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- (2) Title of Program Trace and Replay MVS V3R1M0 and V3R2M0
- (3) System Type(s) (Machine) 370 and 390 Architecture
- (4) Search Keys
- (5) Programming Systems/Languages MVS
- (6) Primary Subject Codes
- (7) Minimum System Requirements
- (8) New (N) or Revision (R) R
- (9) Date of Submittal June 1, 1992
- (10) Documentation (number of pages of hardcopy submitted) 78 Pages
- (11) Author's Name and Address Michelle Lewis
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- (12) Name and Address of Contact for Technical .. Same
Inquiries (if different from Author)
- (13) Submitter's Installation Membership Code
- (14) Abstract (use reverse side of this form)

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- a. Purpose of Program
- b. Programming Language Used
- c. Version and Modification level or Release Number
- d. Field of Application
- e. Type of routine (main program, subroutine, etc.)
- f. Specific description of machine requirements.

CADAM - Trace and Replay for MVS/OS

Author: Michelle Lewis

Description- The tape submitted is in the operating form of MVS. This tape contains Version 3 Release 1.0 and Version 3 Release 2.0 of Trace and Replay.

Trace and Replay is a tool that records and replays a sequence of events called a scenario. During the interactive session scope attentions are captured, recorded, and stored in an external file. The recorded scenarios can then be called from storage and replayed on the scope. The Trace and Replay program can be used on CADAM's Version 3 Release 1 and Version 3 Release 2.

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- 15) Signature of Submitter and Date Michelle Lewis June 1 1992
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Additionally, this program is being submitted with the full knowledge and consent of the author.



```

//*****
//*   THE LOAD1060 JCL ALLOCATES REQUIRED DATA SETS FOR TRACE
//*   AND REPLAY, THEN LOADS THE TRACE AND REPLAY FILES
//*   TO DISK.
//*****
//* THE CADALLOC PROC IS INVOKED TO ALLOCATE CADAM SYSTEM DATA SETS.
//* UPDATE THE PROC DEFAULTS AS NECESSARY.
//*
//CADALLOC PROC QUAL='CADDISK',DUNIT='SYSDA',
//          DSER='CADAM1',DISP='(NEW,CATLG)',DCB=''
//*
//IEFBR14 EXEC PGM=IEFBR14
//*
//ALLOCATE DD DSN=&QUAL..&DSN.,
//          UNIT=&DUNIT.,
//          VOL=SER=&DSER.,
//          DCB=&DCB.,
//          DISP=&DISP.,
//          SPACE=&SPACE.
//*
//          PEND
//*****
//* THE CADTCOPY PROC IS INVOKED TO COPY PARTITIONED DATA SETS
//* FROM TAPE. UPDATE THE PROC DEFAULTS AS NECESSARY.
//*
//CADTCOPY PROC QUAL='CADDISK',DUNIT='SYSDA',TUNIT='TAPE'
//*
//IEBCOPY EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT3 DD UNIT=&DUNIT.,SPACE=(CYL,2)
//SYSUT4 DD UNIT=&DUNIT.,SPACE=(CYL,2)
//*
//INDSN DD DSN=CADTAPE.&DSN.,VOL=(,RETAIN,SER=&TSER.),
//          UNIT=&TUNIT.,LABEL=(&FILE.,SL),DISP=(OLD,KEEP)
//OUTDSN DD DSN=&QUAL..&DSN.,DISP=SHR
//*
//SYSIN DD DISP=SHR,DSN=&QUAL..INSTALL.JCL(CADCOPY)
//*
//          PEND
//*****
//* THE CADTGENR PROC IS INVOKED TO COPY SEQUENTIAL DATA SETS
//* FROM TAPE. UPDATE THE PROC DEFAULTS AS NECESSARY.
//*
//CADTGENR PROC QUAL='CADDISK',TUNIT='TAPE'
//*
//IEBGENER EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DSN=CADTAPE.&DSN.,VOL=(,RETAIN,SER=&TSER.),
//          UNIT=&TUNIT.,LABEL=(&FILE.,SL),DISP=(OLD,KEEP)
//SYSUT2 DD DSN=&QUAL..&DSN.,DISP=SHR
//SYSIN DD DUMMY
//*
//          PEND
//*****

```



```

/* THE TNURESTR PROC IS INVOKED TO COPY NURESTOR FORMAT DRAWING
/* FILES FROM TAPE DIRECTLY TO CADAM DRAWING FILES.
/*
/* UPDATE THE PROC DEFAULTS AS NECESSARY.
/*
/*TNURESTR PROC QUAL='CADDISK',TUNIT='TAPE'
/*
/*NURESTOR EXEC PGM=NURESTOR,PARM='DEFGRP=&GRP.'
/*STEPLIB DD DSN=&QUAL..LM,DISP=SHR
/*CARDS DD SYSOUT=*
/*PRINT DD SYSOUT=*
/*SYSUDUMP DD SYSOUT=*
/*DRAWINGS DD DSN=CADTAPE.&TAPEDSN.,
// DISP=(OLD,KEEP),UNIT=&TUNIT.,
// VOL=(,RETAIN,SER=&TSER.),LABEL=(&FILE.,SL)
/*
//CADDRAW DD DSN=&QUAL..CAD.DRAWFILE.DRAW,DISP=SHR
//CADVTOC DD DSN=&QUAL..CAD.DRAWFILE.INDEX,DISP=SHR
/*
// PEND
//*****
/* ALLOCATE TRACE AND REPLAY DATA SETS.
/* ALL SPACE ALLOCATIONS ARE SPECIFIED IN 3380 UNITS.
//*****
/*
//LM EXEC CADALLOC,DSN='TRACE.LM',
// DCB='(DSORG=PO,RECFM=U,BLKSIZE=6150)',
// SPACE='(TRK,(3,1,4))'
/*
//IM EXEC CADALLOC,DSN='TRACE.IM',
// DCB='(DSORG=PO,RECFM=U,BLKSIZE=6000)',
// SPACE='(TRK,(5,2,2))'
/*
//DATA EXEC CADALLOC,DSN='TRACE.DATA',
// DCB='(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=3120)',
// SPACE='(TRK,(5,2,5))'
/*
//SAMPTLIB EXEC CADALLOC,DSN='SAMPLE.TRACELIB',
// DCB='(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=4000)',
// SPACE='(TRK,(5,1))'
/*
//*****
/* LOAD THE FILES ON TAPE OS1060 TO DISK.
//*****
/*
//LOADPROD EXEC CADTCOPY,TSER='OS1060',FILE='2',DSN='PROD.JCL'
/*
//LOADLM EXEC CADTCOPY,TSER='OS1060',FILE='3',DSN='TRACE.LM'
/*
//LOADIM EXEC CADTCOPY,TSER='OS1060',FILE='4',DSN='TRACE.IM'
/*
//LOADDATA EXEC CADTCOPY,TSER='OS1060',FILE='5',DSN='TRACE.DATA'
/*
//LOADSMPT EXEC CADTGENR,TSER='OS1060',FILE='6',DSN='SAMPLE.TRACELIB'

```



```
/*  
/*****  
/* LOAD DRAWINGS TO APPROPRIATE SUBGROUP.  
/*****  
//INSTAL    EXEC TNURESTR,TSER='OS1060',FILE='7',GRP='CAD',  
//          TAPEDSN='CAD.INSTAL.DRAWINGS'  
/*  
//NURESTOR.SYSIN DD *,DCB=(BLKSIZE=80)  
VERIFY TAPE LABEL (CADAM,,OS1060)  
RESTORE UINSTAL ALL  
END  
/*  
//
```


CADAM® Trace and Replay Facility Installation Guide for MVS

Document Number OS1060-030100-IG

November 1990

**Version 3
Release 1.0**

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Preface

What This Guide Contains

This guide contains instructions for installing the CADAM® Trace and Replay facility in the MVS operating system environment.

Who Should Use This Guide

This guide is intended for use by CADAM system installers and programmers responsible for installing, customizing, and maintaining the CADAM system. This guide assumes that installers have a working knowledge of the MVS operating system and MVS commands and have access to MVS system manuals.

Where to Look for More Help

- *CADAM Interactive Design System: 2D/3D Design Installation Guide for MVS*
- *CADAM Interactive Design System: Interactive Design User's Reference*
- *CADAM Trace and Replay Facility User's Guide*

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Figure 1. SUPPORT Function Key 3

Chapter 1. Before You Begin

WARNING

CADAM products are not backward compatible. This release may not be compatible with previous releases. If CADAM models created or processed in this release are then processed in a previous release, bad models may result.

If your site migrates from this release of any CADAM product to a previous release, first back up your CADAM system drawing files using the NURESTOR program supplied with the CADAM Interactive Design System. Refer to the *CADAM Interactive Design System: Data Manager's Guide for MVS* for complete information about the NURESTOR program.

What You Should Know About Trace and Replay

The Trace and Replay facility is a tool that records and replays a sequence of events called a *scenario*. During an interactive session, scope attentions are captured, recorded, and stored in an external file. The recorded scenario can then be called from storage and replayed on the scope.

Trace and Replay has a variety of uses. With it you can:

- Detect and recreate problems.
- Validate the consistency of CADAM in different environments.
- Track and inspect CADAM's performance under various conditions.
- Perform regression testing.
- Prepare visual presentations of CADAM functions and capabilities for marketing and training uses.

Note: Stored Trace and Replay scenarios are not compatible across releases.

The SUPPORT Function Key

One function key, SUPPORT, is provided with Trace and Replay. See Figure 1 on page 3.

