembles a BMS map from generated BMS source code.

Uses—N/A

Used by—JCPBMS

Parameters:

- SRCLIB—PDS containing BMS source
- SRCMEM—BMS source member within SRCLIB
- BMSPARM—type of BMS output to generate (Default = MAP)

Notes—Required for all CICS installations using BMS mapping. The above parameters do not have to be included in both this procedure and the job running it.

TLNIPMFS

Procedure that assembles an MFS map from generated MFS source code.

Uses—N/A

Used by—JIPMFS

Parameters:

- SRCLIB—PDS containing MFS source
- SRCMEM—MFS source member within SRCLIB
- IMSRES—IMS ResLib
- MFSREF—IMS Referral Lib

- MFSFRMT—IMS Format Lib

Notes—The above parameters do not have to be included in both this procedure and the job running it.

TLNUBK2

Used to initialize GDG data sets to back up CA Telon data sets.

Uses—N/A

Used by—JUBK2

Parameters—N/A

TLNUBK3

Used to create the GDG backup tapes.

Uses—N/A

Used by—JUBK3

Parameters—N/A

TLNUBK4B

Used to do a partial restore of a TDF file from a TDF backup file.

Uses—N/A

Used by—JUBK4B

Parameters—N/A

TLNUCAD2

Used to import DB2 tables into the TDF.

Uses—N/A

Used by—JUCAD2

Parameters—N/A

TLNUCCCK

Job used to report on and optionally delete orphan custom code members found in the TNTCCL database. For example, custom code members left in the CA Telon Design Facility when the program to which they belong has been deleted.

Uses—N/A

Used by—JUCCCK

Parameters—N/A

- DELFLAG—1=Delete orphan custom code members, 0=Do not delete "orphan" custom code members
- RPTOPT—S=Short format (list only "orphan" custom code members, L=Long format (list all custom code members)

TLNUCVDT

Job used to run the Century-Date conversion utility.

Uses—TLNUCVDT

Used by—N/A

Parameters:

- TPFRSRC—Transport source file to be converted/reported on
- TPTOSRC—Transport source file output from conversion
- RUNTYPE—"CONVERT" or "REPORT"
- USREDITS—File containing user field edits to be converted (from and to)

TLNUDDEF

Procedure that deletes screen, nonterminal, report, driver, stored procedure, and batch definitions from the TDF.

Uses—N/A

Used by—JUDDEF

Parameters:

- TDFMEM—Screen, Report, Driver, Nonterminal, or Batch Definition name within TDF
- DEFTYPE—Type of TDF Definition to be deleted—PI, PD, SD, RD, DR, BD, SP, or ND

Notes—The above parameters do not have to be included in both this procedure and the job running it.

TLNUMDBD

Procedure that imports DBD information from existing DBD source code into the TDF.

Uses—N/A

Used by—JUMDBD

Parameters:

- MAXSEVR—Two-digit indicator of the highest acceptable Comparison severity
- RUNTYPE—Indicator defining the scope of import processing
- SRCLIB—PDS containing database definition source code
- SRCMEM—Database definition source member name in SRCLIB

Notes—The above parameters do not have to be included in both this procedure and the job running it. For more information, see the *Utilities Guide*.

TLNUMDEF

Procedure that imports screen, nonterminal, report, stored procedure, and driver definitions into the TDF from CA Telon source code.

Uses—CINPTPCH

Used by—JUMDEF

Parameters:

- MAXSEVR—Two-digit indicator of the highest acceptable comparison severity
- RUNTYPE—Indicator defining the scope of import processing
- SRCLIB—PDS containing CA Telon Screen, Report, Nonterminal, or Driver Definition
- SRCMEM—CA Telon Screen, Nonterminal, Report, or Driver source member name in SRCLIB

For more information, see the *Utilities Guide*.

