

Getting Started with Energizer[®] for CICS

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BMC Software, Inc.
2101 CityWest Blvd.
Houston TX 77042-2827
USA

Contacting BMC Software

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USA and Canada

Address BMC Software, Inc.
2101 CityWest Blvd.
Houston TX 77042-2827

Telephone 713 918 8800 or
800 841 2031

Fax 713 918 8000

Outside USA and Canada

Telephone (01) 713 918 8800

Fax (01) 713 918 8000

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- find the most current information about BMC Software products
- search a database for problems similar to yours and possible solutions
- order or download product documentation
- report a problem or ask a question
- subscribe to receive e-mail notices when new product versions are released
- find worldwide BMC Software support center locations and contact information, including e-mail addresses, fax numbers, and telephone numbers

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Before Contacting BMC Software

Before you contact BMC Software, have the following information available so that a technical support analyst can begin working on your problem immediately:

- product information
 - product name
 - product version (release number)
 - license number and password (trial or permanent)
- operating-system and environment information
 - machine type
 - operating system type, version, and service pack or program temporary fix (PTF)
 - system hardware configuration
 - serial numbers
 - related software (database, application, and communication) including type, version, and service pack or PTF
- sequence of events leading to the problem
- commands and options that you used
- messages received (and the time and date that you received them)
 - product error messages
 - messages from the operating system, such as `file system full`
 - messages from related software

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About This Book

This book describes how to install Energizer[®] for CICS and perform a product evaluation. It is intended for anyone installing the product or performing a product evaluation. The material in this book supplements the *Energizer for CICS User Guide* which should be read once the product is successfully installed and the evaluation process is complete.

To use this book, you should be familiar with the following items:

- Customer Information Control System (CICS)
- Multiple Virtual Storage (MVS) systems, job control language (JCL), and the Interactive System Productivity Facility (ISPF)
- Virtual Storage Access Method (VSAM) and the access method services utility (IDCAMS)

How This Book Is Organized

This book is organized as follows. In addition, an index appears at the end of the book.

Chapter/Appendix	Description
Chapter 1, "Introduction,"	contains and overview of the book, describes system requirements and general considerations
Chapter 2, "Installing Energizer for CICS,"	describes how to install the product, describes how to migrate from earlier versions
Chapter 3, "How to Evaluate Energizer for CICS,"	describes the tools used to evaluate the product, provides an evaluation timeline, describes common mistakes to avoid

Chapter/Appendix	Description
Appendix A, "Dynamic SVC Install and Table Maintenance"	describes how to install the CICS CLOSE TYPE=T SVC routine
Appendix B, "Maintaining Files"	describes how to maintain the VSAM parameter and VSAM report files

Related Documentation

BMC Software products are supported by several types of documentation:

- online and printed books
- online Help
- release notes and other notices

In addition to this book and the online Help, you can find useful information in the publications listed in the following table. As "Online and Printed Books." explains, these publications are available on request from BMC Software.

Category	Document	Description
Installation documentation	<i>OS/390 and z/OS Installer Guide</i>	describes how to install the product libraries
Installation documentation	<i>MAINVIEW Installation Requirements Guide</i>	describes the product's software and storage requirements
User documentation	<i>Energizer for CICS Messages and Codes Guide</i>	provides information about the various messages issued by the product
User documentation	<i>Energizer for CICS User Guide</i>	describes how to customize and use the product
Other documents	<i>Energizer for CICS Release Notes</i>	describes product enhancements and fixes included in the current version of the product

Online and Printed Books

The books that accompany BMC Software products are available in online format and printed format. If you are a Windows or Unix user, you can view online books with Acrobat Reader from Adobe Systems. The reader is provided at no cost, as explained in "To Access Online Books." You can also obtain additional printed books from BMC Software, as explained in "To Request Additional Printed Books."

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In some cases, installation of Acrobat Reader and downloading the online books is an optional part of the product-installation process. For information about downloading the free reader from the Web, go to the Adobe Systems site at <http://www.adobe.com>.

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Online Help

Energizer for CICS includes online Help. In the ISPF interface, you can access Help by pressing **F1** from any ISPF panel.

Release Notes and Other Notices

Printed release notes accompany each BMC Software product. Release notes provide current information such as

- updates to the installation instructions
- last-minute product information

In addition, BMC Software sometimes provides updated product information between releases (in the form of a flash or a technical bulletin, for example). The latest versions of the release notes and other notices are available on the Web at <http://www.bmc.com/support.html>.

Conventions

This section provides examples of the conventions used in this book.

Item	Example
information that you are instructed to type	Type SEARCH DB in the designated field.
specific (standard) keyboard key names	Press Enter .
field names, text on a panel	Type the appropriate entry in the Command field.
directories, file names, Web addresses	The BMC Software home page is at www.bmc.com .
nonspecific key names, option names	Use the HELP function key. KEEPDICTIONARY option
code examples, syntax statements, system messages, screen text	//STEPLIB DD The table <i>table_name</i> is not available.
emphasized words, new terms, variables	The instructions that you give to the software are called <i>commands</i> . In this message, the variable <i>file_name</i> represents the file that caused the error.

This book uses the following types of special text:

Note: Notes contain important information that you should consider.

Warning! Warnings alert you to situations that could cause problems, such as loss of data, if you do not follow instructions carefully.

Tip: Tips contain useful information that may improve product performance or that may make procedures easier to follow.

Chapter 1 Introduction

This book provides a fast start for individuals installing or evaluating Energizer for CICS. If you are installing the product, Chapter 2, “Installing Energizer for CICS,” walks you through the process. Topics include

- system requirements for running Energizer for CICS
- using the BMC Software OS/390 z/OS Installer
- the steps required to install Energizer for CICS
- how to specify the product password
- what to do if you are installing the product for the first time
- what to do if you are migrating from a prior version of the product

If you are performing a product evaluation, Chapter 3, “How to Evaluate Energizer for CICS,” describes the process. Topics include

- the steps required to conduct a product evaluation and a timeline for performing them
- common evaluation pitfalls and how to avoid them
- the tools provided for evaluating the product

The remaining sections of this chapter contain system requirements and general considerations that should be reviewed before installing the product. “Important Considerations” on page 1-3 discusses topics that should be reviewed whether you are installing the product or evaluating it.

System Requirements

Hardware Requirements

DASD Space

Product libraries:	730 tracks on 3390 DASD
Product VSAM data sets:	210 tracks on 3390 DASD per report file
SMP/E VSAM data sets:	375 tracks on 3390 DASD
SMP/E non-VSAM libraries:	110 tracks on 3390 DASD

Processor

Energizer for CICS will run on any CPU that is capable of running one of the supported releases of the operating system.

Cartridge drive

One cartridge drive is required for product installation.

Software Requirements

- MVS ESA: all releases are supported
- OS/390: all releases are supported
- z/OS: All releases are supported. However, if you are running z/OS release 1.2 or higher you must also be running Energizer for CICS release 4.2 and higher.
- CICS release 4.1, and Transaction Server 1.2 and above are supported.
- all MRO and ISC systems are supported

PTFs Required

- For CICS 4.1: Apply IBM APAR PN72337 before allowing the Transient Data Queue Management function to purge any waiting tasks.
- For Transaction Server 1.2: Apply IBM PTF UQ24583 before activating the PERM transaction of Energizer for CICS on a remote CICS system via CRTE.
- For CICS/DB2: Make sure IBM APAR PN15555 (for DB2 2.3) is installed before allowing the Trace Management function to disable writing USER entries to the Trace Table.
- For ACF2/CICS: Users of ACF2/CICS Release 6.2 must apply the Computer Associates APAR TC5164R, and users of ACF2/CICS Release 6.3 must apply the Computer Associates APAR TC5164S.

Important Considerations

- If you have disabled the CICS Trace via the MONITOR FOR CICS, do not activate the Trace Manager.
- If you are running the MONITOR FOR CICS release 1.3 or later, set the Trace Option Level for the Monitoring Manager to **0** on the Trace Options Table Screen (I1AT).
- If you have a product that cancels tasks for using excessive CPU, specify the Energizer for CICS long-running task PET0 on that product's exclusion list. This task runs 24 hours a day.
- If you have a product that prevents tasks from initiating other tasks via EXEC CICS START TRANSID, specify the Energizer for CICS tasks PEPI, PEOB, and PETF on that product's exclusion list. The programs activated by these tasks—P100PEPI, P100PEOB, and P100PETF—should likewise be excluded.
- If the Energizer for CICS Primary Options Menu does not display properly, ensure that Long message in pop-up is set to **OFF**, in your ISPF settings (Option 0 from the ISPF Primary Menu).
- If you are running Xpediter for CICS you will need to ensure that transactions PETF and PET0 are excluded from Xpediter's processing.

- The MROLRM system initialization parameter can have a significant effect on performance in an MRO function shipping environment. In general, we recommend setting MROLRM=YES. However, this option can have the following system-dependent effects:
 - Systems with a significant percentage of inquiry transactions, each with multiple VSAM calls, or transactions with many reads followed by a few updates, typically show significant improvements in processor utilization per transaction.
 - Systems using IMS/ESA, or transactions that make a lot of use of VSAM-update or browse-activity, may see very little or no performance improvement.
 - System with a very simple inquiry transaction workload may actually experience degraded performance because there is an extra flow at sync point.

Task Time-Out Management Excluded Tasks

The Task Time-out Management function excludes the following transactions from purge processing:

- All transaction IDs that begin with the character 'C'
- Any transaction ID whose first two characters match the first two characters of the Energizer for CICS long running tuning transaction. The tuning transaction is normally named PET0. It may have a different name when the Energizer for CICS transactions have been renamed to confirm to site naming standards.
- The DB2 transaction DSNB

Before activating the Task Time-out Management function in PROD mode, a task age table exclusion list must be defined containing the transaction IDs for any long running tasks that execute within the CICS region. Some transaction IDs for long running tasks that should be defined in the table are:

- MAINVIEW for CICS transactions JNL2 and BCRT
- Omegamon transaction OMEG

Chapter 2 Installing Energizer for CICS

Energizer for CICS is installed by unloading the product libraries from the distribution media and then customizing the product for your particular system.

The product libraries are installed using the OS/390 and z/OS Installer. The following topic summarizes the steps required to install the libraries and create the SMP/E environment. Use this section as a guide through the process.

Once the product libraries are installed, configure the product for your site. If you are installing the product for the first time, follow the steps in “Installing for the First Time” on page 2-5, otherwise perform the steps described in “Migrating from a Prior Version” on page 2-17.

Installing the Product Libraries

This section covers how to unload the distribution libraries using the BMC Software OS/390 and z/OS Installer. This is the first step in the installation process regardless of whether you are installing the product for the first time, or you are upgrading from a prior release of the product.