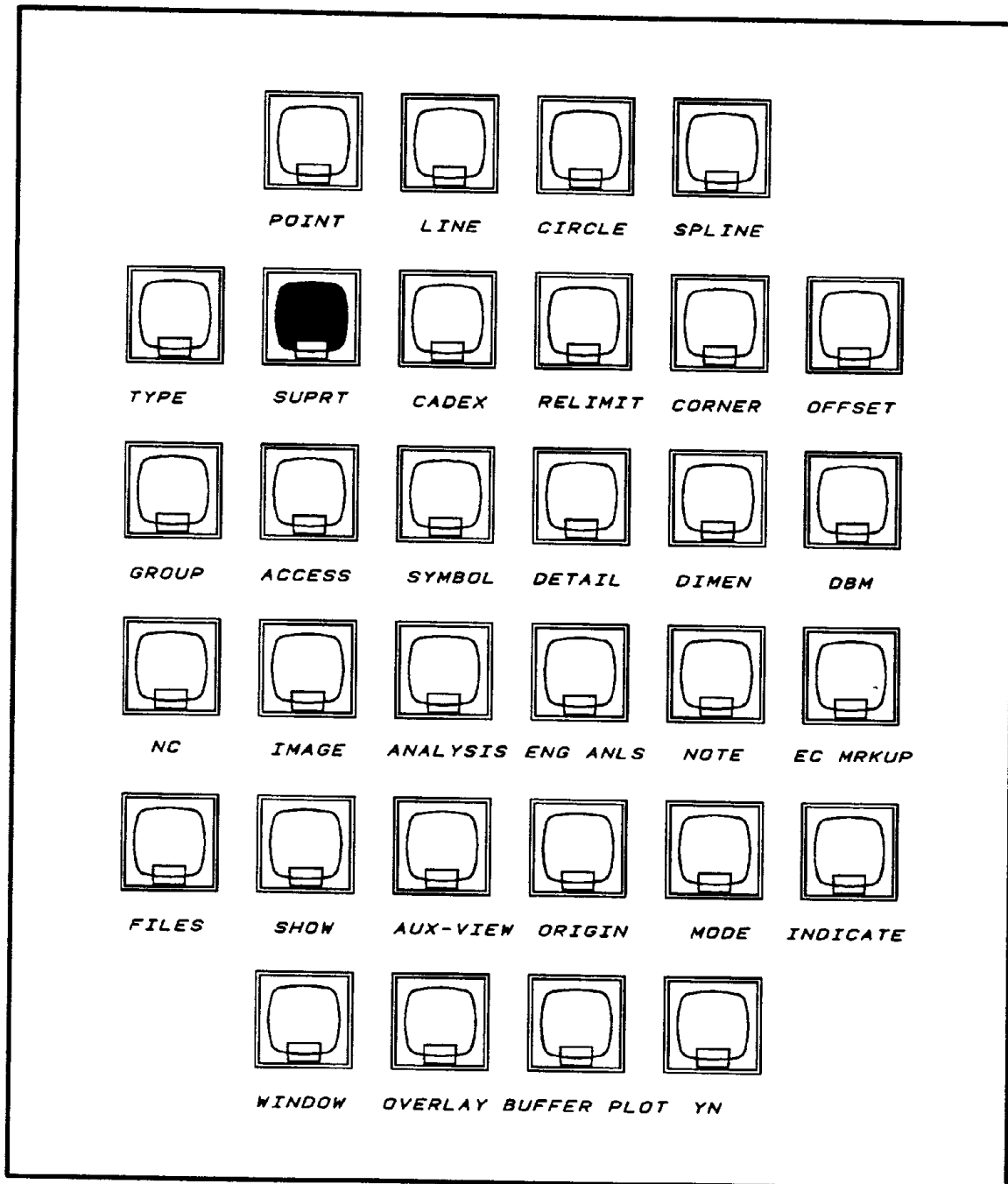


Figure 1. SUPPORT Function Key

Prerequisites to Installing Trace and Replay

Before installing Trace and Replay, ensure that you have installed Version 3 Release 2.0 of the CADAM Interactive Design System.

Defaults in CADAM-Supplied JCL

This section lists the assumptions CADAM INC made when structuring the JCL setups for Trace and Replay. *These character strings are automatically updated* to conform to your site's requirements as the JCL is loaded from the product tape.

- **CADDISK** is the high-level qualifier for all disk data sets that comprise the CADAM system except your site's drawfiles.
SYSDA is the generic disk unit name for CADDISK data sets.
CADVOL1 is the disk volume serial number for CADDISK data sets.
- **PRMDISK** is the high-level qualifier for CADAM drawfiles.
PRMDA is the generic disk unit name for PRMDISK data sets.
PRMVOL1 is the disk volume serial number for PRMDISK data sets.
- **USRDISK** is the high-level qualifier for user-owned data sets built by CADAM batch jobs.
USRDA is the generic disk unit name for USRDISK data sets.
USRVOL1 is the disk volume serial number for USRDISK data sets.
- **SYSSQ** is the generic disk unit name for temporary data sets.
- **TAPEUNIT** is the generic unit name for a tape drive.
- All printed output is routed to **SYSOUT=***.
- **IEV90** is the name of your site's H Assembler.
SYS1.MACLIB and **SYS1.AMODGEN** are the names of the H Assembler's system macro libraries.
- **SYS1.VSF2COMP** is the name of the library that contains your site's VS FORTRAN Version 2 compiler.
SYS1.VSF2LINK is the name of the library that contains the VS FORTRAN link-mode routines.
SYS1.VSF2FORT is the name of the library that contains the VS FORTRAN support routines.
SYS1.VSF2LOAD is the name of the VS FORTRAN run-time library.
- **IEWL** is the name of your site's linkage editor.

Contents of the Trace and Replay Facility Tape

Listed below are the JCL, modules, data files, and drawings contained on the Trace and Replay (OS1060) product tape.

File 1: JCL in CADTAPE.CNTL

OS1060
SCOPETRC

File 2: Load Modules in CADTAPE.TRACE.LM

FKSM
FKSP
FKS2
FKS3

File 3: Image Modules in CADTAPE.TRACE.IM

SPRT

File 4: Data Files in CADTAPE.TRACE.DATA

E10C0001
.
.
.
E10C0051
E10C0053
ESPT0001
ESPT0002
ESPT0006
ETRC0001
ETRC0003
ETRC0004
ETRC0005

File 5: CADTAPE.SAMPLE.TRACELIB

File 6: Sample Drawings in CADTAPE.CAD.INSTAL.DRAWINGS

RATCHET WHEELMSTR
RATCHET WHEELRPLY
2D RTCH WHEELMSTR
2D RTCH WHEELRPLY

Chapter 2. Installing Trace and Replay

This chapter contains steps for installing Trace and Replay.

Summary of Steps

Steps for installing Trace and Replay are summarized below.

Step 1: Load the JCL	8
Step 2: Load the Remaining Files	9
Step 3: Create the Trace and Replay CPCPARMS File	11
Step 4: Verify the Installation	12
Step 5: Create a Library for Your Trace Scenarios	13

The following pages provide detailed instructions for each of these steps. Carefully review the results of each step before you move on.

Step 1: Load the JCL

This step loads the Trace and Replay JCL from the product tape to disk and updates the JCL.

1. Edit CADDISK.CNTL(LOADCNTL), listed below.
2. On the LOADCNTL EXEC statement, change the TVOL parameter from OSXXXX to OS1060.
3. Check your JOB statement, submit the JCL, and mount the OS1060 tape.

Verify that the JCL was loaded (see the contents list on page 6) and properly updated.

LOADCNTL JCL

```
//*INC=JOBTAPE
//* REQUIRES CADAM CATALOGED PROCEDURES
/*****
/* THE LOADCNTL JCL LOADS THE CONTROL JCL FROM THE FIRST FILE OF MOST
/* CADAM TAPES; CHECK YOUR INSTALLATION DOCUMENTATION TO BE SURE.
/* THE JCL IS UPDATED ACCORDING TO YOUR @PROFILE MEMBER.
/*****
/*
//LOADCNTL EXEC @CITCNTL,TVOL='OSXXXX',FNUM='1',DSN='CNTL'
/*
```

Step 2: Load the Remaining Files

This step loads the remaining files from the OS1060 tape to disk.

1. Edit CADDISK.CNTL(OS1060), listed below.
2. Check your JOB statement, submit the JCL, and mount the OS1060 tape.

Verify that the files were loaded (see the contents list on page 6).

OS1060 JCL

```

/**INC=JOBTAPE
/** REQUIRES CADAM CATALOGED PROCEDURES
/*****
/**  THE OS1060 JCL ALLOCATES REQUIRED DATA SETS FOR TRACE
/**  AND REPLAY, THEN LOADS THE TRACE AND REPLAY FILES
/**  TO DISK.
/*****
/**  ALLOCATE TRACE AND REPLAY DATA SETS.
/**  ALL SPACE ALLOCATIONS ARE SPECIFIED IN 3380 UNITS.
/*****
/**
/**LM      EXEC @CIALLOC,DSN='CADDISK.TRACE.LM',
/**        DCB='(DSORG=PO,RECFM=U,BLKSIZE=6150)',
/**        SPACE='(TRK,(3,1,4))',DVOL='CADVOL1'
/**
/**IM      EXEC @CIALLOC,DSN='CADDISK.TRACE.IM',
/**        DCB='(DSORG=PO,RECFM=U,BLKSIZE=6000)',
/**        SPACE='(TRK,(5,2,2))',DVOL='CADVOL1'
/**
/**DATA    EXEC @CIALLOC,DSN='CADDISK.TRACE.DATA',
/**        DCB='(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=3120)',
/**        SPACE='(TRK,(5,2,5))',DVOL='CADVOL1'
/**
/**SAMPTLIB EXEC @CIALLOC,DSN='CADDISK.SAMPLE.TRACELIB',
/**        DCB='(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=4000)',
/**        SPACE='(TRK,(5,1))',DVOL='CADVOL1'
/**
/*****
/** LOAD THE FILES ON TAPE OS1060 TO DISK.
/*****
/**
/**LOADLM  EXEC @CITREPL,TVOL='OS1060',FNUM='2',DSN='TRACE.LM'
/**
/**LOADIM  EXEC @CITREPL,TVOL='OS1060',FNUM='3',DSN='TRACE.IM'
/**
/**LOADDATA EXEC @CITREPL,TVOL='OS1060',FNUM='4',DSN='TRACE.DATA'
/**

```

Step 2: Load the Remaining Files

```
//LOADSMPT EXEC @CITGENR,TVOL='OS1060',FNUM='5',DSN='SAMPLE.TRACELIB'
//*
//*****
//* LOAD DRAWINGS TO APPROPRIATE SUBGROUP.
//*****
//INSTAL EXEC @CINULOD,TVOL='OS1060',FNUM='6',PARMS='DEFGRP=CAD',
//      TDSN='CADAPE.CAD.INSTAL.DRAWINGS'
//*
//NURESTOR.PASSWORD DD DUMMY
//NURESTOR.SYSIN DD *,DCB=(BLKSIZE=80)
VERIFY TAPE LABEL (CADAM,,OS1060)
RESTORE UINSTAL ALL
END
/*
//
```

Step 3: Create the Trace and Replay CPCPARMS File

This step creates and updates the Trace and Replay CPCPARMS file to allow access to the SUPPORT function key.

