



WebSphere Studio Application Monitor CICS Data Collector Product Guide

3.1





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Note:

Before using this information and the product it supports, read the information in “Notices” on page 67.

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Preface

About this book

This book helps you use the *WebSphere Studio Application Monitor CICS Data Collector* (CICS Data Collector) in conjunction with *WebSphere Studio Application Monitor* (Application Monitor).

There are three parts to this book:

- *Part I:* Instructions on installing and customizing the CICS Data Collector, which lets CICS® Regions join the Application Monitor Managed Space.
- *Part II:* Instructions for enabling the Composite Request features of the Application Monitor, including the operation of the Managing Server component specific to Composite Requests—transactions that start on a J2EE application server and use CTG or MQ to access resources in CICS Regions.
- *Part III:* Instruction for using the Managing Server with the CICS Data Collector.

Who should read this book

This book is written for the following audiences:

- Administrators or advanced users who want to install or modify the configuration of the CICS Data Collector, or the aspects of Application Monitor that relate to Composite Requests.

For certain sections, a working knowledge of z/OS and CICS is expected. For other sections, a working knowledge on deploying WebSphere® applications in a UNIX® environment with DB2® experience is expected.

- Anyone who wants to learn more about how to use the Composite Request features of the Application Monitor.

Where to find more information

The following list shows the books in the Application Monitor library:

- *WebSphere Studio Application Monitor CICS Data Collector User's Guide* contains instructions and user information for the Application Monitor.
- *WebSphere Studio Application Monitor CICS Data Collector Operator's Guide* contains information about the operation of Application Monitor and the common services address space.
- *WebSphere Studio Application Monitor CICS Data Collector Installation and Customization Guide* contains instructions on installing user's exits and customizing the Application Monitor.
- *WebSphere Studio Application Monitor CICS Data Collector for CICS Data Collector Product Guide* contains information about the installation, configuration and use of the Application Monitor CICS Data Collector.
- *WebSphere Studio Application Monitor CICS Data Collector for IMS Data Collector Product Guide* contains information about the installation, configuration and use of the Application Monitor IMS Data Collector.

- *WebSphere Studio Application Monitor CICS Data Collector Messages and Codes* contains information about messages and codes generated by the Application Monitor.
- *WebSphere Studio Application Monitor CICS Data Collector Program Directory* contains complete installation instructions for the Application Monitor Engine.
- *WebSphere Studio Application Monitor Program Directory for the CICS Data Collector* contains complete installation instructions for the Application Monitor *CICS Data Collector* Engine.
- *WebSphere Studio Application Monitor Program Directory for the IMS Data Collector* contains complete installation instructions for the Application Monitor *IMS Data Collector* Engine.
- *WebSphere Studio Application Monitor CICS Data Collector* has an online help system that describes all of the commands and dialogs available from its graphical user interface.

Documentation Conventions

The following table describes the conventions used throughout this book.

Table 1. Documentation Conventions

Convention	Item
Ctrl+Tab	Indicates that you must press two or more keys simultaneously.
<installation directory>	Indicates that you should insert the directory appropriate for your environment.
monospace text	Indicates code samples.

Part 1. Installing and Configuring CICS Data Collectors

Chapter 1. Overview of CICS Data Collectors

This chapter covers the following topics:

- “System Requirements”.
- “How the CICS Data Collector Works” on page 5.
- “Overview of the Installation and Configuration Process” on page 7.

System Requirements

z/OS® Requirements

You can install and configure CICS Data Collectors on systems with the following specifications:

- CICS Transaction Server for z/OS v1.3, v2.2 or v2.3, running on z/OS v1.2, v1.3 or v1.4.
Note: CICS v2.3 will not work on z/OS less than v1.4.
- One or more LPARs

Managing Server Requirements

You must have available a Managing Server from the *WebSphere Studio Application Monitor* (Application Monitor) in order to use your CICS Data Collectors.

Supported Platforms

CICS Data Collectors work in conjunction with any v3.1 Application Monitor Managing Server. See the *WebSphere Studio Application Monitor Installation and Customization Guide* for the supported platform/application server/database combinations.

Configuration Information

These instructions assume that you know the following information about your Managing Server:

- *Kernel Codebases.* The fully qualified URIs, including port numbers, that resolve to the Kernels' Codebase servers. (A Kernel is a component of the Managing Server. There may be several Kernels in a Managing Server deployment; the default number of Kernels, and therefore the number of Kernel Codebase URIs, is two.)
- *RMI Server Codebases.* The fully qualified URIs, including port numbers, that resolve to the Kernels' RMI servers.
- *RFS Server Addresses.* The addresses of the Request-for-Stub (RFS) servers, which are part of the Managing Server, including TCP/IP host names and ports.

Composite Request Requirements

The Application Monitor can monitor transactions that span several application servers, including CICS.

To monitor Composite Requests, your Data Collectors that initiate Composite Requests (J2EE and CICS) as well as those that receive them (CICS) must be among those supported by the Application Monitor.

Support is defined in terms of a combination of Operating System, Application Server and CTG or MQ version. CTG and MQ are the two supported mechanisms for Composite Requests that involve CICS.

Table 2 and Table 3 describe the supported combinations for CICS Data Collectors, and Table 4 and Table 5 describes the supported combinations for J2EE Data Collectors.

Table 2. Composite Request Requirements for CICS Data Collector using CTG

Operating System	Application Server	CTG Version
z/OS 1.3-1.4	CICS 1.3 or 2.2	5.0 or 5.0.1
z/OS 1.4	CICS 2.3	5.0 or 5.0.1

Table 3. Composite Request Requirements for CICS Data Collector using MQ

Operating System	Application Server	MQ Version
z/OS 1.3-1.4	CICS 2.2	5.3.1
z/OS 1.4	CICS 2.3	5.3.1

Table 4. Composite Request Requirements for J2EE Data Collector using CTG

Operating System	Application Server	CTG Version
z/OS 1.2-1.4	WebSphere 5.0.2 and 5.1	5.0.1 or 5.1
AIX	WebSphere 5.0.2 and 5.1	5.0.1 or 5.1

Table 5. Composite Request Requirements for J2EE Data Collector using MQ

Operating System	Application Server	MQ Version
z/OS 1.3-1.4	WebSphere 5.0.2 and 5.1	5.3.1
AIX	WebSphere 5.1	5.3.1
Solaris	WebSphere 5.1	5.3.1

See Chapter 5. "Enabling Composite Request Features in the Application Monitor" on page 39 for instructions on how to enable Composite Request monitoring on J2EE Data Collectors.

Scope of CICS Data Collector Installation

For this release, CICS Data Collectors must be installed on all CICS Regions involved in certain EAI transactions. This includes the following CICS Regions:

- CICS Regions whose programs are invoked through CTG, where the invocations are from applications running within J2EE application servers which use the ECI interface (directly, or through CCI,) and where the J2EE servers are in the Managed Space. See "The Scope of Composite Requests" in the *WebSphere Studio Application Monitor User's Guide* for more detailed information about the Composite Request Space.

An exception to this is that a CICS Region is acting exclusively as a TOR does not need to have a CICS Data Collector installed.

- If CTG invokes a TOR, all CICS Regions to which the TOR routes requests must have CICS Data Collector installed.
- All other CICS Regions invoked by way of DPL from programs invoked in the first two cases.

How the CICS Data Collector Works

The CICS Data Collector is fully integrated with CICS Transaction Server v1.3, v2.2 and v2.3.

The CICS Data Collector monitors all requests arriving to CICS/TS through Distributed Program Link (DPL)-based connections or through RMI/IIOF connections (protocols used with OMG/CORBA-based requests.)

The CICS Data Collector monitors activity in CICS/TS using hooks in the CICS Global User Exits (GLUE) and by Task-Related User Exits (TRUE) invoked at task-start and at task-end times. In addition, at the deepest level of monitoring, the CICS Data Collector intercepts CICS transactions at additional GLUE exit points for entry to and exit from EXEC CICS commands. The CICS Data Collector uses these hooks to intercept and obtain access to CICS' SMF110 system monitoring buffers.

Standalone and Composite Requests

In addition to monitoring standalone transactions, the CICS Data Collector participates in monitoring Composite Requests, which are requests that span multiple servers.

WebSphere Studio Application Monitor uses a passport/visa token technique to track and correlate activity from J2EE application servers (through invocations using the CICS Transaction Gateway) into CICS/TS itself. Thus, the entire processing path of the request/transaction is monitored as a composite unit, allowing its progress through the various servers to be tracked and analyzed as a single unit of work.

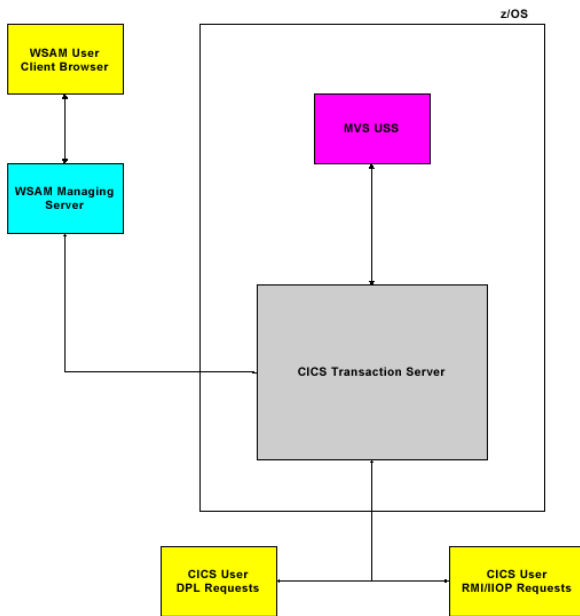


Figure 1. Composite Request Architecture

Parts of the CICS Data Collector

The CICS Data Collector is composed of three parts:

- The Data Capture component is launched when the CICS Region starts up .
The Data Capture component is the part that operates at GLUE and TRUE exit points in CICS/TS, and binds the collected data together with the underlying user tasks.
- The Services component is middleware that transfers the monitored data from the Data Capture component to the Communications Driver component, by putting the captured data into memory.

The Services component runs under the Data Capture component, and is primarily a set of macros called by the Data Capture component.

- The Communications Driver component is then responsible for publishing the CICS/TS user tasks' monitored data to the Managing Server.

The Communications Driver component runs in a JVM in CICS/TS that is used exclusively by the CICS Data Collector. The JVM used by the CICS Data Collector is approximately 8 MB in size, and is run under a subtask thread in the MVS task control block started by the Services component.

The Communications Driver understands the protocol between Data Collectors and the Managing Server, as well as accepts commands via RMI from the Managing Server, acting as a proxy for the Data Capture component.

Processing Path Within CICS

The following is the processing path of the CICS Data Collector for a Composite Request within CICS/TS:

1. A request flows across a DPL-based or RMI/IOP-based connection with CICS/TS.
2. CICS/TS builds the request into a CICS transaction and initiates the transaction using standard CICS/TS dispatching methods.

These may or may not be the same person, but they are presented as distinct in order to clarify the different skills needed to perform the different installation and configuration tasks.

What Tasks Need To Be Performed?

Here is a summary of the tasks involved in installing and configuring a CICS Data Collector.

z/OS Systems Programmer

- Pre-allocate Data Sets for use by the CICS Data Collector.
- Transfer files.
- Install files.
- Define subsystem CYN1.
- APF-authorize the CICS Data Collector data sets and update CICS JCL.
- Initialize z/OS.
- Verify components.

CICS Systems Programmer

- Introduce CICS Data Collector definitions to your SIT.
- Prepare your PLT to use the CICS Data Collector.
- Add CICS Data Collector (CYN) program definitions to your CSD.
- Compile sample programs (optional.)
- Enable Composite Request features on the CICS Data Collector.
- Restart CICS Regions (Post-installation)

USS Systems Programmer

- Unpack the CICS Data Collector (once per USS)
- Install and Configure the CICS Data Collector (once per CICS Region)

Application Monitor Administrator

- Configure the Data Collector on the Managing Server (once per CICS Region) (Post-installation)
- Configure the Managing Server's Publish Servers to support CICS Data Collectors
- Restart the Managing Server's Publish Servers
- Enable logging for CICS Data Collectors (optional; once per CICS Region)

Where Are the Instructions?

Detailed, step-by-step descriptions of these tasks are provided in the following two chapters:

- Chapter 3, "Compiling Sample CICS Programs," on page 27 (For tasks performed by z/OS, CICS and USS Systems Programmers.)
- Chapter 5, "Enabling Composite Request Features in the Application Monitor," on page 39 (For tasks performed by the Application Monitor Administrator.)

Chapter 2. Installing and Configuring CICS Data Collectors

This chapter covers the following topics:

- “Step-by-Step Instructions: z/OS”.
- “Step-by-Step Instructions: CICS” on page 13.
- “Step-by-Step Instructions: USS” on page 17.
- “Post-Installation Tasks” on page 20.

Step-by-Step Instructions: z/OS

Before You Begin

Identify APPLIDs

Gather the following information about your z/OS system(s):

- The APPLIDs of the CICS Regions to be monitored, on all z/OS LPARs, on your z/OS system. Provide this list to your CICS Systems Programmer and USS Systems Programmer.