The BMC Software OS/390 and z/OS Installer provides many options that tailor the installation for individual preferences and site-specific needs. The *OS/390 and z/OS Installer Guide* describes the specific details related to each of the steps that must be performed. This section summarizes each step and guides you through the process.

The *standard* install process will be used to install Energizer for CICS, and the end result will be a valid SMP/E product environment.

The install process consists of the following basic steps

- unload the installation materials
- create the customized installation library
- define the install repository and profile
- generate the product installation JCL
- execute the product installation JCL

Each of these steps is discussed in the following sections. After these steps are complete, the Product libraries will be populated. The tasks performed using the BMC Software OS/390 and z/OS installer will be complete. Energizer for CICS customization is accomplished by the procedures documented in the *Energizer for CICS User Guide*. The customization steps are summarized in this document.

Step 1: Unload the Installation Materials

The section “Unloading the Base Installation Libraries” of the *OS/390 and z/OS Installer Guide* describes how to unload the installation materials from the base install tape. This tape is volume serial number BMI nnx , where nnx represents the version of the install tape that you received. Create the JCL member and execute it to unload the base libraries.

Step 2: Create the Customized Installation Library

The section “Creating the Customized Installation Library” of the *OS/390 and z/OS Installer Guide* describes how to invoke the REXX member BMCINSTL. When invoked for the first time, pressing **Enter** displays the Selection of Install Method panel. Select the *standard* install method, not the SMP/E method. The standard method creates an SMP/E environment.

1. At the Customized Installation Library and Jobcard Specifications panel, specify the data set name for the customized installation library. Use the same high level qualifier that was used to unload the installation materials.
2. Specify the JOB statement information and other input field values.
3. Press **Enter** to display the Installation Tape VOLSERS list.
4. Enter all of the volume serial identifiers provided in the following table, where nnx represents the version of the install tape that you received. The nnx values will not be the same for all the tapes. Be certain to enter the appropriate values for the tapes you received.

Table 2-1 Tape VOLSER informationn

VOLSER	Tape Set Name
A1Snnx	Infrastructure Tape 1
A2Snnx	Infrastructure Tape 2
A3Snnx	Infrastructure Tape 3
C1Snnx	S/390 Online

Any additional volumes you may have received are not required to install the product.

5. Press **Enter** to display the job used to build the customized installation library.
6. Review the JCL and submit the job for execution. Correct any errors you may encounter and rerun the job until it completes successfully.

When successful, return to the BMC Software Installation Configuration Initial Menu.

Step 3: Define an Install Repository and Profile

The “Starting the Installation System” section of the *OS/390 and z/OS Installer Guide* describes how to create the install Repository and Profile.

1. At the Main Menu select **Install and Customize Products and Solutions**. The BMC Software installation tables will be loaded and the installation menu will be displayed.
2. Select the **Manage Repository/Profile** option. Specify the desired options. The Repository data set name should have the same high level qualifier as the other data sets being created for this install process. For example, high.level.qual.INSTALL.BMCREPO.
3. Specify a unique Repository Profile Id for this installation of Energizer for CICS. For example, ‘ENCS’. Specify the same high level qualifier for the Profile Data Set HLQ value. Press **Enter** and the Installation System User Options panel will be displayed.

The “Specifying User Options” section of the *OS/390 and z/OS Installer Guide* describes this facility.

4. Specify the Basic installation option and the other options that are specific to your site. Press **Enter** and the Install Processing Main Menu will be displayed.

Step 4: Generate Product Install JCL

The section “Generating Installation JCL” of the *OS/390 and z/OS Installer Guide* describes how to create the JCL used to populate the product libraries and create the SMP/E environment. The SMP/E environment is required to receive and apply maintenance to Energizer for CICS.

1. To generate the product installation JCL, select **Product Install** on the Main menu and press **Enter**.
2. On the Product Selection panel, choose **Energizer for CICS**. A series of panels that request information are displayed. This information is used to construct the JCL members. For the Non-VSAM Library Prefix, specify the same high level qualifier but do not include INSTALL as the last level specified. Two groups of data sets will be created:
 - The OS/390 and z/OS Installer data sets named `high.level.qual.INSTALL.xxxx`
 - The product code data sets named `high.level.qual.xxxx`

Table 2-2 **Generated Jobs**

Member	Function
\$B00DOC	Unload Doc
\$B05UNLD	Unload Product Files
\$B90SMPE	Unload SMP/E Auxiliary Files
\$D99DUCL	Cleanup UCLIN Input Files

Step 5: Execute the JCL

The section ‘Running Standard Installation JCL’ of the *OS/390 and z/OS Installer Guide* describes the generated jobs and how to execute them.

1. Run both the \$B05UNLD job and the \$B90SMPE job. The first job populates the product libraries. The second job creates the SMP/E environment that is required to receive and apply maintenance.
2. Exit the OS/390 and z/OS Installer at this point.

Step 6: Customize Energizer for CICS

Note: The OS/390 and z/OS Installer is not used to customize Energizer for CICS. It simply unloads the product from the distribution media and established the product SMP/E environment.

If you are installing Energizer for CICS for the first time, perform the steps in the following section. Otherwise, see “Migrating from a Prior Version” on page 2-17 for information about updating from an earlier version.

Installing for the First Time

This section provides step-by-step instructions for implementing Energizer for CICS for the first time on a given operating system image.

The product libraries must be installed before the procedures described in this section can be performed. See “Installing the Product Libraries” on page 2-1 for information related to installing the product’s distribution libraries.

Note: If a previous version of Energizer for CICS is already installed on this operating system image, skip this section, and go directly to “Migrating from a Prior Version” on page 2-17.

Step 1: Allocate the VSAM Files

Allocate the Energizer for CICS VSAM files. Use the sample JCL provided in BBSAMP library member ECSJVDFN, as shown in Figure 2-1 on page 2-6.

Report File (PEREPORT): A single file must be allocated for each MVS image in which Energizer for CICS is to be used. This process allocates a second report file that might be referenced if the first one becomes full.

Parameter File (PEPARMS): This file can be a single data set allocated and accessed from all CICS regions using Energizer for CICS.

Refer to “Migrating from a Prior Version” on page 2-17 for a discussion of the files’ maintenance and space requirements.

Figure 2-1 Member ECSJVDFN

```

***** Top of Data *****
/*
/* Member: ECSJVDFN
/*
/* This JCL defines the Parameter file and two Report files.
/*
/* Edit the following variables:
/* -----
/* your.energize.cics
/*      The high level qualifier for the VSAM data
/*      set names to be defined.
/* volser
/*      The DASD volume serial Id where the data
/*      sets are to reside.
/*
/* -----*
//DEFINE EXEC PGM=IDCAMS,
//      REGION=800K
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
DELETE your.energize.cics.PARMS PURGE ERASE
SET MAXCC=0
DEFINE CLUSTER (NAME(your.energize.cics.PARMS) -
RECORDS(100 100) -
VOLUMES(volser) -
FSPC(0 0) -
KEYS(12 0) -
RECSZ(100 900) -
SHR(3,3)) -
DATA (NAME (your.energize.cics.PARMS.DATA) -
CISZ(4096)) -
INDEX (NAME (your.energize.cics.PARMS.INDEX))
DELETE your.energize.cics.REPORT PURGE ERASE
SET MAXCC=0
DEFINE CLUSTER (NAME(your.energize.cics.REPORT) -
RECORDS(50000 5000) -
VOLUMES(volser) -
FSPC(0 0) -
KEYS(22 0) -
RECSZ(200 4086) -
SHR(2,3)) -
DATA (NAME (your.energize.cics.REPORT.DATA) -
CISZ(4096)) -
INDEX (NAME (your.energize.cics.REPORT.INDEX))
DELETE your.energize.cics.REPORT01 PURGE ERASE
SET MAXCC=0
DEFINE CLUSTER (NAME(your.energize.cics.REPORT01) -
RECORDS(50000 5000) -
VOLUMES(volser) -
FSPC(0 0) -
KEYS(22 0) -
RECSZ(200 4086) -
SHR(2,3)) -
DATA (NAME (your.energize.cics.REPORT01.DATA) -
CISZ(4096)) -
INDEX (NAME (your.energize.cics.REPORT01.INDEX))
//
***** Bottom of Data *****

```

Step 2: Update the CSD

Using the sample JCL provided in the BBSAMP library member ECSJGDFN, execute the CICS utility DFHCSDUP. This upgrades your CSD with the Energizer for CICS resource definition group named ENERCICS.

Note: There are several points to keep in mind if you are migrating from older versions of Energizer for CICS. If you plan to continue running Energizer for CICS release 4.1, do not update the CSD. If you are migrating from 4.1 and do not plan to continue running that version, you can upgrade the CSD to remove resource definitions no longer required.

Figure 2-2

Member ECSCPLTS

```

***** Top of Data *****
      SPACE
*-----*
*      *
* Member: ECSCPLTS      *
*      *
* Energizer for CICS PLTSD Entry      *
* -----*
* Insert the following entry BEFORE the entry for DFHDELIM. *
*      *
*-----*
      SPACE
      DFHPLT TYPE=ENTRY,
      PROGRAM=P100PESD
      SPACE
***** Bottom of Data *****

```

Step 3: Update the PLTPI (Optional)

Note: This step is optional and may be omitted if you always intend to start Energizer for CICS manually by executing the PEPI transaction.

Using the source code provided in BBSAMP library member ECSCPLTI as a copybook member, update your PLTPI to include the Energizer for CICS start-up program P100PEPI. Add this entry *after* the PROGRAM=DFHDELIM statement, and then reassemble and link the PLTPI.

PLTPI: This table entry is optional and only needs to be installed if you want Energizer for CICS automatically activated at CICS startup. The PLTPI entry is provided in member ECSCPLTI. Add this entry and assemble PLTPI. This entry must appear *after* the PROGRAM=DFHDELIM statement.

Note: An alternate method of automatically starting Energizer for CICS functions at CICS startup is to activate the PEPI transaction from a sequential terminal.

Figure 2-3 Member ECSCPLTI

```

***** Top of Data *****
      SPACE
*-----*
*
* Member: ECSCPLTI
*
* Energizer for CICS PLTPI Entry
* -----*
* Insert the following entry AFTER the entry for DFHDELIM.
*
*-----*
      SPACE
      DFHPLT TYPE=ENTRY,
            PROGRAM=PL00PEPI
      SPACE
***** Bottom of Data *****

```

Step 4: Update the PLTSD (Optional)

Note: This step is optional and only needs to be completed if you want Energizer for CICS to be part of the non-immediate termination procedure.

Using the source code provided in BBSAMP library member ECSCPLTS as a copybook member, update your PLTSD to include the Energizer for CICS shutdown program P100PESD. Add this entry *before* the PROGRAM=DFHDELIM statement, and then re-assemble and re-link the PLTSD.

