CA Gen

z/OS Installation Guide

Release 8.5

Second Edition

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CA Technologies Product References

This document references the following CA Technologies products:

- CA Gen
- AllFusion® Gen
- CA CSM™ (CA MSM)

Contact CA Technologies

Contact CA Support

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

- 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
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Documentation Changes

The following documentation updates have been made since the last release of this documentation:

- Installing Your Product from Tape—Removed from the guide.
- Installing Your Product from DVD—Replaced with the chapter Installing Your Product Using Pax ESD (see page 35).
- Starting Your Product – Added Configuring Host Encyclopedia and Host Construction in section How to Configure With CA CSM (see page 62).
- Test the CA Gen IT Installation (see page 229)—Replaced the MAPPED with BYPASS instances in this topic to address the STAR issue: 21697347.

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Chapter 1: Overview

This section contains the following topics:

Audience (see page 7)
Installing CA Gen on z/OS (see page 7)

Audience

Installing CA Gen's z/OS products requires a working knowledge in the following areas:

- JCL
- TSO/ISPF
- z/OS environment and installing software in this environment
- DB2
- CICS or IMS, if developing for these target environments.
- Your organization's IT environment, enterprise structure, and region structure

You may need to work with the following personnel:

- Systems programmer for z/OS
- Systems programmer for CICS or IMS
- Storage administrator for DASD allocations
- Database Administrator for DB2

Installing CA Gen on z/OS

CA Technologies has standardized product installations across all mainframe products. Installation uses the following process:

- Acquisition—Transports the software to your z/OS system.
- Installation using SMP/E—Creates an SMP/E environment and runs the RECEIVE, APPLY, and ACCEPT steps. The software is untailored.
- Deployment—Copies the SMP/E target libraries to another system or LPAR.
- Configuration—Creates customized load modules, bringing the software to an executable state.

CA Chorus™ Software Manager (CA CSM) - formerly known as CA Mainframe Software Manager™ (CA MSM) - is an intuitive web-based tool that can automate and simplify many CA Technologies product installation activities on z/OS systems. This application also makes obtaining and applying corrective and recommended maintenance easier. A web-based interface enables you to install and maintain your products faster and with less chance of error. As a best practice, we recommend that you install mainframe products and maintenance using CA CSM. Using CA CSM, someone with limited knowledge of JCL and SMP/E can install a product.

Note: All CA Gen products can be Installed and Deployed using CA CSM. At this time only the CA Gen Host Encyclopedia (and Host Construction) product can be Configured using CA CSM. See chapter *Starting Your Product* for Deployment and Configuration details.

Note: If you do not have CA CSM, you can download it from the Download Center at http://ca.com/support. Follow the installation instructions in the CA Chorus Software Manager documentation bookshelf on the CA Chorus Software Manager product page.

You can also complete the standardized installation process manually using pax files that are downloaded from http://ca.com/support.

To install your product, do the following tasks:

1. Prepare for the installation by confirming that your site meets all installation requirements.
2. Verify that you acquired the product using one of the following methods:
   - Download the software from http://ca.com/support using CA CSM.
   - Download the software from http://ca.com/support using Pax-Enhanced Electronic Software Delivery (Pax ESD).
3. Perform an SMP/E installation using one of the following methods:
   - If you used CA CSM to acquire the product, start the installation process from the SMP/E Environments tab in CA CSM.
   - If you used Pax ESD to acquire the product, you can install the product in the following ways:
     - Install the product manually.
     - Complete the SMP/E installation using the Add Product option in CA CSM.

   Note: If a CA Recommended Service (CA RS) package is published for your product, install it before continuing with deployment.

4. Deploy the target libraries using one of the following methods:
   - If you are using CA CSM to configure your products, a CA CSM deployment is required.
   - If you are using a manual configuration process, a manual deployment is an optional step.

   Note: Deployment is considered part of starting your product.
5. Configure your product using CA CSM or manually.

   Note: Configuration is considered part of starting your product.

Chapter 2: Preparing for Installation

This section describes what you need to know and do before you install the product.

This section contains the following topics:

Hardware Requirements (see page 11)
Software Requirements (see page 11)
CA Common Services Requirements (see page 11)
Security Requirements (see page 13)
Storage Requirements (see page 14)
USS Space Requirements (see page 22)
Other Requirements (see page 22)
CA Gen Products (see page 23)
Concurrent Releases (see page 24)

Hardware Requirements

Refer to *CA Gen Technical Requirements* on the CA support website.

Software Requirements

Refer to *CA Gen Technical Requirements* on the CA Support website.

The terms COBOL, COBOL/390 and COBOL for z/OS all refer to the version of COBOL specified in the *CA Gen Technical Requirements*.

We recommend checking with IBM regarding the support of DB2 releases.

CA Common Services Requirements

The following CA Common Services are used with CA Gen:

- CAIRIM (Resource Initialization Manager)
- CA LMP (License Management Program services)
- CAISSF (Standard Security Facility)
- CA-C Runtime
- CAICCI (Common Communication Interfaces)
- CAIENF (Event Notification Facility)

Note: If other CA products are installed at your site, some of these services may already be installed. Check with your systems group.

The *CA Common Services Installation* Guide describes the CA Common Services media and installation.

CA LMP Keys Requirements

CA Gen z/OS products require CA LMP keys. CA LMP keys are valid for multiple product releases but not for multiple CPUs. If you are running an earlier release of the product and installing it on the same CPU, skip this section. If you are installing a new product, or installing on a different CPU, install CA LMP keys.

Examine the CA LMP Key Certificates you received with your installation package to ensure you have a key certificate for every product that requires one.

Fields	Descriptions
Product Name	The trademarked or registered name of the CA product licensed for the designated site and CPUs.
Supplement	The reference number of your license for the particular product, in the format *nnnnnn-nnn*. This format differs slightly inside and outside North America. In rare situations, it may be omitted.
Expiration Date	The date, *month dd*, *yyyy* as in January 15, 2010, the product license expires.
Technical Contact	The name of the technical contact at your site that is responsible for the installation and maintenance of the designated product. CA addresses all CA LMP correspondence to this person.
MIS Director	The name of the director of MIS, or the person who performs that function at the site. If the title but not the individual's name is indicated on the Certificate, supply the actual name when correcting and verifying the certificate.
CPU Location	The address of the building where the CPU is installed.
Execution Key	An encrypted code required by CA LMP for product initialization. During the installation, it is referred to as the LMP code.
Product Code	A two-character code corresponding to this particular product.
CPU ID	The code identifying the specific CPU for which installation of your product is valid.

If your site is already running software from CA, your systems group probably is already running a CAS9 proc (cataloged procedure). If so, add the CA LMP keys for the products you are installing to the CA LMP keys already being used.

The CAS9 proc runs the CAIRIM program that uses a KEYS DD statement. The KEYS DD statement should point to your CA LMP keys. The KEYS DD statement usually points to a member named KEYS in a PARMLIB or OPTLIB. Each line contains the information from one key certificate. If the information does not fit on one line, code a hyphen in column 72 for a continuation character.

The parameter structure for member KEYS is:

```
PROD(pp) DATE(ddmmmyy) CPU(tttt-mmmm/ssssss) LMPCODE(kkkkkkkkkkkkkkk)
```

Note: The parentheses are required.

Parameter	Definition
pp	Required. The two-character product code. For any given CA LMP software solution, this code agrees with the product code already in use by the CAIRIM initialization parameter for earlier releases of the product.
ddmmmyy	The CA LMP licensing agreement expiration date.
tttt-mmmm	Required. The CPU type and model on which the CA LMP software solution is to run. If the CPU type or the model requires less than four characters, insert blank spaces for the unused characters.
ssssss	Required. The serial number of the CPU on which the CA LMP software solution is run.
kkkkkkkkkkkkkkk	Required. The execution key is provided on the Key Certificate shipped with each CA LMP software solution.

This is an example of a control card for the CA LMP execution software parameter:

```
PROD(BD) DATE(15JAN02) CPU(3090-600 /370623) LMPCODE(52H2K06130Z7RZ6)
```

Note: This is an example. The CA LMP execution key is invalid. For more information about CA LMP execution key definition, see the *CA Common Services Installation Guide*.

Security Requirements

- Identify a distinct DB2 authorization ID for CA Gen.
- Identify an individual with the technical skill and authority to install DB2 and ISPF applications.

Storage Requirements

CA Gen requires disk space for the following:

- Distribution, target, deployment, and runtime libraries
- Host Encyclopedia databases
- Implementation Toolset database

Sizing Host Encyclopedia

This section explains the CA Gen Host Encyclopedia size, how to estimate larger encyclopedia sizes, creating storage group parameters, and VSAM parameters.

DASD Requirements

The Host Encyclopedia requires a minimum of 650 3390 cylinders. Of that total, 350 cylinders are for the Host Encyclopedia and 300 cylinders are for CA Gen software libraries.

You can control the amount of DB2 DASD by allocating for a small or medium size Host Encyclopedia. For better performance, you should allocate the tables and indexes across 3 to 6 volumes.

The number of 4 KB pages for a small Host Encyclopedia is:

VOL	4 KB Page
1	12750
2	7350
3	7800
4	6600
5	6300
6	4200

Many installations put all Host Encyclopedia data sets on the same volume, but relocate the high-use tablespaces and indexes to separate volumes.

How to Size an Encyclopedia

This section explains the encyclopedia size and how to estimate larger encyclopedia sizes.

CA Gen defines two Encyclopedia sizes:

- A small Encyclopedia is 350 cylinders (3390).
- A medium Encyclopedia is 1400 cylinders (3390).

All tables or indexes are the same in the small and medium encyclopedias except for the following:

DASC	DPRP
DOBJ	DSUBEX

These tables and indexes are seven times larger in the medium Encyclopedia than in the small Encyclopedia. This section explains how to resize the tables to fit your requirements when you need a larger encyclopedia.

Note: Large encyclopedias can be as large as 10,000 cylinders or more.

How to Estimate Larger Encyclopedia Sizes

This section defines which tables need resizing to accommodate a larger encyclopedia and how to estimate the size of the encyclopedia.

Schema Tables

Never resize these CA Gen tables:

SASC	SOBJ
SDIV	SPRP
SMDL	STRG

Small User Data Tables that Remain Static

The following tables are considered *small* and usually remain static:

DCOPY	DMDL	DSUBDF
DCPYUS	DSETDF	DSUBID
DFAMILY	DSETID	DSUBUS

DGRPUS	DUSR	DXCPID
DMAX		

User Data Tables that Vary in Size

The sizes of the following user data tables depend on logging use:

- DHLOG-Model history activity logging. When logging is enabled, archive this table frequently to keep it small.
- DHOBJ-Object history activity logging. When logging is enabled, archive this table frequently to keep it small.
- DTXT-Bulk of data is descriptions inside model. This table may grow as the use of descriptions increases.

You can disable DHLOG and DHOBJ for each model by using Host Encyclopedia option 1.3.13.4.

Large Data Tables

The following tables need to grow as encyclopedia use increases:

DASC	DPRP
DOBJ	DSUBEX

Public Interface Table Sizes

Resize the Public Interface (PI) tables according to the use of PI feature:

MODEL	PINAME
PIDATA	PITEXT

Encyclopedia Estimating Methods

Use one of the following methods to estimate a large encyclopedia.

Method One

Look at the table sizes for an encyclopedia installed on your system to estimate the space needed for a larger encyclopedia.

Method Two

Use the relative sizes of major tables. The relationship is based on analysis of several large production Host Encyclopedias.

Table	Index 1	Index 2	Index 3
DOBJ	30%	40%	40%
DASC	50%	50%	Not applicable
DPRP	16%	Not applicable	Not applicable
DSUBEX	40%	40%	Not applicable
DTXT	15%	Not applicable	Not applicable
DHLOG	10%	Not applicable	Not applicable
DHOBJ	10%	Not applicable	Not applicable
MODEL	40%	40%	Not applicable
PIDATA	40%	40%	50%
PINAME	25%	20%	Not applicable
PITEXT	25%	20%	Not applicable

Using the information in this table, estimate the number of objects and divide by 70 to get the size of the DOBJ table (in 4 KB pages).

```
Calculate the sizes of the DASC, DPRP, and DSUBEX tables:
DASC = 1.7 X (DOBJ value)
DPRP = 1.7 X (DOBJ value)
DSUBEX = 1.0 X (DOBJ value)
```

The factor for DSUBEX is a minimum. If subsetting is not used, or is low, 1.0 is adequate; otherwise, this value needs to be larger.

Example

```
50 Models x 30,000 Objects/Model = approximately
1,500,000 Objects
1,500,000 divided by 70 = approximately 22,000 4K
DOBJ pages
DASC = 1.7 * 22,000 = approximately 36,000
DPRP = 1.7 * 22,000 = approximately 36,000
SUBEX = 1.5 * 22,000 = approximately 33,000
DOBJ = 22,000 (see above)
```

	Table	Index 1	Index 2	Index 3
DOBJ	22,000	7,000	9,000	9,000
DASC	36,000	18,000	18,000	N/A
DPRP	36,000	6,000	N/A	N/A
DSUBEX	22,000	13,000	13,000	N/A

Method Three

The following tables show the number of 4 KB pages allocated for the Schema, Data, and Public Interface tables or indexes for a small and a medium Host Encyclopedia. When using Storage Group, CA Gen automatically multiplies each value by four when generating the DDL.

The sizes of the following tables or indexes depend on the number and sizes of models.

Table/Index	Small	Medium
DASC	4800	33600
DASCI1	2400	16800
DASCI2	2400	16800
DOBJ	3000	21000
DOBJI1	900	6300
DOBJI3	1200	8400
DPRP	4800	33600
DPRPI1	800	5600
DPRPI1	800	5600
DSUBEX	6000	42000
DSUBEXI1	2400	16800
DSUBEXI2	2400	16800

You may need to adjust the sizes of the following tables or indexes:

Table/Index	Small or Medium
DHOBJ	1500
DHOBJI1	150

Table/Index	Small or Medium
DHLOG	2500
DHLOGI1	500
DHLOGI2	500
DHLOGI3	1000
DTXT	6000
DTXTI1	325

The values of the following table or indexes are constant.

Table/Index	Small, Medium, or Large
DCOPY	150
DCOPYI1	150
DCOPYI2	150
DCPYUS	65
DCPYUSI1	10
DCPYUSI2	10
DFAMLY	65
DFAMLYI1	20
DFAMLYI2	20
DGRPUS0	65
DGRPUSI1	5
DGRPUSI2	5
DMAX	65
DMDL	65
DMDLI1	12
DMDLI2	24
DSETDF	400
DSETDFI1	400
DSETID	65
DSETIDI1	30
DSETIDI2	30

Table/Index	Small, Medium, or Large
DSETIDI3	30
DSUBDF	400
DSUBDFI1	100
DSUBDFI2	100
DSUBID	65
DSUBIDI1	20
DSUBIDI2	20
DSUBUS	65
DSUBUSI1	10
DSUBUSI2	10
DUSR	65
DUSRI1	5
DXCPID	65
DXCPIDI1	5

The size of the following table or indexes depends on Public Interface usage.

Table/Index	Small or Medium
MODEL	65
MODELI1	10
MODELI1	10
MODELI2	1000
PIDATA	400
PIDATAI1	400
PIDATAI2	400
PIDATAI3	400
PINAME	100
PINAMEI2	80
PITEXT	1000
PITEXTI1	250
PITEXTI2	250

Do not resize the following schema tables.

Table/Index	Small or Medium
SASC	600
SASCI1	300
SASCI2	300
SASCI3	300
SDIV	600
SDIVI1	300
SDIVI2	300
SMDL	65
SMDLI10	5
SMDLI2	5
SOBJ	300
SOBJI1	300
SOBJI2	300
SPRP	600
SPRPI1	300
SPRPI2	300
STRG	600
STRGI1	300

How to Create Storage Group Parameters

The Assign Storage Group Names screen shows the CEINSTAL screen for creating STOGROUP space parameters. The default values are expressed in 1 KB records, so they are four times larger than the values in the VSAM samples. A sample SQL that Creates DASC is shown next:

```
CREATE TABLESPACE DASC
    IN DBIEF67D
    USING STOGROUP SYSDEFLT
    PRIQTY                          134400
    SECQTY                          53760
    LOCKSIZE                        ANY
    SEGSIZE                         64
    CLOSE NO;
```

How to Create VSAM Parameters

The Assign VSAM Names screen illustrates the CEINSTAL screen for creating VSAM space parameters. The default values are expressed in 4 KB pages.

A JCL to create space for table DASC is shown next.

```
DEFINE CLUSTER  +
  (NAME('AAAC.DSNDBC.DBIEF67D.DASC.I0001.A001')  +
  LINEAR  +
  REUSE  +
  VOL (XXXXXX)  +
  RECORDS (33600    13440)  +
  SHR (3,3)   )  +
  DATA +
  (NAME('AAAC.DSNDBD.DBIEF67D.DASC.I0001.A001'))
CREATE TABLESPACE DASC
  IN DBIEF67D
  USING VCAT AAAC
  LOCKSIZE ANY
  SEGSIZE 64
  CLOSE NO;
```

USS Space Requirements

Ensure that you have sufficient free space in the USS file system that you are using for Pax ESD to hold the directory that the pax command and its contents create. You need approximately 3.5 times the pax file size in free space.

If you do not have sufficient free space, you receive error message EDC5133I.

Other Requirements

Before installing CA Gen, ensure the environment meets the following prerequisites:

- Verify all the required operating system components are installed.
- Identify an individual with the technical skill and authority to install DB2 and ISPF applications.
- Identify the TSO environment settings required for access to CA Gen.
- Identify the ISPF changes required for CA Gen.
- DASD requirements are met

Before installing Host Construction and z/OS Implementation Toolset ensure the environment meets the following requirements:

- IMS environment requirements
- CICS environment requirements
- COBOL requirements, before compiling source code

CA Gen Products

CA Gen products consist of multiple FMIDs. The following are CA Gen's FMIDs and the products/components they represent (x varies per release):

- CEG68x0 = Host Encyclopedia (HE)
- CEG78x0 = z/OS Implementation Toolset (IT)
- CEHB8x0 = Base (common) modules
- CETA8x0 = Base modules build as unresolved (NCAL)
- CEHC8x0 = Runtime CICS
- CEHD8x0 = Runtime IMS
- CEG88x0 = TCP/IP Direct Connect for CICS
- CEG98x0 = TCP/IP Direct Connect for IMS
- CEKP8x0 = CICS MQSeries
- CEKZ8x0 = IMS MQSeries

Some FMIDs are grouped and must be installed together while others are standalone. Base modules (EHB and ETA) for instance are grouped with both HE and IT products. The datasets where the product code resides are created when the Base FMID (EHB) is installed with the exception of the Runtime DLLs Library which is created only when a Runtime FMID (EHC or EHD) is installed. MQSeries FMIDs are each included when the corresponding Runtime is installed.

This information is important when using CA CSM Deployment and Configuration, where specified products need to be selected in order for their corresponding datasets to be included in the deployed and in the configured products.

Concurrent Releases

You can install this release of CA Gen and continue to use an older release for your production environment. If you plan to continue to run a previous release, consider the following points:

- When installing into an existing SMP/E environment, this installation deletes previous releases.
- If you acquired your product with Pax-Enhanced ESD, select different target and distribution zones for your new release from where your current release is installed. The new zones use different libraries than your current release.

  Note: CA CSM installs into a new CSI by default.
- Define DDDEF entries in your new zones to point SMP/E to the proper libraries for installation. Ensure that they point to the new release libraries.

Chapter 3: Installing Your Product Using CA CSM

How to Install Your Product Using CA CSM

As a system programmer, your responsibilities include acquiring, installing, maintaining, deploying, and configuring CA Technologies mainframe products on your system.

CA CSM is an application that simplifies and unifies the management of your CA Technologies mainframe products on z/OS systems. As products adopt the CA CSM services, you can install your products in a common way according to industry best practices.

This scenario describes the steps for a system programmer to acquire, install, deploy, and configure products and maintenance. Not all tasks may apply to your organization. For example, you may decide not to deploy and configure products. In this case, do not perform the product deployment task and the product configuration task.

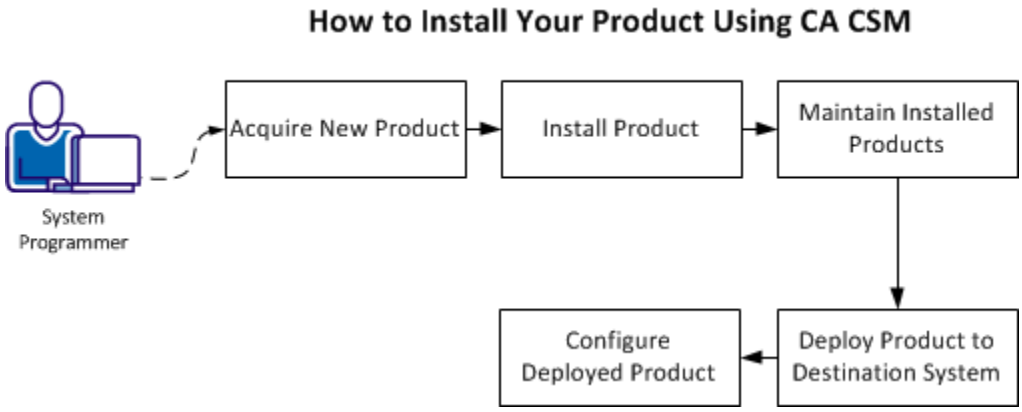
Before you use this scenario, you must have CA CSM installed at your site. If you do not have CA CSM installed, you can download it from the Download Center at http://ca.com/support. This web page also contains links to the complete documentation for CA CSM.

You access CA CSM (see page 26) from a web browser.

Note: This scenario applies to the latest version of CA CSM. If you are using an earlier version, see the appropriate bookshelf on the CA Chorus Software Manager product page.

This scenario is a high-level overview of steps that you perform using CA CSM. For more detailed information, use the online help that is included in CA CSM.

You perform the following tasks to install products and manage them on your system:



1. Acquire a new product (see page 27).
2. Install the product. (see page 28)
3. Maintain the installed products (see page 31).
4. Deploy the product to the destination system. (see page 31)
5. Configure the deployed product. (see page 32)

Access CA CSM Using the Web-Based Interface

You access CA CSM using the web-based interface.

You need the URL of CA CSM from the CA CSM administrator.

Follow these steps:

1. Start your web browser, and enter the access URL.

   The login page appears.

   Note: If the Notice and Consent Banner appears, read and confirm the provided information.

2. Enter your z/OS login user name and password.

   The initial page appears. If you log in for the first time, you are prompted to define your account on the CA Support Online website.

   Note: For more information about the interface, click the online help link at the top right corner of the page.

3. Click New.

   You are prompted for the credentials to use on the CA Support Online website.

4. Specify the credentials, click OK, and then click Next.

   You are prompted to review your user settings.

   Note: These settings are available on the User Settings page.

5. Change the settings or keep the defaults, and then click Finish.

   A dialog opens, which shows the progress of the configuration task. You can click Show Results to view the details of the actions in a finished task.

Important! If your site uses proxies, review your proxy credentials on the User Settings, Software Acquisition page.

Acquire a New Product

Acquisition allows you to download products and product maintenance from the CA Support Online website at http://ca.com/support to a USS directory structure on your system. The products to which your site is entitled and the releases available are displayed in the Available Products section on the Products page.

You perform the following high-level tasks to acquire a product using CA CSM:

1. Set up a CA Support Online account at http://ca.com/support.

   To use CA CSM to acquire or download a product, you must have a CA Support Online account. If you do not have an account, create one on http://ca.com/support.

2. Determine the CA CSM URL for your site.

   To access CA CSM (see page 26), you require its URL. You can get the URL from your site CA CSM administrator and log in using your z/OS credentials. When you log in for the first time, you are prompted to create a CA CSM account with your credentials that you use to access http://ca.com/support. This account enables you to download product packages.

3. Log in to CA CSM and go to the Products tab to locate the product that you want to acquire.

   After you log in to CA CSM, you can see the products to which your organization is entitled on the Products tab.

   If you cannot find the product that you want to acquire, update the product list. CA CSM refreshes the product list through http://ca.com/support using the site IDs associated with your credentials.

4. Download the product installation packages.

   After you find your product in the product list, you can download the product installation packages.

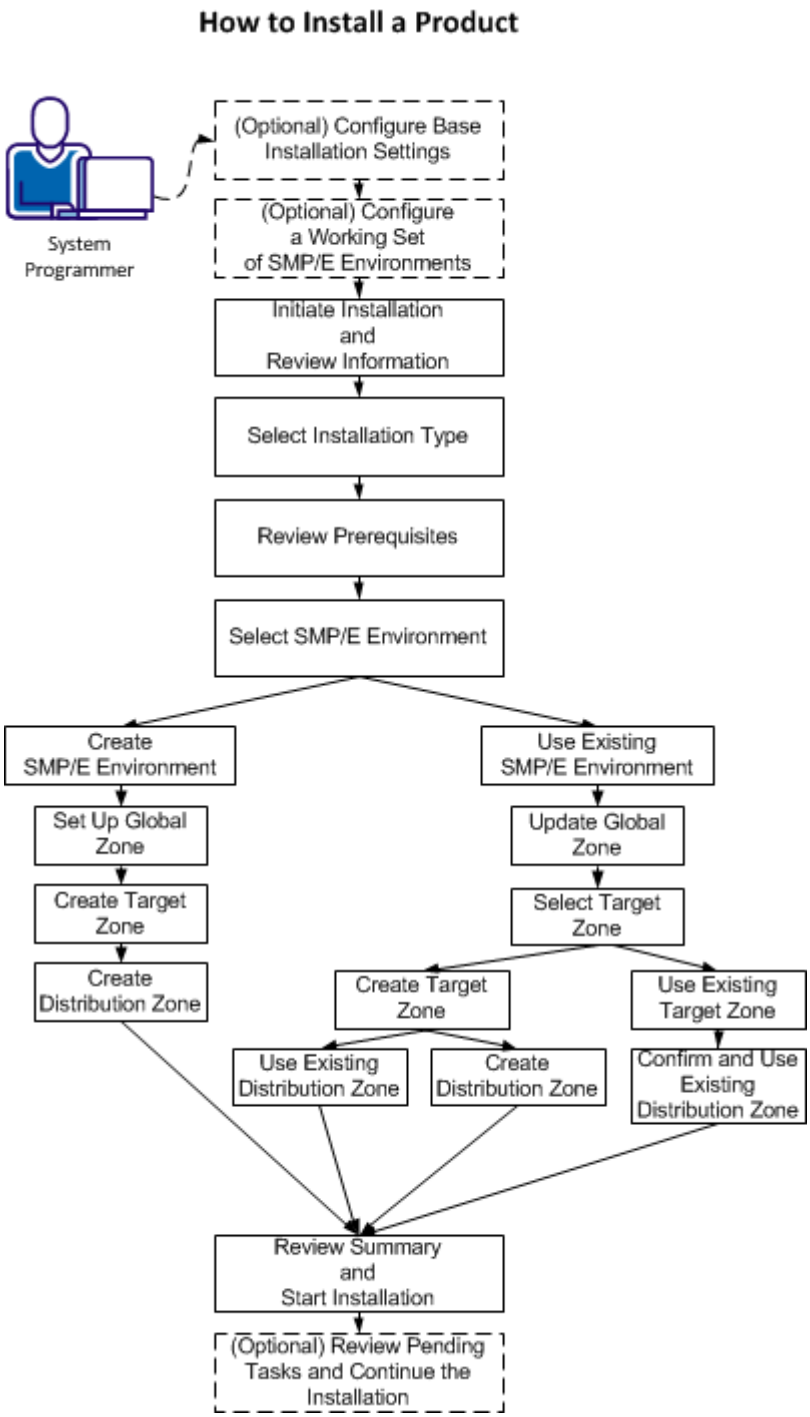
   CA CSM downloads (acquires) the packages (including any maintenance packages) from the CA Support Online website.

After the acquisition process completes, the product is ready for you to install or apply maintenance.

Install a Product

CA CSM simplifies and manages SMP/E installation tasks. You can browse and install a product that you acquired and that is available in the product list on the Products page. You can also install the maintenance for the products that are currently installed in a managed SMP/E environment on the driving system.

You perform the following high-level tasks to install a product using CA CSM:



1. (Optional) On the Settings tab, click Software Installation under System Settings, and configure base installation settings.
2. (Optional) Click the SMP/E Environments tab, and configure a working set of SMP/E environments.
3. Click the Products tab and select a product that you want to install. Start the installation wizard and review product information.
4. Select an installation type.
5. Review installation prerequisites if any are presented.
6. Take *one* of the following steps to select an SMP/E environment:
   - Create a new SMP/E environment:
     a. Set up the global zone.
     b. Create a target zone.
     c. Create a distribution zone.
   - Use an existing SMP/E environment from your working set:
     a. Update the global zone.
     b. Set up the target zone: Create a target zone or use an existing target zone.
     c. Set up the distribution zone: Create a distribution zone or use an existing distribution zone.

     Note: If you install a product or its components into an existing target or distribution zone, older versions are deleted from the zone and associated data sets. We recommend that you use new target and distribution zones for this installation so that you can keep your previous installation available for use, if necessary.
7. Review the installation summary and start the installation.
8. (Optional) Review pending tasks for the SMP/E environment where you are installing your product. Continue the installation, if applicable.

   CA CSM installs the product.

After the installation process completes, check for and install available product maintenance. Ensure all maintenance is installed before you start the next step, deployment, specifically if using CA CSM Configuration because only deployed maintenance is available to be configured. The product is ready for you to deploy. Verify if there are other steps to perform manually outside of CA CSM before continuing.

Maintain the Installed Products

You can migrate existing SMP/E environments into CA CSM to maintain all your installed products in a unified way from a single web-based interface.

You can use CA CSM to maintain a CA Technologies product.

You perform the following high-level tasks to maintain a product using CA CSM:

1. Verify that CA CSM recognizes the SMP/E environment where your product is installed. If not, migrate the SMP/E environment to CA CSM.

   During the migration, CA CSM stores information about the SMP/E environment in the CSM database.

2. From the Product tab, download the latest maintenance for the installed product releases.

   If you cannot find the required release, perform the following steps to download the maintenance:

   a. Add the release manually.

   b. Update the release.

3. Apply the maintenance.

   CA CSM applies the maintenance to your product.

After the maintenance process completes, the product is ready for you to deploy to systems that are defined in the system registry.

Deploy the Product to the Destination System

Deployment is a process of copying SMP/E target libraries to a destination system. The destination system could be the local z/OS system, a remote z/OS system, or a sysplex. You identify the destination system, deployed data set names, and the transport mechanism as part of the deployment process. Deploying a product makes it available for configuration.

Important! Before you deploy a product, set up the destination systems and remote credentials in the system registry.

You perform the following high-level tasks to deploy your products using CA CSM:

1. On the Deployments tab, set up methodologies.

   Note: You can also set up methodologies when creating a deployment, or use existing methodologies, if you have set up any previously. If using existing methodologies, skip this step.

2. Start the New Deployment wizard to create a deployment. Complete each of the steps in the wizard. The wizard guides you through choosing deployment settings for your site. At any point, you can save your work and come back to it later.
3. Deploy:
   a. Take a snapshot of the deployment.
   b. Transmit the deployment to a destination system.
   c. Deploy (unpack) to the mainframe environment.

   CA CSM deploys the product to the destination system.

After the deployment process completes, the product is ready for you to configure.

Configure the Deployed Product

Configuration is a process of copying the deployed libraries to run-time libraries and customizes the product for your site to bring it to an executable state. You can configure CA Technologies products that you have already acquired, installed, and deployed using CA CSM. You cannot use CA CSM to configure a product unless you have already used CA CSM to deploy the product. Ensure that all maintenance is installed and deployed before starting CA CSM Configuration as only deployed maintenance is available to be configured.

You perform the following high-level tasks to configure your products using CA CSM:

1. Select a configurable deployment on the Deployments tab to view details and products for that deployment.
2. Select a product in the deployment and start the Configuration wizard to create a configuration. Complete each of the steps in the wizard. The wizard has multiple levels of detailed instructions and guides you through choosing configuration settings for your site. At any point, you can save your work and come back to it later. Configurations where you have partially completed the steps in the wizard are listed on the Configurations tab.

   The steps in the wizard include the following:

   a. Define a configuration name and select a system for the configuration.
   b. Select configuration functions and options.
   c. Define system preferences.
   d. Create target settings.
   e. Select and edit resources.
3. Build the configuration. The last step of the Configuration wizard lets you build the configuration. If needed, you can edit the configuration and can build the configuration again. Building the configuration closes the wizard and creates a configuration with all your settings.

4. (Optional) Validate the configuration. Validation verifies access to resources that are going to be used when you implement the configuration.
5. Implement the configuration. You implement a configuration to make your deployed software fully functional. Implementation executes on the destination system, applying the variables, resources, and operations that are defined in the configuration.

   CA CSM configures the product.

After the configuration process completes, the product is ready for you to use.

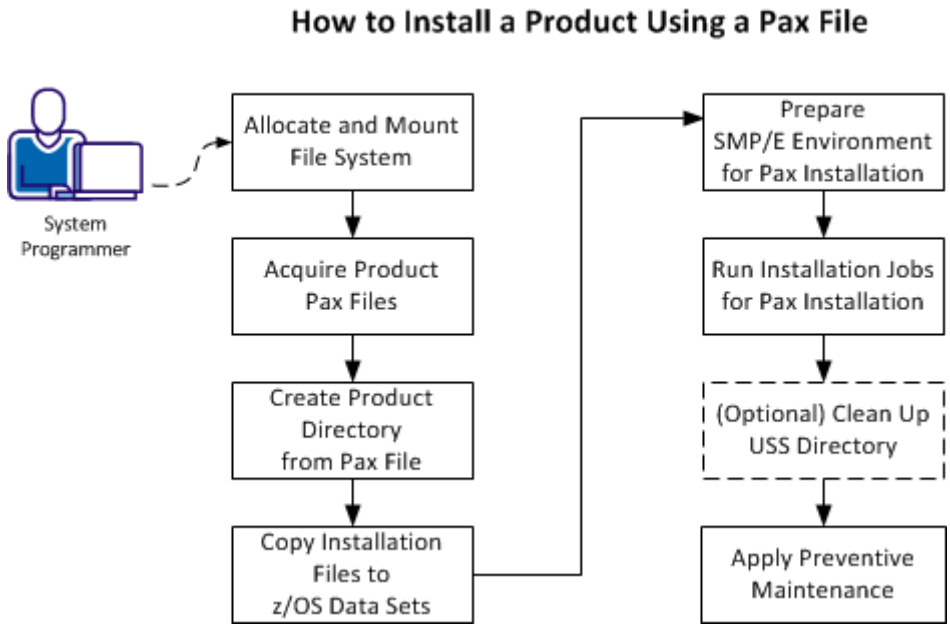
Chapter 4: Installing Your Product Using Pax-Enhanced Electronic Software Delivery

How to Install Your Product Using a Pax File

As a system programmer, your responsibilities include installing products on your mainframe system. With this option, you acquire a product pax file from http://ca.com/support.

Product updates may have occurred after you acquired the product. The files on the online site always have the most current product updates. To determine if you have the latest updates, go to http://ca.com/support and click Download Center.

You perform the following tasks to install a product with a pax file:



1. Allocate and mount the file system (see page 36).
2. Acquire the product pax files (see page 39).
3. Create a product directory from the pax file (see page 44).
4. Copy the installation files to z/OS data sets (see page 45).
5. Prepare the SMP/E environment for a pax installation (see page 47).
6. Run the installation jobs for a pax installation (see page 49).

7. (Optional) Clean up the USS directory (see page 50).
8. Apply preventive maintenance (see page 51).

USS Environment Setup

You need a UNIX System Services (USS) directory and a file system with adequate space to perform the following tasks:

- Receive product pax files from http://ca.com/support.
- Perform utility functions to unpack the pax file into MVS data sets that you can use to complete the product installation.

We recommend that you allocate and mount a file system that is dedicated to Pax ESD. The amount of space that you need for the file system depends on the following variables:

- The size of the pax files that you intend to download.
- Whether you plan to keep the pax files after unpacking them. We do not recommend this practice.

We recommend that you use one directory for downloading and unpacking pax files. Reusing the same directory minimizes USS setup. You need to complete the USS setup only one time. You reuse the same directory for subsequent downloads. Alternatively, you can create a directory for each pax download.

Important! Downloading pax files for the SMP/E installation as part of the Pax ESD process requires write authority to the UNIX System Services (USS) directories that are used for the Pax ESD process. In the file system that contains the Pax ESD directories, you also need free space approximately 3.5 times the pax file size to download the pax file and unpack its contents. For example, to download and unpack a 14 MB pax file, you need approximately 49 MB of free space in the file system hosting your Pax ESD directory.

Allocate and Mount a File System

The product installation process requires a USS directory to receive the pax file and to perform the unpack steps. We recommend that you allocate and mount a file system that is dedicated to the product acquisition and create the directory in this file system.

You can use the zSeries File System (zFS) or hierarchical file system (HFS) for product downloads.

This procedure describes how to perform the following tasks:

- Allocate a zFS or an HFS.
- Create a mount point in an existing maintenance USS directory of your choice.
- Mount the file system on the newly created mount point.

  Note: You must have either SUPERUSER authority, or the required SAF profile setting to allow you to issue the USS mount command for the file system.
- Optionally, permit write access to anyone in the same group as the person who created the directory.

  Important! USS commands are case-sensitive.

Follow these steps:

1. Allocate the file system by customizing one of the following samples to your site requirements:

   - On a zFS, use the following sample:

```
//DEFINE   EXEC PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//SYSUDUMP DD   SYSOUT=*
//AMSDUMP  DD   SYSOUT=*
//SYSIN    DD *
  DEFINE CLUSTER ( +
  NAME(your_zFS_data_set_name) +
  STORAGECLASS(class) +
  LINEAR +
  CYL(primary secondary) +
  SHAREOPTIONS(3,3) +
  )
/*
//FORMAT   EXEC PGM=IOEAGFMT,REGION=0M,
// PARM=('-aggregate your_zFS_data_set_name -compat')
//SYSPRINT DD   SYSOUT=*
//SYSUDUMP DD   SYSOUT=*
//STDOUT   DD   SYSOUT=*
//STDERR   DD   SYSOUT=*
//CEEDUMP  DD   SYSOUT=*
//*
```

- On an HFS, use the following sample:

```
//ALCHFS EXEC PGM=IEFBR14
//CAPAX  DD   DSN=yourHFS_data_set_name,
//            DISP=(NEW,CATLG,DELETE),UNIT=3390,
//            DSNTYPE=HFS,SPACE=(CYL,(primary,secondary,1))
```

The file system is allocated.

Note: Ensure that the zFS or HFS data set name that you use conforms to your data set naming conventions for USS file systems. If the allocation of the file system data set fails, it is because of environmental settings not allowing for the allocation. On an HFS, try using the ISPF 3.2 Data Set Utility to allocate your HFS data set.

2. Create a mount point for the file system. This example shows how to create a /CA/CAPAX directory in an existing directory, /u/maint. From the TSO OMVS shell, enter the following commands:

```
cd /u/maint/
mkdir CA
cd CA
mkdir CAPAX
```

Note: This document refers to this structure as *yourUSSpaxdirectory*.

The mount point is created.

3. Mount the file system by customizing one of the following samples to your site requirements:

- On a zFS, use the following sample:

```
MOUNT FILESYSTEM('your_zFS_data_set_name')
      MOUNTPOINT('yourUSSpaxdirectory')
      TYPE(ZFS)  MODE(RDWR)
      PARM(AGGRGROW)
```

- On an HFS, use the following sample:

```
MOUNT FILESYSTEM('your_HFS_data_set_name')
      MOUNTPOINT('yourUSSpaxdirectory')
      TYPE(HFS)  MODE(RDWR)
```

The file system is mounted.

4. (Optional) Set security permissions for the directory. You can use the chmod command to let other users access the Pax ESD directory and its files. For example, to allow write access to the Pax ESD directory for other users in your USS group, from the TSO OMVS shell, enter the following command:

```
chmod -R 775 /yourUSSpaxdirectory/
```

Write access is granted.

Note: For more information about the chmod command, see the IBM *z/OS UNIX System Services User Guide* (SA22-7802).

Acquire the Product Pax Files

To begin the CA Technologies product installation procedure, copy the product pax file into the USS directory that you set up.

Important! Downloading pax files for the SMP/E installation as part of the Pax ESD process requires write authority to the UNIX System Services (USS) directories that are used for the Pax ESD process. Also, you must have available USS file space before you start the procedures in this guide.

Use one of the following methods:

- Download the product pax file from http://ca.com/support to your PC (see page 40), and then upload it to your USS file system.

  If you download a zip file, you must unzip it before uploading to your USS file system.

- Download the pax files from http://ca.com/support directly to your USS file system (see page 40).

This section includes the following information:

- A sample batch job to download a product pax file from the CA Support Online FTP server directly to a USS directory on your z/OS system
- Sample commands to upload a pax file from your PC to a USS directory on your z/OS system

Important! The FTP procedures vary due to local firewall and other security settings. Consult your local network administrators to determine the appropriate FTP procedure to use at your site.

Ensure that sufficient free space is available in the USS file system that you are using to hold the product pax file. If you do not have sufficient free space, error messages similar to the following appear:

```
EZA1490I Error writing to data set
EZA2606W File I/O error 133
```

When the download finishes, the pax file size in your USS directory matches the value in the Size column for the corresponding pax file on the CA Technologies Products Download window.

Download Files to a PC Using Pax ESD

You can download product installation files from http://ca.com/support to your PC.

Follow these steps:

1. Log in to http://ca.com/support, and click Download Center.

   The Download Center web page appears.

2. Under Download Center, select Products from the first drop-down list, and specify the product, release, and gen level (if applicable), and click Go.

   The CA Product Download window appears.

3. Download an entire CA Technologies product software package or individual pax files to your PC. If you download a zip file, you must unzip it before continuing.

   Note: For traditional installation downloads, see the *Traditional ESD User Guide*. For information about download methods, see the Download Methods and Locations article. Go to http://ca.com/support, log in, and click Download Center. Links to the guide and the article appear under the Download Help heading.

Download Using Batch JCL

You download a pax file from http://ca.com/support by running batch JCL on the mainframe. Use the sample JCL attached to the PDF file as CAtoMainframe.txt (see page 42) to perform the download.

Important! The PDF version of this guide includes sample JCL jobs that you can copy directly to the mainframe. To access these jobs, click the paper clip icon at the left of the PDF reader. A window displaying attachments opens. Double-click a file to view a sample JCL. We recommend that you use the latest version of Adobe Reader for viewing PDF files.

Note: We recommend that you follow the preferred download method as described on http://ca.com/support. This JCL procedure is our preferred download method for users who do not use CA CSM. We also include the procedure to download to the mainframe through a PC in the next section.

Follow these steps:

1. Replace *ACCOUNTNO* with a valid JOB statement.
2. Replace *yourTCPIP.PROFILE.dataset* with the name of the TCP/IP profile data set for your system. Consult your local network administrators, if necessary.

   The job points to your profile.

3. Replace *YourEmailAddress* with your email address.

   The job points to your email address.

4. Replace *yourUSSpaxdirectory* with the name of the USS directory that you use for Pax ESD downloads.

   The job points to your USS directory.

5. Locate the product component to download on the CA Support Product Download window.

   You have identified the product component to download.

6. Click Download for the applicable file.

   Note: For multiple downloads, add files to a cart.

   The Download Method window opens.

7. Click FTP Request.

   The Review Download Requests window displays any files that you have requested to download.

   Note: We send you an email when the file is ready to download or a link appears in this window when the file is available.

8. Select one of the following methods:

   Preferred FTP

   Uses CA Technologies worldwide content delivery network (CDN). If you cannot download using this method, review the security restrictions for servers that company employees can download from that are outside your corporate network.

   Host Name: ftp://ftpdownloads.ca.com

   Alternate FTP

   Uses the original download servers that are based on Long Island, New York.

   Host Name: ftp://scftpd.ca.com for product files and download cart files and ftp://ftp.ca.com for individual solution files.

   Both methods display the host, user name, password, and FTP location, which you then can copy into the sample JCL.

   Note: The following links provide details regarding FTP: the FTP Help document link in the Review Download Requests window and the Learn More link available in the Download Methods window.

9. Submit the job.

   Important! If your FTP commands are incorrect, it is possible for this job to fail and still return a zero condition code. Read the messages in the job DDNAME SYSPRINT to verify the FTP succeeded.

   After you run the JCL job, the pax file resides in the mainframe USS directory that you supplied.

Example: CAtoMainframe.txt, JCL

The following text appears in the attached CAtoMainframe.txt JCL file:

```
//GETPAX   JOB (ACCOUNTNO),'FTP GET PAX ESD PACKAGE',
//          MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID
//*********************************************************************
//* This sample job can be used to download a pax file directly from  *
//* CA Support Online to a USS directory on your z/OS system.         *
//*                                                                   *
//* When editing the JCL ensure that you do not have sequence numbers *
//* turned on.                                                        *
//*                                                                   *
//* This job must be customized as follows:                           *
//* 1. Supply a valid JOB statement.                                  *
//* 2. The SYSTCPD and SYSFTPD JCL DD statements in this JCL may be   *
//*    optional at your site. Remove the statements that are not      *
//*    required. For the required statements, update the data set     *
//*    names with the correct site-specific data set names.           *
//* 3. Replace "Host" based on the type of download method.           *
//* 4. Replace "YourEmailAddress" with your email address.            *
//* 5. Replace "yourUSSpaxdirectory" with the name of the USS         *
//*    directory used on your system for Pax ESD downloads.           *
//* 6. Replace "FTP Location" with the complete path                  *
//*    and name of the pax file obtained from the FTP location        *
//*    of the product download page.                                  *
//*********************************************************************
//GETPAX   EXEC PGM=FTP,PARM='(EXIT TIMEOUT 120',REGION=0M
//SYSTCPD  DD   DSN=yourTCPIP.PROFILE.dataset,DISP=SHR
//SYSFTPD  DD   DSN=yourFTP.DATA.dataset,DISP=SHR
//SYSPRINT DD   SYSOUT=*
//OUTPUT   DD   SYSOUT=*
//INPUT    DD   *
Host
anonymous YourEmailAddress
lcd yourUSSpaxdirectory
binary
get FTP_location
quit
/*
```

Download Files to Mainframe through a PC

You download the product installation files to your PC and transfer them to your USS system.

Follow these steps:

1. Download the product file to your PC:

   - Pax ESD (see page 40). If you downloaded a zip file, first unzip the file to use the product pax files.
   - Or copy the entire product software package (or individual pax files) to your PC.

   The pax file resides on your PC.

   Note: Do *not* change the format of the pax.Z.

2. Open a Windows command prompt.

   The command prompt appears.

3. Customize and enter the following FTP commands:

   ```
   FTP mainframe
   userid
   password
   bin
   lcd C:\PC\folder\for\thePAXfile
   cd /yourUSSpaxdirectory/
   put paxfile.pax.Z
   quit
   exit
   ```

   mainframe

   Specifies the z/OS system IP address or DNS name.

   userid

   Specifies your z/OS user ID.

   password

   Specifies your z/OS password.

   C:*PC\folder\for\thePAXfile*

   Specifies the location of the pax file on your PC.

   Note: If you specify a location that has blanks or special characters in the path name, enclose that value in double quotation marks.

yourUSSpaxdirectory

Specifies the name of the USS directory that you use for Pax ESD downloads.

***paxfile*.pax.Z**

Specifies the name of the pax file to upload.

The pax file is transferred to the mainframe.

Create a Product Directory from the Pax File

The pax command performs the following actions:

- Extracts the files and directories that are packaged within the pax file.
- Creates a USS directory in the same directory structure where the pax file resides.
- Automatically generates a product and level-specific directory name.

Set the current working directory to the directory containing the pax file, and create a directory in your USS directory by entering the following command:

```
pax -rvf pax-filename
```

Use the sample JCL that is attached to the PDF file as Unpackage.txt (see page 45) to extract the product pax file into a product installation directory.

Important! The PDF version of this guide includes sample JCL jobs that you can copy directly to the mainframe. To access these jobs, click the paper clip icon at the left of the PDF reader. A window displaying attachments opens. Double-click a file to view a sample JCL. We recommend that you use the latest version of Adobe Reader for viewing PDF files.

Follow these steps:

1. Replace *ACCOUNTNO* with a valid JOB statement.
2. Replace *yourUSSpaxdirectory* with the name of the USS directory that you use for product downloads.

   The job points to your specific directory.
3. Replace *paxfile.pax.Z* with the name of the pax file.

   The job points to your specific pax file.
4. Submit the job.

   The job creates the product directory.

Note: If the PARM= statement exceeds 71 characters, uncomment and use the second form of UNPAXDIR instead. This sample job uses an X in column 72 to continue the PARM= parameters to a second line.

Example: JCL File, Unpackage.txt, to Customize

The following text appears in the attached Unpackage.txt JCL file:

```
//ESDUNPAX JOB (ACCOUNTNO),'UNPAX PAX ESD PACKAGE',
// MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID
//*********************************************************************
//* This sample job can be used to invoke the pax command to create   *
//* the product-specific installation directory.                      *
//*                                                                   *
//* This job must be customized as follows:                           *
//* 1. Supply a valid JOB statement.                                  *
//* 2. Replace "yourUSSpaxdirectory" with the name of the USS         *
//*    directory used on your system for Pax ESD downloads.           *
//* 3. Replace "paxfile.pax.Z" with the name of the pax file.         *
//* NOTE: If you continue the PARM= statement on a second line,       *
//*       start entering characters in column 16 and make sure        *
//*       the 'X' continuation character is in column 72.             *
//*********************************************************************
//UNPAXDIR EXEC PGM=BPXBATCH,
// PARM='sh cd /yourUSSpaxdirectory/; pax -rvf paxfile.pax.Z'
//*UNPAXDIR EXEC PGM=BPXBATCH,
//* PARM='sh cd /yourUSSpaxdirectory/; pax                            X
//*             -rvf paxfile.pax.Z'
//STDOUT DD SYSOUT=*
//STDERR DD SYSOUT=*
```

Copy Installation Files to z/OS Data Sets

Use this procedure to invoke the SMP/E GIMUNZIP utility to create MVS data sets from the files in the product-specific directory.

The file UNZIPJCL in the product directory contains a sample job to GIMUNZIP the installation package. You edit and submit the UNZIPJCL job to create z/OS data sets.

Follow these steps:

1. Locate and read the product readme file or installation notes, if applicable, which resides in the product-specific directory that the pax command created. This file contains the product-specific details that you require to complete the installation procedure.

   You have identified the product-specific installation details.

2. Use ISPF EDIT or TSO ISHELL to edit the UNZIPJCL sample job. You can perform this step in one of the following ways:

   - Use ISPF EDIT. Specify the full path name of the UNZIPJCL file.
   - Use TSO ISHELL. Navigate to the UNZIPJCL file and use the E line command to edit the file.

   The job is edited.

3. Change the SMPDIR DD PATH to the product-specific directory created by the pax command.

   Your view is of the product-specific directory.

4. If ICSF is not active, perform the following steps:

   a. Change the SMPJHOME DD PATH to your Java runtime directory. This directory varies from system to system.

   b. Perform one of the following steps:

      - Change the SMPCPATH DD PATH to your SMP/E Java application classes directory, typically /usr/lpp/smp/classes/.
      - Change HASH=YES to HASH=NO on the GIMUNZIP parameter.

   One of the following occurs: ICSF is active or you are using Java.

5. Change all occurrences of y*ourHLQ* to the high-level qualifier (HLQ) for z/OS data sets that the installation process uses. We suggest that you use a unique HLQ for each expanded pax file to identify uniquely the package. Do *not* remove CAI after *yourHLQ*. Do *not* use the same value for y*ourHLQ* as you use for the SMP/E RELFILEs.

   All occurrences of y*ourHLQ* are set to your high-level qualifier for z/OS data sets.

6. Submit the UNZIPJCL job.

   The UNZIPJCL job completes with a zero return code. Messages GIM69158I and GIM48101I in the output and IKJ56228I in the JES log are acceptable.

   GIMUNZIP creates z/OS data sets with the high-level qualifier that you specified in the UNZIPJCL job. You use these data sets to perform the product installation. The pax file and product-specific directory are no longer needed.

   Note: For more information, see the IBM *SMP/E for z/OS Reference (SA22-7772)*.