TLNUMDFE

Procedure that imports screen, nonterminal, report, driver, batch, stored procedure, and panel definitions into the TDF from All Fusion Endevor Change Manager

Uses—N/A

Used by—JUMDFE

Parameters

- MAXSEVR—Two-digit indicator of the highest acceptable comparison severity
- NDVRENV—CA Endevor SCM environment
- NDVRSTG—CA Endevor SCM stage for retrieval
- NDVRSYS—CA Endevor SCM system
- NDVRSUB—CA Endevor SCM subsystem
- NDVRTYP—CA Endevor SCM type
- NDVRCID—CA Endevor SCM CCID paramater (optional)
- NDVRCMT—CA Endevor SCM comment parameter (optional)
- RUNTYPE—Indicator defining the scope of import processing
- SRCMEM—CA Telon Definition member name in CA Endevor SCM

TLNUMPAN

Procedure that imports Screen, Nonterminal, Report, and Driver Definitions into the TDF from CA Panvalet.

Uses—N/A

Used by—JUMPAN

Parameters:

- MAXSEVR—Two-digit indicator of the highest acceptable Comparison severity
- RUNTYPE—Indicator defining the scope of import processing
- PANLIB—CA Panvalet library containing CA Telon Screen, Nonterminal, Report, or Driver Definition
- SRCMEM—CA Telon Definition member name in PANLIB

Notes—See the *Utilities* for details.

TLNUMPSB

Procedure that imports PSB data from existing PSB source code into the TDF.

Uses—N/A

Used by—JUMPSB

Parameters:

- SRCLIB—PDS containing the PSB source code
- SRCMEM—PSB source code member name in SRCLIB

Notes—The above parameters do not have to be included in both this procedure and the job running it. For more information, see the *Utilities Guide*.

TLNUPIMG

Proceudre that creates a formatted print of a TDF Panel Image.

Uses—N/A

Used by—JUPIMG

Parameters:

- TDFMEM—Header-ID of the TDF Panel Image to be printed.

Notes—See the "Important Parameters" appendix in this guide for more information.

TLNUVDFI

Creates a PC import file from a mainframe CA Panvalet file.

Uses—N/A

Used by—JUVDFF

Parameters—

- PCTLIB = PC transfer library
- PANLIB = user source library
- SRCMEM = name of member with CA Telon source

TLNUXDEF

Procedure that exports Panel Images, Panel Definitions, and Program Definitions from the TDF to CA Telon source code in a PDS.

Uses—N/A

Used by—JUXDEF

Parameters:

- TDFMEM—Header-ID of the TDF Definition being exported
- DEFTYPE—Type of the Definition: SD, RD, DR, BD, PD, PI, ND, SP
- SRCLIB—PDS into which the exported definition will be placed
- ENV—Export environment: T-TSO, C-CICS, I-IMS
- CMP—Export format: C-compressed, N-noncompressed

Notes—The above parameters do not have to be included in both this procedure and the job running it. For more information, see the *Utilities Guide*.

TLNUXDFE

Procedure that exports Screen, Report, Driver, Batch and Panel Definitions from the TDF to CA Endevor SCM.

Uses—N/A

Used by—JUXDFE

Parameters:

- DEFTYPE—Type of the Definition: SD, RD, DR, BD, PD, PI, ND, or SP
- CMP—Export format: C-compressed, N-noncompressed
- ENV—Export environment: T-TSO, C-CICS, I-IMS
- NDVRENV—All Fusion Endevor Change Manager environment
- NDVRSUB—All Fusion Endevor Change Manager subsystem
- NDVRSYS—All Fusion Endevor Change Manager system
- NDVRTMP—All Fusion Endevor Change Manager type
- NDVRUP—All Fusion Endevor Change Manager update if present flag (optional)
- NDVRDVR All Fusion Endevor Change Manager override signout flag (optional)
- NDVRCID All Fusion Endevor Change Manager CCID parameter (optional)
- NDVRPRG All Fusion Endevor Change Manager processor group parameter (optional)
- NDVRCMT All Fusion Endevor Change Manager comment parameter (optional)
- TDFMEM—Header-ID of the TDF Definition being exported

TLNUXPAN

Procedure that exports Screen, Report, and Driver Definitions from the TDF to CA Panvalet.