PLTSD: The PLTSD entry is provided in member ECSCPLTS. Add this entry *before* the PROGRAM=DFHDELIM statement in the PLTSD and assemble PLTSD. This table entry is optional and only needs to be installed if you want Energizer for CICS termination to be part of the non-immediate termination procedure. Energizer for CICS functions will terminate automatically at CICS shutdown. However, it is preferable to terminate them via PLTSD.

Step 5: Update the CICS Startup JCL

Update the CICS startup JCL for each CICS that will use Energizer for CICS. Use the sample JCL statements that are provided in the install JCL library member ECSCJCLS.

- Add the appropriate Energizer for CICS load library to the DFHRPL library concatenation.

- Add the BBLINK load library to the list of libraries concatenated to the DFHRPL DD statement.

Note: BMC Software recommends that you specify the DSNames of these files in the CSD file instead of using DD statements.

- In order to use the CICS user interface to browse additional report files, add definitions for the files.

Note: BMC Software recommends that you specify this DSNAME in the CSD file and not in a DD statement. The Parameter File does not change and can therefore still be used without changes.

- Add the BBLINK load library to a new DD statement named PEAPFLIB.

Figure 2-4

Member ECSCJCLS

```
***** Top of Data *****
/*
/* Member: ECSCJCLS
/*
/* Sample DD statements for the Energizer for CICS files to be
/* inserted in the CICS startup procedure:
/*
//DFHRPL DD DISP=SHR,DSN=other.load.libraries
// DD DISP=SHR,DSN=energize.cics.BBLINK
/*
/* It is recommended to specify the DSNames of the PEPARMS and
/* PEREPORT files in the CSD file instead of using the two DD
/* statements below.
/*
//PEPARMS DD DISP=SHR,DSN=your.energize.cics.PARMS
//PEREPORT DD DISP=SHR,DSN=your.energize.cics.REPORT
/*
/* This DSN is the BMC distribution library containing the
/* Energizer for CICS load modules.
/*
//PEAPFLIB DD DISP=SHR,DSN=energize.cics.BBLINK
/*
***** Bottom of Data *****
```

Step 6: Specify the CICS SIT Parameters

The CICS System Initialization Table (SIT) parameter NEWSIT=YES *must* be specified in the SIT overrides for CICS startup.

Warning! Failure to set this parameter may cause the CICS parameters, dynamically set by Energizer for CICS, to not be restored to their original values during a subsequent CICS startup.

Step 7: Customize the ISPF Invocation CLIST

Customize the CLIST for activating the Energizer for CICS TSO/ISPF interface. Enter the appropriate libraries that were created in Step 1. Use the sample JCL provided in the BBSAMP library member ECSPISPF.

Figure 2-5 Member ECSPISPF

```

***** Top of Data *****
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* MEMBER: ECSPISPF                                          */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* MODIFY THE PROC STATEMENT VARIABLES AS FOLLOWS:         */
/* - - - - - - - - - - - - - - - - - - - - - - - - - - - - */
/* LLIB      -- ENERGIZER LOAD LIBRARY                      */
/* PLIB      -- ENERGIZER ISPF PANEL LIBRARY                */
/* MLIB      -- ENERGIZER ISPF MESSAGE LIBRARY              */
/* SLIB      -- ENERGIZER ISPF SKELETON LIBRARY             */
/* TLIB      -- ENERGIZER ISPF TABLE LIBRARY              */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
PROC 0 LLIB ('energize.cics.BBLINK')      +
      PLIB ('energize.cics.BBPLIB')      +
      MLIB ('energize.cics.BBMLIB')      +
      SLIB ('energize.cics.BBSLIB')      +
      TLIB ('energize.cics.BBTLIB')

/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* ESTABLISH THE ISPF ENVIRONMENT                          */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
CONTROL NOLIST NOMSG NOCONLIST
ISPEXEC LIBDEF ISPLLIB DATASET ID('&LLIB')
ISPEXEC LIBDEF ISPMLIB DATASET ID('&MLIB')
ISPEXEC LIBDEF ISPPLIB DATASET ID('&PLIB')
ISPEXEC LIBDEF ISPSLIB DATASET ID('&SLIB')
ISPEXEC LIBDEF ISPTLIB DATASET ID('&TLIB')
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* INVOKE ENERGIZER/CICS ISPF INTERFACE                    */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
ISPEXEC SELECT PGM(P100IS00) NEWAPPL(PRFM) PASSLIB NEWPOOL
      PARM('&LLIB')
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* CLEAN UP AND RELEASE RESOURCES ACQUIRED BY THE DIALOG  */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
CLEANUP: +
ISPEXEC LIBDEF ISPLLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPSLIB
ISPEXEC LIBDEF ISPTLIB
END
***** Bottom of Data *****

```

Step 8: Initialize the Functional Parameters

Using the ENERGIZER for CICS ISPF interface, initialize and customize the parameter values for each of the product's functional areas.

This involves using the ISPF interface's Dialog Management screen to define the minimum subset of product parameter information. This requirement may be satisfied by

- defining the names of the VSAM data sets that will contain the product parameters and the reporting data.
- defining the APPLIDs for the CICS regions that will be running Energizer for CICS.

If you stop at this point in the customization process, Energizer for CICS will run with the default parameter values. Experience has shown that the default parameter work well for most installations. It may be necessary to define exclusion lists to have some transactions excluded from particular functions. For example, your site may have long running tasks that should be excluded from the Task Time-out Management function.

However, if you decide to further customize the parameter values used by Energizer for CICS, see the chapter in the *Energizer for CICS User Guide* entitled “Customizing Energizer for CICS” for further details.

Step 9: Specify the product password

Using the ENERGIZER for CICS ISPF interface, specify the product password. This step may require that you call the BMC contracts department in order to secure a valid password at your site. The password will be of the form *XXX XXX XXX XXX*—four groups of three characters. On the Product Authorization screen specify the name of the *load library* where the password module is to be stored, as well as the password that you were given. *The library specified must be a valid load library.* Normally this is not the BBLINK load library that was created during the product install process. This is a separate load library that exists to contain password load modules. It may have been previously defined at your site.

Note: If you have received a password in any format other than the one above, please call Contracts for a valid password.

For more information on the license facility, refer to the *OS/390 and z/OS Installer Guide*.

Step 10: Customize the Reporting Address Space JCL

The reporting facilities and license validation code require the Energizer for CICS Reporting Address Space.

To activate it, create a uniquely named catalogued procedure in your MVS procedure library. Use the sample procedure provided in the BBSAMP sample library member ECSPRASM, as shown in Figure 2-6 on page 2-13, as a guide. Once the procedure is created, the Reporting Address Space can be started using the operator start command

```
/S procname
```

Modify the library names appropriately. At least one Report File (DDname REPORT) must be specified in the Reporting Address Space JCL. Up to 99 additional files (DDnames REPORT01, REPORT02, ..., REPORT99) can also be specified.

If the Report File becomes full, the Reporting Address Space will automatically switch to the file with the next consecutive REPORTnn DDname. If this file is still full, or if any other error is encountered, the operator will be prompted to manually enter a DSName of a new report file. See “Automatic Shutdown” on page 3-4.

Note: The BMC Software License Facility stores password information in the load library identified at the time you defined the Energizer for CICS password. A load library other than the product load library is often used to store the password information. That load library must be concatenated to the BMCPSWD DD statement of the Reporting Address Space.

Figure 2-6 Member ECSPRASM

```

/**
***** Top of Data *****
/**
/** Member: ECSPRASM
/**
/** This JCL starts the Reporting Address Space
/**
/** Edit the following variables:
/** -----
/** procname
/**          The name for this procedure.
/**
/** energize.cics.BBLINK
/**          This DSN is the BMC distribution library containing the
/**          ENERGIZER load modules.
/**
/** bmc.license.LOADLIB
/**          This DSN is the USER load library where you have
/**          instructed the BMC license facility to place the
/**          product authorization table for ENERGIZER. This
/**          load module will have a name like ECSTBL3x.
/**
/** your.energize.cics
/**          The high level DSN qualifier for this Reporting
/**          Address Space.
/**
/**-----*
/**procname PROC
/**P100RASM EXEC PGM=P100RASM,
/**          REGION=32M,TIME=180
/**STEPLIB DD DISP=SHR,DSN=energize.cics.BBLINK
/**BMCPSWD DD DISP=SHR,DSN=bmc.license.LOADLIB
/**REPORT DD DISP=SHR,DSN=your.energize.cics.REPORT
/**REPORT01 DD DISP=SHR,DSN=your.energize.cics.REPORT01
/**PEPARMS DD DISP=SHR,DSN=your.energize.cics.PARMS
/**SYSPRINT DD SYSOUT=*
/**SYSABEND DD SYSOUT=*
/**SNAPMAIN DD SYSOUT=*
/**SNAPRPRT DD SYSOUT=*

```

Model Started Task: When the procedure is placed into a MVS procedure library, the Reporting Address Space may be started using an operator start command. For example,

```
/S procname
```

where procname is the procedure member name.

Step 11: Establish APF Authorization for BBLINK

Data sets concatenated to the Reporting Address Space STEPLIB and to the CICS startup JCL PEAPFLIB DD statements must be APF authorized. Follow the standard procedures at your site to establish APF authorization for these libraries.

Step 12: Run the P100SIRP Utility

The CICS component and the Reporting Address Space require the Energizer for CICS SVC.

Create a uniquely named JCL member to execute the P100SIRP utility used to install the SVC routines and optionally start the Report Address Space. Use the BBSAMP sample library member ECSJSIRP, shown in Figure 2-7, as a guide.

If you specified the PROCNAME parameter in the PARM= field on the EXEC card, the Reporting Address Space will be activated by a start command for the specified procedure when the JCL is executed.