Locate the Data Sets in the Distribution

You need the following data sets to install the CICS Data Collector:

- CYN.CINSTALL.CICS.ACYNAUTH
- CYN.CINSTALL.CICS.ACYNSAM2
- CYN.CINSTALL.CICS.ACYNLIB

The following data sets provide support for SMF and WLM, and are also necessary for the CICS Data Collector. However, you do not have to install them if there are other WSAM components installed on the same LPAR (an IMS Data Collector or a Data Collector for WebSphere on z/OS):

- CYN.CINSTALL.ACYNAUTH
- CYN.CINSTALL.ACYNPROC

All five of these data sets work for CICS v1.3, v2.2 and v2.3, and are distributed with the CICS Data Collector.

Install WLM Support

Before you install the CICS Data Collector, you must install the two data sets that support WLM: CYN.CINSTALL.ACYNAUTH and CYN.CINSTALL.ACYNPROC.

You may have already installed them on an LPAR, as a result of having installed the IMS Data Collector or the Data Collector for WebSphere on z/OS on that LPAR.

The instructions for installing those data sets are located in the *WebSphere Studio Application Monitor Installation and Customization Guide*, in Part 3. The Data Collector for z/OS, in Chapter 8. Installation and Configuration, in the Installing the Data Collector section, under the heading Installing MVS Components.

Pre-Allocating Data Sets on z/OS

In order to receive the files (containing the CICS Data Collector distribution) onto z/OS, you must pre-allocate space for the three data sets.

You can pre-allocate space for the data sets using either JCL or the ISPF Data Set Utility. Each of the following two procedures describes one of the ways of pre-allocating space.

To pre-allocate data sets on z/OS using JCL:

1. Execute the following JCL, where <VOLSER> is the volume serial number for the disk that has the temporary files (the data sets CYN.CINSTALL.CICS.ACYNAUTH, CYN.CINSTALL.CICS.ACYNMAM2 and CYN.CINSTALL.CICS.ACYNMAMLIB):

```
//DD1 DD DISP=(NEW,CATLG),UNIT=3390,VOL=SER=<VOLSER>,  
//          DCB=(LRECL=80,BLKSIZE=3120,RECFM=FB,DSORG=PS),  
//          SPACE=(CYL,(2,1)),DSN= CYN.CINSTALL.CICS.ACYNAUTH  
  
//DD2 DD DISP=(NEW,CATLG),UNIT=3390,VOL=SER=<VOLSER>,  
//          DCB=(LRECL=80,BLKSIZE=3120,RECFM=FB,DSORG=PS),  
//          SPACE=(CYL,(2,1)),DSN= CYN.CINSTALL.CICS.ACYNMAM2  
  
//DD3 DD DISP=(NEW,CATLG),UNIT=3390,VOL=SER=<VOLSER>,  
//          DCB=(LRECL=80,BLKSIZE=3120,RECFM=FB,DSORG=PS),  
//          SPACE=(CYL,(2,1)),DSN=CYN.CINSTALL.CICS.ACYNMAMLIB
```

2. You can delete and uncatlog the temporary files CYN.CINSTALL.CICS.ACYNAUTH, CYN.CINSTALL.CICS.ACYNINST and CYN.CINSTALL.ACYNPROC at the end of the installation process, after the TSO RECEIVE process has completed.

To pre-allocate data sets on z/OS using the ISPF Data Set Utility:

1. From ISPF option 3.2 (Data Set Utility,) allocate the three data sets using the following parameters, where <VOLSER> is the volume serial number for the disk that has the temporary files:

```
Volume Serial: <VOLSER>  
Space Units: Cyls  
Primary Quantity: 2  
Secondary Quantity: 1  
Directory Blocks: <zero for a sequential data set>  
Record Format: FB  
Record Length: 80  
Block Size: 3120  
Data Set Name Type: <leave blank>
```

Transferring Files

The following procedure transfers files from the PC to the z/OS environment.

Note: If you are upgrading the CICS Data Collector, we recommend that you archive or rename these existing files before you update them: CYN.CICS.SCYNMAMLIB, CYN.CICS.SCYNMAM2 and CYN.CICS.SCYNMAMAUTH.

To transfer files from the PC to z/OS:

1. Untar the z/OS files c:\zos\CICS_DC_31_MVS.tar and c:\zos\zWAS_DC_31_MVS.tar to c:\zos.

Confirm that the following files have been extracted:

```
cyn.cinstall.cics.acynauth
cyn.cinstall.cics.acynsam2
cyn.cinstall.cics.acynslib
cyn.cinstall.acynproc
cyn.cinstall.acynauth
```

2. Open a PC DOS shell command window.
3. At the shell command prompt, enter the following commands, where <IP Address> is the IP address of the z/OS USS system:

```
cd c:\zos
ftp <IP Address>
```

4. At the ftp userid/password prompts, enter the appropriate userid and password.
5. At the ftp prompt, enter the following commands:

```
bin
cd 'cyn.cinstall.cics.acynauth'
put 'cyn.cinstall.cics.acynauth'
cd 'cyn.cinstall.cics.acynsam2'
put 'cyn.cinstall.cics.acynsam2'
cd 'cyn.cinstall.cics.acynslib'
put 'cyn.cinstall.cics.acynslib'
```

If you need to install the data sets to support WLM, then also enter the following commands to transfer the appropriate files:

```
cd 'cyn.cinstall.acynproc'
put 'cyn.cinstall.acynproc'
cd 'cyn.cinstall.acynauth'
put 'cyn.cinstall.acynauth'
```

End your ftp session by entering the following command:

```
quit
```

6. If you encounter any errors transferring the files, repeat the ftp commands in step 5.

Installing z/OS Files

The following procedure installs the three z/OS files that comprise the CICS Data Collector distribution.

To install z/OS files:

1. Log onto TSO.
2. At the TSO READY prompt, issue the following command:

```
receive indataset('cyn.cinstall.cics.acynauth')
```

Press ENTER on the ISPF session until you see the following system messages:

```
INMR901I Dataset...
INMR906A Enter Restore Parameters ~ 'Delete' or 'End'
```
3. Issue the following command, where <VOLSER> is the volume serial number of the disk on which the file is installed:

```
da('cyn.cics.scynauth') volume(<VOLSER>)
```

Press ENTER on the ISPF session until you see the following messages:

```
IEB1098I '39 of 39 members loaded from input dataset...
INMR001I 'Restore successful to dataset 'cyn.cics.scynauth'
READY
```

4. At the TSO READY prompt, issue the following command:
receive indataset('cyn.cinstall.cics.acynsam2')
Press ENTER on the ISPF session until you see the following system messages:
INMR901I Dataset...
INMR906A Enter Restore Parameters ~ 'Delete' or 'End'
5. Issue the following command, where <VOLSER> is the volume serial number of the disk on which the file is installed:
da('cyn.cics.scynsam2') volume(<VOLSER>)
Press ENTER on the ISPF session until you see the following messages:
IEB1098I '33 of 33 members loaded from input dataset...
INMR001I 'Restore successful to dataset 'cyn.cics.scynsam2'
READY
6. At the TSO READY prompt, issue the following command:
receive indataset('cyn.cinstall.cics.acynslib')
Press ENTER on the ISPF session until you see the following system messages:
INMR901I Dataset...
INMR906A Enter Restore Parameters ~ 'Delete' or 'End'
7. Issue the following command, where <VOLSER> is the volume serial number of the disk on which the file is installed:
da('cyn.cics.scynslib') volume(<VOLSER>)
Press ENTER on the ISPF session until you see the following messages:
IEB1098I '1 of 1 members loaded from input dataset'
INMR001I 'Restore successful to dataset 'cyn.cics.scynslib'
READY
8. At the TSO READY prompt, issue the following command:
ISPF
Press ENTER on the ISPF session. From option 3.4, verify the three datasets listed below have been allocated and have members in them:
 - cyn.cics.scynauth
 - cyn.cics.scynsam2
 - cyn.cics.scynslib

Authorizing the Data Sets and Updating CICS JCL

The following procedure enables the CICS Data Collector data set to be used by CICS.

To authorize the CICS Data Collector data sets and update your CICS JCL:

1. APF-authorize the CYN.CICS.SCYNAUTH data set:
2. Put the CYN.CICS.SCYNAUTH data set in the STEPLIB, and put both the CYN.CICS.SCYNAUTH and CYN.CICS.SCYNSLIB data sets in the DFHRPL concatenation of your CICS JCL.

The lines to add have the following format:

```
//STEPLIB DD DSN=CYN.CICS.SCYNAUTH,DISP=SHR
```



```
//DFHRPL DD DSN=CYN.CICS.SCYNAUTH,DISP=SHR
```

```
DD DSN=CYN.CICS.SCYNSLIB,DISP=SHR
```

Note: The instructions for authorizing the data sets needed for WLM support are located in the *WebSphere Studio Application Monitor Installation and Customization Guide*, in Part 3. The Data Collector for z/OS, in Chapter 8. Installation and Configuration, in the Installing the Data Collector section, under the heading Installing MVS Components.

Step-by-Step Instructions: CICS

Configuring Your CICS Regions

These procedures need to be performed by your CICS Systems Programmer:

- Assembling a SIT and/or Defining SIT Overrides
- Defining CICS Data Collector programs and transactions to CICS
- Compiling Sample Programs (optional)
- Modifying the PLT

Performing these steps enables your CICS Regions to use the CICS Data Collector.

Before You Begin

Gather the following information about your z/OS system(s):

<DB2 DBRMLIB data set>

The DSN of your DB2 DBRMLIB PDS data set, which is specific to your DB2 installation. For example: DSN710.DBRMLIB.DATA.

<APPLID>

The APPLIDs of the CICS Regions to be monitored, on all z/OS LPARs, on your z/OS system. Provide this list to your CICS Systems Programmer and USS Systems Programmer. The CICS SDFHLOAD library for your particular release.

<SYSLMOD>

Your load library.

<HLQ>

Your high level qualifier.

<CICS HLQ>

Your CICS high level qualifier..

<SDFHLOAD>

The CICS SDFHLOAD library for your particular release.

<CSD>

The fully-qualified name of your CSD.

<Group List>

The group list specific to your CICS Region.

<SDFHMAC>

The fully-qualified name of your SDFHMAC.

SIT Strategy

The CICS Data Collector needs several definitions to be defined in the SIT. There are several ways to accomplish this:

- Transfer the definitions specific to or necessary for the CICS Data Collector into your existing SIT (and assemble it.)
- Put the appropriate definitions as part of the SYSIN overrides for each CICS Region.

SIT Definitions

The following SIT definitions are needed by the CICS Data Collector:

- **INITPARM=(CYNCINI1='<install path>')**
The value of <install path> needs to be the location, in the USS file system, where the CICS Data Collector files will be installed. The default value of <install path> is /usr/lpp/cyanea.
Note: The value of <install path> is case sensitive.
- **INITPARM=(CYNCSQLP='<DB2 DBRMLIB dataset>')**
The value of <DB2 DBRMLIB dataset> is specific to your DB2 installation, and must be the DSN of your DB2 DBRMLIB PDS dataset.
An example for the value of <DB2 DBRMLIB dataset> is DSN710.DBRMLIB.DATA.
Note: The <DB2 DBRMLIB dataset> should have all the DBRMs used by the monitored CICS applications to bind DB2 plans for the CICS system. This allows the CICS Data Collector to discover the original, full SQL string when it captures a SQL statement. Otherwise, the CICS Data Collector supplies only partial, abbreviated SQL strings for L2 SQL events.
- **PLTPI=<XX>**
The PLTPI specifies a program list table, which contains a list of programs to be executed in the final stages of system initialization.
If you already have a PLT, then you already have this parameter in your SIT, and do not need to change it. However, in this case, you must add the CICS Data Collector definitions to your PLT table and reassemble the PLT, which is described in “Modifying the PLT”.
If you do not use a PLT, you can use the one supplied in the CICS Data Collector sample programs data set: CYN.CICS.SCYNSAM2(CYN\$PTCY). The suffix defined in the supplied PLT is CY (although you can change this suffix, too. See “Modifying the PLT” for more information about PLTs.)
- **MN=ON**
MNPER=ON
The MN=ON and MNPER=ON definitions enable CPU time monitoring. This is optional.

Modifying the PLT

Your CICS Systems Programmer needs to perform this once for each distinct set of CICS System Definitions (CSD.)

Performing these steps ensures that your CICS Region is pre-initialized to use the CICS Data Collector.

Using Your Existing PLT

This is appropriate if you already have a PLT in use.

To prepare CICS to use the CICS Data Collector:

1. Include the following lines in your PLT:


```
DFHPLT TYPE=ENTRY,PROGRAM=CYNINCINI1
DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
DFHPLT TYPE=ENTRY,PROGRAM=CYNINCINI2
```
2. You may also include either of the following lines in your PLT; use CSQCCODF for MQ and DFHD2CM0 for DB2:


```
DFHPLT TYPE=ENTRY,PROGRAM=CSQCCODF
DFHPLT TYPE=ENTRY,PROGRAM=DFHD2CM0
```
3. Assemble your PLT.

Note: You must assemble your PLT.

Using the Supplied PLT

Perform the following procedure if you do not already use a PLT in your CICS Region.