Four function key tables, each containing the SUPPORT function key, are provided in the Trace and Replay load module library, CADDISK.TRACE.LM. These tables and their CADAM equivalents are listed in "Trace and Replay Function Key Tables" on page 16. To enable Trace and Replay, you must create a new CPCPARMS member and substitute the appropriate function key table within in it.

1. Edit CADDISK.CPCPARMS(TRACE).
2. Copy your scope CPCPARMS member (for example, CADDISK.CPCPARMS(SCOPE)) into member TRACE.
3. Locate the following lines:

```
*-----DEFAULT FUNCTION KEY TABLE  
FKEYTABLE=(table name)
```

where table name is the current default function key table name (FKT2, FKT3, FKTM, FKTP).

4. Change the function key table parameter to its Trace and Replay equivalent; for example, change FKEYTABLE=FKT2 to FKEYTABLE=FKS2.

See "Trace and Replay Function Key Tables" on page 16 for more information.

5. Save your changes.

Step 4: Verify the Installation

This step verifies that you performed the installation procedures correctly and that Trace and Replay is ready for implementation.

Start an Interactive Scope Session

1. Edit CADDISK.CNTL(SCOPETRC).
2. Check your job statement and submit the JCL to start a CADAM scope.
3. Enter CAD,INSTAL as the group and subgroup.

Start a Model and Initiate the Sample Trace and Replay Scenario

1. Press function key FILES.
2. Select menu option /START/.
3. Press ENTER to enter a blank drawing name.
4. Press function key SUPPORT (SUPRT), located directly below function key POINT (see Figure 1 on page 3).
5. Select menu option /TRACE/ and press YN.
6. Select menu option /REPLAY/ and press YN.
7. Press YN to display the list of scenarios.
8. Select the scenario which is appropriate for your installed CADAM features:

2D__SAMPLE__TRACE (for sites with only 2D installed)

3D__SAMPLE__TRACE (for sites with 3D installed)

9. Press YN to initiate the scenario.

Depending on your selection, the scenario executes and files either 2D RTCH WHEEL,RPLY (2D only), or RATCHET WHEEL,RPLY (3D) in group CAD, subgroup INSTAL.

This concludes the installation of Trace and Replay.

10. Log off the scope and continue with the next step.

Step 5: Create a Library for Your Trace Scenarios

The Trace library supplied on the product tape contains a sample scenario for validation of the installation. This file is not large enough and may not have the correct permissions for production use; therefore, you must allocate a new library to store the scenarios you want to record.

You can select any name for your scenario library. In the following example it is called CADDISK.TEST.TRACELIB.

1. Allocate CADDISK.TEST.TRACELIB as follows:

- a. Create the following JCL:

```
//*****
// *   THIS JCL WILL ALLOCATE A NEW TRACELIB
//*****
//ALLOC    EXEC @C1ALLOC,DSN='CADDISK.TEST.TRACELIB',
//          DCB=' (DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=4000) ',
//          SPACE=' (CYL,(5,2)) ',DVOL='CADVOL1'
//
```

- b. Update the defaults to suit your requirements (see page 5).
 - c. Change the space requirements to accommodate the number of scenarios you plan to record.

Note: If you use a protection facility such as RACF or ACF2®, make sure the scope users who are allowed to record scenarios have write access to CADDISK.TEST.TRACELIB.

- d. Add and update your JOB statement, and submit the JCL.

Note: Make sure your JOB statement also points to your procedure library (usually CADDISK.PROCLIB).

2. Update your Trace and Replay scope JCL as follows:

- a. Edit CADDISK.CNTL(SCOPETRC).
 - b. Change the TRACELIB DD statement to point to the library you just allocated, for example:

```
//CAD.TRACELIB DD DSN=CADDISK.TEST.TRACELIB,DISP=SHR
```

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3. Save your changes.
4. Submit the SCOPETRC JCL to run Trace and Replay.

Refer to the *Trace and Replay User's Guide* for more information on the use of Trace and Replay.

Chapter 3. Program Descriptions

This chapter describes the load and image modules supplied with the Trace and Replay facility.

Image Modules

SPRT The SUPPORT function key image module.

Load Modules

FKS2 The 2D function key table.

FKS3 The 3D function key table.

FKSM The 3D Mesh Geometry function key table.

FKSP The AEC Design function key table.

Trace and Replay Function Key Tables

Four function key table modules, each containing the SUPPORT function key, are contained in CADDISK.TRACE.LM. The TRACE function key tables matched with their CADAM equivalents are listed below.

CADAM Table	TRACE Table
-------------	-------------

FKT2	FKS2
------	------

FKT3	FKS3
------	------

FKTM	FKSM
------	------

FKTP	FKSP
------	------

Glossary

attention: An interactive event captured by Trace and Replay during the recording process for later replay. A sequence of attentions comprises a scenario.

auto mode: The system-controlled, automatic, non-stop replay of a scenario.

auto/step switch: The ability to change from auto to step mode in the middle of a replay by pressing YN to instantly freeze the display. Also known as: *on fly control*

Control: A replay option allowing the user to choose between the auto and step modes.

delay factor: The seconds of wait between consecutive attentions during replay.

hard pause: The suspension of a replay caused by a pause inserted during the recording.

Initial State: A user option that ensures that certain CADAM conditions are identical for scenario recording and replay.

Menu/Messages: An option that facilitates the capture of all menu options and messages displayed during the recording of a scenario and their validation and update during replay.

on fly control: See **auto/step switch**.

Parameters: A replay option allowing the user to specify the step size and the delay factor.

pause: See **hard pause** and **soft pause**.

pause label: An alphanumeric, 70-character, unique label used to identify a hard pause.

Performance: A replay option enabling the user to monitor CADAM's response.

If this option is enabled, performance data is placed in file for later access.

recording: The capturing and storing of the attentions processed during an interactive CADAM session.

recording options: The parameters controlling the recording environment.

replaying: A process of simulating the series of attentions captured in a scenario so they can be viewed and analyzed.

scenario: A sequence of CADAM interactive events captured during a recording session for later analysis during replay.

scenario name: An alphanumeric, 70-character, unique label used to identify a scenario.

scenario file: A file that stores all of the scenarios at a particular site.

step: A scenario subset consisting of a user-specified number of attentions.

step mode: The user-controlled mode of scenario replay that stops after each step is replayed.

step size: The number of attentions in each step of the scenario. The user defines this quantity while setting the recording options.

stop: The termination of a recording. A stop is generated by the user to inform Trace and Replay that a scenario is finished.

stop label: An alphanumeric, 70-character, unique label used by Trace and Replay to identify the end of a scenario.

SUPPORT: The function key under which the Trace and Replay Facility runs.

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CADAM® Trace and Replay Facility Installation Guide for MVS

Document Number OS1060-030200-IG

February 1992

**Version 3
Release 2.0**

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Glossary

attention: An interactive event captured by Trace and Replay during the recording process for later replay. A sequence of attentions comprises a scenario.

auto mode: The system-controlled, automatic, non-stop replay of a scenario.

auto/step switch: The ability to change from auto to step mode in the middle of a replay by pressing YN to instantly freeze the display. Also known as: *on fly control*

Control: A replay option allowing the user to choose between the auto and step modes.

delay factor: The seconds of wait between consecutive attentions during replay.

hard pause: The suspension of a replay caused by a pause inserted during the recording.

Initial State: A user option that ensures that certain CADAM conditions are identical for scenario recording and replay.

Menu/Messages: An option that facilitates the capture of all menu options and messages displayed during the recording of a scenario and their validation and update during replay.

on fly control: See **auto/step switch**.

Parameters: A replay option allowing the user to specify the step size and the delay factor.

pause: See **hard pause** and **soft pause**.

pause label: An alphanumeric, 70-character, unique label used to identify a hard pause.

Performance: A replay option enabling the user to monitor CADAM's response.

If this option is enabled, performance data is placed in file for later access.

recording: The capturing and storing of the attentions processed during an interactive CADAM session.

recording options: The parameters controlling the recording environment.

replaying: A process of simulating the series of attentions captured in a scenario so they can be viewed and analyzed.

scenario: A sequence of CADAM interactive events captured during a recording session for later analysis during replay.

scenario name: An alphanumeric, 70-character, unique label used to identify a scenario.

scenario file: A file that stores all of the scenarios at a particular site.

step: A scenario subset consisting of a user-specified number of attentions.

step mode: The user-controlled mode of scenario replay that stops after each step is replayed.

step size: The number of attentions in each step of the scenario. The user defines this quantity while setting the recording options.

stop: The termination of a recording. A stop is generated by the user to inform Trace and Replay that a scenario is finished.

stop label: An alphanumeric, 70-character, unique label used by Trace and Replay to identify the end of a scenario.

SUPPORT: The function key under which the Trace and Replay Facility runs.