Figure 2-7 Member ECSJSIRP

```

/*-----*
/*
/* Member: ECSJSIRP
/*
/* P100SIRP - Energize for CICS Dynamic SVC Install Program.
/*
/* Input Parameters:
/*
/*   Specified on the EXEC statement or using SYSIN
/*   statements.
/*
/*   A positional function keyword, optionally followed
/*   by one or more keyword parameters.
/*
/*   Any keyword parameters that are irrelevant to a
/*   function are ignored.
/*
/* Function keywords:
/*
/*   May be one of the following keywords.
/*
/*   INSTALL - Dynamically install the CLOSE TYPE=T SVC.
/*
/*             If WAIT=YES is also specified (see below),
/*             the WAIT SVC will also be installed.
/*
/*   LISTCSA - List the entries in the Energizer for CICS
/*             CICS CSA area.
/*
/*   REINSTALL - Dynamically reinstall the SVC routines that
/*               are currently at the top of the SVC chain.
/*
/*   RELEASE - Release an entry in the CSA area.
/*             The ASCB, ASID, JNAME, JNUM, and TCB
/*             parameter keywords are required values.
/*             The FORCE parameter keyword is optional.
/*
/*   REMOVE - Dynamically remove the SVC routines from
/*            the SVC chain if they are NOT at the top
/*            of the chain.
/*            Otherwise, this is identical to REINSTALL.
/*
/* Additional parameters:
/*
/*   May follow the function keyword in any order.
/*
/*   ASCB - 1 to 8 hexadecimal characters
/*          (leading zeroes are optional)
/*
/*          Address of the ASCB of the CICS region
/*          owning the CSA entry to be released.
/*
/*          * When the entry to be released is in a
/*          "SIGNING-ON" status (complemented ASCB),
/*          then the exact ASCB from the relevant
/*          CSA entry should be given as input.
/*
/*   ASID - 1 to 5 decimal characters
/*          (leading zeroes optional)
/*
/*          Address Space Id value of the CICS region
/*          owning the CSA entry to be released.
/*
/*   FORCE - YES | NO (default = NO)
/*
/*          When FORCE=YES is specified for the INSTALL
/*          or REMOVE functions:
/*
/*          Force the action even when there are CICS
/*          regions still using the Dispatch Management
/*          functions.
/*
/*          When FORCE=YES is specified for the RELEASE
/*          function:

```

```

/**
/**      Release the specified CSA entry even when
/**      the Dispatch management functions are
/**      active in the specified CICS region.
/**
/** JNAME   - 1 to 8 alphameric characters
/**
/**      Job Name of the CICS region owning the CSA
/**      entry to be released.
/**
/** JNUM    - 1 to 5 digits
/**          (leading zeroes optional)
/**
/**      Job Number of the CICS region owning the CSA
/**      entry to be released.
/**
/** NUMCICS - 1 to 255 (default = 10)
/**
/**      The number of CICS regions that will use the
/**      Dispatch Management functions.
/**
/** PROCNAME - Name of the member containing the procedure
/**            to activate the Reporting Address Space.
/**            This procedure must reside in a procedure
/**            library that is searched on your system,
/**            such as, SYS1.PROCLIB.
/**
/** TCB     - 1 to 8 hexadecimal characters
/**          (leading zeroes are optional)
/**
/**      Address of the Task Control Block of the CICS
/**      region owning the CSA entry to be released.
/**
/** WAIT    - YES | NO (default = NO)
/**
/**      Dynamically install the WAIT SVC screening.
/**
/** Examples:
/**
/**      When you wish to install the CLOSE TYPE=T SVC routine,
/**      allocate space for 5 CICS regions, and automatically
/**      activate the Reporting Address Space using procedure
/**      RASPROC, then code the PARM= value as follows:
/**
/**          PARM='INSTALL,NUMCICS=5,PROCNAME=RASPROC'
/**
/**      When you wish to reinstall the SVC routine, then code
/**      the PARM= value as follows:
/**
/**          PARM='REINSTALL'
/**
/**-----*
/**
/**      Edit the following variables:
/**      -----
/**      energize.cics.BBLINK
/**          The DSN of the BMC Software load library.
/**
/**      function,param1=abc,param2=def,...
/**          The function to execute and the required
/**          parameters.
/**
/**-----*
/**P100SIRP EXEC PGM=P100SIRP,REGION=2000K,
/**          PARM='function,param1=...'
/**STEPLIB DD DISP=SHR,DSN=energize.cics.BBLINK
/**SYSPRINT DD SYSOUT=*
/**SYSABEND DD SYSOUT=*
/**
***** Bottom of Data *****

```

Step 13: Activate the Energizer for CICS functions

Activate the Energizer for CICS functions via the Energizer for CICS Control Facility.

Note: Due to VSAM restrictions, BMC Software recommends that you activate the Energizer for CICS functions in CICS, *after* activating the Energizer for CICS Reporting Address Space.

Step 14: Evaluate Energizer for CICS Performance

The first time setup of Energizer for CICS is complete. If you plan to perform a product evaluation, skip to the “How to Evaluate Energizer for CICS” chapter.

For additional information related to the customization and use of the product, refer to the *Energizer for CICS User Guide*.

Migrating from a Prior Version

This section provides step by step instructions for upgrading an existing release of Energizer for CICS to the current version. If you have already performed the steps described in the section entitled “If you are installing Energizer for CICS for the first time” you can skip this section and go directly to the “How to Evaluate Energizer for CICS” chapter.

The main difference between migrating from release 4.1, and migrating from a release *prior* to release 4.1, is the Reporting Address Space. There was no Reporting Address Space prior to release 4.1. Each CICS region had a separate and distinct report file allocated to it. When migrating to release 4.3 and above, you must allocate a new report file that is large enough to handle the report data for *all* the CICS regions that will be running Energizer for CICS. Optionally, you may merge the previously collected data from the separate report files into the new report file. This will make the previously collected data available for viewing within the batch and online reporting facilities.

The Reporting Address Space for release 4.3 and prior releases may be active concurrently. This allows multiple versions of Energizer for CICS to be running and generating report data concurrently. This enables the migration of individual CICS regions to the new release without effecting CICS regions that are running the current release.

Note: Before migrating to a new version of Energizer for CICS, the product's distribution libraries must be installed as described in the *OS/390 and z/OS Installer Guide*.

The migration steps are described in the following topics

- steps related to the setup of the new Reporting Address Space are described in the next topic
- steps related to converting a CICS region to the new Energizer for CICS release are described in “Steps to Migrate Each CICS Region” on page 2-20
- steps related to terminating a previous release of Energizer for CICS are described in “Steps to Terminate the Previous Release” on page 2-22

Setting Up the New Reporting Address Space

Step 1: Allocate the Report File

If you are migrating from a version *older* than 4.1, allocate a new, single report file large enough to hold the reporting data for all the CICS regions that are running Energizer for CICS.

Step 2: Initialize Any New Functional Parameters

Using the Energizer for CICS ISPF interface, initialize and customize any new parameter values for each of the product's functional areas. See the chapter in the *Energizer for CICS User Guide* entitled “Customizing Energizer for CICS” for further details.

Step 3: Specify the product password

Using the Energizer for CICS ISPF interface, specify the product password. This step may require that you call the BMC contracts department in order to secure a valid password for your site. The password will be of the form *XXX XXX XXX XXX*—four groups of three characters. On the Product Authorization screen specify the name of the load library where the password module is to be stored, as well as the password that you were given. *The library specified must be a valid load library.* Normally this is not the BBLINK load library that was created during the product install process. This is a separate load library that exists to contain password load modules. It may have been previously defined at your site.

Note: If you have received a password in a format other than the one above, please call contracts for a valid password.

Step 4: Install the SVC Routine and Start the Reporting Address Space

Install the SVC Routine and Start the Reporting Address Space from the *new* product distribution libraries. Using the sample JCL that is provided in the BBSAMP sample library member ECSJSIRP as a baseline, you can create a JCL procedure that will install the Energizer for CICS SVC Routine *and* automatically start the Energizer for CICS Reporting Address Space. When this JCL is executed, a start command will be issued for the procedure specified in the PARM or SYSIN statements, thereby activating the Energizer for CICS Reporting Address Space.

Using the sample JCL that is provided in the BBSAMP sample library member ECSJRASM, you can also create a JCL procedure that will manually activate the reporting address space as either a batch job or a started task.

Note: Ensure that library names in your existing JCL members reference the new product distribution libraries where appropriate.

At this point the CICS regions may be migrated to the new Reporting Address Space.

Steps to Migrate Each CICS Region

Step 1: Upgrade the CSD File

Using the sample JCL provided in the BBSAMP library member ECSJGDFN, execute the CICS utility DFHCSDUP to upgrade your CSD with the new resource definition group named ENERCICS.

Note: If you plan to continue running a prior release of Energizer for CICS do *not* update the CSD.

Step 2: Verify the PLTPI (Optional)

Note: This step is optional and may be omitted if you intend to always start Energizer for CICS manually via the PEPI transaction.

Using the source code provided in BBSAMP library member ECSCPLTI as a guide, update your PLTPI to include the Energizer for CICS start-up program P100PEPI. Add this entry *after* the PROGRAM=DFHDELIM statement, .and then re-assemble and re-link the PLTPI.

Step 3: Verify the PLTSD (Optional)

Note: This step is optional and only needs to be completed if you want Energizer for CICS to be part of the non-immediate termination procedure.

Using the source code provided in BBSAMP library member ECSCPLTS as a guide, update your PLTSD to include the Energizer for CICS shutdown program P100PESD. Add this entry *before* the PROGRAM=DFHDELIM statement, and then re-assemble and re-link the PLTSD.

Step 4: Change the DSNNAME of the Report File

Change the dataset name of the report file that is concatenated to the PEREPORT DD statement in the startup JCL to the *new* dataset name.

Note: BMC Software recommends that you specify this DSNNAME in the CSD file and not in a DD statement. The Parameter File does not change and can therefore still be used without changes.

Make sure that the Reporting Address Space JCL, and the TSO/ISPF CLIST reference libraries are updated with the new programs.

The Parameter File does not change and can therefore still be used without changes.

Step 5: Change the DSNAME of the Load Libraries

Change the dataset names of the load libraries that are concatenated to the PEAPFLIB and DFHRPL DD statements in the startup JCL of all CICS regions, to the BBLINK dataset name.

Step 6: Migrating From Versions Prior to 4.1.00

If you are migrating from a version older than 4.1.00, allocate a new, single report file large enough to hold the reporting data for all the CICS regions that use Energizer for CICS. See “Migrating from a Prior Version” on page 2-17. You can optionally merge the contents of the existing Report Files into this single file prior to activating the new version of Energizer for CICS. Use the sample JCL in member ECSJVMRG of the Energizer for CICS BBSAMP sample library. See Figure 2-8 on page 2-22

Otherwise, *do not* reallocate and initialize the Energizer for CICS VSAM files unless explicitly stated in the instructions for the new release.

If you want to continue using the data in the exiting report files of Energizer for CICS, you will have to merge their contents into the new report file.