To prepare CICS to use the CICS Data Collector:

1. Assemble the PLT supplied in the CYN.CICS.SCYNSAM2 data set, which is called CYN\$PTCY.

For reference, the JCL for the supplied PLT is as follows:

```
TITLE 'DFHPLTCY - SAM/CICS SAMPLE PLT TABLE'
*
* SAM/CICS has two stages of initialization
*
DFHPLTCY  DFHPLT TYPE=INITIAL,SUFFIX=CY
           DFHPLT TYPE=ENTRY,PROGRAM=CYNINCINI1
           DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
           DFHPLT TYPE=ENTRY,PROGRAM=CYNINCINI2
           DFHPLT TYPE=FINAL
           END DFHPLTBA
```

Note: The suffix specified in this PLT must match the suffix specified by the PLTPI parameter in your SIT. See “SIT Strategy” on page 13 for more details about the PLTPI parameter.

Note: If you want to use MQ and DB2 you may use the sample CYN\$PTAL in CYN.CICS.SCYNSAM2 as a reference for the MQ and DB2 programs. Alternately, you can add the appropriate lines to the PLT, as described in 14.

Assembling the PLT

If you use your own PLT, assemble it using your standard procedures.

If you use the supplied PLT, perform the following procedures to assemble the supplied PLT, which is in the sample dataset CYN.CICS.SCYNSAM2.

You will need to identify the following:

<SYSLMOD>

Your load library.

<HLQ>

Your high level qualifier.

<CICS HLQ>

Your CICS high level qualifier..

To assemble the PLT table for your CICS region:

1. Modify the job named CYN\$APLT and identify <SYSLMOD>, which is your load library.

The line to modify in the CYN\$APLT job has the following format:

```
//SYSLMOD DD DSN=<SYSLMOD>(DFHPLTCY),DISP=SHR
```

Here is an example using "customer.load.library" for <SYSLMOD>:

```
//SYSLMOD DD DSN=customer.load.library(DFHPLTCY),DISP=SHR
```

2. To assemble the PLT, use option 6 in TSO.

Run the clist CYN\$APL using the following format, which includes the parameters <HLQ> as your high level qualifier and <CICSHLQ> as your CICS high level qualifier:

```
'CYN.CICS.SCYN SAM2(CYN$APLT)' '<HLQ> <CICSHLQ>'
```

Here is an example of the command, using CYN for <HLQ> and CICSTS22.CICS for <CICSHLQ>:

```
'CYN.CICS.SCYN SAM2(CYN$APLT)' 'CYN CICSTS22.CICS'
```

Defining CICS Objects

This needs to be done by your CICS Systems Programmer.

Performing these steps adds and modifies program definitions needed by the CICS Data Collector to your CSD.

You will need to identify the following:

<SDFHLOAD>

The CICS SDFHLOAD library for your particular release.

<CSD>

Your CICS CSD.

<Group List>

The group list specific to your CICS Region.

To add CICS Data Collector program definitions to your CSD:

1. Modify the job named CYN\$INST, in the CYN.CICS.SCYN SAM2 data set.

Note: You only need to perform this step if you use the CICS-supplied mirror program DFHMIRS in LPA. Otherwise, proceed to the next step.

Update the definition for the CICS-supplied DFHMIRS mirror program, within the CYN\$INST job, to include the USELPACOPY(YES) line, as follows:

```
DEFINE PROGRAM(DFHMIRS)
    GROUP(CYNCICS) LANGUAGE(ASSEMBLER)
    STATUS(ENABLED) RELOAD(NO) USAGE(NORMAL)
    RESIDENT(NO) EXECKEY(CICS)
    DATALOCATION(BELOW) CEDF(NO)
    USELPACOPY(YES)
```

2. Modify the job named CYN\$INST to identify <SDFHLOAD>, <CSD> and <Group List>.

If desired, change the group name, to which all of the CICS Data Collector programs are defined, from CYNCICS to one of your choosing.

The CYN\$INST JCL has the following format (there are multiple DEFINE PROGRAM statements):

```
//STEPLIB DD DSN=<SDFHLOAD>,DISP=SHR
//DFHCSD DD DSN=<CSD>,DISP=SHR
```

...

*

* Add group to the master list

* Please edit list name

*

```
ADD GROUP(CYNCICS) LIST(<Group List>)
```

Here is an example of modified JCL:

```
//STEPLIB DD DSN=CICSST22.CICS.SDFHLOAD,DISP=SHR
```

```
//DFHCSD DD DSN=CICSST22.CICS.DFHCSD,DISP=SHR
```

...

*

* Add group to the master list

* Please edit list name

*

```
ADD GROUP(CYNCICS) LIST(CYNGPLST)
```

3. Submit the CYN\$INST job.
4. Using the SDSF log, verify that the CYN\$INST job ran correctly, and that the CICS Data Collector definitions went into your CSD.
5. If you use the CICS-supplied DFHMIRS mirror program, verify whether it is set to use the USEIpacopy.
 - a. Log into a 3270 terminal emulation for z/OS.
 - b. At the prompt, type the following, where <APPLID> is the APPLID of the appropriate CICS region:

```
1 <APPLID>
```

The "CICS Good Morning" screen comes up.
 - c. Enter the following command at the prompt:

```
ceda di gr(<Group List>)
```

The list of programs in the group is displayed.
 - d. Scroll down to the mirror program, DFHMIRS.
 - e. Type v to view the program definition.
 - f. Verify the value of the property USEIpacopy is YES.

Next, you may choose to compile sample programs shipped with the data set. See Chapter 3. "Compiling Sample CICS Programs" on page 27.

Step-by-Step Instructions: USS

To install the CICS Data Collector, follow the instructions in the following sections:

- "Deploying the USS Files for the CICS Data Collector" on page 18.
- "Installing the CICS Data Collector for Each CICS Region" on page 18.
- "Restarting CICS Regions" on page 21.
- "Configuring the Managing Server" on page 21.

Deploying the USS Files for the CICS Data Collector

This needs to be done by your USS Systems Programmer.

The USS Systems Programmer must have access to a USS command line, and must use a login with privileges necessary to create directories and change file permissions (within the CICS Data Collector installation directory.)

Before You Begin

Know Your CICS Region APPLIDs:

Before you begin, determine on which CICS Regions you are installing CICS Data Collectors, and know the APPLIDs of these regions. In these instructions, you choose a distinct installation subdirectory for each CICS Region, named by its <APPLID>.

The instructions in "Installing the CICS Data Collector for Each CICS Region" need to be repeated for each CICS Region (identified by its <APPLID>) that you want to monitor.

Choose an Installation Directory:

The following convention is suggested for choosing an installation directory for the CICS Data Collector: /<install path>/cics/<APPLID>.

- The <install path> is defined by your CICS Systems Programmer in an INITPARM statement in each CICS Region's SIT (See "SIT Definitions" on page 14.)
The default value for the <install path> is "/usr/lpp/cyanea".
- The subdirectory "cics" is fixed.
- It is recommended that the last subdirectory, known as <APPLID>, be the name of the CICS Region. The default is "CICS1".

For example, the default <installation directory> of the CICS Data Collector is /usr/lpp/cyanea/cics/CICS1. The examples provided in these instructions use the default installation directory. You must adjust the commands appropriately for the installation directory you choose.

Prepare Your Filesystem as READ-WRITE:

Wherever you decide to install your CICS Data Collectors, several directories within it must have READ-WRITE permissions. The default installation directories for CICS Data Collectors are all within /usr/lpp/cyanea, which is often READ-ONLY.

Note: Directories in USS are case sensitive.

Making directories READ-WRITE may be accomplished by mounting a unique HFS file over the installation directory, or by creating a symbolic link between the appropriate subdirectories where each CICS Data Collector creates files.

Installing the CICS Data Collector for Each CICS Region

This needs to be done by your USS Systems Programmer.

Performing these steps configures the CICS Data Collector to monitor a single CICS Region. Perform these steps for each CICS Region that you want to monitor. You must know the <APPLID> of the CICS Region.

The Data Collector must point to the Managing Server. This is done by setting parameters that identify the IP address of the Managing Server. These changes must be implemented prior to starting the Data Collector.

To configure the CICS Data Collector to monitor a CICS Region

1. Create the <installation directory>, which is /<install path>/cics/<APPLID>, if it does not already exist.

Unless you are upgrading the CICS Data Collector, you must create the <APPLID> subdirectory, where <APPLID> is named for a CICS Region. Here is an example of how to create the default installation directory:

```
mkdir /usr/lpp/cyanea/cics/CICS1
```

2. If you are upgrading the CICS Data Collector, then move the lib, logs, etc and bin subdirectories to an archived location. Here is an example of how to relocate these directories into a new directory called archive:

```
cd /usr/lpp/cyanea/cics/CICS2
```

```
mkdir archive
```

```
mv lib logs etc bin archive
```

3. Copy the contents (recursively) of the cics/CICS1 subdirectory of the installation directory to this CICS Region-specific directory you just created. For example:

This example assumes the installation distribution is in /usr/lpp/tmp/cyanea:

```
cp -R /usr/lpp/tmp/cyanea/cics/CICS1/* /usr/lpp/cyanea/cics/<APPLID>
```

This copies a set of directories (etc, logs, lib and bin) which contain the following files:

- etc/LogMessages
- etc/datacollector.env
- etc/datacollector.policy
- etc/datacollector.properties
- etc/version.properties
- lib/kernel.common.jar
- lib/libcyanea_cics_zos.so
- lib/model.jar
- lib/ppe.probe-intf.jar
- lib/ppe.cicsprobe.jar
- bin/cicsprobe
- logs

4. In the <installation directory>/etc directory, modify the datacollector.properties file to update the following definitions:

```
kernel.codebase=<Kernel Codebase URIs>
```

```
kernel.rfs.address=<Managing Server RFS Addresses>
```

```
java.rmi.server.codebase=<Java RMI Server Codebase URIs>
```

```
java.security.policy=<Java Security Policy file>
```

```
probe.library.name=<CICS Data Collector Library Name>
```

For descriptions of all these properties, see “The datacollector.properties file” on page 21.

5. In the <installation directory>/etc directory, modify the datacollector.env file to reflect the CICS Region-specific paths of the installation. In particular, the following variables contain CICS Region-specific paths:

- cyanea.classpath
- cyanea.mod
- cyanea.libpath

The default values for these variables include paths that begin with /usr/lpp/cyanea/cics/CICS1. The "CICS1" value needs to be replaced with the appropriate CICS Region's <APPLID>.

If you choose to install the CICS Data Collector in a location other than the default installation path, you must also change the occurrences of /usr/lpp/cyanea to this custom location.

You may want to set the values of other properties in the datacollector.env file to non-default values; see 24 for a complete list of properties in the datacollector.env file used by the CICS Data Collector.

6. When you first start a CICS region, the CICS Data Collector will create the following four files located in the <installation directory>/etc directory:
 - <SYSPLEX>.<MACHINE>.<LPAR>.<SYSID>.<APPLID>.datacollector.properties
 - <SYSPLEX>.<MACHINE>.<LPAR>.<SYSID>.<APPLID>.id
 - <SYSPLEX>.<MACHINE>.<LPAR>.<SYSID>.<APPLID>.gpsCounter.txt
 - cyanea.mod

The files use the following naming conventions:

- <SYSPLEX> is the sysplex name.
- <MACHINE> is the machine name.
- <LPAR> is the LPAR name.
- <SYSID> is the z/OS System ID.
- <APPLID> is the CICS Region ID.

Therefore, the <installation directory>/etc directory must have READ-WRITE permissions. (Or, you can create a symbolic link that will redirect access from this directory to another directory that has READ-WRITE permissions.)

Post-Installation Tasks

Enabling Composite Request Features on CICS Data Collectors

For information on how to enable composite request features on your CICS Data Collectors that use MQ, please see the *WebSphere Studio Application Monitor Installation and Customization Guide*.

In order to enable composite request features on your CICS Data Collectors that use CTG, you must update each CICS Data Collector's etc/bcm.properties configuration file.

Note: You do not need to perform this configuration unless your CICS regions use CTG.

To enable CTG-related composite request features on a CICS Data Collector

1. Update the 'ctg.enable' property in the Data Collector's etc/bcm.properties file:
 - a. Login to the USS system where you have access to the <installation directory> of the Data Collector.

- b. Edit the `etc/bcm.properties` file, which is located within the installation directory of the CICS Data Collector whose Composite Request features you are enabling. For example:

```
vi /<installation directory>/etc/bcm.properties
```
- c. Set the value of the `'ctg.enable'` property to `'yes'`. For example:

```
ctg.enable=yes
```
- d. Save the updated `etc/bcm.properties` file.

To disable Composite Request features on a CICS Data Collector

1. Update the `'ctg.enable'` property in the Data Collector's `etc/bcm.pproperties` file:
 - a. Login to the USS system where you have access to the `<installation directory>` of the Data Collector.
 - b. Edit the `etc/bcm.properties` file, which is located within the installation directory of the CICS Data Collector whose Composite Request features you are disabling. For example:

```
vi /<installation directory>/etc/bcm.properties
```
 - c. Set the value of the `'ctg.enable'` property to `'no'`. For example:

```
ctg.enable=no
```
 - d. Save the updated `etc/bcm.properties` file.

Restarting CICS Regions

Having installed your CICS Data Collectors, you can restart your CICS Regions.