Chapter 3. Program Descriptions

This chapter describes the load and image modules supplied with the Trace and Replay Facility.

Image Modules

SPRT	The image module (overlaid) which supports the SUPPORT function key.
SPRTU	The image module (unoverlaid) which supports the SUPPORT function key.

Load Modules

FKS2	The 2D function key table (overlaid).
FKS2U	The 2D function key table (unoverlaid).
FKS3	The 3D function key table (overlaid).
FKS3U	The 3D function key table (unoverlaid).
FKSM	The 3D Mesh Geometry function key table (overlaid).
FKSMU	The 3D Mesh Geometry function key table (unoverlaid).
FKSP	The AEC Design Base function key table (overlaid).
FKSPU	The AEC Design Base function key table (unoverlaid).

Trace and Replay Function Key Tables

Eight function key table modules, each containing the SUPPORT function key, are contained in CADDISK.TRACE.LM. The TRACE function key tables matched with their CADAM equivalents are listed below.

CADAM Table	TRACE Table
FKT2	FKS2
FKT2U	FKS2U
FKT3	FKS3
FKT3U	FKS3U
FKTM	FKSM
FKTMU	FKSMU
FKTP	FKSP
FKTPU	FKSPU

3. Save your changes.
4. Use the SCOPETRC JCL to execute Trace and Replay.

Refer to the *Trace and Replay User's Guide* for information on how to use Trace and Replay.

Step 5: Verify the Installation

This step verifies that you performed the installation procedures correctly and that Trace and Replay is ready for implementation.

Start an Interactive Scope Session

1. Submit the SCOPETRC JCL to start a scope.
2. Enter CAD,INSTAL as the group and subgroup.

Start a Model and Initiate the Sample Trace and Replay Scenario

1. Press function key FILES.
2. Select menu option /START/.
3. Press **ENTER** to enter a blank drawing name.
4. Press function key SUPPORT (SUPRT), located directly below function key POINT (see Figure 1 on page 2).
5. Select menu option /TRACE/ and press YN.
6. Select menu option /REPLAY/ and press YN.
7. Press YN to access the scenario selection panel.
8. Select the scenario which is appropriate for your installed CADAM features:

2D__SAMPLE__TRACE (For sites with only 2D installed)

3D__SAMPLE__TRACE (For sites with 3D installed)

Depending on your selection, the scenario will now execute and file either 2D RTCH WHEEL,RPLY (2D only), or RATCHET WHEEL,RPLY (3D) in group CAD, subgroup INSTAL.

This concludes the installation of Trace and Replay.

9. Log off the scope and continue with the next step.

Step 6: Create a Library for Your Trace Scenarios

The Trace library supplied on the product tape contains a sample scenario for validation of the installation. This file is not large enough and may not have the correct permissions for production use; therefore, you must allocate a new library to store the scenarios you want to record.

You can select any name for your scenario library. In the following example it is called CADDISK.TRACELIB.

1. Allocate CADDISK.TRACELIB as follows:

- a. Create the following JCL:

```
/**/
/*  ALLOCATE CADDISK.TRACELIB
/**/
//ALLOC      EXEC PGM=IEFBR14
//TRACELIB DD DSN=CADDISK.TRACELIB,
//              UNIT=SYSDA,VOL=SER=CADAM1,
//              DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=4000),
//              SPACE=(CYL,(5,2)),
//              DISP=(NEW,CATLG,DELETE)
```

- b. Change the defaults listed in "Defaults in CADAM-Supplied JCL" on page 4, if necessary.
 - c. Be sure you allocate sufficient space to accommodate the number of scenarios you plan to record.

Note: If you use a protection facility such as RACF or ACF2®, make sure the scope users who are allowed to record scenarios have write access to CADDISK.TRACELIB.

- d. Add your JOB statement and submit the JCL.
 2. Update your TRACE JCL as follows:
 - a. Edit CADDISK.PROD.JCL(SCOPETRC).
 - b. Change the TRACELIB DD statement to use the library you just allocated, for example:

```
//TRACELIB DD DSN=CADDISK.TRACELIB,DISP=SHR
```

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Step 4: Set Up the JCL to Run Trace and Replay

This step creates and modifies the JCL to execute Trace and Replay from the scope.

1. Edit CADDISK.PROD.JCL(TRACEDD), listed on page 14.
 - a. Change the defaults listed in "Defaults in CADAM-Supplied JCL" on page 4, if necessary.
 - b. Save your changes.
2. Create CADDISK.PROD.JCL(SCOPETRC).
3. Copy CADDISK.PROD.JCL(SCOPEJCL), or the JCL you use to start a scope, into member SCOPETRC and modify it as follows:
 - a. Locate the CPCPARMS DD statement.
 - b. Change the CPCPARMS member to TRACE as follows:


```
//CPCPARMS DD DSN=CADDISK.CPCPARMS(TRACE),DISP=SHR
```
 - c. Copy CADDISK.PROD.JCL(TRACEDD) after the CPCPARMS DD statement.
 - d. Move the statement containing TRACE.LM so that it is concatenated in your STEPLIB as follows:


```
//STEPLIB DD DSN=CADDISK.LM.DISP=SHR
//          DD DSN=CADDISK.TRACE.LM.DISP=SHR
```
 - e. Move the statement containing TRACE.IM so that it is concatenated in your IMAGLIB as follows:


```
//IMAGLIB DD DSN=CADDISK.IM.DISP=SHR
//          DD DSN=CADDISK.TRACE.IM.DISP=SHR
```
4. Save your changes.

TRACEDD JCL

```

/*****
/*  CONCATENATE TRACE.LM IN YOUR STEPLIB.
//      DD DSN=CADDISK.TRACE.LM,DISP=SHR
/*
/*  CONCATENATE TRACE.IM IN YOUR IMAGELIB.
//      DD DSN=CADDISK.TRACE.IM,DISP=SHR
/*
/* DD STATEMENTS FOR TRACE AND REPLAY.
//SUPRTLIB DD DSN=CADDISK.TRACE.DATA,DISP=SHR
//TRACELIB DD DSN=CADDISK.SAMPLE.TRACELIB,DISP=SHR
//TRMMSTAT DD SYSOUT=*,DCB=(LRECL=100,BLKSIZE=100)
//TRACWORK DD DISP=(,DELETE),DCB=(RECFM=FB,LRECL=80,BLKSIZE=4000),
//      UNIT=SYSDA,SPACE=(CYL,(1,1))
//SPTPARMS DD *
DFLTERRMSG='CONTACT OPERATIONS'
TRACE=YES
/*
/*
/*****/
```

```

/**
//SAMP TLIB EXEC CADALLOC,DSN='SAMPLE.TRACELIB',
//          DCB='(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=4000)',
//          SPACE='(TRK,(5,1))'
/**
//*****
/** LOAD THE FILES ON TAPE OS1060 TO DISK.
//*****
/**
//LOADPROD EXEC CADTCOPY,TSER='OS1060',FILE='2',DSN='PROD.JCL'
/**
//LOADLM   EXEC CADTCOPY,TSER='OS1060',FILE='3',DSN='TRACE.LM'
/**
//LOADIM   EXEC CADTCOPY,TSER='OS1060',FILE='4',DSN='TRACE.IM'
/**
//LOADDATA EXEC CADTCOPY,TSER='OS1060',FILE='5',DSN='TRACE.DATA'
/**
//LOADSMPT EXEC CADTGENR,TSER='OS1060',FILE='6',DSN='SAMPLE.TRACELIB'
/**
//*****
/** LOAD DRAWINGS TO APPROPRIATE SUBGROUP.
//*****
//INSTAL   EXEC TNURESTR,TSER='OS1060',FILE='7',GRP='CAD',
//          TAPEDSN='CAD.INSTAL.DRAWINGS'
/**
//NURESTOR.SYSIN DD *,DCB=(BLKSIZE=80)
VERIFY TAPE LABEL (CADAM,,OS1060)
RESTORE UINSTAL ALL
END
/**
//

```

Step 3: Set Up a CPCPARMS File for Trace and Replay

This step modifies the function key table in your CPCPARMS file to allow access to the SUPPORT function key.

Eight function key table modules, each containing the SUPPORT function key, are contained in CADDISK.TRACE.LM. These tables and their CADAM equivalents are listed in "Trace and Replay Function Key Tables" on page 20. To enable Trace and Replay, you create a new CPCPARMS member and substitute the appropriate function key table in it.

1. Create CADDISK.CPCPARMS(TRACE).
2. Copy your interactive CPCPARMS member into member TRACE (for example, CONFIG01)
3. Locate the FKEYTABLE parameter.
4. Change FKT in the name to FKS.
For example:

```
FKEYTABLE=FKS2
```

5. Save your changes.

Step 2: Load the Remaining Files

This step loads the remaining files from the OS1060 tape to disk.

1. Edit CADDISK.INSTALL.JCL(Load1060), listed below.
2. Change the defaults listed in "Defaults in CADAM-Supplied JCL" on page 4, if necessary.
3. Add your JOB statement, submit the JCL, and mount your OS1060 tape.