Uses—N/A

Used by—JUXPAN

Parameters:

- TDFMEM—Header-ID of the TDF Definition being exported
- DEFTYPE—Type of the Definition: SD, RD, DR, BD, PD, PI, ND, or SP

- PANLIB—CA Panvalet library into which the exported definition will be placed
- ENV—Export environment: T-TSO, C-CICS, I-IMS
- CMP—Export format: C-compressed, N-noncompressed

Notes—The above parameters do not have to be included in both this procedure and the job running it. For more information, see the *Utilities Guide*.

TLNUXPRT

Procedure that prints TDF Panel Images and Program Definitions.

Uses—N/A

Used by—JUXPRT

Parameters:

- TDFMEM—Header-ID of the TDF item being exported
- DEFTYPE—Type of above entity; SD, RD, DR, BD, PD, PI, ND, or SP

TLNUXREF

Procedure that creates Summary Automated Documentation reports.

Uses—N/A

Used by—JUXREF

Parameters:

- SCRUNIT—Name of Scratch UNIT (e.g., SYSDA)
- SELCTL—Selection Card DSname
- TLNLIB—Library in which CA Telon modules reside
- VSDISP—DISP of VSAM files
- VSQUAL—High level qualifier for CA Telon TDF VSAM files
- XCUST—Customer Code Extract DSname
- XDBSEG—Segment Extract DSname
- XENT—Entity Extract DSname

Notes—The above parameters are only set in this member or its associated job, not in both.

TLNUXTRT

Procedure that creates Summary Automated Documentation Extract Files.

Uses—CIXSEL

Used by—JUXTRT

Parameters:

- PDSUNIT—UNIT for DISK
- PDSVOL—VOL SER for DISK
- SCRUNIT—Name of Scratch UNIT (e.g., SYSDA)
- SELCTL—Selection Card DSname
- TLNLIB—Library in which CA Telon modules reside
- VSDISP—DISP of VSAM files
- VSQUAL—High level qualifier for CA Telon TDF VSAM files
- XCUST—Customer Code Extract DSname
- XDBSEG—Segment Extract DSname
- XENT—Entity Extract DSname

Notes—The above parameters are only set in this member or its associated job, not in both.

TLNUXXRF

Procedure that creates Detail Automated Documentation reports.

Uses—CIXSRT

Used by—JUXXRF

Parameters:

- FUNC—CA Telon PDS Utility function: XREFCBL, XREFEDIT, XREFPLI
- PDS1...—Library to search for "data elements"
- PDSn n = 1 to 9.
- PDSMBR—Scope of search indicator (Default = ALL)
- SCRUNIT—Name of Scratch UNIT (e.g., SYSDA)
- SELCTL—Entity Selection Card DSNAME
- SELPARM—CA Telon Parameter Selection Card DSNAME
- SORTCTL—SORT Control Card DSNAME
- SORTLIB—User SortLib
- SRCHCTL—Search Argument Control Card DSNAME

- TITLE—Optional title to add to report title
- TLNLIB—Library in which CA Telon modules reside
- TRACE—Y or N
- VSQUAL—High level qualifier for CA Telon TDF VSAM files
- XREFOUT—Detail Entity Extract PDS DSNAME

Notes—The above parameters are only set in this member or its associated job, not in both.

TLNVERFY

Procedure used to verify the integrity of the TDF VSAM data sets.