Figure 2-8 Member ECSJVMRG

```

***** Top of Data *****
/*
/* Member: ECSJVMRG
/*
/* Merge report files from Energizer for CICS releases prior
/* to release 4.1.00
/*
/* Edit the following variables:
/* -----
/* 1st.cics.input
/*      The first CICS report file DSN qualifier.
/* 2nd.cics.input
/*      The second CICS report file DSN qualifier.
/* your.energize.cics.REPORT
/*      The output DSN of the report file.
/*
/* Insert addition input report files when appropriate.
/*
/*-----*
//MERGERPT EXEC PGM=IDCAMS,
//          REGION=3000K
//SYSPRINT DD  SYSOUT=*
//C1RPT    DD  DISP=SHR,DSN=1st.cics.input.REPORT
//C1RPT01  DD  DISP=SHR,DSN=1st.cics.input.REPORT01
//C2RPT    DD  DISP=SHR,DSN=2nd.cics.input.REPORT
//C2RPT01  DD  DISP=SHR,DSN=2nd.cics.input.REPORT01
//OUT      DD  DISP=SHR,DSN=your.energize.cics.REPORT
//SYSIN    DD  *
//          REPRO INFILE(C1RPT)   OUTFILE(OUT)
//          REPRO INFILE(C1RPT01) OUTFILE(OUT)
//          REPRO INFILE(C2RPT)   OUTFILE(OUT)
//          REPRO INFILE(C2RPT01) OUTFILE(OUT)
/*
***** Bottom of Data *****

```

Step 7: Deactivate Energizer for CICS

Deactivate Energizer for CICS in each CICS region where it is currently active, or was previously active. If migrating from a 4.10x version of Energizer for CICS prior to 4.104, use transaction PECL. Otherwise, use transaction PECU.

Step 8: Restart the CICS Region

Shutdown and restart the CICS region where Energizer for CICS is to be activated.

Steps to Terminate the Previous Release

After Energizer for CICS has been terminated in all regions running the previous release, the following steps must be executed to remove Energizer for CICS from the OS/390 image.

Step 1: Terminate the Reporting Address Space

About a minute after Energizer for CICS has been deactivated in all the CICS regions, terminate the Reporting Address Space, using the **STOP** or **FSTOP** options of the console MODIFY command.

Step 2: Remove the Energizer for CICS SVC Routine

Using member ECSJSIRP in the BBSAMP library as a baseline, remove the Energizer for CICS SVC routine by executing batch program P100SIRP. Program P100SIRP must be executed from the load library of the Energizer for CICS release of the SVC routines that are to be removed. Use the REMOVE function to remove the SVC routines used by that release of Energizer for CICS.

Note: Do not use the FORCE option unless instructed to do so by your local support representative.

Step 3: Optionally Merge the Report File Data

This step only needs to be performed when you want to view report data collected by the previous release along with the report data being collected for the new release.

Using member ECSJVMRG in the BBSAMP library as a baseline, edit the JCL to reference the old report files containing the previously collected data and the new report file to contain the merged data.

Chapter 3 How to Evaluate Energizer for CICS

The entire process of installing, testing, migrating to production, and evaluating is straightforward and can be concluded in a matter of days. Several tools are provided that aid the process.

During evaluation, Energizer for CICS runs in two modes: simulation (SIML), and production (PROD). In SIML mode, Energizer for CICS does not take any proactive or corrective actions. It performs data gathering only; gathering the data used in the final evaluation process.

The goal is to gather data about CICS performance with Energizer for CICS running in both modes. The data is analyzed and comparisons are made between the performance of your CICS regions with and without Energizer for CICS.

In order for these comparisons to be statistically valid, as many variables as possible must remain constant between the two modes. For example, comparing simulation mode performance over three days in a lightly loaded test CICS region against three days of production mode performance in a heavily loaded production CICS region will not produce a statistically valid comparison.

Note: To produce a statistically valid comparison, the evaluation time line should be followed as closely as possible. Deviations can reduce the quality of collected data and diminish the possibility of performing a valid comparison.

Avoiding Common Mistakes

The following are some common mistakes to avoid during evaluation.

- Do not start up Energizer for CICS in PROD mode before SIML mode.
- Do not put Energizer for CICS into a lightly loaded test region and expect to find CPU savings.
- Focus analysis on *peak* periods. Disregard weekends, holidays, days of low activity, and the hours of the day that typically have low activity. In other words, the ideal hours for data gathering are the normal business hours, Monday through Friday. Don't forget to exclude days that correspond to unusual events, such as month-end, quarter-end, and year-end from the evaluation.
- Do not prepare incomplete analyses. Do not compare only one variable, such as CPU, without looking at the number of transactions processed.
- Do not include the first interval that Energizer for CICS was active in your measurements because many of the CPU saving services are not yet fully functional.
- Be sure to exclude Energizer for CICS transaction PET0 from any analysis of average-response-time figures.
- If you are using a CICS monitor to look at CPU time, be sure to take into account that the largest CPU savings do not occur in application CPU usage but in system time, KCP, TCP, MRO management, and other TCBS such as VSAM subtasking, DB2, etc. RMF is probably a better choice for measuring total savings. The application CPU time may in fact increase with Energizer for CICS if the VSAM Subtask Management function is active and has disabled VSAM subtasking. When VSAM subtasking is disabled, the VSAM CPU is charged to the CICS task rather than to the VSAM subtask. The actual application CPU is more accurate but may be larger. However, the total CICS CPU will have decreased.
- Do not forget to remove CSMI transactions from both response-time and task-number counts.
- Do not misinterpret response-time statistics. When reviewing response-time numbers, you may see a slight increase. In most cases, if not all, there is no true increase but a more accurate measure of response time. This occurs for the following reasons:

- No monitor can measure the time that tasks wait to get into CICS when CICS is at MAXTASKS or Short-On-Storage. Therefore, if Energizer for CICS reduces MAXTASKS, Short-On-Storage, or sympathetic outages you have eliminated the previously unmeasured part of response time that was quite substantial (the time from when the user pressed the Enter key to the time CICS accepted the transaction). The response time with Energizer for CICS is much more exact and lower than the true response time without Energizer for CICS.
- Previously, if the task rate increased significantly (i.e. over 7%), there was considerable work that went unprocessed because CICS could not handle the workload. Prior to Energizer for CICS, the system was not able to process these transactions. In a real sense, these extra transactions had a very long response time. The response time recorded without Energizer for CICS only included the time for work processed and not the time for the work that could not be processed. Again, with Energizer for CICS, the response time is more accurate for your workload.
- Always look at response time, task rate, and CPU usage for peak periods.
- Be sure to install and run Energizer for CICS in at least *three* production CICS regions, even if you only want to analyze and report on two regions. True measurement requires all regions to be *energized*. A region can only receive recovered cycles from other regions. Even a lightly used test region could induce problems at critical times for heavily used production regions. Energizer for CICS can trap these occurrences and in many cases prevent serious problems.

To realize maximum CPU savings when using a non-IBM data base management system, run the CICS regions at a higher dispatching priority than the DBMS regions.

Evaluation Tools and Reports

Several tools and aids assist evaluation. Additionally, CICS statistics, performance monitor reports, and the Resource Management Facility (RMF) reports can be used to analyze Energizer for CICS. Additional information about the tools and reports mentioned in this section may be found in the *Energizer for CICS User Guide*, in chapter 5 “Online Reporting Facility” and in chapter 6 “Batch Reporting Facility.”

Online Reporting Facilities Provide detailed information about the activities and operations executed to enhance CICS performance.

Batch Reporting Facilities Provide several batch reports that can be submitted using the ISPF user interface, or the by editing sample JCL members. The reports include:

- **INDEX** report: lists the CICS APPLIDs found in the report file, and for each unique APPLID shows the dates, times, and activation modes for each day that Energizer for CICS was active.
- **PRINT** report: provides the same detailed information as the Online Reporting Facility.
- **PRINTSTAT** report: the Accumulative Statistics report identifies improvements in CICS stability and transaction throughput.
- **AVALSTAT** report: the CICS Performance Availability report provides summary information about long-term performance availability of the CICS system with Energizer for CICS.
- **WORKSHEET** report: provides statistical information about the performance of the CICS and MVS systems during user-defined periods. These periods compare the collected SIML data to the collected PROD data to produce a performance comparison.
- **AUTOWORK** report: The Automatic CICS Performance Comparison Worksheet report provides statistical information about CICS and MVS performance. Peak SIML mode periods are compared to the peak PROD mode periods within a user-defined time range, and the best performance comparisons are automatically identified.

The Autowork report produces several output reports: the Index report for the time range selected.; the Worksheet report for the best comparison period identified. If more than one CICS region is detected, the Worksheet Summary Report will be produced detailing the combined performance improvements for multiple CICS regions.

The Evaluation Time Line

These steps guide you through the process of collecting data for the evaluation. It results in data collected from multiple production CICS regions executing large workloads while running Energizer for CICS.

The intention is to collect five days of data when Energizer for CICS is running in SIML mode, and then five days of data when it is running in PROD mode. The collected data will then be evaluated.

Day 1 Install in One or More Test CICS Regions

Goal

Ensure that the product is installed properly, the product password is correct, all functional areas are running properly, and unexpected side-effects were not produced.

Procedure

1. Authorize the Energizer for CICS load library BBLINK.
2. Run P100SIRP to install the Energizer for CICS SVC.
3. Run P100RASM to start the Reporting Address Space.
4. Install Energizer for CICS in one or more CICS test regions. Activate the product functions in simulation (SIML) mode. Let the product run in this mode for eight hours.
5. Invoke the PERM transaction to view the function status within the CICS region.
6. Invoke the ISPF user interface to view the reporting data that was collected.

Day 2 Activate PROD Mode in Test CICS Regions

Goal

Ensure the product does not produce unexpected side-effects in your system.

Procedure

1. Switch from SIML mode to PROD mode in the test CICS regions that were selected on Day 1 of the evaluation. Let the product run in this mode for eight hours.
2. Monitor the Energizer for CICS Online Reporting Facility for error messages.
3. Monitor the JES JOBLOG of the CICS regions and the Energizer Reporting Address Space for error messages.

Goal

Prepare to run Energizer for CICS in SIML mode in at least *three* of your production CICS regions.

Procedure

Install Energizer for CICS in at least three heavily loaded production CICS regions. This step can be accomplished concurrently with the first procedure.

Ensure the parameters for the production CICS application IDs specify **SIML** for the mode and **OFF** for the **AUTOSTART** option.

Day 3 Activate SIML Mode in the Production CICS Regions

Goal

Gather the simulation mode data for selected production CICS regions.

Procedure

Activate all Energizer for CICS functions in SIML mode for the selected production regions.

1. Access the Control Facility within the ISPF user interface. Type an **A** line command next to **ALL FUNCTIONS**, and **SIML** in the **MODE** field, then press **Enter**.
2. Monitor the Energizer for CICS Online Reporting Facility for error messages.
3. Monitor the JES JOBLOG of the CICS regions and the Energizer Reporting Address Space for any error messages.

Goal

Prepare to have Energizer for CICS functions AUTOSTART.

Procedure

1. Access the Control facility within the ISPF User Interface.
2. Select the APPID to be updated.
3. Display the General Parameters panel. Type **Yes** in the **AUTOSTART** fields and press **Enter**. The next time the CICS is started, all functions will automatically start.

To exclude a particular function from automatically starting, display the parameter panel for that function and type **NO** in the **AUTOSTART** field.

Days 4–7 Collect SIML Data in Production CICS Regions**Goal**

Gather the simulation mode data for the selected production CICS regions.