LOAD1060 JCL

```

/*****
/* THE LOAD1060 JCL ALLOCATES REQUIRED DATA SETS FOR TRACE
/* AND REPLAY, THEN LOADS THE TRACE AND REPLAY FILES
/* TO DISK.
/*****
/* THE CADALLOC PROC IS INVOKED TO ALLOCATE CADAM SYSTEM DATA SETS.
/* UPDATE THE PROC DEFAULTS AS NECESSARY.
/*
//CADALLOC PROC QUAL='CADDISK',DUNIT='SYSDA',
//          DSER='CADAM1',DISP='(NEW,CATLG)',DCB=' '
/*
//IEFBR14 EXEC PGM=IEFBR14
/*
//ALLOCATE DD DSN=&QUAL..&DSN.,
//          UNIT=&DUNIT.,
//          VOL=SER=&DSER.,
//          DCB=&DCB.,
//          DISP=&DISP.,
//          SPACE=&SPACE.
/*
//          PEND
/*****
/* THE CADTCOPY PROC IS INVOKED TO COPY PARTITIONED DATA SETS
/* FROM TAPE. UPDATE THE PROC DEFAULTS AS NECESSARY.
/*
//CADTCOPY PROC QUAL='CADDISK',DUNIT='SYSDA',TUNIT='TAPE'
/*
//IEBCOPY EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT3 DD UNIT=&DUNIT.,SPACE=(CYL,2)
//SYSUT4 DD UNIT=&DUNIT.,SPACE=(CYL,2)
/*
//INDSN DD DSN=CADTAPE.&DSN.,VOL=(,RETAIN,SER=&TSER.),
//          UNIT=&TUNIT.,LABEL=(&FILE.,SL),DISP=(OLD,KEEP)
//OUTDSN DD DSN=&QUAL..&DSN.,DISP=SHR
/*

```

Step 2: Load the Remaining Files

```
//SYSIN DD DISP=SHR,DSN=&QUAL..INSTALL.JCL(CADCOPY)
//*
//      PEND
//*****
/** THE CADTGENR PROC IS INVOKED TO COPY SEQUENTIAL DATA SETS
/** FROM TAPE.  UPDATE THE PROC DEFAULTS AS NECESSARY.
/**
//CADTGENR PROC QUAL='CADDISK',TUNIT='TAPE'
//*
//IEBGENER EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSUT1   DD DSN=CADTAPE.&DSN.,VOL=(,RETAIN,SER=&TSER.),
//          UNIT=&TUNIT.,LABEL=(&FILE.,SL),DISP=(OLD,KEEP)
//SYSUT2   DD DSN=&QUAL..&DSN.,DISP=SHR
//SYSIN    DD DUMMY
//*
//      PEND
//*****
/** THE TNURESTR PROC IS INVOKED TO COPY NURESTOR FORMAT DRAWING
/** FILES FROM TAPE DIRECTLY TO CADAM DRAWING FILES.
/**
/** UPDATE THE PROC DEFAULTS AS NECESSARY.
/**
//TNURESTR PROC QUAL='CADDISK',TUNIT='TAPE'
//*
//NURESTOR EXEC PGM=NURESTOR,PARM='DEFGRP=&GRP.'
//STEPLIB  DD DSN=&QUAL..LM,DISP=SHR
//CARDS    DD SYSOUT=*
//PRINT    DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//DRAWINGS DD DSN=CADTAPE.&TAPEDSN.,
//          DISP=(OLD,KEEP),UNIT=&TUNIT.,
//          VOL=(,RETAIN,SER=&TSER.),LABEL=(&FILE.,SL)
//*
//CADDRAW  DD DSN=&QUAL..CAD.DRAWFILE.DRAW,DISP=SHR
//CADVTOC  DD DSN=&QUAL..CAD.DRAWFILE.INDEX,DISP=SHR
//*
//      PEND
//*****
/** ALLOCATE TRACE AND REPLAY DATA SETS.
/** ALL SPACE ALLOCATIONS ARE SPECIFIED IN 3380 UNITS.
//*****
/**
//LM       EXEC CADALLOC,DSN='TRACE.LM',
//          DCB='(DSORG=PO,RECFM=U,BLKSIZE=6150)',
//          SPACE='(TRK,(3,1,4))'
//*
//IM       EXEC CADALLOC,DSN='TRACE.IM',
//          DCB='(DSORG=PO,RECFM=U,BLKSIZE=6000)',
//          SPACE='(TRK,(5,2,2))'
//*
//DATA     EXEC CADALLOC,DSN='TRACE.DATA',
//          DCB='(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=3120)',
//          SPACE='(TRK,(5,2,5))'
```

Chapter 2. Installing Trace and Replay

WARNING

CADAM products are not backward compatible. This release may not be compatible with previous CADAM releases. If CADAM models created or processed in this release are then processed in a previous release, bad models may be generated.

If your site migrates from this release of any CADAM product to a previous release, back up your CADAM system drawing files using the NURESTOR program supplied with the CADAM Interactive Design System. Refer to the *CADAM Data Management Program Reference Guide for MVS* for complete information about the NURESTOR program.

This chapter contains steps for installing Trace and Replay.

Summary of Steps

Steps for installing Trace and Replay are summarized below.

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Step 3: Set Up a CPCPARMS File for Trace and Replay	12
Step 4: Set Up the JCL to Run Trace and Replay	13
Step 5: Verify the Installation	15
Step 6: Create a Library for Your Trace Scenarios	16

The following pages provide detailed instructions for each of these steps. Carefully review the results of each step before you move on to the next.

Step 1: Load the JCL

This step loads the JCL from the product tape to disk.

1. Edit CADDISK.INSTALL.JCL(LOADFIL1), listed below.
2. Change the defaults listed in "Defaults in CADAM-Supplied JCL" on page 4, if necessary.
3. Change TSER='OSXXX' to TSER='OS1060'.
4. Add your JOB statement, submit the JCL, and mount your OS1060 tape.

LOADFIL1 JCL

```
/******  
/* THE LOADFIL1 JCL LOADS THE FIRST FILE OF MOST CADAM TAPES.  
/* CHECK YOUR INSTALLATION DOCUMENTATION TO BE SURE.  
/******  
/* THE CADTCOPY PROC IS INVOKED TO COPY PARTITIONED DATA SETS  
/* FROM TAPE.  UPDATE THE PROC DEFAULTS AS NECESSARY.  
/*  
/*CADTCOPY PROC QUAL='CADDISK',DUNIT='SYSDA',TUNIT='TAPE'  
/*  
/*IEBCOPY EXEC PGM=IEBCOPY  
/*SYSPRINT DD SYSOUT=*  
/*SYSUT3 DD UNIT=&DUNIT.,SPACE=(CYL,2)  
/*SYSUT4 DD UNIT=&DUNIT.,SPACE=(CYL,2)  
/*  
/*INDSN DD DSN=CADTAPE.&DSN.,VOL=(,RETAIN,SER=&TSER.),  
/* UNIT=&TUNIT.,LABEL=(&FILE.,SL),DISP=(OLD,KEEP)  
/*OUTDSN DD DSN=&QUAL..&DSN.,DISP=SHR  
/*  
/*SYSIN DD DISP=SHR,DSN=&QUAL..INSTALL.JCL(CADCOPY)  
/*  
/* PEND  
/******  
/*  
/*LOADFIL1 EXEC CADTCOPY,TSER='OSXXX',FILE='1',DSN='INSTALL.JCL'  
/*
```

Contents of the Trace and Replay Facility Tape

The Trace and Replay Facility is distributed on a standard label tape named OS1060.

Contents

File 1: JCL in CADTAPE.INSTALL.JCL

LOAD1060

File 2: JCL in CADTAPE.PROD.JCL

TRACEDD

File 3: Load Modules in CADTAPE.TRACE.LM

FKS2	FKS3	FKSM	FKSP
FKS2U	FKS3U	FKSMU	FKSPU

File 4: Image Module in CADTAPE.TRACE.IM

SPRT
SPRTU

File 5: Data Files in CADTAPE.TRACE.DATA

E10C0001-51	ESPT0001	ESPT0006	ETRC0001
E10C0053	ESPT0002		ESPT0003-5

File 6: CADTAPE.SAMPLE.TRACELIB

File 7: Sample Drawings in CADTAPE.CAD.INSTAL.DRAWINGS

RATCHET WHEELMSTR
RATCHET WHEELRPLY
2D RTCH WHEELMSTR
2D RTCH WHEELRPLY

Prerequisites to Installing Trace and Replay

To install Trace and Replay, ensure that you have installed the CADAM Interactive Design System.

Defaults in CADAM-Supplied JCL

The JCL supplied with Trace and Replay contains the default values described below. Change these defaults as needed to suit your site's requirements.

CADAM Defaults

1. CADDISK is the high-level qualifier for all CADAM disk files and all disk files are cataloged.

CADTAPE is the high-level qualifier for CADAM tape data sets. The CADTAPE qualifier is mandatory and must not be changed.

2. The CADAM system data sets reside on a 3380 disk volume. This volume is identified as follows:
 - SYSDA is the generic unit name for this volume.
 - CADAM1 is the volume serial identification for this volume.
3. TAPE is the generic unit name for a nine-track tape volume.
4. SYSOUT=* is used for all print output.

Chapter 1. Before You Begin

What You Should Know About Trace and Replay

The Trace and Replay facility is a tool that records and replays a sequence of events called a *scenario*. During an interactive session, scope attentions are captured, recorded, and stored in an external file. The recorded scenario can then be called from storage and replayed on the scope.

Trace and Replay has a variety of uses. With it you can:

- detect and recreate problems.
- validate the consistency of CADAM in different environments.
- track and inspect CADAM's performance under various conditions.
- perform regression testing.
- prepare visual presentations of CADAM functions and capabilities for marketing and training uses.

<p>Note: Stored Trace and Replay scenarios are not compatible across releases.</p>

The SUPPORT Function Key

One function key, SUPPORT, is provided with Trace and Replay. See Figure 1 on page 2.