Uses—N/A

Used by—JVERFY

Parameters:

- TDFFILE—DSN of TDF file being verified
- KEYLEN—Length of the key for the file being verified:
  - 10 for TNTDF and TNTDFW
  - 13 for TNTDD and TNTDDW and TNTCCL
  - 18 for TNHELP
  - 32 for TNTDX and TNTDXW

  Note—Add the DELETE parameter to the length of the key for the file being verified to delete bad or missing blocks for that specific file. For example,

  ```
  KEYLEN = ##,DELETE
  ```
- OPTION—Processing option:
  - 0 if keylen=10
  - 2 if keylen=32
  - 3 if keylen=13
  - 8 if keylen=18

Note: See Verifying TDF VSAM Data Sets in the "Managing the Environment" chapter of this guide for more information.

Appendix C: Installation Defaults for Mainframe Targets

The default installation settings for CA Telon mainframe targets as delivered are described in this appendix. Certain modifications that you can make to the various defaults are also discussed.

- CICS installation-specific information
- IMS installation-specific information

This section contains the following topics:

CICS Installation-Specific Information

There are several installation options that you can customize to meet your needs, to provide flexibility, and to meet your installation's standards. These options affect default values for CA Telon non-procedural statements and naming conventions.

This appendix describes the default conventions for each of the categories listed next, and leaves room for you to insert your customized defaults, where appropriate.

Note: If you are using PWS, see the *PWS User Guide* for the directories which are the equivalent of library names.

- Non-procedural statement defaults—Conventions for defining default values for the CA Telon non-procedural statements
- Library names—Conventions for naming the CA Telon libraries
- Screen-related names—Conventions for assigning names that are based on the screen header ID, screen ID, and application ID
- Copy/include member names—Conventions for naming the copy/include members that are standard for each application
- Program names—Conventions for assigning names to generated programs
- CICS control names—Conventions for defining CICS control information: PSB names, transaction IDs, and BMS map names
- General implementation considerations—Suggestions for implementing your own conventions to supplement those specific to CA Telon

Following the discussion of conventions, there are notes of some general approaches to conventions that are recommended for use with CA Telon applications.

Non-Procedural Statement Defaults

The next table contains the non-procedural CA Telon statements and their defaults. Use the space at the right to insert your installation defaults.

Statement	Parameter	Supplied default	Installation standard
CICSPGM	BMS +	N	
	BMSMAP +	*hh*Z*nnnn* **	
	TRACE +	Y	
	TRANCDE +	*nnnn* (ID)	

Statement	Parameter	Supplied default	Installation standard
	BMS alignment +++	Unaligned **	
	GENPCBS	Y	
	IOASTG	Static	
	SPASTG	Static	
	TPBSTG	Static	
	LINEOPT	Y	
SCREEN	ALARM +	N	
	APPLID +++	None *	
	HEADER +++	*hh* *	
	ID +++	*nnnn* *	
	LANG +	COB (COBOL)	
	OUTIFIL +	SPACE	
	REFRESH +	Y	
SEGLOOP	Paging forward ++	PF key 1 or 13	
	Paging backward	PF key 2 or 14	

* See Screen-Related Names for further explanation

** See CICS Control Names for further explanation

\+ Can be changed by the programmer in a CA Telon non-procedural statement

++ Can be overridden by procedural code

+++ Cannot be overridden by the programmer

Library names

Two libraries are used in the generation phase of CA Telon processing:

- **Screen-generation library**, where the skeletal non-procedural statements are written.
- **Screen-definition library,** where you should move the skeletal statements before completing them; often, a CA Panvalet or CA Librarian file.

Library	Generated name	Installation standard
Screen-generation PDS	CUSTOMER.TELON.GENPDS	
Screen-definition PDS	CUSTOMER.TELON	
	SOURCEC (for COBOL)	
	SOURCEP (for PL/I)	

Screen-related names

Screen images, as defined using the Screen Design Aid component of CA Telon, are always identified by a two-character header ID (hh) and a four-character screen ID (nnnn). CA Telon uses these IDs to generate various names related to the screen, including program and control blocks.

You can add another level of screen identifier; a variable number of characters that define an application ID (such as, INV). To do this, use the APPLID keyword parameter of the SCREEN statement. When an application ID is defined, the generated names, as defined for your installation, can make use of the application ID variable (shown as *aa* for our purposes) in the same way that it uses the hh and nnnn variables noted above. As installed, however, the application ID is not used in the generation of names.