Note: Whenever you make changes to a `datacollector.properties` file, you will need first to remove a file from the Data Collector's `<installation directory>/etc` directory (in the USS filesystem).

See 22 for details.

You can then restart the CICS Region.

Verifying the CICS Data Collector Installation

To verify that the CICS region has started successfully with the CICS Data Collector, look for the following messages:

- From the SYS00001 log: JVM Started
- From the SYSOUT log: CYNK0001I <PPECONTROLLER,...

Configuring the Managing Server

There are several procedures your Application Monitor Administrator needs to perform in order to prepare your Managing Server for monitoring the CICS Regions on which you have installed and configured CICS Data Collectors.

Please see Chapter 5. "Enabling Composite Request Features in the Application Monitor" on page 39 for these instructions.

The `datacollector.properties` file

For each CICS Data Collector, there is a `datacollector.properties` file located in its `<installation directory>/etc` directory.

For example, the following is the default for the fully-qualified path of the `datacollector.properties` file:

```
/usr/lpp/cyanea/cics/CICS1/etc/datacollector.properties
```

Note: If you change the `datacollector.properties` file, you need to remove a file and restart the server in order to make your changes take effect.

To update the `datacollector.properties` file:

1. Update the `datacollector.properties` file with your changes.
2. Remove the system-generated file named `<SYSPLEX>.<MACHINE>.<LPAR>.<SYSID>.<APPLID>.datacollector.properties`, which is located in the `<installation directory>/etc` directory.
3. Restart the server.

DEFAULT <code>datacollector.properties</code>
<code>kernel.codebase=http://9.30.134.134:9122/kernel.core.jar</code> <code>http://9.30.134.134:9123/kernel.core.jar</code> <code>kernel.rfs.address=9.30.134.134:9120 9.30.134.134:9121</code> <code>probe.rmi.port=8200-8299</code> <code>java.rmi.server.codebase=file:///opt/cyaneaone/lib3.1/ppe.cicsprobe.jar</code> <code>file:///opt/cyaneaone/lib/ppe.probe-intf.jar</code> <code>probe.controller.rmi.port=8300-8399</code> <code>probe.library.name=cyanea_cics_zos</code>

Note: Each entry in the `datacollector.properties` file must occupy a single line, including the properties `kernel.codebase` and `java.rmi.server.codebase`, which appear in the 22 as if they each occupy two lines.

The following list describes some of the properties that may appear in the `datacollector.properties` file of the CICS Data Collector.

cyanea.rmsocket.timeout

If the `cyanea.usecustomrmi` property is set to true, than this property specifies the duration of the timeout used for rmi calls.

Value

A duration, in milliseconds.

Example

```
cyanea.rmsocket.timeout=60000
```

cyanea.usecustomrmi

Enables use of custom RMI socket factories that enforce timeouts, which prevents hanging the Kernel. Set to false to use standard RMI.

Value

true or false

Example

```
cyanea.usecustomrmi=true
```

gpsCushion

Specifies how frequently the counter, which is used to create unique tokens used to correlate Composite Requests, is written to a file. The default value is

200. Increase this value if there is too much I/O as a result of monitoring systems that process many Composite Requests.

Value

an integer

Example

gpsCushion=200

java.rmi.server.codebase

This parameter provides the locations of the libraries that the Data Collector downloads from the kernel.

Value

A space-delimited list of the addresses of the fully-qualified URIs, including port numbers, of the Java RMI servers.

Note: The value must be specified on a single line.

Example

```
java.rmi.server.codebase=file:///opt/cyaneaone/lib/ppe.probe-intf.jar
file:///opt/cyaneaone/lib31/ppe.cicsprobe.jar
```

kernel.codebase

The URIs of the Kernel Codebase.

Value

A space-delimited list of the fully-qualified URIs, including port numbers, that resolve to the Kernels' Codebase servers. This should all be on a single line.

Note: The value must be specified on a single line.

Example

```
kernel.codebase=http://9.30.134.134:9122/kernel.core.jar
http://9.30.134.134:9123/kernel.core.jar
```

kernel.rfs.address

The RFS addresses of the Managing Server.

Value

A space-delimited list of the addresses of the RFS servers, in a TCP/IP host name:port format.

Example

```
kernel.rfs.address=9.30.134.134:9120 9.30.134.134:9121
```

probe.library.name

The shared library that contains the CICS Data Collector libraries.

Value

The name of the shared library file (not including the ".so" extension,) in the lib subdirectory of the installation directory, that contains the CICS Data Collector libraries.

Example

```
probe.library.name=cyanea_cics_zos
```

probe.rmi.port

The range of ports that may be used by the CICS Data Collector.

Value

Either a single port number, or a port range.

Example

```
probe.rmi.port=8800-8899
```

The datacollector.env file

For each CICS Data Collector, the datacollector.env file exists in the <installation directory>/etc directory. For example:
/usr/lpp/cyanea/cics/CICS1/etc/datacollector.env.

DEFAULT datacollector.env
<pre>cyanea.classpath=/usr/lpp/cyanea/cics/CICS1/lib/ppe.cicsprobe.jar:/usr/lpp/cyanea/cics/CICS1/lib/model.jar:/usr/lpp/cyanea/cics/CICS1/lib/ppe.probe-intf.jar:/usr/lpp/cyanea/cics/CICS1/lib/kernel.common.jar:/usr/lpp/java/IBM/J1.3/lib:/usr/lpp/java/IBM/J1.3/bin:/usr/lpp/java/IBM/J1.3/bin/classic cyanea.mod=/usr/lpp/cyanea/cics/CICS1/etc/cyanea.mod java.home=/usr/lpp/java/IBM/J1.3 cyanea.path=/usr/lpp/java/IBM/J1.3/bin cyanea.libpath=/usr/lpp/cyanea/cics/CICS1/lib::/usr/lpp/java/IBM/ java.security.policy=/usr/lpp/cyanea/cics/CICS1/etc/datacollector. cyanea.mapper=no cyanea.user.cputime=no cyanea.memory.dsa=yes cyanea.mx=8m cyanea.txn.exclude=C*,SAM* cyanea.txn.excludeOverride=CPMI,CSMI,CKTI</pre>

Note: Each entry in the datacollector.properties file must occupy a single line, including the property cyanea.classpath, which appears in the 24 as if it occupies several lines.

The following list describes the complete set of properties that may appear in the datacollector.env file of the CICS Data Collector.

cyanea.debug

Specifies whether the CICS Data Collector is to run in debug mode. When running in debug mode, the CICS Data Collector populates the messages log with messages about its state, and about the operation of its internal components.

Note: Running in debug mode should be done only for debugging purposes by IBM Support Services.

Value

no or yes.

Example

```
cyanea.debug=no
```

cyanea.mapper

Specifies whether the request mapper is to be used. A value of "no" (default) means that the default mapping is to be used. See the "Request Mapper" chapter in the *WebSphere Studio Application Monitor User's Guide* for a complete discussion of the Request Mapper.

Value

no or yes.

Example

cyanea.mapper=no

cyanea.memory.dsa

Specifies whether to display DSA memory usage or EDSA memory usage in all memory fields within the Managing Server. A value of "yes" (default) means that the DSA memory usage is used.

Value

no or yes.

Example

cyanea.memory.dsa=yes

cyanea.mod

Specifies the file that the Data Collector uses to maintain persistence of its current monitoring level across restarts.

Value

A fully-qualified file name.

Example

cyanea.mod=/usr/lpp/cyanea/cics/CICS1/etc/cyanea.mod

cyanea.mx

Specify the maximum size, in bytes, of the java memory allocation pool.

Value

A multiple of 1024, and greater than 2MB. Append the letter k or K to indicate kilobytes, or m or M to indicate megabytes. The default value is 8m.

Example

cyanea.mx=8m

cyanea.txn.exclude

Specify the list of transaction names you do not want the CICS Data Collector to monitor. Used in conjunction with the cyanea.txn.excludeOverride property.

Value

A comma-delimited list of transaction names you want the CICS Data Collector to not monitor. Supports wildcards (*).

Example

cyanea.txn.exclude=C*,SAM*

cyanea.txn.excludeOverride

Specify the list of transaction names you want the CICS Data Collector to monitor; this list is used in conjunction with the cyanea.txn.exclude property. You only need to specify a transaction in the exclude override list if it was listed in the exclude list; by default, everything that is not specifically excluded is monitored.

Value

A comma-delimited list of transaction names you want the CICS Data Collector to monitor. Supports wildcards (*).

Example

```
cyanea.txn.excludeOverride=CPMI,CSMI,CKTI
```

java.security.policy

The Java™ Security Policy file.

Value

The complete path of the Java Security Policy file, as it resides in the USS file system.

Example

```
java.security.policy=/usr/lpp/cyanea/cics/CICS1/etc/datacollector.policy
```

cyanea.user.cputime

Specifies whether to display user CPU time or user and CICS CPU time in all CPU Time fields within the Managing Server. A value of "no" (default) means that the CICS CPU time is used.

Value

no or yes.

Example

```
cyanea.user.cputime=no
```

Chapter 3. Compiling Sample CICS Programs

This chapter describes how to compile sample CICS programs that are supplied in the CICS Data Collector distribution.

Compiling Sample Programs

This may be done by your CICS Systems Programmer.

A set of sample programs is supplied in the CYN.CICS.SCYNSAM2 data set, which can be used on an as-is basis. Performing these steps compiles the sample program of your choosing, identified by <Program Name>, shipped with the CYN.CICS.SCYNSAM2 data set.

Note: For CICS 1.3, make sure you compile using the CICS 1.3 Macros.

To compile sample programs:

1. Modify the job named CYN\$APRG, in the CYN.CICS.SCYNSAM2 data set, to identify <SDFHLOAD>, <Program Name>, <SDFHMAC> and the <LOADLIB> you want to compile.

The lines to modify have the following format:

```
//STEPLIB DD DSN=<SDFHLOAD>,DISP=SHR
//SYSPRINT DD SYSOUT=H
//SYSIN DD DSN=CYN.CICS.SCYNSAM2(<Program Name>),DISP=SHR
...
//SYSLIB DD DSN=<SDFHMAC>,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
...
//COPYLINK EXEC PGM=IEBGENER,COND=(7,LT,ASM)
//SYSUT1 DD DSN= <SDFHMAC>(DFHEILIA),DISP=SHR
...
//SYSLMOD DD DSN=<LOADLIB>,DISP=SHR
...
//SYSIN DD *
        NAME <Program Name>(R)
/*
```

Here is an example of the JCL modified to compile the program CYN\$PUMP, which uses CICS22.CICS as the CICS High Level Qualifier for both <SDFHLOAD> and <SDFHMAC>, and uses CYN.CICS as the High Level Qualifier for <LOADLIB>:

```
//STEPLIB DD DSN=CICS22.CICS.SDFHLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=H
//SYSIN DD DSN=CYN.CICS.SCYNSAM2(CYN$PUMP),DISP=SHR
..
//SYSLIB DD DSN=CICS22.CICS.SDFHMAC,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
..
```

```
//COPYLINK EXEC PGM=IEBGENER,COND=(7,LT,ASM)
//SYSUT1 DD DSN=CICSTS22.CICS.SDFHMAC(DFHEILIA),DISP=SHR
..
//SYSLMOD DD DSN=CYN.CICS.SCYNSLIB,DISP=SHR
..
//SYSIN DD *
    NAME CYN$PUMP(R)
/*
```

2. Run the CYN\$BLDT clist, by using TSO option 6, using the following format, which includes <HLQ> and <CICS HLQ>:

```
ex 'CYN.CICS.SCYNSAM2(CYN$BLDT) '<HLQ> <CICS HLQ>'
```

Here is an example of the command, using CYN as <HLQ> and CICSTS22.CICS as <CICS HLQ>:

```
ex 'CYN.CICS.SCYNSAM2(CYN$BLDT) 'CYN CICSTS22.CICS'
```

Here is a similar example of the command, using CICSTS23.CICS as <CICS HLQ>:

```
ex 'CYN.CICS.SCYNSAM2(CYN$BLDT) 'CYN CICSTS23.CICS'
```

Here is another example of the command, using CICSTS13.CICS as <CICS HLQ>:

```
ex 'CYN.CICS.SCYNSAM2(CYN$BLDT) 'CYN CICSTS13.CICS'
```

3. Using the SDSF log, verify that the assembly jobs ran correctly, and that the programs were added to the load library specified in your SYSLMOD.

CICS Definitions

The following program is distributed in the CYN.CICS.SCYNSAM2 data set.

See “Defining CICS Objects” on page 16 for instructions on how to add definitions and sample programs from this data set to your CICS region.

CYN\$INST

The CYN\$INST job adds the CYN definitions and the sample programs. This member adds the definitions and sample programs appropriate for the version of CICS you are running (versions 1.3, 2.2 or 2.3.)

Sample Program Descriptions

The following programs are distributed in the CYN.CICS.SCYNSAM2 data set.

CYN\$APLT

Used to assemble tables.

Execution

Called by CYN\$BLDT.

CYN\$APRG

Used to compile sample programs, as described in “Compiling Sample Programs” on page 27.

Execution

Called by CYN\$BLDT.

CYN\$BLDT

Used to compile sample programs, as described in “Compiling Sample Programs” on page 27.