Prepare the SMP/E Environment for a Pax Installation

The following steps describe the process to install products using native SMP/E JCL:

1. Download external HOLDDATA.
2. Allocate product data sets and SMP/E data sets.
3. Create an SMP/E environment.
4. Receive base functions and HOLDDATA.
5. Download and RECEIVE PTFs from http://ca.com/support.
6. Run an SMP/E APPLY CHECK operation.
7. Apply base functions using SELECT GROUPEXTEND.
8. Run an SMP/E ACCEPT CHECK operation.
9. Accept base functions using SELECT GROUPEXTEND.
10. Configure the product according to your site requirements.

Note: Steps 1 through 3 of this process are documented in detail in this section. Steps 4 through 9 are documented in the section describing how to run installation jobs for a Pax installation. If applicable to your product, Step 10 is documented in the section describing starting your product.

The members that are used in this procedure prepare the data sets, initialize the zones, and create the DDDEFs for your product.

Establishing a hierarchical file system (HFS) may be required as part of the product installation or required as a feature of the product.

For information about the members, see the comments in the JCL.

Follow these steps:

1. Customize the macro GENSEDIT with your site-specific information and then copy the macro to your SYSPROC location. Replace the rightmost parameters for each ISREDIT CHANGE command. Each time you edit an installation member, type GENSEDIT on the command line, and press Enter to replace the defaults with your specifications.

   The macro is ready to customize the *yourHLQ*.SAMPJCL members.

   Note: Set the DASD HLQ to the same value specified for *yourHLQ* within the JCL that is used to unzip the pax file.

   Note: The following steps include instructions to execute the GENSEDIT macro each time you open a new SAMPJCL member. To edit all SAMPJCL members simultaneously, read and follow the instructions in the GENAREAD member, and submit the GENEDALL member.

2. Open the SAMPJCL member GEN1HOLD in an edit session and execute the GENSEDIT macro from the command line.

   GEN1HOLD is customized.

3. Submit GEN1HOLD.

   This job downloads the error and FIXCAT HOLDDATA from http://ca.com/support.

4. Open the SAMPJCL member GEN2ALL in an edit session and execute the GENSEDIT macro from the command line.

   GEN2ALL is customized.

5. Submit GEN2ALL.

   This job produces the following results:

   - The target and distribution data sets for your product are created.
   - Unique SMPLTS, SMPMTS, SMPSCDS, and SMPSTS data sets for this target zone are created.

6. If your product requires a USS file system or if you want to install a feature of the product that requires a USS file system, allocate and mount the file system:

   Note: You can customize the supplied HFS JCL to zFS, if your site requires it.

   a. Open the SAMPJCL member *ccc2*ALLU in an edit session and execute the GENSEDIT macro from the command line.

      Note: All instances of *ccc* in this section indicate a three-character component code based on the FMID.

      *ccc2*ALLU is customized.

   b. Submit *ccc2*ALLU.

      This job allocates your HFS or zFS data sets.

   c. Open the SAMPJCL member *ccc3*MKD in an edit session and execute the GENSEDIT macro from the command line.

      *ccc3*MKD is customized.

   d. Submit *ccc3*MKD.

      This job creates all directories and mounts the file system.

7. Open the SAMPJCL member GEN3CSI in an edit session and execute the GENSEDIT macro from the command line.

   GEN3CSI is customized.

8. Submit GEN3CSI.

   This job produces the following results:

   - The CSI data set is defined.
   - The SMPPTS and SMPLOG data sets are allocated.

- The global, target, and distribution zones are initialized.
- The DDDEF entries for your product are created.
- The DDDEFs for the required SMP/E data sets are created.

9. If your product requires HFS or if you want to install a feature of the product that requires HFS, add the DDDEFS that are required for the file system to your SMP/E environment:

   a. Open the SAMPJCL member *ccc*3CSIU in an edit session and execute the GENSEDIT macro from the command line.

      *ccc*3CSIU is customized.

   b. Submit *ccc*3CSIU.

      This job customizes the CSI by adding the DDDEFs associated with the directory.

Run the Installation Jobs for a Pax Installation

Submit and run these SAMPJCL members in sequence. Do not proceed with any job until the previous job has completed successfully.

Note: The following steps include instructions to execute the GENSEDIT macro each time you open a new SAMPJCL member. To edit all SAMPJCL members simultaneously, read and follow the instructions in the GENAREAD member, and submit the GENEDALL member.

Follow these steps:

1. Open the SAMPJCL member GEN4RECD in an edit session, and execute the GENSEDIT macro from the command line.

   GEN4RECD is customized.

2. Submit GEN4RECD to receive SMP/E base functions and error HOLDDATA.

   Your product is received and now resides in the global zone.

3. If an FMID was placed in error, download and receive PTFs from http://ca.com/support.

4. Open the SAMPJCL member GEN5APP in an edit session, and execute the GENSEDIT macro from the command line.

   GEN5APP is customized.

5. Submit GEN5APP to apply SMP/E base functions with the CHECK option. If you find unresolved hold errors, we recommend that you note these errors and verify that resolving PTFs are applied before implementing products in production. Update the JCL to BYPASS the unresolved hold error IDs. After successful completion, rerun APPLY with the CHECK option removed.

   Your product is applied and now resides in the target libraries.

6. Open the SAMPJCL member GEN6ACC in an edit session, and execute the GENSEDIT macro from the command line.

   GEN6ACC is customized.

7. Submit GEN6ACC to accept SMP/E base functions with the CHECK option. After successful completion, rerun APPLY with the CHECK option removed.

   Your product is accepted and now resides in the distribution libraries.

Clean Up the USS Directory

This procedure is optional. If you decide to perform the procedure, do so after you complete the installation process and when you do not need the installation files anymore.

To free file system disk space for subsequent downloads after downloading and processing the pax files for your CA Technologies product, we recommend removing the files from your USS directory and deleting unnecessary MVS data sets. You can delete the following items:

- Pax file
- Product-specific directory that the pax command created and all of the files in it
- SMP/E RELFILEs, SMPMCS, and HOLDDATA MVS data sets

  These data sets have the HLQ that you assigned in the UNZIPJCL job.

Note: Retain non-SMP/E installation data sets such as *yourHLQ*.INSTALL.NOTES for future reference.

Follow these steps:

1. Navigate to your Pax ESD USS directory.

   Your view is of the applicable USS directory.

2. Delete the pax file by entering the following command:

   `rm paxfile`

   paxfile

   Specifies the name of the CA Technologies pax file that you downloaded.

   The pax file is deleted.

3. Delete the product-specific directory by entering the following command:

   `rm -r product-specific_directory`

   product-specific_directory

   Specifies the product-specific directory that the pax command created.

   The product-specific directory is deleted.

Note: You can also use TSO ISHELL to navigate to the pax file and product-specific directory, and delete them using the D line command.

Apply Preventive Maintenance

Important! We strongly recommend that you use CA CSM to maintain your CA Technologies z/OS-based products. The procedure that is discussed in this section is fully automated when you use CA CSM.

CA Support Online at http://ca.com/support has maintenance and HOLDDATA published since the installation data was created. After the maintenance process completes, the product is ready to deploy.

Note: To review the CA Technologies mainframe maintenance philosophy, see your *Best Practices Guide* or visit the CA Next-Generation Mainframe Management page.

This procedure directs you to use the CAUNZIP utility. The CAUNZIP utility processes ZIP packages directly on z/OS without the need for an intermediate platform, such as a Microsoft Windows workstation. If you are not familiar with this utility, see the *CA Common Services for z/OS Administration Guide*. This guide includes an overview and sample batch jobs. To use this utility, you must be running CA Common Services for z/OS Version 14.0 with PTF RO54887 or CA Common Services for z/OS Release 14.1 with PTF RO54635.

Follow these steps:

1. Check the Download Center at http://ca.com/support for PTFs that have been published since this release was created. If the base release was created recently, no PTFs will have been published yet. If PTFs exist, add published solutions for your product to your Download Cart, and click Checkout.
2. Specify that you want a complete package.

   When processing completes, a link appears on the Review Download Requests page. You also receive an email notification.
3. Click the Alternate FTP link for your order to obtain FTP login information and the ZIP file location. Download the ZIP file into a USS directory on your z/OS system.

4. Run the CAUNZIP utility.

   CAUNZIP unzips the package of published solutions and creates a SMPNTS file structure that the SMP/E RECEIVE FROMNTS command can process. For sample JCL to run the utility that is located in *yourHLQ*.CAW0JCL(CAUNZIP), see the *CA Common Services for z/OS CAUNZIP Administration Guide*. After execution completes, the ZIPRPT data set contains the summary report. The summary report does the following:

   - Summarizes the content of the product order ZIP file.
   - Details the content of each data set and the z/OS UNIX files produced.
   - Provides a sample job to receive the PTFs in your order.

5. Review the sample job that is provided in the CAUNZIP output ZIPRPT file. Cut and paste the JCL into a data set, specify your SMP/E CSI on the SMPCSI DD statement and submit the job to receive the PTFs in your order.

6. Verify that you have the values from the base installation in the GENSEDIT macro that was customized in the installation steps.

7. Open the SAMPJCL member GEN1HOLD in an edit session and execute the GENSEDIT macro from the command line.

   Note: Update GEN1HOLD SAMPJCL to receive the HOLDDATA file.

   GEN1HOLD is customized.

8. Submit GEN1HOLD.

   The job downloads the external HOLDDATA file.

9. Open the SAMPJCL member GEN7RECH in an edit session and execute the GENSEDIT macro from the command line.

   GEN7RECH is customized.

10. Submit GEN7RECH.

    The job receives the external HOLDDATA file.

11. Open the SAMPJCL member GEN8APYP in an edit session and execute the GENSEDIT macro from the command line.

    GEN8APYP is customized.

12. Submit GEN8APYP.

    The PTFs are applied.

13. (Optional) Open the SAMPJCL member GEN9ACCP in an edit session and execute the GENSEDIT macro from the command line.

    GEN9ACCP is customized.

14. (Optional) Submit GEN9ACCP.

    The PTFs are accepted.

    Note: You do not have to submit the job at this time. You can accept the PTFs according to your site policy.

HOLDDATA

When you apply maintenance, you typically encounter SMP/E HOLDDATA. We use HOLDDATA to notify your SMP/E system of SYSMODs that have errors or special conditions. We support system and external HOLDDATA.

System HOLDDATA

System HOLDDATA indicates data that is an in-stream part of the SYSMOD, informing you of special conditions. These are also called internal holds. The following reasons are used with SYSTEM HOLDDATA for CA Gen:

ACTION

Indicates that you must perform special processing before or after you apply this SYSMOD.

DB2BIND

Indicates that DBRMs have changed and packages need to be rebound.

DDDEF

Indicates that data sets and DDDEFs are being added or modified.

DELETE

Deletes the SYSMOD load module. You cannot reverse this type of SYSMOD with the SMP/E RESTORE command.

DEP

Indicates a dependency for this SYSMOD that you must externally verify.

DOC

Indicates a documentation change with this SYSMOD.

ENH

Introduces a small programming enhancement. The hold contains the instructions to implement the enhancement. If no action is needed to implement the enhancement, gives a summary of the enhancement.

EXIT

Indicates that changes delivered by this SYSMOD require reassembly of user exits.

EXRF

Indicates that the SYSMOD must be installed in both the Active and Alternate Extended Recovery Facility Systems.

DOWNLD

Indicates that some or all of the elements that this SYSMOD delivers are to be downloaded to a workstation.

Code a bypass operand on your APPLY command to install SYSMODs that have (internal) holds. Code the bypass operand only after you have performed the required action, or if you are performing the action after the APPLY, if that is appropriate.

External HOLDDATA

External HOLDDATA is not part of the PTF. The HOLDDATA resides in a separate file and contains both error and FIXCAT HOLDDATA. The error HOLDDATA is used for SYSMODs that have been distributed and later are discovered to cause problems. The FIXCAT HOLDDATA helps identify maintenance that is required to support a particular hardware device, software, or function.

Download the external HOLDDATA from http://ca.com/support to a DASD file, and allocate the file to the SMPHOLD DD statement. To take care of the external HOLDDATA, receive it into your SMP/E environment. SMP/E receives the HOLDDATA from CA-supplied jobs.

You can find JCL to download the external HOLDDATA in your SAMPJCL member. Open GEN1HOLD in an edit session and execute the GENSEDIT macro on the command line. Then, submit the JCL.

Error HOLDDATA

If a SYSMOD has unresolved error HOLDDATA, SMP/E does not install it unless you add a bypass to your APPLY command. You can bypass error HOLDDATA in situations that are not applicable to you. Error HOLDDATA that is not applicable to you can include a problem that happens only with a hardware device that you do not have or in a product feature that you do not use.

When CA Technologies publishes a SYSMOD that resolves the error HOLDDATA, the resolving SYSMOD supersedes the error HOLDDATA. This action lets you apply the original SYSMOD in conjunction with the fixing SYSMOD.

The only manual task is running a REPORT ERRSYSMODS. This report identifies the following:

- Any held SYSMODs already applied to your system
- Any resolving SYSMODs that are in RECEIVE status

SMP/E identifies the SYSMOD to apply to correct the situation.

FIXCAT HOLDDATA

CA Technologies provides FIXCAT HOLDDATA to help identify maintenance that is required to support a particular hardware device, software, or function. Fix categories are supplied as SMP/E FIXCAT HOLDDATA statements. Each FIXCAT HOLDDATA statement associates an APAR and its related fixing PTF to one or more fix categories.

Chapter 5: Starting Your Product

This section contains the following topics:

How to Prepare for Deployment (see page 57)
How to Deploy With CA CSM (see page 57)
How to Deploy Without CA CSM (see page 61)
How to Configure With CA CSM (see page 62)
How to Configure Without CA CSM (see page 85)
Configuring Runtime: IMS and CICS (see page 175)
Preparing to Start CA Gen (see page 202)

How to Prepare for Deployment

This section contains topics that describe tasks you may need to perform before beginning the deployment process.

Before deploying a CA Gen product ensure that all available maintenance is applied, particularly if using CA CSM Configuration Services to configure the deployed product. This is because the contents of deployment datasets is copied by CSM SCS to the runtime datasets created during configuration.

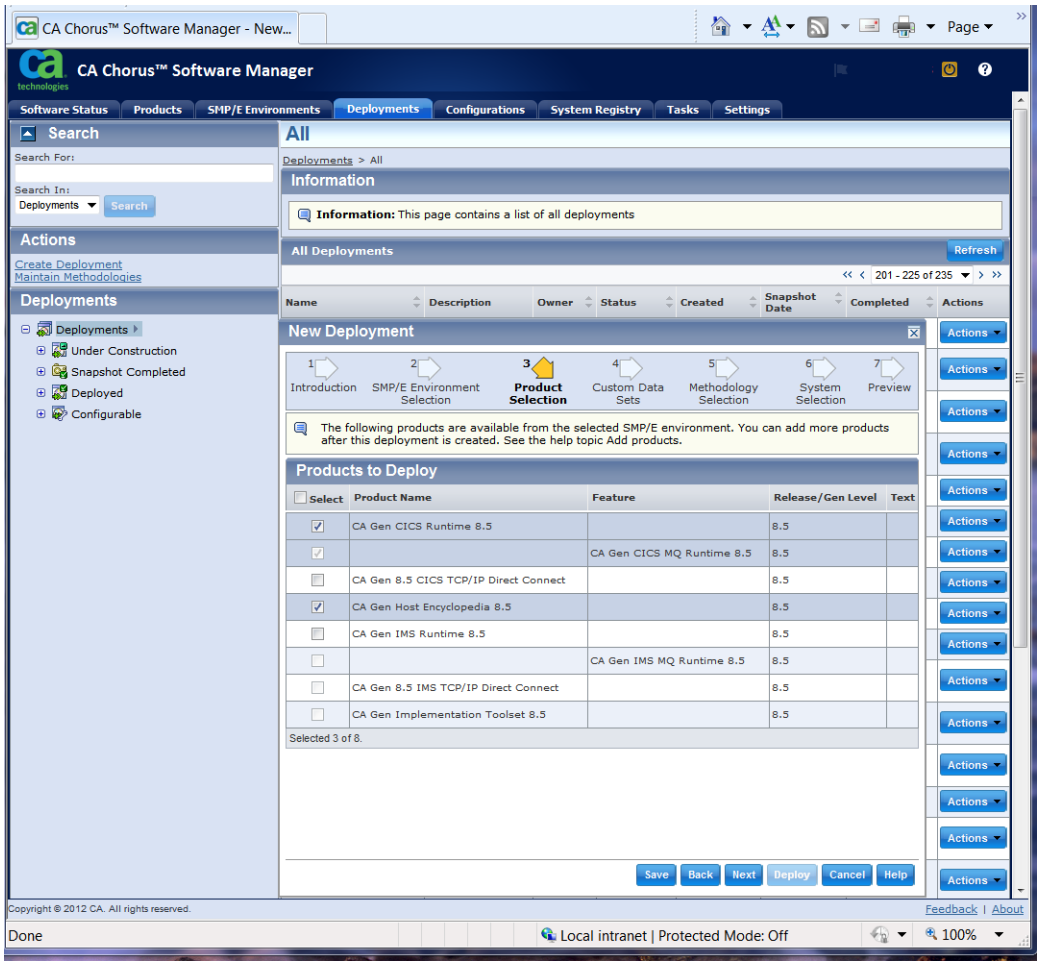
Applying maintenance requires re-deployment and re-configuration, and each of these activities may create a new set of datasets.

How to Deploy With CA CSM

Use SDS facilities to Create the deployment, which includes completing each step in the New Deployment wizard. Select the appropriate CSI and one or more CA Gen products on the Product Selection panel. When Deploying CA Gen Host Encyclopedia or CA Gen Implementation Toolset also select one of the Runtime products (either CICS, IMS or both) so that the Runtime DLLs library is included in the deployment.

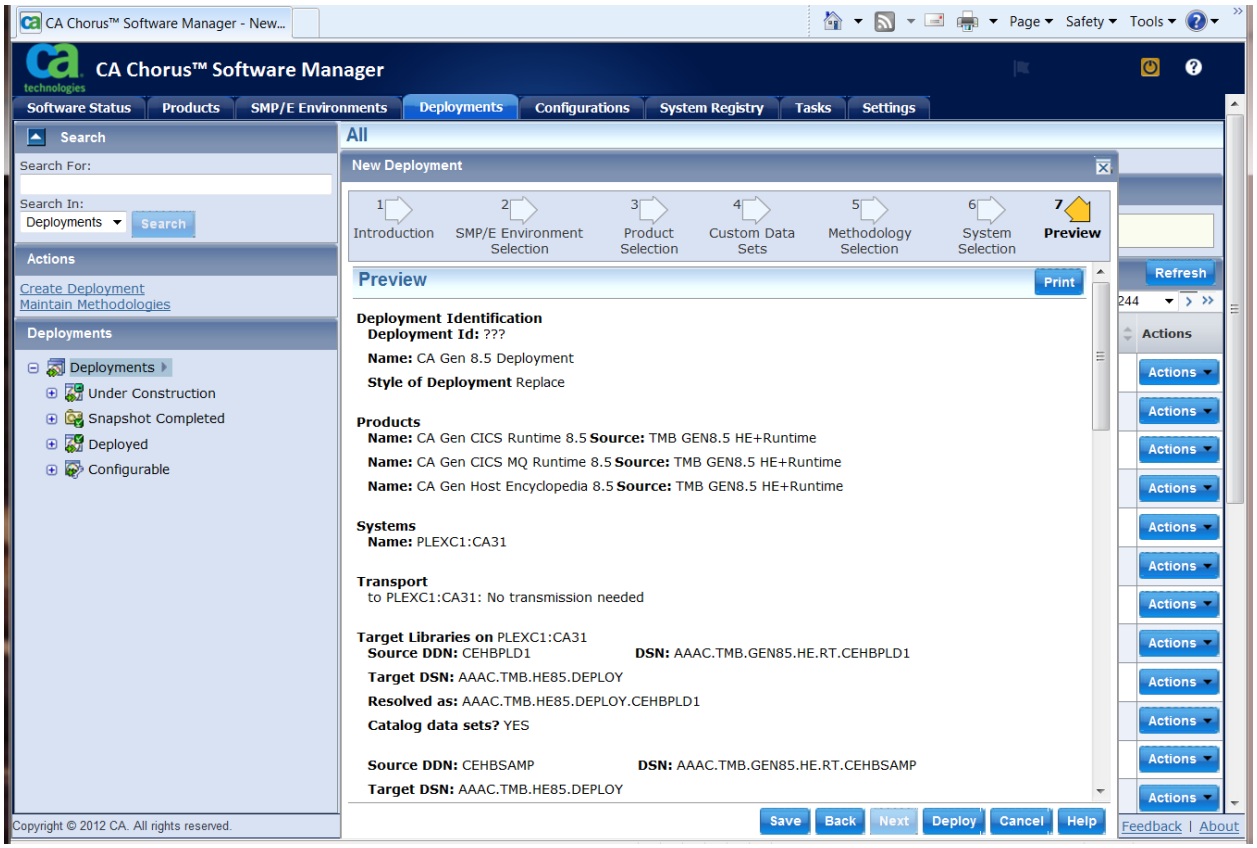
Deploy Host Encyclopedia and Host Construction

In the following Create Deployment process the CA Gen Host Encyclopedia is selected for deployment.



The CA Gen CICS Runtime 8.5 product is also selected. This means that deployment will create the Gen runtime DLLs Library in addition to the base Host Encyclopedia datasets. It is a requirement of CA Gen that one or more Runtime product (either CA Gen CICS Runtime 8.5 or CA Gen IMS Runtime 8.5, or both) is selected to enable deployment to include Runtime DLLs Load Library in the set of deployed datasets.

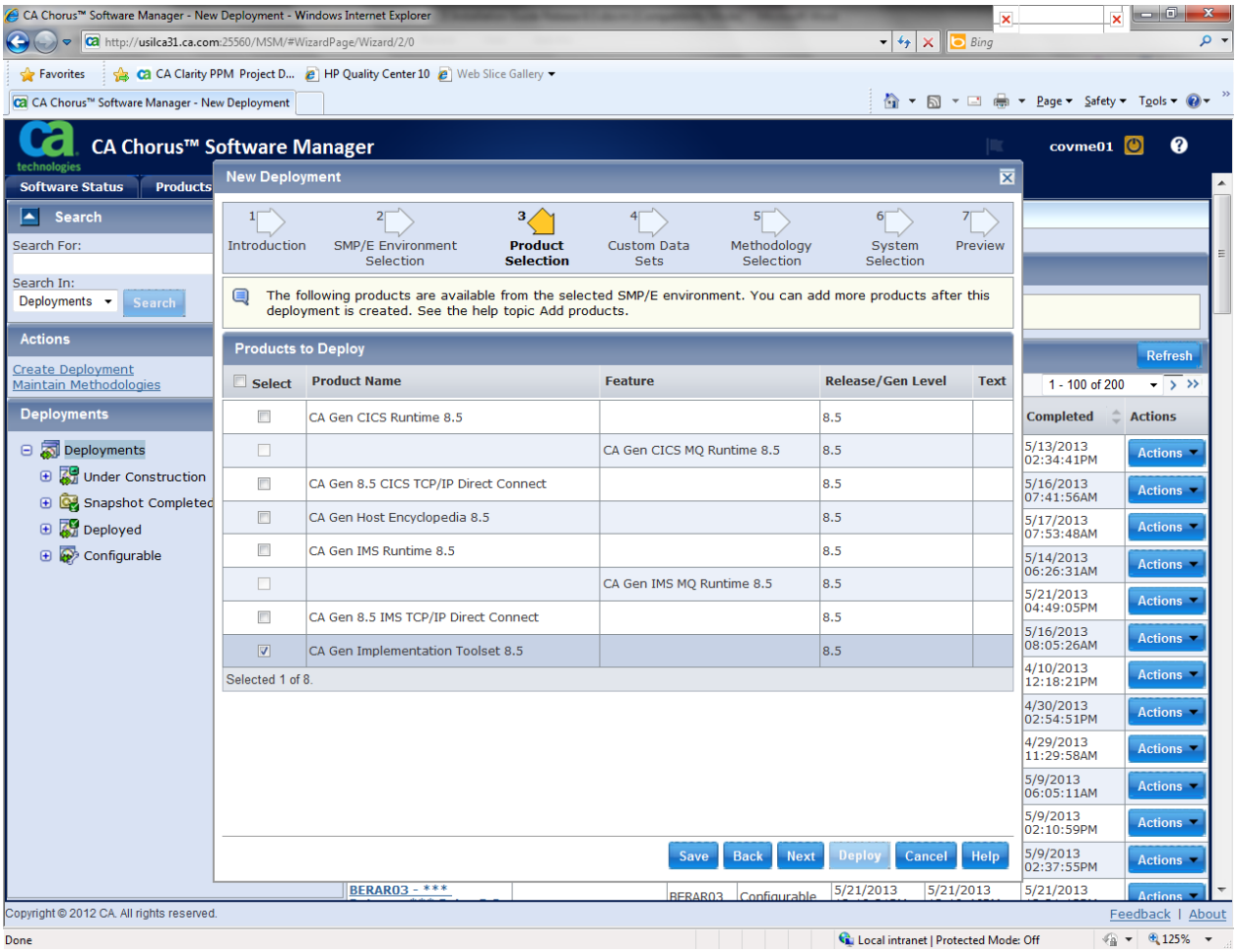
Proceed through the wizard by clicking the Next button. CA Gen does not provide Custom Data Sets so select Next to continue, then select a Methodology and a System to get to the Preview panel where you can review the selected or entered deployment options. Ensure that the System selected is a Target System.



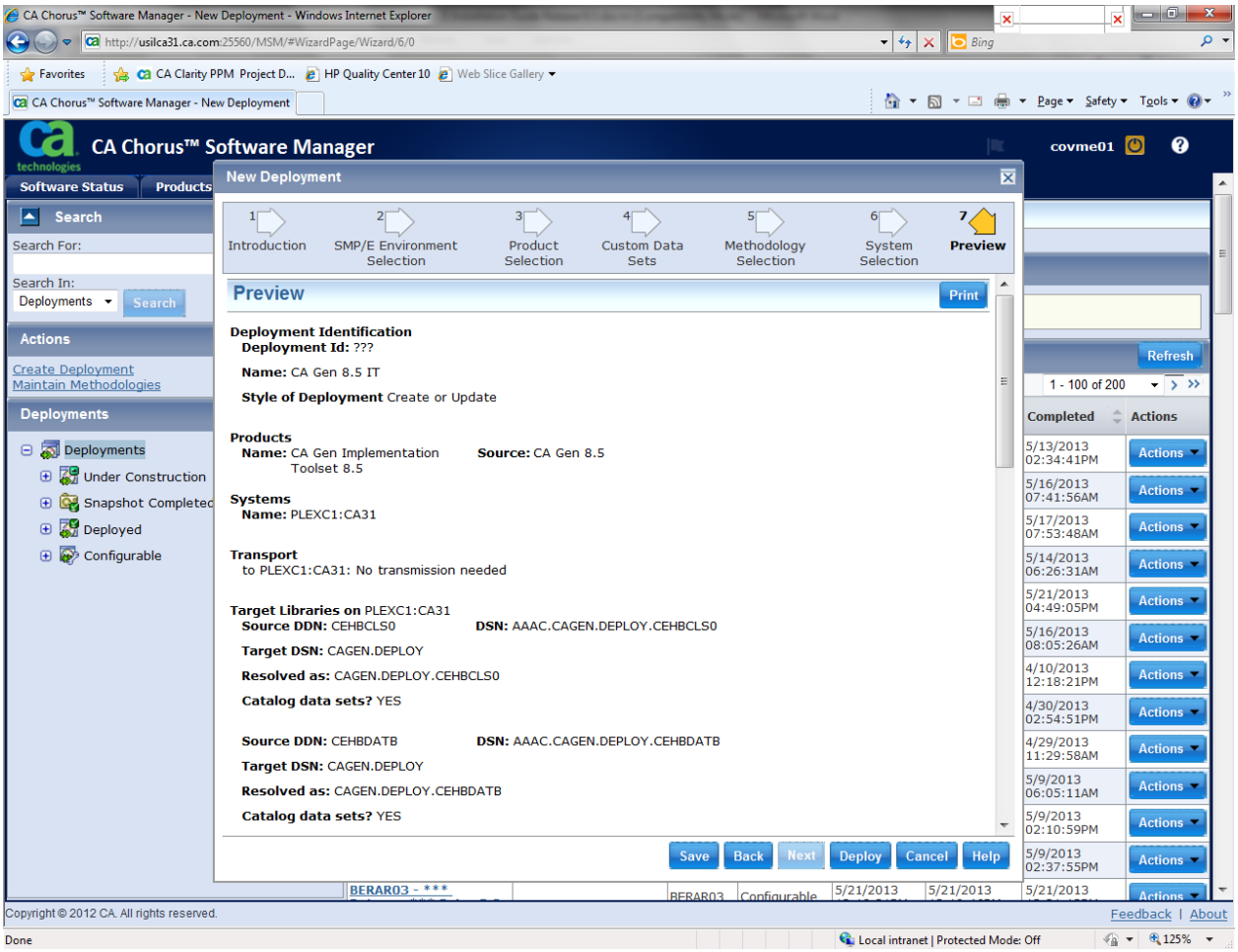
Once the deployment wizard is complete select Deploy to make the Deployment Configurable.

Deploy Other CA Gen Products

All CA Gen products installed via CSM can be deployed but only the Host Encyclopedia can be Configured using CA CSM SCS. In the following example, CA Gen Implementation Toolset is selected for deployment.



Proceed through the wizard by using the Next button. CA Gen does not provide Custom Data Sets so select Next to continue, then select a Methodology and a System and to get to the Preview panel where you can review the selected or entered deployment options.



Once the deployment wizard is complete select Deploy to complete the Deployment process.

At this time CA Gen Implementation Toolset can be deployed but cannot be configured using CA CSM.

How to Deploy Without CA CSM

To deploy without CA CSM, you must manually copy the target libraries defined to SMP/E and user-selected data sets to other (target) environments.

How to Configure With CA CSM

Start from the Deployments tab and select the appropriate deployment from the Deployments Configurable list. In Deployment Details, select the product from the Product List section and Create Configuration or select Create Configuration from the Actions drop-down button.

Follow the steps in the Create Configuration wizard to prepare a configuration, then build and implement. Configuration implementation may be completed using only CA CSM SCS or may require some manual processing.

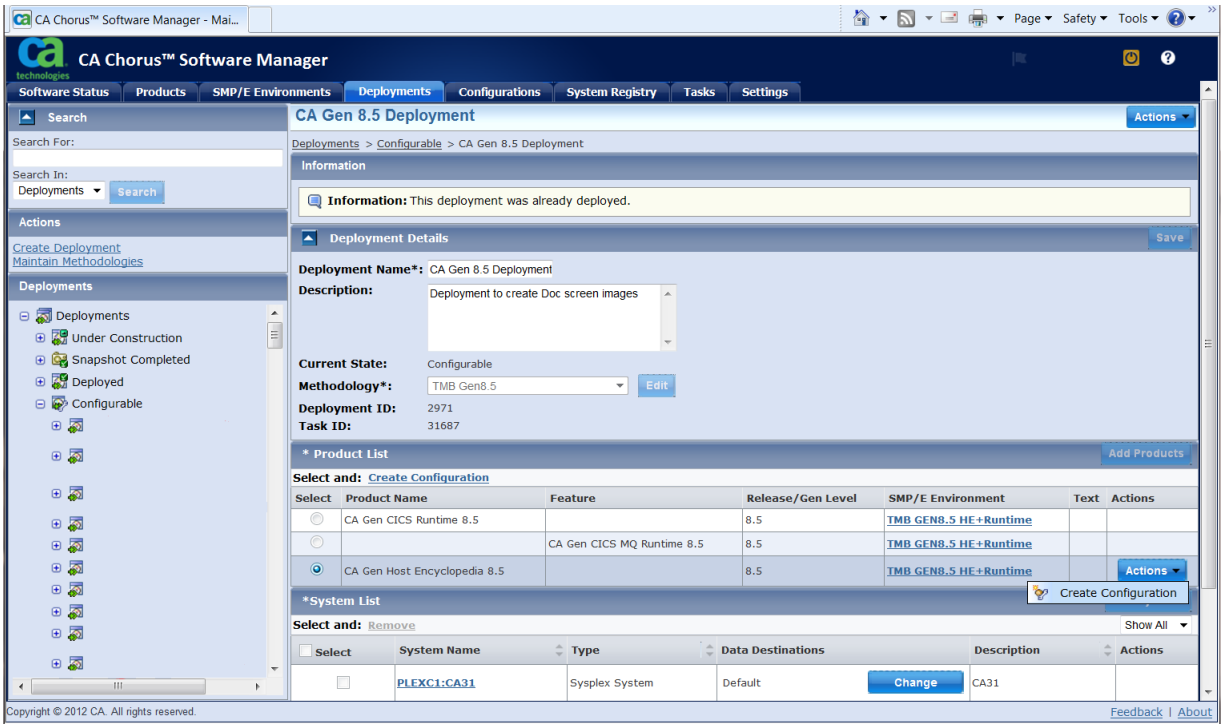
After the configuration implementation process completes, the product is ready for use.

At this time only the CA Gen Host Encyclopedia 8.5 product is enabled to be configured using CA CSM Configuration Services.

Important! CA CSM Configuration Services can be used to UPGRADE a CA Gen Host Encyclopedia created by a previous release of CA Gen (possibly not configured with CA CSM). Use CA CSM Installation and Deployment to create a Target version of the CA Gen 8.5 Host Encyclopedia software and Create the Configuration using the existing encyclopedia (database) variables. Once Implemented this Configuration will provide the Upgraded Encyclopedia.

Configuring Host Encyclopedia and Host Construction

After the CA Gen Host Encyclopedia has been deployed it is Configurable. Select Create Configuration to start the wizard. The CA Gen Runtime (CICS or IMS) is not configurable at this time, and it does not need to be selected for the Runtime DLLs library to be included in the Host Encyclopedia Configuration.

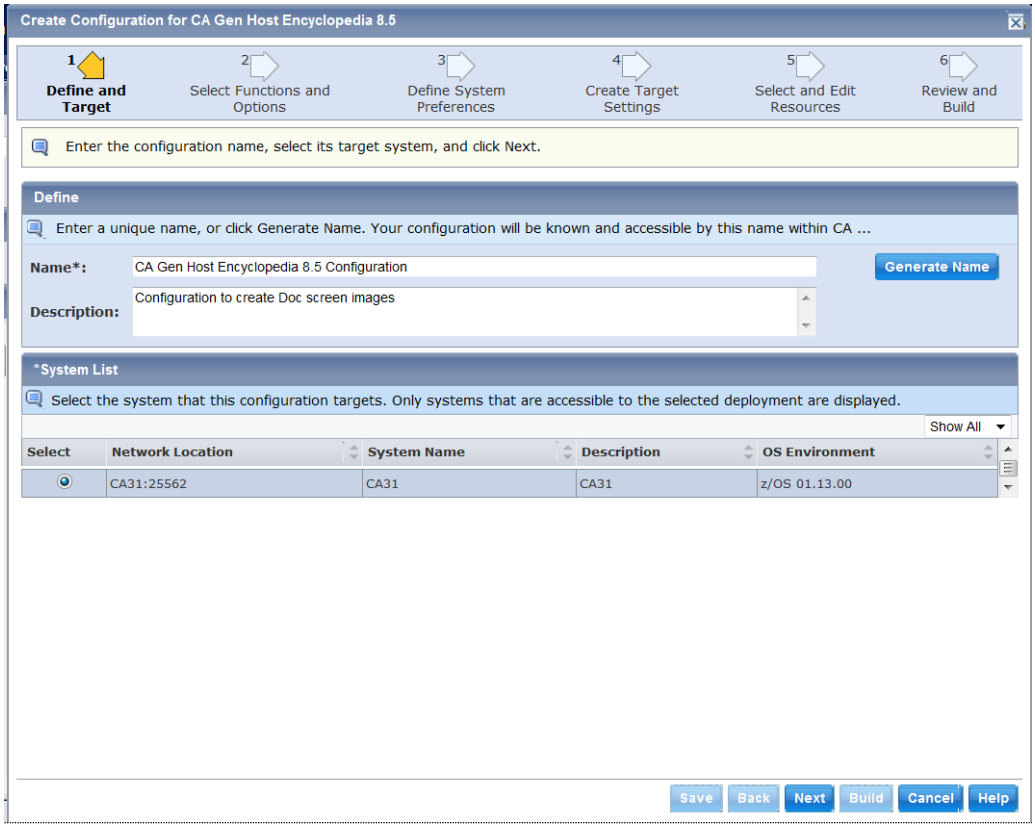


Perform the steps in the configuration wizard to define and build the configuration.

Follow these steps:

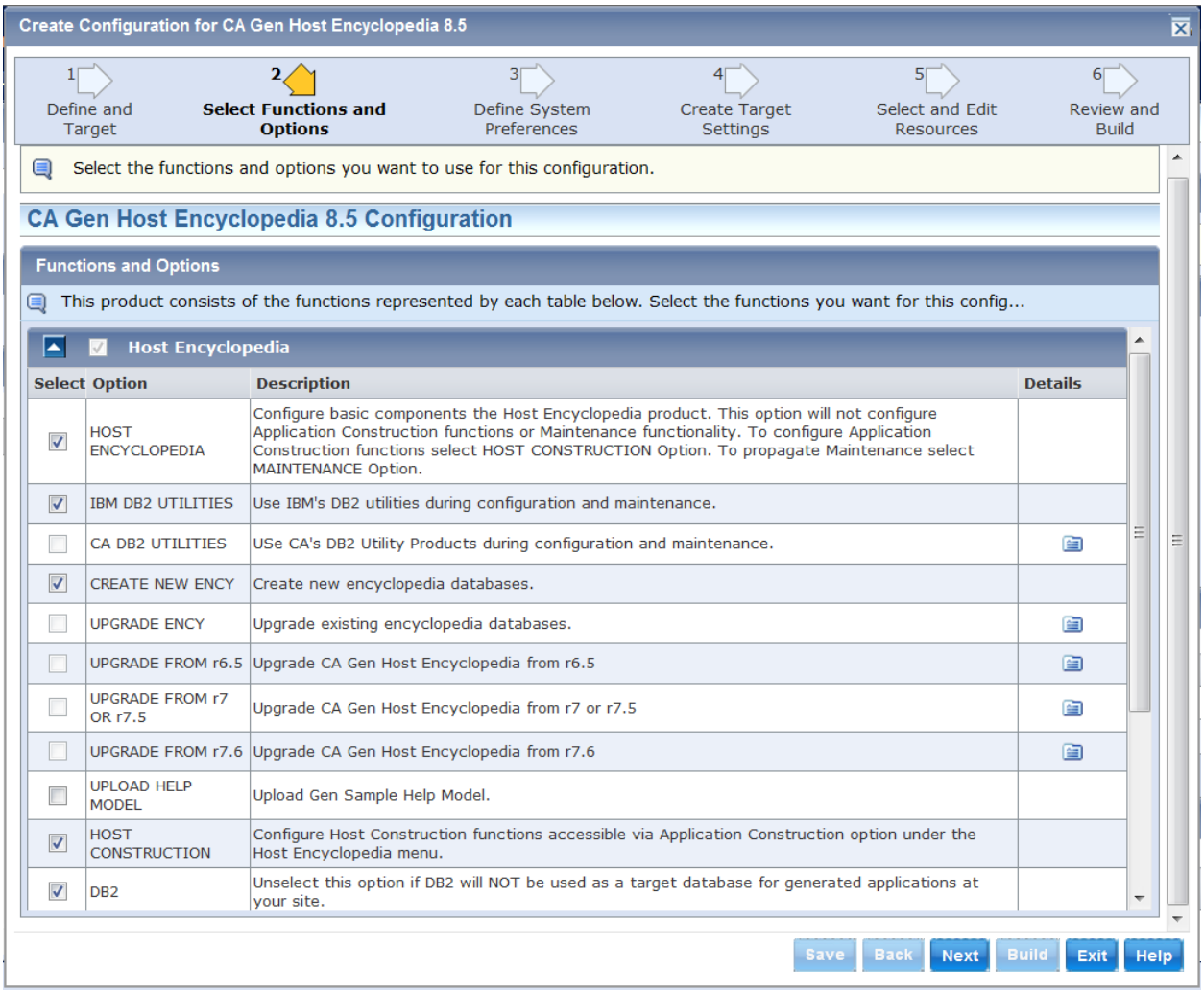
1. Define and Target.

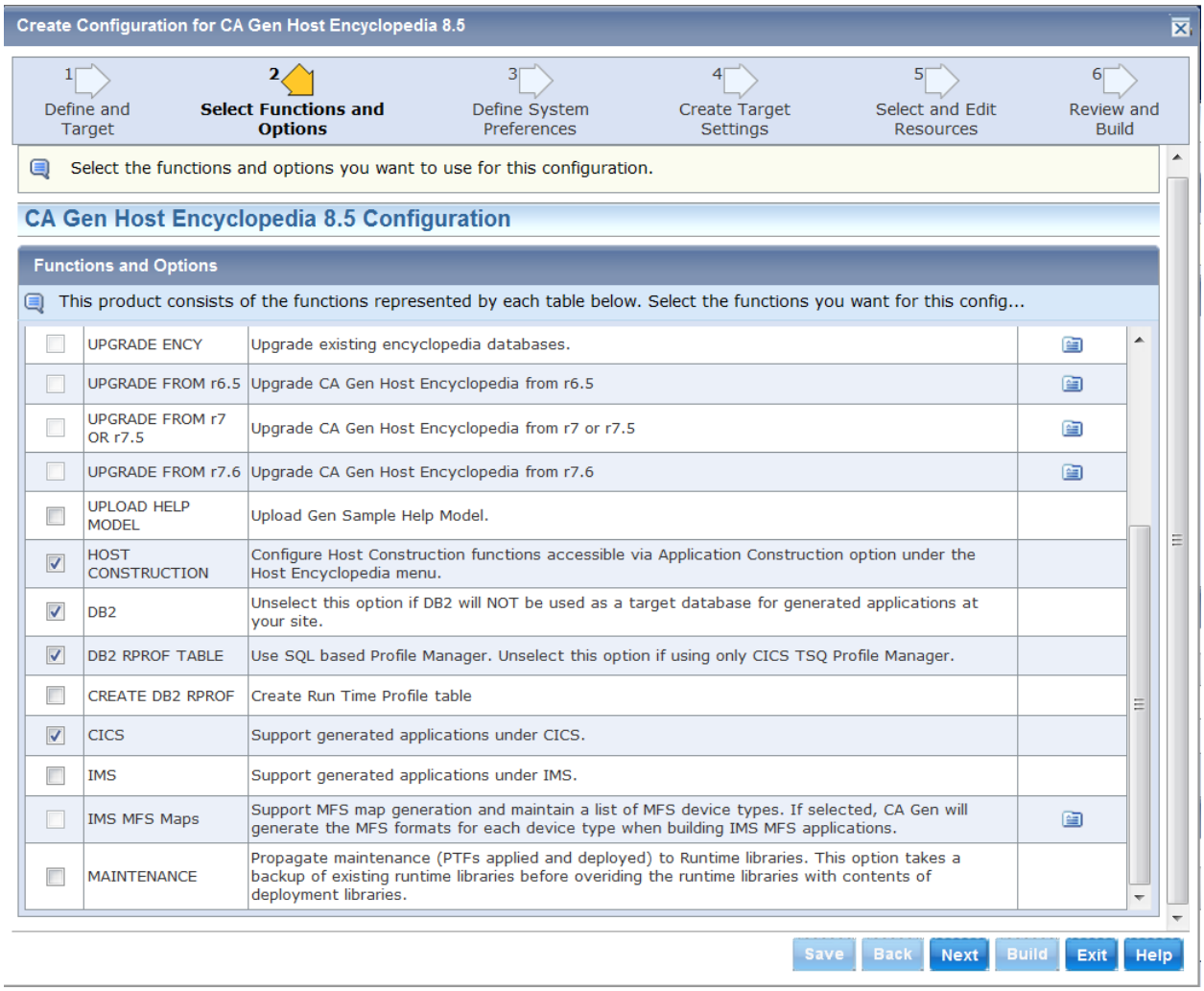
   Select your CA Gen deployment from the list of configurable deployments and create a configuration. The configuration must target an available system.



2. Select Functions and Options.

Select CA Gen Host Encyclopedia functions and options for configuration. The options selected here are used to determine the variables presented in the Create Target Settings dialog to obtain values used in the Implementation. This is akin to the CEINSTAL process used when Configuring the Host Encyclopedia without CSM. In the following example, a New Encyclopedia will be created using IBM's DB2 utilities, Host Construction is selected and a DB2 profile table will be used for applications built by the Encyclopedia.





CA Gen Host Construction components can be configured if the Host Construction option is selected, but CICS or IMS runtimes must be already deployed (selected when the deployment was created) to enable them to be included in this configuration.

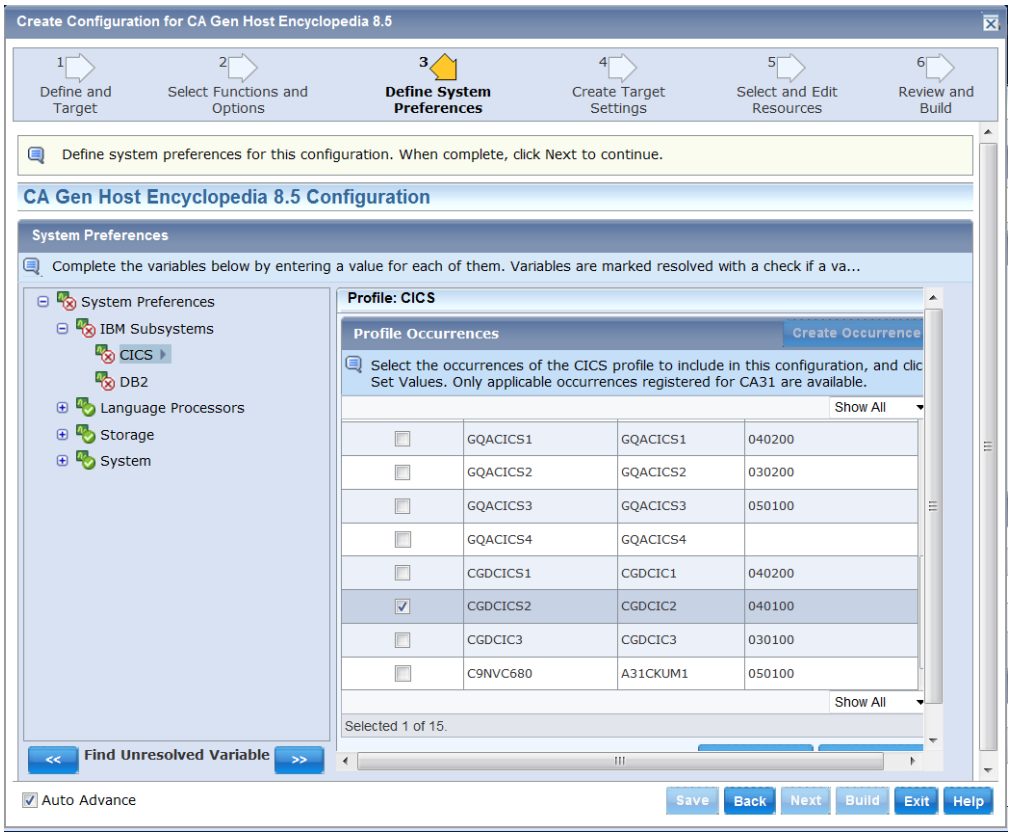
The MAINTENANCE option cannot be used when Creating a New Encyclopedia or Upgrading an Existing Encyclopedia. It is intended to propagate already installed and deployed PTFs to Runtime datasets used by an existing Host Encyclopedia and Host Construction.

The following table lists the configuration options for the Host Encyclopedia and Host Construction:

Configuration Option ID	Description
HOST ENCYCLOPEDIA	Configures basic components in the Host Encyclopedia product. This option does not configure Application Construction functions.
IBM DB2 UTILITIES	Use IBM DB2 utilities during configuration.
CA DB2 UTILITIES	Use CA Technologies DB2 Utility Products during configuration.
CREATE NEW ENCY	Create encyclopedia databases.
UPGRADE ENCY	Upgrade existing encyclopedia databases, select version from the options that follow.
UPLOAD HELP MODEL	Upload CA Gen Sample Help Model.
HOST CONSTRUCTION	Configure Host Construction Functions accessible through Application Construction option under the Host Encyclopedia menu.
DB2	Unselect this option if DB2 is NOT used as a target database for generated applications.
DB2 RPROF TABLE	Use SQL-based Profile Manager. Selecting this option will enable the use of DB2 RPROF in addition to the CICS TSQ RPROF. Unselect this option if using ONLY the CICS TSQ Profile Manager.
CREATE DB2 RPROF	Create Runtime Profile table. Unselect this to use a DB2 RPROF table previously created (even if created for earlier releases).
CICS	Support generated applications under CICS.
IMS	Support generated applications under IMS.
IMS MFS Maps	Support MFS map generation and maintain a list of MFS device types. If this option is selected, CA Gen generates the MFS formats for each device type when building IMS MFS applications.
MAINTENANCE	Propagate maintenance (PTFs applied and deployed) to Runtime libraries. This option takes a backup of existing runtime libraries before overriding these runtime libraries with the contents of the deployment libraries.

3. Define the system environment for your configuration. Some of the environment variables may already have been defined in your CSM environment if/when other CA Technologies products where configured.

   In the following example, the CICS region CGDCICS2 is selected as the designated environment for CA Gen applications targeting CICS.



Note: The configuration options Host Construction and CICS must have been selected in the Select Functions and Options panel for the CICS subsystems occurrences to be presented.

The significant environment variables for CA Gen are as follows:

z/OS

ZOSVERSION-z/OS version identifier

Specifies the z/OS version identifier of the system. Enter a 6 digit numeric value in the form vvrrmm. The vv is version, rr is release, and mm is the maintenance level. For example, 011100 for z/OS 1.11.

DB2

SUBSYSNAME-DB2 subsystem name

Specifies the DB2 subsystem name. Enter a 1 to 4 character uppercase alphanumeric or national (#,@,$) text string that must begin with an alphabetic or national character.

SDSNLOAD-DB2 load module library data set name

Specifies a DB2 load module library. Enter a 1 to 44 character MVS data set name.

SDSNEXIT-DB2 load modules data set name

Specifies the DB2 load module library containing the subsystem parameter module (DSNHDECP) and user-written exit routines. Enter a 1 to 44 character MVS data set name. This is a mandatory field. The name can be the same name provided for SDSNLOAD, in which case the SDSNLOAD dataset will be included twice in the STEPLIB DD but this will NOT be a problem.

VERSION-DB2 version identifier

Specifies the DB2 product version identifier. Enter a 6 digit numeric value in the form vvrrmm. The vv is version, rr is release, and mm is the maintenance level. For example, 100100 for DB2 10.1.00.

SSIDVER-DB2 version identifier (3 characters)

Specifies the DB2 product version identifier. Enter a 3 character value in the form Vnn. The nn is version. For example, V10.

Language Environment (LE)

SCEELKED-C/C non-XPLINK (uppercase, no long name) resident routine library data set name

Specifies the C/C non-XPLINK (uppercase, no long name) resident routine library. Enter a 1 to 44 character MVS data set name.

Default: CEE.SCEELKED

SCEERUN-MVS LE SCEERUN runtime library data set name

Specifies the MVS Language Environment (LE) dynamic runtime library. Enter a 1 to 44 character MVS data set name.

Default: CEE.SCEERUN

SCEEINLL-SCEERUN and SCEERUN2 in the LNKLST/LPALST

Specifies whether the MVS Language Environment (LE) dynamic runtime libraries SCEERUN and SCEERUN2 are in the LNKLST/LPALST. Select YES or NO.

COBOLCOMPILER-COBOL compiler name

Specifies the COBOL compiler name. Enter a 1 to 8 character load module name.

COBOLLIB1-COBOL compiler load module library name

Specifies a COBOL compiler load module library. Enter a 1 to 44 character MVS data set name.

COMPILERINLL-COBOL compiler in the LNKLST/LPALST

Specifies whether the libraries needed for the COBOL compiler are in LNKLST/LPALST. Select YES or NO.

CICS

SDFHLOAD-CICS runtime library data set name

Specifies the runtime library associated with the CICS region. Enter a 1 to 44 character MVS data set name.

JOBNAME-CICS job name

Specifies the name of the CICS region. Enter a 1 to 8 character uppercase alphanumeric or national (#,@,$) text string that must begin with an alphabetic or national character.