The following variables are used:

- *hh*—Header ID
- *nnnn*—Screen ID
- *aa*—Application ID (not used in supplied defaults but available if defined on the SCREEN statement.)

The next table tells how the header ID, screen ID, and application ID are used to generate names related to the screen itself.

Name	Supplied default	Installation default
Screen member name* screen generation library	*hhnnnn*	
Screen definition memberin screen design library	*hhnnnn*	
SCREEN statement		
Screen ID	*nnnn*	
Header ID	*Hh*	
APPLID	None&semi. used to define application ID for use elsewhere	
NEXTPGM parameter	*nnnn*	

* Cannot be modified in r1.0

COPY/INCLUDE Member Names

CA Telon looks for several standard COPY members when it generates application code. These COPY members are summarized next, along with their naming conventions. See the *Programming Concepts* guide for more information about these members.

Member description	Supplied default	Installation standard
Application Work Area	*hh*WKAREA	
DL/I Update Area	*hh*UPDTA	
PF Key Logic	*hh*PFK*nnn* where *nnn* is 1-3 characters, supplied by the PFKEYS parameter of the SCREEN statement	

Program Names

CA Telon follows the conventions displayed next when naming the CICS program. Each assigned value refers to the name used in the COBOL IDENTIFICATION DIVISION or the PL/I PROC OPTIONS statement (respectively, by language).

Language and name	Supplied default	Installation standard
COBOL program	*hh*CP*nnn*	
PL/I program	*hh*T*nnnn*	

CICS Control Names

CA Telon follows the conventions displayed next when naming the control information for use in processing a screen under CICS. For the DL/I PSB, there is no convention as installed. You can define the names explicitly and thereby not use the defaults in effect for your installation. To do this, use the following parameters on the non-procedural statements.

- CICSPGM statement PSBNAME
- CICSPGM statement TRANCDE parameter
- CICSPGM and CICSBMS statements BMSMAP parameter (both specifications, if used, must be identical)

Control description	Supplied default	Installation standard
BMS Alignment	Unaligned	
BMS Map Name	*hhZnnnn*	
DL/I PSB	(none supplied)	
Transaction name	*nnnn*	

General Implementation Considerations

In addition to the naming conventions described previously, each installation should establish conventions for use during the evolution of an application. For CA Telon, these conventions might include:

- Design conventions: Rules regarding the general and detailed design. Who is responsible for what? What are the products that result from the design process? Who signs off on what, and at what point?
- Conventions for coding.
- Conventions for testing: Rules regarding the use of BMS and which entries are required in the CICS tables (PPT, PCT, FCT, PDIR, DDIR).
- Conventions related to PSB/BMS generation: How is the PSB and BMS source be used? What responsibilities do application programmers have in the final assembly of BMS map source? Must PSB source be input to the data dictionary?
- Conventions related to converting an application from the test environment to production (for example, updating the CICS tables).

IMS Installation-Specific Information

CA Telon provides you with many parameters to tailor an application to the application user, existing screens, and the IMS DB/DC environment. This has been done to allow flexibility in meeting the various trade-offs between user friendliness, production efficiency, and the installation's data processing standards.

The following topics are presented in this subsection:

- CA Telon nonprocedural statement defaults
- Naming conventions
- Adding new field edits
- Preparing an application for development
- IMS standard environment options
- IMS conversion checklist
- CA Telon batch JCL procedures

Installation Modifiable Parameters

Parameters used in the CA Telon nonprocedural statements that can be modified by an installation are:

Statement	Parameter	Supplied default	Installation standard
SCREEN	PGMCUST	NONE	
	LANG	COB	
	REFRESH	Y	
	ALARM	N	
	OUTIFIL	SPACE	
	EOFKEY	Y	
	OUTATTR	Y	
SEGLOOP	Paging forward	PF1, this default, or PF7-PF8	
	Paging backward	PF1, this default, or PF7-PF8	
IMSPGM	LINEOPT	1	
	CONVERS	Y	
	LINKOPT	D	
	TRACE	Y	