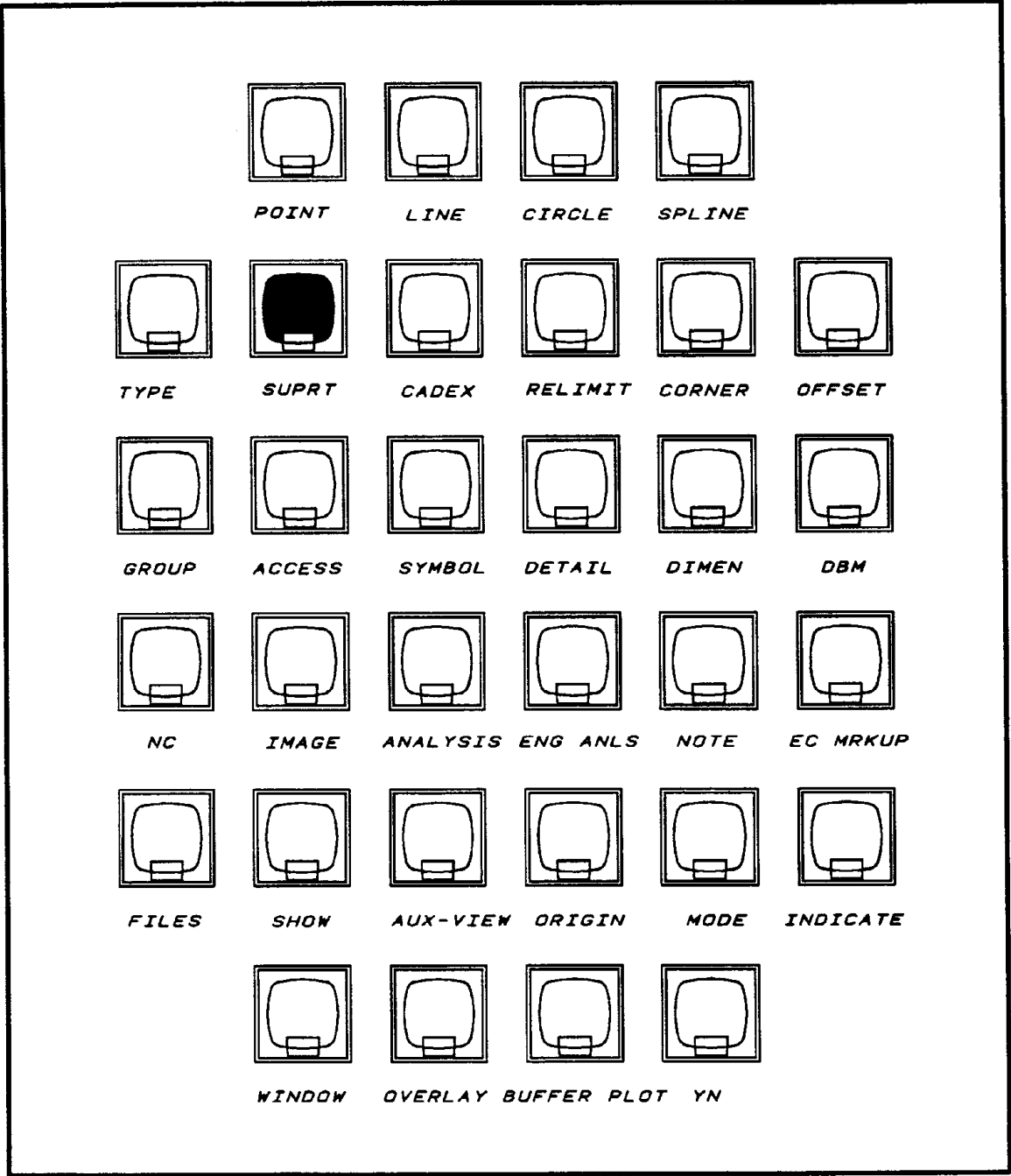


Figure 1. SUPPORT Function Key

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Preface

What This Guide Contains

This guide contains instructions for installing the CADAM® Trace and Replay facility in an MVS operating system environment.

Who Should Use This Guide

This guide is intended for use by CADAM system installers and programmers responsible for installing, customizing, and maintaining the CADAM system. This guide assumes that installers have a working knowledge of the MVS operating system and MVS commands and have access to MVS system manuals.

Where To Look For More Help

- *CADAM Interactive Design System: Interactive Design Installation Guide for MVS*
- *CADAM Interactive Design System: Interactive Design User's Reference*
- *CADAM Trace and Replay Facility User's Guide*

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CADAM® Trace and Replay Facility User's Guide

Document Number MF1060-030100-UG

August 1990

Version 3 Release 1

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About This Guide

Purpose of This Guide

The *CADAM® Trace and Replay Facility User's Guide* describes Trace and Replay and explains how to use this tool to record and replay a sequence of interactive CADAM events.

Who Should Use This Guide

This guide is designed for CADAM users. It assumes you are familiar with CADAM applications and have at least a moderate level of experience using the basic procedures and terminology associated with CADAM products.

How This Guide is Organized

This guide describes the actions of Trace and Replay in chronological order as follows:

- **Chapter 1** provides a general description of the functions and capabilities of the facility.
- **Chapter 2** explains how to record a sequence of events and provides step-by-step instructions for setting up a recording session, inserting pauses, and finishing the recording.
- **Chapter 3** describes techniques for modifying a recorded scenario.
- **Chapter 4** describes how to replay a recording session and provides instructions for starting a replay, modifying a replay in progress, and switching between replay modes.
- The **glossary** defines terms used in Trace and Replay functions.
- The **index** provides page references for the topics discussed in this guide.

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Chapter 1. Introduction

Trace and Replay is a CADAM tool that records and then replays a sequence of events called a “scenario.” CADAM users create and modify geometry using the normal scope attentions which are captured and built into a scenario in a process called “recording.” The facility then “replays” the recorded scenario which it accesses from an external scenario file.

Applications

Trace and Replay has a variety of uses. With it you can:

- detect and recreate problems.
- validate the consistency of CADAM in different environments.
- track and inspect CADAM's performance under various conditions.
- perform regression testing.
- prepare visual presentations of CADAM functions and capabilities for marketing and training uses.

Be aware, however, that Trace and Replay is not intended for use as a parametric design tool.

Scenario Compatibility

Trace and Replay scenarios are not compatible across different releases. This results from the extensive changes made to CADAM functions between releases.

Chapter 2. Recording a Scenario

This chapter explains what you need to know to record scenarios, including information on recording options and step-by-step instructions for performing the recording procedures. For explanations of system errors that can occur during a recording, see the *CADAM Trace and Replay Facility Installation Guide* for your operating system (VM or MVS).

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Starting a Recording Session

Overview

To use Trace and Replay, you first capture the attentions executed during a scope session. This capture (recording) preserves all events in the order they occurred, allowing them to be reconstructed (replayed) at a later time. Avoid long scenarios; you should limit each scenario to no more than 500 – 750 attentions.

Before you record a scenario, you need to establish the recording environment. This involves selecting options related to two recording conditions. These options are described below. Step-by-step instructions for starting a recording begin on page 5.

Recording Options

After you access Trace and Replay, the system asks you to set options for two conditions. Your screen will appear as shown below.

INITIAL STATE

- * reset
- ignore

MENU/MESSAGES

- capture
- * ignore

INITIAL STATE: This option enables you to set the conditions under which CADAM will operate during the recording. Selecting *reset* (the default) reinitializes CADAM as though you were logging on, except that accounting and group information is retained.

You must select *reset* if you are recording a new scenario. Since Trace and Replay uses the same reinitialization prior to replaying a scenario, selecting *reset* results in identical initial states for recording and replay. This enhances the reliability of your scenarios.

If you select *ignore*, CADAM is not changed, and the recording will start from the current state. Use *ignore* only to record a scenario that is a continuation of a previously-recorded scenario. For more information, see "Adding to a Recorded Scenario" on page 12.

MENU/MESSAGES: With this option, you can capture all of the menu and message items produced by the attentions in your recording. If you select *capture*, you can later use the replay function to automatically compare the menu options and messages currently displayed with those on your recording. This traps any discrepancies.

Though helpful, this option increases the size of your scenario by 200 percent and should be used sparingly. *Ignore* is the default.

Scenario Names

After you finish selecting your recording options, the system will ask you to key in a name for your scenario. This allows you and the system to find the scenario in the external file. Any name up to 70 characters in length, including blanks, is accepted without validation. Choosing a descriptive name will help you identify your scenario.

Procedure

To begin recording, you need to set the recording environment, choose from available recording options, and select a name for the scenario. Follow the procedure below.

Before you begin: Be sure function key SUPPORT is enabled. If not, see your system administrator.

1. Press function key SUPPORT.

Menu option /TRACE/ is displayed.

2. Select /TRACE/.

The screen is cleared, and the messages FILE CURRENT DRAWING AS NEEDED PRIOR TO USING SELECTED OPTION and YN CONTINUE are displayed.

CAUTION: If you do not perform Steps 3 and 4, you will lose the drawing you are currently creating.

3. Press YN.

4. Press function key FILE and file your drawing.

5. Press function key SUPPORT.

The main menu is displayed. Its options include /REPLAY/, /RECORD/, and /RETURN/. Select /RETURN/ at any point to abort this procedure and reaccess the /TRACE/ menu option.

6. Select /RECORD/.

The two recording options, Initial State and Menu/Messages, are displayed with asterisks to the left of the defaults.

The messages SEL RECORDING OPTION and YN CONTINUE also are displayed.

7. Select the desired recording options.

These options are explained on pages 4 and 5.

8. Press YN.

The message KEY SCENARIO NAME is displayed.

9. Key in a scenario name.

The message PRESS FUNCTION KEY TO START RECORDING is displayed.

10. Press any function key to start recording.

The recording process begins. The procedure is complete.

NOTE: *The following is very important to remember:* When performing attentions during the recording session, always key data in rather than selecting it if you have a choice.

You can file the drawing in your scenario prior to ending the recording session. Be sure to press Y/N twice to overfile. The procedure is complete.

Inserting a Pause

Overview

Once you begin a recording session, it will run until you interrupt it or end it. To end a recording, see page 9.

Sometimes, you may want to interrupt a recording to insert a pause. During subsequent replay, this pause temporarily suspends the scenario, allowing you to do any of the following:

- stop the replay.
- start the replay over again from the beginning.
- skip to another place in the scenario and continue the replay from that point.
- change your replay options.

You cause the scenario to suspend replay at a specified point by interrupting the recording and inserting a hard pause at that point. Remember that you insert the pause during the *recording* in order to affect the *replay*.