Execution

This member may be run manually in TSO.

CYN\$CPUP

Posts a notification that a specific time interval has expired. The example posts the notification after 2 seconds. Checks a timer-event control area at intervals.

Execution

The program is executed by running transaction TIME.

CYN\$DPL2

Links to CYN\$DPL3 and CYN\$DPL4 three times each and passes a COMMAREA of 27 bytes for each LINKed call. Writes to a CICS Transient Data Queue named CSSL.

Execution

The program is executed through the WebSphere Test Servlet, on WebSphere 4.x or 5.x with CTG, using the CTGTesterECI.

The CTGTesterECI is a traditional servlet-based application that uses the CICS TG ECIRquest class to call a specified COMMAREA-based CICS program, and displays the result of the returned COMMAREA. The CTGTesterECI runs in the Web Container of WebSphere Application Server.

Make sure you set the following parameters in the CTGTesterECI invocation:

- COMMAREA length: 27
- Encoding: IBM037

Note: Details of this application can be obtained from the following RedBook: CICS Transaction Gateway V5 - The WebSphere Connector for CICS 'SG24-6133-01'

CYN\$DPL3

Obtains the name of the current program, data and time and return the values to CYN\$DPL2 through a COMMAREA. The date and time are formatted prior to returning control back to CYN\$DPL2.

Execution

Invoked as a DPL by CYN\$DPL2.

CYN\$DPL4

Obtain the name of the current program, data and time and return the values to CYN\$DPL2 through a COMMAREA. The date and time are formatted prior to returning control back to CYN\$DPL2.

Execution

Invoked as a DPL by CYN\$DPL2.

CYN\$ECI2

Calls the programs CYN\$ECI3 and CYN\$ECI4, passing a COMMAREA and expecting the COMMAREA to be returned to the CTGTesterECI test servlet.

Execution

Executed in the same manner as CYN\$DPL2.

CYN\$ECI3

Supports the program CYN\$ECI2, which passes a COMMAREA. Returns a COMMAREA to the CTGTesterECI test servlet.

Execution

Invoked as a DPL by CYN\$ECI2.

CYN\$ECI4

Supports the program CYN\$ECI2, which passes a COMMAREA. Returns a COMMAREA to the CTGTesterECI test servlet.

Execution

Invoked as a DPL by CYN\$ECI2.

CYN\$HEAD

Contains copyright information.

Execution

This member does not contain any executable code.

CYN\$LOOP

Assigns a program name and userid and makes a couple of delay calls. Links to the program CYN\$STCK, which writes to a queue before returning back to CYN\$LOOP. Runs repeatedly until terminated by the user, or through the In-Flight Search Page of the Application Monitor. This member is used for CICS versions 2.2 and 2.3.

Execution

Transaction LOOP is used to execute the program.

CYN\$MAPL

A copybook used in CYN\$RMAP.

Execution

Used by CYN\$RMAP.

CYN\$PUMP

A program that runs continuously and calls transaction SAM6, which loops.

Execution

Transaction PUMP is used to execute the program.

CYN\$RMAP

The sample request mapper program, which you can edit in order to map the transaction name and program name of the currently executing transaction to something else. A copy book CYN\$MAPL is used to ensure byte boundary.

Execution

The request mapper is used when the datacollector.env file has the following setting:

```
cyanea.mapper=yes
```

When the CICS Data Collector is configured to use the request mapper, all executing transactions and applications have their transaction name and program name mapped to the values set in the CYN\$RMAP program.

CYN\$SMP1

Verifies that CICS and the CICS Data Collector are working correctly. Makes a link to CYN\$SMP2 and returns a message that states that everything is ok.

Execution

Called by the transaction CAM1.

CYN\$SMP2

Called by program CYN\$SMP1, writes to a temporary storage queue and returns control back to program CYN\$SMP1.

Execution

Use transaction CAM1 to verify the program.

CYN\$SMP6

Writes a start message to a temporary storage queue CYN\$ and starts transaction SAM7 twice. Passes the COMMAREA for each call to SAM7. On return from SAM7, writes to the CYN\$ queue. SAM7 is defined as a transaction that executes program CYN\$SMP7.

Execution

Called by transaction SAM6.

CYN\$SMP7

Retrieves information from the task into the COMMAREA, issues a delay and links to program CYN\$SMP8, passing a COMMAREA with a specific length. On return the information is written to a Temporary Storage Queue.

Execution

Called by transaction SAM7.

CYN\$SMP8

Retrieves information from the task into the COMMAREA, issues a delay and links to program CYN\$SMP9, passing a COMMAREA with a specific length. On return the information is written to a Temporary Storage Queue.

Execution

Called by program CYN\$SMP7.

CYN\$SMP9

Retrieves information from the task into the COMMAREA, issues a delay and writes to a Temporary Storage Queue.

Execution

Called by program CYN\$SMP8.

CYN\$STCK

This program is called by CYN\$LOOP. This program works for CICS versions 2.2 and 2.3.

Execution

Called by CYN\$LOOP.

CYN\$XCT0

Transfers control (XCTL) to program CYN\$XCT1. Program CYN\$XCT0 relinquishes control once CYN\$XCT1 gets control.

Execution

Called by transaction XCT0.

CYN\$XCT1

Writes a message to the Operator and has a delay set. On returning from the delay, the program returns and completes.

Execution

Called by transaction XCT0.

CYN\$XCT2

Links to program CYN\$XCT3. When CYN\$XCT3 is invoked, it transfers control (XCTL) to CYN\$XCT1.

Execution

Called by transaction XCT2.

CYN\$XCT3

Writes a message to the Operator and links to program CYN\$XCT1.

Execution

Called by transaction XCT2.

CYN\$SYSN

An example of the parameters needed for CICS SYSIN overrides. See "SIT Strategy" on page 13 for more information.

Execution

Not invoked by any sample programs.

CYN\$PTCY

An example program list table that contains definitions described in “SIT Strategy” on page 13.

Execution

Not invoked by any sample programs.

Debugging Tools

The following programs are distributed in the CYN.CICS.SCYN SAM2 data set.

CYN\$PR13

The Print program to be used for CICS 1.3 is DFHTU530. The STEPLIB should contain CICSTS13.CICS.SDFHLOAD and CICSTS13.CICS.SDFHLINK.

See “Auxiliary Trace” on page 65 for instructions on how to use this job.

CYN\$PR22

The Print program to be used for CICS 2.2 is DFHTU620. The STEPLIB should contain CICSTS22.CICS.SDFHLOAD and CICSTS22.CICS.SDFHLINK.

See “Auxiliary Trace” on page 65 for instructions on how to use this job.

CYN\$PR23

The Print program to be used for CICS 2.3 is DFHTU630. The STEPLIB should contain CICSTS23.CICS.SDFHLOAD and CICSTS23.CICS.SDFHLINK.

See “Auxiliary Trace” on page 65 for instructions on how to use this job.

Chapter 4. CICS Data Collector Log Files

Logs are available in both the CICS and USS environments.

Logs may provide useful information for troubleshooting, with or without the assistance of the IBM® Support team.

When troubleshooting issues related to the Managing Server, please see the *WebSphere Studio Application Monitor Operator's Guide* for information about log files that reside on the Managing Server.

Viewing CICS Data Collector Logs

Viewing Logs in the CICS Regions

Within CICS, you can use the Spool Search and Display Facility (SDSF) to view information the CICS Data Collector receives from the Managing Server, and information produced by the CICS Data Collectors.

Information is spooled to **SYS00001** and **SYSOUT**.

The information spooled to **SYS00001** includes variable definitions received from the Managing Server.

The information spooled to **SYSOUT** comes from the CICS Data Collector; You may want to compare it to the information in the Managing Server's properties files.

To view CICS Region Logs for the CICS Data Collector:

1. Login to the z/OS Mainframe.
2. Type in the command line to get to the Display Active panel in your SDSF (Spool Display.)
3. Specify the prefix related to your CICS jobs.
4. Select the CICS region with ?
5. Select the **SYS00001** or **SYSOUT**.
6. Verify the JVM has started by looking at the SYS0001 log, and verify that the CICS region connected to the kernel, and to the Publish Server in the SYSOUT.

Note: If there are any problems loading the shared library (libcyanea_cics_zos.so), no meaningful messages will be displayed in **SYS00001**, and no **SYSOUT** will be created. You can verify this by looking at the cyanea_datacollector.log file in the USS file system; see 36 for more details.

Viewing Logs in USS

Logs are created in USS for each CICS Data Collector.

Where Are the Logs?

Files for each CICS Region are located within the CICS Data Collector <installation directory>, based on the CICS Region's APPLID:

<install path>/cics/<APPLID>

For example, the location of files for a CICS Region with an APPLID of CICS1, installed in the default location, is as follows:

```
/usr/lpp/cyanea/cics/cics1
```

What Logs Are Available?

There are several files associated with each monitored CICS Region:

- etc/<SYSPLEX>.<SYSID>.<APPLID>.datacollector.properties
- etc/<SYSPLEX>.<SYSID>.<APPLID>.id
- etc/cyanea.mod
- logs/datacollector_<date>.log
- logs/cyanea_datacollector.log

The term <SYSPLEX> represents the sysplex name, and <SYSID> represents the z/OS SYSID. (<SYSPLEX>.<SYSID> represents the admin server name.).

These five files are created when the CICS Data Collector is started or restarted. (If you want to restart the CICS Data Collector after changing its configuration, you must delete the first two of these files.)

etc/<SYSPLEX>.<SYSID>.<APPLID>. datacollector.properties:

This log file contains the same information as the etc/datacollector.properties file, but in an escaped format, and with an additional line for the date. (The etc/datacollector.properties file is one of the configuration files for the CICS Data Collector.)

etc/<SYSPLEX>.<SYSID>.<APPLID>.id:

This file contains information about how the CICS Data Collector and its RMI interface are known to the Managing Server and its components.

etc/cyanea.mod:

This file contains information about the current monitoring level of the CICS Data Collector.

logs/datacollector_<date>.log:

The <date> is in yyyyymmddhhmmss format. This file contains information from the CICS Data Collector about major events that occur with regard to the Managing Server, like joining the kernel or disconnecting from the kernel.

logs/cyanea_datacollector.log:

The cyanea_datacollector.log file will display any errors that occur prior to loading the shared library. If there are no problems before loading the shared library, this log file will not be created.

Note: If the cyanea_datacollector.log file cannot be created in the <installation directory>/logs directory, the CICS Data Collector will attempt to create this log in the directory named /tmp.

Part 2. Operating the CICS Data Collector

Chapter 5. Enabling Composite Request Features in the Application Monitor

The *WebSphere Studio Application Monitor CICS Data Collector* (CICS Data Collector) is integrated with the *WebSphere Studio Application Monitor* (Application Monitor).

To enable Composite Request features, you must configure each Data Collector that participates in Composite Requests, including J2EE as well as CICS Data Collectors.

In addition, you must perform a few tasks in order to prepare the Managing Server for using CICS Data Collectors. This chapter describes these tasks, including:

- “Step-by-Step Instructions: J2EE Data Collectors”.
- “Configuring CICS Data Collectors on the Managing Server” on page 42
- “Configuring Publish Servers” on page 43
- “Starting the Global Publish Server” on page 44

Step-by-Step Instructions: J2EE Data Collectors

Your Application Monitor Administrator must perform these procedures for each J2EE Data Collector that initiates Composite Requests.

These instructions are Application Server-dependent. Furthermore, you must configure each application server for either or both mechanism used to connect to CICS: CTG and MQ.

Follow the instructions appropriate for the Application Server version and platform.

Enabling Composite Request Features for WebSphere 5 Data Collectors on z/OS

Perform the following procedure to enable Composite Requests, regardless of the mechanism used to connect to CICS (CTG or MQ.)

To enable Composite Request Features on a WebSphere 5 Data Collector on z/OS:

1. Add the `sam.codepage` and `appserver.platform` custom properties in the WebSphere configuration.
 - a. Login to the WebSphere Administration Console.
 - b. Navigate as follows:
 - 1) Select the `Server > Application Servers` option and select the server on which you want to enable Composite Request monitoring for requests that use CTG.
 - 2) Select `Additional Properties: Process Definition > Servant > Additional Properties: Java Virtual Machine`.
 - 3) In the Java Virtual Machine Panel, select `Additional Properties > Custom Properties`.
 - c. In the Custom Properties dialog box, select 'New'.
 - d. In the configuration panel, enter the following name/value pairs, if they do not already exist. Select <OK> after each add operation:

NAME	VALUE
sam.codepage	IBM037
appserver.platform	WS502 (for WebSphere 5.0.2) or WS51 (for WebSphere 5.1)

Note: You may re-verify your configuration data in /<WebSphere directory>/<server>/servant.jvm options by searching the variable name (for example: sam.codepage).

2. In the Messages dialog box, select 'Save'.
3. In the Save to Master Configuration dialog box,
 - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
 - If you are NOT under ND environment, simply select <Save>.

Enabling Composite Requests Features for CTG

Perform the following procedure if you want to enable Composite Request features on a Data Collector that uses CTG to access CICS.