Statement	Parameter	Supplied default	Installation standard
	GENPCBS	Y	
IMSDRV	CONVERS	Y	
	GENPCBS	Y	
	LINKDYN	N	
	TRACE	Y	

Naming conventions are to be tailored at installation time to meet existing standards in the following areas:

- Screen names
- COPY/INCLUDE member names
- Program names
- IMS control block names

If an installation's naming conventions for Programs or IMS control blocks cannot be automatically generated, then manual overrides are possible on the IMSPGM, IMSDRV, and IMSMFS statements.

Copy/Include Names

CA Telon applications make use of several standard COPY/INCLUDE members. These members have the following naming conventions:

Member function	Supplied default	Installation standard
PCB List	*hh*PROC	
PCB Declaration	*hh*PCBS	
Application Work Area	*hh*WKAREA	
DLI Update Area	*hh*UPDTA	
PFKEY Code	*hh*PFK*xx* (*xx* supplied by SCREEN PFKEYS parameter)	

COBOL Program Names

The TSO and IMS programs have the following naming conventions:

Program type	Supplied default	Installation standard
TSO Program	*hh*TM*nnnn*	
IMS Dynamic MAIN	*hh*IM*nnnn*	
IMS Dynamic ALIAS	*hh*XM*nnnn*	
IMS Driver	*hh*IM*nnnn*	
IMS Static Module	*hh*SM*nnnn*	

PLI Programs

The TSO and IMS programs have the following naming conventions:

Program type	Supplied default	Installation standard
TSO Program	*hh*T*nnnn*	
IMS Dynamic MAIN	*hh*I*nnnn*	
IMS Dynamic ALIAS	*hh*X*nnnn*	
IMS Driver	*hh*I*nnnn*	
IMS Static Module	*hh*S*nnnn*	

IMS Control Names

The IMS control information has the following naming conventions:

IMS function	Supplied default	Installation standard
TSO PSB Name	NONE	
IMS PSB Name(must match the IMS Program Name)	*hh*IM*nnnn*	
Transaction Name	*hh*IM*nnnn*	
MFS Names Format	*hhnnnn*	
MID	*hh*I*nnnn*	

IMS function	Supplied default	Installation standard
MOD	*hh*O*nnnn*	

IMS Overrides on CA Telon Statements

Use the following parameters when the above naming conventions cannot be adhered to by an application or an installation.

Statement	Parameter	Installation standard
IMSPGM	PGMNAME	
TRANCDE		
MFSMOD		
IMSDRV	PGMNAME	
TRANCDE		
FRSTMOD		
IMSMFS	MFSMOD	
TRANCDE		
SYSMSG		

Add New Edits

This section describes how to add a new edit at your installation:

1. Decide:
   - Whether the edit is for INPUT or OUTPUT
   - What type of interface is required (ALPHA, NUMERIC, or BIT)
   - What language to use in writing the edit (it is important to use the calling language or assembler language and in PL/I it is recommended to use the ASM interface option)
2. Code the new edit, paying special attention to the linkage parameters.
3. Compile and link the edit subroutine. All external references should be resolved.

   Note: The name of the module in the load library must begin with an I or O (for example, if FLDTYPE=NEWED is used for both input and output editing, then two edit modules are required and they are named INEWED and ONEWED).
4. Test the edit.

   Note: For PWS, test the field edit using the alternative debugging tools described in the *PWS User Guide*.
5. Have your CA Telon coordinator place the name of your new edit into the EDITTBL member used by the Application Generator.

Prepare an Application for Development

The *Programming Concepts Guide* defines the tasks necessary to prepare an application for development with CA Telon. The following is a checklist to assure those tasks are completed. This list should be augmented to include any special installation requirements also required.