Procedure

- Continue to run all Energizer for CICS functions in SIML mode in the selected production regions.
- Monitor the Energizer for CICS Online Reporting Facility for error messages.
- Monitor the JES JOBLOG of the CICS regions and the Energizer Reporting Address Space for error messages.

Day 8 Activate PROD Mode in Production CICS Regions**Goal**

Gather the production mode data for the selected production CICS regions.

Procedure

Activate all Energizer for CICS functions in PROD mode for the selected production regions.

1. Display the Energizer for CICS Control Facility. Type an **A** line command next to **ALL FUNCTIONS** and **PROD** in the **Mode** field, then press **Enter**.
2. Monitor the Energizer for CICS Online Reporting Facility for any error messages.
3. Monitor the JES JOBLOG of the CICS regions and the Energizer Reporting Address Space for any error messages.

Days 9–12 Collect PROD Data in Production CICS Regions

Goal

Gather the production mode data for the selected production CICS regions.

Procedure

- Continue to run all Energizer for CICS functions in PROD mode in the selected production regions.
- Monitor the Energizer for CICS Online Reporting Facility for any error messages.
- Monitor the JES JOBLOG of the CICS regions and the Energizer Reporting Address Space for any error messages.

Time Line Summary

At this point you have

- become familiar with using the Energizer for CICS user interfaces in both the ISPF and CICS environments.
- become familiar with the tasks required to setup and activate the Energizer for CICS functions in the CICS regions.
- Collected data from multiple production CICS regions that execute large workloads. The collected data should consist of five days of SIML mode data and five days of PROD mode data.

Analyzing the Collected Data

This section describes how to analyze the data collected during the data-gathering phase of the evaluation. Several reports are described and various general performance topics discussed. For additional information on how to interpret the reports, see Chapter 6 in the *Energizer for CICS User Guide* “Batch Reporting Facility.”

After the data has been collected, batch reports that provide an overview of the performance improvements should be executed. The functions that generate the reports are described in the following table.

Table 3-1 Batch Reporting Facility Reports

INDEX	Run this report using the date range of the evaluation period. This report will produce a summary of the data collected.
AUTOWORK	Run this report using the SIML and PROD date ranges that are obtained from the INDEX report output. Be certain to specify the model application Id on the APPLID parameter value. This report identifies the time periods that show the best performance improvement. It also produces multiple WORKSHEET reports for the time period identified.
WORKSHEET	Examine the AUTOWORK report output for the best comparisons. Select individual days to compare for a particular CICS region. Execute the WORKSHEET report for each CICS region, selecting SIML and PROD date pairs for each CICS region. Compare the SIML data from 8:00 to 18:00 with PROD data from 8:00 to 18:00. This will provide an overall summary of the improvements made to each CICS region running Energizer for CICS.
AVALSTAT	Run this report using the PROD date ranges obtained from the INDEX report.
PRINTSTAT	Run this report using the PROD date ranges obtained from the INDEX report.

Interpreting the Index Report

This report summarizes the contents of the report file. Summaries are produced for each CICS region. This information is useful in identifying comparable periods of activity to be used as input to the other reports. Locate SIML and PROD date ranges that show similar activity. These are dates that have similar recording intervals and a similar number of transactions per interval. Make a note of these date pairs.

Interpreting the AUTOWORK Report

The Automated CICS Performance Comparison Worksheet report identifies comparable peak workload periods in which the Energizer for CICS functions were active in both production and simulation modes. It also generates a Performance Comparison Worksheet for the pair of peak workload periods with the most significant CPU savings.

Note: The AUTOWORK function only accounts for days in which the functions were active in the *same* mode between 8.00 A.M. and 8.00 P.M.

An Index Report is produced before the Performance Comparison Worksheet. This lists the exact periods and modes of activity selected for input to the Performance Comparison Worksheet report.

An abbreviated Accumulative Statistics Report containing statistical data from the selected worksheet records is printed at the end of the report.

When data for multiple CICS regions exists in the report file for the peak time range identified, a Worksheet report is produced for each CICS region.

When multiple Worksheet reports are produced, a Worksheet summary is also produced that summarizes the combined performance improvement for all reported CICS regions.

The following information should be kept in mind when using these functions to report on multiple CICS regions:

- The AUTOWORK function uses the data for the MODEL APPLID to identify a pair of comparable production/simulation peak-workload periods with the largest CPU savings. This pair is then used to produce the Performance Comparison Worksheet for each of the CICS regions in the input report files. It is important to specify as MODEL APPLID the CICS region with the most significant activity in the system, or whose activity and time of peak workload best represent the other CICS regions included on the report files.

When no MODEL APPLID is provided, the first APPLID found in the report file is used as the model. This may be a test CICS region and will cause the AUTOWORK report to produce undesirable results.

- The time frame input to the WORKSHEET function is used for all of the CICS regions encountered in the input report files. This time frame should be the time of peak workload in the heaviest loaded CICS region, or should best represent the other CICS regions included in the report.

- The Worksheet Summary report uses the data from the Performance Comparison Worksheet produced for each CICS region. It shows the combined performance improvement gained during the time frame used.

Interpreting the WORKSHEET Report

The CICS Performance Comparison Worksheet report provides statistical data for peak workload periods both with and without Energizer for CICS. Using the PRODDATE, PRODTDATE, PRODFROMT, PRODTOT, SIMLDATE, SIMLTDATE, SIMLFROMT and SIMLTOT parameters of the function, various types of comparison periods can be defined. For instance

- A few peak hours of a simulation run can be compared to a few peak hours of a production run from the same day or from another day.
- A period of several consecutive days (e.g. a week) in one mode can be compared to a period of consecutive days in the other. Using the time parameters, specific peak times in each period may be defined.
- All the simulation data can be compared to all the production data within the same period or partly overlapping period.

Note: Be careful to compare periods with similar workloads and transaction mixes. Specify times that represent real peak workloads. When comparing longer periods, be sure to omit weekends, holidays, and days with low activity.

The following information will help you interpret the CICS Performance Comparison Worksheet and identify the benefits provided with Energizer for CICS actively managing your CICS systems: resource savings, increased availability, and performance improvements.

Peak-Period CICS Performance Analysis

CICS CPU The AVERAGE CICS CPU and AVERAGE MAXIMUM CICS CPU for the peak period should be lower for comparable workloads. If your CPU has been heavily loaded, you may observe more transactions being processed with the same or less CPU. If your workload is the same or lower, on the PROD day, you will see significantly reduced CPU with the same number of transactions.

SYSTEM CPU AVERAGE SYSTEM CPU utilization is initially lowered by reducing **MAXIMUM SYSTEM CPU** and allowing more work to be processed in CICS, batch, and TSO. However, MVS CPU often increases as more batch and TSO work is processed. The reason is based on the reduction in MVS dispatching of both batch and CICS.

Note: CICS CPU is based on the utilization of one processor in the complex and may exceed 100%. System CPU is CPU utilization of the entire complex. System CPU utilization of over 100% indicates 100% CPU utilization plus the number of users waiting for CPU.

TRANSACTIONS With Energizer for CICS active, more transactions are processed using less CPU. The Mirror Task Management function usually reduces the number of mirror (CSMI) transactions. Therefore, it may appear that less work is being processed relative to the CPU utilized. The **NET TRANSACTIONS** and **NET TRANSACTIONS PER INTERVAL** represent a truer comparison between the two periods. The **TRANSACTIONS PER CICS CPU MINUTE** represents the improvement in the number of transactions processed per CICS CPU minute is indicated by the percentage displayed between the **PROD** and **SIML** figures.

AVERAGE CICS CPU PER TRANSACTION With Energizer for CICS active, less CPU is utilized for each transaction. This figure may be significantly higher than the CPU-per-task figure reported by your performance monitor. Energizer for CICS counts all CPU, application, monitor, database, VSAM subtasking, and CICS overhead. This figure is a true measure of CPU that CICS uses.

WAITS PER SECOND CICS issues significantly less waits with Energizer for CICS than without it. This difference affects an increase in transaction throughput and reduction in CPU utilization.

Note: Users of non-IBM data base management systems that have changed the priority of the DBMS regions to be below that of CICS, and users of DB2 might notice an increase in this figure with Energizer for CICS in production mode. This is not a real increase. With the DBMS in a higher dispatching priority than CICS, a significant part of the **WAITS** issued by CICS is preempted and therefore not counted. The actual **WAITS PER SECOND** figure with Energizer for CICS in simulation mode is much higher than that reported. With Energizer for CICS in production mode, all waits issued by CICS are handled.

VSAM SUBTASKING ACTIVATION This figure indicates how many times VSAM subtasking was activated during the two periods. Overhead is saved by only allowing the system to off-load VSAM I/O activities as needed. This is usually for short periods of peak activity during the day.

Peak Period CICS Availability Analysis

SOS/MXT CONDITIONS Users with heavily loaded systems and who regularly experience SOS and MXT conditions will see a significant reduction in them. In some installations they may be completely eliminated. Their main causes—waiting on resource queues and MRO session waits—have been eliminated. As the frequency of these conditions decreases, CPU utilization will also decrease and availability improve.

PROGRAM COMPRESSION Higher residency times with Energizer for CICS means unused programs are kept in storage longer for possible reuse. As a result, fewer programs are reloaded and unnecessary response-time delays are avoided. The number of not-in-use (NIU) programs increases and the number of program compressions decreases as CICS manages DSA more efficiently. The PROGRAMS DELETED PER INTERVAL figure indicates that Energizer for CICS had to change the CICS storage factor dynamically in order to provide DSA for task requests.

Interpreting the AVALSTAT Report

The CICS Performance Availability Statistics report summarizes long-term CICS performance availability during Energizer for CICS execution. It extracts data from the operational and statistical records in the Energizer for CICS Report file accumulated during both production and simulation modes.

The following information will help you interpret the CICS Performance Availability Statistics report and evaluate the long-term benefits provided by Energizer for CICS.

Long Term Availability

SOS/MXT CONDITIONS Users with heavily loaded systems who experienced regular short-on-storage (SOS) and Maxtasks (MXT) conditions in the past, will see a significant reduction in the number of these conditions. In some installations, these conditions may be completely eliminated. Most of the problems causing SOS and MXT have been eliminated. As the frequency of these conditions decrease, CPU utilization also decreases. Response time and system availability may significantly improve.

Maxtasks Management

By raising the MXT value above the original number as needed, potential MXT lockouts can be avoided. By lowering the MXT conditions, workloads were matched to available storage and CPU. The MIN TIMES MXT CONDITION AVOIDED is a minimum number. There is no way for Energizer for CICS to know how many more times MXT would have occurred if the MXT value was not changed.

Storage Management

By adjusting the minimum and maximum DSALIMIT and EDSALIMIT values, the number of SOS and MXT conditions are reduced significantly, transaction throughput increased, and system availability and response time improved.