To enable Composite Request features on a WebSphere 5 Data Collector on z/OS that uses CTG:

1. Update the etc/bcm.properties file as follows:
 - a. Login to the USS system where you have access to the <installation directory> of the J2EE Data Collector.
 - b. Edit the etc/bcm.properties file, which is located within the installation directory of the J2EE Data Collector whose Composite Request features you are enabling. For example:


```
vi /<installation directory>/etc/bcm.properties
```
 - c. Set the value of the 'ctg.enable' property to 'yes'. For example:


```
ctg.enable=yes
```
 - d. Save the updated etc/bcm.properties file.
2. Make sure that the directory /usr/lpp/cicsts/gateway/ctg/deployable is in the LIBPATH:
 - a. Login to the WebSphere Administration Console.
 - b. Navigate as follows:
 - 1) Select the Server > Application Server option and select the <ServerName> of the server on which you are enabling Composite Request features.
 - 2) Select Additional Properties: Process Definition > Servant > Additional Properties: Environment Entries.
 - 3) Select New button for creating new entry LIBPATH or select the LIBPATH entry for an update.
 - 4) Insert the following properties as name/value pair to the beginning:

NAME	VALUE
LIBPATH	/usr/lpp/cicsts/gateway/ctg/deployable:

5) Select <Apply>.

Note: A colon ':' must be used to separate two property values. If only one property value is present, the colon is not required. For example,

```
<installation
directory>/wsam/<server>/lib:/usr/lpp/cicsts/gateway/ctg/deployable
```

You may confirm your changes in was.env and server.xml under /<WebSphere directory>/servers/<ServerName> directory via key word 'server_region_libpath' and 'LIBPATH', respectively.

Note: The was.env and server.xml files are ASCII encoded. To view them, you need to either use an editor which support ASCII encoding (e.g. viascii) or export it to a computer (UNIX or Windows) which supports the ASCII character set by default.

3. Update the CLASSPATH as follows:

- a. Select the Server > Application Servers option and select the server on which you are enabling composite request features.
- b. Navigate to the Additional Properties : Custom Services section.
- c. In the Custom Services panel, select '-' of the probe service for update.
- d. Insert the following value at the beginning of the classpath:

```
${CONNECTOR_INSTALL_ROOT}/cicsecl.rar:
```

Note: The colon is used to separate paths within the classpath.

- e. In the Messages dialog box, select 'Save'.
- f. In the Save to Master Configuration dialog box,
 - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select 'Save'.
 - If you are NOT under ND environment, simply select 'Save'.

4. Verify the location of the cicsecl.rar directory:

- a. Select Environment > Manage WebSphere Variables.
- b. Select the node with server option as blank and click the <Apply> button.
- c. Look for \${CONNECTOR_INSTALL_ROOT} and its real value.

For example, \${CONNECTOR_INSTALL_ROOT} might resolve to \${USER_INSTALL_ROOT}/installedConnectors).

The variable \${USER_INSTALL_ROOT} might resolve to /WebSphere/V5R1M0/AppServer.

- d. On the z/OS USS system, verify the existence of the directory named cicsecl.rar under the directory \${CONNECTOR_INSTALL_ROOT}.

For example:

```
cd /WebSphere/V5R1M0/AppServer/installedConnectors
ls -l cicsecl.rar
```

Note: If you don't see the cicsecl.rar file in this location, you need to locate this cicsecl.rar directory (via your WebSphere or CICS administrator(s)) and update the value of the WebSphere variable \${CONNECTOR_INSTALL_ROOT} to reference the correct directory path.

5. Restart WebSphere.

Enabling Composite Request Features for MQ

The instructions for enabling Composite Request features of Data Collectors for application servers that use MQ to connect to CICS are located in the *WebSphere Studio Application Monitor Installation and Customization Guide*, in Part 3. The Data Collector for z/OS, in Chapter 9. Customization, in the Optional z/OS WebSphere 5 Support section, under the heading Adding MQI Capturing Support.

Disabling Composite Request Features for WebSphere 5 Data Collectors on z/OS

Perform the following procedure to disable Composite Request features on a WebSphere 5 Data Collector on z/OS.

To disable Composite Request Features on a WebSphere 5 Data Collector on z/OS:

1. Update the 'ctg.enable' property in the Data Collector's etc/bcm.properties file:
 - a. Login to the USS system where you have access to the <installation directory> of the Data Collector.
 - b. Edit the etc/bcm.properties file, which is located within the installation directory of the CICS Data Collector whose Composite Request features you are disabling. For example:

```
vi /<installation directory>/etc/bcm.properties
```
 - c. Set the value of the 'ctg.enable' property to 'no'. For example:

```
ctg.enable=no
```
 - d. Save the updated etc/bcm.properties file.
2. Restart WebSphere.

Step-by-Step Instructions: Managing Server

These procedures need to be performed by your Managing Server Administrator.

Performing these tasks prepares your Managing Server for monitoring the CICS Regions on which you have installed and configured CICS Data Collectors:

- Configuring CICS Data Collectors on the Managing Server
- Configuring J2EE Data Collectors on the Managing Server
- Updating the Publish Server Properties Files
- Restarting the Publish Servers

This chapter also covers the following tasks, which you may need to perform from time to time:

- Toggling Data Collector Logging (on the Managing Server)
- Stopping and Checking the Status of the Global Publish Server.

Configuring CICS Data Collectors on the Managing Server

You must configure the Managing Server to communicate with your CICS Data Collectors.

To configure a Data Collector within the Managing Server

1. Open the Application Monitor.
2. Click the **Administration** tab on the top navigation.

3. Select **Server Management > Data Collector Configuration**
4. Apply a configuration setting to your Data Collector.

Note: If you want to monitor Composite Requests using MQ, make sure that the configuration you apply to your CICS Data Collector has MQ monitoring enabled. Make sure that the exclude and exclude override lists accurately specify the queues you do and do not want to monitor.

See the WebSphere Studio Application Monitor User's Guide for more information about Data Collector Configuration.

Configuring Publish Servers

For best results when using CICS Data Collectors, increase the value of the `TIMEOUT_LIMIT` property of all Publish Servers to 60 (minutes.)

Updating the Publish Server Properties Files

The properties files of the Publish Servers are located within the `etc` directory of the Application Monitor installation directory, and are named with the convention `psX.properties`, where `X` is an integer. Here are some example Publish Server properties file locations:

```
/opt/cyaneaone/etc/ps1.properties
```

```
/opt/cyaneaone/etc/ps2.properties
```

The desired definition looks like the following:

```
TIMEOUT_LIMIT=60
```

For these settings to take effect, you must restart the Publish Servers.

Restarting the Publish Servers

To restart a Publish Server, you must stop it and then restart it. To do so, run the `cyaneactl.sh` script, located in the `<Application Monitor installation directory>/bin` directory.

For example, the following commands restart the Publish Server whose properties file is `ps1.properties`:

```
cd <Application Monitor installation directory>
```

```
cd bin
```

```
./cyaneactl.sh ps1 stop
```

```
./cyaneactl.sh ps1 start
```

Toggling Data Collector Logging (on the Managing Server)

In order to toggle logging of Data Collectors, run the `dcctl.sh` script, located in the `<Application Monitor installation directory>/bin` directory.

The log file this affects is described in “logs/datacollector_<date>.log:” on page 36.

Note: Although toggling the Data Collector log file is performed on the Managing Server, the log file itself is located on the USS filesystem, within the CICS Data Collector installation directory.

To enable logging on a Data Collector

1. Run the following commands on the Managing Server host:

```
cd <Application Monitor installation directory>
cd bin
./dcctl.sh debug
```

You see a list of the Data Collectors known to the Managing Server followed by a prompt, which looks like the following:

```
0 CIQ5:CICS5 813102ab-32c2-d701-686e-c69b95b483d2.120
1 zlnx:servzln 6181978b-d8b7-d701-7a5c-000255ac59c8.2471
2 ADCDPL:BBOSAM1A 202c7303-89bc-d701-6d93-ad2b66481876.105
3 CIQ2:CICS2 61132cc5-55c1-d701-43be-68992bcec9bc.97
4 aix:ws405_aix_01 50f2a8bb-fea8-d701-d25d-01005e000001.13324
-->
```

The number at the beginning of each line identifies the Data Collector to the dcctl.sh script.

2. Enter the number associated with the Data Collector for which you want to enable logging.

To reset a Data Collector log:

1. Run the following commands on the Managing Server host:

```
cd Application Monitor installation directory
cd bin
./dcctl.sh info
```

You see a list of the Data Collectors known to the Managing Server followed by a prompt, which looks like the following:

```
0 CIQ5:CICS5 813102ab-32c2-d701-686e-c69b95b483d2.120
1 zlnx:servzln 6181978b-d8b7-d701-7a5c-000255ac59c8.2471
2 ADCDPL:BBOSAM1A 202c7303-89bc-d701-6d93-ad2b66481876.105
3 CIQ2:CICS2 61132cc5-55c1-d701-43be-68992bcec9bc.97
4 aix:ws405_aix_01 50f2a8bb-fea8-d701-d25d-01005e000001.13324
-->
```

The number at the beginning of each line identifies the Data Collector to the dcctl.sh script.

2. Enter the number associated with the Data Collector whose log you want to reset.

Starting the Global Publish Server

In order for the Managing Server to track Composite Requests, you must start the Global Publish Server, which is a component of the Managing Server.

Starting the Global Publish Server is similar to starting other Managing Server components.

For more information on operating other components within the Managing Server, please see the *WebSphere Studio Application Monitor Operator's Guide*.

To start the Global Publish Server

1. Enter the following commands at a command prompt, substituting the appropriate location of your <Application Monitor installation directory>:


```
su - cyanea
cd <Application Monitor installation directory>
./cyaneactl sam start
```

2. To check whether the Global Publish Server started successfully, you can type in the following command.

```
./cyaneactl sam ping
```

Stopping the Global Publish Server

Stopping the Global Publish Server is similar to stopping other Managing Server components.

To stop the Global Publish Server

1. Enter the following commands at a command prompt, substituting the appropriate location of <Application Monitor installation directory>:

```
su - cyanea
cd <Application Monitor installation directory>
./cyaneactl sam stop
```

2. To check whether the Global Publish Server stopped successfully, you can type in the following command.

```
./cyaneactl sam ping
```

Checking the status of the Global Publish Server

Checking the status of the Global Publish Server is similar to checking the status of other Managing Server components.

To check the status of the Global Publish Server

1. Enter the following commands at a command prompt, substituting the appropriate location of <Application Monitor installation directory>:

```
su - cyanea
cd <Application Monitor installation directory>
./cyaneactl sam status
```

Starting Multiple Instances of the Global Publish Server

In this release, it is not possible to use more than one instance of a Global Publish Server.

Part 3. Using the CICS Data Collector

Chapter 6. Using the Application Monitor with CICS Data Collectors

Although the architectures of CICS and J2EE are distinct, the Application Monitor integrates them in a single monitoring solution. However, there are some distinctions between CICS and J2EE that affect your use of the Application Monitor.

In cases where CICS and J2EE terminology differ, the Application Monitor uses both names to be clear. Some Application Monitor features are only relevant to J2EE architectures, and are therefore unavailable for use with CICS Data Collectors. Likewise, other features have CICS-specific details and are only available for use with CICS Data Collectors.

This chapter reviews the differences between CICS and J2EE terms, and describes the availability of Application Monitor features for CICS Data Collectors.

Overview of Application Monitor Features Available for CICS Data Collectors

For the current release, not all Application Monitor features are available for CICS Data Collectors. This section describes the features that are available for CICS Data Collectors.

Administration

The top-level navigation for Administration includes Account Management, Server Management, Monitoring on Demand™, and Managing Server.

Account Management

The Account Management section contains the User Profiles and Role Configuration. Manage your user accounts in User Profiles. Add and delete user accounts as necessary. Role Configuration displays the system default roles and any custom roles created by the administrator specific to the needs of their data center environment. Manage the custom roles by maintaining and updating user account access.

Server Management

Server Management contains the Server Groups and Data Collector Configuration. In Server Groups, manage the groups by creating, duplicating, and deleting groups as needed. Maintain existing groups by editing them when necessary. In Data Collector Configuration, configure and unconfigure Data Collectors, maintain your Data Collectors' status and create configurations to apply to your Data Collectors. In addition, manage your configurations by creating, applying, modifying, duplicating, and deleting to keep them up-to-date. The Web Server Administration section provides a method for adding and deleting Web servers from the Web Server Overview page.

Monitoring on Demand™

Monitoring on Demand™ (MOD) provides the user with three different types of monitoring levels to choose from for each group or server including: L1 (Production

mode), L2 (Problem Determination mode), and L3 (Tracing mode). Create a schedule to apply to a server or group of servers.

Managing Server

The Managing Server contains the System Properties, Self-Diagnosis, and Data Management. In System Properties, maintain the system settings for Application Monitor. Also control the settings for the following properties: Data Collection Settings, Application Overview Display. (SNMP Network is not applicable for CICS Data Collectors.)

Self-Diagnosis:

The Self-Diagnosis allows you to view all the components currently running in Application Monitor, and their states and attributes in the Self-Diagnosis. Application Monitor consists of the following components: Kernel, Data Collector Controller, Publish Server, Global Publish Server, Archive Agent and Message Dispatcher. Because Application Monitor is designed to work as a loosely-coupled system, the components can be up or down without affecting the integrity of the whole system. Data Management provides a method for permanently deleting excess data from the database server.