1. Prepare DBDs for all necessary databases and create and initialize databases.
2. Prepare a PSB accessing necessary databases (any structure, even one including extra databases, is valid). This PSB is used for TSO testing.
3. (Optional Step) Create *hh*PCBS and *hh*PROC members to define the structure of the PSB. This is most easily done by copying over existing members and making global changes for new names.
4. Create *hh*WKAREA member by copying over an existing member and changing any values which are different for this application. If error message contents and flag values are standard at an installation, no changes are necessary.
5. (Not a Required Step for DB2) Create the *hh*UPDTA member (if any) by copying over an existing member and changing the length of the value to be at least as large as the largest segment updated.
6. Create COPY or INCLUDE members for all segments to be accessed in this application.
7. Create a Transfer Work Area copy member.

CA Telon Procedures

It is recommended that installation standards be set to define CA Telon procedures and standard modes of operation for CA Telon applications. Some sample standards are listed next. They should be modified and expanded and then redistributed as a part of this guide.

Starting an application

Whether applications are started using a /FORMAT command or by entering the IMS transaction code.

TRAN code on screen

Whether the transaction code is to appear unprotected on the screen.

TRAN code specification

How transaction code values are specified, either through generated names or by explicit specification on the IMSPGM and IMSMFS statements.

Linkage options

Under what circumstances, if any, static, dynamic, and message switch linkage for IMS programs are used?

PSB/MFS generation

How is the PSB and MFS source used? Do application programmers have any responsibility in the final assembly of MFS control blocks? Must PSB source be input to the data dictionary?

Appendix D: Important Parameters

Important parameters for the install are described in this appendix. The printing and TELONTDF parameters are also included.

You will also learn how to print panel images in batch mode on the mainframe.

For more information about printing panel images from the Utilities screen, see the *Design Facility Reference Guide.*

This section contains the following topics:

Print Parameters

The *pdsqual.INSTALL(JUXPRT)* job stream prints Panel Images from the batch mode. It uses a procedure pdsqual.INSTALL(TLNUXPRT). This prints both standard Panel Images and Batch Panel Images with Image Groups.

The job allows you to enter parameters in order to format the printed Panel Image to your specific requirements.

Once you have set these parameters in JUXPRT, verify the job cards and submit the job. The parameters you can set are:

LINENUM=Y&lor.N

Parameter that controls whether each panel image line should be numbered at both ends of the line. The line numbers are separated from the Panel Image by asterisks. Values are:

- **Y**—(Default) Print line numbers
- **N**—Do not print line numbers

When LINENUM=Y, JUXPRT prints in this format:

```
1 *     TRAINING SYSTEM     * 1
2 *          MENU           * 2
3 *                         * 3
```

DBLSPC=Y&lor.N

Parameter that controls whether the numbered lines are printed double spaced. The parameter is ignored when LINENUM=N. Only operational when the the first parameter asks for line numbers. Valid values are:

- **Y**—(Default) Print a blank line bounded only with asterisks between each Panel Image line
- **N**—Do not double space the Panel Image

When DBLSPC=Y and LINENUM=Y, JUXPRT prints in this format:

```
  *                       *
1 *     TRAINING SYSTEM   * 1
  *                       *
2 *          MENU         * 2
  *                       *
3 *                       * 3
```

Valid only when LINENUM=N. This parameter controls whether to print column one of your panel. Often used with batch output that can use column one for attribute bytes and carriage control. Values are:

- **Y**—Print column one characters in column 1
- **N**—(Default) Discard column-1 characters, and print column-2 characters in column 1

USECOL1=Y&lor.N

Parameter that can be used to ignore screen control characters in column one. Values are:

- **Y**—Print any characters found in column 1
- **N**—(Default) Set column 1 output to spaces.

TDFMEM= hhnnnn

The header-ID combination of the Panel Image that you want to print.

Note: All the Panel Images can be printed under a given Header by specifying the member name as the header (*hh*) followed by four asterisks for *nnnn* (for example, TDFMEM='TR****').