Task Time-Out Management

Tasks that exceed their maximum allowable duration are canceled. As a result, system resources are released and unnecessary transaction processing and potential MXT conditions are prevented.

Transaction Class Management

TIMES MAXACTIVE/PURGETHRESH INCREASED By increasing the MAXACTIVE and/or PURGETHRESH limits of a transaction class as needed, transaction throughput increases and response time improves.

TIMES MAXACTIVE/PURGETHRESH DECREASED By decreasing the MAXACTIVE and/or PURGETHRESH limits of a transaction class as needed, the over commitment of CPU and/or dynamic storage is prevented, and the number of SOS and MXT conditions significantly reduced.

Temporary Storage/Transient Data Queue Management

STRINGS/BUFFERS ADDED Strings and buffers are added as needed, to prevent performance degradation, SOS and MXT conditions. Both transaction throughput and system availability are thereby increased.

TASKS ABENDED Tasks that exceed the maximum number allowed to wait for temporary storage/ transient data resources are canceled. This saves the system from a severe MXT or SOS condition that may not have been recoverable.

VSAM Queue Management

STRINGS ADDED File strings are added to overcome a CICS resource shortage and improve transaction throughput.

TASKS ABENDED Tasks are cancelled that exceed the maximum number allowed to wait for file strings and LSR strings and buffers. This saves the system from a CICS deadlock condition.

MRO/ISC Queue Management

Tasks are terminated that exceed the maximum number allowed to wait for remote sessions. MXT or SOS conditions are thereby avoided. This can prevent sympathetic outages.

Interpreting the PRINTSTAT Report

The Accumulative Statistics report identifies improvements in CICS stability and transaction throughput.

The following information will help you interpret the Accumulative Statistics report and identify improvements in CICS stability, avoid lockouts and outages, and improve transaction throughput. Refer to the *Energizer for CICS Messages and Codes Guide* for a complete description of the statistical messages (STxxx) found in the Accumulative Statistics report.

Program Compression Management (Messages ST001 - ST008)

Message ST003 indicates how many times that Energizer for CICS replaced the static CICS storage usage target, to dynamically match availability, to maximum throughput.

Maxtasks Management (Messages ST023 - ST025)

- If Energizer for CICS raised the MXT value (ST023) and made it larger than the original number, the system was saved from a MAXTASKS condition.

- If Energizer for CICS lowered the MXT value (ST024) to a number less than the original number, it detected that the original MXT number was too high in relation to storage or CPU availability. If the system has suffered from an occasional or recurring MAXTASKS problem, use your CICS or performance monitor statistics to compare the number of occurrences of MAXTASKS in a week, with and without Energizer for CICS.

Temporary Storage & Transient Data Queue Management (Messages ST029 - ST034)

- If Energizer for CICS added strings or buffers (ST029, ST030, ST032 & ST033), transaction throughput was improved. If these messages appeared more than twice, Energizer for CICS probably saved the system from severe degradation, MAXTASKS, or Short-On-Storage.
- If Energizer for CICS abended tasks (ST031 & ST034), then it saved the system from a severe MAXTASKS or Short-On-Storage condition which may not have been recoverable. If this has occurred, you should carefully examine all the CICS parameter definitions to understand why it happened.

Trace Management (Messages ST035 - ST042)

Messages ST035-ST042 indicate how many times Energizer for CICS turned off part of the CICS Trace Facility Options in order to give the system extra CPU for a temporary peak demand in CPU.

VSAM Subtask Management (Messages ST043 - ST048)

Messages ST043 - ST048 indicate how often the system needed to off load VSAM I/O activities to the VSAM Subtask. You may note that the system needed VSAM subtasking only for a short time during the day. Energizer for CICS lets CICS save the overhead by only activating the subtask when it is needed.

Dispatch Management (Messages ST049 - ST051)

Use messages ST049, ST050, and ST051 to compare the MVS Wait Rate with Energizer for CICS in PROD mode versus SIML mode. You will note much lower wait rates in PROD mode. This is how Energizer for CICS provides CPU savings. If the report covers an extended period, the average may include inactive times. It is best to print these statistics for a peak period (e.g. 4 hours) with Energizer for CICS in SIML mode on one day and in PROD mode during the same peak period on another day. Use the PRINTSTAT parameters FROMDATE, FROMTIME, TODATE, TOTIME.

MRO Mirror Task Management (Messages ST052–ST057)

Messages ST055, ST056, and ST057 indicate the average, maximum and minimum number, respectively, of mirror tasks changed by Energizer for CICS from short to long running. This service reduces CPU overhead and improves transaction throughput and response times.

VSAM Queue Management (Message ST058)

Message ST058 indicates how many times Energizer for CICS added file strings (and buffers for NSR files) or abended tasks to overcome a VSAM resource shortage. Throughput was improved. If more than two files had such messages, or if more than two tasks were abended, Energizer for CICS probably saved the CICS from a deadlock condition.

MRO/ISC Queue Management (Message ST059)

If message ST059 appears on the report, Energizer for CICS may have avoided a MAXTASKS or Short-On-Storage condition. If the number of tasks abended is more than two, a sympathetic outage was probably prevented: a loss of one CICS system caused by a problem in a connected CICS system.

Storage Management (Messages ST066 - ST068)

These messages indicate how Energizer for CICS has adjusted the EDSALIMIT values of CICS to match the size of the available dynamic storage to the transaction workload, thereby preventing Short-On-Storage and MAXTASKS conditions and improving transaction throughput and response times.

Task Time-Out Management (Message ST071)

Messages ST071 indicates how many tasks that have exceeded their allowable duration were canceled by Energizer for CICS, thereby releasing system resources and preventing unnecessary transaction processing and potential MXT conditions.

Transaction Class Management (Messages ST072 - ST075)

These messages indicate how Energizer for CICS has adjusted the MAXACTIVE and PURGETHRESH limits of the listed transaction classes to match the transaction workload to available CPU and dynamic storage. Short-On-Storage and MAXTASKS conditions were prevented and transaction throughput and response times were improved.

Selected Data Analysis Topics

Measuring CPU Savings

It is easy to measure CPU savings produced by Energizer for CICS. The CICS Performance Comparison Worksheet report provides the means to analyze these savings. Additionally, any CICS performance monitor can be used. Any active CICS system in its peak four-hour period is a prime candidate for measuring the savings results of Energizer for CICS. Use data for two comparable days with the Dispatch Management, MRO Dispatch Management, and MRO Mirror Task Management functions activated in PROD mode and in SIML mode. Do not attempt to measure test systems or systems with low utilization. *The Dispatch Management and MRO Dispatch Management functions only manage CICS systems when CPU utilization is above 10%.* This is the default percentage and can be altered using the Parameter Facility.

Note: It is important to remember that up to one full reporting interval is needed for all functions to become fully activated. Do not measure Energizer for CICS during this time frame.

The CICS Performance Comparison Worksheet measures CICS and MVS CPU savings by comparing the average and maximum CPU utilization for similar peak-workload periods. Energizer for CICS affects total CPU utilization by reducing CPU peaks and allowing more work to be processed in CICS, TSO, and Batch. An additional way to measure the CPU savings produced by the Dispatch Management and MRO Dispatch Management functions is to look at the savings in CICS CPU per task. This is shown by AVG CICS CPU PER TRANSACTION on the Performance Comparison Worksheet.

Note: Remember that variations in transaction activity can easily affect the comparison.

Additional savings can be measured in MRO systems with the MRO Mirror Task Management function activated. The aim of the MRO Mirror Task Management function is to greatly reduce the number of mirror tasks.

For systems that suffer from numerous MAXTASKS, MAXACTIVE, Short-On-Storage conditions, or program compressions, additional CPU savings can be realized with the use of Energizer for CICS functions.

Analyzing Storage Management

The CICS Performance Comparison Worksheet report shows how much virtual storage was reclaimed by Energizer for CICS during a peak-demand period, and the resulting DSA utilization. DSA savings are achieved without any unnecessary response-time delays or Short-On-Storage conditions.

Measuring the Effects on Bottlenecks for MRO Users

Today, MRO users running multiple regions of interconnected CICS regions suffer greatly from sympathetic outages—problems in one CICS region that spread to other CICS regions. All MRO users have probably experienced a temporary problem in one application-owning region that caused an interconnected terminal owning region to reach MAXTASKS or a short-on-storage condition. With Energizer for CICS installed, problems in one interconnected CICS are isolated. The attached CICS regions in most, if not all, instances will continue to function.

Actions taken to ensure that problems do not spread between CICS systems are best illustrated by the data recorded in the Energizer for CICS Report File. Elimination of bottlenecks is best illustrated in an exception report, produced by selecting only exception action messages (MSG TYPE = EXC) in the Online Reporting Facility, and the PRINT Report of the Batch Reporting Facility.

The number of tasks waiting in queues for resources is continually monitored. When it detects that a queue has exceeded the user-defined maximum, it begins to cancel the excessive waiting tasks. However, this process often fails to ensure efficient operations. Usually, new tasks arrive faster than they can be canceled. If this situation occurs, Energizer for CICS also begins to raise the MAXTASKS and Transaction Class MAXACTIVE values to allow other unrelated tasks to be processed normally while the appropriate waiting tasks are canceled. Energizer for CICS always continues to ensure that real storage and virtual storage are not over committed.

Finally, when the attached CICS region begins to process normally, it will experience heavy demand because all users will resubmit transactions that had previously been rejected. Again, Energizer for CICS assists this CICS region by constantly adjusting MAXTASKS and Transaction Class MAXACTIVE values to allow maximum throughput that is consistent with DSA, CPU, and real storage availability. In most cases, this backlog of transactions results in a peak demand for CPU resources. Energizer for CICS tries to meet this demand by adjusting CICS Trace and VSAM subtasking accordingly. As the peak period passes, the relevant CICS system parameters are restored to normal values.

It is both informative and educational to review the batch reports for all CICS regions to see how the components of Energizer for CICS interact to provide maximum availability, minimum disruption, and maximum throughput at these critical times. Both the Accumulative Statistics Report (PRINTSTAT) and the CICS Performance Availability Statistics Report (AVALSTAT) summarize the actions taken to avoid bottlenecks.

Measuring the Effects on MXT, MAXACT, and SOS

Users who have heavily loaded systems and reach Maximum Active Tasks (MAXACTIVE) in a transaction class, Maximum Tasks (MXT), and short-on-storage (SOS) conditions with regularity will experience a significant reduction in the frequency and severity of these conditions. In some installations these conditions will be completely eliminated. Users who experience these conditions find that most of the causes of the problem, such as waiting on several resource queues and MRO session waits, have been eliminated.