Availability

The top-level navigation for Availability includes the *Systems Overview* and the *Server Statistics Overview*.

Systems Overview

Enterprise Overview: The *Enterprise Overview* page displays information for groups of servers (i.e. server farm). It provides the highest level view of health status for the server farm in a typical Data Center. Additional data displayed on the page includes completed requests for the group. Links are available for each of the groups to further investigate the availability and to search the group information for a request.

Group Overview:

The *Group Overview* page provides a high-level overview of activity for each server in the group. Specifically, the overview includes the response time and throughput for the last hour as well as the current monitoring level for each server. The user can analyze this data in order to ascertain whether the servers in the group are functioning properly.

Server Overview:

The *Server Overview* page displays comprehensive server information, activity, statistics, and resource data for the selected server. View the summary data to understand the status of your applications and application server (CICS Region) behavior. This page provides vital information for determining the health of your server farm.

Web Server Overview:

The *Web Server Overview* page offers a quick method for viewing whether your Web servers are properly functioning. While performing problem determination functions, it is useful to know the status of your Web servers. You can efficiently eliminate your Web servers as the source of the problems by checking the Web Server Overview page. The Application Overview page displays information for groups of servers (i.e. server farm). It provides the highest level view of health status for the server farm in a

typical Data Center. Additional data displayed on the page includes completed requests for the group. Links are available for each of the groups to further investigate the availability and to search the group information for a request.

Server Statistics Overview

The *Server Statistics Overview* page provides application server-level statistics for quick assessment of server activity and related platform data (from the perspective of the *Server Statistics Overview*, CICS is considered an application server.) This page assists the operators in drawing an educated guess of the true availability of the applications being served in the individual application servers. This is also called activity- based availability as opposed to IP availability.

Workload Manager

The Workload Manager feature offers a way to view selected data from the Workload Manager (WLM) for z/OS and OS/390, for the address space associated with a particular server, as well as its associated service class data, service class period and enclave data. This feature is only available for z/OS servers and CICS Regions.

The Workload Manager feature is not available directly from the top-level navigation. It is available through the Tools button on the *Server Overview* (within the *Systems Overview* feature) and the *Server Statistics Overview*, for z/OS servers and CICS Regions.

Problem Determination

The top-level navigation for Problem Determination includes the *In-Flight Request Search*, *Server Activity Display*, *Recent Activity Display*, *Memory Diagnosis*, *JVM Thread Display*, *Software Consistency Check*, and *Trap & Alert Management*.

Among these features, only *In-Flight Request Search*, *Server Activity Display*, *Recent Activity Display* and *Memory Diagnosis* are available for CICS Data Collectors.

In-Flight Request Search

The *In-Flight Request Search* page provides a searching component to search for a request on a troubled application server (CICS Region). When a client makes a request for a particular server resource, in most cases, the user requests a Web page or a Java application. To search for a request, enter in the request using alpha numeric characters or a URL string or leave it blank to search for everything.

Server Activity Display

The *Server Activity Display* page provides task data for an application server (CICS Region) at a specific point in time, as well as the 100 most recently completed transactions. You may filter the tasks by the type, or select another filter from the drop-down list. This will limit the list to the type of tasks you want to view. After pinpointing a hung task, click the Task's ID to review more request detail. View a stack trace, program/component trace; or view, email or export a PDF file of the trace to other WSAM users.

Recent Activity Display

Recent Activity Display is an aid to investigating potential memory problems relating to the Process/Region heap size. Use *Recent Activity Display* to create a server activity analysis report.

Memory Diagnosis

The *Memory Diagnosis* section provides the user with diagnostic tools to discover memory related problems in their environment. *Memory Analysis* provides an interface to help the user create useful server activity analysis reports regarding memory.

Performance Management

The top-level navigation for Performance Management includes the *System Resources*, *System Resource Comparison*, *Performance Analysis & Reporting*, and *Daily Statistics*.

Among these features, only *Performance Analysis & Reporting* is available for CICS Data Collectors.

Performance Analysis & Reporting

Users can easily analyze application and application server (CICS Region) data using the *Performance Analysis & Reporting* functions. Create reports for a Group of servers or a selected server. Analyze data for requests/transactions, methods/programs, SQL calls and server availability. For CICS Data Collectors, there is no system resource data, and therefore there are no system resources report features. From the report analysis, access more details on the behavior, performance, memory utilization of the application server and the percentage of the server availability.

Help

Application Monitor online Help offers you multiple ways to find answers to your questions. You can use the Contents tab to browse through the available Help topics; Index tab for an alphabetical listing of all our help text; and Search tab to find the answer to a specific question.

Glossary

Our easy to use glossary offers definitions for headings in results tables, processes, and unfamiliar terms presented in the Application Monitor application. Search alphabetically to quickly find a definition for the term in question.

About

About provides the current version number for Application Monitor and trademark information, regarding pending and approved trademarks for Application Monitor and International Business Machines Corporation.

J2EE and CICS Terminology

Comparison of Terms

The following table lists terms that describe equivalent concepts in J2EE and CICS:

Table 6. J2EE and CICS Terms

J2EE Name	CICS Name
Application Server	CICS Region
Request	Transaction

Table 6. J2EE and CICS Terms (continued)

J2EE Name	CICS Name
Thread ID	Task ID
Method Name	Program
JVM	Process/Region

Whenever these terms are used, the labeling is in the following format:

- [J2EE Name]/[CICS Name]

Features with Dual J2EE/CICS Terminology

The following Application Monitor features display both the J2EE and CICS terms described in Table 6 on page 52.

Table 7. Features with Dual J2EE/CICS Terminology

Section	Feature
Administration	<i>Server Management</i>
	<i>Monitoring on Demand™</i>
	<i>Managing Server</i>
Availability	<i>Systems Overview</i>
	<i>Server Statistics Overview</i>
Problem Determination	<i>In-Flight Request Search</i>
	<i>Recent Activity Display</i>
	<i>Memory Diagnosis: Memory Analysis</i>
Performance Management	<i>Performance Analysis & Reporting</i>
Help	All

WSAM Features for CICS Data Collectors

Features Unavailable to CICS Data Collectors

Various features specific to J2EE Data Collectors are not available for CICS Data Collectors. The following lists describes the features of WSAM that are not available for CICS Data Collectors:

Table 8. Application Monitor Features Unavailable for use with CICS Data Collectors

Section	Feature
Problem Determination	<i>Recent Activity Display: Garbage Collection options</i>
	<i>Software Consistency Check</i>
	<i>Memory Diagnosis: Memory Analysis: Garbage Collection options</i>
	<i>Memory Diagnosis: Heap Analysis</i>
	<i>Memory Diagnosis: Memory Leak</i>
	<i>JVM Thread Display</i>
	<i>Trap & Alert Management</i>
Performance Management	<i>System Resources</i>
	<i>System Resource Comparison</i>
	<i>Performance Analysis & Reporting: System Resource Analysis Reports</i>
	<i>Daily Statistics</i>

CICS-Customized Features

In several cases, features are customized based on whether or not a Data Collector is a CICS Data Collector or a J2EE Data Collector:

Administration

Server Management: Data Collector Configuration:

There is a Data Collector configuration that is tailored to CICS Data Collectors named 'CICS default.' The exclude list of the CICS default configuration is populated with regular expressions that match the names of CICS programs you will typically not want to monitor, such as DFH*, CSQ*, DSN*, DFS* and CYN*.

Monitoring on Demand:

Monitoring on Demand (MOD) provides the user with three different types of monitoring levels to choose from for each group or server including: L1 (Production mode), L2 (Problem Determination mode), and L3 (Tracing mode). Create a schedule to apply to a server or group of servers.

The same philosophy of monitoring levels applies to CICS as to J2EE:

- L1—Top level requests/transactions.
- L2—API calls. (Includes L1 events)
- L3—Low level trace. (Includes L1 and L2 events.)

The following table describes which type of CICS events are monitored, and in which monitoring level they first appear.

Table 9. CICS Events and MOD Levels

Event	Monitoring Level
Transaction	L1—Production
EXEC CICS API	L2—Problem Determination
MQI	L2—Problem Determination
DSQL	L2—Problem Determination
Program	L3—Tracing

Availability

Workload Manager:

The *Workload Manager* (WLM) feature for CICS Regions includes support for service class and service class periods, but not for enclaves.

From the WLM point of view, a CICS Region is a server address space, and so there is additionally some subsystem work manager delay data (transactions in various states in the begin-to-end or execution phases,) which is not available in WLM for WebSphere on z/OS.

See “Viewing the WLM Associated Service Class Summary” on page 58 and “Viewing the WLM Associated Service Class Period Detail” on page 59.

Problem Determination

Server Activity Display: Active Requests:

The options for the Request/Thread Type filter include CICS as an option, along with the usual options of EJB, Servlet and JSP.

Note: When you click the **Cancel Request** button once, the CICS Data Collector issues an EXEC CICS SET TASK PURGE to the task.

If you click the the **Cancel Request** button a second time, and the task has not completed, the CICS Data Collector issues an EXEC CICS SET TASK FORCEPURGE to the task.

If you click the the **Cancel Request** button a third time, and the task has still not completed, the CICS Data Collector issues an EXEC CICS SET TASK KILL to the task.

Server Activity Display: Request Detail:

- The range of values for changing a transaction’s priority is from 1 to 255.
- There is an additional field for User Name, which is the name of the user initiating the transaction.
- There is a *Work Area* page for viewing the contents of work areas, which is described in 57.
- In the Stack Trace for CICS Data Collectors, there is no Class Name associated with the methods (programs.)

TRANSACTION PROPERTIES			
Snapshot Date	Oct 31, 2003	Application Server Name	CICS2
Snapshot Time	3:11:37 PM	Application Server IP Address	192.168.3.68
Platform CPU % Utilization	3.00%	Total Task Count	4
TRANSACTION DETAIL			
Task ID	100	Last Known CPU	0.000 ms
Client Transaction	XCT0-MAPPER	Idle Time	2443 ms
Client Transaction Start Date	Oct 31, 2003	Task Type	CICS TRANSACTION
Client Transaction Start Time	3:11:34 PM	Current Applid	CICS2
Resident Time	2443 ms	Current Program	XCTLTST1
User ID	CICSUSER	Current Action	EXEC CICS Request
Priority	1	Task Status	Waiting
Change Priority	<input type="button" value="No Change"/>	Change Task Status	<input type="button" value="No Change"/>
<input type="button" value="Cancel Transaction"/>			

Figure 3. Request Detail page for CICS

Recent Activity Display:

- The metrics related to Garbage Collection are not available for CICS Data Collectors.
- CICS Data Collectors use Process/Region CPU instead of JVM CPU as a metric.
- CICS Data Collectors use Process/Region heap size instead of JVM Heap size as a metric.
- The Process/Region heap size graphs also contain a reference line for the maximum heap size.

Note: The maximum heap size reference is not dynamic. If you change the limit in a CICS Region, the new value will not be reflected in the *Recent Activity Display*. You must disable and reconfigure the CICS Data Collector in order to obtain the new maximum heap size.

Memory Diagnosis: Memory Analysis:

Memory Analysis uses the same metrics as *Recent Activity Display*, and are interpreted to reflect the Process/Region, rather than the JVM.

Performance Management

Performance Analysis & Reporting:

- The Request/Thread Type dropdown includes CICS as an option, along with EJB, Servlet and JSP.

Viewing the Contents of a Work Area

When debugging an active transaction, it may be desirable to view the contents of the Work Areas. When used with CICS Data Collectors, the Application Monitor provides a familiar Hex Viewer to view the Work Areas.

The Hex Viewer allows you to view the contents of any of the following Work Areas in either EBCDIC or ASCII format:

- COMMAREA (Communications Area)
- CWA (Common Work Area)
- TCTUA (Terminal Control Terminal User Area)
- TIOA (Terminal Input Output Area)
- TWA (Transaction Work Area)

To view the contents of a Work Area:

1. From the top navigation, click **Problem Determination > In-Flight Request Search**.

The In-Flight Request search page displays active requests/transactions.

2. Locate a transaction running on a CICS server (on the basis of the **Server Name**) and click its name in the **Thread/Task ID** column.

The Transaction Detail page for that CICS transaction opens.

3. Click the Work Area link in the left navigation of the Transaction Detail page.

The Work Area page opens, which includes Transaction Information and a **Hex Viewer** at the bottom of the page.

An example of the Hex Viewer from a Transaction Detail page is shown in Figure 1 on page 6.

4. Select a **Work Area** from the Work Area drop-down.
5. Select either the **EBCDIC** or **ASCII** translation option.
6. Click **OK**.

The contents of the Work Area is presented in terms of the columns **Address**, **Offset**, **Hex Values** and **Text Values**.