APPLID-CICS APPLID

Specifies the primary VTAM APPLID of the CICS region. Enter a 1 to 8 character uppercase alphanumeric text string.

Default: DBDCCICS

TSVERSION-CICS Transaction Service version identifier

Specifies the Transaction Service version identifier of the CICS region. Enter a 6 digit numeric value in the form vvrrmm. The vv is version, rr is release, and mm is the maintenance level. For example, 030200 for CICS TS 3.2.

IMS

RESLIB-IMS linkage editor library data set name

Specifies the IMS linkage editor library. Enter a 1 to 44 character MVS data set name.

JOBNAME-IMS job name

Specifies the name of the IMS system. Enter a 1 to 8 character uppercase alphanumeric or national (#,@,$) text string that must begin with an alphabetic or national character.

VERSION-IMS version identifier

Specifies the IMS product version identifier. Enter a 6 digit numeric value in the form vvrrmm. The vv is version, rr is release, and mm is the maintenance level. For example, 110100 for IMS 11.1.

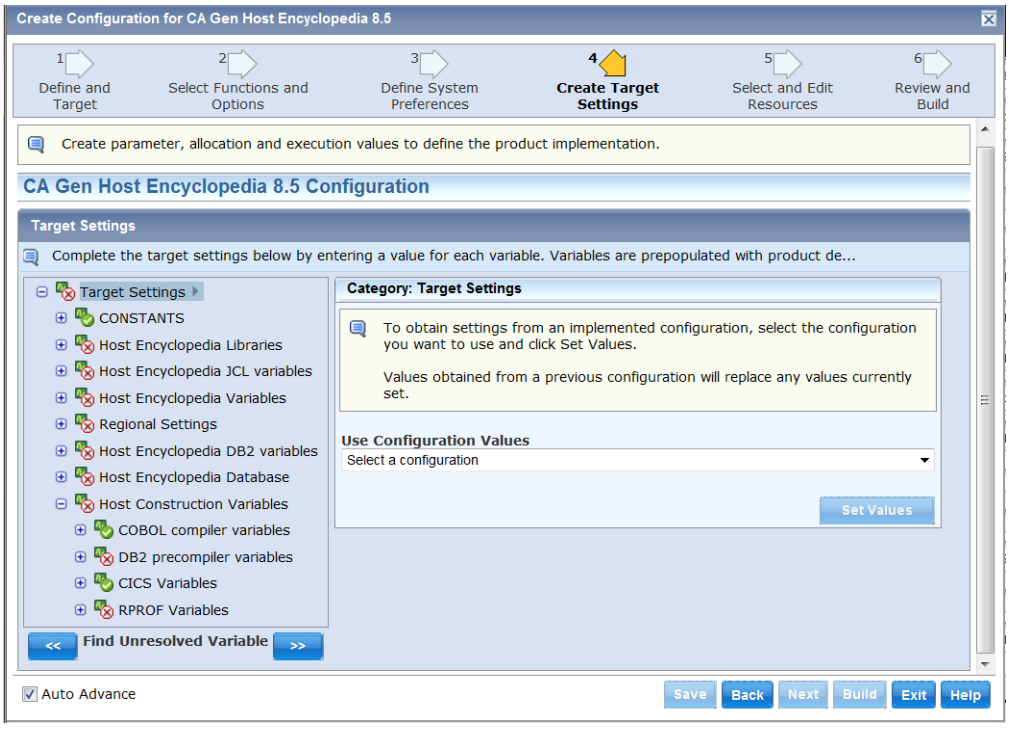
4. Create Target Settings.

   Define your CA Gen Host Encyclopedia and Host Construction target environment by specifying values for CA Gen product variables.

   Host Encyclopedia variables are grouped to match the CEINSTAL process. Expand each group to see the individual variables. Some variables have default settings that can be overwritten or confirmed as seen, and accepted. The option 'Find Unresolved Variable' sequentially displays the mandatory variables and variables which require confirmation. The icon  means the variable has been resolved (has a value, either entered or confirmed). The icon  means the variable needs to be resolved (either requires a value or needs to be confirmed). The same icons apply to the product variable groups, in which case one or more variables in the group needs to be actioned. The Next button only becomes active when all the variables have been resolved.

   A previous configuration can be used to populate the current configuration, re-using the same variable values if appropriate. This is particularly useful for the Maintenance option, where PTFs are being applied to an existing Configuration.

   The following example shows the product variable groups for CA Gen Host Encyclopedia and Host Construction.



The product variables are grouped as follows:

CONSTANTS

Variables which are provided with constant values within the product. CSMGEN is used as the second qualifier for temporary work datasets used to keep the output of Implementation Steps.

DSNTYPE determines the DSN Type used when allocating CA Gen partitioned datasets, like DBRM library. It is not used when allocating CA Gen Load Libraries like CEHBPLD0 or CEHBPLD1 as these are always allocated as PDSE (Library).

Host Encyclopedia Libraries

Prefix and suffixes for the libraries used by the Host Encyclopedia and Host Construction. Similar to the values entered using the CEINSTAL panel. These are the Runtime version of the Deployment datasets. The Runtime datasets includes the JCL, SQL, and PARMLIB datasets which are not part of Deployment.

Includes SMS variables used to allocate the Runtime datasets (permanent).

When Maintenance Option is used it requires an extra dataset prefix used to allocate datasets to backup the Runtime datasets prior to applying maintenance.

Host Encyclopedia JCL variables

Variables used in Host Encyclopedia utility jobs, such as encyclopedia image copy.

Includes SMS variables used to allocate temporary datasets used to keep the output of Implementation Steps.

Host Encyclopedia Variables

Global values used to operate the Host Encyclopedia, like encyclopedia name and plan prefix.

Includes SMS variables used to allocate userid prefixed datasets like <userid>.IEF.LOGFILE.

Old Host Encyclopedia variables

Optional variables used in model cross copy or conversion from another encyclopedia. This other encyclopedia is usually at a previous schema level.

Host Encyclopedia DB2 variables

DB2 environment variables used by the Host Encyclopedia such as the Secondary AuthID, database names, dynamic SQL plan name.

Host Encyclopedia Database

Variables used in creating the Host Encyclopedia DB2 databases and associated objects such as tables, indexes.

Storage Group for Host Encyclopedia database variables are used to distribute the encyclopedia spaces across different volumes. At this time the CSM Implementation only uses the odd numbered groups (1, 3 and 5), ignoring the others.

Host Construction Variables

Target system specific variables.

COBOL compiler variables

Compiler variables are used to capture information about the COBOL compiler.

DB2 precompiler variables

DB2 precompiler variables capture information about the DB2 precompiler. The information is used when precompiling a generated source module targeting DB2.

CICS Variables

CICS variables are used to capture information about CICS. The information is used when installing generated applications targeting CICS. This option is activated by specifying support for generated applications under CICS in target environment configuration.

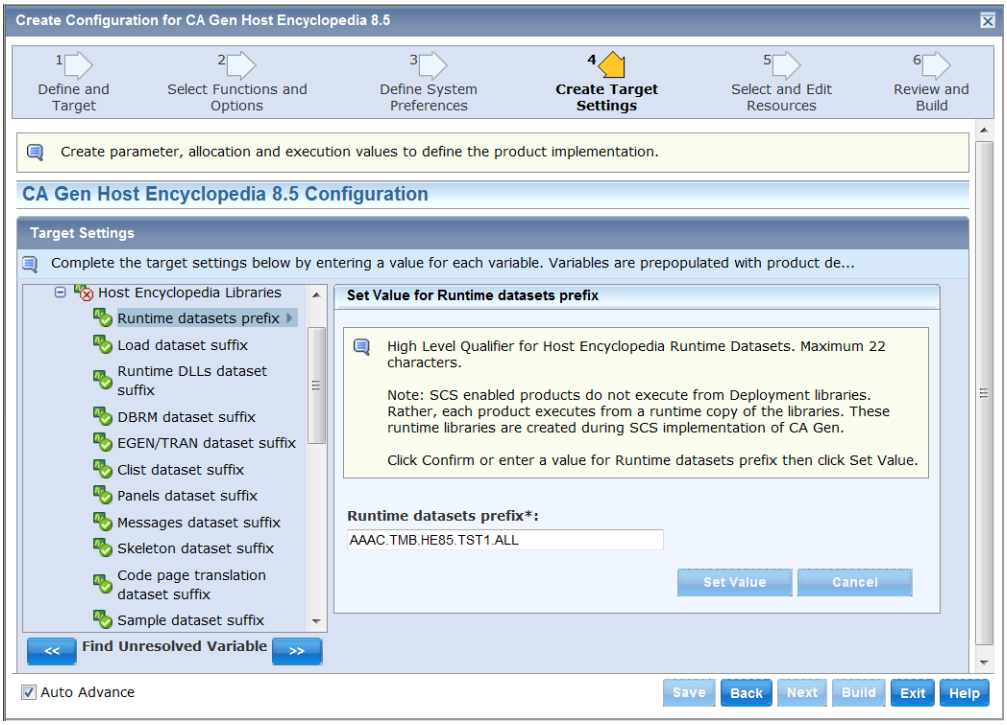
IMS Variables

IMS variables capture information about IMS. The information is used when installing a generated application targeting IMS. This option is activated by specifying support for generated applications under IMS in target environment configuration.

RPROF Variables

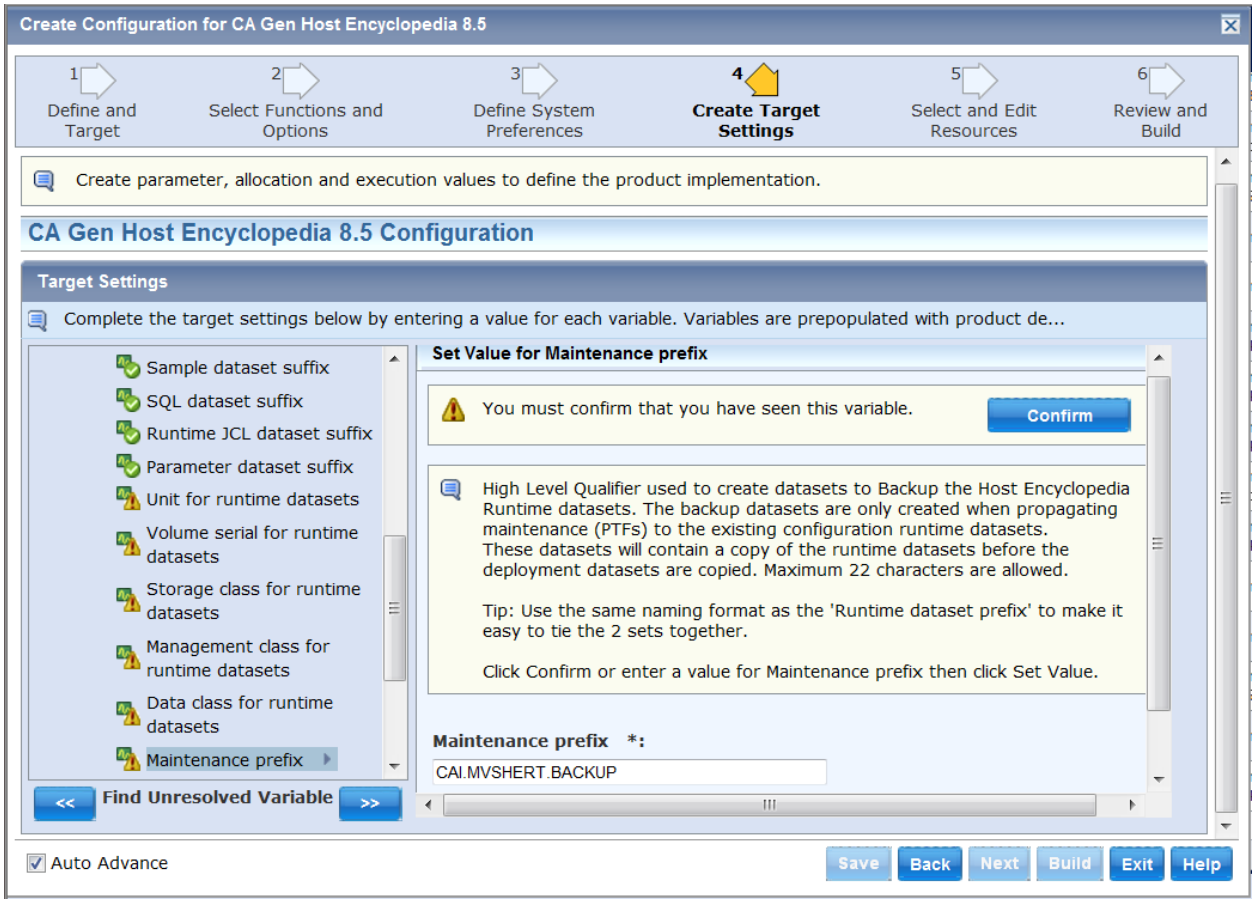
RPROF variables capture information which is used to build the runtime profile manager for DB2. This option is activated by selecting DB2 RPROF TABLE option, made available by Host Construction. The option CREATE DB2 RPROF has no effect on this group.

In the following example, Host Encyclopedia Libraries is expanded. The default value for the variable 'Runtime datasets prefix' is shown. Confirm the default value or specify another value.



When Implemented, this specific Configuration creates datasets named AAAC.TMB.HE85.TST1.ALL.CEHBPLD0, CEHBCLS0 and so on and copies the contents of the Deployment datasets into them. In addition it creates datasets JCL, SQL and PARMLIB which are populated by the Implementation.

Once the Configuration is implemented the AAAC.TMB.HE85.TST1.ALL.* datasets are the Runtime datasets that should be accessed via the Logon Clist or Procedure to access this encyclopedia and construction.



When Maintenance option is selected, the value specified for the ‘Runtime datasets prefix’ variable should be the value entered when this encyclopedia was originally created/upgraded. The ‘Maintenance prefix’ variable should be a different name as it will be used to create a backup of the Runtime datasets before the maintenance is propagated. Maintenance option requires that one of the DB2 utilities option (IBM or CA) is also selected.

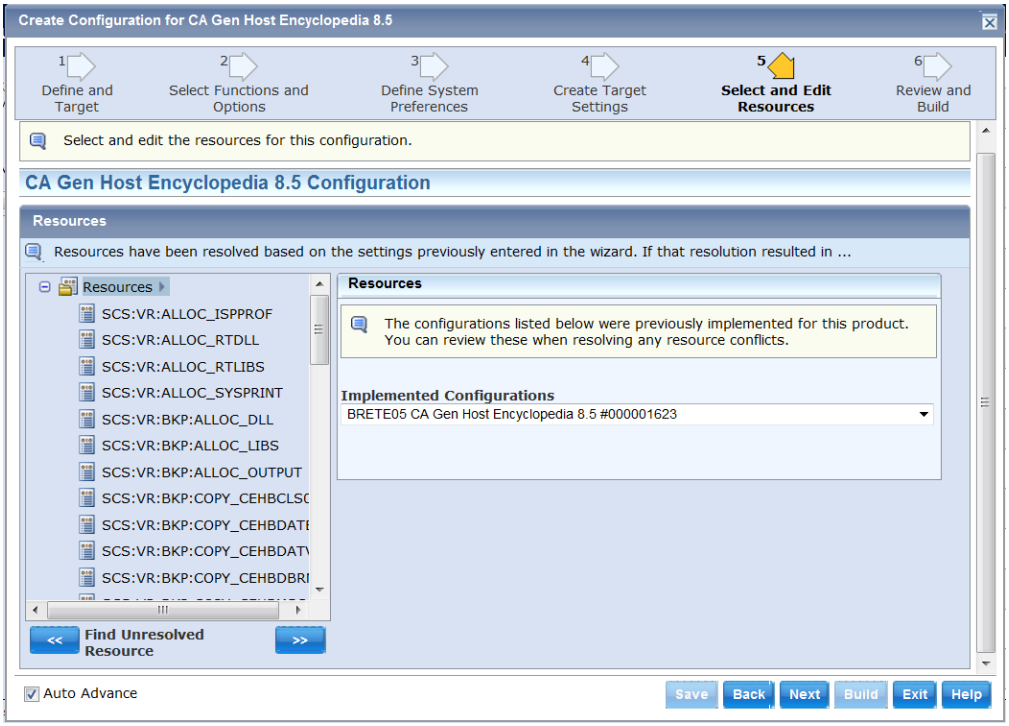
Since Maintenance is intended to be applied to an existing configuration enter the name of a previously created configuration in the Use Configuration Values, or select one from the list, to pick up the values used when the Implemented Configuration was originally created.

Selecting the Upgrading Ency(clopedia) option enables the 'Upgrade From ……' options. CA CSM Configuration Services can be used to UPGRADE a CA Gen Host Encyclopedia created by a previous release of CA Gen (not just a CA CSM Configuration). Use CA CSM Installation and Deployment to create the Runtime version of the CA Gen 8.5 Host Encyclopedia software as before. Then in the Create Configuration dialog enter the database values (like Schema, Data and Public Interface database name) for the encyclopedia being upgraded. The Implementation will then configure your old encyclopedia to be used with the new software.

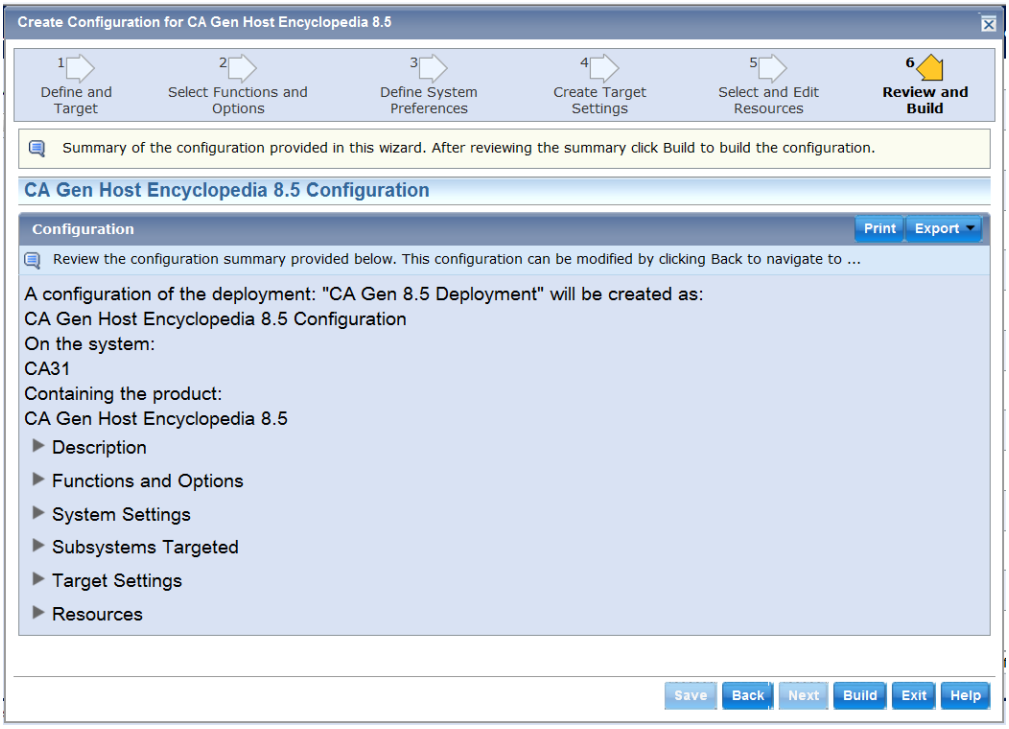
5. Select and edit resources.

   On this panel, you can select and edit resources.

   There are no editable resources for Host Encyclopedia and Host Construction. Therefore you can proceed to the next step.



6. Review and Build.



You can expand each section to see the value used by each variable. You can Print or Export (save) this Configuration Summary. Verify that the values entered or the ones presented by default are correct before selecting Build to Implement the configuration.

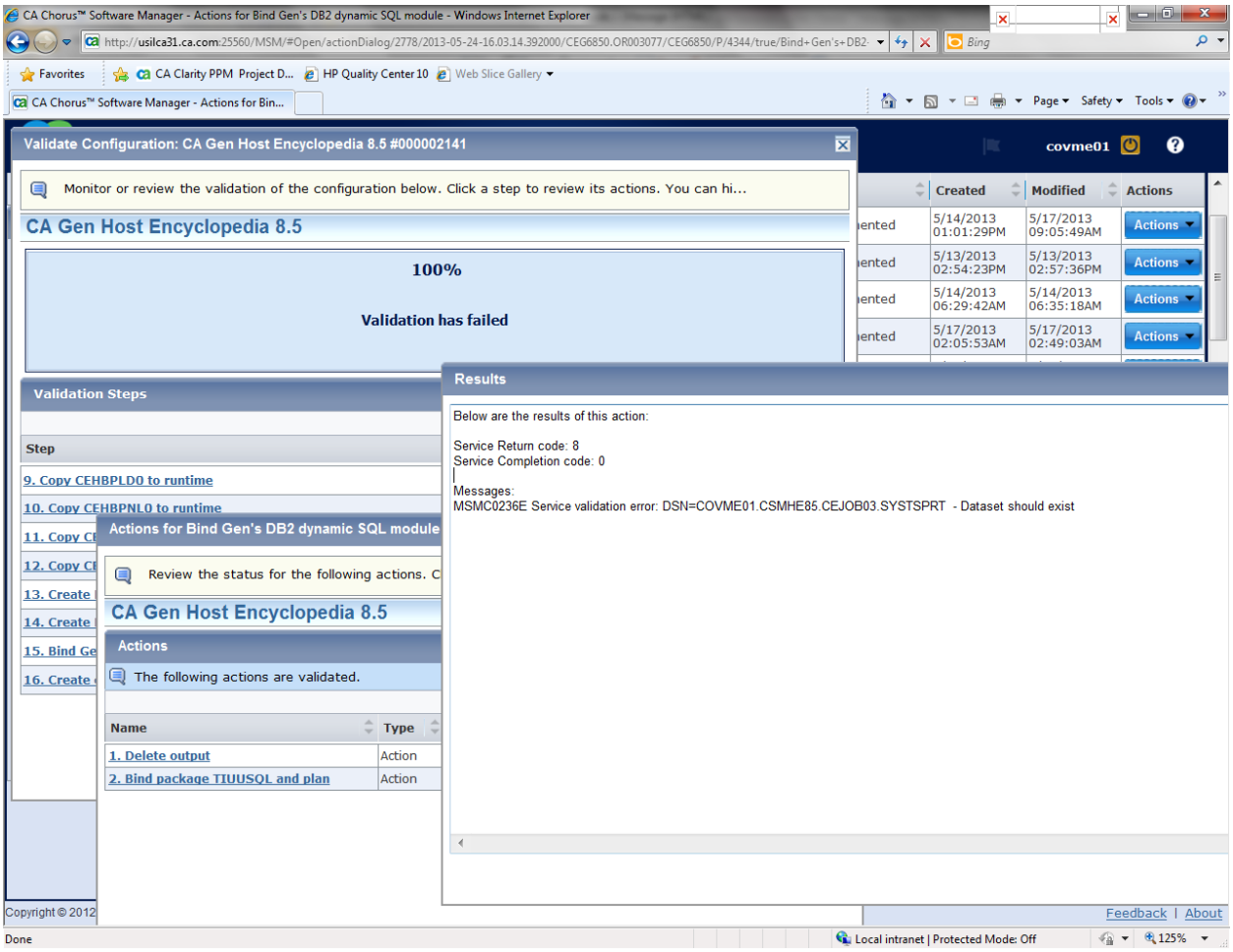
Implementing Host Encyclopedia and Host Construction Configuration

When you build a configuration for CA Gen Host Encyclopedia and Host Construction, you can validate and implement it.

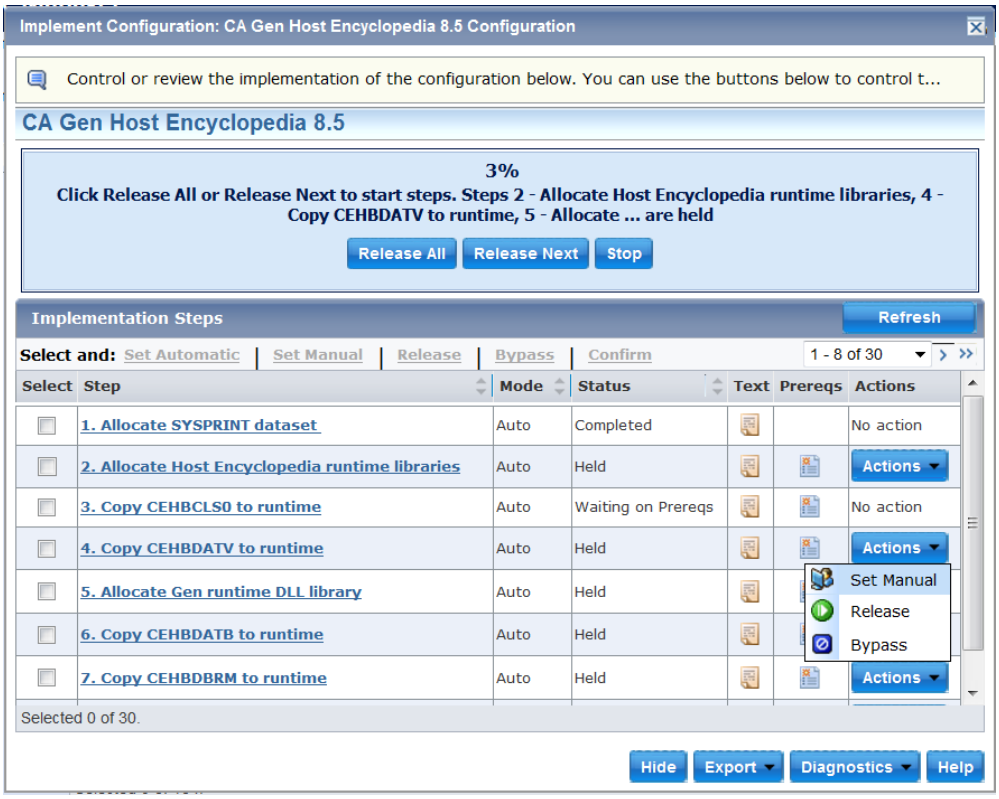
Validation verifies access to resources used when you implement the configuration. At this time skip Validation of CA Gen as a validation failure caused by a non-existent temporary dataset condition will prevent Implementation. The validation failure is for a condition handled during Implementation so the actual Implementation, when validation is bypassed, is successful.

The following is an example of Validation results for Bind Package and Plan processing. The first action deletes outputs from a previous Implementation, if there are any. It is acceptable that the dataset does not exist. The Validation fails with 'MSMC0236E Service validation error: DSN=<userid>.CSMHE85.CEJOB07A.SYSTSPRT - Dataset should exist' message, but the Implementation of the same process handles the condition and succeeds.

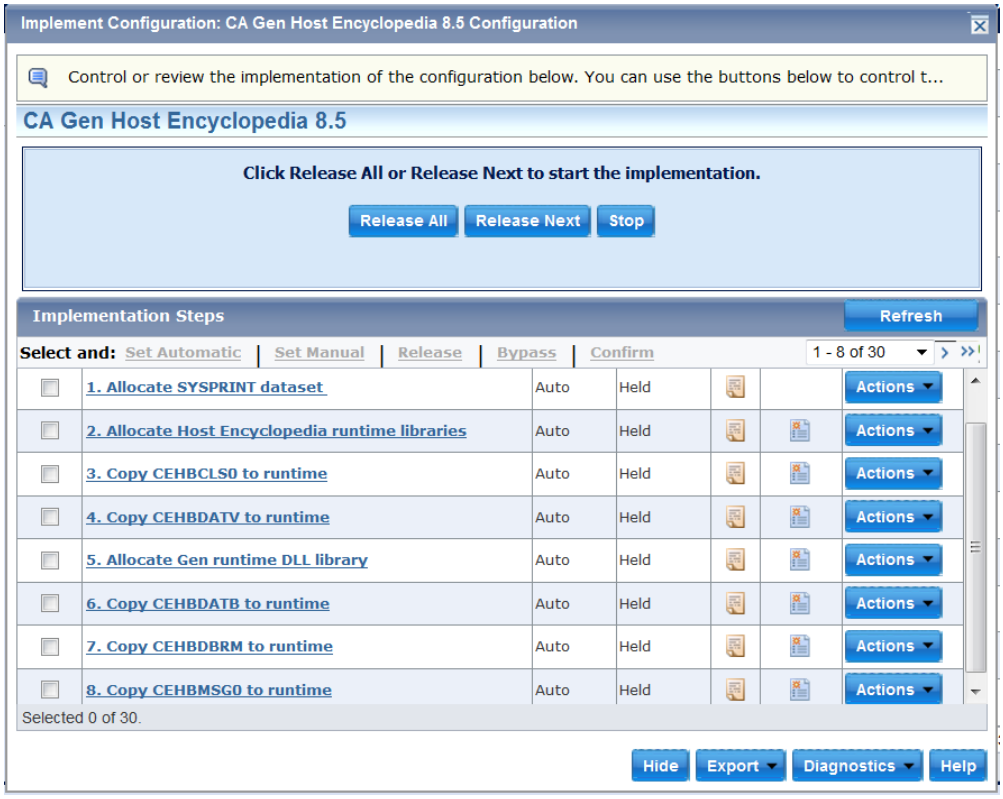
When this Validation error is encountered it is not possible to simply continue with Implementation. It is best to just skip Validation until this error condition is addressed.

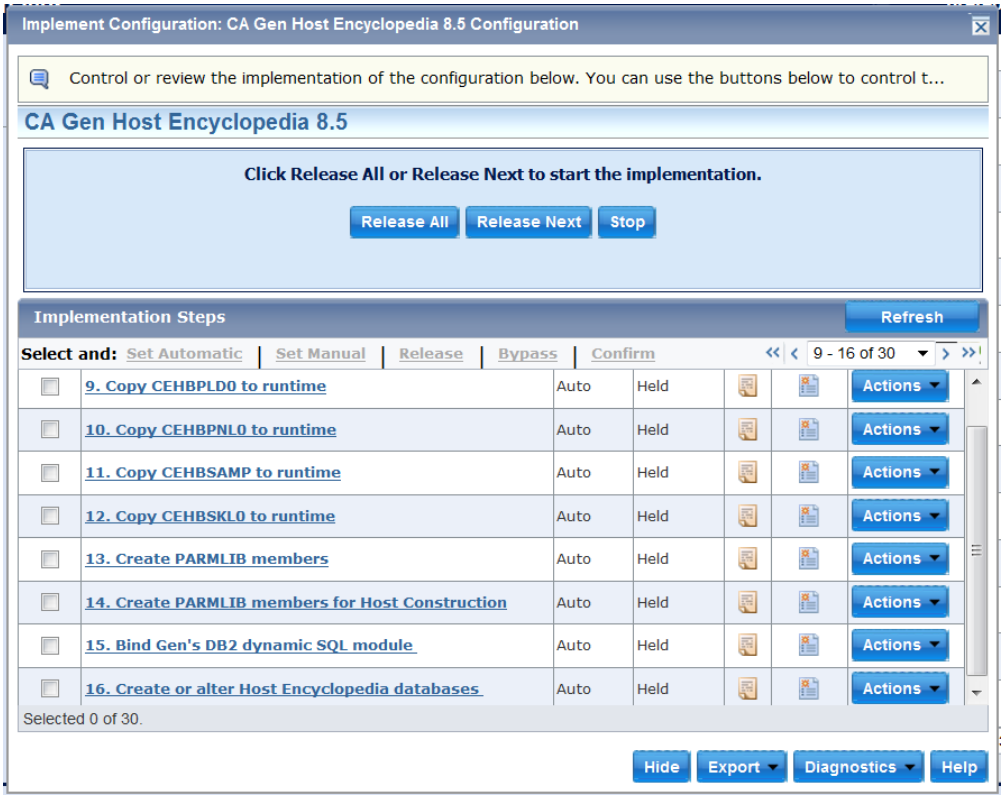


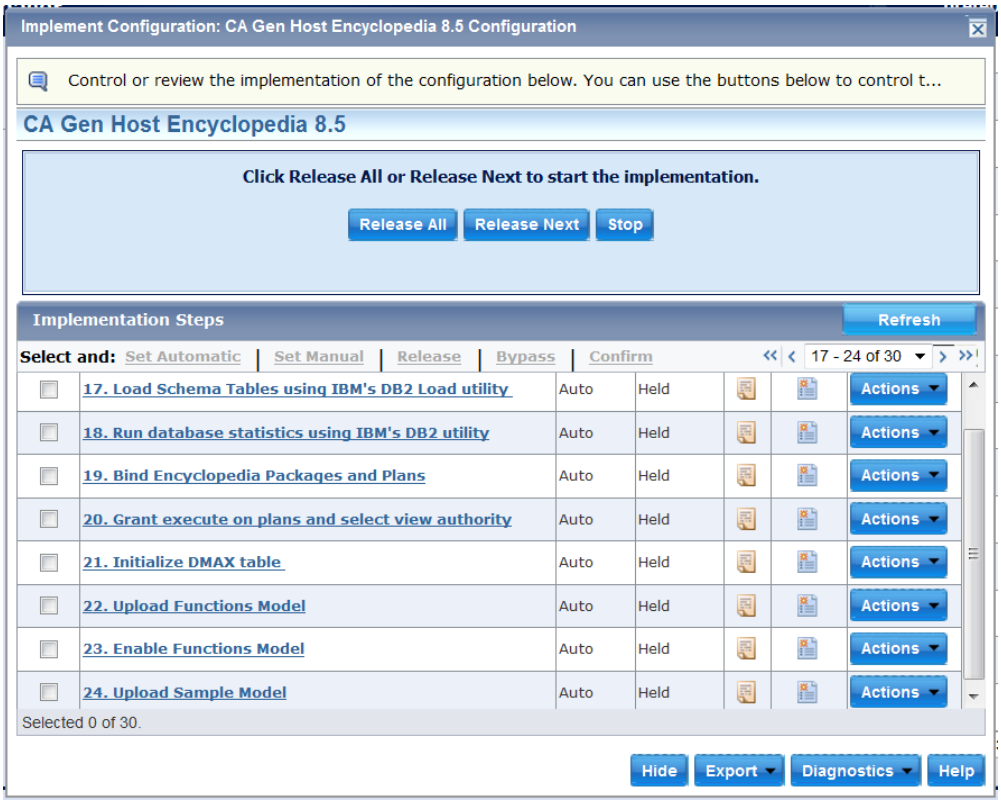
Use the Configurations tab in CA CSM, select the built configuration from the list and select Implement from the Actions drop-down. Implement the configuration by releasing the Implementation Steps. You can Release All steps or Release individual steps. The following example shows the Implementation Steps to Create a New Encyclopedia. Either Release All for steps to execute automatically where the steps pre-reqs are automatically addressed or Release Next to manually control the execution of each step. The Actions drop-down can also be used to Release (or Bypass) each step.

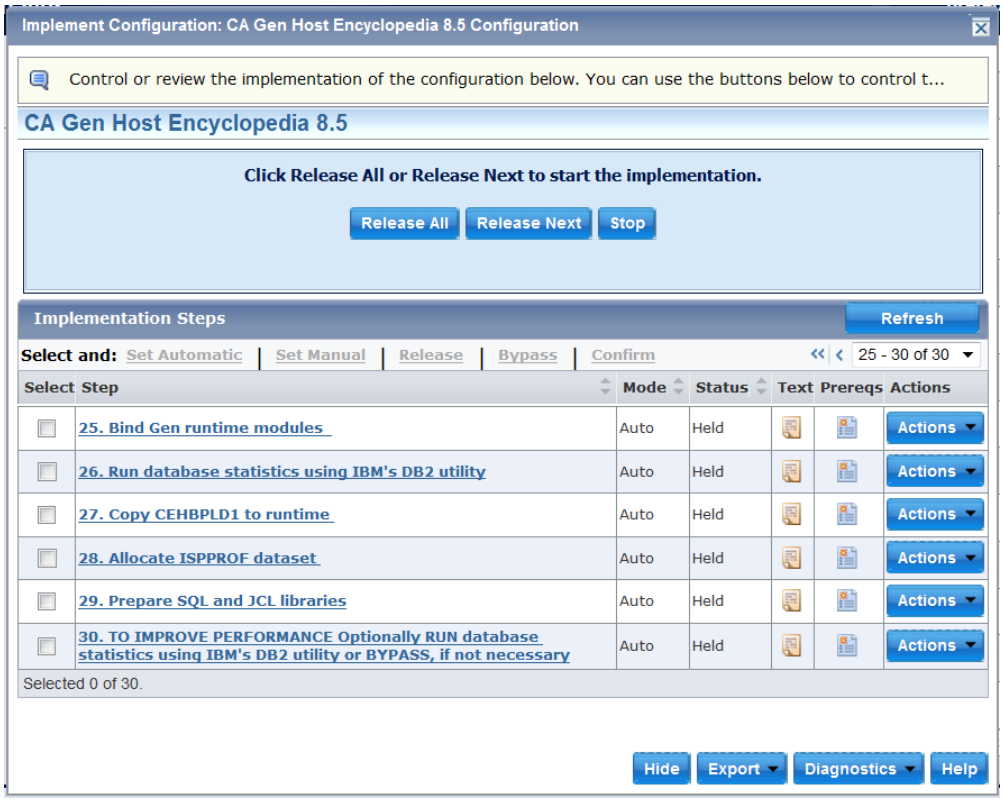


The following images show all the steps to create a New Encyclopedia:


Implement Configuration: CA Gen Host Encyclopedia 8.5 Configuration
Control or review the implementation of the configuration below. You can use the buttons below to control t...
CA Gen Host Encyclopedia 8.5
Click Release All or Release Next to start the implementation.
Release All
Release Next
Stop
Implementation Steps
Refresh
Select and: Set Automatic | Set Manual | Release | Bypass | Confirm
1 - 8 of 30
1. Allocate SYSPRINT dataset Auto Held Actions
2. Allocate Host Encyclopedia runtime libraries Auto Held Actions
3. Copy CEHBCLS0 to runtime Auto Held Actions
4. Copy CEHBDATV to runtime Auto Held Actions
5. Allocate Gen runtime DLL library Auto Held Actions
6. Copy CEHBDATB to runtime Auto Held Actions
7. Copy CEHBDBRM to runtime Auto Held Actions
8. Copy CEHBMSG0 to runtime Auto Held Actions
Selected 0 of 30.
Hide
Export
Diagnostics
Help


Implement Configuration: CA Gen Host Encyclopedia 8.5 Configuration
Control or review the implementation of the configuration below. You can use the buttons below to control t...
CA Gen Host Encyclopedia 8.5
Click Release All or Release Next to start the implementation.
Release All
Release Next
Stop
Implementation Steps
Refresh
Select and: Set Automatic | Set Manual | Release | Bypass | Confirm
9 - 16 of 30
9. Copy CEHBPLD0 to runtime Auto Held Actions
10. Copy CEHBPNL0 to runtime Auto Held Actions
11. Copy CEHBSAMP to runtime Auto Held Actions
12. Copy CEHBSKL0 to runtime Auto Held Actions
13. Create PARMLIB members Auto Held Actions
14. Create PARMLIB members for Host Construction Auto Held Actions
15. Bind Gen's DB2 dynamic SQL module Auto Held Actions
16. Create or alter Host Encyclopedia databases Auto Held Actions
Selected 0 of 30.
Hide
Export
Diagnostics
Help


Implement Configuration: CA Gen Host Encyclopedia 8.5 Configuration
Control or review the implementation of the configuration below. You can use the buttons below to control t...
CA Gen Host Encyclopedia 8.5
Click Release All or Release Next to start the implementation.
Release All
Release Next
Stop
Implementation Steps
Refresh
Select and: Set Automatic | Set Manual | Release | Bypass | Confirm
17 - 24 of 30
17. Load Schema Tables using IBM's DB2 Load utility Auto Held Actions
18. Run database statistics using IBM's DB2 utility Auto Held Actions
19. Bind Encyclopedia Packages and Plans Auto Held Actions
20. Grant execute on plans and select view authority Auto Held Actions
21. Initialize DMAX table Auto Held Actions
22. Upload Functions Model Auto Held Actions
23. Enable Functions Model Auto Held Actions
24. Upload Sample Model Auto Held Actions
Selected 0 of 30.
Hide
Export
Diagnostics
Help



The last Step is optional and, if not required, should be Bypassed. Verify this step is not required by accessing the newly created encyclopedia to evaluate performance before bypassing the step. This step can be executed when a new encyclopedia's performance needs to be improved by uploading models and executing RUNSTATS.

When all implementations steps complete successfully, you can use the Host Encyclopedia. Start by setting up the ISPF environment to access the Host Encyclopedia just created or upgraded. This is described next.

Establish ISPF Library Concatenation

The ISPF environment must be established before using CA Gen. The encyclopedia libraries can be allocated using a logon CLIST, a logon PROC, or the ISPF LIBDEF facility. In all cases, if the logon is used primarily for the encyclopedia, certain libraries must be first in the concatenation.

Important! Do not include CA Gen data sets from releases before CA Gen 8.5 in the ISPF logon concatenation because it may produce unpredictable results or cause errors. Do not install the CA Gen load modules in an APF authorized library.

ISPLLIB or STEPLIB

A combination of ISPLLIB or STEPLIB can be used to allocate the required CA Gen software libraries and the required z/OS program product runtime libraries, such as LE, DB2, and ISPF.

If DB2 or LE libraries are not in the linklist, allocate them through a STEPLIB DD or the ISPLLIB DD in the logon CLIST or in the TSO logon procedure.

LIBDEF

If you use the ISPF LIBDEF facility, note these restrictions:

- LIBDEF is not supported for the SYSPROC DD. You must include the CA Gen CLIST library in the SYSPROC concatenation of a logon CLIST or a TSO logon PROC.
- Do not use LIBDEF to allocate the required load libraries. CA Gen programs make dynamic calls to LE runtime routines. Using LIBDEF to allocate ISPLLIB results in an S806 abend for module not found. This is a limitation of ISPF LIBDEF.
- There are two CLIST exits for LIBDEF: TIELIBDF and TIELIBFR.

  TIELIBDF is called at the beginning of some CA Gen Host Encyclopedia functions, including the clist TICPYRIT which displays the CA Gen copyright panel. TIELIBDF dynamically allocates ISPPLIB, ISPMLIB, and ISPSLIB.

  TIELIBFR is called at the end of some Host Encyclopedia functions and can be used to free libraries allocated using LIBDEF. TIELIBDF and TIELIBFR contain examples of how to use LIBDEF to allocate and free libraries.

Note: When customizing exits, use a different library that can be concatenated before the CA Gen software, ensuring that CA Gen software libraries are not modified.

Procedure

1. Allocate the following libraries:

DDNAME	Description	CA Gen Library Short Name
SYSPROC	CLIST libraries	CEHBCLS0
ISPPLIB	ISPF Panel libraries	CEHBPNL0
ISPMLIB	ISPF Message libraries	CEHBMSG0
ISPLLIB	Load libraries	CEHBPLD0 CEHBPLD1
ISPPROF	ISPF User Profile library	(not applicable)
ISPSLIB	ISPF Skeleton libraries	CEHBSKL0

DDNAME	Description	CA Gen Library Short Name
TIUPARML	Parameter library containing site specific values used in Host Encyclopedia and Construction functions	PARMLIB

2. Create and test the logon CLIST or PROC. Contact the System Administrator if you need help with this step or the next step.
3. If using LIBDEF, modify and test TIELIBDF.

Establish Access to CA Gen

Modify an existing ISPF menu to provide an ISPF entry point to CA Gen Host Encyclopedia. The modified ISPF menu must provide an option that executes the CLIST TICPYRIT to display the CA Gen copyright panel, for example, CMD (%TICPYRIT). Alternatively, you can use the CLIST GENHE to display the CA Gen copyright panel for the Host Encyclopedia, for example CMD (%GENHE).

Other ISPF Considerations

Review the default flag in the TSO command table (ISPTCM) header to determine if the command processor entries for the following TSO commands need to be added to the ISPTCM:

- TSOAE-required by the TSO testing facility.
- EXECSQL-(Optional) a dynamic SQL utility for diagnostics and problem correction.

Most sites do not need to change these commands. If you modify the ISPTCM defaults, you must add these commands.

No modification is required if the default flag in the ISPTCM header is B'.......1'. This indicates that a BLDL instruction is used to determine if a command processor or a CLIST is entered. If your ISPTCM table has a different setting in the header, add a command processor ENTRY for the TSOAE and EXECSQL commands. For more information, see the ISPF documentation.

Important! Insufficient space in the ISPPROF profile data set can cause unpredictable results.

Next you want to populate the encyclopedia, see start CA Gen Host Encyclopedia (see page 202).

How to Configure Without CA CSM

The topics in this section describe the manual tasks you perform if you are not configuring your product using CA CSM.

Configuring Host Encyclopedia and Host Construction

This section describes the configuration tasks needed before CA Gen can be started, customized, and used in your environment.

Configuration Variables

CA Gen Library Name Variables

The following table describes the installed CA Gen library names.

CA Gen Library Suffixes	Description	User Notes
Load library Default: CEHBPLD0	Library containing CA Gen executables and runtime modules. **Note:** The data sets must be allocated as PDSE data sets.	Must be of 'DSNTYPE=LIBRARY'
Runtime DLLs Default: CEHBPLD1	Library containing CA Gen runtime modules, DLLs. **Note:** The data sets must be allocated as PDSE data sets.	Must be of 'DSNTYPE=LIBRARY
DBRM Default: CEHBDBRM	Library containing CA Gen DBRMs. DBRMs that correspond to the modules linked into CA Gen executables.	
Data (EGEN/TRAN) Default: CEHBDATV	Contains schema load files, transaction files for models shipped with CA Gen.	
CLIST Default: CEHBCLS0	Library containing CA Gen CLISTs and REXX commands. CEINSTAL generates CLISTs in this library.	
Panel Default: CEHBPNL0	Library containing the CA Gen ISPF panels.	
Message Default: CEHBMSG0	Library containing the CA Gen ISPF messages.	

CA Gen Library Suffixes	Description	User Notes
Skeleton Default: CEHBSKL0	Library containing the CA Gen ISPF skeletons.	
X-Late Default: CEHBDATB	Library containing the CA Gen translate or international tables.	

The following table describes the CA Gen library names populated during configuration.

CA Gen Library Suffixes	Description	User Notes
SQL Default: SQL	CEINSTAL generates the SQL necessary to install CA Gen and places it in this library.	
JCL Default: JCL	CEINSTAL generates the JCL necessary to install CA Gen and places it in this library.	
PARMLIB Default: PARMLIB	Library containing site specific parameters.	

JCL Variables

The following table describes the JCL variables.

JCL Variables	Description	User Notes
Jobcard No default	Job card included in the generated JCL to perform various installation tasks	
Installer TSOID No Default	Used to prefix the names of the temporary data sets built and used during installation	Used in several places
DISK UNIT Default: SYSDA	Disk unit used in the generated JCL to perform various installation tasks.	
Tape unit Default: 3480	Tape unit used in the generated JCL to perform various installation tasks.	
SYSOUT class Default: *	SYSOUT class used in the generated JCL to perform various installation tasks.	

JCL Variables	Description	User Notes
DB2 STEPLIB No default	Optionally, one or more libraries included in a STEPLIB in the generated JCL to perform various installation tasks. If your site included the DB2 libraries in the system LINKLIST, do *not* specify them in a STEPLIB.	
z/OS steplib1 z/OS steplib2 OTHER STEPLIB No default	Optionally, one or more libraries included in a STEPLIB in the generated JCL to perform installation tasks. If your site included the z/OS runtime libraries in the system LINKLIST, do *not* specify a STEPLIB.	

Encyclopedia Variables

The following table describes the encyclopedia variables.

Encyclopedia Variables	Description	User Notes
Site name Default: YOUR_COMPANY_NAME	For information purposes only.	
Encyclopedia variables for the current installation		
Encyclopedia name Default: HOST001	Name of the encyclopedia. It must be a unique value to prevent cross encyclopedia enqueues.	
Encyclopedia ID Default:1	Host encyclopedia's numeric ID. Required when exchanging models between the Host Encyclopedia and client/server encyclopedias in a multiple encyclopedia environment. This ID must be unique among the host and client/server encyclopedias.	

Encyclopedia Variables	Description	User Notes
Install construction Default: Y	Determine if Construction is installed.	
Administrator TSOID Default: TSO user ID	Identifies person doing the install.	
Administrator name Default: System Administrator	For information purposes only.	
PLAN Prefix Default: HEPL (4 byte limit)	Prefix for CA Gen DB2 plan names. Plan prefixes make plan names unique in a DB2 subsystem, allowing different versions of CA Gen software to run against the same CA Gen database.	
Schema Identifier	A display only field that identifies the schema.	
User dataset prefix Default: &SYSPREF	Prefix for user data sets created by CA Gen, for example standard error, standard out.	
User dataset UNIT type Default: SYSDA	Unit for allocating user data sets created by CA Gen.	
User dataset suffix	Option value suffix for user datasets created by CA Gen.	
Optional Variables used in Model Cross-copy or Conversion		
Old PLAN Prefix PL00	Optionally identifies the DB2 plan prefix for the old Host Encyclopedia when cross-copying models from old to new encyclopedia.	

Encyclopedia Variables	Description	User Notes
Old Schema identifier	Optionally identifies the schema level of the old encyclopedia when cross-copying a model from an old to new encyclopedia. The old encyclopedia must be in the prior or second prior schema and you must specify the exact schema value, as in 9.1.A5 or 9.0.A2. **Note:** For the schema designation for Prior Schema and Second Prior Schema, see the *Release Notes.*	
Old load library	Optionally identifies the load library corresponding to the prior or second prior schema.	

DB2 Database Variables

The following table describes the DB2 database variables.

DB2 Database Variables	Description	User Notes
DB2 Subsystem ID Default: DSN	Identifies the DB2 subsystem.	
Secondary authorization ID No default	The DB2 DDL uses secondary authorization ID as: SET CURRENT SQLID='XXX' Secondary authorization ID is passed to the DB2 bind process in the OWNER parameter.	
Bind Qualifier and DB2 Table-Index-View Owner No default	Optional. Bind qualifier and DB2 Table-Index-View-Owner are passed to the DB2 bind process in the QUALIFER parameter. This value is also used to prefix table, index, and view names, during their creation.	

DB2 Database Variables	Description	User Notes
DB2 Collection ID Default: DBCOLLID	Identifies DB2 collection ID used in binding Host Encyclopedia packages.	
Schema DB name Default*:* HOSTS	Name of the schema database.	
Data DB name Default*:* HOSTD	Name of the encyclopedia database.	
Public Interface DB name Default*:* HOSTP	Name of the public interface database.	
Dataset storage type Default: S	Space for CA Gen database can be allocated using storage groups or VSAM data sets: S-storage group allocation V-VSAM allocation	
Encyclopedia Initial size Default: S	S-small M-medium	
Secondary storage factor Default: 0	Defines secondary space allocation in relation to primary allocation. 0 to 1.0 times primary allocation.	
Storage Group Names No default	If you select storage group space allocation, you must know the names of the groups to use.	
VSAM Volume Names No default	If you select VSAM space allocation, you must specify the volume names for VSAM data sets.	
Gen Runtime Collection ID Default: RTCOLLID	Identifies DB2 collection ID used in binding runtime packages for TIRPROFD and TIROLBCM.	

COBOL Compiler Variables

The following table describes the COBOL compiler variables.

COBOL Compiler Variables	Description	User Notes
COBOL Compiler name Default: IGYCRCTL	Name of the COBOL compiler.	
Size parameter No default	Amount of space for the compiler SIZE parameter as: kilobytes, for example, 4096 KB bytes, for example, 4194304 MAX.	
COBOL Compiler library Default: IGY.SIGYCOMP	Name of the library containing the compiler used by the environment and various support modules for COBOL.	
Compiler library in linklist Default: N	Flag indicating if the compiler library is defined in the system linklist.	
z/OS Static runtime Default: CEE.SCEELKED	Library containing static runtime modules for COBOL.	
z/OS Dynamic runtime Default: CEE.SCEERUN	Library containing z/OS LE dynamic runtime modules.	
SCEERUN library in linklist Default: N	Flag indicating if this library is in the linklist.	

DB2 Subsystem Variables

The following table describes the DB2 subsystem variables.

DB2 Subsystem Variables	Description	User Notes
DB2 precompiler name Default: DSNHPC	Name of the DB2 precompiler.	