TLNLOAD= pdsqual.LOAD

Name of the CA Telon load library.

VSQUAL= vsamqual

High-level VSAM qualifier for the TDF VSAM datasets that hold this Panel Image. Change this only if your installation uses multiple TDF VSAM datasets.

Parameters Passed to TELONTDF

The CLIST used to call the TDF calls the mainframe CA Telon-supplied TELONTDF program to execute the TDF. TELONTDF is also executed from procedures that import and export members to and from the TDF.

The next table lists the mainframe CA Telon parameters that are sent to TELONTDF when it is called (programs beginning with TN are supplied with the CA Telon product):

Parameter	Description	Bytes
DLS	CA Telon's Data Language Simulator	3
Program name	Application program name to be executed by TELONTDF (for example, TNRADRVR)<%	8
File definition module	Name of the file definition module name, TNFDMDL3	8
Y or N	Indicates whether DFP is installed	1
Scan time	Time interval to wait, in seconds, before re-attempting a control interval split in the absence of DFP	4
Y, N, or C	DLS trace option that specifies whether to trace DLS calls. C allows the trace to be turned on or off during TELONTDF execution.	1

Appendix E: Mainframe TDF Abends

The U901 abend is an internal CA Telon abend. It is returned when a TDF program encounters an error in attempting to perform I/O on a TDF file.

If you receive a U901 abend, run the JVERFY job (which is explained in more detail in Appendix C) to identify (and optionally, delete) the bad or missing blocks.

If you run JVERFY with the DELETE option, you may then need to restore selected TDF members from your file backups. You can perform a restore by defining a set of temporary TDF files. Next, repro your backup files into these temporary files. Then export the members that had been deleted through the JVERFY DELETE process, and finally, re-import the members into your permanent TDF files.

If you encountered errors in running JVERFY after receiving a U901 abend, your next step is to reorganize your TDF files and reinitialize your WIP files, then rerun JVERFY. If problems are encountered at this point, contact Customer Support according to the procedures established at your site. Be sure to have a hard copy of your output from JVERFY (and any other jobs that you just ran against the TDF files) when you call.

Some of the most common reasons for bad blocks occurring on TDF files are as follows:

- A high number of CI or CA splits (or both)
- A file could not acquire additional extents due to lack of available space on the pack
- Running a CICS TDF with VSAM share options that are different from those stated in the CA Telon installation procedures
- Hardware errors
- Using CA Telon files in a shared DASD environment
- Region (for CICS), Session (for TSO) or System Failures while TDF I/O is in progress (or all of these)

This section contains the following topics:

Recommendations for Handling U901 Abends

For large or high activity CA Telon sites, the following suggestions are offered as possible ways to reduce or prevent U901 abends from occurring. These recommendations are based on experiences with CA Telon clients in a variety of environments. You must determine the need for and feasibility of implementing any or all of these recommendations at your site.

- Based on informal reports from CA Telon clients, the custom code file (TNTCCL) receives the greatest number of U901 abends, probably in part because this is often the most active and the largest of the TDF files. This file should be reorganized nightly.
- Reorganizing all TDF files nightly helps to improve performance and decrease the probability of a U901 occurring. The JREORGPR job is provided in the INSTALL data set (see TDF VSAM Data Set Maintenance in the chapter "Manage the CA Telon Environment").
- Reinitializing the WIP files and Hold files nightly also helps achieve the benefits listed earlier. The JREORGHD and JREORGWK jobs are provided in the INSTALL data set (see TDF VSAM Data Set Maintenance in the chapter "Manage the CA Telon Environment").
- For sites that have very large Custom Code members (for example, more than 2000 lines) these large members should be stored in a PDS rather than in the TDF files.
- Sites encountering excessive CI or CA splits should increase the free space for the files in question.
- TDF files should be backed up regularly to help provide for recovery from software or hardware failures.

Index

/

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

R

S

T

U

V

W

X