Pause Labels

When you insert the pause, you key in a pause label. Any string of up to 70 characters, including blanks, is accepted without validation. Choosing a descriptive label will help you remember why you wanted to pause at that point in the replay.

Procedure

To insert a pause, you suspend the recording, key in a pause label, and then continue recording. Follow the procedure below.

Before you begin: Be sure you have started recording your scenario. If not, see “Starting a Recording Session” on page 4.

1. Press function key **SUPPORT**.

The recording stops, and menu options /STOP/, /PAUSE/, and /CONTINUE/ are displayed.

- 2. Optional. To continue the recording without inserting a pause, select /CONTINUE/.**

If you decide not to insert the pause, you can select /CONTINUE/ any time during this procedure.

- 3. Select /PAUSE/.**

The message KEY PAUSE LABEL is displayed.

- 4. Key in a pause label.**

The message PRESS FUNCTION KEY TO CONTINUE RECORDING is displayed.

- 5. Press any function key to continue recording.**

The recording resumes.

- 6. Optional. Repeat steps 1, 3 and 4 to insert another pause.**

You may insert any number of pauses into a scenario. The procedure is complete.

Ending a Recording Session

Overview

Once you begin a recording session, it will run until you interrupt it or end it. To interrupt a recording, see page 7.

When your recording is finished, you need to tell Trace and Replay to stop recording. At the end, you insert a stop that turns off the recording mechanism and returns you to the main menu. Later, during replay, this stop will terminate the replay and return you to the main menu.

Stop Labels

After you stop the recording, you key in a stop label. Any string of up to 70 characters, including blanks, is accepted without validation. Many users choose something like "Drawing is Complete."

Procedure

To end your recording, you suspend the recording and key in a stop label. Follow the procedure below.

Before you begin: Be sure you are recording a scenario. If not, see page 4 to start a recording.

1. Press function key SUPPORT.

The recording stops, and menu options /STOP/, /PAUSE/, and /CONTINUE/ are displayed.

2. Select /STOP/.

The message KEY STOP LABEL is displayed.

3. Key in a stop label.

The main menu and the message RECORDING COMPLETED are displayed. The procedure is complete.

Chapter 3. Modifying a Scenario

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Adding to a Recorded Scenario

Even after you insert a stop to end a recording, you can still add on to it by recording a new scenario as a continuation of the old one. You can add only to the end of a scenario; you cannot insert events into the middle of a recorded scenario.

To add to a scenario, you do the following:

- First, you replay it with the Initial State option set to *reset* (the default). See Chapter 4 “Replaying a Recording” for replay instructions.
- Then, you record your continuation with the Initial State option set to *ignore*. See “Starting a Recording Session” on page 4.

When you finish, you will have a newly-recorded scenario that is logically contiguous to the one you just replayed. Then, you can use any file editing facility to physically combine the two scenarios into one. While combining the scenarios, you should avoid modifying the scenario’s contents.

Editing a Scenario

The Trace and Replay scenarios reside in a file which you can access and update using any available edit facility. However, since the scenario data is directly used to “drive” CADAM, you must exercise extreme caution during the editing session. Do not attempt to edit a scenario until you are very familiar with Trace and Replay and with scenario data. Often, changes which seem insignificant can corrupt data or jeopardize the logical continuity of your scenario, damaging it beyond recovery and wasting your recording time.

Normally, the need for editing arises only when you want to merge logically contiguous scenarios into one. (See “Adding to a Recorded Scenario” on page 12.) Whatever your purpose, you should follow the few important editing rules below.

- Always begin by making a working copy of the scenario file you want to edit. *Never edit the original scenario file.* After a successful replay of the edited copy, you can delete the original.
- When modifying an attention (a very dangerous procedure), be sure the new data conforms to the layout for the record type.
- Be careful not to misplace or delete record control characters. Never insert information into the record; instead, key over existing data.
- When you delete a portion of a scenario or add new data, be sure not to jeopardize the logical continuity of your scenario. Try to “replay” the scenario in your mind to confirm its validity.
- If you key in new data to replace a string of characters, be sure to adjust the length of the field; otherwise, some characters may be cut off when the system extracts this data for replay.

For more information on scenario file layout, see the *CADAM Trace and Replay Facility Installation Guide* for your operating system (VM or MVS).

Chapter 4. Replaying a Scenario

This chapter explains what you need to know to replay scenarios, including information on replay options and step-by-step procedures.

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Starting a Replay

Overview

After you record a scenario, you can replay it at any time. First, you need to set the replay environment. This involves selecting options for six replay conditions, most of which remain in effect during the entire replay. These options are described below. Step-by-step instructions for starting a replay begin on page 18.

Replay Options

After you access Trace and Replay, the system asks you to set options for six conditions. Your screen will appear as shown below.

CONTROL

- * auto
- step

PARAMETERS

delay (sec/atn) = 0.25
step size = 1

PAUSES

- * use
- ignore

PERFORMANCE

- update
- * ignore

INITIAL STATE

- * reset
- ignore

MENU/MESSAGES

- update
- validate
- * ignore

CONTROL:

Auto (the default) causes the replay to continue without stopping until it reaches a pause or the end of the scenario.

If you select *step*, the replay is performed in steps, each containing an equal number of attentions. After each step, the replay stops, and the system waits for a command to play the next step. This pattern continues until the replay reaches a pause or the end of the scenario. For more information, see "Using the Step Mode" on page 26.

PARAMETERS:

The *delay factor* affects the speed of the replay. The default is .25 seconds between attentions, but you can enter any value. The load on the system during the replay also affects the delay. Entering a larger value for the delay factor will more closely approximate the real delay.

The *step size* specifies the number of attentions in each step. The default is one, but you can enter any number.

PAUSES:

Use (the default) causes the replay to stop at all pauses inserted during the recording of the scenario. If you select *ignore*, the replay will not stop at any of the pauses.

PERFORMANCE:

Selecting *update* allows you to monitor CADAM's performance during the replay. Two characteristics are tracked: attention time and the roll time. You can then use the external scenario file to extract this data. If you select *ignore* (the default), replay performance is not monitored.

INITIAL STATE:

Always select *reset* (the default) to ensure that the state of CADAM is the same at the start of the replay as it was during the recording. For an explanation of this condition, see INITIAL STATE under Recording Options on page 4.

MENU/MESSAGES:

You can select *validate* to verify the content of menus and messages captured during the recording. They are matched with the current menus and messages, and the differences are placed in the "Trace Menu and Messages Status File," identified as TRMMSTAT.

Update allows you to add and change menus and messages. The most current menus and messages are inserted after each attention during replay. Then, you can delete the old scenario from the file

Ignore (the default) disables the validation and update options.

Procedure

To replay a scenario, you first need to establish the replay environment. Follow the procedure below.

Before you begin: Be sure function key SUPPORT is enabled. If not, see your system administrator.

1. **Press function key SUPPORT.**

The menu option /TRACE/ is displayed.

2. **Select /TRACE/.**

The screen is cleared, and the messages FILE CURRENT DRAWING AS NEEDED PRIOR TO USING SELECTED OPTION and YN CONTINUE are displayed.

CAUTION: If you do not perform Steps 3 and 4, you will lose the drawing you are currently creating.

3. **Press YN.**

4. **Press function key FILE and file your drawing.**

5. **Press function key SUPPORT.**

The main menu is displayed. Its options include /REPLAY/, /RECORD/, and /RETURN/. Select /RETURN/ at any point to abort this procedure and reaccess menu option /TRACE/.

6. **Select /REPLAY/.**

The six replay options, Control, Parameters, Pauses, Performance, Initial State and Menu/Messages, are displayed with asterisks to the left of the defaults.

The messages SEL REPLAYING OPTION and YN CONTINUE also

are displayed.

7. Select the desired replay options.

These options are explained on pages 16 and 17.

NOTE: If you receive the error message DATA SET NOT FOUND after attempting to select *validate* and *update* in the Menu/Messages option, it means that the files collecting the menus and messages have not been correctly named or are missing. See the *CADAM Trace and Replay Facility Installation Guide* for your operating system (VM or MVS) for more information.

8. Press YN.

The messages KEY SCENARIO NAME and YN LIST are displayed.

9. Do one of the following:

- If you know the exact name of the scenario you want to replay, key in this name.

The replay begins when you enter the name. If the name is not valid, the error message SCENARIO NOT FOUND is displayed.

- If you do not know the name of your scenario, do the following:

1. Press YN.

The system displays a list of all scenarios currently available for replay.

The messages KEY PAGE and SEL SCENARIO also are displayed.

The menu options /START/, /SCHEDULE/, /FWD/, /BACK/, and /WILDCARDS/ also are displayed.

2. Optional. To review the list and find your scenario, do one of the following:

- a. Select /FWD/ and /BACK/.

The list display changes a page at a time.

- b. Key in a page number.

The requested page is displayed.

- c. Do the following:

- Select /WILDCARDS/.

The message KEY WILDCARDS is displayed.

- Key in a wildcard pattern.

All names that follow the requested wildcard pattern are displayed.

If the pattern is not valid, the error message INVALID WILDCARD is displayed. For an explanation of wildcards, see page 22.

3. Select /START/ when the desired scenario is displayed.

4. Select the desired scenario.

The selected scenario is highlighted, and the message YN START is displayed.

5. Press YN.

The replay begins. To modify the replay while it is running, see page 23.

If the replay stops in the middle and you see the message **WARNING – MENU ITEM NOT FOUND = (menu item), see “Resolving an Unmatched Menu Item” on page 28 for instructions.

If the replay aborts because of other problems, see your system administrator or the *CADAM Trace and Replay Facility*.

ity Installation Guide for your operating system (VM or MVS).

When the replay is finished, the system redisplay the main menu. The procedure is complete.

Wildcards

With the /WILDCARDS/ menu option, you can limit the display of scenario names to those that follow a specific pattern. After you select the menu option, you key in a string of characters containing an asterisk (*). Trace and Replay recognizes the patterns listed below.