DB2 Subsystem Variables	Description	User Notes
DB2 link library Default: DB2.SDSNLOAD	Name of the DB2 link library containing the DB2 precompiler and various support modules.	
Link lib in LPA/linklist Default: N	Flag indicating if the DB2 link library is defined in the system linklist.	

CICS Variables

The following table describes the CICS variables.

CICS Variables	Description	User Notes
CICS Load library Default: CICS.SDFHLOAD	Name of CICS Load library.	
z/OS Static Link Library Default: CEE.SCEELKED	z/OS LE static link library.	
CICS shares CPU with this TSO Default: N	Flag indicating if the CICS system targeted to run CA Gen applications executes on the same CPU as Host Construction. Only applications targeting DB2 use this variable to decide where and when to do the DB2 BIND. Y - Host Construction can perform the BIND. N - You must do a manual BIND on the other CPU.	

IMS Variables

The following table describes the IMS variables.

IMS Variables	Description	User Notes
IMS resident Load lib Default: IMS.RESLIB	Load library containing IMS modules.	
Maximum segment size Default: 1280	Maximum segment size of IMS messages.	

IMS Variables	Description	User Notes
IMS shares CPU with this TSO Default: N	Flag indicating if the IMS system targeted to run CA Gen applications runs on the same CPU as Host Construction. Only applications targeting DB2 use this variable to decide where and when to do the DB2 BIND. Y-Host Construction can perform BIND. N-You must do a manual BIND on the other CPU.	
CPIC interface Load lib Default: SYS1.CSSLIB	Name of the system library that contains the CPIC interface modules. Usually this library is SYS1.CSSLIB, a required z/OS data set.	

RPROF Variables

The following table describes the RPROF variables.

RPROF Variables	Description	User Notes
DB2 Subsystem ID Default: DB2	DB2 subsystem identifier of the subsystem where you want to create an RPROF table.	
Explicit creator ID No default	If specified, RPROF table and index are qualified using this ID. Explicit creator ID and secondary authorization ID are mutually exclusive.	
Secondary Authorization ID No default	If specified, the current SQLID is set to this ID before RPROF table and index are defined. Secondary authorization and explicit creator ID are mutually exclusive.	
DB name Default: RPROF	Name of the database in which to build the RPROF table.	

RPROF Variables	Description	User Notes
Storage Type Default: S	Space for the RPROF database is allocated using storage groups or VSAM data sets. S - Storage Group allocation V - VSAM allocation	
Storage Group Name No default	When Storage Type is set to S, you must specify the Storage Group Name to use when creating the tablespace and table for RPROF.	
VCAT No default	If you select VSAM as the type of database storage, you must specify the VCAT name to use when creating the VSAM data sets.	
Volume No default	If you select VSAM space allocation, you must specify the volume names when creating the VSAM data sets.	
RPROF initial size Default: 350 4 KB pages for VSAM, or 1400 1 KB pages for storage group	Primary size of tablespace containing the RPROF table.	
RPROF secondary size Default: 0	Secondary space allocation of tablespace containing the RPROF table.	
RPROFI1 initial size Default: 350 4 KB pages for VSAM, or 1400 1 KB pages for storage group	Primary size of RPROF index.	
RPROFI1 secondary size Default: 0	Secondary space allocation of RPROF index.	

JCL Members

This following table provides a comprehensive list of all CA Gen JCL members and a brief description of the jobs they perform. The installation and upgrade processes create these members.

JCL Member	Job Description
BIEFXCPY	Performs a batch cross-copy by executing CLISTs IEFDOWN and IEFUP.
BLDRPROF	Builds RPROF tables and indexes. Each DB2 subsystem used by applications generated by CA Gen should have an RPROF table. If the target of a CA Gen application is CICS, you can use a TSQ RPROF instead of a DB2 RPROF, eliminating the need for an RPROF table.
CEJOB02	Allocates VSAM data sets for encyclopedia tables and indexes, if VSAM data sets are selected.
CEJOB03	Executes a DB2 BIND for dynamic SQL processing program TIUUSQL.
CEJOB04	Creates all DB2 objects for a new Host Encyclopedia.
CEJOB05	Loads the CA Gen schema tables with meta-model data. Executes the IBM's DB2 Load utility.
CAJOB05	Performs the same task as CEJOB05 using CA Technologies's Fast Load utility.
CEJOB05A	Relaxes schema migration rules.
CEJOB06	Executes the DB2 RUNSTATS utility for all Host Encyclopedia tables.
CAJOB06	Updates DB2 catalog statistics similar to CEJOB06 using CA Technologies's PDASTAT utility.
CEJOB07A	Binds Host Encyclopedia DBRMs into packages.
CEJOB07B	Binds CA Gen Host Encyclopedia plans.
CEJOB08	Grants to PUBLIC, DB2 EXECUTE authority on CA Gen plans and DB2 SELECT authority on Public Interface table views.
CEJOB09	Updates the DMAX table for the CA Gen schema.
CEJOB10	Loads the Schema Functions Model.
CEJOB11	Processes the Functions Model to extract information and load it to the schema tables.
CEJOB12	Loads the CA Gen Sample Model.

JCL Member	Job Description
CEJOB13	Loads the CA Gen Help Model.
CEUCLEN	Runs a special version of the model delete function that removes all orphan objects not related to a model.
CEUCOPY	Runs the DB2 COPY utility to take a full image-copy of encyclopedia tablespaces. This job is also used to create a new encyclopedia. This member was created as sample utility JCL.
CAUCOPY	Runs the CA DB2 QUICK COPY utility to take a full image-copy of encyclopedia tablespaces. This job is also used to create a new Encyclopedia. This member was created as sample utility JCL.
CEUINCR	Runs the DB2 COPY utility to take an incremental image-copy of encyclopedia tablespaces.
CAUINCR	Runs the CA DB2 QUICK COPY utility to take an incremental image-copy of encyclopedia tablespaces.
CEUREOR	Runs the DB2 REORG utility on tablespaces.
CAUREOR	Runs the CA DB2 RAPID REORG utility on tablespaces.
CEUXPND	Expands table and indexspaces.
CVJOB04A	Upgrades CA Gen Host Encyclopedia objects: - from AllFusion Gen 7 to CA Gen 8.5 - from AllFusion Gen 7.5 to CA Gen 8.5
CVJOB04B	Upgrades CA Gen Host Encyclopedia objects from AllFusion Gen 7.6 to CA Gen 8.5
LAPPHELP	Runs IBM DB2 LOAD utility to load the application Help Model data.
CAPPHELP	Runs the CA DB2 Fast Load utility to load the application Help Model data.
USERLIB	Allocates libraries used in Host Construction. Can also be used as a model for user allocation of construction libraries. For a list of the libraries allocated by USERLIB, see "Testing Host Construction." **Note:** Any load library must be allocated as PDSE (DSNType = LIBRARY).
CEJOB14R	Binds CA Gen runtime DBRM TIROLBCM into a package using CA Gen runtime collection ID.

JCL Member	Job Description
CEJOB15R	Binds CA Gen runtime DBRMs TIRPROFD into a package using CA Gen runtime collection ID. The BLDRPROF job must execute before this job executes unless a previously created DB2 RPROF table is to be used.

You must have IBM DB2 utilities, CA DB2 utilities, or equivalent utilities from other vendors to execute the following jobs:

- CEJOB05
- CAJOB05
- CEJOB06
- CAJOB06
- CEUCOPY
- CAUCOPY
- CEUREOR
- CAUREOR
- CEUINCR
- CAUINCR
- LAPPHELP
- CAPPHELP

If you are using utilities from other vendors, you must customize these jobs accordingly.

Evaluate Return Codes

During the installation process, you may see return codes of 0 and 4. These return codes do not adversely affect installation. If the return code is not 0 or 4, check your system output to ensure that the installation succeeded. For example, CEJOB04 may return a code of 8 if the database already exists, but the rest of the job completes normally. In this case, you should check the DB2 SYSPRINT. For more information about return codes, see the IBM documentation.

Return codes of 8, 12, and 16 may indicate the following problems with the installation:

- The data set is full.
- You are out of directory blocks in the load library.
- The block size of the load library is wrong.
- A file was defined improperly.
- The wrong attributes were defined.

Establish ISPF Library Concatenation

The ISPF environment must be established before using CA Gen. The encyclopedia libraries can be allocated using a logon CLIST, a logon PROC, or the ISPF LIBDEF facility. In all cases, if the logon is used primarily for the encyclopedia, certain libraries must be first in the concatenation.

Important! Do not include CA Gen data sets from releases before CA Gen 8.5 in the ISPF logon concatenation because it may produce unpredictable results or cause errors. Do not install the CA Gen load modules in an APF authorized library.

ISPLLIB or STEPLIB

A combination of ISPLLIB or STEPLIB can be used to allocate the required CA Gen software libraries and the required z/OS program product runtime libraries, such as LE, DB2, and ISPF.

If DB2 or LE libraries are not in the linklist, allocate them through a STEPLIB DD or the ISPLLIB DD in the logon CLIST or in the TSO logon procedure.

LIBDEF

If you use the ISPF LIBDEF facility, note these restrictions:

- LIBDEF is not supported for the SYSPROC DD. You must include the CA Gen CLIST library in the SYSPROC concatenation of a logon CLIST or a TSO logon PROC.
- Do not use LIBDEF to allocate the required load libraries. CA Gen programs make dynamic calls to LE runtime routines. Using LIBDEF to allocate ISPLLIB results in an S806 abend for module not found. This is a limitation of ISPF LIBDEF.
- There are two CLIST exits for LIBDEF: TIELIBDF and TIELIBFR.

  TIELIBDF is called at the beginning of some CA Gen Host Encyclopedia functions, including the clist TICPYRIT which displays the CA Gen copyright panel. TIELIBDF dynamically allocates ISPPLIB, ISPMLIB, and ISPSLIB.

  TIELIBFR is called at the end of some Host Encyclopedia functions and can be used to free libraries allocated using LIBDEF. TIELIBDF and TIELIBFR contain examples of how to use LIBDEF to allocate and free libraries.

Note: When customizing exits, use a different library that can be concatenated before the CA Gen software, ensuring that CA Gen software libraries are not modified.

Procedure

1. Allocate the following libraries:

DDNAME	Description	CA Gen Library Short Name
SYSPROC	CLIST libraries	CEHBCLS0
ISPPLIB	ISPF Panel libraries	CEHBPNL0
ISPMLIB	ISPF Message libraries	CEHBMSG0
ISPLLIB	Load libraries	CEHBPLD0 CEHBPLD1
ISPPROF	ISPF User Profile library	(not applicable)
ISPSLIB	ISPF Skeleton libraries	CEHBSKL0
TIUPARML	Parameter library containing site specific values used in Host Encyclopedia and Construction functions	PARMLIB

2. Create and test the logon CLIST or PROC. Contact the System Administrator if you need help with this step or the next step.
3. If using LIBDEF, modify and test TIELIBDF.

Establish Access to CA Gen

Modify an existing ISPF menu to provide an ISPF entry point to CA Gen Host Encyclopedia. The modified ISPF menu must provide an option that executes the CLIST TICPYRIT to display the CA Gen copyright panel, for example, CMD (%TICPYRIT). Alternatively, you can use the CLIST GENHE to display the CA Gen copyright panel for the Host Encyclopedia, for example CMD (%GENHE).

Other ISPF Considerations

Review the default flag in the TSO command table (ISPTCM) header to determine if the command processor entries for the following TSO commands need to be added to the ISPTCM:

- TSOAE-required by the TSO testing facility.
- EXECSQL-(Optional) a dynamic SQL utility for diagnostics and problem correction.

Most sites do not need to change these commands. If you modify the ISPTCM defaults, you must add these commands.

No modification is required if the default flag in the ISPTCM header is B'.......1'. This indicates that a BLDL instruction is used to determine if a command processor or a CLIST is entered. If your ISPTCM table has a different setting in the header, add a command processor ENTRY for the TSOAE and EXECSQL commands. For more information, see the ISPF documentation.

Important! Insufficient space in the ISPPROF profile data set can cause unpredictable results.

Establish the Environment

Follow these steps:

1. Define the installation variables, or pre-populate the installation variables using an existing TILPARMS member.
2. Verify the installation variables.
3. Save the installation variables in the external JCL library member TILPARMS.
4. Build the CA Gen parameter files.
5. Build sample utility JCL (Optional).

Prerequisites

Before setting up the environment, verify the following tasks are complete:

1. Completed the site variables configuration.
2. Uploaded and installed the CA Gen Host Encyclopedia and Host Construction software.
3. Established ISPF concatenation.

Define Installation Variables

The installation dialog CLIST named CEINSTAL specifies installation parameters. This CLIST modifies the installation jobs by substituting variable values specific to your site. The next time you start CEINSTAL, all your site-specific variables are available.

Note: Installation variables are saved in the ISPF profile pool and this pool is associated only with the TSO user ID executing CEINSTAL. When you build installation JCL and SQL, CEINSTAL uses the ISPF profile pool variables. You must use the same TSO user ID until the parameters are saved to the external JCL data set member TILPARMS. If there is an earlier version of the Host Encyclopedia software on your system you probably already have a TILPARMS. For instructions on how to use an existing TILPARMS member, see "Use Saved Parameters to Configure the Environment."

Use Saved Parameters to Configure the Environment

The following sections explain how to use the saved parameters to configure the environment.

Relationship between TILTAB50 and TILPARMS

All installation variables entered during the CEINSTAL dialog, through the options in the Installation Variables Management Menu, including those stored in the TILTAB50 table, can be saved for later retrieval. The saved variables are stored in JCL library member TILPARMS. For more information about using TILPARMS to install variables or restore variables to previously saved values, see the TILPARMS section in this guide.

Using the Retrieve Variables option on the Installation Variables Management Menu retrieves all CEINSTAL variables stored in TILPARMS. Existing TILPARMS variables are overwritten. TILTAB50 is created, based on the values in TILPARMS, when you select option 7, Assign Storage Group name, or option 8, Assign VSAM names from the Installation Variables Management Menu. If TILTAB50 already exists, it is overwritten.

TILPARMS

Use the CAI.CAGEN.JCL(TILPARMS) option in the CEINSTAL dialog to save variables to an external data set. If you are *not* installing the Host Encyclopedia for the first time, you probably have a set of installation parameters defined in TILPARMS. You can retrieve, modify, and verify these parameters for the new installation.

Modify TILPARMS

Follow these steps:

1. Copy the TILPARMS member into the JCL data set for the new installation.
2. To edit TILPARMS, use the following steps:
   a. Locate the line that contains @TILCSCHM.
   b. Change and verify the value to the right of @TILCSCHM to the Current Schema to update the schema to CA Gen 8.5.

      Note: For information about the schema designation for Current Schema, see the *Release Notes*
   c. Locate the line that contains @TILAPREF<data set prefix> and change the value of <data set prefix> to the new prefix used for CA Gen 8.5.

      Note: If the CLIST suffix is different, change it now.

      The SASCI3 index was new in AllFusion Gen 7 and should exist in a TILPARMS copied from an AllFusion Gen 7.*x* release.
   d. The CICS Sockets Load library is not required to build generated applications and has been removed. When a TILPARMS copied from an earlier CA Gen release contains an entry for the CICS Sockets Load library TCPIP.SEZATCP, remove it.

3. On the CA Gen Main Menu command line, type the following and press Enter:

   ```
   TSO %CEINSTAL
   ```

   The Encyclopedia Maintenance Menu displays.

4. Select option 1 and press Enter.

   The Installation Variables Management Menu displays.

5. Select option 1 and press Enter.

   The Set Library Names screen displays.

6. Set the Data set Prefix to point to your new data sets on the Set Library Names screen.

7. Verify the JCL library suffix is correct and press F3.

   The Installation Variables Management Menu displays.

8. To read in the TILPARMS member you edited, select option 12. Retrieve variables from external data set.

9. Step through options 2 through 9 to accept (F2) and save (F6) the edits to TILPARMS. When you select option 7 or 8, depending on the type of storage you are using, it builds the TILTAB50 table explained in the section TILTAB50 in this guide.

10. After all settings are correct, use option 10, Check variables to verify the validity of the settings.

11. To save the new settings to TILPARMS, choose option 11. Save variables to external data set.

TILTAB50

TILTAB50 is a TSO/ISPF table that stores space parameters used to create DB2 tables and indexes for Host Encyclopedia installation.

Create Space Parameters

The following values, entered in the Set DB2 Variables screen, are used to create space parameters:

- Data set Storage Type
  - S defines Storage Groups and displays the Assign Storage Group Names screen.
  - V defines VSAM and displays the Assign VSAM Names screen.
- Encyclopedia Initial Size
- Secondary Storage Factor

Storage Groups

The parameters on the Assign Storage Group Names screen were created from the values entered in the following fields of the Set DB2 Variables screen:

- Data set Storage Type=S
- Encyclopedia Initial Size=S, for small
- Secondary Storage Factor=0.5, half the size of the primary storage used

VSAM

The parameters on the Assign VSAM Names screen were created from the values entered in the following fields of the Set DB2 Variables screen.

- Data set Storage Type=V
- Encyclopedia Initial Size=S, for small
- Secondary Storage Factor=0.5, half the size of the primary storage used

Origins of TILTAB50

The CA Gen skeleton library (SLIB) member, TILTAB50, contains the default source values for TILTAB50. The default source TILTAB50 is not used in processing.

The TILTAB50 member which stores space parameters is kept in a temporary table library (TLIB).

Important! If a sizing field on the Set DB2 Variables screen changes, Data set storage type, Encyclopedia initial size, or Secondary storage factor, TILTAB50 is reset to the new values based on the new input and on defaults stored in the skeleton library (SLIB). Previously stored values are lost.

How TILTAB50 Is Used

While creating installation JCL and SQL, the space parameters in TILTAB50 become input to CEJOB02 for VSAM and to SQL CRNEWSP and CRNEWIX used by CEJOB04 for Storage Groups.

The following is a sample DB2 DDL used to create CA Gen DASC Table:

```
CREATE TABLESPACE DASC
     IN GEND
 USING STOGROUP STO03 (STO03=Storage Group Table DASC)
PRIQTY 19200             (Primary Space in 1K records)
SECQTY 9600              (Secondary Space in 1K records)
LOCKSIZE ANY
SEGSIZE 64
```

The following is a sample VSAM JCL of CA Gen DASC Table:

```
DEFINE CLUSTER +
(NAME('AACC2.DSNDBC.GEN.DASC.I0001.A001') +
LINEAR +
REUSE +
VOL(BDS001) +          (BDS001 is VSAM data set volume)
RECORDS(4800 2400) +   (4800=primary space, 2400=secondary space in 4K pages)
SHR(3,3) ) +
DATA +
(NAME('AACC2.DSNDBD.GEN.DASC.I0001.A001'))
```

Tasks to Define Installation Variables

Defining installation variables includes the following subtasks:

1. Start the CEINSTAL dialog.
2. Set library names.
3. Edit job cards.
4. Set JCL variables.
5. Set Encyclopedia variables.
6. Define regional settings.
7. Set DB2 variables.
8. Assign storage group names.
9. Assign VSAM names.
10. Set target system variables.

Function Keys

Use the following function keys in CEINSTAL dialogs as you enter parameters.

Note: To use these keys, your ISPF profile session must be set to 24 PF-keys.

Key	Function
F1 (Help)	Displays Help for the screen.
F2 (Accept)	Verifies the variables and saves them to the user's ISPF profile pool. The verification process may check if data sets exist or a DB2 subsystem exists and so on. Displays messages on an Activity Display screen when it encounters errors.
F3 (Exit)	Saves the information to the user's ISPF profile pool and exits the screen.
F6 (Save)	Saves the information to the user's ISPF profile pool without exiting the screen.
F12 (Cancel)	Exits the screen without making changes to the ISPF profile pool.

Start the CEINSTAL Dialog

To begin defining variables, start the CEINSTAL dialog from the CA Gen Main Menu.

Follow these steps:

1. Log on to TSO/ISPF.

   The ISPF Main Menu displays.

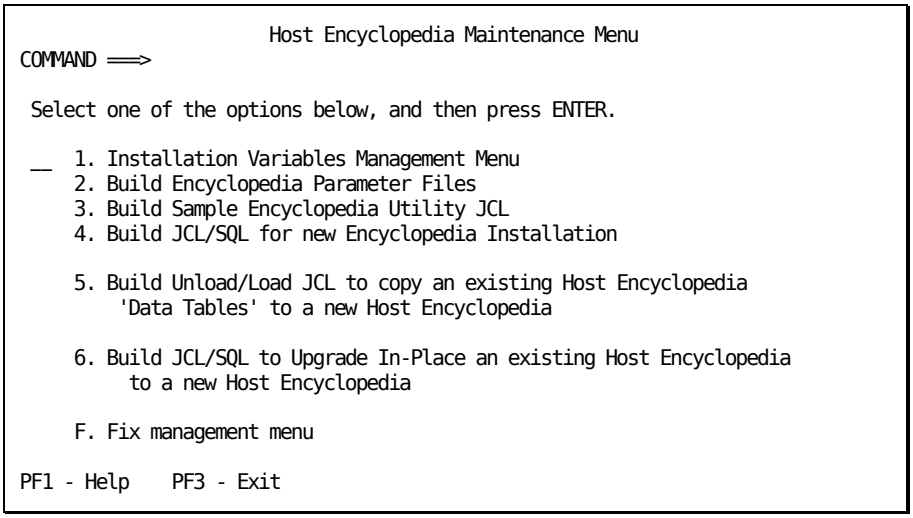
2. Select CA Gen and press Enter.

   The CA Technologies copyright screen displays.

3. Press Enter to display the Main Menu.

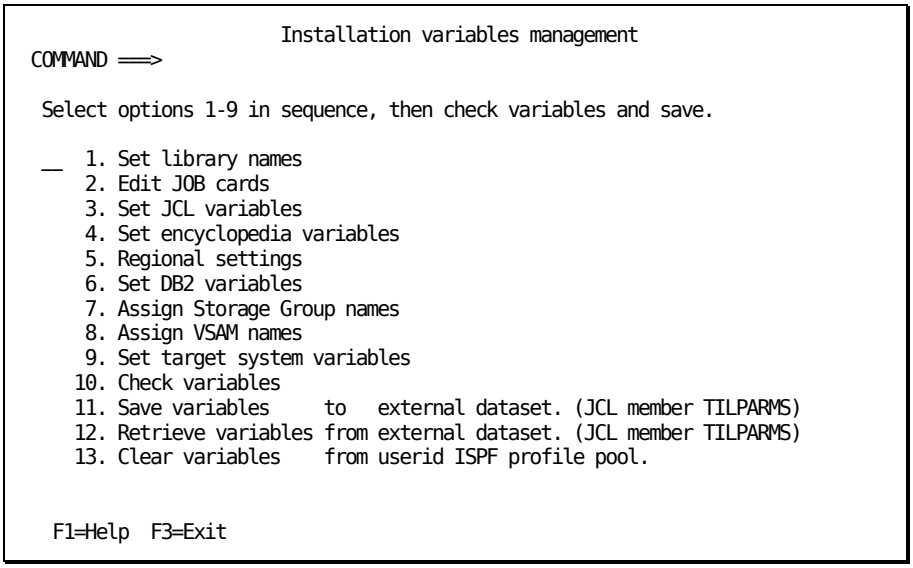
4. On the command line, type:
   TSO %CEINSTAL

   and press Enter. The Host Encyclopedia Maintenance Menu displays.



5. Select option 1 and press Enter.

   The Installation variables management screen displays.



   Note: Options 7 and 8 on the Installation variables management screen are mutually exclusive.

Use this menu to define site-specific variables. This section explains each option. Before building the CLISTs, verify you entered and saved the required variables.

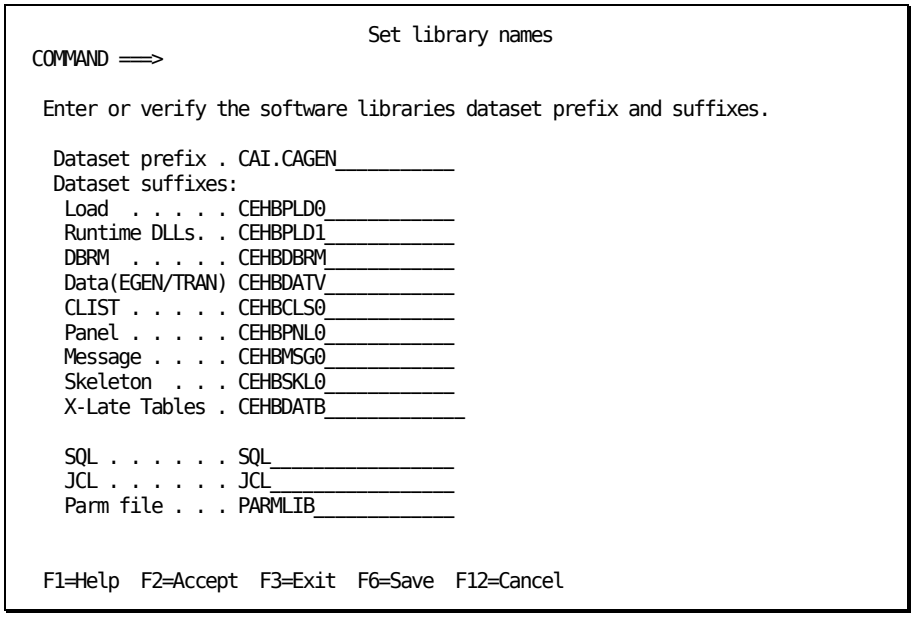
Set Library Names

The library names the installation creates must match those CEINSTAL displays.

Follow these steps:

1. Select option 1 on the Installation Variables Management Menu and press Enter.

   The Set library names screen displays.



```
                                Set library names
COMMAND ===>

 Enter or verify the software libraries dataset prefix and suffixes.

  Dataset prefix . CAI.CAGEN__________
  Dataset suffixes:
   Load  . . . . . CEHBPLD0___________
   Runtime DLLs. . CEHBPLD1___________
   DBRM  . . . . . CEHBDBRM___________
   Data(EGEN/TRAN) CEHBDATV___________
   CLIST . . . . . CEHBCLS0___________
   Panel . . . . . CEHBPNL0___________
   Message . . . . CEHBMSG0___________
   Skeleton  . . . CEHBSKL0___________
   X-Late Tables . CEHBDATB___________

   SQL . . . . . SQL_________________
   JCL . . . . . JCL_________________
   Parm file . . . PARMLIB___________


  F1=Help  F2=Accept  F3=Exit  F6=Save  F12=Cancel
```

2. Accept the defaults on the Set Library Names screen, or type new values to match the library references the installation created.
3. Press F2 to verify and save the variables in a working copy of the user's ISPF profile pool.
4. When verification is complete, press Enter to exit the Activity Display screen.

   The Set Library Names screen appears. If verification fails, verify the library names match the names created during install.
5. Press F3 to exit the screen.

   The Installation Variables Management Menu displays.

Edit Job Card

This option places you in ISPF edit mode for a member called JOBCARD, stored in the skeleton library.

Follow these steps:

1. Select option 2 on the Installation Variables Management Menu and press Enter.

   The Edit Job Card screen displays.

```
EDIT   CAI.CAGEN.PARMLIB(JOBCARD)
 Command ===>
******************************** Top of Data *****
//CEJOB    JOB 'JOB CARD INFO HERE'
//*
//* COPY IN JOBCARDS FROM SOME OTHER LIBRARY
//*
****************************** Bottom of Data ***
```

2. Create a valid job card for your site, based on these considerations:
   - The job card is included in each installation job built.
   - The USER parameter must be the installer's TSO user ID. Some installation jobs use this ID to confirm authorization.
   - The REGION parameter must be at least 4096 KB.
3. When your job card is complete, press F3 to save the information and exit the screen.

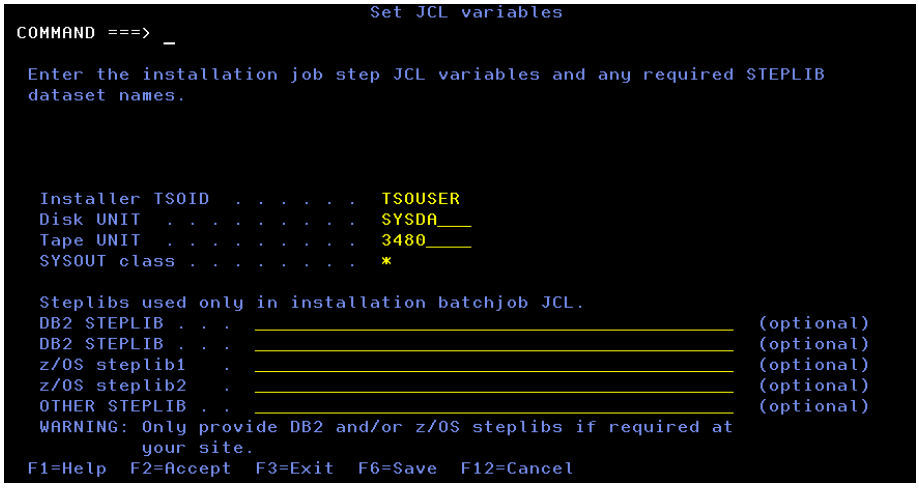
   The Installation Variables Management Menu displays.

Set JCL Variables

Follow these steps:

1. Select option 3 on the Installation variables management screen and press Enter.

   The Set JCL variables screen displays.



2. Verify and complete the fields on the Set JCL variables screen, which is based on these considerations:

   - The TSO user ID is required. It is prefixed to the names of the temporary data sets built and used during installation.
   - The installation process includes data sets specified here and data sets allocated in the TSO session of the installer to the STEPLIB DD or the ISPLLIB DD into the JCL STEPLIB of the installation. This can result in duplicate data set names in the STEPLIB concatenation in the installation JCL. No action is required if this occurs.

     Note: There are some exceptions. JCLs generated by skeletons imbedding STEPDB2 skeleton, for example CEJOB05 or CEJOB06, contains DB2 libraries only in the STEPLIB concatenation if DB2 STEPLIB libraries are specified in the Set JCL variables screen. If no DB2 STEPLIB libraries are specified in the Set JCL variables screen, the installation's JCL would have no STEPLIB DD.

3. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.
4. When verification ends, press Enter to exit the screen.
5. Press F3 to exit the screen.

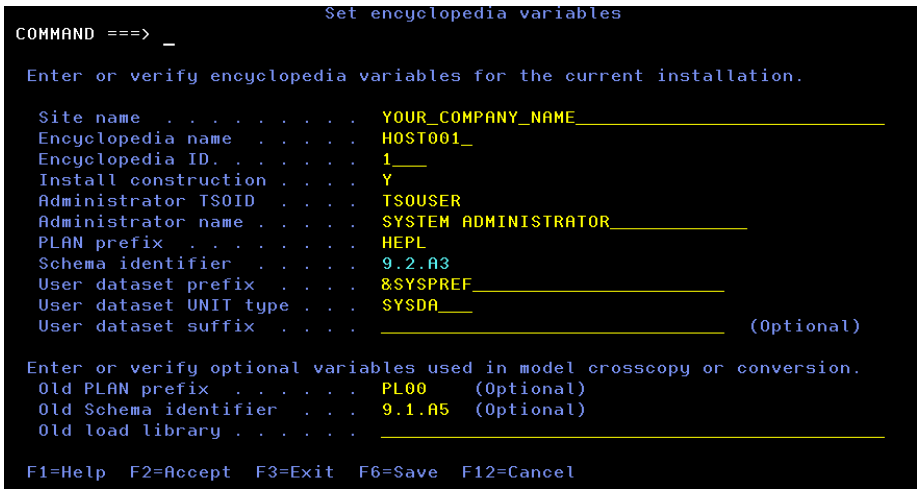
Note: The z/OS runtime parameters HEAP, ANYHEAP and THREADHEAP, specify locations for certain types of storage. You must define these parameters to have a value of ANYWHERE to ensure CA Gen processes can acquire storage above the line.

Set Encyclopedia Variables

Follow these steps:

1. Select option 4 on the Installation variables management screen and press Enter.

   The Set encyclopedia variables screen displays.



2. Complete the fields on the Set Encyclopedia Variables screen, based on the following considerations:
   - The Encyclopedia Name must be unique to prevent z/OS enqueues.
   - &SYSPREF is defined to create temporary data sets from the Encyclopedia user's TSO ID.
   - The Schema Identifier lists the current schema and is read-only.
   - The PLAN Prefix is used to construct plan names for CA Gen. Verify this value is unique for the DB2 subsystem.
   - If the Old PLAN Prefix, Old Schema Identifier, and Old Load Library fields are used, they must contain valid values.
3. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool.
4. When the verification is complete, press Enter to exit the Activity Display screen.
5. Press F3 to exit the screen.

Define Regional Settings

The value you select from this screen defines the default Encyclopedia code page loaded into the DXCPID table during installation.

Understanding Regional Settings and Code Pages

There are some important aspects of code pages and the DXCPID table that you should understand before selecting a regional setting.

- All new models are stored in the encyclopedia in the code page associated with the regional setting you select. Existing models maintain their original code page association.
- The DXCPID table lists all the possible code page values supported by CA Gen and the corresponding code page value in which new models are translated and stored in the Host Encyclopedia.
- If your country is not listed on the Regional Settings screen, select the Other option.

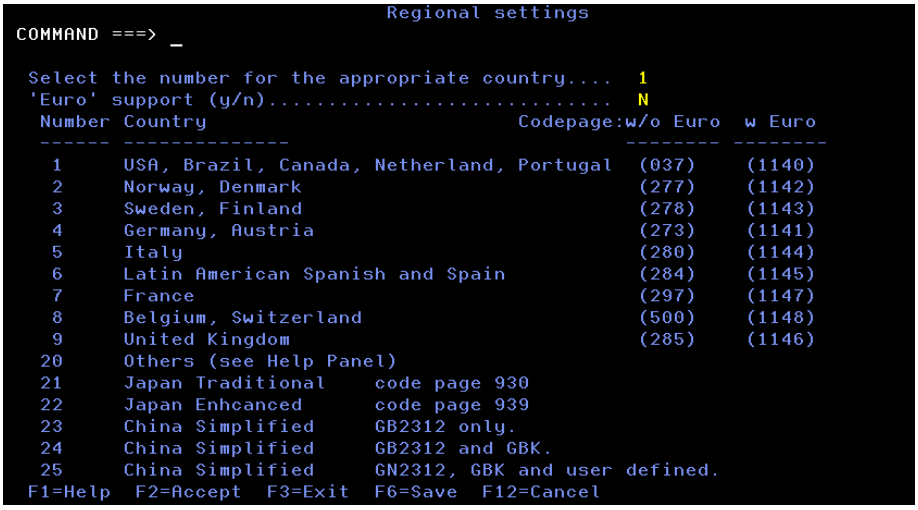
- All American and Western European code pages are based on a Latin-1 character set and can be successfully translated from one to the other. Countries based on character sets other than Latin-1 often have only one valid code page. The default values defined in the DXCPID table handle these countries regardless of the selection on the Regional Settings screen. For example, Japan has three regional settings: 930, 939, or Other. Other exports code page 930 and code page 939.
- The selections made in the Regional Settings screen do not affect loaded DBCS BiDi (Double-Byte Character Set, BiDirectional) code pages or a non-Western European Latin (such as Turkish) encyclopedia code page entry into DXCPID.

Note: For more information regarding code page translation table, see the *Client Server Encyclopedia User Guide*. For a full explanation of code page functionality, see the *National Language Support Reference Manual, Volume II* published by IBM.

Follow these steps:

1. Select option 5 on the Installation variables management screen and press Enter.

   The Regional settings screen displays.



2. Enter the number that represents the appropriate country and code page for your site.
3. Set the Euro flag to Y to use the Euro sign in your models.

   Note: If you are upgrading an existing encyclopedia and set the Euro support flag to Y, you must run DXCPISRT in SPUFI or an equivalent query program to create a table that cross-references ASCII and EBCDIC code pages that have identical character sets. This facilitates the upload and download of models from workstations that have ASCII code pages to the Host Encyclopedia and its EBCDIC code pages. For more information about uploading and downloading models, see Model Code Pages (see page 173).
4. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.

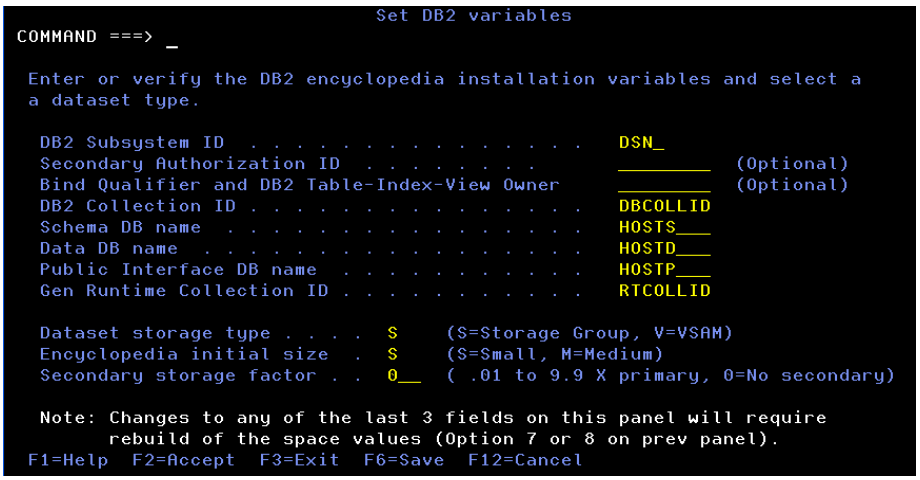
5. When verification is complete, press Enter to exit the Activity Display screen.
6. Press F3 to exit the screen.

Set DB2 Variables

Use this option to capture the global values required for building DB2 tables and running DB2 utilities.

Follow these steps:

1. Select option 6 on the Installation variables management screen and press Enter.
2. The Set DB2 variables screen displays.



3. Complete the fields on the Set DB2 Variables screen based on the following considerations and according to the information gathered in your site variables configuration.
   - The following fields on the Set DB2 Variables screen are blank unless you are using an existing TILPARMS member:
     - Secondary Authorization ID
     - Bind Qualifier and DB2 Table-Index-View Owner
     - DB2 Collection ID
     - Schema DB name
     - Data DB name
     - Public Interface DB name

     Note: Secondary Authorization ID and Bind Qualifier and DB2 Table-Index-View Owner fields are optional. If entered, they must exist as valid AuthIDs or Group IDs in the security system.

- DB2 Host Encyclopedia DDL uses Secondary Authorization ID in the SET CURRENT SQLID = *'xxxxxxx'*; and it is passed to the DB2 Bind process through the OWNER parameter. For example:

  BINDPACK MEMBER(ALL) ... OWNER(*xxxxxxx*)

- Bind Qualifier and DB2 Table-Index-View Owner identifier is used to prefix names of Tables, Indexes, and Views and is passed to the DB2 Bind process in the QUALIFIER variable. For example:

  CREATE TABLE *xxxxx*.DOBJ

  BINDPACK MEMBER(ALL) ... QUALIFIER(*xxxxx*)

  Where *xxxxx* is the DB2 Bind Qualifier and DB2 Table-Index-View

  Important! If this is an existing installation, values for Bind Qualifier and DB2 Table-Index-View Owner field must be set to the same value as in the current installation.

- The Host Install Package bind uses the DB2 Collection ID. For example:

  BINDPACK MEMBER(ALL) ... COLLID(*xxxxx*)

  Where *xxxxxx* is the DB2 Collection ID

- The Gen Runtime Collection ID is used to perform a package bind on runtime DBRMs TIRPROFD and TIROLBCM before CA Gen applications use the collection. For example:

  BINDPKRT MEMBER(ALL) COLLID(*xxxxxxxx*)

  Where *xxxxxxxx* is the Gen Runtime Collection ID

- If the Data set Storage Type is S for Storage Group, the maximum and minimum space values are checked to ensure compliance with DB2 rules.

- For assistance in choosing the size of the initial Host Encyclopedia, see Sizing an Encyclopedia.

  Important! If this is an existing instillation, the values for Data set Storage Type, Initial Data Base Size, or Secondary Storage Factor are stored in TILTAB50 and used to create space values. If you change the values in these fields, TILTAB50 is deleted and your values are lost. For more information on the tasks to complete before changing these values, see the section TILTAB50 in this section.

4. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool.
5. When the verification is complete, press Enter to exit the Activity Display screen.
6. Press F3 to exit the screen.

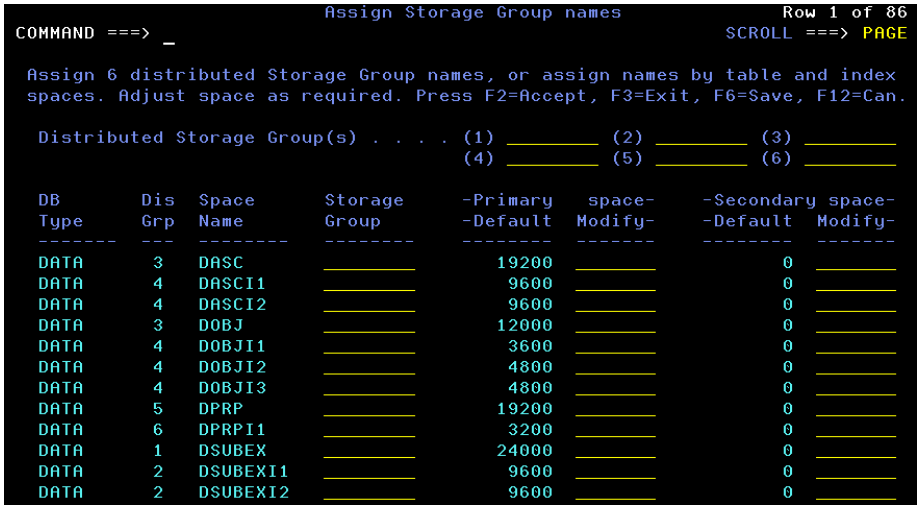
Assign Storage Group Names

Use this option to specify Storage Groups as the data set storage type when setting DB2 variables.

Follow these steps:

1. Select option 7 on the Installation variables management screen and press Enter.

   The Assign Storage Group names screen displays.



```
                          Assign Storage Group names                Row 1 of 86
COMMAND ===> _                                                SCROLL ===> PAGE

 Assign 6 distributed Storage Group names, or assign names by table and index
 spaces. Adjust space as required. Press F2=Accept, F3=Exit, F6=Save, F12=Can.

  Distributed Storage Group(s) . . . . (1) ________ (2) ________ (3) ________
                                       (4) ________ (5) ________ (6) ________

  DB       Dis  Space      Storage     -Primary   space-     -Secondary space-
  Type     Grp  Name       Group       -Default   Modify-    -Default   Modify-
  -------  ---  --------   --------    --------   -------    --------   -------
  DATA       3  DASC       ________       19200  _______           0   _______
  DATA       4  DASCI1     ________        9600  _______           0   _______
  DATA       4  DASCI2     ________        9600  _______           0   _______
  DATA       3  DOBJ       ________       12000  _______           0   _______
  DATA       4  DOBJI1     ________        3600  _______           0   _______
  DATA       4  DOBJI2     ________        4800  _______           0   _______
  DATA       4  DOBJI3     ________        4800  _______           0   _______
  DATA       5  DPRP       ________       19200  _______           0   _______
  DATA       6  DPRPI1     ________        3200  _______           0   _______
  DATA       1  DSUBEX      ________       24000  _______           0   _______
  DATA       2  DSUBEXI1    ________        9600  _______           0   _______
  DATA       2  DSUBEXI2    ________        9600  _______           0   _______
```

2. To distribute tablespace and indexspace allocations across Storage Groups, type the names of the Storage Groups in spaces (1) through (6), based on these considerations:

   - You must include at least one distributed storage group.
   - Tablespaces and indexes referencing a blank Distributed Storage Group are distributed to the group specified in (1).
   - Allocating the database over three to six volumes can improve performance.
   - If you specify more than one disk group, complete all the Distributed Storage Group fields. For example, if you only want to assign three groups, complete all the fields by using the same name for (1) and (4), (2) and (5), (3) and (6).

3. Modify the Dis Grp (Distribution Group) to specify individual tablespaces and index distribution.

   For information about how CA Gen assigns high-use tablespaces and indexes, see Sizing an Encyclopedia.

4. To modify a Primary Default storage value for a table or index, type a new value in the Modify Space column.

5. To modify a Secondary Default storage value for a table or index, type a new value in the Modify Space column.

   Note: To calculate the Secondary Default storage space value for a table or index on this screen, multiply the Primary Default storage space value by the Secondary Storage Factor entered on the Set DB2 Variables screen.

6. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool.

   This also creates the member TILTAB50 in the Table library (TLIB). The system uses TILTAB50 to create the storage group space variables in the CREATE TABLESPACE SQL member (CRNEWSP). For more information, see the section TILTAB50 in this guide.

7. When verification is complete, press Enter to exit the Activity Display screen.

8. Press F3 to exit the screen.

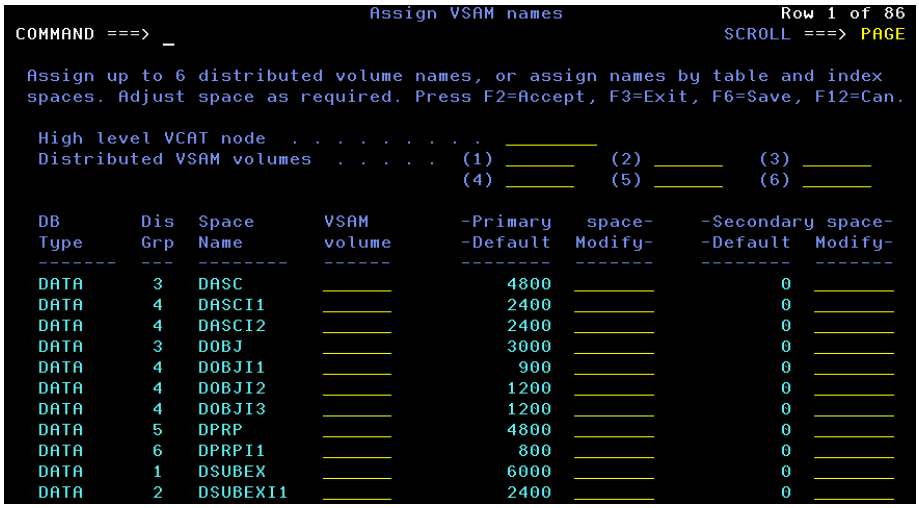
Assign VSAM Names

Use this option to specify VSAM as the data storage type when setting the DB2 variables.

Follow these steps:

1. Select option 8 on the Installation Variables Management Menu and press Enter.

   The Assign VSAM names screen displays.



2. Type the high-level VCAT node used to form the DB2 VSAM space data set names for the Host Encyclopedia.

3. To distribute the tablespace and indexspace allocations across DASD volumes, type the names of the available volumes in spaces (1) through (6). Note that:
   - You must specify at least one volume.
   - Tablespaces and indices referencing a blank Distributed VSAM volume are distributed to (1).
   - Allocating the database over three to six volumes can improve performance.
   - If you specify more than one volume, you must complete all the Distributed VSAM volume fields. For example, if you only want to assign three volumes, complete all the fields by using the same volume name for (1) and (4), (2) and (5), (3) and (6).
4. To specify how individual tablespaces and indices are distributed, modify the Dis Grp (Distribution Group) field. For more information about how CA Gen assigns high-use tablespaces and indexes, see Sizing an Encyclopedia.
5. To modify a Primary Default storage value for a table or index, type a new value in the Modify Space column to the right of the Primary Default value.
6. To modify a Secondary Default storage value, type a new value in the Modify Space column to the right of the Secondary Default value.

   Note: To calculate the Secondary Default storage space value for a table or index, multiply the Primary Default storage space by the Secondary Storage Factor on the Set DB2 Variables screen.
7. Press F2 to verify the entered variables and store them in the user's ISPF profile pool.

   This also creates member TILTAB50 in the table library (TLIB). The systems uses TILTAB50 to create CEJOB02, the VSAM JCL space variables. For more information, see the section TILTAB50 in this guide.
8. When verification is complete, press Enter to exit the Activity Display screen.
9. Press F3 to exit the screen.

Set Target System Variables

The Set target system variables option helps you configure system settings in the environments in which applications generated by CA Gen run. To set target system variables, select option 9 on the Installation Variables Management Menu and press Enter. The Set target system variables screen displays.

```
                    Set Target System Variables
COMMAND == >
Select options 1-3 in sequence. Select the other options
as required
    1.   Target environment configuration
    2.   Set COBOL compiler variables
    3.   Set DB2 precompiler variables
    4.   Set CICS variables
    5.   Set IMS variables
    6.   Set RPROF variables
    7.   Select MFS device types


F1=Help      F3=Exit
```

Each option displays another screen. Options 1 through 3 must be performed in sequence. Options 4 through 7 are optional, and depend on the target environment configuration. The following sections explain how to use each option.

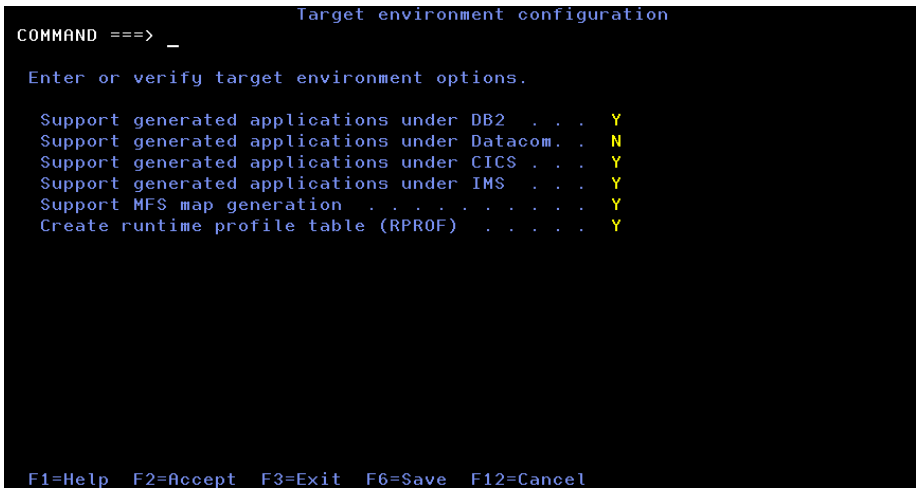
Target Environment Configuration

Use this option to set the support levels on the target environment.

Follow these steps:

1. Select option 1 on the Set Target System Variables Menu and press Enter.

   The Target environment configuration screen displays.



2. Set each option to Y to include support or N to omit support, according to your environment specifications.

   These choices enable other options on the Set target system variables screen.

   a. Press F2 to verify and save the values in the user's ISPF profile pool.

   b. When verification is complete, press Enter to exit the Activity Display screen.

   c. Press F3 to exit the screen.

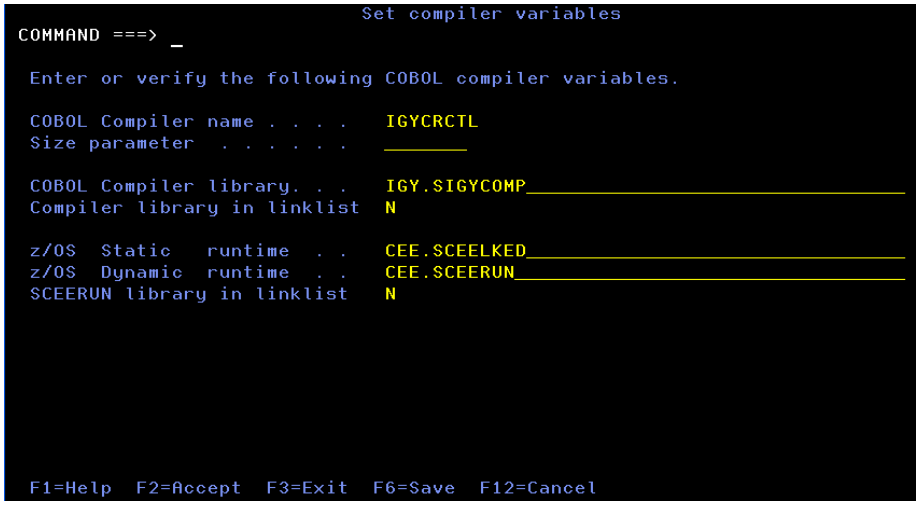
Set COBOL Compiler Variables

Use this option to define COBOL compiler variables used by Host Construction installation to install CA Gen applications. This compiler applies to all environments.

Follow these steps:

1. Select option 2 on the Set target system variables screen and press Enter.

   The Set compiler variables screen displays.