HEX VIEWER 200 per Page

Work Area: Translation: EBCDIC ASCII

1 - 6 of 6 Results 1

Address	Offset	HexValues				TextValue
1400D0	0	0114808F	0103220F	D7E4D4D7	0000030C	..X.....PUMP....
1400E0	10	E3F0F0F3	00000000	00000010	08000000	T003.....
1400F0	20	00000000	00000000	000000C4	C6F0F0F5DF005
140100	30	F1C6C6E2	C1D4F640	40404000	00000000	1FFSAM6.....
140110	40	00000000	00000000	00000000	00000000
140120	50	00000000	00000000		

1 - 6 of 6 Results 1

Figure 4. CICS Data Collector Hex Viewer

Viewing the WLM Associated Service Class Summary

The WLM Associated Service Class Summary page offers a way to view selected data from the Workload Manager (WLM) for z/OS and OS/390, for the address space associated with a particular server, as well as its associated service class data and service class period data.

The address space properties include the server name and associated Report Class, Resource Group, Workload, Server Space and Associated Service Class Goals.

The associated service class properties include Service Class Name, Description, Associated Workload, Associated Resource Group, Number of Service Class Periods, WLM Mode, Last Initialized Time, Data Collected Time, Policy Name, Policy Activated Time, Policy Activator User ID, Policy Activated System, Current Delay Sample Intervals (ms), and Number of times the WLM Sample Code ran.

Each associated service class period data includes Period Name, Goal Type, Response Time Units, Goal % Value, Importance Level, Response Time Velocity, and Period Duration, for each associated service class period. Drill down on the period name to see the WLM Associated Service Class Period Detail.

To open the WLM Associated Service Class Summary page:

- From the top navigation, click **Availability > Systems Overview > Server**.
The *Server Overview* selection page opens.
- Select a Group and a Server from the drop-down menus.
The *Server Overview* page opens displaying data for the selected server.
- Click the **WLM Associated Service Class Summary** from the tools button.
The WLM Associated Service Class Summary page opens.

ADDRESS SPACE PROPERTIES	
Server Name (Region)	ADCDPL.P390.CICS3.78 (L3)
Associated Workload	STARTED
Associated Report Class	
Associated Resource Group	
Server Space	Yes
Associated Service Class Goals	Applied

ASSOCIATED SERVICE CLASS PROPERTIES					
Name	STCLOM	Description	Started Tasks Low - Med	Associated Workload	STARTED
Associated Resource Group		# of Service Class Periods	2	WLM Mode	Goal Mode
Last Initialized Time	Oct 22, 2003 8:50:26 PM	Data Collected Time	Oct 23, 2003 11:55:20 AM	Policy Name	ETPBASE
Policy Activated Time	Oct 20, 2003 3:58:55 PM	Policy Activator User ID	JHELER	Policy Activated System	P390
Current Delay Sample Intervals (ms)	250	Total # WLM Sample Code	217,173		

ASSOCIATED SERVICE CLASS PERIOD						
Period	Goal Type	Response Time Units (msec., sec., min., hr.)	Goal % Value	Importance Level (1-5)	Response Time/Velocity (Goal Value)	Period Duration
Period 1	Velocity Goal	Unknown	0	3	40	1000
Period 2	Percentile Goal	ms	40	2	20000	0

Figure 5. WLM Associated Service Class Summary page for CICS

Viewing the WLM Associated Service Class Period Detail

The WLM Associated Service Class Period Detail page offers a way to view selected data from the Workload Manager (WLM) for z/OS and OS/390, for a selected service class period. This includes the response time distribution detail, and possibly delay detail information, about each subsystem work manager.

The service class period properties include the Period Name, Response Time, Goal % Value, Importance Level, Response Time Velocity, Period Duration, and Data Collected Time.

The response time distribution detail includes the Total Transactions and the Goal and Transaction information for all 14 goal "buckets."

The delay data, if available, includes, for each subsystem work manager, the number of programs in each of the Active, Ready, Waiting, Local, Sysplex and Network states, for both the begin-to-end phase and execution phase.

To open the WLM Associated Service Class Period Details page:

- From the top navigation, click **Availability > Systems Overview > Server**.
The *Server Overview* selection page opens.
- Select a Group and a Server from the drop-down menus.
The *Server Overview* page opens displaying data for the selected server.
- Click the **WLM Associated Service Class Summary** from the tools button.
The WLM Associated Service Class Summary page opens.
- Click the name of one of the associated service class periods.
The WLM Associated Service Class Period Detail page opens.

Service Class		Endpoint					
ASSOCIATED SERVICE CLASS PERIOD PROPERTIES							
Period	Period 1	Response Time Units (msec., sec., min., hr.)	ms	Goal % Value	60	Importance Level (1-5)	3
Response Time/Velocity (Goal Value)	10000	Period Duration	0	Data Collected Time	Oct 22, 2003 2:13:47 PM		
RESPONSE TIME DISTRIBUTION DETAIL							
Total Transactions	11,910						
Buckets	Transactions	Buckets	Transactions	Buckets	Transactions		
< 50%	11,905	90 - 100%	0	130 - 140%	0		
50 - 60%	0	100 - 110%	1	140 - 150%	1		
60 - 70%	0	110 - 120%	0	150 - 200%	0		
70 - 80%	0	120 - 130%	0	200 - 400%	0		
80 - 90%	0			> 400%	3		
DELAY DETAIL -- CICS							
Begin-to-End Phase	Active	Ready	Waiting	Local	Sysplex	Network	
	0	0	25	0	0	0	
Execution Phase	Active	Ready	Waiting	Local	Sysplex	Network	
	0	0	0	0	0	0	

Figure 6. WLM Associated Service Class Period Detail page for CICS

Chapter 7. The Request Mapper for CICS Data Collectors

You can make the Application Monitor easier to use by giving more meaningful names to the programs and transactions monitored by the CICS Data Collector. You can do this using the Request Mapper.

This chapter describes how to use the Request Mapper, and provides guidance on how to write your own.

Using the Request Mapper

What the Request Mapper Does

When the Request Mapper is in use, a program named CYN\$RMAP is invoked, as an EXEC CICS LINK, during every transaction start (EXEC CICS START TRANSID.)

The CYN\$RMAP program changes the values of the transaction name (TRANNAME) and program name (APPLNAME). These new values for the transaction name and program name are sent to the Application Monitor, and used instead of the original values, wherever the data appears.

The Request Mapper Program

You can use the sample Request Mapper that ships with the CYN.CICS.SCYNSAM2 data set, or you can write your own. In either case, the Request Mapper must be a program named CYN\$RMAP. It must be compiled and included in your CSD. It can be written in any language, such as COBOL, C, PL/1 or Assembler.

Assuming you have an appropriate Request Mapper program, to turn on the Request Mapper feature you need to set the `cyanea.mapper` property, in the `datacollector.properties` file, to `yes`, and restart the CICS Data Collector:

Using the Supplied Request Mapper

There is a request mapper shipped with the CICS Data Collector. The following procedure describes how to use this request mapper. This must be done for each CICS Region.

To use the supplied request mapper

1. Compile the program named CYN\$RMAP, which is in the CYN.CICS.SCYNSAM2 data set. See "Compiling Sample Programs" on page 27 for instructions on how to compile programs using the job named CYN\$APRG, which is also in the CYN.CICS.SCYNSAM2 data set.
2. Edit the definition of the following property in the `datacollector.env` file:
`cyanea.mapper=yes`
3. Include the CYN\$RMAP in your CSD. You can do this either by modifying an existing batch job that adds programs to your CICS Regions, or by using CEDA DEF PROGRAM(CYN\$RMAP) GR(YOUR GROUP).
4. Restart the CICS Region.

The supplied Request Mapper appends the string "-MAPPED" to the transaction name and the program name.

Sample Code

Here is the source code to the supplied Request Mapper:

```
TITLE 'CYN$RMAP - SAM/CICS SAMPLE REQUEST MAPPER'
*****

MODULE NAME = CYANEA SAMPLE PROGRAM

DESCRIPTIVE NAME = SAMPLE PROGRAM USED TO MODIFY THE TRANSACTION
                   AND PROGRAM NAME WHEN MAPPER FUNCTION IS
                   ENABLED IN THE DATACOLLECTOR.ENV FILE ON THE
                   U.S.S
                   USES A COPYBOOK: CYN$MAPL
                   (Sample ASSEMBLER Version)
*****

COMPTR  EQU R4
*
DFHEISTG DSECT
ICAT1   DS  CL8
*
DFHCOMMAREA DSECT
        COPY CYN$MAPL
*
CYN$RMAP CSECT
CYN$RMAP AMODE 31
CYN$RMAP RMODE ANY
*
        DFHREGS
        MVC  ICAT1,CYN$MAPI
        LH   COMPTR,EIBCALEN
        LTR  COMPTR,COMPTR
        BZ   ERROR
        L    COMPTR,DFHEICAP
        USING DFHCOMMAREA,COMPTR
*
```

* You can use EXEC CICS ADDRESS and ASSIGN commands to obtain access
 * to areas like CWA, TWA, and TCTUA to determine what the Transaction
 * name and Application name should be. The first COMMAREA pointer is
 * passed in CYN\$MAPL. This area should be for read only.

*

* Move EIBTRNID to TRANNAME

```
MVC  TRANNAME(L'EIBTRNID),EIBTRNID
MVC  TRANNAME+L'EIBTRNID(7),=C'-MAPPED'
```

*

* Move Application Name to APPLNAME

```
MVC  APPLNAME(L'SAMAPPL),SAMAPPL
```

*

* Return to CYNCTRUE

```
EXEC CICS RETURN
```

*

ERROR EQU *

```
EXEC CICS ABEND ABCODE(ABCODE)
```

*

```
LTORG
```

```
ABCODE DC C'CYNM'
```

```
CYNCPAPI DC C'CYN$RMAP'
```

```
CYNCPAPI DC C'CYN$RMAP'
```

```
SAMAPPL DC C'SAM/CICS Test Mapper App'
```

```
END
```

Chapter 8. Troubleshooting

This chapter describes a few techniques for troubleshooting the CICS Data Collector.

Debug Mode

It is possible to run any *WebSphere Studio Application Monitor* Data Collector in debug mode. When a Data Collector is run in debug mode, additional information is produced that describes what a Data Collector is doing.

For CICS Data Collectors, these messages are sent to sysout. Debug mode should be used, therefore, only when necessary, or else your spool will fill up.

There are two ways to put a CICS Data Collector in debug mode.

Setting cyanea.debug

One way to put a CICS Data Collector in debug mode is to set `cyanea.debug=yes` in the `datacollector.env` file. See “The `datacollector.env` file” on page 24 for more information about the location of the `datacollector.env` file, and other properties you can set.

In order for this to take effect, you must remove several log files and restart the CICS Region. For details, see “Restarting CICS Regions” on page 21.

Using `dcctl.sh`

You can dynamically put the CICS Data Collector in and out of debug mode by using a program on the managing server called `dcctl.sh` (Data Collector Control.)

See “Toggling Data Collector Logging (on the Managing Server)” on page 43 for more details on how to toggle the debug mode of of Data Collectors.

Auxiliary Trace

Another way to obtain more troubleshooting information about the CICS Data Collector is to print an auxiliary trace.

To obtain CICS Data Collector trace information for an active CICS Region:

1. Login to the CICS Region using normal login processes.
2. Check the status of Auxiliary Tracing by issuing the following command:

```
CEMT INQ AUXTRACE
```
3. If the trace is stopped (STO) then turn on the trace by overtyping the STO option with STA.
4. Verify whether the auxiliary trace is been written to the DFHAUXT or the DFHBUXT trace dataset.
5. Modify the CYN\$PR22 job (for CICS v2.2) or the CYN\$PR23 (for CICS v2.3) or the CYN\$PR13 job (for CICS v1.3) in the CYN.CICS.SCYN\$SAM2 dataset to point to the active auxiliary trace dataset for your CICS Region, and to set the value of TYPETR.

In all cases, the TYPETR value should be as follows:

```
TYPETR=(AP00A8)
```

The sections of the CYN\$PRT22, CYN\$PRT23 or CYN\$PRT13 job that you need to modify as follows:

```
//STEPLIB DD DSN=<SDFHLOAD Data Set>,DISP=SHR
//          DD DSN=<SDFHLINK Data Set>,DISP=SHR
//AUXTRACE DD DSN=<DFH Data Set>,DISP=SHR
```

Replace <SDFHLOAD Data Set> and <SDFHLINK Data Set> and with the fully-qualified name of the CICS data sets that are specific to your CICS versions. Verify with your CICS System programmer the names of the CICS data sets. For example:

- CICSTS13.CICS.SDFHLOAD and CICSTS13.CICS.SDFHLINK
- CICSTS22.CICS.SDFHLOAD and CICSTS22.CICS.SDFHLINK
- CICSTS23.CICS.SDFHLOAD and CICSTS23.CICS.SDFHLINK

Replace <DFH Data Set> with the name of the auxiliary trace data set that pertains to your specific CICS region. For example:
CICSTS22.CICSREGION.DFHAUXT or CICSTS22.CICSREGION.DFHBUXT.

6. Submit the job.
7. Send the output to IBM support.

To stop auxiliary tracing for an active CICS Region

1. Login to the CICS Region using normal login processes.
2. Check the status of Auxiliary Tracing by issuing the following command:
CEMT INQ AUXTRACE
3. If the trace is started (STA) then turn off the trace by overtyping the STA option with STO.

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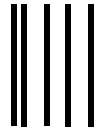
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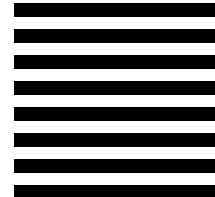
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