PATTERN	DESCRIPTION	EXPLANATION
*(string)	Asterisk followed by character string	Restricts the list of names to those ending with the string

Examples: If the pattern is *210, possible names include 'TEST REL210', '210', 'DEMO 5.210', etc.

PATTERN	DESCRIPTION	EXPLANATION
(string)*	Asterisk preceded by character string	Restricts the list of names to those starting with the string

Examples: If the pattern is 210*, possible names include '210 DETAILS', '210', '2101', '2102', etc.

PATTERN	DESCRIPTION	EXPLANATION
(string)	Asterisk preceding and following a character string	Restricts the list of names to those containing the string anywhere within them

Examples: If the pattern is *210*, possible names include 'R210 TEST', 'DEMO-2101', '210', '2101', '2102', '3210', etc.

Entering only an asterisk produces an unrestricted list of all names.

Modifying a Replay

Overview

Once you start a replay, it continues to the end of the scenario, unless you inserted pauses during the recording process. If the system encounters a pause, it stops the replay and returns control to you.

While the replay is suspended, you can make changes to it. These modifications include:

- restarting the replay from the beginning
- skipping ahead to another pause
- changing the replay options
- quitting the replay
- continuing the replay

You can also perform window operations using function key WINDOW. All function keys other than SUPPORT and WINDOW are disabled.

NOTE: You can also freeze the replay while it is playing by pressing YN. This operation is unrelated to the suspended replay described in this section and cannot be used to make the modifications in the above list. For more information, See “Using the Step Mode” on page 26.

Procedure

When the replay stops at a pause, the message REPLAYING SUSPENDED, LABEL = (pause label) is displayed.

The suspended replay menu options /CONTINUE/, /RESTART/, /SKIP/, /QUIT/, /PROFILE/, and FK WINDOW also are displayed.

Do any of the following:

- **Select /RESTART/.**

The replay starts over again from the beginning.

- **Select /CONTINUE/.**

The replay resumes from the current pause.

- **Change the replay options by doing the following:**

1. Select /PROFILE/.

The replay options screen is displayed, and the messages SEL REPLAYING OPTION and YN CONTINUE also are displayed.

2. Select or key in changes to any of the options.

3. After you finish changing the replay options, press YN to continue the replay.

- **Select /QUIT/.**

The replay terminates. The message REPLAYING COMPLETED is displayed.

The main menu options /REPLAY/, /RECORD/, and /RETURN/ are displayed.

- **Skip to another pause by doing the following:**

1. Select /SKIP/.

The messages KEY PAUSE LABEL and YN NEXT are displayed.

2. Do one of the following:

- a. Key in the label of the pause to which you want to skip.

You can skip to any pause in the scenario. If identical pauses exist for the label you keyed in, the system will move to the pause nearest the beginning of the scenario. If the label is not valid, the error message NOT FOUND is displayed.

The message REPLAYING SUSPENDED, LABEL = (pause label) changes to display the label of the pause to which the sys-

tem has skipped.

- b. Press YN to skip to the next pause.

The message REPLAYING SUSPENDED, LABEL = (pause label) changes to display the label of the next pause.

You can press YN repeatedly to move to successive pauses in the scenario.

3. At the desired pause, select another menu option from the suspended replay menu.

NOTE: Often, a scenario will not replay well with the /SKIP/ option, because each of the scenario's sections is logically dependent on those preceding it. Only those scenarios you record with the intent to use the /SKIP/ option will benefit from it. This type of scenario contains sets of logically independent subscenarios between pauses.

- **Perform window operations by doing the following:**

1. Press function key WINDOW.
2. Perform window operations as desired.
3. After you have finished the window operations, press any function key to restore the original window parameters.

The suspended replay menu is redisplayed.

4. Select another option from the suspended replay menu.
The procedure is complete.

Using the Step Mode

Overview

Most replays run in the auto mode which you select when you choose your replay options. In auto mode, once a replay begins, it continues until it reaches either a previously inserted pause or the end of the scenario.

Step mode, in contrast, allows you to move through the display by steps. Each step contains an equal number of attentions (the step size). After each step, the replay stops, and the system waits for a command to play the next step. At this stop, you can change the step size (the number of attentions in each step), disable the replay, and switch to auto mode.

Step mode can be accessed in two ways. Before starting your replay, you can select step mode and key in the step size on the replay options screen as described in "Starting a Replay" on page 16. You also can switch to step mode during a replay by pressing YN. This feature, the auto/step switch, gives you what is known as *on fly control*. With it, you can freeze the display, creating a soft pause at any point in the scenario for as long as desired. You then can view and analyze the scenario's events at a convenient rate.

Procedure

Use the step mode to gain more control over the pace of the replay. Follow the procedure below.

Before you begin: Either the replay options screen must be displayed, or a replay must already be underway. See "Starting a Replay" on page 16.

NOTE: You need to perform step 1 if you are currently running a replay in auto mode.

- 1. Optional. Press YN to access the step mode.**

The system changes to step mode, and the display freezes at the exact point in the replay where you pressed YN.

NOTE: Since the screen freezes instantly, no messages are displayed to prompt you to perform the actions described in step 2 below. You need to remember them or use this book.

2. Do one of the following at the end of each step:

- Key in an integer between 1 and 9999.

The step size changes to the number you entered, and the system proceeds to replay the next step.

- Key in the word STOP.

The replay is disabled (terminated). The current module remains active, and control is returned to you without affecting CADAM. (When a replay ends normally, the system abandons the last active module and reactivates the SUPPORT module.)

- Press YN to replay the next step.

- Key in the word AUTO.

The system exits step mode and continues the replay in auto mode. The procedure is complete.

Resolving an Unmatched Menu Item

Overview

Under normal conditions, a replay continues to the end of the scenario unless you inserted pauses during the recording process. Certain error conditions also will cause the replay to stop in the middle. If an error message is displayed, you should consult either the *CADAM Trace and Replay Facility Installation Guide* for your operating system (MVS or VM) or your system administrator.

However, you can resolve one particular error interactively. When you are recording a scenario and you select a menu option, its content is recorded as part of that attention's data. During replay, the system verifies the current existence of each recorded menu option. If an exact match is found, the replay continues normally. However, if the system fails to find a menu option in the current CADAM release, the replay is aborted, and an error message is displayed. To resolve this problem, follow the procedure below.

Procedure

If your replay aborts due to an unmatched menu option, the message ****WARNING - MENU ITEM NOT FOUND = /menu item/** is displayed, where /menu item/ = the unfound menu option.

The messages **SELECT CORRECT MENU ITEM** and **YN QUIT** also are displayed.

1. Do one of the following:

- Press YN to quit the replay.

The replay is terminated, the scenario remains unchanged, and the messages **SCENARIO FILE NOT UPDATED** and **REPLAY COMPLETED** are displayed.

The main menu is displayed. The procedure is complete.

- Select a suitable option from the current menu as a substitute.

CAUTION: Be very sure that the menu option you select as a substitute functions in the exact same manner as the un-

matched (old) item. The most common cause of an unmatched menu option is a change in the spelling of that item. However, if the entire function of the unmatched menu item has been eliminated, no substitution is possible, and your scenario cannot be replayed.

The message CHANGING FROM = /menu item/ TO = /new menu item/ is displayed.

The messages RE-SELECT MENU ITEM and YN UPDATE also are displayed.

2. Optional. Select another menu item.

This menu option is displayed in the message line as the option to be substituted for the unmatched menu item.

3. Press YN.

The system replaces the unfound menu item with the selected menu option. This replacement affects *every occurrence* of the unmatched option in *all the scenarios*. The message SCENARIO FILE UPDATED is displayed.

The menu options /RESTART/ and /QUIT/ are displayed.

4. Do one of the following to complete the procedure:

- Select /RESTART/.

The replay restarts from the beginning of the scenario.

- Select /QUIT/.

The replay is terminated, and the message REPLAY COMPLETED is displayed. The main menu also is displayed.

Glossary

attention: An interactive event at a CADAM scope captured by Trace and Replay during the recording process for later replay. A sequence of attentions comprises a scenario.

auto mode: The system-controlled, automatic, non-stop replay of a scenario.

auto/step switch: The ability to change from auto to step mode in the middle of a replay by pressing YN to instantly freeze the display. Also known as: *on fly control*.

Control: A replay option allowing the user to choose between the auto and step modes.

delay factor: The seconds of wait between consecutive attentions during replay.

hard pause: The suspension of a replay caused by a pause inserted during the recording.

Initial State: A user option that ensures that certain CADAM conditions are identical for scenario recording and replay.

Menu/Messages: An option that facilitates the capture of all menu options and messages displayed during the recording of a scenario and their validation and update during replay.

on fly control: See: **auto/step switch**.

Parameters: A replay option allowing the user to specify the step size and the delay factor.

pause: See: **hard pause** and **soft pause**.

pause label: An alphanumeric, 70-character, unique label used to identify a hard pause.

Performance: A replay option enabling the user to monitor CADAM's response. If this option is enabled, performance data is placed in a file for later access.

recording: The capturing and storing of the attentions processed during an interactive CADAM session.

recording options: The parameters controlling the recording environment.

replay options: The parameters controlling the replaying environment.

replaying: A process of simulating the series of attentions captured in a scenario so they can be viewed and analyzed.

scenario: A sequence of CADAM interactive events captured during a recording session for later analysis during replay.

scenario name: An alphanumeric, 70-character, unique label used to identify a scenario.

scenario file: A file that stores all of the scenarios at a particular site.

step: A scenario subset consisting of a user-specified number of attentions.

step mode: The user-controlled mode of scenario replay that stops after each step is replayed.

step size: The number of attentions in each step of the scenario. The user defines this quantity while setting the recording options.

stop: The termination of a recording. A stop is generated by the user to inform Trace and Replay that a scenario is finished.

stop label: An alphanumeric, 70-character, unique label used by Trace and Replay to identify the end of a scenario.

SUPPORT: The function key under which the Trace and Replay Facility runs.

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