2. Complete the fields on the Set Compiler Variables screen. The IBM default names are:

   - IGY.SIGYCOMP for the COBOL Compiler library
   - CEE.SCEELKED for the z/OS Static runtime library
   - CEE.SCEERUN for the z/OS Dynamic runtime library

3. Press F2 to verify and save the values in the user's ISPF profile pool.

   Note: The value in the Size Parameter field is passed to the COBOL compiler. The site default value is sent when this field is blank, and the compiler may fail when the site default is too small. The recommended minimum is 3072 KB.

4. When verification is complete, press Enter to exit the Activity Display screen.

5. Press F3 to exit the screen.

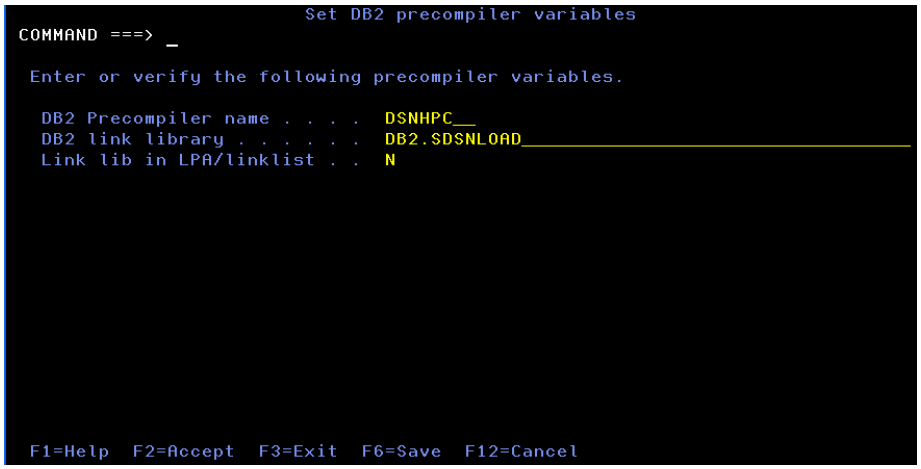
Set DB2 Precompiler Variables

Use this option to define variables for the DB2 precompiler used by Host Construction to install CA Gen applications.

Follow these steps:

1. Select option 3 on the Set Target System Variables Menu and press Enter.

   The Set DB2 precompiler variables screen displays.



2. Complete the fields.
3. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool.
4. When verification is complete, press Enter to exit the Activity Display screen.
5. Press F3 to exit the screen.

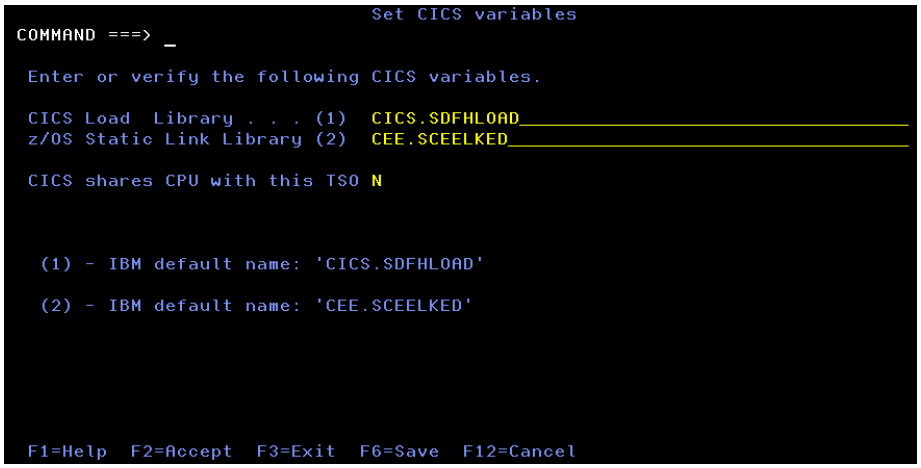
Set CICS Variables

Use these steps to set CICS variables when you set the Support generated applications under CICS option on the Target environment configuration screen to Y.

Follow these steps:

1. Select option 4 on the Set target system variables screen and press Enter.

2. The Set CICS Variables screen displays.



3. Set the z/OS Static Link Library to the runtime library containing CICS-specific COBOL runtime modules, for example, CEE.SCEELKED.

   Note: You no longer need to enter a value for the CICS DB2 library because it is the same library as the CICS Load library. The variable TIRCLDB2 in TIRCFIGS clist points to the CICS Load library.

   The name of the system library that contains the CICS Sockets interface modules, usually named TCPIP.SEZATCP, has been removed.

4. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool.

5. When verification is complete, press Enter to exit the Activity Display screen.

6. Press F3 to exit the screen.

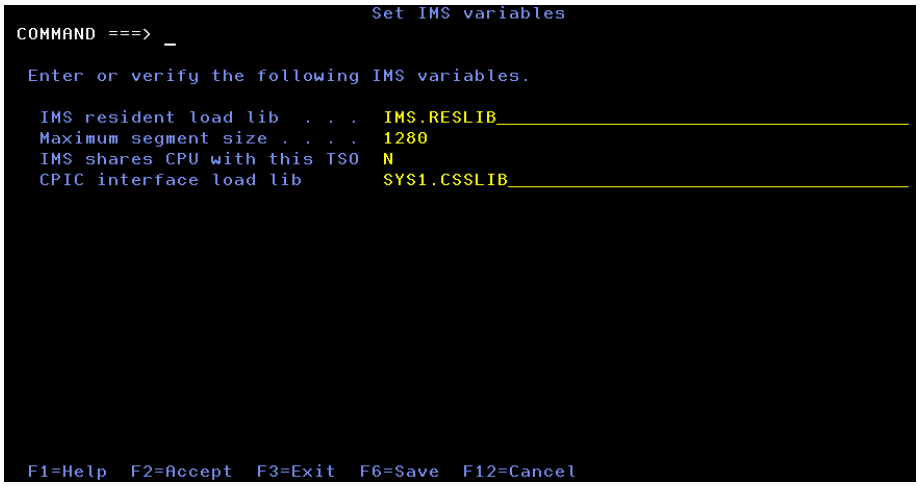
Set IMS Variables

Use these steps to set IMS variables when you set the Support generated applications under IMS option on the Target environment configuration screen to Y.

Follow these steps:

1. Select option 5 on the Set target system variables screen and press Enter.

2. The Set IMS Variables screen displays.



3. Complete the fields on the Set IMS variables screen.

   The value entered in the Maximum segment size field is site-specific. Your system administrator knows this value.

4. The name of the system library that contains the CPIC interface modules, such as CMRCV and CMALLC, is the required z/OS library usually named SYS1.CSSLIB.

5. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool.

6. When verification is complete, press Enter to exit the Activity Display screen.

7. Press F3 to exit the screen.

Set RPROF Variables

Use these steps to set RPROF variables when you set the Create runtime profile table (RPROF) option on the Target Environment Configuration screen to Y.

This option builds the BLDRPROF JCL member stored in the CA Gen JCL library. You can use BLDRPROF to create a runtime profile table, RPROF, if you do not have it. The RPROF tables created under previous versions of CA Gen are compatible. For more information on RPROF, see the section The Runtime Profile (RPROF) Table for DB2 in the Host Construction User Guide.

When you build a new RPROF table, you must execute the CEJOB15R job to bind the runtime package TIRPROFD to use the new table.

When you use an RPROF table created in a previous version of CA Gen, you must still execute the CEJOB15R job to bind the current version of the runtime package TIRPROFD to use the existing RPROF table.

Follow these steps:

1. Select option 6 on the Set target system variables screen and press Enter.
2. The Set RPROF variables screen displays.

```
                          Set RPROF variables
COMMAND ===>

 Enter or verify the following DB2 RPROF variables.

  DB2 Subsystem ID . . . . . DB2_
  Explicit creator ID  . . . . _________  (Optional)
  Secondary Authorization ID . _________  (Optional)

  DB name  . . . . . RPROF___

  Storage type . . . . . S         (S=Storage Group, V=VSAM)

  Storage group name . . . . . _________
  RPROF initial size . . . . . 1400      1K pages
  RPROF secondary size . . . . 0___      1K pages
  RPROFI1 initial size . . . . 1400      1K pages
  RPROFI1 secondary size . . . 0___      1K pages



 F1=Help  F2=Accept  F3=Exit  F6=Save  F12=Cancel
```

3. Complete the fields on the Set RPROF variables screen.
4. Enter an Explicit Creator ID, a Secondary Authorization ID, or leave these fields blank.
   - When you configure VSAM space allocation, the screen includes the VCAT and volume fields. These fields are required.
   - VSAM page size is 4 KB. Storage Group is 1 KB. Size values do not convert when changing storage types.

```
                          Set RPROF variables
COMMAND ===> _

 Enter or verify the following DB2 RPROF variables.

  DB2 Subsystem ID . . . . . DB2_
  Explicit creator ID  . . . . _________  (Optional)
  Secondary Authorization ID . _________  (Optional)

  DB name  . . . . . RPROF___

  Storage type . . . . . V         (S=Storage Group, V=VSAM)
  VCAT . . . . . _________
  Volume . . . . . _________
  RPROF initial size . . . . 1400      4K pages
  RPROF secondary size . . . . 0___      4K pages
  RPROFI1 initial size . . . . 1400      4K pages
  RPROFI1 secondary size . . . 0___      4K pages



 F1=Help  F2=Accept  F3=Exit  F6=Save  F12=Cancel
```

5. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.

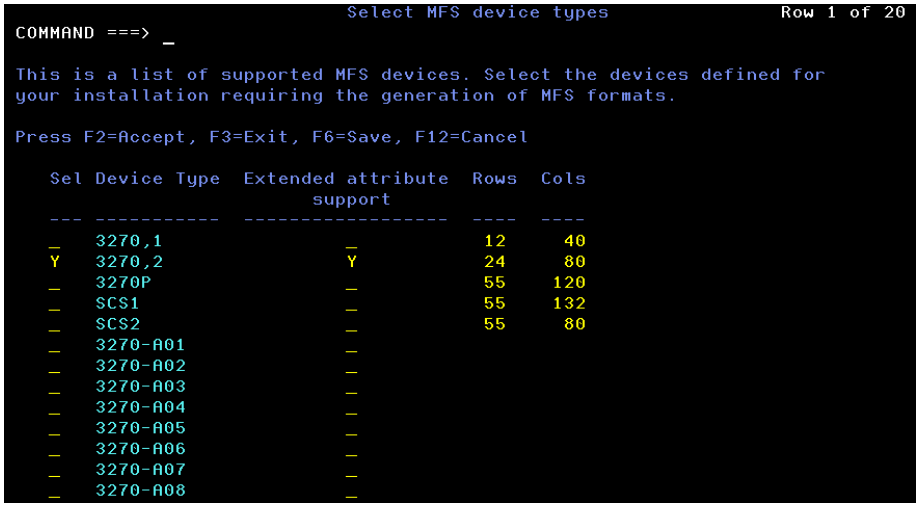
6. When verification is complete, press Enter to exit the Activity Display screen.
7. Press F3 to exit the screen.

Select MFS Device Types

Use these steps to choose MFS device types when you set the Support MFS map generation flag on the Target environment configuration screen to Y.

Follow these steps:

1. Select option 7 on the Set target system variables screen and press Enter.
2. The Select MFS device types screen displays.



3. Type Y in the Sel column next to the appropriate device type.
4. Press F2 to verify and save the values in a working copy of the user's ISPF profile pool and create the member TIRMFS in the parameter library (PARMLIB).
5. When verification is complete, press Enter to exit the Activity Display screen.
6. Press F3 to exit the screen, press F3 again to exit the menu.

Verify Installation Variables

The Check Variables option performs a validity check on the working copy of the variables. The validity check does not update error conditions. You can perform this check anytime during variable definition.

Follow these steps:

1. Select option 10 on the Installation Variables Management Menu.

   This option verifies all the variables entered for options 1 through 9, as if you pressed F2 in each screen.

2. Check the messages on the Activity Display screen. Confirm all variables are valid and passed verification. Correct any errors and recheck the variables.
3. Press Enter to exit the Activity Display screen.
4. Press F3 to exit the menu.

Save Installation Variables

The Save Installation Variables option creates a snapshot of all ISPF profile pool variables and saves the variables as a member in the TILPARMS JCL library. TILPARMS stores installation variables to use later.

Note: When you save variables, it overwrites current values in TILPARMS. To preserve TILPARMS values, rename TILPARMS before saving the new variables.

To save new variables for subsequent recall, select option 11 on the Installation Variables Management Menu. Option 2, Build Encyclopedia Parameter Files on the Host Encyclopedia Maintenance menu, automatically saves new variables.

Display System Information

To review system information, execute the following TSO command from inside CEINSTAL:

```
TSO %HESYSADM
```

This command opens the System Administration Information screen that lists the following information:

- Option One - Displays the copyright screen, listing the release and levelset numbers
- Option Two - Lists all PTFs applied to this Host Encyclopedia
- Option Three - Displays a separate screen to access these variables:
  - Host Encyclopedia variables
  - Host Encyclopedia administration variables
  - Host Encyclopedia DB2 variables
  - Host Encyclopedia COBOL variables
  - Host Encyclopedia IMS variables
  - Host Encyclopedia CICS variables
  - Miscellaneous
- Option Four - Makes the current TSO ID a new Host Encyclopedia administrator ID and loads the current TSO ID with the ISPF (profile pool) variables used by the original installer.

Build Parameter Files

The installation builds parameter files TIUHE, TIUHE2, TIRHE and TIRMFS, using the variables defined in the preceding tasks. These parameter files are required to define the operating parameters for CA Gen execution.

Follow these steps:

1. Select option 2 on the Host Encyclopedia Maintenance Menu and press Enter.

   The Confirm Activity screen displays.

2. Press Enter to start building the parameter files.

   The parameters are created and stored in the CA Gen PARMLIB library.

   After you build the parameter files, you can browse and if required edit the parameter files outside CA Gen Installation process.

   The parameter file TIRHE contains an automatically inserted TIRDBATT parameter. It is used as the DB2 Attachment Type when building batch dynamic RI and z/OS Library DLLs. It defaults to DSN, but can be modified as IMS_BMP or DLIBATCH if appropriate.

3. When processing completes, press Enter to return to the CA Gen Encyclopedia Maintenance Menu.

Build Sample Utility JCL

Use the Build Sample Utility JCL option to create the JCL members for testing Host Construction and maintaining the Host Encyclopedia.

Follow these steps:

1. Select option 3 on the Host Encyclopedia Maintenance Menu and press Enter.
2. Press Enter to start the build process.

   The JCL members are created and stored in the CA Gen JCL library.

3. When processing completes, press Enter to return to the Host Encyclopedia Maintenance Menu.

Next Steps

You've collected the variables required to install and configure the Host Encyclopedia and Host Construction and accomplished these tasks:

- Unloaded software and allocated libraries

- Defined variables and executed jobs to establish the environment to access and use the encyclopedia

The next step is to create or upgrade the encyclopedia.

The CA Gen software for z/OS requires a set of DB2 tables, indexes, and views called 'Host Encyclopedia'. The CA Gen models are uploaded from a workstation toolset or a client server encyclopedia into the host encyclopedia. The host encyclopedia software organizes and manipulates the CA Gen models. The host generators read the CA Gen models to generate model code. Host Construction is used to install the applications in the models.

You can create a new encyclopedia or upgrade an existing encyclopedia to handle CA Gen 8.5 models. Information to Create a New Encyclopedia is covered next. The Upgrading an Encyclopedia (in place) section explains updating the schema tables for an encyclopedia from a previous release so the encyclopedia can handle CA Gen 8.5 models.

Create a New Encyclopedia

This section describes how to build JCL and SQL to create a new host encyclopedia and enable it for user access.

To create a new encyclopedia, you must build and execute SQL and JCL to create and populate the encyclopedia tables. If you have an existing encyclopedia you can copy the data that comprises the models into the new encyclopedia.

Follow these steps:

1. Build SQL and JCL.
2. Run jobs to create the encyclopedia.
3. Test encyclopedia functions.
4. Copy and rebind CA Gen plans.
5. Enable user access to the encyclopedia.

Prerequisites

Before creating an encyclopedia, you must have completed the work from preceding sections, including:

1. Reading and completing the configuration variables (see page 85).
2. Uploading and installing the CA Gen software.
3. Establishing ISPF concatenation.
4. Defining all variables to establish the appropriate environment.

Build SQL and JCL

Follow these steps to allow the CEINSTAL program to build the SQL and JCL to create the encyclopedia:

Follow these steps:

1. Select option 4 on the Host Encyclopedia Maintenance Menu and press Enter to start building the SQL and JCL.
2. When processing ends, press Enter to return to the Host Encyclopedia Maintenance Menu.

Run Jobs to Create the Encyclopedia

The jobs in the table create the z/OS Host Encyclopedia DB2 tables for CA Gen. Run each job on the system that contains the unloaded and allocated Host Encyclopedia software and your DB2 subsystem. The SQL and JCL libraries contain the SQL and JCL to build the encyclopedia.

Use this table as a checklist as you run the jobs.

Important! You must run the jobs in the order listed in the table. Running these jobs in a different sequence or omitting a job can cause errors and failures.

JCL Name	Description
CEJOB02	Not required for storage groups. For data set storage type VSAM, this job removes existing VSAM data sets for DB2 objects and creates new ones.
CEJOB03	Executes a DB2 BIND of the dynamic SQL program TIUUSQL to CA Gen DB2 subsystem. If your site has Host Construction and the target for generated applications is on a different DB2 subsystem than the Host Encyclopedia, bind TIUUSQL for both subsystems and grant DB2 EXECUTE authority to PUBLIC for plans on the target's subsystem.
CEJOB04	Creates DB2 objects for CA Gen and populates the DXCPID table and inserts the installer ID into the user table with encyclopedia administrator authority. Ignore SQL code of 552 because it means the databases already exist, but does not affect processing.

JCL Name	Description
CEJOB05	Loads schema tables for the Current Schema, Prior Schema, and Second Prior Schema. The schemas contain static data representing the meta-model. You must have IBM DB2 utilities to execute this job. You can also use the equivalent job that uses CA Unicenter DB2 products. When using utilities from other vendors, customize this job accordingly. **Note:** For the schema designation for Current Schema, Prior Schema, and Second Prior Schema, see the *Release Notes.*
CAJOB05	Loads schema tables for the Current Schema, Prior Schema, and Second Prior Schema. The schemas contain static data representing the meta-model. Customers must have CA Unicenter DB2 products to execute this job. You can also use the equivalent job that uses IBM utilities. When using utilities from other vendors, customize this job accordingly. This job returns RC=4 if DB2 Products UTIL parmlib contains SET-COPYPENDING TO (NO). RC=4 is acceptable unless the optional CEJOB05A job runs subsequently. To run CEJOB05A subsequently, you must run DB2 backup, job CAUCOPY or CEACOPY, before running CEJOB05A.
CEJOB05A (Optional)	Relaxes migration rules by modifying values on the schema tables that provide operational rules for object migrations using version control.
CEJOB06	Executes the DB2 RUNSTATS utility for the Host Encyclopedia tables and index. You must have IBM DB2 utilities to execute this job. You can also use the equivalent job that uses CA Unicenter DB2 products. When using utilities from other vendors, customize this job accordingly.
CAJOB06	Executes the DB2 PDASTATS utility for the Host Encyclopedia and index. Customers must have CA Unicenter DB2 products to execute this job. You can also use the equivalent job that uses IBM utilities. When using utilities from other vendors, customize this job accordingly.
CEJOB07A	Binds Host Encyclopedia DBRMs into packages.
CEJOB07B	Binds CA Gen Host Encyclopedia plans to use packages. Only run this job once.
CEJOB08	Grants DB2 authority to PUBLIC on all CA Gen plans and DB2 SELECT authority on Public Interface Table views.
CEJOB09	Updates the DMAX tables for the CA Gen schema.

JCL Name	Description
CEJOB10	Required to load the functions model to the new encyclopedia: Model name: IEF_SUPPLIED_FUNCTIONS in the 'CAI.CAGEN.CEHBDATV(FUNCMODL)' data set. CEJOB10 may return a condition code of 0 even if it fails. For additional information, see the userid.IEF.LOGFILE for an error message. To verify, the functions model was added to the list of models, follow these steps: Display the CA Gen Main Menu. On the command line, type: 1.3.5 Press Enter. On the Model Statistics screen, move the cursor to the Model Name field and press F4 to display the list of models. Verify the functions model appears on the list. If CEJOB10 abends with U3001 ONCODE 84 when SYSPRINT is Allocated, the userid.IEF.SYSPRINT data set is unavailable. To correct the error, follow these steps: Navigate out of CA Gen concatenation. Issue this command: FREE DA (userid.IEF.SYSPRINT). Delete added model functions. Resubmit CEJOB10.
CEJOB11	Processes the functions model, inserts the model information into the schema SMDL table, and deletes the model information from the data DMDL table. The expected return code is 20. To verify the functions model is removed from the list of models, display the list of models by entering 1.3.5 on the command line and press enter. Verify IEF_SUPPLIED_FUNCTIONS is not on the list.

JCL Name	Description
CEJOB12	Loads the sample model to the new encyclopedia and is optional. Model name: GEN SAMPLE MODEL 8 5 in the CAI.CAGEN.CEHBDATV(SAMPMODL) data set CEJOB12 may return a condition code of 0 even if it fails. For additional information, see the userid.IEF.LOGFILE for an error message. To verify the model was added to the list of models, follow these steps: Display the CA Gen Main Menu On the command line, type 1.3.5 Press Enter. On the Model Statistics screen, move the cursor to the Model Name field and press F4 to display the list of models. Verify the sample model appears on the list. If CEJOB12 abends with U3001 ONCODE 84 when SYSPRINT is Allocated, the userid.IEF.SYSPRINT data set is unavailable. To correct the error, follow these steps: Navigate out of CA Gen concatenation. Issue this command: FREE DA (userid.IEF.SYSPRINT). Delete the sample model. Resubmit CEJOB12.

JCL Name	Description
CEJOB13	Loads the help model to the new encyclopedia and is optional. Model name: GEN SAMPLE HELP MODEL 8 5 in the CAI.CAGEN.CEHBDATV (HELPMODL) data set. CEJOB13 may return a condition code of 0 even if it fails. For additional information, see the userid.IEF.LOGFILE for an error message. To verify the model was added to the list of models, follow these steps: Display the CA Gen Main Menu On the command line, type: 1.3.5 Press Enter On the Model Statistics screen, move the cursor to the Model Name field and press F4 to display the list of models. Verify the help model appears on the list. If CEJOB13 abends with U3001 ONCODE 84 when SYSPRINT is Allocated, the userid.IEF.SYSPRINT data set is unavailable. To correct the error, follow these steps: Navigate out of CA Gen concatenation Issue this command: FREE DA (userid.IEF.SYSPRINT) Delete the help model. Resubmit CEJOB13.
CEJOB06	Run this job again. It executes the IBM DB2 RUNSTATS utility for the Host Encyclopedia tables and indexes.
CAJOB06	Run this job again. It executes the DB2 PDASTATS utility for the Host Encyclopedia tables and indexes. A RUNSTATS of the CA Gen data tables, after loading the models in CEJOB10, followed by a REBIND of all CA Gen plans, speeds encyclopedia access.
CEJOB07A	Executes bind replace on all packages.

Run Jobs to Bind DB2 Gen Runtime Packages

You must run the CEJOB14R on each DB2 subsystem used for applications generated by CA Gen. CEJOB14R binds CA Gen runtime DBRM TIROLBCM into a DB2 package.

Run Jobs to Install DB2 Profile Manager

If the target of a CA Gen application is CICS, you can use a TSQ Profile Manager instead of DB2 Profile Manager. When you do so, you do not need to run the jobs described in this section.

Note: For more information on RPROF, see the section The Runtime Profile (RPROF) Table for DB2 in *Host Construction User Guide.*

The following jobs must run on each DB2 subsystem used for applications generated by CA Gen using DB2 Profile Manager.

BLDRPROF	Builds RPROF tables and indexes. This job is not required when applications installed with the new release of CA Gen use an existing RPROF table.
CEJOB15R	Binds Gen runtime DBRM TIRPROFD into a DB2 package.

Test Encyclopedia Functions

Test the new encyclopedia functions by exporting a model to the Public Interface and running an Entity Definition Report. Use the CA Gen Sample Model to export to the Public Interface.

Note: Running the export in the foreground can be time consuming, so it is best to run this procedure in a batch mode.

Follow these steps:

1. Select option 2 on the CA Gen Main Menu and press Enter.

   The Public Interface Functions screen appears.
2. Select option 1 and press Enter to export a model.
3. Type this model name: GEN SAMPLE MODEL 8 5
4. Press Enter.

   When an error occurs during the export process, the process logs the error message to the userid.IEF.LOGFILE. If the model failed to export, contact Technical Support.
5. Run the Entity Definition Report using these steps:
   a. Select option 1 on the Main Menu and press Enter.
   b. Select option 3 and press Enter to display the Host Encyclopedia Reports Menu.
   c. Select option 13 and press Enter to display the Model Reports screen.
   d. Type the model name GEN SAMPLE MODEL 8 5 and press Enter.
   e. Select option 6 and press Enter.

   The Entity Definition Report runs and displays on the screen.

RUNSTATS, Rebind CA Gen Packages, and Image Copy

Before rebinding the packages, follow these steps to update DB2 statistics to optimize encyclopedia access:

1. Run CEJOB06 or CAJOB06 again to update the DB2 statistics for the Host Encyclopedia tables and indexes.

   Uploading the models to the Host Encyclopedia and exporting to the public interface, populates many CA Gen tables. For DB2 optimization, a RUNSTATS of the CA Gen data tables, followed by a BIND of all CA Gen packages, speeds subsequent access to the encyclopedia.

2. Run CEJOB07A to execute a DB2 BIND of the CA Gen packages taking advantage of the new RUNSTATS statistics.

3. Run CEUCOPY to execute the DB2 COPY utility to create an image-copy of all CA Gen tablespaces.

Package Bind

Follow these steps:

1. JCL - CEJOB07A-Binds all DBRMs to packages in a collection. This job may be rerun when a PTF introduces new or replacement DBRMs.

2. JCL - CEJOB07B-Bind all plans to access all packages in a collection. Only execute this job once.

The difference between CEJOB07A and CEJOB07B is that CEJOB07A executes CLIST BINDPACK and CEJOB07B executes CLIST BINDPLAN. The BINDPACK and BINDPLAN CLISTs take the same input parameters.

CEJOB07A-BINDPACK

Here is a sample of the executable portion of JCL:

```
-----------------
//JOBCARD...
//*
........
........
//*
//*
//TSOPROC PROC TILCLIB='CAI.CAGEN.CEHBCLS0',
//                        SOUT='*'
//*
//PS10     EXEC PGM=IKJEFT01,DYNAMNBR=30
//STEPLIB  DD DSN=CAI.CAGEN.CEHBPLD1,DISP=SHR
//         DD DSN=CAI.CAGEN.CEHBPLD0,DISP=SHR
//SYSPROC  DD DSN=&TILCLIB,DISP=SHR
//SYSPRINT DD SYSOUT=&SOUT
//SYSTSPRT DD SYSOUT=&SOUT
//                   PEND
//*
//JS10         EXEC TSOPROC
//PS10.SYSTSIN DD *
  %BINDPACK    MEMBER(ALL) +         (1)
                    COLLID(XXXXXXXX) +    (2)
                    OWNER(2ND_AUTH) +     (3)
                    QUALIFIER(XXXXXXXX) + (4)
                    RESTART               (5)
```

Note:

- MEMBER(ALL)-Bind all DBRMs into packages in a collection.
- COLLID(*XXXXXXXX*)-*XXXXXXXX* is the collection ID. You must specify a collection ID when performing a package bind. Enter the collection ID value on the Set DB2 Variables screen in the CEINSTAL procedure to add to the CEJOB07A JCL.
- OWNER(2ND_AUTH)- 2ND_AUTH is the secondary authorization ID used in the BIND packages job. This job only includes the OWNER parameter when you include a value in CEINSTAL for the Secondary Authorization ID in the Set DB2 Variables screen. For example:

%BINDPACK MEMBER(ALL) COLLID(XXXXXXXX) OWNER(2ND_AUTH)

- QUALIFIER(XXXXXXXX)-Specifies the prefix used for tables, indexes, and views, in the DB2 BIND process. The job only includes the QUALIFER parameter when you set the Bind Qualifier and DB2 Table-Index-View Owner in CEINSTAL's Set DB2 Variables screen. This value must be defined to the DB2 security system. For example:

%BINDPACK MEMBER(ALL) COLLID(*XXXXXXXX*) .... QUALIFIER(*XXXXXXX*)

- RESTART-The CEJOB07A job can restart. When a bind error occurs, correct the error, and use the messages provided at the end of the failing BINDPACK CLIST to provide the package DBRM name as input through the MEMBER() parameter. Add the keyword RESTART. For example:

%BINDPACK MEMBER(DBRMNAME) ... RESTART

CEJOB07B-BINDPLAN

(Only the executable portion of sample JCL is shown)

```
------------------
//JOBCARD...
//*
........
........
//*
//*
//TSOPROC         PROC TILCLIB='CA.CAGEN.CEHBCLS0',
//                             SOUT='*'
//*
//PS10            EXEC PGM=IKJEFT01,DYNAMNBR=30
//STEPLIB         DD DSN=CAI.CAGEN.CEHBPLD1,DISP=SHR
//                DD DSN=CAI.CAGEN.CEHBPLD0,DISP=SHR
//SYSPROC         DD DSN=&TILCLIB,DISP=SHR
//SYSPRINT        DD SYSOUT=&SOUT
//SYSTSPRT        DD SYSOUT=&SOUT
//                           PEND
//*
//JS10            EXEC TSOPROC
//PS10.SYSTSIN    DD *
  %BINDPLAN MEMBER(ALL)     +               (1)
                    COLLID(XXXXXXXX) +              (2)
                    OWNER(2ND_AUTH)         +       (3)
                    QUALIFIER(XXXXXXXX) +   (4)
                    RESTART                         (5)
```

Note:

- MEMBER(ALL) -Bind all plans to use all packages in a collection
- COLLID(*XXXXXXXX*)-*XXXXXXXX* is the collection ID. You must specify a collection ID when performing a package bind. Enter a value for the collection ID on the Set DB2 Variables screen of the CEINSTAL procedure to add it to the CEJOB07B JCL.

- OWNER(2ND_AUTH) - 2ND_AUTH is the secondary authorization ID used in the BIND packages job. This job only includes the OWNER parameter when you include a value in CEINSTAL for the Secondary Authorization ID in the Set DB2 Variables screen. For example:
  ```
  %BINDPLAN MEMBER(ALL) OWNER(2ND_AUTH)
  ```
- QUALIFIER(*XXXXXXXX*) - Specifies the prefix used for tables, indexes, and views, in the DB2 BIND process. The job only includes the QUALIFER parameter when you set the Bind Qualifier and DB2 Table-Index-View Owner in CEINSTAL's Set DB2 Variables screen. This value must be defined to the DB2 security system. For example:
  ```
  %BINDPLAN MEMBER(ALL) .... QUALIFIER(XXXXXXX)
  ```
- RESTART-The CEJOB07B job can restart. When a bind error occurs, correct the error, and use the messages at the end of the failing BINDPLAN CLIST to provide the plan name as input through the MEMBER() parameter. Add the keyword RESTART, for example:
  ```
  %BINDPLAN MEMBER(DBRMNAME) ... RESTART
  ```

Enable User Access

To enable user access, you must select the user access control function from the Host Encyclopedia Functions Menu to add each user to the encyclopedia (see page 202). Each user requires access to your site-specific ISPF/CA Gen logon CLIST to establish the environment.

Next Steps

The next step in installing the Host Encyclopedia is to populate the encyclopedia just created. To copy existing Host Encyclopedia data tables from an earlier release of CA Gen to this CA Gen Host Encyclopedia, see Populate a Host Encyclopedia (see page 203).

Note: If using Host Construction, see Testing Host Construction in the *Host Encyclopedia Construction User Guide*.

Upgrade an Host Encyclopedia

A z/OS CA Gen Host Encyclopedia and Generator software upgrade is a complete redistribution of software libraries. Enabling an existing Host Encyclopedia to work with the new CA Gen software may alter some existing DB2 objects, including the Gen data, schema, and public interface tables. A new schema level requires complete reloading of the schema tables. Changing the public view interface may require removing and adding DB2 view definitions.

This section describes the tasks required to upgrade an existing Encyclopedia to a CA Gen 8.5 Encyclopedia, including the following tasks:

1. Build SQL and JCL

2. Run upgrade jobs
3. Enable user access

Prerequisites

Upgrading an encyclopedia requires that you complete the tasks in section Define Installation Variables, and have met these DB2/DBA prerequisites:

1. Start the databases in Utility status for a consistent point of recovery
2. Create an image copy of the data, schema, and public interface libraries
3. Back up the software libraries
4. After the image copy, start the databases in read or write status.

The Host Encyclopedia Maintenance Menu should be displayed on your monitor.

Build SQL and JCL

To build the JCL and SQL to upgrade an existing encyclopedia to a CA Gen 8.5 Encyclopedia, use this procedure:

1. Select option 6 on the Host Encyclopedia Maintenance Menu and press Enter to start building the SQL and JCL.
2. When processing completes, press Enter to return to the Host Encyclopedia Maintenance Menu. The CA Gen JCL and SQL libraries contain the JCL and SQL to upgrade existing Encyclopedias to CA Gen 8.5.

Considerations

Before beginning the upgrade tasks, consider these points:

- The JCL and SQL for the upgrade process are in the JCL and SQL libraries.
- The options selected on the CEINSTAL Host Encyclopedia Maintenance Menu were:
  - Build Encyclopedia Parameter Files
  - Build Sample Encyclopedia Utility JCL
  - Build JCL/SQL to Upgrade in Place
- You must run the jobs in the order listed. Failure to do so causes unpredictable results.
- The DB2 database status must be read or write.

- CA recommends using a new plan prefix.
- Each job must run on the CPU containing the Host Encyclopedia and the DB2 tables.

Important! All models should be checked in, and an image copy of the Encyclopedia made, before beginning an upgrade. This establishes a recovery point, should one be needed.

Schema Levels

Information in each model is controlled and processed in accordance with a specific schema release level, as defined in the schema database and the DMAX table of the Data database.

When a software release defines new objects, properties, or associations that support new functionality, the schema release level changes.

Run Upgrade Jobs

These upgrade jobs amend the z/OS Host Encyclopedia DB2 tables to work with the CA Gen software.

The jobs BLDRPROF, CEJOB14R and CEJOB15R relate to Host Construction and CA Gen runtime environments when DB2 is the target database. They must be run on each DB2 subsystem used for applications generated by CA Gen.

You must have IBM DB2 utilities or CA DB2 utilities or equivalent utilities from other vendors to execute the following jobs. If you are using utilities from other vendors, customize these jobs accordingly.

- CEJOB05
- CAJOB05
- CEJOB06
- CAJOB06
- CEUREOR
- CAUREOR
- CEUCOPY
- CAUCOPY

Use this table as a checklist as you run the following jobs. n/a is used if the job does not apply.

JCL Name	Description	6.5 to 8.5	7/7.5 to 8.5	7.6 to 8.5	8 to 8.5
CEJOB03	Executes a DB2 BIND of the dynamic SQL program TIUUSQL to CA Gen DB2 subsystem. Bind this plan and grant DB2 EXECUTE authority to PUBLIC for each DB2 subsystem that is a target for CA Gen generated applications. Only bind TIUUSQL to other DB2 subsystems if using TIUUSQL to install DDL or to bind applications onto the subsystems.	√	√	√	√
CVJOB04A	Upgrades Host Encyclopedia from 7 to 8.5, and 7.5 to 8.5.	n/a	√	n/a	n/a
CVJOB04B	Upgrades Host Encyclopedia from 7.6 to 8.5.	n/a	n/a	√	n/a
CVJOB04C	Upgrades Host Encyclopedia from 6.5 to 8.5.	√	n/a	n/a	n/a
CEJOB05	Reloads schema tables with releases, 9.0.A2, 9.1.A5, and 9.2.A6, using the IBM DB2 LOAD utility.	√	√	√	√
CAJOB05	Reloads schema tables with releases 9.0.A2, 9.1.A5, and 9.2.A6. It uses CA's Fast Load utility.	√	√	√	√
CEJOB05A	Relaxes migration rules.	optional	optional	optional	optional
CEUREOR	Executes the DB2 REORG utility using the IBM REORG utility. It includes Data, Schema, and Public Interface databases.	√	√	√	√
CAUEROR	Executes the CA DB2 RAPID REORG utility.	√	√	√	√

JCL Name	Description	6.5 to 8.5	7/7.5 to 8.5	7.6 to 8.5	8 to 8.5
CEUCOPY	Executes the IBM DB2 COPY utility to create a full image copy of all tablespaces.	√	√	√	√
CAUCOPY	Executes the DB2 QUICK COPY utility to create a full image copy of all tablespaces.	√	√	√	√
CEJOB06	Executes the DB2 RUNSTATS utility for the Host Encyclopedia schema tables.	√	√	√	√
CAJOB06	Executes the CA PDASTATS utility.	√	√	√	√
CEJOB07A	Binds Host Encyclopedia DBRMs into packages.	√	√	√	√
CEJOB07B	Binds CA Gen Host Encyclopedia plans.	√	√	√	√
CEJOB08	This job grants to PUBLIC, DB2 authority on all CA Gen plans, and DB2 SELECT authority on Public Interface Table views. An SQLCODE of +562 indicates privileges have been granted.	√	√	√	√
CEJOB09	Updates the DMAX tables for the CA Gen schema.	√	√	√	√
CEJOB10	Loads Schema Functions Model to Host Encyclopedia.	√	√	√	√
CEJOB11	Processes the Functions Model. This job inserts the model information into the schema SMDL table and deletes the model information from the data DMDL table. The expected return code is 20. To verify the Functions model is removed from the list of models, display the list of models by entering 1.3.5 on the command line. Verify that IEF_SUPPLIED_FUNCTIONS is not on the list.	√	√	√	√

JCL Name	Description	6.5 to 8.5	7/7.5 to 8.5	7.6 to 8.5	8 to 8.5
CEJOB12	Loads Sample Model to Host Encyclopedia.	optional	optional	optional	optional
CEJOB13	Loads Help Model to Host Encyclopedia.	optional	optional	optional	optional
CEJOB14R	Binds CA Gen runtime DBRM TIROLBCM into a DB2 package.	√	√	√	√
BLDRPROF	Builds RPROF tables and indexes. It is not required to run this job if the applications built with the new release of CA Gen will use an existing RPROF table.	optional	optional	optional	optional
CEJOB15R	Binds CA Gen runtime DBRM TIRPROFD into a DB2 package.	√	√	√	√

Enable User Access

Existing user access is automatically enabled for this version of the encyclopedia. However, each user needs access to site-specific ISPF/CA Gen logon CLIST to establish the environment.

Next Steps

If you selected a new regional setting value or the Euro sign support, you must convert your models to the new code page. For regional setting value, see Model Code Pages (see page 173).

Next step is to use the Host Encyclopedia you just upgraded, for more information about copying any existing model to the new CA Gen encyclopedia, see Populate a Host Encyclopedia (see page 203). If you do not need to copy any existing models, but are using Host Construction, see the *Host Encyclopedia Construction User Guide.*

If you are developing applications that use online help, see the *Host Encyclopedia Construction User Guide.*

Configuring z/OS Implementation Toolset

This section describes the configuration tasks needed before CA Gen z/OS Implementation Toolset can be started, configured and used in your environment.

Configuration Variables

CA Gen Library Name Variable

The following table describes the installed CA Gen library names.

CA Gen Library Suffixes	Description	User Notes
Load library Default: CEHBPLD0	Library containing the IT's executables and runtime modules. **Note:** The data sets must be allocated as PDSE data sets.	Must be of 'DSNTYPE=LIBRARY'
Runtime DLLs Default: CEHBPLD1	Library containing the IT's runtime modules, DLLs. **Note:** The data sets must be allocated as PDSE data sets.	Must be of 'DSNTYPE=LIBRARY'
DBRM Default: CEHBDBRM	Library containing the IT's DBRMs. DBRMs that correspond to the modules linked into the IT's executables.	
Runtime DBRM Default: CEHBDBRM	Library of DBRMs corresponding to runtime modules in LOAD library. Used when binding plans for applications installed by the IT.	
CLIST Default: CEHBCLS0	Library containing the IT's CLISTs and REXX commands. CLISTs generated by the ITINSTAL generates dialog are created in this library.	
Panel Default: CEHBPNL0	Library containing the IT's ISPF panels.	
Message Default: CEHBMSG0	Library containing the IT's ISPF messages.	
Skeleton Default: CEHBSKL0	Library containing the IT's ISPF skeletons.	
SAMPLIB Default: CEHBSAMP	Library containing the IT's sample, customizable modules.	

X-Late Default: CEHBDATB	Library containing the CA Gen translate or international tables.

The following table describes the CA Gen library names populated during configuration.

SQL Default: SQL	The ITINSTAL dialog generates SQL necessary to install the IT. The SQL is placed in this library.
JCL Default: JCL	The ITINSTAL dialog generates the JCL necessary to install the IT. The generated JCL is placed in this library.
PARMLIB Default: PARMLIB	Library containing site specific parameters.

JCL Variables

The following table describes JCL variables.

JCL Variables	Description	User Notes
Jobcard No default	Job card included in the generated JCL to perform various installation tasks.	
Installer TSOID No Default	This field is for information purposes only.	
DISK UNIT Default: SYSDA	Disk unit used in the generated JCL to perform various installation tasks.	
Tape/media unit or TAPEDEV Default: 3480	Tape/media unit used in the generated JCL to perform various installation tasks.	
SYSOUT class Default: *	SYSOUT class used in THE generated JCL to perform various installation tasks.	

JCL Variables	Description	User Notes
DB2 STEPLIB No default	Optionally, one or more libraries included in a STEPLIB in the generated JCL to perform various installation tasks. If your site included the DB2 libraries in the system LINKLIST, do not specify them in a STEPLIB.	
z/OS steplib1 z/OS steplib2 OTHER STEPLIB No default	Optionally, one or more libraries included in a STEPLIB in the generated JCL to perform installation tasks. If your site included the z/OS runtime libraries in the system LINKLIST, do not specify a STEPLIB.	

IT Variables

The following table describes IT variables.

IT Variables	Description	User Notes
Site name Default: YOUR_COMPANY_NAME	For information purposes only.	
IT administrator's TSOID Default: TSOID of user executing ITINSTAL	Identifies person doing the install.	
IT administrator's name Default: SYSTEM ADMINISTRATOR	For information purposes only.	
Plan prefix Default: ITPL (4 byte limit)	Prefix for CA Gen z/OS IT DB2 plan names. Plan prefixes make plan names unique in a DB2 subsystem, allowing different versions of IT software to run against the same IT database.	

IT Variables		Description	User Notes
	User dataset prefix Default: &SYSPREF	Prefix for user data sets created by CA Gen z/OS IT, for example, standard error, standard out.	
User dataset UNIT type Default: SYSDA		Unit for allocating user data sets created by CA Gen.	
User dataset suffix No default		Optional value suffix for user data sets created by CA Gen z/OS IT, for example, standard error, standard out.	

DB2 Database Variables

The following table describes the DB2 database variables.

DB2 Database Variables	Description	User Notes
DB2 Subsystem ID Default: DSN	Identifies the DB2 subsystem.	
DB2 Collection ID Default: DBCOLLID	Identifies DB2 collection ID used in binding z/OS IT packages.	
Explicit creator ID No default	If specified, the z/OS IT's tables and indexes are qualified using this ID. Explicit creator ID and secondary authorization ID are mutually exclusive.	
Secondary authorization ID No default	If specified, current SQLID is set to this ID before IT tables and indexes are defined. Secondary authorization and explicit creator ID are mutually exclusive.	
Database name Default: MVSIT	Name of the IT's database.	

DB2 Database Variables	Description	User Notes
Dataset storage type Default: S	Space for the IT's database can be allocated using storage groups or VSAM data sets: S for storage group allocation, V for VSAM.	
Initial database size Default: S	**S**-small **M**-medium	
Secondary storage factor Default: 0	Defines secondary space allocation in relation to primary allocation. (0 to 1.0 times primary allocation.)	
Storage Group Names No default	If you select storage group space allocation, you must know the names of the groups to use.	
VSAM Volume Names No default	If you select VSAM space allocation, you must specify the volume names for VSAM data sets.	
Gen Runtime Collection ID Default: RTCOLLID	Identifies DB2 collection ID used in binding runtime packages for TIRPROFD and TIROLBCM.	

COBOL Compiler Variables

The following table describes COBOL compiler variables.

COBOL Compiler Variables	Description	User Notes
COBOL Compiler name Default: IGYCRCTL	Name of the COBOL compiler.	

COBOL Compiler Variables	Description	User Notes
Size parameter No default	Amount of space for the compiler SIZE parameter as: kilobytes, for example, 4096 KB Bytes, for example, 4194304 MAX.	
COBOL Compiler library Default: IGY.SIGYCOMP	Name of library containing the compiler used by the environment and various support modules for COBOL.	
Compiler library in linklist Default: N	Flag indicating if the compiler library is defined in the system linklist.	
z/OS Static runtime library Default: CEE.SCEELKED	Library containing static runtime modules for COBOL.	
z/OS Dynamic runtime library Default: CEE.SCEERUN	Library containing z/OS LE dynamic runtime modules. z/OS and LE/370 refer to the same environment. LE/370 or z/OS runtimes may also be referenced as DLLs, dynamic runtime, or transient runtime.	
SCREERUN library in linklist Default: N	Flag indicating if this library is in linklist.	

DB2 Subsystem Variables

The following table describes DB2 subsystem variables.

DB2 Subsystem Variables	Description	User Notes
DB2 precompiler name Default: DSNHPC	Name of the DB2 compiler.	

DB2 Subsystem Variables	Description	User Notes
DB2 link library Default: DB2.SDSNLOAD	Name of the DB2 link library containing the DB2 precompiler and various support modules.	
Link lib in LPA/linklist Default: N	Flag indicating if the DB2 link library is defined in the system linklist.	

CICS Variables

The following table describes CICS variables.

CICS Variables	Description	User Notes
CICS load library Default: CICS.SDFHLOAD	Name of CICS load library.	
z/OS Static link library Default: CEE.SCEELKED	z/OS LE static link library.	
CICS shares CPU with this TSO Default: N	Flag indicating if the CICS system targeted to run CA Gen applications executes on the same CPU as CA Gen. Only applications targeting DB2 use this variable to decide where and when to do the DB2 BIND. Y – z/OS IT can perform the BIND. N – You must do a manual BIND on the other CPU.	

IMS Variables

The following table describes IMS variables.

IMS Variables	Description	User Notes
IMS resident load library Default: IMS.RESLIB	Load library containing IMS modules.	
Maximum segment size Default: 1280	Maximum segment size of IMS messages.	

IMS Variables	Description	User Notes
IMS shares CPU with this TSO Default: N	Flag indicating if the IMS system targeted to run CA Gen applications executes on the same CPU as CA Gen. Only applications targeting DB2 use this variable to decide where and when to do the DB2 BIND. Y – z/OS IT can perform the BIND. N – You must do a manual BIND on the other CPU.	
CPIC interface load library Default: SYS1.CSSLIB	Name of the system library containing the CPIC interface modules. Usually this library is SYS1.CSSLIB, a required z/OS data set.	

RPROF Variables

The following table describes RPROF variables.

RPROF Variables	Description	User Notes
DB2 subsystem ID Default: DB2	DB2 subsystem identifier of the subsystem where you want to create an RPROF table.	
Explicit creator ID No default	If specified, RPROF table and index are qualified using this ID. Explicit creator ID and secondary authorization ID are mutually exclusive.	
Secondary Authorization ID No default	If specified, current SQLID is set to this ID before RPROF table and index are defined. Secondary authorization ID and explicit creator ID are mutually exclusive.	
DB name Default: RPROF	Name of database in which to build the RPROF table.	

RPROF Variables	Description	User Notes
Storage type Default: S	Space for the RPROF database is allocated using storage groups or VSAM data sets. S – Storage Group allocation V - VSAM allocation	
Storage Group Name No default	When Storage Type is set to S, you must specify the Storage Group Name to use when creating the tablespace and table for RPROF.	
VSAM Volume names No default	If you select VSAM space allocation, you must specify the volume names when creating the VSAM data sets.	
RPROF initial size Default: 350 4 KB pages for VSAM, or 1400 1 KB pages for storage group	Primary size of tablespace containing the RPROF table.	
RPROF secondary size Default: 0	Secondary space allocation of tablespace containing the RPROF table.	
RPROFI1 initial size Default: 350 4 KB pages for VSAM, or 1400 1 KB pages for storage group	Primary size of RPROF index.	
RPROFI1 secondary size Default: 0	Secondary space allocation of RPROF index.	

Installation JCL

The batch jobs discussed in this section are executed outside the IT environment. You must run these jobs in the order they are presented and on the CPU where DB2 resides. Also verify that COND CODE = 0 is returned from all steps and that execution of all SQL statements results in SQLCODE = 000. This following table provides a comprehensive list of all CA Gen JCL members and a brief description of the jobs they perform. The installation and upgrade processes create these members.

JCL Member	Job Description
ITJOB02	Creates VSAM data sets for a new z/OS IT database. Skip this step if using STOGROUPS.

JCL Member	Job Description
ITJOB03	Executes a DB2 BIND for dynamic SQL processing program TIUUSQL.
ITJOB04	Creates DB2 objects. If storage group allocation was selected as the database storage type for this installation, the storage groups must be created prior to running ITJOB04. ITJOB04 creates the DB2 objects for the IT, and uses the SQL created previously.
BLDRPROF	Creates the CA Gen runtime profile (RPROF) table. (If you did not enter Y at the Build RPROF option in the Installation Variables screen, you cannot run this job.) The IT requires an RPROF table. You can use BLDRPROF to create an RPROF table for the IT, or you can create additional RPROF tables for use by CA Gen applications installed by the IT (RPROFS are unique by creator ID). One RPROF table per DB2 subsystem is recommended, and it must be adequately sized to avoid deadlock
ITJOB05A	Binds or replaces DBRMs into packages
ITJOB05B	Binds Plans.
ITJOB05S	Executes the IBM DB2 RUNSTATS utility for the IT database. Customers must have IBM DB2 utilities to execute this job.
CAJOB05S	Updates DB2 catalog statistics for the IT database similar to ITJOB05S. It uses CA's DB2 PDASTATS utility. Customers must have CA Unicenter DB2 products to execute this job. If you are using DB2 utilities from other vendors, you must customize ITJOB05S or CAJOB05S accordingly.
ITJOB06	Grant executes authority of CA Gen IT for z/OS plans to public.
ITJOB07R	Binds CA Gen runtime DBRM TIROLBCM into a DB2 package.
ITJOB08R	Binds CA Gen runtime DBRM TIRPROFD into a DB2 package.

Configuration of the z/OS Implementation Toolset involves the following tasks:

- Establish ISPF Library Concatenation
- Define installation variables
- Build parameter files, SQL, and JCL
- Run installation JCL
- Start the Implementation Toolset

Establish ISPF Library Concatenation

The proper ISPF environment must be established before the IT can be used. The IT libraries can be allocated using a logon CLIST, a logon proc, or the ISPF LIBDEF facility. In all cases, if the logon is used primarily for the IT, the IT libraries should be first in the concatenation.

Important! Do not include CA Gen data sets from releases before CA Gen 8.5 in the ISPF logon concatenation because it may produce unpredictable results or cause errors.

ISPLLIB or STEPLIB

A combination of ISPLLIB and STEPLIB can be used to allocate the required software and z/OS program product runtime libraries (for example, PL/1, DB2, ISPF). If DB2 or LE libraries are not in the linklist, allocate them through STEPLIB DD or ISPLLIB DD in the logon CLIST or the TSO logon.

LIBDEF

If you use the ISPF LIBDEF facility, note the following restrictions:

- LIBDEF is not supported for the SYSPROC DD. Consequently, you must include the IT CLIST library in the SYSPROC concatenation of a logon CLIST or a TSO logon proc.
- Do not use LIBDEF to allocate the required load libraries. IT programs make dynamic calls to LE runtime routines. Using LIBDEF to allocate ISPLLIB results in S806 “module not found” abend. This is a limitation of ISPF LIBDEF.

There are two CLIST exits for LIBDEF: TIELIBDF and TIELIBFR.