Energizer for CICS will ensure that these conditions occur only when there are truly no more resources to handle additional tasks. The user who experiences an unexpected peak, such as during a system restart, will now be protected from the devastating effect that short-on-storage, MXT or MAXACTIVE conditions can cause. The net result for all users will be significantly improved availability and CPU usage. These performance improvements are easily measurable with the Performance Availability Statistics Report or any performance monitor. As the frequency of these events decreases, the associated CPU utilization will also decrease and response time may be significantly better. Availability will improve as systems restarts will be avoided.

Appendix A **Dynamic SVC Install and Table Maintenance**

The Energizer for CICS SVC routines front-end the standard CLOSE TYPE=T SVC (SVC 23) can be dynamically installed and reinstalled at any time without interfering with any MVS or CICS activities.

Both the CICS component of Energizer for CICS and the Reporting Address Space require the Energizer for CICS front-end to the CLOSE TYPE=T SVC to be installed and the Energizer for CICS Table to be built in the MVS ECSA.

Dynamic SVC Installation

To dynamically install or reinstall the Energizer for CICS CLOSE TYPE=T SVC routine and to build or rebuild the Energizer for CICS table use the sample JCL in member ECSJSIRP. See Figure A-1 on page A-3. This JCL runs the P100SIRP batch utility program. The input to the program is passed via PARM on the EXEC statement or via SYSIN control cards. The input consists of a positional function keyword, optionally followed by one or more keyword parameters. The function keyword may be one of the following keywords:

Table A-1 Function Keywords

Keyword	Description
INSTALL	Dynamically install the Energizer for CICS CLOSE TYPE=T SVC routine.
REINSTALL	Dynamically reinstall the standard CLOSE TYPE=T SVC routine if the Energizer for CICS SVC routine is currently on top of the SVC chain.
REMOVE	Dynamically remove the Energizer for CICS CLOSE TYPE=T SVC routine from the SVC chain if is NOT on top of the SVC chain. Otherwise this is identical to REINSTALL.

Note: The REINSTALL and REMOVE functions will be processed only if the Energizer for CICS Reporting Address Space is not active and if there are no CICS regions currently using the Energizer for CICS functions. Otherwise, the FORCE=YES option must be used (see below).

The following keyword parameters may follow the INSTALL and REINSTALL function keywords, in any order, separated by commas.

Table A-2 Keyword Parameters

Parameter	Description
NUMCICS=<i>n</i>:	The number of CICS regions that will use Energizer for CICS. The default is 10.
PROCNAME=<i>procname</i>:	Name of member in SYS1.PROCLIB that contains the procedure to activate the Energizer for CICS Reporting Address Space. If this keyword is not specified, the Energizer for CICS Reporting Address Space will not be automatically started by the P100SIRP utility.
FORCE=YES:	For the REINSTALL and REMOVE functions, this will force reinstallation of the standard SVC, or removal of the SVC, respectively, even if CICS regions are still using one of the Energizer for CICS functions or if the Reporting Address Space is still active. If not specified, reinstallation or removal will not be carried out. The default is NO.

When using SYSIN control cards as input to the P100SIRP program, keep in mind the following:

- If a PARM input exists, the SYSIN input is ignored.
- Up to 8 control cards are allowed. Blank cards or cards beginning with an asterisk are considered comments.
- The program reads from the first non-blank within columns 1 to 72 in the card to the first blank afterward within columns 1 to 72.

- If the last character in the card is a comma, the next card is read. Otherwise, all following cards are ignored.

Figure A-1 Sample ECSJSIRP INSTALL Function

```
//ECSJSIRP JOB
// EXEC PGM=P100SIRP,REGION=2000K,PARM=('INSTALL, NUMCICS=5',
// 'PROCNAME=ECSPRASM')
//STEPLIB DD DISP=SHR,DSN=energize.cics.BBLINK
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
```

Figure A-2 Sample ECSJSIRP INSTALL Function using SYSIN control cards

```
//ECSJSIRP JOB
// EXEC PGM=P100SIRP,REGION=2000K
//STEPLIB DD DISP=SHR,DSN=energize.cics.BBLINK
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSIN DD *
INSTALL,
NUMCICS=5,
PROCNAME=ECSPRASM
//
```

The first successful activation of the program will allocate the following approximate amounts of storage in the MVS common storage:

- In the SQA: 8,000 bytes.
- In the ECSA: 9,400 bytes, plus an additional 9,250 bytes for each CICS region specified in the NUMCICS parameter.

To ensure successful automatic activation of all the Energizer for CICS components, BMC Software recommends that you add the ECSJSIRP JCL as part of the IPL procedure, or alternatively, as a preliminary step to the startup JCL of each CICS region. There is no harm in repeated execution of the SVC installation process because the SVC front-end will only be installed once.

Note: The size of the Energizer for CICS table depends on the NUMCICS parameter entered in job ECSJSIRP.

The following steps should be carried out to increase the size of the table. Refer to chapter 3 “Starting and Stopping Energizer for CICS” in the *Energizer for CICS User Guide* for instructions on deactivating the various components.

1. Shut down Energizer for CICS in all CICS regions.
2. Wait about 60 seconds and then terminate the Energizer for CICS Reporting Address Space.
3. Run job ECSJSIRP with the REINSTALL function.

4. Run job ECSJSIRP with the INSTALL function and specify a NUMCICS value larger than the current number of entries in the table. If nothing is specified, a default value of 10 is assumed.

Table Maintenance

The Energizer for CICS table maintenance procedures will, in most cases, never be needed. The procedures are only used if the Energizer for CICS Table is defined with too few entries (NUMCICS was set too low during the dynamic SVC installation) or Energizer for CICS has some internal problem that prevents it from reusing an entry. If the maintenance procedures are needed, a LISTCSA function should be executed first to examine the status of each entry in the table. The RELEASE function can then be used for releasing a not in use entry.

Warning! Completely unpredictable results will occur if an entry that is in use is released.

Customer Support may also request a LISTCSA output in order to aid in problem determination.

The Energizer for CICS table maintenance procedures use the same sample JCL that resides in member ECSJSIRP in the Energizer for CICS BBSAMP sample library. The input to the program is passed via PARM on the EXEC statement or via SYSIN statements and consists of a positional function keyword, optionally followed by one or more keyword parameters. The function keyword may be one of the following keywords:

Table A-3 **Keywords**

Keyword	Description
LISTCSA	List the entries in the Energizer for CICS Table
RELEASE	Release an entry in the Energizer for CICS table. The ASCB, ASID, JNAME, JNUM, and TCB parameters are required for this function.

All the following keyword parameters (except FORCE) must be specified with the RELEASE function and may follow the function keyword, in any order, separated by commas. See Figure A-3 on page A-5 for an example.

Table A-4 Parameters

Parameter	Description
ASCB=<i>n</i>:	The address (hexadecimal) of the Address Space Control Block of the CICS region owning the Energizer for CICS Table entry to be released. Note: If the entry to be released is in a "SIGNING-ON" status, the exact four byte ASCB from the relevant entry should be given as input. This address may appear as a negative number.
ASID=<i>n</i>:	Address space ID (decimal) of the CICS region owning the Energizer for CICS Table entry to be released.
JNAME=<i>n</i>:	Job name of the CICS region owning the Energizer for CICS Table entry to be released.
JNUM=<i>n</i>:	Job number of the CICS region owning the Energizer for CICS Table entry to be released.
TCB=<i>n</i>:	Address of the Task Control Block (hexadecimal) of the CICS region owning the Energizer for CICS Table entry to be released.
FORCE=YES:	(Optional) Release the specified Energizer for CICS table entry even if one of the Energizer for CICS dispatch functions is still active in the CICS region. The default is NO.

Warning! Completely unpredictable results will occur if an entry that is in use is released.

Figure A-3 Sample ECSJSIRP RELEASE Function

```

//ECSJSIRP JOB
//EXEC PGM=P100SIRP,REGION=2000K,
//
PARM=( 'RELEASE,ASCB=00F86580,ASID=00098,JNAME=CICS32,JNUM=02626',
//      'TCB=00AD9E88' )
//STEPLIB DD DISP=SHR,DSN=energize.cics.BBLINK
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//

```

Appendix B Maintaining Files

Energizer for CICS uses two VSAM files: a parameter file which contains the permanent parameter settings used by Energizer for CICS to monitor and tune the CICS region, and a report file which contains the actions and messages generated by Energizer for CICS during CICS activity.

Parameter File

The parameter file needs no maintenance. Only one copy of the file per MVS image is necessary, and it can be shared among all CICS regions. The file should be defined locally to each CICS as read-only. Updates to the parameter file are done via the Energizer for CICS Parameters Facility of the TSO/ISPF interface.

If Energizer for CICS cannot access the file when it starts up, it will execute according to the default parameter values, which do not contain the AUTOSTART option. Each function will have to be started manually using the Energizer for CICS Control Facility in CICS. Once the functions are activated, the parameters can be changed online. If the parameter file becomes unavailable while the functions are active, it will have no effect on continued Energizer for CICS operation.

Report File

The Energizer for CICS Report file requires periodic maintenance. One copy of the file is required for each MVS Image, and it can be shared among all CICS regions within an MVS Image. The file should be defined locally to each CICS region as read/browse-only. Updates to the Report file are continuously performed by the Energizer for CICS Reporting Address Space. All Energizer for CICS activities and messages are written to this file.

On a weekly or biweekly basis, the Report File should be archived, deleted, and redefined. The rule-of-thumb for computing an appropriate size for the Report File is that on the average, 15 records are written to the Report File during each Energizer for CICS reporting interval for each CICS region. The reporting interval is defined on the General Parameters Screen of the Parameters Facility and has a default value of 600 seconds (10 minutes). If Energizer for CICS is active 24 hours a day using the default Reporting Interval, the number of records written to the file each day for each CICS region equals $15 * (24 * 60) = 2160$ records per day. If the file is redefined on a weekly basis, it should be defined to hold at least $7 * 2160 = 15,120$ records for each CICS region.

Note: If CICS requires significant Energizer for CICS activity, such as during a peak load, the number of records written to the file will be greater. When running in simulate mode, the number of records written to the file may increase when Energizer for CICS constantly reports actions that were not taken because the product is running in simulate mode.

To avoid losing data, define a secondary allocation for the Report File. Define additional files to be used when the primary Report File fills up. If the Report File should run out of space, Energizer for CICS will attempt to automatically switch to another file. If this is not possible, Energizer for CICS will send the appropriate messages to the console requesting the specification of a new Report File. The operator can then manually specify the DSName of a new Report File to be used by the Reporting Address Space. In the meantime, Energizer for CICS activity will continue without the Report File. Reporting data will be saved in buffers in storage until they fill up. “Refer to User Initiated Start-up and Shut-down – Reporting Address Space” in Chapter 4 for a more detailed discussion of Report File switching.

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STOP!

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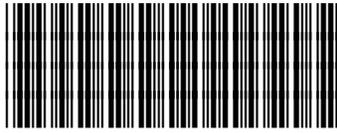
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