- TIELIBDF is called at the beginning of IT functions such as ITINSTAL, and TIXSTART. TIELIBDF dynamically allocates ISPPLIB, ISPMLIB, and ISPSLIB.
- TIELIBFR is called at the end of some IT functions and can be used to free libraries allocated using LIBDEF. TIELIBDF and TIELIEBFR contain examples of how to use LIBDEF to allocate and free libraries.

Note: When customizing exits, use a different library that can be concatenated before the CA Gen software, ensuring that CA Gen software libraries are not modified.

Procedure

Allocate the following libraries:

DDNAME	Description	CA Gen Library Short Name
SYSPROC	CLIST libraries	CEHBCLS0
ISPPLIB	ISPF Panel libraries	CEHBPNL0
ISPMLIB	ISPF Message libraries	CEHBMSG0
ISPLLIB	Load libraries	CEHBPLD0 CEHBPLD1
ISPPROF	ISPF User Profile library	(not applicable)
ISPSLIB	ISPF Skeleton libraries	CEHBSKL0
TIUPARML	Parameter library containing site specific values used in the z/OS IT functions	PARMLIB

1. Create and test the logon CLIST or PROC. Contact the System Administrator if you need help with this step or the next step.
2. If using LIBDEF, modify and test TIELIBDF.

Establish Access to CA Gen

Modify an existing ISPF menu to provide an ISPF entry point to CA Gen. The modified ISPF menu must provide an option that executes the CLIST TIXSTART to display the CA Gen copyright panel for the z/OS IT, for example, CMD (%TIXSTART). Alternatively, the CLIST GENIT can be used to display the CA Gen copyright panel for the z/OS IT, for example CMD (%GENIT).

Other ISPF Considerations

Review the default flag in the TSO command table (ISPTCM) header to determine if the command processor entries for the following TSO commands must be added to the ISPTCM:

- TSOAE-required by the TSO testing facility.

- EXECSQL-(Optional) a dynamic SQL utility for diagnostics and problem correction.

Most sites do not need to change these commands, but if you modify the ISPTCM defaults, you must add the commands.

No modification is required if the default flag setting in the ISPTCM header is B'.......1'. This indicates that a BLDL is used to determine if a command processor or a CLIST is entered. If your ISPTCM table has a different setting in the header, add a command processor ENTRY for the TSOAE and EXECSQL commands. For more information, see the ISPF documentation.

Important! Insufficient available space in the ISPPROF profile data set can cause unpredictable results.

Define Installation Variables

The next step to installing the IT is to define installation variables by running the ITINSTAL dialog. There are multiple subtasks involved in defining installation variables. These subtasks are:

Follow these steps:

1. Start the ITINSTAL dialog.
2. Set library names.
3. Edit job cards.
4. Set JCL variables.
5. Set Implementation Toolset variables.
6. Set DB2 variables.
7. Assign storage group names.
8. Assign VSAM names.
9. Set target system variables (which also has multiple subtasks).
10. Check, save, retrieve, and clear variables.

Each of these subtasks is explained in the following sections.

Start the ITINSTAL Dialog

To start ITINSTAL, type the following command at the ISPF prompt:

```
COMMAND==> TSO %ITINSTAL
```

The Implementation Toolset Maintenance Menu appears.

```
                                   Implementation Toolset Maintenance Menu
Command ===>
Select one of the options below, then press enter.
1. Installation variables management
2. Implementation Toolset installation management
F. Fix management
```

Set Library Names

Follow these steps:

1. Select Option 1 from the Implementation Toolset Maintenance Menu. The Installation Variables Management Menu appears.

```
                        Installation Variables Management
 COMMAND ===>
 Select options 1-8 in sequence, then check variables and save.
____1. Set library names
    2. Edit JOB cards
    3. Set JCL variables
    4. Set Implementation Toolset variables
    5. Set DB2 variables
    6. Assign Storage Group names
    7. Assign VSAM names
    8. Set target system variables
    9. Check variables
   10. Save variables to external dataset       (JCL member TILITSAV)
   11. Retrieve variables from external dataset (JCL member TILITSAV)
   12. Clear variables from ISPF profile pool

F1=Help F3=Exit
```

2. Select Option 1 to display the Set Library Names screen.

```
                                Set Library Names
COMMAND ===>
   Enter or verify the system software libraries dataset prefix and suffixes

Dataset prefix . . . . . CAI.MVSIT__________
Dataset suffixes:
Load . . . . . . . . . . CEHBPLD0___________
Runtime DLLs . . . . . . CEHBPLD1___________
IT DBRM  . . . . . . . . CEHBDBRM___________
Runtime DBRM . . . . . . CEHBDBRM___________
SQL  . . . . . . . . . . SQL_________________
JCL  . . . . . . . . . . JCL _________________
CLIST  . . . . . . . . . CEHBCLS0___________
Panel  . . . . . . . . . CEHBPNL0___________
Message  . . . . . . . . CEHBMSG0___________
Skeleton . . . . . . . . CEHBSKL0___________
Parm file. . . . . . . . PARMLIB____________
```

The Set Library Names screen lets you create a data set name for each of the CA Gen data sets. If you make no changes on this screen, CA Gen uses the default values, displayed when you first enter the screen.

The Dataset prefix field defines the first part of the name for every data set. Each Dataset suffix combines with the data set prefix to complete a data set name.

Edit JOB Cards

Follow these steps:

1. With the Installation Variables Management Menu displayed, select the Edit JOB Cards option to display the following screen.

```
BROWSE CAI.MVSIT.PARMLIB(JOBCARD) - 01.02 Line 00000000 Col 001 080
Command ===>_____________________________________Scroll ===> CSR
***************************** Top of Data ***************************
//ITJOB     'JOB CARD INFO HERE'
//*
//* COPY IN JOBCARDS FROM SOME OTHER LIBRARY
************************** Bottom of Data ***************************
```

This screen indicates that you are in ISPF edit mode for a member called JOBCARD that is stored in the IT parmlib library. You should include a REGION parameter of at least 3072K on this job card.

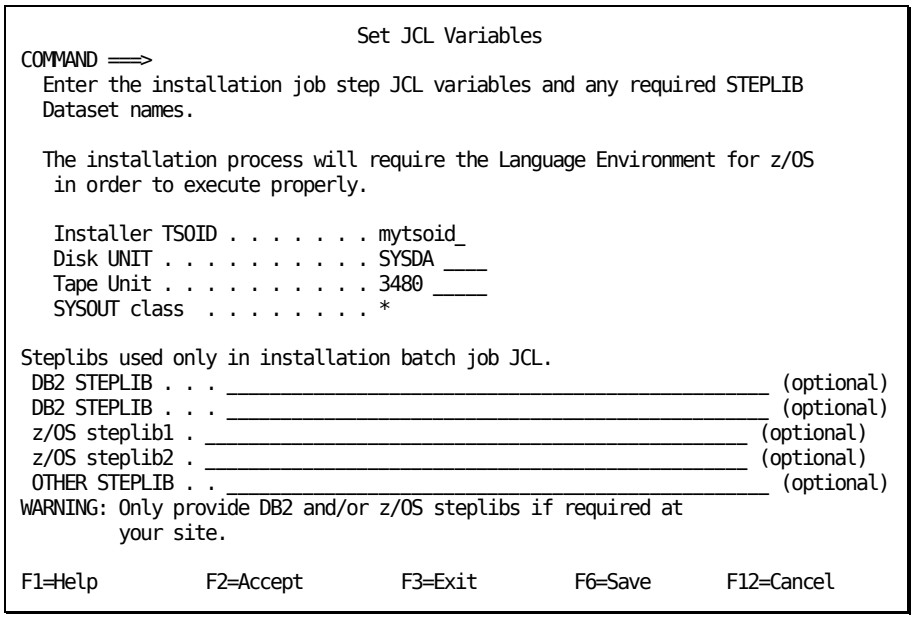
2. Type a valid job card for your site. The job cards contained in this member are included in each installation job you build. You must include a USER parameter equal to the TSO ID of the installer, because most of the IT installation jobs run under DB2 or use this ID to confirm authorization.

3. Press F3 when the job card is complete.

Set JCL Variables

Follow these steps:

1. From the Installation Variables Management Menu, select option 3 (Set JCL Variables) to display the Set JCL Variables screen.



```
                                Set JCL Variables
COMMAND ===>
  Enter the installation job step JCL variables and any required STEPLIB
  Dataset names.

  The installation process will require the Language Environment for z/OS
   in order to execute properly.

   Installer TSOID . . . . . . . mytsoid_
   Disk UNIT . . . . . . . . . . SYSDA ____
   Tape Unit . . . . . . . . . . 3480 _____
   SYSOUT class  . . . . . . . . *

Steplibs used only in installation batch job JCL.
 DB2 STEPLIB . . . _____________________________________________________ (optional)
 DB2 STEPLIB . . . _____________________________________________________ (optional)
 z/OS steplib1 . _____________________________________________________ (optional)
 z/OS steplib2 . _____________________________________________________ (optional)
 OTHER STEPLIB . . _____________________________________________________ (optional)
WARNING: Only provide DB2 and/or z/OS steplibs if required at
         your site.

F1=Help          F2=Accept          F3=Exit          F6=Save          F12=Cancel
```

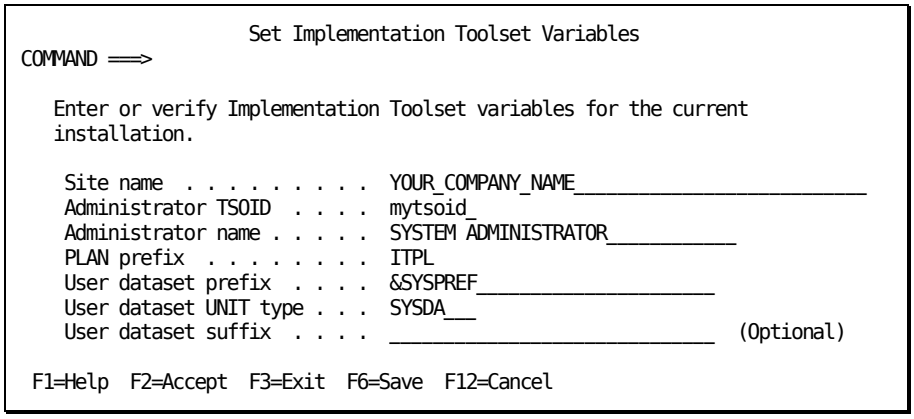
2. Verify the TSOID of the installer.
3. Type the disk and tape or media unit types used to build JCL for various installation and sample maintenance jobs.
4. Type the SYSOUT class used to direct job output.

   Note: The installation JCL STEPLIB includes any data set specified here, plus any data sets allocated in the installer TSO session to the STEPLIB DD or the ISPLLIB DD. This can result in duplicate data set names in the STEPLIB concatenation in the installation JCL. No action is required if this occurs.
5. Press F2 to verify and store the variables entered into a working copy of the variables table.
6. Press F6 to save the data you entered.
7. Use the Save Variables option on the Installation Variables Management Menu to write the values to the TILITSAV member in the JCL library. Press F3 to exit to the Installation Variables Management Menu.

Set Implementation Toolset Variables

Follow these steps:

1. From the Installation Variables Management Menu, select option 4, the Set Implementation Toolset Variables option, to display the Set Implementation Toolset Variables screen. This option defines the global values for the IT.

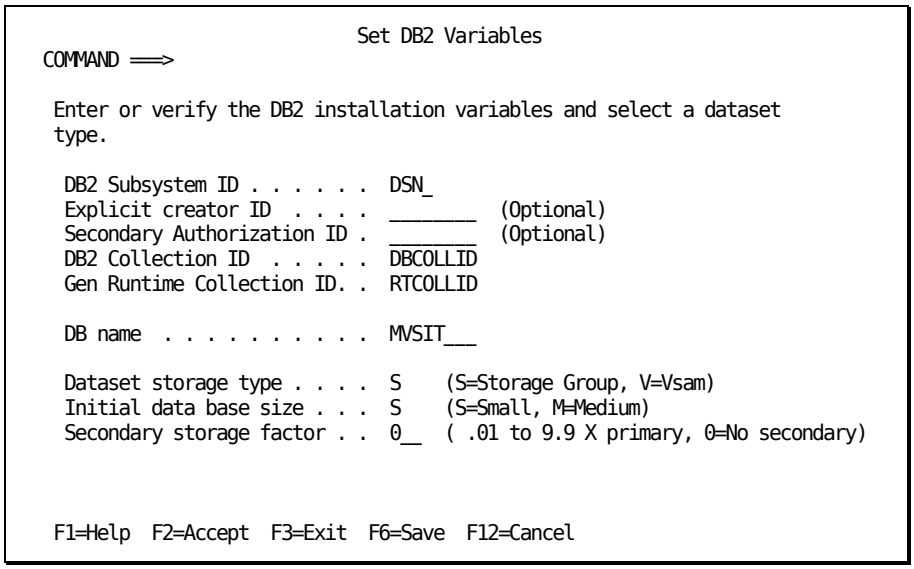


2. Type the site name or company name.
3. Type the TSOID and name of the initial IT administrator.
4. Type the DB2 plan prefix. This prefix is used to construct unique plan names. If you use ITPL as the prefix, then ITPLINLM is the plan name for the IT install load module executable (IEFINLM).
5. Type a prefix, unit, and suffix (optional) for user data sets allocated when performing various IT functions. CLIST control variables, &SYSUID, or &SYSPREF can be used for the prefix.
6. Press F2 to verify and store the variables entered into a working copy of the variables table.
7. Press F6 to save the data you entered.
8. Use the Save Variables option on the Installation Variables Management Menu to write the values to the TILITSAV member in the JCL library, and then press F3 to exit.

Set the DB2 Variables

Follow these steps:

1. From the Installation Variables Management Menu, select option 5, Set DB2 Variables, to display the Set DB2 Variables screen.



```
                              Set DB2 Variables
COMMAND ===>

 Enter or verify the DB2 installation variables and select a dataset
 type.

  DB2 Subsystem ID . . . . . .  DSN_
  Explicit creator ID  . . . .  ________  (Optional)
  Secondary Authorization ID .  ________  (Optional)
  DB2 Collection ID  . . . . .  DBCOLLID
  Gen Runtime Collection ID. .  RTCOLLID

  DB name  . . . . . .  MVSIT___

  Dataset storage type . . . .  S    (S=Storage Group, V=Vsam)
  Initial data base size . . .  S    (S=Small, M=Medium)
  Secondary storage factor . .  0__  ( .01 to 9.9 X primary, 0=No secondary)



 F1=Help  F2=Accept  F3=Exit  F6=Save  F12=Cancel
```

2. Type the DB2 subsystem identifier where the IT tables are placed.
3. (Optional) Type an explicit DB2 authorization identifier to qualify all DB2 objects created in the installation of the IT. If blank, the default ID is the installer's TSOID. To use secondary DB2 authorization, enter the secondary authorization ID in the space provided. Choose either a secondary or an explicit ID; you cannot choose both.
4. Enter a collection ID value in the DB2 Collection ID field.
5. Enter a runtime collection ID value in the Gen Runtime Collection ID field.
6. Type a unique name for the database.
7. Type the data set storage type. Valid values are:
   - S—Storage Group
   - V—VSAM
8. Type the initial database size. Valid values are:
   - S—Small (approximately 329 tracks of 3390 DASD)
   - M—Medium (approximately 2303 tracks of 3390 DASD)

9. Type a secondary storage factor. Valid ranges are .01 to 9.9. A value of 0 results in no secondary allocation. The secondary storage value is determined by multiplying the primary space value by the factor. If the data set storage type is S, the maximum and minimum space values are checked to ensure compliance with DB2 rules.
10. Press F2 to verify and store the variables entered into a working copy of the variables table.
11. Press F6 to save the data you entered.
12. Use the Save Variables option on the Installation Variables Management Menu to write the values to the TILITSAV member in the JCL library.
13. Press F3 to exit.

Assign Storage Group Names

Perform this procedure only if you specified Storage Groups (rather than VSAM) as the data set storage type when you set the DB2 variables.

Follow these steps:

1. From the Installation Variables Management Menu, select option 6, Assign Storage Group names, to display the Assign Storage Group Names screen.

```
                          Assign Storage Group Names
                                                                Row 1 to 12 of 26
COMMAND ===>                                                    SCROLL ===>

 Assign 6 distributed Storage Group names, or assign names by table and index
 spaces. Adjust space as required. Press F2=Accept, F3=Exit, F6=Save, F12=Can.

  Distributed Storage Group(s) . . . . (1) SYSDEFLT (2) SYSDEFLT (3) SYSDEFLT
                                       (4) SYSDEFLT (5) SYSDEFLT (6) SYSDEFLT

  DB       Dis  Space     Storage     -Primary   space-    -Secondary space-
  Type     Grp  Name      Group       -Default  Modify-    -Default  Modify-
  -------  ---  --------  --------    --------  -------    --------  -------
  DATA       5  ACTIV     ________        1792  _______        1792  _______
  DATA       6  ACTIVI1   ________          28  _______          28  _______
  DATA       2  IUSER     ________        1792  _______        1792  _______
  DATA       3  IUSERI1   ________         140  _______         140  _______
  DATA       5  ACTDT     ________        1792  _______        1792  _______
  DATA       6  ACTDTI1   ________          28  _______          28  _______
  DATA       1  TARDF     ________        9800  _______        9800  _______
  DATA       2  TARDFI1   ________         980  _______         980  _______
  DATA       2  TARDFI2   ________         980  _______         980  _______
  DATA       2  TARDFI3   ________         980  _______         980  _______
  DATA       2  TARDFI4   ________         980  _______         980  _______
  DATA       2  TARDFI5   ________        9800  _______        9800  _______
```

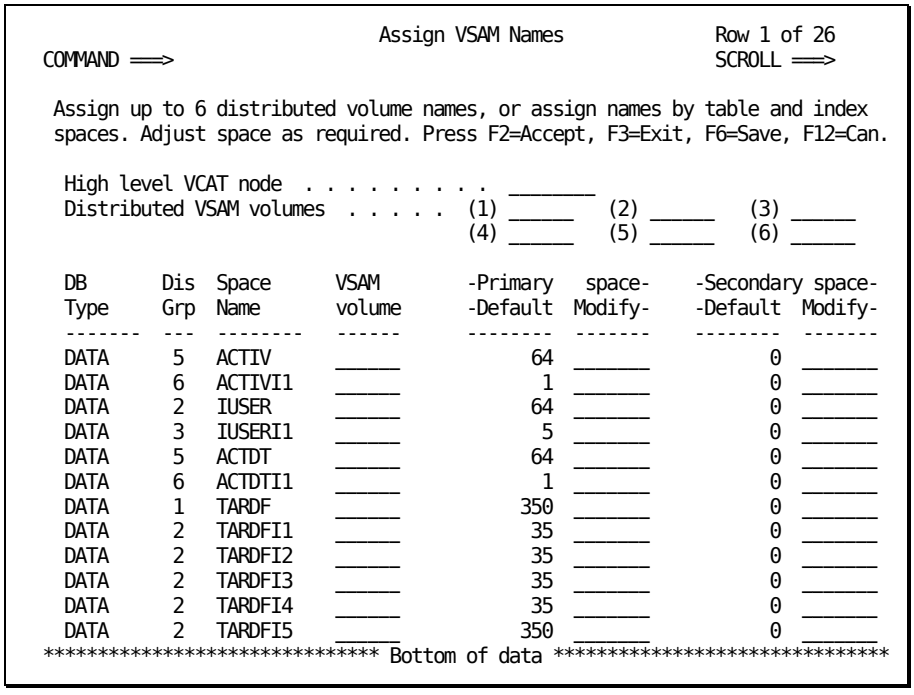
2. Type the Storage Groups in spaces 1 through 6. Blank spaces are set to the first Storage Group name. To specify distribution, modify Storage Group Name for all Space Names. Distribute the database over multiple volumes to improve performance.
3. Press F2 to verify and store the variables entered into a working copy of the variables table.
4. Press F6 to save the data you entered.
5. Use the Save Variables on the Installation Variables Management Menu to write the values to the TILITSAV member in the JCL library.
6. Press F3 to exit.

Assign VSAM Names

This step is required only if the data set storage type is VSAM.

Follow these steps:

1. From the Installation Variables Management Menu, select option 7, Assign VSAM names, to display the Assign VSAM Name screen.



```
                                Assign VSAM Names                Row 1 of 26
COMMAND ===>                                                     SCROLL ===>

 Assign up to 6 distributed volume names, or assign names by table and index
 spaces. Adjust space as required. Press F2=Accept, F3=Exit, F6=Save, F12=Can.

  High level VCAT node  . . . . . . . . . _______
  Distributed VSAM volumes  . . . . . (1) ______   (2) ______   (3) ______
                                      (4) ______   (5) ______   (6) ______

  DB       Dis  Space      VSAM       -Primary   space-    -Secondary space-
  Type     Grp  Name       volume     -Default  Modify-    -Default  Modify-
  -------  ---  --------   ------     --------  -------    --------  -------
  DATA       5  ACTIV       ______          64  _______           0  _______
  DATA       6  ACTIVI1     ______           1  _______           0  _______
  DATA       2  IUSER       ______          64  _______           0  _______
  DATA       3  IUSERI1     ______           5  _______           0  _______
  DATA       5  ACTDT       ______          64  _______           0  _______
  DATA       6  ACTDTI1     ______           1  _______           0  _______
  DATA       1  TARDF       ______         350  _______           0  _______
  DATA       2  TARDFI1     ______          35  _______           0  _______
  DATA       2  TARDFI2     ______          35  _______           0  _______
  DATA       2  TARDFI3     ______          35  _______           0  _______
  DATA       2  TARDFI4     ______          35  _______           0  _______
  DATA       2  TARDFI5     ______         350  _______           0  _______
******************************* Bottom of data ********************************
```

2. Type the high-level VCAT node used to form the DB2 VSAM space data set names for the IT.
3. Type the DASD volumes in spaces 1 through 6 if you want to distribute tablespace and indexspace allocations across DASD volumes. Any space left blank defaults to the first volume entered.

4. Modify the VSAM volume field for space names if you want to specify the distribution manually.
5. Press F2 to verify and store the variables entered into a working copy of the variables table.
6. Press F6 to save the data you entered.
7. Select Save Variables on the Installation Variables Management Menu to write the values to the TILITSAV member in the JCL library.
8. Press F3 to exit.

Set Target System Variables

Follow these steps:

1. Select option 9 on the Installation Variables Management Menu and press Enter to display the following Set Target System Variables Menu.

```
                    Set Target System Variables
COMMAND ==>
Select options 1-3 in sequence. Select the other options
as required
    1.   Target environment configuration
    2.   Set COBOL compiler variables
    3.   Set DB2 precompiler variables
    4.   Set CICS variables
    5.   Set IMS variables
    6.   Set RPROF variables
    7.   Select MFS device types


F1=Help      F3=Exit
```

   Each of the options on this screen leads to another screen in which you can set target system variables.

2. Select options 1, 2, and 3 in sequence.

   Options 5 through 8 are optional, depending on the target environment configuration. The following sections explain how to use each of these options.

Target Environment Configuration

Use this option to configure the target environments where applications generated by CA Gen are run.

Follow these steps:

1. Select option 1 on the Set Target System Variables Menu and press Enter to display the Target Environment Configuration screen.

```
          Target Environment Configuration
COMMAND == >
Enter or verify target environment options.

         Support generated applications under DB2       Y
         Support generated applications under CICS      Y
         Support generated applications under IMS       Y
         Support MFS map generation                     N
         Create runtime profile table (RPROF)           Y



F1=Help   F2=Accept   F3=Exit   F6=Save   F12=Cancel
```

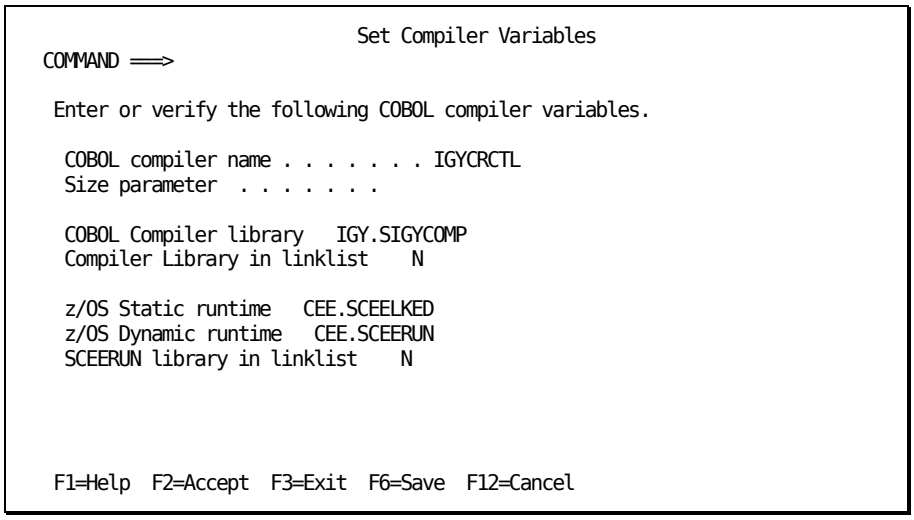
2. Complete the fields on the Target Environment Configuration screen according to the specifics of your environment. The choices you make here enable other options on the Set Target System Variables Menu.
3. Press F2 to verify/save the entered variables in the user's ISPF profile pool.
4. Press Enter to exit the Activity Display screen.
5. Press F3 to exit the screen.

Set Compiler Variables

Use this option to define variables for the COBOL compiler, which is used during the Implementation Package Execute step. This compiler applies to all environments.

Follow these steps:

1. Select option 2 on the Set Target System Variables Menu and press Enter to display the Set Compiler Variables screen.



2. Complete the fields on the Set Compiler Variables screen. The IBM default name for the COBOL Compiler library is IGY.SIGYCOMP. The IBM default name for the z/OS Static runtime library is CEE.SCEELKED. The IBM default name for the z/OS Dynamic runtime library is CEE.SCEERUN.
3. Press F2 to verify and save the variables in the user's ISPF profile pool.

   Note: The value in the Size Parameter field is passed to the COBOL compiler. If this field is left blank, the site default is used. If the site default is too small, the compiler may fail. The recommended minimum is 3072 KB.
4. When verification is complete, press Enter to exit the Activity Display screen.
5. Press F3 to exit the screen.

Set DB2 Precompiler Variables

Use this option to define variables for the DB2 precompiler, which is used during the Implementation Package Execute step.

Follow these steps:

1. Select option 3 on the Set Target System Variables Menu and press Enter to display the Set DB2 Precompiler Variables screen.

```
                    Set DB2 Precompiler Variables
COMMAND == >

Enter or verify the following precompiler variables.

DB2 precompiler name          DSNHPC
DB2 link library              DB2.SDSNLOAD _____________
Link lib in LPA/linklist      N


F1=Help      F2=Accept      F3=Exit      F6=Save      F12=Cancel
```

2. Complete the fields on the DB2 Precompiler Variables screen.
3. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.
4. When verification is complete, press Enter to exit the Activity Display screen.

Set CICS Variables

This option is available if the Support CA Gen Applications Under CICS flag on the Target Environment Configuration screen is set to Y.

Follow these steps:

1. Select option 5 on the Set Target System Variables Menu and press Enter to display the Set CICS Variables screen.

```
                  Set CICS Variables
COMMAND == >
Enter or verify the following CICS variables.

CICS load  library (1)            CICS.SDFHLOAD_________________
z/OS Static Link Library (2)      CEE.SCEELKED _________________

CICS shares CPU with this TSO     N

-IBM default name: 'CICS.SDFHLOAD'
-IBM default name: 'CEE.SCEELKED'



F1=Help      F2=Accept      F3=Exit      F6=Save      F12=Cancel
```

2. Complete the fields on the Set CICS Variables screen.
3. The CICS COBOL load library should be the runtime library containing CICS-specific COBOL runtime modules (for example, CEE.SCEELKED).

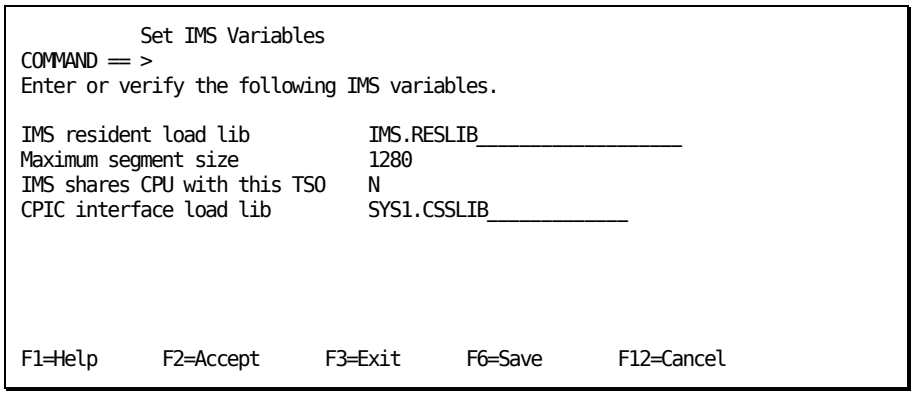
   Note: The CICS DB2 library is no longer specified because it is the same library as the CICS Load library. The variable TIRCLDB2 in PARMLIB points to the CICS Load library.
4. The name of the system library that contains the CICS Sockets interface modules normally called TCPIP.SEZATCP is not required and has been removed.
5. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.
6. When verification is complete, press Enter to exit the Activity Display screen.
7. Press F3 to exit the screen.

Set IMS Variables

This option is available if the Support CA Gen Applications Under IMS flag on the Target Environment Configuration screen is set to Y. The following procedure explains how to set IMS variables.

Follow these steps:

1. Select option 6 on the Set Target System Variables Menu and press Enter to display the Set IMS Variables screen.



2. Complete the fields on the Set IMS Variables screen.
3. The value entered in the Maximum Segment Size field is site-specific; your system administrator knows this value.
4. The name of the system library that contains the CPIC interface modules (CMRCV, CMALLC and so on) is normally SYS1.CSSLIB, which is a required z/OS library.
5. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.

6. When verification is complete, press Enter to exit the Activity Display screen.
7. Press F3 to exit the screen.

Set RPROF Variables

This option is available if the Create Runtime Profile Table (RPROF) flag on the Target Environment Configuration screen is set to Y.

This option builds the BLDRPROF JCL member, which is stored in the CA Gen JCL library. You can use BLDRPROF to create runtime profile tables (RPROFs) if you do not have them. RPROF tables created under previous versions of CA Gen are compatible. For more information on RPROF, see The Runtime Profile (RPROF) Table.

Follow these steps:

1. Select option 7 on the Set Target System Variables Menu and press Enter to display the Set RPROF Variables screen.

```
                    Set RPROF Variables

COMMAND ===>

Enter or verify the following DB2 RPROF variables.

DB2 Subsystem ID. . . . . DB2_
Explicit creator ID . . . . ________ (Optional)
Secondary Authorization ID. ________ (Optional)

DB name . . . . . RPROF___

Storage type. . . . . S (S=Storage Group, V=Vsam)

Storage type. . . . . ________
RPROF initial size. . . . . 1400 1K pages
RPROF secondary size. . . . 0___ 1K pages
RPROFI1 initial size. . . . 1400 1K pages
RPROFI1 secondary size. . . 0___ 1K pages

F1=Help F2=Accept F3=Exit F6=Save F12=Cancel
```

2. Complete the fields on the Set RPROF Variables screen.
   - You can enter an Explicit Creator ID, a Secondary Authorization ID, or leave these fields blank.
   - The VCAT and volume fields appear if the VSAM space allocation is configured instead of Storage Group. These fields are required.
   - VSAM page size is 4 KB, Storage Group is 1 KB. Size values do not convert when switching from one storage type to the other.
3. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.

4. When verification is complete, press Enter to exit the Activity Display screen.
5. Press F3 to exit the screen.

Select MFS Device Types

This option is available if the Support MFS Map Generation flag on the Target Environment Configuration screen is set to Y.

Follow these steps:

1. Select option 8 on the Set Target System Variables Menu and press Enter to display the following Select MFS Device Types screen.

```
                          Select MFS Device Types
COMMAND ===>

Listed are the MFS device types supported by Gen. Select the devices defined for your
installation requiring the generation of Gen MFS formats

Press F1=Help, F2=Accept, F3=Exit, F6=Save, F12=Cancel

Sel  Device Type     Extended attribute  Rows Cols
                        support
___  __________      _________________ ________
___  3270,1               Y            12   40
Y    3270,2 __                        24   80
___  3270P __                         55  120
___  SCS1 __                          55  132
___  SCS2 __                          55   80
___  3270-A01
___  3270-A02
___  3270-A03
___  3270-A04
___  3270-A05
___  3270-A06
___  3270-A07
__   3270-A08
```

2. Type Y in the Sel column next to the appropriate device type.
3. Press F2 to verify and save the entered variables in a working copy of the user's ISPF profile pool.
4. This creates the number TILMFS in the parameter library (PARMLIB). TILMFS is used by the system when processing IMS.
5. When verification is complete, press Enter to exit the Activity Display screen.
6. Press F3 to exit the screen, press F3 again to exit the menu.

Check, Save, Retrieve, and Clear Variables

Options 9 through 12 on the Installation Variables Management Menu perform the true management of the variables. Each option is invoked from the Installation Variables Management Menu by typing the option number and pressing Enter.

- Option 9—Check Variables. This option performs validity checking on the working copy of the variables. Validity checking can be performed at any time, but the process cannot automatically update any invalid values.
- Option 10—Save Variables. This option saves the working copy of the variables in a member called TILITSAV in the JCL library. That member is stored in the JCL library you referred to on the Set Library Name screen. If it does not already exist, TILITSAV is created automatically when you select this option. It can also be copied from one installation JCL library to another to provide a starting point for future installations.

  Note: When you save variables, the save action overwrites any current values in TILITSAV. If you want to save the existing values in TILITSAV member for use later, you must rename TILITSAV to a new name before saving the new variables.

  To save new variables for subsequent recall, select option 10 on the Installation Variables Management Menu. If you do not explicitly save the new variables, they are automatically saved when the system CLISTs are created.
- Option 11—Retrieve Variables. This option loads previously saved variables, from the permanent storage location, for the current session. You must save variables at least once before you can retrieve them.
- Option 12—Clear Variables. This option deletes current settings in the working copy of the variable table and restores the default settings.

Build Parameter files, SQL, and JCL

This section shows you how to build the installation parameter files, SQL, and JCL that you will later run to complete the installation of the Implementation Toolset.

The installation builds parameter files TIUIT, TIUIT2, TIRIT and TIRMFS, using the variables defined in the preceding tasks. These parameter files are required to define the operating parameters for the CA Gen execution.

Build Parameter files

Follow these steps:

1. Select option 2 from the Implementation Toolset Maintenance Menu to display the following Implementation Toolset Installation Management screen.

```
       Implementation Toolset Installation Management
Command ===>
Select one of the options below, then press enter.

___1. Build Implementation Toolset Parameter Files
   2. Build all Implementation Toolset installation SQL and JCL
```

2. Select option 1, Build Implementation Toolset Parameter Files, to build the parameters. The parameters are created and stored in the CA Gen PARMLIB library.
3. Press Enter to start building the parameter files. When the processing is complete, the Implementation Toolset Installation Management Menu appears with the following message in the Command line:

   `COMMAND==> PARMS BUILT SUCCESSFULLY.`
4. After you build the parameter files, you can browse and if required edit the parameter files outside CA Gen Installation process.

   The parameter file TIRIT contains an automatically inserted TIRDBATT parameter. It is used as the DB2 Attachment Type when building batch dynamic RI and z/OS Library DLLs. It defaults to DSN, but can be modified as IMS_BMP or DLIBATCH if appropriate.

Build SQL and JCL

The SQL and JCL built with this procedure are contained in the IT's JCL and SQL libraries.

Follow these steps:

1. Select option 2 from the Implementation Toolset Maintenance Menu to display the Implementation Toolset Installation Management Menu.
2. Select option 2, Build all IT installation SQL and JCL.
3. Press Enter to start the build process.
4. Press Enter to return to the Implementation Toolset Installation Management Menu.

Display System Information

You can review system information at any time by executing this TSO command from inside ITINSTAL: TSO %ITSYSADM. This displays the System Administration Information Panel, which contains the following useful displays.

Option One—Displays the copyright panel, which includes the release and levelset numbers.

Option Two—Displays a list of all PTFs applied to this Implementation Toolset.

Option Three—Displays a separate panel to access these variables:

- Implementation Toolset variables
- Implementation Toolset administration variables
- Implementation Toolset DB2 variables
- Implementation Toolset COBOL variables
- Implementation Toolset IMS variables
- Implementation Toolset CICS variables
- Miscellaneous

Option Four—Makes the current TSO ID a new Implementation Toolset administratorID. Loads the current TSO ID with the ISPF (profile) variables used by the original installer.

Run Installation JCL

The batch jobs discussed in this section are executed outside the IT environment. You must run these jobs in the order they are presented and on the CPU where DB2 resides. Also verify that COND CODE = 0 is returned from all steps and that execution of all SQL statements results in SQLCODE = 000.

These columns in the following table explains the different batch jobs that need to be run:

1. Installing new z/OS CA Gen IT database
2. Upgrading from a previous release of CA Gen IT

Note: ANY in column 1 and 2 suggests that the job can be run as needed when performing normal maintenance.

JCL Name	Action	1	2
ITJOB02	Skip this step if using STOGROUPS. Create VSAM data sets for new z/OS IT database	Y	N/A

JCL Name	Action	1	2
ITJOB03	If you want to bind TIUUSQLX to additional DB2 subsystems, enter the following commands at the TSO command line: %BINDPACK MEMBER(TIUUSQL) COLLID(XXXXXXXX) OWNER(YYYYYYYY) %BINDPLAN MEMBER(USQL) COLLID(XXXXXXXX) OWNER(YYYYYYYY) **Note:** COLLID(XXXXXXXX) must be the collection id entered in the 'Set DB2 Variables' OWNER(YYYYYYYY) is an optional secondary authorization id that can be entered in the 'Set DB2 Variables'	Y	Y
ITJOB04	Creates DB2 objects. If storage group allocation was selected as the database storage type for this installation, the storage groups must be created prior to running ITJOB04. ITJOB04 creates the DB2 objects for the IT, and uses the SQL created previously.	Y	N/A
BLDRPROF	Builds RPROF tables and indexes. Each DB2 subsystem used by applications generated by CA Gen should have an RPROF table. If the target of a CA Gen application is CICS, you can use a TSQ RPROF instead of a DB2 RPROF, eliminating the need for an RPROF table.	Y	N/A
ITJOB05A	JCL to BIND or replace DBRMs into packages.	Y	Y
ITJOB05B	JCL to BIND Plans.	Y	Y

JCL Name	Action	1	2
ITJOB05S	Executes the IBM DB2 RUNSTATS utility for the IT database. Customers must have IBM DB2 utilities to execute this job.	ANY	ANY
CAJOB05S	Alternative to ITJOB05S job. It updates DB2 catalog statistics for the IT database similar to ITJOB05S. It uses CA's DB2 PDASTATS utility. Customers must have CA Unicenter DB2 products to execute this job. If you are using DB2 utilities from other vendors, you must customize ITJOB05S or CAJOB05S accordingly.		
ITJOB06	Grant executes authority of CA Gen IT for z/OS plans to public.	Y	Y
ITJOB07R	Binds CA Gen runtime DBRM TIROLBCM into a DB2 package.	Y	Y
ITJOB08R	Binds CA Gen runtime DBRM TIRPROFD into a DB2 package.	Y	Y

Next Steps

The next step is to start the z/OS Implementation Toolset and optionally verify the installation and configuration was successful (see page 225).

Model Code Pages

After the encyclopedia's code page is set, you must set the code page of all existing models using one of the methods described in this section.

Method 1 to Set Model Code Pages

If you added the Euro sign to your models and uploaded the changes to the encyclopedia, run the code page translation utility to translate the text to the correct code points and update the MODEL_LANG_CODE column in the DMDL. To run the utility, from the ready prompt or TSO option, execute:

```
%TIUXLAT SRCCPID(sss) DSTCPID(dddd) MODEL('model name')
```

Where:

- *sss* is the model's current code page, the code page of the encyclopedia before applying the Euro code page update.

  To locate this value, query the model's DMDL table, using SQL member EUROSQL as a template for the query. An error message terminates the command when *sss* is not equal to the current code page of the model.

- *dddd* is the new code page for the model and is the same value set for the encyclopedia in step 1. An error message terminates the command when *dddd* is not the encyclopedia default code page.

Method 2 to Set Model Code Pages

If your model does not contain the Euro sign, run the SQL member EUROSQL to update the MODEL_LANG_CODE column for the model row in the DMDL table.

Note: If your encyclopedia contains a combination of models, run the TIUXLAT utility for each model containing a Euro sign. After translating all the models, run the SQL from step 2 to change the MODEL_LANG_CODE for all other models in the encyclopedia.

Modifying the Default Code Page

There are several reasons why you require code page translations. Usually it is because the data that is passed from a client is in a code page that differs from the code page used by the server. CA Gen combines the various translation routines into one dynamically invoked runtime, appropriately called Dynamic Runtime. The Dynamic Runtime version provided uses 037 as the default code page.

For procedures to create a customized translation table for your environment see Customize Code Page Translation.

For information about the list of the code page tables and supported environments, see the *User Exit Reference Guide*.

Configuring Runtime: IMS and CICS

When IMS or CICS is the target environment for CA Gen generated applications, you must configure the target environment appropriately before deploying the application. This section covers Block Mode Support for IMS and CICS, Client/Server Support for IMS and CICS, and Debugging features for IMS and CICS.

Before you configure IMS or CICS for CA Gen applications, confirm the following tasks are complete:

- The CICS or IMS execution environment has been established according to the CA Gen Technical Requirements. The CA Gen *Technical Requirements* document is in the Product Information section of the CA Gen Product home page, accessible from the CA Support Online website.
- If the application generated by CA Gen is the first software to use the DB2 Attachment Facility from within CICS or IMS, ensure the Installation Verification Procedure (IVP) COBOL application was installed and executed. The DB2 installation tape includes IVP COBOL. For more information, see your IBM documentation.

Runtime DLLs and LE

CA Gen z/OS runtime is a multi-language execution environment that includes C, COBOL, and Assembler code.

In AllFusion Gen 7, the C runtime components were converted to IBM C to support dynamic linking of runtime and to use DLLs.

Since AllFusion Gen 7.5, most Assembler and COBOL runtime components are implemented as DLLs. Dynamically loading the runtime components allows multiple processes to share a single copy of the runtime component, significantly decreasing the overall load module size for a CA Gen application. Using DLLs improves serviceability by allowing maintenance updates to runtime components without requiring relinking of generated applications. All applications that use the DLL get the maintenance update.

In AllFusion Gen 7.5, the z/OS runtime was updated to full IBM LE conformance. The runtimes were updated to use the standard LE call interface, reducing the complexity of the runtime code. The runtimes were made fully re-entrant and threadsafe, enhancing runtime and application reliability and performance.

AllFusion Gen runtimes were changed to exploit LE storage management within the assembler routines, eliminating the need to frequently use GETMAIN and FREEMAIN. This reduced CPU usage for runtime modules in certain generated applications, such as batch jobs.

AllFusion Gen's C and COBOL runtimes were changed to use similar functionality.

Migrating AllFusion Gen's Assembler code to LE functionality decreased the number of OS storage calls resulting in a decrease use of CPU when a generated application invokes Assembler runtime functions. The benefit of this change depends on the LE Heap and Stack settings and how each generated application uses these runtimes.

Since CA Gen 8, all runtime DLLs are delivered in PDSE dataset named CEHBPLD0 and CEHBPLD1.

CA Gen Requires PDSE

CA Gen runtimes are Program Objects that must reside in PDSE library, a data set type of LIBRARY. The Host Encyclopedia and Implementation Toolset installation jobs create PDSE data sets for CA Gen CEHBPLD0 and CEHBPLD1 libraries.

Because the generated code is also installed as Program Objects, these components must also be PDSEs:

- The business system data sets specified for NCAL
- Executable and RI Trigger Compiled load modules
- The Compatibility libraries
- The External Action block
- The Compatibility External Action Block
- The External System Load Libraries

Threadsafe

Since CICS/TS 1.3, all user programs defined in CICS have a concurrency attribute of Quasirent or Threadsafe. In CICS terms, Quasirent indicates that the program requires CICS protection when using sharable resources. Threadsafe means that the program maintains data integrity while it handles concurrent access of shared resources. CICS uses the concurrency attribute with information about the CICS API commands to decide under which TCB to execute the program, switching between TCBs if necessary.

In CICS/TS 2.2, IBM modified the task-related user exit used by the CICS-DB2 attachment facility so it executes as threadsafe and has started to modify the CICS API commands to make them threadsafe. Not all CICS API commands are threadsafe.

CICS starts all tasks using the quasirent TCB. When the program associated with a task executes an SQL command, CICS changes the task to the threadsafe TCB. After the SQL command completes, CICS determines under which TCB to continue executing the task based on the concurrency attribute of the executing program and of the CICS API command, if applicable.

When the program is defined as quasirent, CICS switches the task to the quasirent TCB where it remains until the next SQL command executes. When the program is defined as threadsafe the task continues executing in the threadsafe TCB until the next non-threadsafe CICS API command executes.

Applications that access DB2 resources and are defined as quasirent must do TCB switching. TCB switching impacts application performance.

The Advantage Gen 6.5 CICS runtime is not threadsafe. Advantage Gen 6.5 CICS applications fail with a variety of 0Cx abends if defined as threadsafe, and must be defined as quasirent.

In AllFusion Gen 7, the z/OS runtimes were made threadsafe. Define AllFusion Gen applications installed using runtimes from AllFusion Gen 7.*x*, and CA Gen 8.x as threadsafe. They operate without abending.

To benefit from reduced TCB switching, when you use the CA Gen DB2 Dynamic Plan Exit TIRC$EXT, define it as threadsafe. The DB2 Dynamic Plan Exit is used for plan selection when the CA Gen CICS option XCTL for Flows is selected.

CA Gen programs execute the non-threadsafe CICS API commands at the start of each program to receive or retrieve the input data, and at the end to send or omit the response. CA Gen programs defined as threadsafe perform fewer TCB switches than the same programs defined as quasirent. This applies to statically and dynamically linked CA Gen applications. There are a few points to notice:

- The CICS-DB2 Attach Dynamic Plan Exit TIRC$EXT MUST be defined as threadsafe for applications to benefit from the reduction in TCB switching.
- Define the CICS Sockets server programs, TISRVLIS and TIRSLTMX, as quasirent. Since these programs do not access DB2, this has no impact.
- Since the Transaction Dispatcher for CICS, TIRMQTDC, does not access DB2, define it as quasirent.
- If you use EABs, remember to place the SQL calls as close together as possible, or at least without interspersing with CICS API non-threadsafe commands.

Install Gen Runtime Load Library Modules

After uploading the CA Gen software to the z/OS platform, configure the CICS and IMS environments to enable the target CICS or IMS execution environment to access the CA Gen runtime software modules.

Execution Load Library: IMS

The CA Gen runtime modules must be available to the target IMS system as part of the IMS STEPLIB data set concatenation. Add the CA Gen 8.5 runtime DLL library, CEHBPLD1, to the concatenation or copy the relevant modules to a library in the concatenation. The data set that contains the CA Gen runtime modules must be a data set of type LIBRARY, a PDSE.

DLLs required for all types of generated IMS applications are TIRORUNI, TIRMTQBZ, TIRTERAZ, TIRARUNI, TIRARUNH, TIRARUNM, TIRIRTRZ, TIRISYSZ, TIRITIAZ, TIRIURTZ, TIRIUSRZ, TIRDATXZ, TIRDEVIZ, TIRDLCTZ, TIRELOGZ, TIRHELPZ, TIRUPPRZ, TIRYYXZ, and TIRRTLDI.

DLLs required for generated IMS Block Mode Enhanced Map applications are TIRCGSPZ, TIRCHPZ, TIRCHPRZ, TIRCIIMZ, TIRCO2PZ, TIRCO2SZ, TIRCPINZ, TIRCPUIZ, TIRCVINZ, and TIRIEXZ. The TIRIEXSZ DLL is required for generated IMS Block Mode Standard Map applications.

DLLs required for generated IMS server applications are TIRCRUNI, TIRIALLZ, TIRIDTRZ, TIRIROUZ, TIRNCRYZ, TIRDCRYZ, TIRELOGZ, TIRPTOKZ, TIRSECVZ and TIRXINFZ. In addition, applications targeting Websphere MQ require the TIRCMQI and the TIRMQPXZ DLLs.

Execution Load Library: CICS

The CA Gen runtime modules must be available to the target CICS region as part of the CICS DFHRPL data set concatenation. Add the CA Gen 8.5 runtime DLL library, CEHBPLD1 to the data set concatenation or copy the relevant modules to a library in the concatenation. The data set that contains the CA Gen runtime modules must be a data set of type LIBRARY, a PDSE.

DLLs required for all types of generated CICS applications are TIRORUNC, TIRMTQBZ, TIRTERAZ, TIRARUNC, TIRSDTNZ, TIRCDPTZ, TIRCRTRZ, TIRCSYSZ, TIRCTIAZ, TIRCURTZ, TIRCUSRZ, TIRDATXZ, TIRDEVCZ, TIRDLCTZ, TIRHELPZ, TIRQCNTZ, TIRSECRZ, TIRUPPRZ, TIRYYXZ, TIRRTLDC and TIRMMDLL.

DLLs required for generated CICS Block Mode Enhanced Map applications are TIRCGSPZ, TIRCHPZ, TIRCHPRZ, TIRCIIMZ, TIRCO2PZ, TIRCO2SZ, TIRCPINZ, TIRCPUIZ, TIRCVINZ and TIRIEXZ. The TIRIEXSZ DLL is required for generated CICS Block Mode Standard Map applications.

DLL TIRCRUNC is required for generated CICS server applications and CICS block mode applications being traced. DLLs required for generated CICS server applications are TIRCALLZ, TIRCROUZ, TIRNCRYZ, TIRDCRYZ, TIRELOGZ, TIRPTOKZ, TIRCSGNZ, TIRSECVZ, TIRSIPEZ, TIRSRTRZ, TIRSURTZ and TIRXINFZ. In addition applications targeting Websphere MQSeries require TIRMQPXZ and either TIRCMQC or the TIRMQTDC DLL depending on which CICS MQSeries method they use. See Customize for MQSeries in this section.

Each module must have a corresponding CICS program definition that can be added to CICS using the CA Gen supplied DEFCICS job, or by using the CICS Resource Definition Online (RDO) mechanism, for example, the CICS CEDA transaction. If using RDO, see DEFCICS job for information about defining each copied module.

To re-load a new copy of a CA Gen runtime module, log on to CICS and execute the following CICS command:

```
CEMT SET PROGRAM(module name) NEW
```

Define IMS Block Mode Applications

Perform transaction mapping and program definition before deploying each generated application in the IMS target environment.

Define APPLCTN and TRANSACT Macros

Use the IMS APPLCTN and TRANSACT macros to define and associate a program with one or more transactions. For example:

```
APPLCTN PSB=progname,PGMTYPE=(TP,,4)
TRANSACT CODE=trancode,PRTY=(7,9,2),                    X
MSGTYPE=(MULTSEG,NONRESPONSE,4),                        X
PROCLIM=(3,20),SCHD=3,                                  X
MODE=SNGL,                                              X
SEGSIZE=0,SEGNO=320
```

- These macros require continuation characters in column 72.
- For the APPLCTN macro, PGMTYPE can be TP for online or BMP for batch.
- For the TRANSACT macro, MSGTYPE should specify MULTSEG and NONRESPONSE.
- The remaining parameters are site dependent. Do *not* specify SPA size.

Define PSBs

To define the IMS Program Specification Blocks (PSBs) for the IMS application you are deploying, use the following order for the Program Control Blocks (PCBs):

- CA Gen requires I-O PCB first. By default, the I-O PCB is generated automatically from the initial request.
- CA Gen requires the second PCB to be an alternate, modifiable I-O PCB with EXPRESS=NO. Do not code ALTRESP on the second PCB because CA Gen issues CHNG calls to other transactions, not terminals.

- All other PCBs must appear after the alternate, modifiable I-O PCB.

```
PCB TYPE=TP,MODIFY=YES
PCB TYPE=DB...
PCB TYPE=DB...
PSBGEN
PSBNAME=progname,LANG=COBOL,
CMPAT=YES
END
```

Note: Failure to create the PSB according to this convention may result in loops or other unpredictable behavior in message switching.

DB2 assumes plan name and PSB name are the same. If your installation requirements are different, assemble a DSNMAPN macro and link it into the DB2 load library for each trancode.

Activate a PSB for MPP Processing

The next step in setting up the IMS environment for deploying CA Gen applications is to create the IMS ACBGEN procedure macro to activate a PSB for MPP application processing. To do so, use this command:

```
BUILD PSB=progname
```

MFS

When using MFS, ensure the following tasks are complete:

- Follow your installation's procedures to install the MFS control blocks to the IMS environment. A common error is to use extended MFS attributes for terminals or emulators that do not support them. When you specify the target environment, you must specify if extended attributes can be used. For more information about extended attribute support, see the chapter Target Environment and Construction Libraries in the *Host Encyclopedia Construction* User *Guide*.
- The source generated by MFS uses a copy member called TIMFSEQU that resides in the CEHBSAMP library distributed with CA Gen. Change this member and optionally save it to your own library. Change your installation procedure to pickup the changed member.

Note: If the MFS source is compiled outside of CA Gen and the installation procedure has not changed, the following message is displayed:

```
DFS1479I SC=08 MBRNAME REQUESTED NOT PRESENT IN SYSLIB
```

Follow your installation's procedures to install the load module in your IMS load libraries.

Define CICS Block Mode Applications

Before CICS can execute a generated CA Gen application, you must define the transaction name to CICS. Depending on how CICS is setup, you may also need to define its load module name. If the target DBMS is DB2, you may also need to define the DB2 plan name.

Define User Transactions

Transaction and load module names are chosen in load module packaging. The *clear screen* and *dialog flow* transaction names must be the same, or must be mapped and defined.

For each transaction name, define a transaction using CICS Resource Definition Online (RDO). You can use the following information to run DFHCSDUP:

```
DEFINE TRANSACTION(tttt)
DESCRIPTION(CA Gen Trancode)
PROGRAM(pppppppp)
TASKDATALOC(ANY) TASKDATAKEY(USER)
```

Define User Load Modules

CA Gen application load modules can install automatically. For load modules not auto installed, define a program using Resource Definition Online (RDO). Use the following to run DFHCSDUP:

```
DEFINE PROGRAM(pppppppp)
DESCRIPTION(CA Gen Program)
LANGUAGE(LE370)
DATALOCATION(ANY)
EXECKEY(USER)
CONCURRENCY(THREADSAFE)
```

Map Transactions to DB2 Plans

CICS requires that you define CICS DB2 resources using Resource Definition Online (RDO). Specify the required information in the DB2CONN definition, such as PLANExitname, or use the DB2ENTRY and DB2TRAN definitions for individual transactions.

Add a PPT entry for TIRC$EXT; language is ASSEMBLER and ensure the TIRC$EXT program is in a library in the CICS DFHRPL concatenation.

Enable XCTL

The Define Target Environment Parameters screen has an option to Use XCTL for Flows When Possible. If Gen applications use this option and the target DBMS is DB2, use Package Binds and a single CICS plan or you can use the Dynamic Plan Selection exit TIRC$EXT. The recommended choice is Package Binds.

Enable Error Messages

CA Gen dynamically calls the DB2 error message-formatting module DSNTIAR. For the dynamic call to work, add an entry to the Program Definition (PPT) for DSNTIAR (or use the DEFCICS job to do this for you). The program language is ASSEMBLER. For more information about the TIRTIAR user exit, see the *User Exit Reference Guide.*

Establish Client/Server Support

This section explains how to setup CICS and IMS to execute client/server applications. If you are not implementing CA Gen generated client/server applications, skip this section. The basic tasks to establish client/server (C/S) support are:

- Customize code page translation
- Define server transactions and programs
- Customize middleware

Depending on the type of middleware used, select from the following tasks:

- Establish communications support (ECHO for CICS, ECHOI for IMS)
- Customize for LU6.2
- Customize for TCP/IP
- Customize for MQSeries
- Customize for ECI

The following sections describe completing each task.

Customize Code Page Translation

The TIRXLAT function translates view data passed between the client and server from the client's code page to the server's code page, and vice versa. It uses the client's code page value, passed from the client to the server, and the host's code page value to locate a translation table. For additional information about code pages and internationalization considerations, see the *Client Server Encyclopedia User Guide*.

Since AllFusion Gen 7, the dynamic runtime modules TIRCRUNC (CICS) and TIRCRUNI (IMS) replace runtimes TIRENTC (CICS) and TIRENTI (IMS). Applications built with releases earlier than AllFusion Gen 7 must still use TIRENTC and TIRENTI runtimes.

In many parts of the world, a country or company may use several code pages. If your installation uses a code page on the z/OS system that differs from the supplied default, a JCL procedure is provided to build a code page specific version of the dynamic runtime modules TIRCRUNC and TIRCRUNI. The procedure is called MKCRUN for AllFusion Gen 7 and later releases and MKTIRE for earlier releases. The CEHBSAMP data set includes a sample of MKCRUN.

You may benefit from rebuilding the TIRCRUNC and TIRCRUNI runtimes using the MKCRUN procedure even when you use a code page on the z/OS system that matches the supplied default because the runtime contains extra code page pairs you may not need. MKCRUN removes the pairs.

Note: The debug version of either TIRCRUNC or TIRCRUNI should be used and the output sent to support only when Technical Support asks you to do so. Do not use it any other time. For more information about how to enable tracing, see Debugging Applications (see page 199).

Note: If TIRCRUNC and TIRCRUNI do not contain the translation table the client and server are using, the CICS transactions abend with an IEFT abend error and IMS transactions abend with a U3500. Use MKCRUN JCL to build a version of TIRCRUNx modules that support the required code page combination.

For information about the list of supported code tables, see the *User Exit Reference Guide*.

Define Server Transactions and Programs

This section explains how to define IMS and CICS server transactions and programs. These definitions are discussed in the following sections:

- IMS server transactions and programs
- CICS server transactions and programs
- DEFCICS member

Note: All CICS samples in this section use IBM supplied transaction CEDA. These samples are for illustration only and may not be pertinent to your particular environment. Verify applicability before installing definitions.

IMS Server Transaction and Program Definitions

Use the IMS APPLCTN and TRANSACT macros to define and associate a program with one or more transactions.

The following code is an example:

```
APPLCTN GPSB=progname,PGMTYPE=TP,LANG=COBOL
TRANSACT CODE=trancode,                                    X
EDIT=ULC,                                                  X
MSGTYPE=(SNGLSEG,RESPONSE,1)
```

1. For the APPLCTN macro, PGMTYPE is TP for online.
2. Ensure that each IMS C/S trancode has a TRANSACT definition.

3. For the TRANSACT macro, MSGTYPE should specify SNGLSEG and RESPONSE.
4. For the TRANSACT macro, ensure EDIT=ULC to prevent lowercase characters from being translated to uppercase. This also allows the CA Gen cooperative buffer characters to bypass IMS input message translation.

CICS Server Program and Transaction Definitions

The following example shows a transaction definition to use to run DFHCSDUP:

```
DEFINE TRANSACTION(tttt)
DESCRIPTION(CA Gen Trancode)
PROGRAM(pppppppp)
TWASIZE(0)
TASKDATALOC(ANY)
TASKDATAKEY(USER)
```

CA Gen 8.x servers no longer require a TWASIZE of 8 bytes.

The following example shows a program definition to run DFHCSDUP:

```
DEFINE PROGRAM(pppppppp)
DESCRIPTION(CA Gen Program)
LANGUAGE(Le370)
DATALOCATION(ANY)
EXECKEY(USER)
CONCURRENCY(THREADSAFE)
```

DEFCICS Batch Job

Use the DEFCICS batch job to understand and define CICS transactions and programs. The steps to using DEFCICS are:

Follow these steps:

1. Edit DEFCICS to change the data set names on the lines marked for modification (***MOD***).
2. Edit the group name, if appropriate for your installation. The default group name is GEN.
3. Examine all the settings and definitions in DEFCICS for conflicts and changes from previous releases and make appropriate changes.
4. Uncomment the ADD GROUP segment, if appropriate.
5. Change the LISTNAME on the ADD GROUP to your startup list.

6. Decide whether to keep or remove the DSNTIAR or DSNTIAC definition, depending on the exits you define and use.
7. Submit DEFCICS.

Note: If you change the GROUP name, change it for each occurrence in the job. If the GROUP name exists and contains entries, avoid potential conflicts by deleting the entries, or moving them to another group.

Customize Middleware

This section explains how to customize the middleware and establish communications support.

Establish Communications Support

This section shows you how to install ECHO support. ECHO is a transaction used to verify the connection between the workstation and the host. An ECHO request can only be executed from the CA Gen Client Manager or Communications Bridge.

IMS

The IMS ECHO is in CA Gen CEHBPLD1 library member ECHOI. The program name is ECHO.

Follow these steps:

1. Move ECHOI from the CA Gen runtime DLLs library, CEHBPLD1, to a data set in the IMS Steplib concatenation. Ensure this data set is of type LIBRARY (PDSE). Rename ECHOI to ECHO.
2. Add an APPLCTN and TRANSACT macro definition for ECHO to match the server definitions.
3. Ensure that the PSB for ECHO has an IO-PCB and an ALT-IO-PCB.

CICS

Ensure the latest version of ECHO in the CA Gen CEHBPLD1 Library is used. This version can also be used by requests from the CA Gen Communications Bridge using ECI and the CA Gen 8.5 Client Manager or Communications Bridge using the CICS Sockets Server implementation.

Follow these steps:

1. Move ECHO from the runtime DLLs library, CEHBPLD1, to a data set in the CICS DFHRPL concatenation. Ensure this data set is of type LIBRARY (PDSE).
2. Add a transaction and program definition for ECHO to match the server definitions.

Customize for LU6.2

The CA Gen Client Manager or the CA Gen Communications Bridge is required when CA Gen applications use LU6.2 communications. Information regarding installation and configuration of the CA Gen Client Manager and Communications Bridge is found in the *Distributed* Processing - *Client Manager User Guide* and *Distributed Processing - Communications Bridge User Guide*. The following details the configuration to define the necessary resources for LU6.2 communications in the z/OS environment:

- VTAM Log Mode Table
- LU6.2 Communications and Sessions for CICS
- APPC z/OS LU Definitions for IMS

VTAM LOG MODE TABLE ENTRY

This is a portion of a sample VTAM log mode table, SAMP62, containing a mode entry for LU62APPC. The addition of this entry enables support of multiple parallel LU6.2 sessions for the Client Manager and the Communications Bridge. Please note this macro requires continuation characters in column 72.

```
SAMP62  MODETAB
 MODEENT FMPROF=X'13',                  X
 TSPROF=X'07',                          X
 COS=#CONNECT,                          X
 PRIPROT=X'B0',                         X
 PSNDPAC=X'08',                         X
 SRVPAC=X'08',                          X
 SSNDPAC=X'08',                         X
 SECPROT=X'B0',                         X
 TYPE=X'00',                            X
 COMPROT=X'50B5',                       X
 RUSIZES=X'8888',                       X
 PSERVIC=X'060200000000000000002F00’
A  MODEENT  LOGMODE= A,                 X
 .
 .
LU62APPC MODEENT LOGMODE=LU62APPC,      X
FMPROF=X'13',                           X
TSPROF=X'07',                           X
COS=#INTER,                             X
PRIPROT=X'B0',                          X
PSNDPAC=X'08',                          X
SRCVPAC=X'08',                          X
SSNDPAC=X'08',                          X
SECPROT=X'B0',                          X
TYPE=X'00',                             X
COMPROT=X'50B5',                        X
RUSIZES=X'8888',                        X
PSERVIC=X'060200000000000000002F00'
Z MODEENT LOGMODE= Z,                   X
.
.
MODEEND.
```

LU6.2 Connection and Session Definitions for CICS

LU6.2 communications include a terminal definition that includes connection and session definitions, LUTYPE 6.2 /APPC links and parallel sessions. For more information, see the *CICS Resource Definition Guide* in the IBM documentation.

In the following DFHCSDUP connection and session sample definitions, add the relevant GROUP name and description.

Connection Definition

```
DEFINE CONNECTION(LU62CONN)
GROUP(?????)
DESCRIPTION(?????)
NETNAME(LUNETNAME)
PROTOCOL(APPC)
AUTOCONNECT(YES)
ATTACHSEC(LOCAL/VERIFY/IDENTIFY)*
```

* - As required.

Session Definition

```
DEFINE SESSIONS(LU62SESS)
GROUP(?????)
DESCRIPTION(?????)
CONNECTION(LU62CONN)
MODENAME(LU62APPC)
PROTOCOL(APPC)
```

APPC z/OS LU Definition for IMS

This is a sample APPC z/OS local LU definition using the utility ATBSDFMU:

```
LUADD ACBNAME(ADVPCI51)          /* Add local LU ADVPCI51 */
SCHED(IMS5)                       /* Specify that the APPC/IMS transaction
                                 scheduler is associated with this LU name */
BASE                             /* Designate this LU as the base LU */
TPDATA(SYS6.APPC.TP)             /* Specify that VSAM data set is the permanent
                                 repository for TP profiles for this LU */
TPLEVEL(SYSTEM)                  /* Specify the search order for TP profiles as:
                                 TP profiles associated with a specific user
                                 TP profiles associated with a group of users
                                 TP profiles associated with all users of the
                                 LU name */
```

Customize for TCP/IP

CA Gen TCP/IP server applications can be deployed as z/OS CICS or IMS transactions.

CICS

CA Gen 8.5 offers two TCP/IP Direct Connect for CICS products, the CICS Sockets Server implementation and the CICS Multi Sockets Server implementation. The Direct Connect for CICS implementation, TILSTNR and TICONMGR, offered in releases earlier than CA Gen 8 has been stabilized and is not included with CA Gen 8.5.

Both the CICS Sockets Server implementation and the CICS Multi Sockets Server implementation pass the socket to the CA Gen server application. The difference in the two implementations is how the processing is done when processing requests. The CICS Socket Server implementation process a single request all the way to passing the socket to the CA Gen server before accepting next request. The CICS Multi Socket Server processes multiple requests simultaneously. The CA Gen server closes the socket when it terminates. The CA Gen Client Manager and the CA Gen Communications Bridge recognize that the socket connection terminated after processing each flow.

Both the implementations can use IPv4 or IPv6 socket protocol. For specific information about installing the CICS Sockets Server feature, see either the section CICS Sockets Server or CICS Multi Sockets Server in this section.

You must configure the IBM CICS Sockets Interface to use it with CA Gen generated CICS Server applications. For more information about configuring IBM's CICS Sockets Interface, see Setting up and Configuring CICS TCP/IP in IBM's latest Communications Server IP CICS Sockets Guide.

The CICS Sockets Interface must start before the listener can initialize, and all listeners must terminate before stopping the interface. Use the IBM-provided EZACIC20 program to start or stop the CICS Sockets Interface and to initialize or terminate listener programs.

To automatically start or stop the CICS Sockets Interface at CICS startup or shut down, add the EZACIC20 program to the CICS Program Load Table (PLT). When the listener record in the configuration file states IMMED=YES, the listener automatically initiates when the interface starts and terminates before the interface terminates at CICS shut down.

Both implementations can exploit transactional security. Transactional security refers to starting the server transaction with the client application's userid, not the password. The server starts in CICS as a non-terminal task and can only use CICS transactional security with surrogate security checking.

The TCP/IP Direct Connect option of CA Gen for CICS is included in the Pax file as option CICS TCP/IP DC. Both implementations use the same user exits which are also included in the CICS TCP/IP DC option. This option is installed using CA CSM or SAMPJCL into the CEG8PLD1 dataset.

CICS Sockets Servers

TISRVLIS is the listener included for the CICS Sockets Server implementation.

You must define this listener as a Standard Listener.

Using Server Listener of CA Gen requires the following record in the EZACONFG file:

```
TYPE=LISTENER,
TRANID=TISL*,
TRANTRN=NO,
TRANUSR=NO,
```

Leave the SECEXIT and WLM groups parameters blank.

Set the ACCTIME, GIVTIME and REATIME parameters to a value greater than zero.

CICS definitions are required for:

- The Listener transaction TISL*
- The programs TISRVLIS, TIRSLEXT and TIRSLTMX

Use the following example to run DFHCSDUP:

```
DEFINE TRANSACTION(TISL*)
DESCRIPTION(Gen CICS Sockets Server Listener Transaction)
PROGRAM(TISRVLIS)
TASKDATALOC(ANY)
TASKDATAKEY(CICS)

DEFINE PROGRAM(TISRVLIS)
DESCRIPTION(Gen CICS Sockets Server Listener Program)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(CICS)

DEFINE PROGRAM(TIRSLEXT)
DESCRIPTION(Gen CICS Sockets Server Exit Program)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(CICS)

DEFINE PROGRAM(TIRSLTMX)
DESCRIPTION(Gen CICS Sockets Server Timeout Exit Program)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(CICS)
```

* This transaction identifier can be something other than TISL. The EZACONFG file and the CICS definition must use the same name. Add a GROUP of your choice.

Customizable Sockets Server Listener TIMEOUT values are used in the process of accepting new connections, reading data from the socket, and waiting for a socket to be taken by a server. The server application uses customizable TIMEOUT values to read data from the socket. Each TIMEOUT value includes two timeout fields, to set seconds and microseconds that the SELECT/SELECTEX CICS Socket API calls use. In the TIRSLTMX exit, you can modify the TIMEOUT values that TISRVLIS listener ACCEPT, READ and ERROR processes use. The TIMEOUT values that the TISRVLIS listener TAKESOCKET processes use are in the TIRSLEXT exit.

Note: For more information about each exit, see the *User Exit Reference Guide*.

The Sockets Server listener program, TISRVLIS, produces error and informational messages. Error messages are always written to the CICS Joblog, using the CSSL TDQ and the information messages are written to a CICS TDQ with the same name as the TISRVLIS' transaction identifier. Informational messages are suppressed when the user defined TDQ does not exist.

When using Sockets Server implementation, the client generates TIRM615E and TIRM709E messages for the following conditions:

- TIRM615E when TISRVLIS cannot receive data from sockets after multiple retries. The CICS Joblog includes a message indicating the problem.
- TIRM709E when TIRSLEXT exit is customized to verify encryption use, but the client request fails to set the encryption flag.

The Sockets Server implementation allows the server to be routed to a CICS region different from the region where the TISRVLIS listener executes. To invoke routing, use the SYSID where the server is to execute or use distributed routing. Use the CICS variable in the TIRSLEXT user exit to set the SYSID. Use the DSRTPGM program or the CICS transaction definition to implement distributed routing.

Note: For more information about the TIRSLEXT user exit, see *User Exit Reference Guide*.

CICS Multi Sockets Server

TISRVMSL is the listener included for the CICS Multi Sockets Server implementation.

You must define this listener as a Standard Listener.

Using Server Listener of CA Gen requires the following record in the EZACONFG file:

```
TYPE=LISTENER,
TRANID=TIML*,
TRANTRN=NO,
TRANUSR=NO,
```

Leave the SECEXIT and WLM groups parameters blank.

Set the ACCTIME, GIVTIME and REATIME parameters to a value greater than zero.

CICS definitions are required for:

- The Listener transaction TIML*
- The programs TISRVMSL, TIRSLEXT and TIRSLTMX

Use the following example to run DFHCSDUP:

```
DEFINE TRANSACTION(TIML*)
DESCRIPTION(Gen CICS Multi Sockets Server Listener Transaction)
PROGRAM(TISRVMSL)
TASKDATALOC(ANY)
TASKDATAKEY(CICS)

DEFINE PROGRAM(TISRVMSL)
DESCRIPTION(Gen CICS Multi Sockets Server Listener Program)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(CICS)

DEFINE PROGRAM(TIRSLEXT)
DESCRIPTION(Gen CICS Sockets Server Exit Program)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(CICS)

DEFINE PROGRAM(TIRSLTMX)
DESCRIPTION(Gen CICS Sockets Server Timeout Exit Program)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(CICS)
```

* This transaction identifier can be something other than TIML. The EZACONFG file and the CICS definition must use the same name. Add a GROUP of your choice.

Customizable Multi Sockets Server Listener TIMEOUT values are used in the process of accepting new connections, reading data from the socket, and waiting for a socket to be taken by a server. The server application uses customizable TIMEOUT values to read data from the socket. Each TIMEOUT value includes two timeout fields, to set seconds and microseconds that the SELECT/SELECTEX CICS Socket API calls use. In the TIRSLTMX exit, you can modify the TIMEOUT values that TISRVMSL listener ACCEPT, READ and ERROR processes use. The TIMEOUT values that the TISRVMSL listener TAKESOCKET processes use are in the TIRSLEXT exit.

Note: For more information about each exit, see the User Exit Reference Guide.

The Multi Sockets Server listener program, TISRVMSL, produces error and informational messages. Error messages are always written to the CICS Joblog, using the CSSL TDQ and the information messages are written to a CICS TDQ with the same name as the TISRVMSL' transaction identifier. Informational messages are suppressed when the user defined TDQ does not exist.

When using Multi Sockets Server implementation, the client generates TIRM615E and TIRM709E messages for the following conditions:

- TIRM615E when TISRVMSL cannot receive data from sockets after multiple retries. The CICS Joblog includes a message indicating the problem.
- TIRM709E when TIRSLEXT exit is customized to verify encryption use, but the client request fails to set the encryption flag.

The Multi Sockets Server implementation allows the server to be routed to a CICS region different from the region where the TISRVMSL listener executes. To invoke routing, use the SYSID where the server is to execute or use distributed routing. Use the CICS variable in the TIRSLEXT user exit to set the SYSID. Use the DSRTPGM program or the CICS transaction definition to implement distributed routing.

Note: For more information about the TIRSLEXT user exit, see User Exit Reference Guide.

IMS

The TCP/IP Direct Connect option of CA Gen for IMS runtime is included in the Pax file as option IMS TCP/IP DC.

Each User Message Exit consists of Assembler Language modules that are installed, using MSM or SAMPJCL, into the CEG9PLD1 dataset.

Gen provides a different User Message Exit for each version of IMS Connect supported, namely v10, v11, v12 and v13. These user message exits are delivered with name TIR##TCP, where ## is the IMS Connect version number.

Each TIR##TCP exit can be customized using one of three exits. The user message exits are supplied as object code only while the customizable exits are supplied as source code and object load modules with default behavior. Refer to the comments in the exits themselves for information about the default behavior and how to modify them. If the exits are modified, the relevant user message exit must be relinked to include the modifications. Once relinked the user message exit must be renamed from TIR##TCP to CAGRITCP as this is the name specified by Gen clients when connecting to IMS Connect.

Making a change to the three exits requires:

- Re-assembling and re-linking the TIR##XXX exit(s), where ## is the required version and XXX is the specific exit name
- Relinking the TIR##TCP user message exit
- Renaming the TIR##TCP exit to CAGRITCP
- Copying relinked CAGRITCP user message exit to the SDFSRESL library
- Stopping and restarting IMS Connect

For more information, see the instructions in the exits source code.

The IMS Connect user message exit can use IPv4 or IPv6 sockets protocol.

To use the IMS Connect user message exit TIR##TCP/CAGRITCP, configure IMS Connect to include the exit name. For information about setting up and customizing IMS Connect, see the IMS Connect User's Guide in the IBM documentation set. Add the user message exit name CAGRITCP to the TCPIP statement's IMS Connect EXIT parameter.

IPv4 Example

```
HWS (ID=……)
TCPIP (HOSTENAME=<IPV4 TCP/IP Stack name>
   EXIT=(HWSSMPL0,CAGRITCP))
DATASTORE  (ID=....,GROUP=IMSXCF,MEMBER=....,
TMEMBER=IMSA,DRU=...)
```

IPv6 configuration Example

```
HWS (ID=……)
TCPIP (HOSTENAME=<IPV6 TCP/IP Stack name>,…
  EXIT=(HWSSMPL0,CAGRITCP),IPV6=Y)
DATASTORE  (ID=....,GROUP=IMSXCF,MEMBER=....,
TMEMBER=IMSA,DRU=...)
```

Configure the IMS control region to use OTMA.

Note: For more information, see the IMS documentation, especially the *Install Volume 2: System Definition and Tailoring.*

For example:

```
…..
OTMA=Y,
GRNAME=IMSXCF,
OTMAMN=IMSA,
….
```

Where:

- GRNAME-Matches the name specified in the GROUP parameter of the IMS Connect DATASTORE statement.
- OTMANM-Matches the name specified in the TMEMBER parameter of the IMS Connect DATASTORE statement.

Customize for MQSeries

CA Gen MQSeries server applications can be deployed as z/OS CICS or IMS transactions.

CA Gen MQSeries runtimes are included in the Pax file as options CICS – MQ Runtime and IMS – MQ Runtime. This has to be installed using CA CSM Custom Install or SAMPJCL into the CEHBPLD1 dataset.

Note: For more information about using MQSeries with CA Gen, see the *Distributed Processing - WebSphere MQ User Guide.*

CICS

CA Gen supports two methods to invoke a CICS DPS (Distributed Processing Server) application through MQSeries:

- Using a trigger monitor to dispatch each server manager directly.
- Using a trigger monitor to invoke the Transaction Dispatcher for CICS (TDC)

Note: For more information about dispatching the server directly, refer to the *Distributed Processing- WebSphere MQ User Guide.*

MQSeries Transaction Dispatcher

The CA Gen Transaction Dispatcher for CICS (TDC) is an optional enhancement designed to overcome some of the queuing and triggering limitations experienced with the previous implementations. It also provides additional operational and administrative options within MQSeries (MQS) and CICS. With the TDC enabled:

- Trigger events result in fully processing, or emptying, the queue.
- Queues may contain mixed CA Gen messages and are not limited to a single server manager.
- A user exit can control multi-programming and dispatching the TDC.
- Transaction level security may be implemented, associating client userids with individual server manager transactions in CICS.

The TDC consists of a CICS transaction TITD, program TIRMQTDC, and an optional user exit/control program, TIRMQTDZ. It runs as a front-end for MQ-enabled server managers within the CICS region. Select the TDC by designating the TITD transaction, not the Server Manager transaction, as the process associated with an MQSeries queue definition.

Server Managers can continue to use the current methodology, that is, Server Manager direct to MQS, and require no changes to take advantage of the TDC.

MQSeries TDC can take advantage of transactional security. Transactional security refers to starting the server transaction with the client application's userid, not the password. The server starts in CICS as a non-terminal task and thus can only use CICS transactional security with surrogate security checking.

Installation

The components of TDC are installed as part of the CICS – MQ Runtime feature which is installed using CA CSM Custom Install option or SAMPJCL. To access them, they must be defined to CICS.

The TDC uses either CICS Temporary Storage or VSAM files (standard KSDS or SDT) as storage to hold MQ start data. VSAM files must be created and defined to CICS to use the VSAM option.

Basic CICS Install

The modules TIRMQTDC and, if used, TIRMQTDZ must be in the CICS DFHRPL concatenation. If the CA Gen Load library is not allocated to DFHRPL, copy TIRMQTDC from the CA Gen CEHBPLD1 library to a data set in the DFHRPL concatenation. Ensure this data set is a PDSE.

Use the following as an example to run DFHCSDUP:

```
DEFINE TRANSACTION(TITD)
DESCRIPTION(CA Gen Transaction dispatcher)
PROGRAM(TIRMQTDC)
TASKDATALOC(ANY)
TASKDATAKEY(USER)


DEFINE PROGRAM(TIRMQTDC)
DESCRIPTION(CA Gen Transaction dispatcher)
LANGUAGE(ASSEMBLER)
DATALOCATION(ANY)
EXECKEY(USER)


DEFINE PROGRAM(TIRMQTDZ)
DESCRIPTION(CA Gen Transaction dispatcher control exit)
LANGUAGE(LE370)
DATALOCATION(ANY)
EXECKEY(USER)
```

Add a Group of your choice.

CICS VSAM SDT Install

Use the following to create the VSAM files when using VSAM SDT as the temporary location for start data. Change the data set name to the DSN you are using. You can change the DDNAME if you make the corresponding update in TIRMQTDZ. Adjust MAXNUMRECS as your installation requires. Do not use a CICS maintained table. Use only a USER maintained table. Use values specific to your installation for YOUR.TEMP.DATASET in the DSNAME and CLUSTER parameters.

Run DFHCSDUP using the following deck:

```
DEFINE FILE(TITDTEMP)

DESCRIPTION(CA Gen Transaction dispatcher temp SDT)
DSNAME(YOUR.TEMP.DATASET)
STRINGS(5)
ADD(YES) DELETE(YES) READ(YES) BROWSE(YES)
RECOVERY(NONE)
RECORDSIZE(32760) RECORDFORMAT(V) KEYLEN(8)
TABLE(USER) MAXNUMRECS(4096)
GROUP(TDCGROUP)
```

Add a Group of your choice.

Run IDCAMS as follows:

```
//IDCAMS EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//DD1 DD *
00000000
/*
//SYSIN DD *
DEFINE CLUSTER(NAME(YOUR.TEMP.DATASET) -
                VOLUMES(VVVVVV) -
                      CYLINDERS(5 5) -
                       RECORDSIZE(865 32760) -
                KEYS(8 0) -
                    )
REPRO INFILE(DD1) OUTDATASET(YOUR.TEMP.DATASET)
```

CICS VSAM KSDS Install

To use a standard VSAM KSDS without using the datatable feature modify the SDT IDCAMS JCL to adjust the cluster space accordingly, and delete and redefine the cluster each time CICS is restarted. We recommend that you use SDT to enhance performance.

IMS

CA Gen supports MQSeries DPS deployment in the z/OS IMS applications environment.

Note: For more information, see the *Distributed Processing- WebSphere MQ User Guide.*

The IMS DPS MQSeries environment is implemented using the IMS trigger monitor from IBM. The IMS trigger monitor is an IMS transaction called CSQQTRMN. This method dispatches each server manager directly.

Customize for ECI

A CA Gen CICS server is accessible by CA Gen clients using the CICS Client External Call Interface (ECI). CA Gen C and Java clients and those using Communications Bridge can use ECI communications. Depending on where and how the CA Gen clients are deployed, each client type may require CICS Universal Clients or CICS Transaction Gateway.

Note: For more information about CICS Universal Clients and CICS Transaction Gateway, see the *CICS Transaction Gateway* documentation.

A CA Gen server invoked through ECI is started by a Distributed Program Link (DPL) request. The DPL request uses the CICS supplied Mirror Program (DFHMIRS) to start the requested Gen server. By default, the transaction ID CPMI invokes the CICS Mirror Program. In some cases, it may be desirable to use a transaction ID other than CPMI for ECI requests.

For Java clients, the trancode associated with the target server application in Construction Packaging is the transaction ID used when the commcfg.properties file parameter ECIUseSyncTpn is set to Yes.

For clients using the Communications Bridge, the data pointed to by parameter pECITpn of the Communications Bridge exit ioeciclx.c is used.

For GUI and C proxy clients, the data pointed to by parameter pTpn of the Windows exit cieciclx.c is used.

When using a transaction ID other than CPMI, define the relevant transaction in CICS to point to the DFHMIRS program and use profile DFHCICSA. CA Gen applications using ECI and non-ECI cooperative flows cannot share this transaction definition.

The interface assumes that data translation (ASCII to EBCDIC) and code page conversion is required and automatically invokes the conversation table DFHCNV. CA Gen does translation and conversion, so this step is not necessary. However, a conversion table is still required. Code a DFHCNV table with TYPE=INITIAL and TYPE=FINAL macros only. Assemble, link, and make the table available to CICS.

Sample DFHCNV that CA Gen requires:

```
DFHCNV      TYPE=INITIAL
DFHCNV      TYPE=FINAL
END
```

To use this table for another application, ensure that no translation or conversion is done for CA Gen server applications. For more information on the DFHCNV table, see the *CICS Family Communicating from CICS on S/390.*

Debugging Applications

The following section explains how to debug CA Gen applications.

Diagram Trace Facility

CA Gen includes a Diagram Trace Facility (DTF) to trace block mode and server CICS applications, at the diagram source level. To use this facility, add a transaction and program definition for DTF and another for TFDI, or use the DEFCICS job to do this for you, as follows:

Transaction Definitions

```
DEFINE TRANSACTION(DTF)
DESCRIPTION(?????)
PROGRAM(DTF)
TWASIZE(0)
TASKDATALOC(any)
TASKDATAKEY(user)


DEFINE TRANSACTION(TFDI)
DESCRIPTION(?????)
PROGRAM(TFDI)
TWASIZE(1200)
TASKDATALOC(any)
TASKDATAKEY(user)
```

Program Definitions

```
DEFINE PROGRAM(DTF)
DESCRIPTION(?????)
LANGUAGE(Le370)
DATALOC(any)
EXECKEY(user)


DEFINE PROGRAM(TFDI)
DESCRIPTION(?????)
LANGUAGE(Le370)
DATALOC(any)
EXECKEY(user)
```

Note: Transaction DTF no longer requires a TWASIZE of 8 bytes. Transaction TFDI still requires a TWASIZE of 1200 bytes.

TIRCRUNC and TIRCRUNI Debug Versions

Trace output from the client/server dynamic runtime can be helpful to support when working on a problem with the translation or formatting of the common format buffer. CA Gen 8.5 provides two versions of the Dynamic Runtime, one without debug and a debug version. The regular versions (without debug) are the TIRCRUNC and TIRCRUNI while the debug versions are called TI2CRUNC and TI2CRUNI and can be found in the CEBHPLD1 dataset.

Note: Use the debug version only when instructed by technical support.

TIRCRUNC

Since there can only be one copy of TIRCRUNC per CICS region, all CA Gen client/server applications in the region generate trace output when using the debug version. Only enable trace for a limited time to debug a specific problem.

Enable Trace with Debug TIRCRUNC

Follow these steps:

1. (Optional) If the regular TIRCRUNC is modified for code page translations, make the same modifications to TI2CRUNC. Use MKCRUN JCL provided in CEHBSAMP dataset.
2. Save a copy of the non-debug version of TIRCRUNC. Rename TIRCRUNC to something else.
3. Rename TI2CRUNC to TIRCRUNC and make it available to a library in the CICS DFHRPL concatenation.

   Log on to CICS and use CEMT to load the new copy of TIRCRUNC as follows:

   ```
   CEMT SET PROGRAM(TIRCRUNC) NEWCOPY
   ```
4. Run a client/server transaction. Trace output is written to a temporary storage queue named TIRTxxxx, where xxxx is the terminal ID or tranid for non-terminal transactions.

Disable Trace with Debug TIRCRUNC

Follow these steps:

1. (Optional) Back up or rename the debug version of TIRCRUNC.
2. Reinstate the non-debug version of TIRCRUNC by replacing the debug version with the original, non-debug copy.
3. Log on to CICS and run CEMT to load a new copy of TIRCRUNC as follows:

   ```
   CEMT SET PROGRAM(TIRCRUNC) NEWCOPY.
   ```

TIRCRUNI

Since there can only be one copy of TIRCRUNI per IMS region, all CA Gen client/server applications in the region generate trace output. Only enable trace for a limited time to debug a specific problem.

Enable Trace with Debug TIRCRUNI

Follow these steps:

1. The debug version of TIRCRUNI produces trace information directed to a selected LTERM. Use user exit TIRIDTRX to specify the following information:
   - TIRTMXSZ-hex size of the trace buffer
   - TIRTLTRM-eight-character Lterm specifying the location of trace data
   - TIRTMODN-MFS modname to format the screen before sending data, DFS.EDT is the default and sends data in bypass-edit mode.
2. Customize the TIRIDTRX exit and include it in the server application that needs tracing. The tracing operation only executes if a value is specified for TIRTMXSZ and TIRTLTRM.
3. (Optional) If the regular TIRCRUNI is modified for code page translations, make the same modifications to TI2CRUNI. Use MKCRUN JCL provided in CEHBSAMP.
4. Save a copy of the non-debug version of TIRCRUNI. Rename TIRCRUNI to something else.
5. Rename TI2CRUNI to TIRCRUNI and make it available to a library in the IMS STEPLIB concatenation.
6. Run a client/server transaction. The runtime sends TIRTMXSZ bytes to the TIRTLTRM with mfsmod TIRTMODN.

Disable Trace with Debug TIRCRUNI

Follow these steps:

1. (Optional) Back up or rename the debug version of TIRCRUNI.
2. Reinstate the non-debug version of TIRCRUNI by replacing the debug version with the original, non-debug copy.

Preparing to Start CA Gen

Preparing to Start Host Encyclopedia

This section describes the tasks needed before CA Gen Host Encyclopedia can be started and used.

Populate a Host Encyclopedia

After creating or upgrading a Host Encyclopedia, you may want to populate the encyclopedia with existing models and data from another encyclopedia. You can do so by copying data tables, copying complete models, or copying data tables and models. This section describes the tasks involved in these processes.

Copy Data to a Host Encyclopedia

When you copy data tables, the copy includes subset, version control, and security data. The only tables not included in copying existing data to a new encyclopedia are the public interface tables and the schema tables. You must run the Public Interface Export function to re-populate the Public Interface tables. This section explains these tasks required to copy existing data tables to a new CA Gen Host Encyclopedia:

- Build JCL and SQL
- Run UNLOAD and LOAD
- Enable User Access

Prerequisites

Before upgrading an encyclopedia, you must complete the work in previous sections. Before starting, log on to the Host Encyclopedia that is the target for the data tables you are copying and display the Encyclopedia Maintenance Menu.

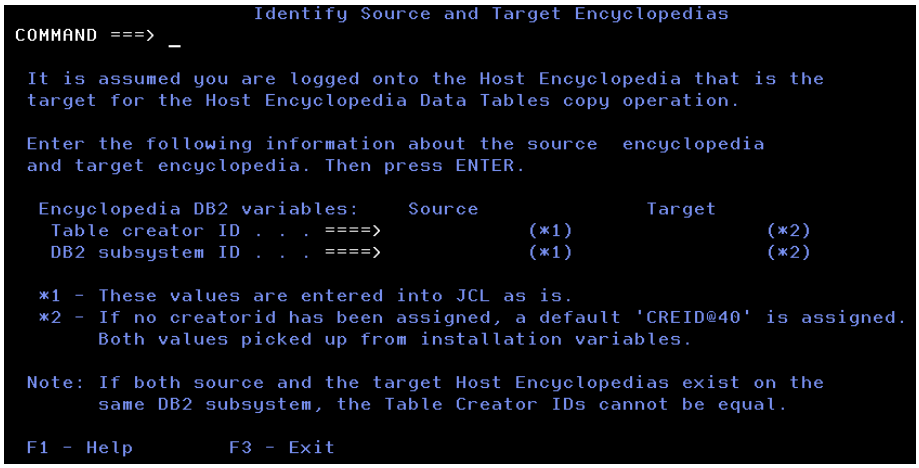
Build JCL and SQL

The following procedure uses CEINSTAL to build the JCL and SQL to unload and load the Encyclopedia Data tables.

Follow these steps:

1. Select option 5 on the Host Encyclopedia Maintenance Menu.
2. Press Enter.

   The Identify Source and Target Encyclopedias screen displays.



3. Enter values for the Source fields and verify the values in the Target fields.

   The values for the Target fields derive from values entered in the Set DB2 Variables screen.

   Note: Do not change the values in the Target fields. If these values are incorrect, you are logged on to the wrong Encyclopedia, or the information used to build the Encyclopedia was entered incorrectly in the Set DB2 Variables screen.

4. Press Enter to start building the JCL.
5. When processing completes, press Enter.

   The Host Encyclopedia Maintenance Menu displays.

Unload and Load

After building JCL and SQL, there is load and unload JCL and SQL in the CA Gen JCL and SQL libraries. To successfully complete the unload and load procedure, you must perform the following steps:

- Check in all models before starting this procedure.
- Execute the steps in the order listed.
- Execute each step on the CPU that contains the Host Encyclopedia.

Perform the following jobs to complete the unloading and loading of the data tables. Use this table as a checklist as you run the jobs.

JCL Name	Description
HE1UNLD	Unloads a copy of the existing encyclopedia data tables.
HE2LOAD	Loads the existing encyclopedia data tables into the new Host Encyclopedia.
CEUREOR	Executes the DB2 REORG utility. If this job fails, there is no restore; you must reload all data tables by re-running HE2LOAD.
CEUCOPY	Executes the DB2 COPY utility and creates a full image copy of all tablespaces. This is required to activate new tables because HE2LOAD runs with LOG NO.
CEJOB06	Executes the DB2 RUNSTATS utility for the encyclopedia tables.
CEJOB07A	Executes a DB2 BIND of the CA Gen packages to take advantage of the RUNSTATS statistics from CEJOB06.
CEJOB09	Updates the DMAX table for the new schema. This job updates the DMAX table MAX_RELEASE with the new encyclopedia name, the name entered for Encyclopedia Name in the Set Encyclopedia Variables screen. To avoid cross-encyclopedia contention, ensure this name is unique across all encyclopedias.

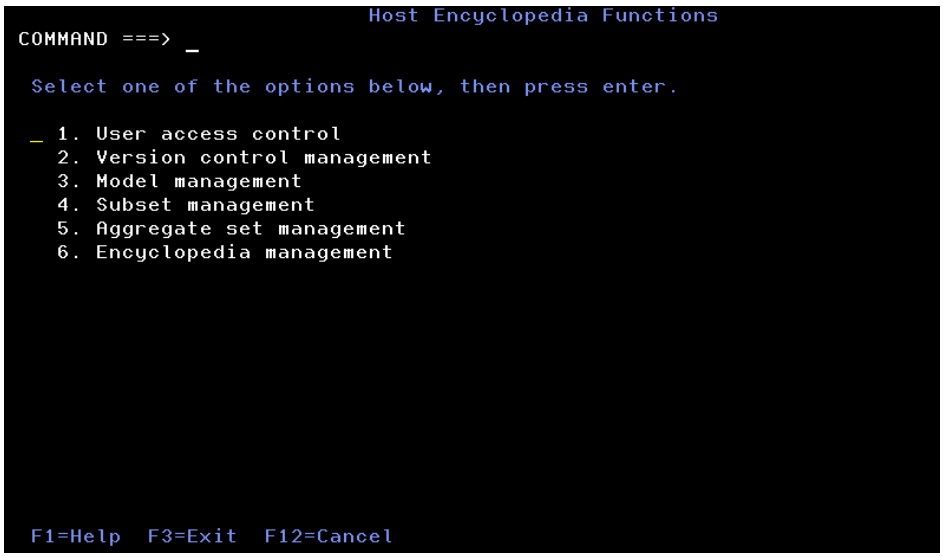
JCL Name	Description
CEJOB10	Loads the required functions model to the new encyclopedia. Model name: IEF_SUPPLIED_FUNCTIONS in the data set 'CAI.CAGEN.CEHBDATV(FUNCMODL).' CEJOB10 may return a condition code of 0 even if it fails. For more information, look for an error message in userid.IEF.LOGFILE. To verify the functions model was added to the list of models, follow these steps: Display the CA Gen Main Menu On the command line, type: 1.3.5 Press Enter. On the Model Statistics screen, move the cursor to the Model Name field and press F4 to display the list of models. Verify the functions model appears on the list. If CEJOB10 abends with U3001 ONCODE 84 when SYSPRINT is Allocated, the userid.IEF.SYSPRINT data set is unavailable. To correct the error, follow these steps: Navigate out of CA Gen concatenation. Issue this command: FREE DA (userid.IEF.SYSPRINT) Delete added models. Resubmit CEJOB10.
CEJOB11	Processes the function model. This job inserts the model information into the schema SMDL table and deletes the model information from the data DMDL table. The expected return code is 20. To verify that the functions model is removed from the list of models, follow these steps: Display the CA Gen Main Menu. On the command line, type:1.3.5 Press Enter. Verify IEF_SUPPLIED_FUNCTIONS is not on the list.

JCL Name	Description
CEJOB12	Loads the optional Sample model to the new encyclopedia. Model name: GEN SAMPLE MODEL 8 5 in the data set: 'CAI.CAGEN.CEHBDATV(SAMPMODL)' CEJOB12 may return a condition code of 0 even if it fails. For more information, look for an error message in userid.IEF.LOGFILE. To verify the model was added to the list of models, follow these steps: Display the CA Gen Main Menu On the command line, type: 1.3.5 Press Enter. On the Model Statistics screen, move the cursor to the Model Name field and press F4 to display the list of models. Verify the sample model appears on the list. If CEJOB12 abends with U3001 ONCODE 84 when SYSPRINT is Allocated, the userid.IEF.SYSPRINT data set is unavailable. To correct the error, follow these steps: Navigate out of CA Gen concatenation Issue this command: FREE DA (userid.IEF.SYSPRINT) Delete added models Resubmit CEJOB12.

JCL Name	Description
CEJOB13	Loads the optional help model to the new encyclopedia. Model name: GEN SAMPLE HELP MODEL 8 5 in the data set: 'CAI.CAGEN.CEHBDATV (HELPMODL)' CEJOB13 may return a condition code of 0 even if it fails. For more information, look for an error message in userid.IEF.LOGFILE. To verify the model has been added to the list of models, follow these steps: Display the CA Gen Main Menu. On the command line, type: 1.3.5 Press Enter. On the Model Statistics screen, move the cursor to the Model Name field and press F4 to display the list of models. Verify the help model appears on the list. If CEJOB13 abends with U3001 ONCODE 84 when SYSPRINT is Allocated, the userid.IEF.SYSPRINT data set is unavailable. To correct the error, follow these steps: Navigate out of CA Gen concatenation. Issue the command: FREE DA (userid.IEF.SYSPRINT) Delete added models Resubmit CEJOB13.

Enable User Access

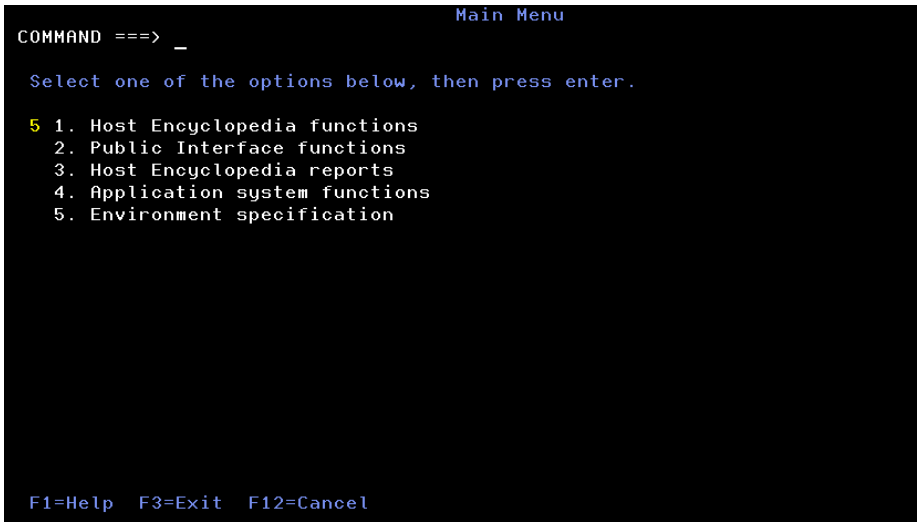
To enable user access, add each user to the encyclopedia by selecting the user access control function from the Host Encyclopedia Functions Menu. Each user needs access to the site-specific ISPF/CA Gen logon CLIST to establish the environment.



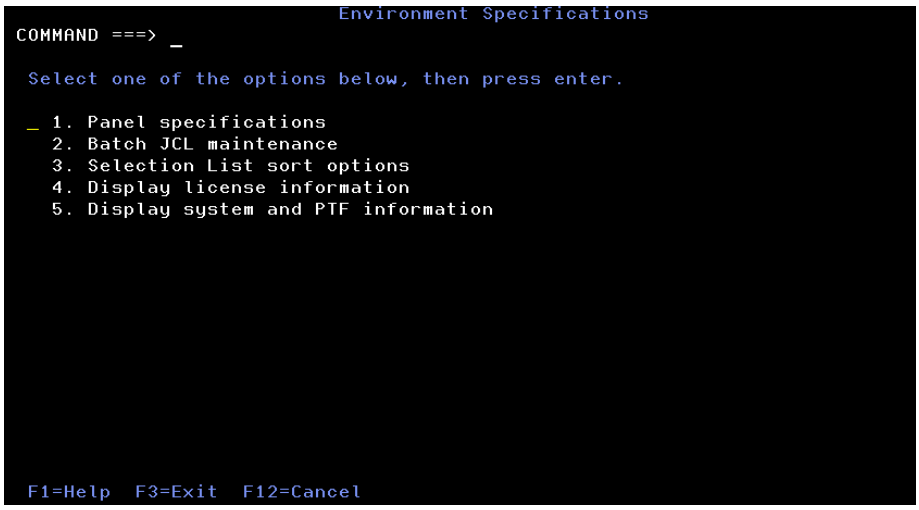
Display License Information

Follow these steps:

1. Choose option 5. Environment specification on the Main Menu

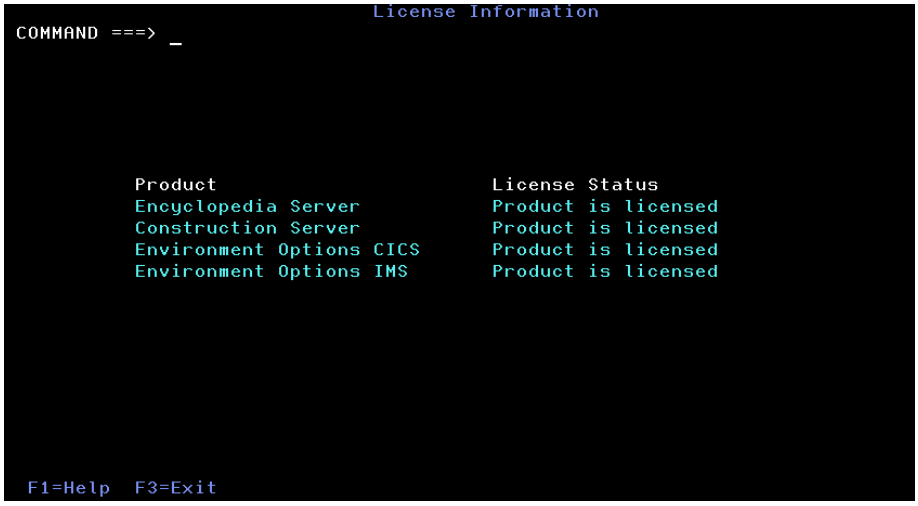


The Environment Specification screen displays.



2. Choose option 4. Display license information.

   The following example illustrates the license status at a site using the Host Encyclopedia and Host Construction, with the target generation environment CICS.



Note: If a licensed product does not show as licensed, contact the CA Total License Care group. Their information is posted on the CA website under CA Support Resources.

Encyclopedia Number for Multiple Encyclopedias

When using multiple encyclopedias, including client/server encyclopedias, you must create a unique numeric ID for the Host Encyclopedia to ensure object uniqueness across encyclopedias.

After creating the encyclopedia tables and loading them with data from the existing encyclopedia, perform the following procedure to create the Host Encyclopedia ID:

1. From the Main Menu, on the command line, type:
   `TSO %TIEMAX`
2. Press Enter.
3. To complete the next screen, use these steps:
   - Omit schema value.
   - Encyclopedia name is optional.
   - Enter a non-zero, numeric Encyclopedia ID and press Enter.

Copy Models to a Host Encyclopedia

There are two ways to copy models between Host Encyclopedias:

- Download from source encyclopedia, and upload to target Encyclopedia

- Cross-copying

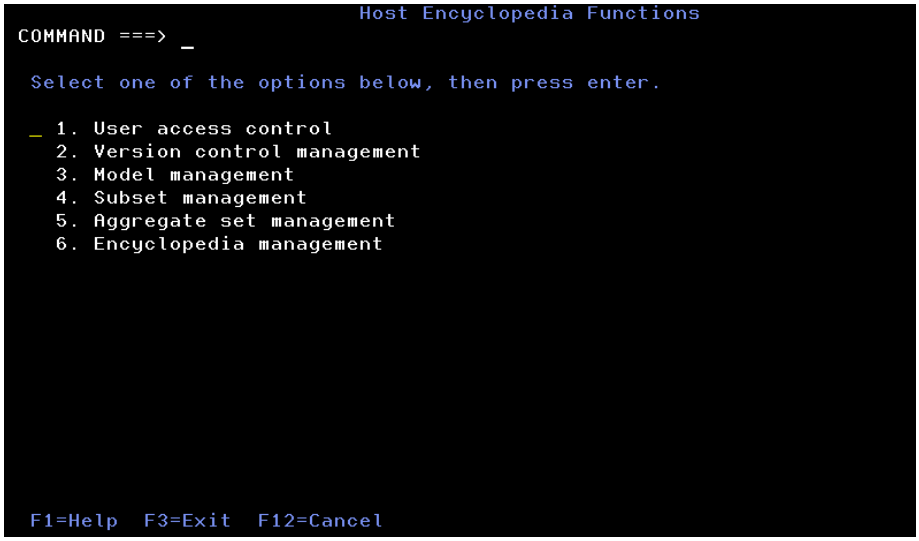
Downloading from the source is preferred and should be used whenever possible. Both methods preserve the original model's name, objects, properties, and associations. Neither method copies subsets, common ancestry, and user access information. This section explains both copy methods.

Download and Upload Method

Follow these steps:

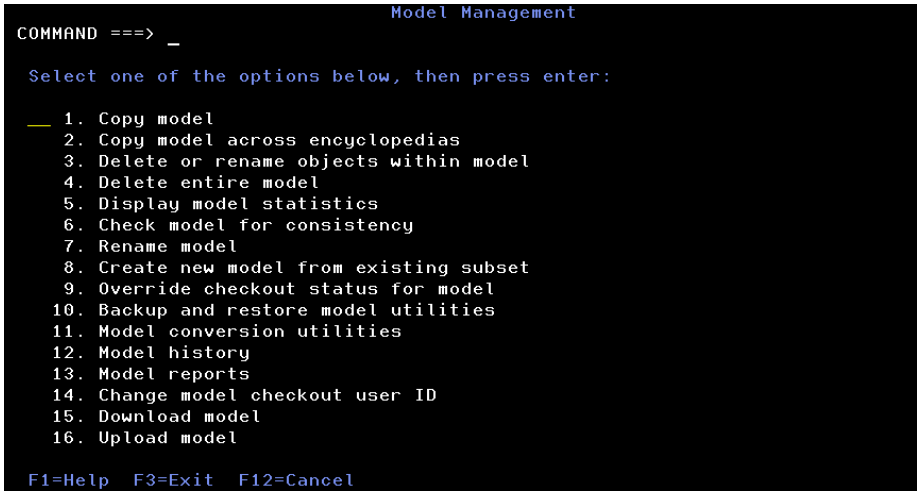
1. On the CA Gen Main Menu on the SOURCE host encyclopedia, select option 1 for Host Encyclopedia functions.

The Host Encyclopedia Functions menu displays.

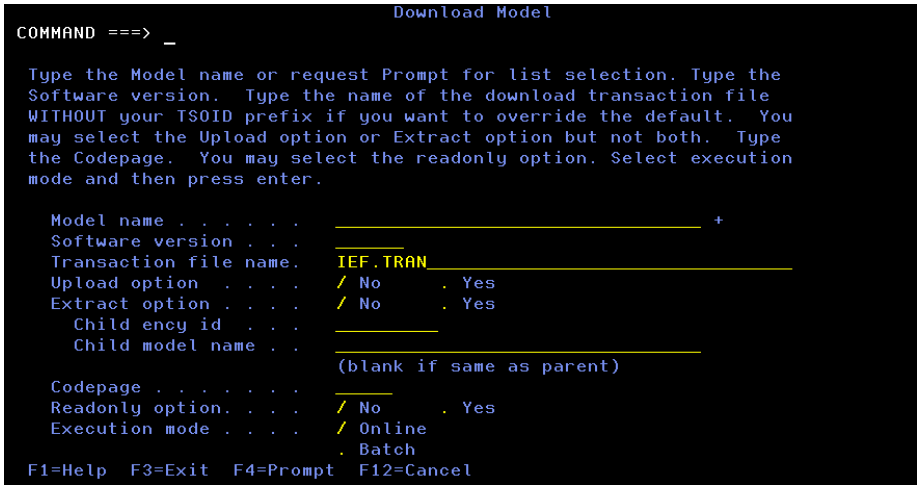


2. Select option 3 for Model Management.

   The Model Management screen displays:



3. Select option 15. Download model, to display the Download Model screen.



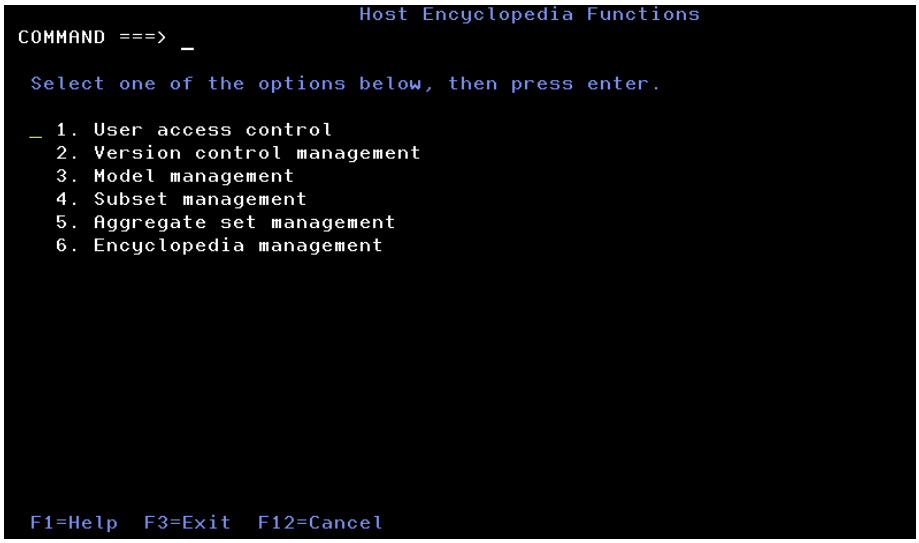
4. Enter the name of the model to copy to another encyclopedia.
5. Select Yes for the upload option.
6. Specify the appropriate code page for your DB2 system.

   This function creates records in your IEF.TRAN file, in a format suitable to upload to the target encyclopedia.

7. Display the CA Gen Main Menu on the TARGET host encyclopedia.

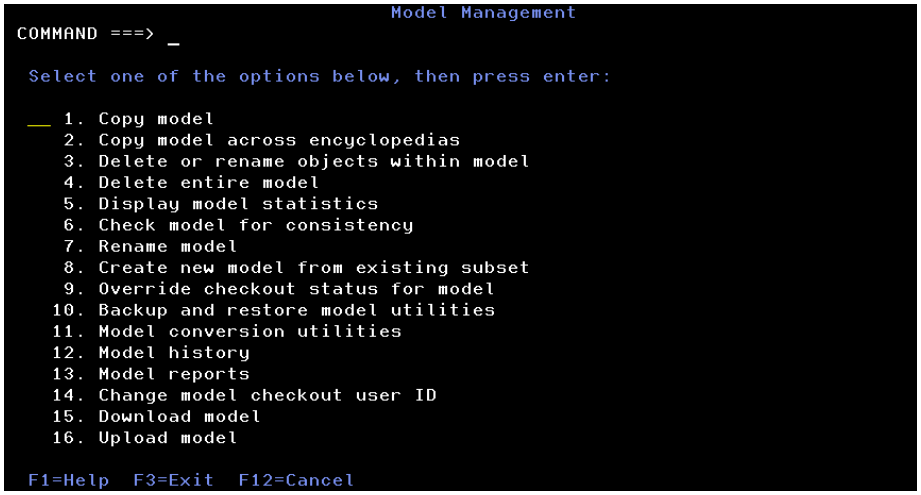
8. Select option 1. Host Encyclopedia functions.

   The Host Encyclopedia Functions menu displays.



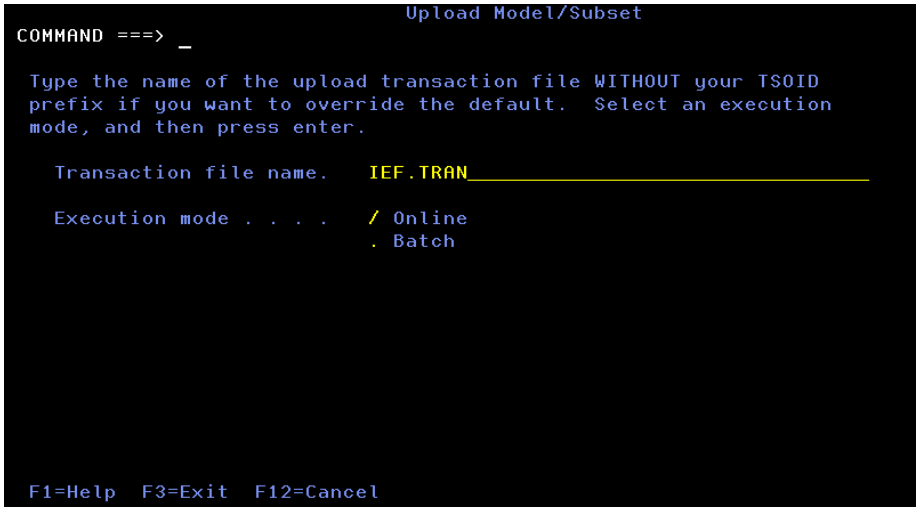
9. Select option 3. Model Management.

   The Model Management menu displays.



10. Select option 16. Upload Model.

    The Upload Model/Subset screen displays.



11. Press Enter to create the new model in the TARGET host encyclopedia.

Cross-Copying Models

Cross Copy copies a model from one encyclopedia to another. The copy has the same name and contains the same objects, properties, and associations as the original model. Use this option to move models in preparation for a conversion or simply to change ownership of a model from one encyclopedia to another.

To perform a cross-copy, you need the plan prefix and load library of both encyclopedias and their schema numbers. Encyclopedias are identified by DB2 plan prefixes. The DB2 plan prefix is the user-specified first four characters of the DB2 plan names for the CA Gen supplied software. Both encyclopedias must be in the same DB2 subsystem.

Rules for Cross Copying a Model

Following are the rules for cross copying a model:

- To cross copy a model, you must have at least Update authorization on the source model in the source encyclopedia and Create Model authorization in the destination encyclopedia.
- An encyclopedia administrator can cross copy any model.
- The model being cross copied must exist in the source Host Encyclopedia and must not exist in the target Host Encyclopedia.
- The destination encyclopedia must be at the same or higher schema as the encyclopedia being copied from.

To Cross Copy a Model

Follow these steps:

1. Access the Main Menu of the target encyclopedia.
2. Select options 1.3.2. Press Enter. The Cross Encyclopedia Model Copy Request panel displays.
3. Enter the name of the model you want to copy to another encyclopedia in the FROM encyclopedia.
4. Enter the schema number of the model being copied.
5. Enter the plan prefix of the FROM encyclopedia in which the model currently resides.
6. Enter the load library of the FROM encyclopedia.
7. Enter the plan prefix of the TO encyclopedia to which you want to copy the model.
8. Enter the load library of the TO encyclopedia.
9. Press Enter. The model is copied to the specified encyclopedia.

The following table lists the schema numbers:

If copying from	Enter
Advantage Gen 6.x model	9.0.A2
AllFusion Gen 7.x model	9.1.A5
CA Gen 8.x model	9.2.A6

Next Steps

Your encyclopedia is now populated with models. To help ensure that DB2 is using optimal paths to retrieve the data, run the DB2 RUNSTAT (CEJOB06 or CAJOB06) and Rebind package (CEJOB07A or CAJOB07A) jobs.

Applications generated and installed by Gen since Allfusion Gen 7 require PDSEs. When your next step is to use Host Construction, verify that the Business System data sets specified for NCAL, Executable and RI Trigger compiled load modules, and the Compatibility libraries, if used, are PDSEs. When using the External Action Block, Compatibility External Action Block, and External System Load Libraries, they must be created as PDSEs.

Enable DBCS

To enable DBCS after z/OS installation customize CLIST TICCMPL, as documented in the CLIST itself:

```
/* JAPANESE, KOREAN AND CHINESE SITES SHOULD BE INSTALLED   */
/* WITH DBCS ENABLED FOR COBOL AND DB2 PRE COMPILE.         */
/* IF DBCS IS NEEDED & SITE DEFAULT IS NOT DBCS THEN        */
/* ENABLE IT BY UNCOMMENTING THE NEXT TWO LINES.            */
/* SET TICCMPCO = &STR(&TICCMPCO.,DBCS)                     */
/* SET TICCMPDO = &STR(&TICCMPDO.,GRAPHIC)                  */
```

Note: For additional information about Encyclopedia maintenance and administration, see the *Host Encyclopedia Administration Guide*.

Using Encyclopedia Exits

This section documents the types of exits included with CA Gen and the common encyclopedia exits. It also explains the DB2 authorization IDs and how to create User CLISTs.

Types of Exits

CA Gen includes two types of exits:

- Runtime User Exits to modify the default behavior of a CA Gen application. For example, the termination exit allows the user to alter the default behavior of a CA Gen application that terminates abnormally. The *User Exit Reference Guide* lists the Runtime User Exits that block mode, cooperative, and batch applications use.

- Encyclopedia Exits modify the encyclopedia and Host Construction default behavior at predefined points. For example, the TICINSTX CLIST exit links and binds a CA Gen application load module.

Note: When customizing exits, use a different library that can be concatenated before the CA Gen software, ensuring that CA Gen software libraries are not modified.

Common Encyclopedia Exits

The most commonly modified components are:

- TIELIBDF – CLIST to allocate libraries using LIBDEF
- TIELIBFR – CLIST to free libraries allocated using LIBDEF
- TICINSTX – Link and DB2 bind CLIST
- TICJCLX – Background JCL generation CLIST
- TICGENB2 – Construction background jobstep skeleton
- TICGENB4 – RI trigger background jobstep skeleton
- TIRGENB2 – Intelligent regeneration background variables skeleton
- TICEXBPK – Package bind user exit CLIST
- TICEXBPL – Plan bind user exit CLIST

Important! We deliver these components with code to accomplish documented CA Gen functions. We recommend that you modify, add, and delete code in them, only as noted in this guide.

TICINSTX

The CLIST TICINSTX performs a link and bind when a load module is installed, whether you choose background or foreground generation.

As delivered, TICINSTX uses the libraries listed in the z/OS Construction Internal Libraries panel and the parameters listed in the Target Environment panel. You can modify TICINSTX to dynamically alter these libraries or parameters, or to add installation steps required at your site.

TICJCLX, TICGENB2, TICGENB4 , and TIRGENB2

The CLIST TICJCLX creates default JCL for the batch Host Encyclopedia functions. This CLIST runs in the foreground and you modify it to intercept the JCL it creates and display or modify the JCL. The interception is useful to:

- Use custom panels to add variables to the batch job. If the job is code generation, you must also add the new variables to the skeleton entries in members TICGENB2, TICGENB4, and TIRGENB2.
- Submit the job directly from TICJCLX, for security reasons.

  The CLIST that calls TICJCLX passes two variables, JCLTYPE and JOBSUB.
- JCLTYPE identifies the batch procedure to submit, C for code generation or e for encyclopedia functions.
- JOBSUB is the name of the JCL skeleton used for JCL creation. The JCL skeleton is available to this CLIST to allow you to submit your own job.

TICJCLX allows display or input of additional variables for a customized background task when using custom variables. Remember to modify SLIB members TICGENB2, TICGENB4, and TIRGENB2 to recognize the new variables.

A return code from TICJCLX is tested to determine subsequent processing. The effect of each return code is:

Return Code	Effect
0	All OK. CA Gen must perform the job submit and update JCL profile variables.
8	All OK. CA Gen must bypass job submit but still update JCL cards to Profile pool.
greater than 8	Error. Do not submit from CA Gen or update JCL cards. Exit with the returned code.

DB2 Secondary Authorization IDs

CA Gen supports using DB2 secondary authorization IDs for Package Binds. If you do not use Package Bind, you can change the CA Gen supplied CLISTs TICINSTX and TICJCLX and the TICGENB2 and TIRGENB2 skeletons to support DB2 secondary authorization ID when binding DBRMs directly into plans.

CA Gen automatically installs a generated application into a specified IMS, CICS, or TSO target environment in the foreground or the background. Instructions for changing TICINSTX, TICJCLX, TICGENB2, and TIRGENB2 to support DB2 secondary authorization IDs are provided in the following sections. Use these instructions as examples of how to change the components to adhere to your site standards without affecting CA Gen software.

TICINSTX CLIST

TICINSTX provides a default installation for an application generated by CA Gen. You can modify TICINSTX as follows to meet your site requirements.

1. Create a copy of the CLIST TICINSTX in a library concatenated ahead of the CA Gen supplied Clist library.
2. Modify the copied TICINSTX to accept DB2 secondary authorization IDs when invoked in either foreground or background.

   a. Find the BIND PLAN (section following the BINDIT label in TICINSTX).

```
BINDIT: +
  CONTROL MSG

/* SAVE VARIABLES FOR USE BY THE USER EXIT                          */
  ISPEXEC VGET TICDSID1 ASIS
  SET BPLFLAG   = Y
  SET BPLSYS    = &STR(&TICDSID1)
  SET BPLREL    = COMMIT
  SET BPLVAL    = BIND
  ISPEXEC VPUT (BPLFLAG  BPLSYS   BPLNAME  BPLLIST  BPLLIBS +
                BPLISOL  BPLVAL   BPLREL +
                BPLMEM0  BPLMEM1  BPLMEM2  BPLMEM3  BPLMEM4 BPLMEM5 +
                BPLMEM6  BPLMEM7  BPLMEM8  BPLMEM9  BPLMEM10 BPLMEM11 +
                BPLMEM12 BPLMEM13 BPLMEM14 BPLMEM15 BPLMEM16 +
                BPLMEM17 BPLMEM18 BPLMEM19 BPLMEM20) SHARED

/* CALL THE EXIT                                                    */
   %TICEXBPL

/* RETRIEVE THE VARIABLES FROM THE EXIT                             */
  ISPEXEC VGET (BPLFLAG  BPLSYS   BPLNAME  BPLLIST  BPLLIBS +
                BPLISOL  BPLVAL   BPLREL +
                BPLMEM0  BPLMEM1  BPLMEM2  BPLMEM3  BPLMEM4 BPLMEM5 +
                BPLMEM6  BPLMEM7  BPLMEM8  BPLMEM9  BPLMEM10 BPLMEM11 +
                BPLMEM12 BPLMEM13 BPLMEM14 BPLMEM15 BPLMEM16 +
                BPLMEM17 BPLMEM18 BPLMEM19 BPLMEM20) SHARED
  IF &STR(&BPLLIST) ^= &Z THEN SET PKLIST = &STR(PKLIST(&BPLLIST))

  /* IF USER REQUESTS IT, SKIP THE BIND
  IF &BPLFLAG = N THEN GOTO ENDUP

  %TICSDIS CMD(MSG) OBJ(&STR(&LOADNAME)) +
                    MSG('BIND IN PROGRESS') TEMP(YES)

  /* IF THERE ARE NO DBRMS, BIND WITHOUT THE MEMBER PARAMETER
  IF &STR(&BPLMEM0) = &Z THEN GOTO NOMBRS

  DSN SYSTEM(&BPLSYS)
```

```
/* IF DSN SESSION FAILS TO START, DO NOT ATTEMPT TO BIND
SET RC = &LASTCC
IF &RC > 0 THEN DO
   SET ERRMSG = &STR(BIND FAILED)
   GOTO ERROR
   END

/* TRAP UP TO 100 ERROR MESSAGES
SET SYSOUTTRAP = 100

BIND PLAN(&BPLNAME.) +
     MEMBER( +
         &BPLMEM0 +
         &BPLMEM1 +
         &BPLMEM2 +
         &BPLMEM3 +
         &BPLMEM4 +
         &BPLMEM5 +
         &BPLMEM6 +
         &BPLMEM7 +
         &BPLMEM8 +
         &BPLMEM9 +
         &BPLMEM10 +
         &BPLMEM11 +
         &BPLMEM12 +
         &BPLMEM13 +
         &BPLMEM14 +
         &BPLMEM15 +
         &BPLMEM16 +
         &BPLMEM17 +
         &BPLMEM18 +
         &BPLMEM19 +
         &BPLMEM20 ) +
         &PKLIST +
     LIBRARY(&STR(&BPLLIBS)) +
     ACTION(REPLACE) RETAIN  +
     ACQUIRE(USE) RELEASE(&BPLREL) +
     EXPLAIN(NO) VALIDATE(&BPLVAL) +
     ISOLATION(&BPLISOL) FLAG(W)
     END  /* END DSN SESSION */
SET RC = &LASTCC
GOTO ENDBIND
```

b. Change the last line of the bind statement by adding the &OWNER parameter so that the line looks like:

```
ISOLATION(&BPLISOL) FLAG(W) &OWNER
```

TICGENB2 and TIRGENB2 Skeletons

The DB2 secondary authorization variable is passed through OWNERID. Variables are passed as control card input through the DATAIN DD Statements. Change TICGENB2 and TIRGENB2 as follows so that the DB2 secondary authorization variable is available to background installation:

Follow these steps:

1. Create a copy of TICGENB2 and TIRGENB2 in a library concatenated ahead of the CA Gen SLIB library.
2. Add the OWNERID variable to the copied TICGENB2 and TIRGENB2. See the samples of TICGENB2 and TIRGENB2 that follow.

The following code sample is an example of passing OWNERID as a variable in TICGENB2:

```
TICGENB2
)TB 10 14
OWNERID!SHR!&OWNERID
MODLNAME!SHR!&MODLNAME
TISNAME!SHR!&TISNAME
TICSLIB1!SHR!&TICSLIB1
.
.
//*                          END OF RUNTIME VARIABLE INPUT
```

An example of passing OWNERID as a variable in TIRGENB2 is shown next.

```
TIRGENB2
)TB 10 14
OWNERID!SHR!&OWNERID
.
//*                         END OF RUNTIME VARIABLE INPUT
```

Each line after the line beginning with)TB contains the name of an ISPF variable, the pool to which it belongs, and the value for that variable being passed to batch code generation.

TICGENB4 Skeleton

TICGENB4 builds job steps for RI trigger generation and installation. It does not build job steps for DB2 bind and does not need to be modified for DB2 secondary authorization. If you do not use Package Bind, RI DBRMs will be directly included to the plan when bind processing is done at the load module level.

TICJCLX CLIST

TICJCLX provides default JCL tailoring for the various batch Host Encyclopedia functions. Change TICJCLX as follows to allow it to pass the DB2 secondary authorization ID variable to batch.

Follow these steps:

1. Create a copy of CA Gen CLIST TICJCLX in a library concatenated ahead of the CA Gen CLIST library.
2. Modify the copied TICJCLX and find the section with label USER LOGIC HERE

   A sample section of TICJCLX

```
  SET CLSTNAME = &NRSTR(#### STARTING TICJCLX CLIST ####)

  ISPEXEC VGET (TICCARD1 TICCARD2 TICCARD3 TICCARD4) SHARED
  ISPEXEC VGET (TICCARD5 TICCARD6 TICCARD7 TICCARD8) SHARED
  ISPEXEC VGET (TICCARD9 TICCARDA) SHARED

  /*****************************************/
  /*            USER LOGIC HERE            */
  /*****************************************/
  /*  ISPEXEC DISPLAY PANEL(????)          */
  /*  SET RC = &LASTCC                     */
  /*  IF (&RC = 0) AND (&ZCMD = ) THEN ???  */
  /*  IF (&RC = 8) THEN EXIT CODE(&RC)     */
  /*  IF (&RC > 8) THEN EXIT CODE(&RC)     */
  /*****************************************/

  ISPEXEC VPUT (TICCARD1 TICCARD2 TICCARD3 TICCARD4) SHARED
  ISPEXEC VPUT (TICCARD5 TICCARD6 TICCARD7 TICCARD8) SHARED
  ISPEXEC VPUT (TICCARD9 TICCARDA) SHARED

SET CLSTNAME = &NRSTR(#### STARTING TICJCLX CLIST ####)

EXIT CODE(0)
Add the following lines after the USER LOGIC HERE label:
/*CUSTOMIZATION TO USE DB2 SECONDARY AUTH ID
IF &JCLTYPE = C THEN DO
      IF &JOBSUB = TICGENBT OR +
  &JOBSUB = TICGENB2 OR +
     &JOBSUB = TIRGENB2 THEN DO
  /* CALL USERCLIST FOR OWNERID VALUE */
         %USRCLIST
       END
END
```

Create a User CLIST

A user CLIST is required to collect the value for the new ISPF variable OWNERID. In the earlier example of TICJCLX, the user CLIST was called USRCLIST. You can modify this name.

The user CLIST is called by either TICINSTX or TICJCLX depending on whether foreground or background is requested. For more information on user CLIST, see this Sample User CLIST:

```
/* USER PROVIDED CLIST TO OBTAIN THE VALUE OF THE OWNERID VARIABLE
/* PROVIDE SOME METHOD FOR SETTING THE VALUE OF OWNERID
     WRITENR ENTER DB2 OWNER ID ===>
      READ OWNERID
/* SAVE THE VALUE FOR OWNERID IN THE SHARED POOL, SO
/* TICINSTX
/* CAN USE IN BATCH OR FOREGROUND
ISPEXEC VPUT OWNERID SHARED
/*
```

TICEXBPK CLIST

TICEXBPK is invoked prior to a DB2 package bind to allow you to:

- Change input parameters
- Suppress or replace the package bind

The following ISPF variables are saved (VPUT) in the shared pool prior to the call to this exit. They are populated with the values that will be passed to the bind if the exit does not change them. If the exit changes these variables, the new values are used.

BPKFLAG Y=do the bind, N=suppress the bind
BPKSYS DB2 Subsystem where bind is to be done
BPKCOLL Collection ID
BPKLOC Location of the DBMS (DB2 subsystem)
BPKMBR DBRM name
BPLLIBS DDNAMEs of the DBRM libraries
BPKOWNER DBRM owner (authorization ID)
BPKISOL CS, RR, RS, UR
BPKVAL BIND, RUN
BPKREL COMMIT, DEALLOCATE
BPKQUAL QUALIFIER ID

To use the input value of a variable, you must provide a VGET for it. To change a variable, you must provide a SET command and a VPUT for it. The CLIST delivered with the product has examples of the VGET and VPUT instructions, but they are commented out.

To suppress the bind entirely, change BPKFLAG to N. To replace the bind with your own, change BPKFLAG to N and add your own bind to the exit. See CLIST TICBNPK for an example of a package bind.

TICEXBPL CLIST

TICEXBPL is invoked prior to a DB2 plan bind to allow you to:

- Change input parameters
- Suppress or replace the plan bind

The following ISPF variables are saved (VPUT) in the shared pool before the call to this exit. They are populated with the values passed to the bind if the exit does not change them. If the exit changes these variables, it uses the new values.

```
BPLFLAG Y=do the bind, N=suppress the bind
BPLSYS DB2 Subsystem where bind is to be done
BPLNAME Plan name
BPLLIST Package list entries (if any)
BPLMEM0-20 DBRM member names (if any)
BPLLIBS DDNAMEs of the DBRM libraries
BPLISOL CS, RR, RS, UR
BPLVAL BIND, RUN
BPLREL COMMIT, DEALLOCATE
```

To use the input value of a variable, you must provide a VGET for it. To change a variable, you must provide a SET command and a VPUT for it. The CLIST delivered with the product has examples of the VGET and VPUT instructions, but they are commented out.

To suppress the bind entirely, change BPLFLAG to N. To replace the bind with your own, change BPLFLAG to N and add your own bind to the exit. See CLIST TICINSTX for an example of a plan bind.

Preparing to Start z/OS Implementation Toolset

This section describes the tasks to start and verify the installation and configuration was successful.

Start the Implementation Toolset

Follow these steps:

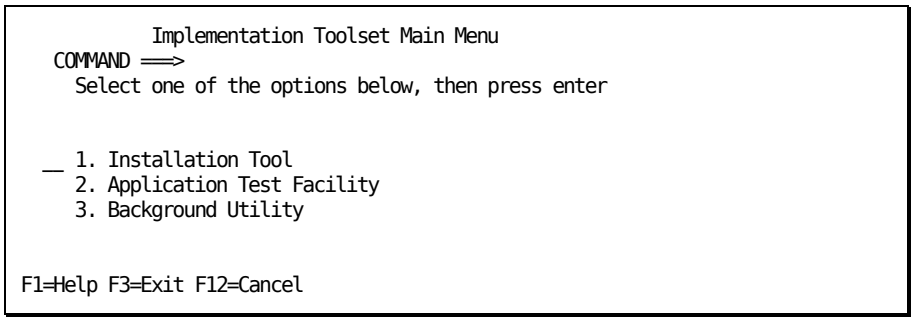
1. Start the IT by executing the following command at the TSO prompt:

   ```
   COMMAND==> TSO     %TIXSTART
   ```

   Note: Alternately, you can also use

   ```
   COMMAND==> TSO     %GENIT
   ```

2. When the Copyright screen appears, press Enter to display the Implementation Toolset Main Menu.



Verifying Installation

Verifying IT installation is a matter of processing a sample set of Implementation Packages (IPs) from the distribution media CEHBSAMP. IPs are created on an CA Gen code generation platform and contain an Installation Control Member (ICM file) and source code. There are three types of IPs: load module, RI trigger, and DDL.

Load module IPs contain code for an CA Gen application load module. Both standard and enhanced screen types are provided as samples. Load module IPs provide IPs for DBMS targeting DB2. The RI trigger IP contains the code to implement referential integrity for a model. The DDL IPs contain the IDCAMS statements (if storage groups are not used) and SQL to build the application's database. There are additional DDL IP that uses storage groups that you can use instead. The following table shows the contents of the CEHBSAMP.

IP Name	Description
TIXIVPDB	Sample DDL IP targeting DB2– VSAM
TIXIVPDS	Sample DDL IP targeting DB2 – Storage Groups
TIXIVPRI	Sample RI trigger IP targeting DB2
TIXIVPIB	Sample load module IP for IMS BYPASS STANDARD
TIXIVPBE	Sample load module IP for IMS BYPASS ENHANCED
TIXIVPIM	Sample load module IP for IMS MAPPED STANDARD
TIXIVPME	Sample load module IP for IMS MAPPED ENHANCED
TIXIVPTS	Sample load module IP for IEFAE STANDARD
TIXIVPTE	Sample load module IP for IEFAE ENHANCED
TIXIVPCI	Sample load module IP targeting DB2 for CICS STANDARD
TIXIVPCE	Sample load module IP targeting DB2 for CICS ENHANCED

There are five procedure steps for each IP. The procedure steps are packaged into one IP to create one load module. All five transactions should point to the program name MENU.

Before you can process the IPs, the following conditions must be met:

- The Implementation Toolset components must be installed on your target system, according to the instructions in the preceding sections.
- A load module script and RI trigger script must be loaded for each target supported at your site (TSO, IMS and CICS). For more information about loading load module script and RI trigger, see the *z/OS Implementation Toolset User Guide*.
- A target environment must be configured for each target supported at your site (TSO and IMS targeting DB2 or, CICS targeting DB2). For more information about configuring a target environment, see the *z/OS Implementation Toolset User Guide*.
- The libraries referenced for the target environment must exist. Member TIXIVPLB in the IT JCL library can be used to allocate these libraries.

Process the DDL IP

The following procedure shows how to process the DDL IP for the sample application. You only need to perform this step once. The database created from this IP can be used for all z/OS target configurations.

Follow these steps:

1. From the Implementation Toolset Main Menu, select option 1 to display the CA Gen Installation Toolset Main Menu.
2. Select option 1, Process Implementation Package, to display the Select Implementation screen.
3. Tab to the Data Set field and type the name of the CEHBSAMP. The data set name must be enclosed in quotes.
4. Tab to the Member field and type TIXIVPDB, TIXIVPDS, TIXIVADB, or TIXIVADS to process the desired IP.
5. Tab to the Name field and type the name of a previously configured target environment. Remember this name, you will use it again to process the RI trigger and load module IPs.
6. Press Enter to display the Process DDL Implementation Package screen.
7. Press Enter to display the JCL Job Statement Information Input screen.
8. Edit the JCL Job Statement Information Input screen to provide job card information.

9. Press Enter to display the JCL Edit screen and make the necessary changes (volume name, database name).
10. Submit the job, and then review the output from the completed job. Confirm that processing completed with return codes of 0.

Process the RI Trigger IP

This procedure shows you how to process the RI trigger IP. Note that this procedure can be common to all targets within a DBMS type provided you are using the same RI trigger LOAD library. When using DB2, the DBRM library must also be the same across all the targets.

Follow these steps:

1. From the Implementation Toolset Main Menu, select option 1 to display the CA Gen Installation Toolset Main Menu.
2. Select option 1 (Process Implementation Package) to display the Select Implementation Package screen.
3. Tab to the Data Set field and type the name of the CEHBSAMP. The data set name must be enclosed in quotes.
4. Tab to the Member field and type TIXIVPRI or TIXIVARI.
5. Tab to the Name field and type the same target name you used in the DDL IP.
6. Press Enter to display the IP Action Menu.
7. Select option 1 and press Enter to start installing the RI trigger IP.
8. When processing is complete, a message indicating a successful installation should be on the screen.

Process the Load Module IP

This procedure shows you how to process the load module IP. Repeat this procedure for each supported target.

Follow these steps:

1. From the Implementation Toolset Main Menu, select option 1 to display the CA Gen Installation Toolset Main Menu.
2. Select option 1 to display the Select Implementation Package screen.
3. Tab to the Data Set field and type the name of the CEHBSAMP. The data set name must be enclosed in quotes.
4. Tab to the Member field and type the load module IP that matches the target you are testing. The choices are:
   - TIXIVPCE (for CICS DB2 ENHANCED)

- TIXIVPCI (for CICS DB2 STANDARD)
- TIXIVPME (for IMS MAPPED ENHANCED)
- TIXIVPIM (for IMS MAPPED STANDARD)
- TIXIVPBE (for IMS BYPASS ENHANCED)
- TIXIVPIB (for IMS BYPASS STANDARD)
- TIXIVPTE (for IEFAE ENHANCED)
- TIXIVPTS (for IEFAE STANDARD)

5. Tab to the Name field and type the same target name you used for the DDL IP.
6. Press Enter to display the IP Action Menu.
7. Select option 1 and press Enter to start creating and installing the executable load module IP.
8. When processing ends, a message indicating a successful installation appears on the screen.

Test the CA Gen IT Installation

The information in the following process is presented solely as an example of how to test and use IT for z/OS. Select the appropriate IP modules for your host environment.

Follow these steps:

1. Load a load module and RI trigger script using the sample IP members in the install CEHBSAMP library. This example is for an application that targets CICS using the enhanced map generator and DB2. Enter a descriptive name for your environment when defining your script. These descriptions are displayed when you select an IP load module for processing.

   a. From the Installation Toolset Main Menu, select option 4 Access Utilities Menu.

   b. On the Utilities Menu, select option 2 Load Script Utility to display the Load Script screen.

   c. Enter the information shown in the following figure.

```
                                        Load Script
COMMAND ===>

Load Module Script
    Name . . . . . CICS-BYPASS _____________
    Data Set . . 'CAI.MVSIT.CEHBSAMP'_____________________ (Quotes Required)
    Member . . . . TIXMVSLM
RI Trigger Script
    Name . . . . . RI SCRIPT _______________
    Data Set . . 'CAI.MVSIT.CEHBSAMP' _____________________ (Quotes Required)
    Member . . . . TIXMVSRI

description . . .  RI TRIGGER SCRIPT-CICS-BYPASS ____________
Language . . . . . COBOL ____        DBMS . . . DB2 _______
TI Monitor . . . . CICS _____        Screen Format . . BYPASS __
Hardware platform ___________________OS.MVS _____________ UserId.userid__


F1=Help    F3=Exit    F11=ISPF    F12=Cancel
```

2. Create a target.

   a. On the IT Main Menu, select option 3 Maintain Configuration Information to display the Selection List screen.

   b. Press F5 (Add). The Select Script screen lists the available load module scripts.

   c. Select CICS-BYPASS (the load module script created in Step 1) and press Enter. The Target Definition screen displays.

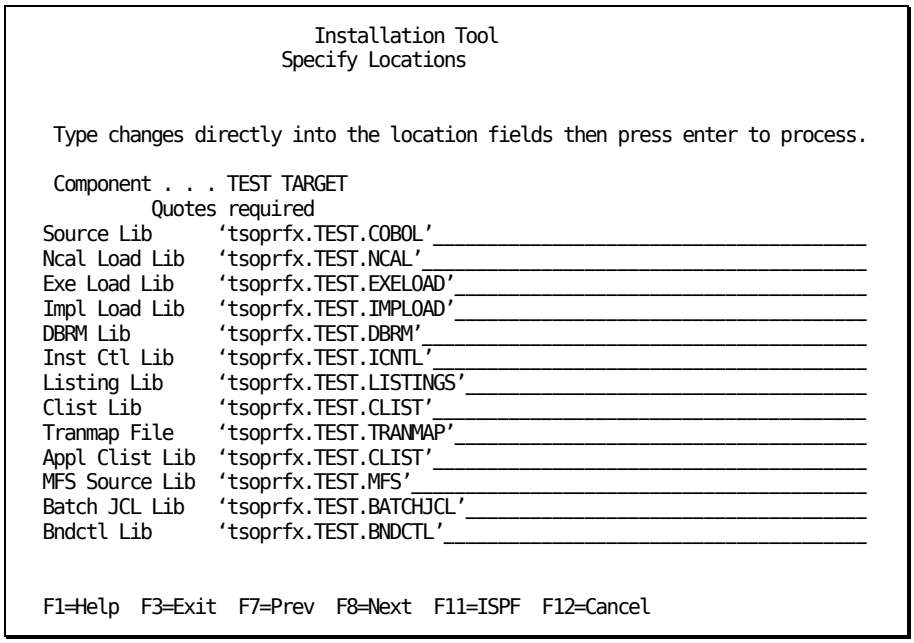
   d. Enter the information shown in the next figure and press Enter.

```
                                  Target Definition

COMMAND ===>

Script name    CICS-BYPASS   (Press F4 to list scripts)
language . . . COBOL   DBMS . . . DB2    TP Monitor . . CICS
Screen Format  BYPASS

Target   TEST TARGET _____________________________________
Name     test MVS/IT Installation ___________________________

DB2sys   DB2T
Target Test Facility . . Yes / No



F1=Help  F2=Define  F3=Exit  F4=list  F5=locs  F10=Delete   F11=ISPF
F12=Cancel  F13=Options
```

   e. Press F5. The Specify Locations screen displays.

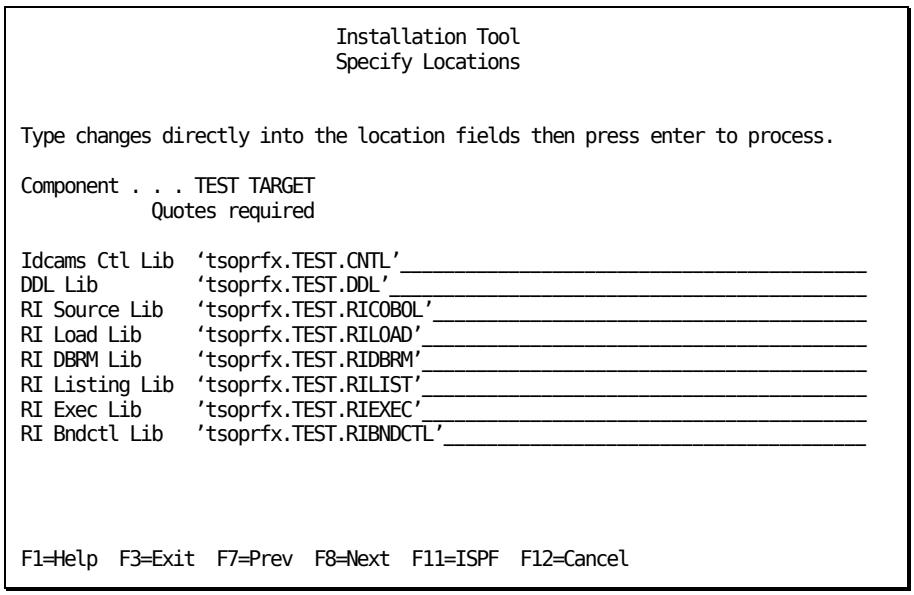
f. Enter the construction libraries as shown in the following figure.

Note: The data sets Ncal, Exe, and Impl Load Lib must be allocated as PDSE (DSNType = library) data sets.



g. Press F8 to enter additional construction library names. Enter the library names shown in the following figure.

Note: The data set RI Load Lib must be allocated as PDSE (DSNType = library) data set.



h. Press Enter.

i. Press F3 to exit.

3. Process the DDL IP.

   a. On the Installation Toolset Main Menu, select option 1 Process Implementation Package, to display the Select Implementation Package screen.

   b. In the Data Set field, type 'CAI.MVSIT.CEHBSAMP'.

   c. In the Member field, type TIXIVPDS.

   d. In the Name field, enter the target environment name by pressing F6 to list and select the target created in Step 2 or by typing the name of the target created in Step 2.

   e. Press Enter. The Process DDL Implementation Package screen displays.

   f. Confirm the data on the screen and press Enter. The JCL Job statement Information Input screen displays.

   g. Press Enter. The JCL Edit screen displays.

   h. On the Command line, type SUB and press Enter to submit the job.

4. Generate the RI trigger.

   a. On the Installation Toolset Main Menu, select option 1 Process Implementation Package. The Select Implementation Package screen displays.

   b. In the Data Set field, type 'CAI.MVSIT.CEHBSAMP'.

   c. In the Member field, type TIXIVPRI.

   d. In the Name field, enter the target environment name by pressing F6 to list and select the target created in Step 2 or by typing the name of the target created in Step 2.

   e. Press Enter. The IP Action Menu displays.

   f. Press F6. The Detailed IP Action Menu displays.

   g. Select Register, Split, Compose, and Execute, and press Enter.

   h. When processing is complete, a message displays indicating whether processing completed successfully.

   Note: The DDL and RI process occurs only once for each model unless changes to the model make it necessary to process again.

5. Process the load module IP.

   a. On the Installation Toolset Main Menu, select option 1 Process Implementation Package. The Select Implementation Package screen displays.

   b. In the Data Set field, type 'CAI.MVSIT.CEHBSAMP'.

   c. In the Member field, type TIXIVPCE.

   d. In the Name field, enter the target environment name by pressing F6 to list and select the target created in Step 2 or by typing the name of the target created in Step 2.

   e. Press Enter. The IP Action Menu displays.

   f. Press F6. The Detailed IP Action Menu displays.

   g. Select Register, Split, Compose, Execute, and Install and press Enter.

   h. When processing is complete, a message displays indicating whether processing completed successfully.

Tips

This section provides miscellaneous information that may be helpful to you while you are installing and testing the IT on the DB2 subsystem.

- If you installed the IEFAE version of the sample application (load module IP TIXIVPTS or TIXIVPTE), the application is ready for execution. Exit to the Implementation Toolset Main Menu and select the Application Test Facility option to execute the application. The trancode is MENU.
- If you installed the CICS version of the sample application with DB2 as DBMS (load module IP TIXIVPCE or TIXIVPCI), you must define the program names and trancodes to CICS before you can execute the application. Search through the data set members TIXIVPCE and, TIXIVPCI, in the CEHBSAMP for the literal :PSTEP to find the program names and trancodes for the sample application. The MEMBER is the program name, the DLGTRAN is the dialog flow trancode, and the CLRTRAN is the clear screen trancode. Both types of trancodes must be defined.
- If you installed the IMS BYPASS version of the sample application (load module IP TIXIVPBE or TIXIVPIB), you need to define the PCBs to IMS before you can execute the application.
- If you installed the IMS MAPPED version of the sample application (load module IP TIXIVPIM or TIXIVPME), you need to define the PCBs to IMS and compile the MFS maps before you can execute the application.
- It is possible to install two or more ITs on a single DB2 subsystem. This is not recommended, but if you do decide to do this, you must customize the scripts used to install the IT to ensure the plan name is unique across the DB2 subsystem. This task should be performed by an experienced user. Contact your system administrator for detailed instructions and site specific requirements.
- If you are attempting to verify a second IT installation with the sample load module IP, you must edit the sample load module IP and change all occurrences of the plan name to another unique plan name. If you do not do this, the second verification process fails.

Implementation Toolset Installation Errors

This section contains errors and messages associated with the installation, configuration and execution of the Implementation Toolset.

The following table explains some of the problems you may encounter when installing the IT.

Problem	Explanation	User Action
Bind of IT plan fails with error: DSNT210I # BIND AUTHORIZATION ERROR USING DBIEFAP AUTHORITY PLAN = INSMODL PRIVILEGE = BIND DSNT210I # BIND FOR PLAN IT52USQL NOT SUCCESSFUL	DBIEFAP does not have the authority to bind plan INSMODL.	Verify that you are installing in the correct DB2 subsystem. If you are, make sure the plan name is not already used in the same subsystem by a different DB2 auth ID.
Bind of IT plans fails because the RPROF table is missing.	The IT is a generated application and, as such, requires an RPROF table.	Create an RPROF table for the IT to use or create a DB2 synonym to an existing RPROF table.
A PARMLIB file error occurs when you attempt to start the IT.	This PARM file (PARMLIB) contains members with site-specific information and they are generated as a part of the IT installation. They are required to execute the IT.	If TIUIT is not in the IT's PARM file then execute the option in the ITINSTAL dialog to create the site-specific PARM files (Build Parameter files).
The following message displays when you attempt to start the IT: TIXGLOB CLIST ERROR TIXGLOB CLIST MUST BE CREATED DURING INSTALLATION	The PARM file contains site-specific information and is generated as a part of the IT installation. This message indicates that the PARM file was not created properly during the IT configuration process.	The safest action is to execute the ITINSTAL dialog and regenerate the PARM file.

IP Installation Errors

The following table explains some of the problems you may encounter when installing an Implementation Package (IP).

Problem	Explanation	User Action
Compile of an application program fails; no listing is generated. *	Compile listings are only created when a listing library is specified in the target.	To get a compiler listing, specify a listing library, compose the MAKE procedure, and execute the MAKE procedure.
Compile of an application program fails due to insufficient storage.	The compiler requires more storage than is available to compile the program.	The safest action is to execute the ITINSTAL dialog, increase the COBOL size parameter specified during IT installation and regenerate the PARM file. The size parameter is stored in ISPF variable TIRCBLSZ, generated into the TIRIT member of the PARM file. TIRIT is generated when the IT is installed. You can change the value in the PARM file; however, your change is overlaid if the TIUIT PARM file is regenerated.
Compose of a MAKE procedure fails with **File Not Open**	The IT is attempting to write the generated MAKE procedure and has found that the output file is not open.	Make sure that the script file associated with the target being used contains a valid **openfile** directive.
Installation of application DDL fails with an -818 timestamp error.	The IT uses a program (TIUUSQL) to execute SQL dynamically. The executable does not match the DBRM used to bind the program.	Contact your IT administrator. Rebind the plan for TIUUSQL for the DB2 subsystem you are using.
Installation of application DDL fails with a -922 authorization error.	The IT uses a program (TIUUSQL) to execute SQL dynamically. Either you are not authorized to execute the plan for this program or a plan has not been bound for the DB2 subsystem you are using.	Contact your IT administrator; ask him or her to grant you execute authority for the plan or to bind the plan for the DB2 subsystem you are using.
The JCL created by the IT to install an application database contains DDL statements in place of IDCAMS control statements.	The DDL IP you are processing contains IDCAMS and DDL statements. The IDCAMS statements are split to the IDCAMS location and the DDL statements are split to the DDL location. If the IDCAMS location and the DDL location are the same, the DDL overlays the IDCAMS statements.	Specify a unique DDL library and IDCAMS library.

Problem	Explanation	User Action
NCAL link-edit of a module fails with an SD37 or SE37 abend. *	After the IT compiles a module, the resulting object module is input to the linkage editor to produce an **NCAL** load module	Delete unused load modules from the relevant NCAL load library and then compress it. If necessary, allocate the library with more space and re-execute the MAKE procedure.
The split of an RI trigger IP fails with a dataset not found error.	The split step places the source for the RI trigger modules in the RI trigger source library. This data set does not exist.	Correct the target to refer to an existing library or allocate the library that does not exist.
The split of a load module IP fails with a **location not found** error.	The split step places the installation control file in the installation control library and the generated source modules in the source library. One or both of these locations is unspecified (that is, a library is unspecified at the target, model or business system level).	Specify a source library and install control library at the target, model, or business system level.
The split of the load module IP fails with a **dataset not found** error.	The split step places the installation control file in the installation control library and the generated source modules in source library. Either the install control library or source library does not exist.	Correct the target to refer to existing libraries or allocate the libraries that do not exist.
Compilation of a module fails with a **listing data set** error. *	A listing **data set** was specified in the target. A problem was encountered allocating this **data set**.	Verify the relevant listing library exists. If it doesn't, allocate it or change target to an existing library, recompose the MAKE procedure.
Compilation of a module fails with an **SD37** or **SE37** abend. *	A compiler output file ran out of space. The most likely cause is that the listing library is out of space.	If there is a listing library, check the number of library extents. If out of space, delete unused listings and compress library or allocate more space. Reexecute the MAKE procedure. If extents are adequate, there may be a space problem with the sys temp file allocated to the object module created by the compiler. Contact your IT Administrator.
DB2 precompiler fails with a RC=20.	Code with imbedded SQL is processed by the DB2 precompiler before its input to the COBOL compiler. The DB2 precompiler step failed.	Make sure you specified a DBRM library in your target. Make sure that DBRM library exists.

* Action Blocks packaged with a Dynamically Link option of No (static) that are included in a module marked for Compatibility are compiled twice: once with the compiler option NODLL and again with compiler option DLL. The compile using the NODLL option uses the libraries specified for Static NCAL Lib and Static LIST Lib. The compile using the DLL option uses the libraries specified for NCAL Load Lib and Listing Lib. If you are processing modules marked for Compatibility make sure you verify both sets of libraries exist and have enough space allocated.

Note: This extra processing does not occur for Action Blocks packaged with a Dynamically Link option of No but are only included in Static or Dynamic (DLL) executables.

Implementation Toolset Messages

Various errors may occur during the five steps of installing an Implementation Package. Each of these steps includes a number of activities, such as opening files, or writing to the configuration database. The Implementation Toolset will output messages when it encounters an error condition. For more information about these messages, see the chapter “Implementation Toolset Messages” in the Messages Guide.

The following tables list the activities associated with each step, and the common error conditions associated with those activities.

Errors Associated with the Register Step

The following table explains some of the problems you may encounter during the register step.

Processing Actions	Potential Error Conditions
Reading IP	IP file corrupted
Writing to configuration database.	Configuration database corrupted
	Problem accessing configuration database
	Database full.

Errors Associated with the Split Step

The following table explains some of the problems you may encounter during the split step.

Processing Actions	Potential Error Conditions
Reading IP	IP file corrupted
Reading configuration database.	Configuration database corrupted
Writing to target configuration locations.	Problem accessing configuration database
	Database full.
	Not enough disk space.
	Target locations (directories) never created.
	User does not have permission to write to target locations.
	User does not have permission to overwrite files in target locations.

Errors Associated with the Compose Step

The following table explains some of the problems you may encounter during the compose step.

Processing Actions	Potential Error Conditions
Reading configuration database.	Configuration database corrupted.
Writing MAKE file.	Problem accessing configuration database.
	Database full.
	Not enough disk space.
	Target locations (directories) never created.
	User does not have permission to write to target locations.
	User does not have permission to overwrite files in target locations.
	Script invalid or incomplete.
	Script directives not properly delimited.

Errors Associated with the Execute Step

The following table explains some of the problems you may encounter during the execute step.

Processing Actions	Potential Error Conditions
Reading and executing MAKE file. Using IP components. Reading and writing to target locations (directories). Using compiler software.	Configuration database corrupted. Problem accessing configuration database. Not enough disk space. Target locations (directories) never created. User does not have permission to write to target locations. User does not have permission to overwrite files in target locations. Compiler software not working properly.

Errors Associated with the Install Step

The following table explains some of the problems you may encounter with the install step.

Processing Actions	Potential Error Conditions
Reading configuration database. Creating Tranmap file. Reading and writing to target locations (directories).	Configuration database corrupted. Problem accessing configuration database. Not enough disk space. Target locations (directories) never created. User does not have permission to write to files in target locations. User does not have permission to overwrite files in target locations. Executable currently being used and cannot be overwritten. Output from compiler invalid.

Chapter 6: Post-Installation Considerations

Now that you have successfully installed CA Gen, consider the following:

- For information about tuning CA Gen for optimal performance, see the *Host Encyclopedia Administration Guide*.

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