

TRIM

Installation and Operations Manual

Note: All references to the TRIM version in this manual are indicated by *vrs* or *v.r.s.*
The current release of TRIM is version 8.4.2.

Comments pertaining to this document and TRIM are encouraged. Please direct all comments to:

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Treehouse Software, Inc. provides two manuals with TRIM. These manuals are:

- **Installation and Operations Manual** This manual provides all of the information necessary to perform the installation and procedures to set up TRIM.
- **Reference Manual** This manual provides detailed reference material about the various TRIM functions and features.

The structure of the TRIM documentation is intended to make information about the product more convenient to locate and use.

This Installation and Operations Manual describes the installation process for the Treehouse Software, Inc. TRIM software package. This manual describes:

- Installation Specifics for each operating system
- Real-Time Monitor operational considerations
- Batch Log Analysis operational considerations
- Tailoring with zaps, TRMTAP, TRMLOG, TRMRSP, TRELOG, and TRMSLO
- Error Analysis and Problem Solving

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SECTION I

INTRODUCTION

I.1 Introduction to Installation

TRIM may be installed and executed in the following IBM and compatible mainframe environments: OS (OS/390, MVS, MVS/XA, MVS/ESA, Z/OS), VSE, and VM (SP, XA, ESA).

This Manual

The installation instructions in this manual cover all of the operating systems listed above. Since the vast majority of TRIM sites are OS, the instructions have an OS orientation. However, 80-90% of the installation process is identical or very similar in every operating system. Therefore, the installation steps are presented for all operating systems in one section, **Section II Installation**. The assumption is that VSE and VM systems personnel responsible for TRIM installation can adapt OS terminology to their operating system environments.

For example, a file in OS may be a library in VSE and a mini-disk in VM.

A PDS (partitioned dataset) in OS may be called a library in VSE and a GLOBAL TXTLIB in VM.

A member in OS may be a module in VSE and a file in VM.

A link-edit in OS may be called a link in VSE and a load in VM.

A load library in OS may be called a core-image library in VSE and a loadlib in VM.

A link-edit in OS has *INCLUDE load-library (member)*, while in VSE it is *INCLUDE text-member*, and in VM it is *loadlist member*.

For OS, to do assemblies, the source members and macros may both reside in one source library. For VSE with older assemblers, the macros must be formed into E-decks, and for VM the macros must be in a MACLIB.

Where appropriate, examples and explanations are given for each operating system.

ADABAS/NATURAL Levels

This version of TRIM contains support for ADABAS v7.4, v8.1.x, thru v8.5.1 and NATURAL Version 4.1.2 and above.

ADABAS Version 8.5.1. was the latest release available at the time the TRIM software and documentation were prepared. TRIM may support releases of ADABAS later than 8.5.1, but since those releases were not available at the time of this release, Treehouse Software, Inc. cannot be certain that this release of TRIM will support these later releases.

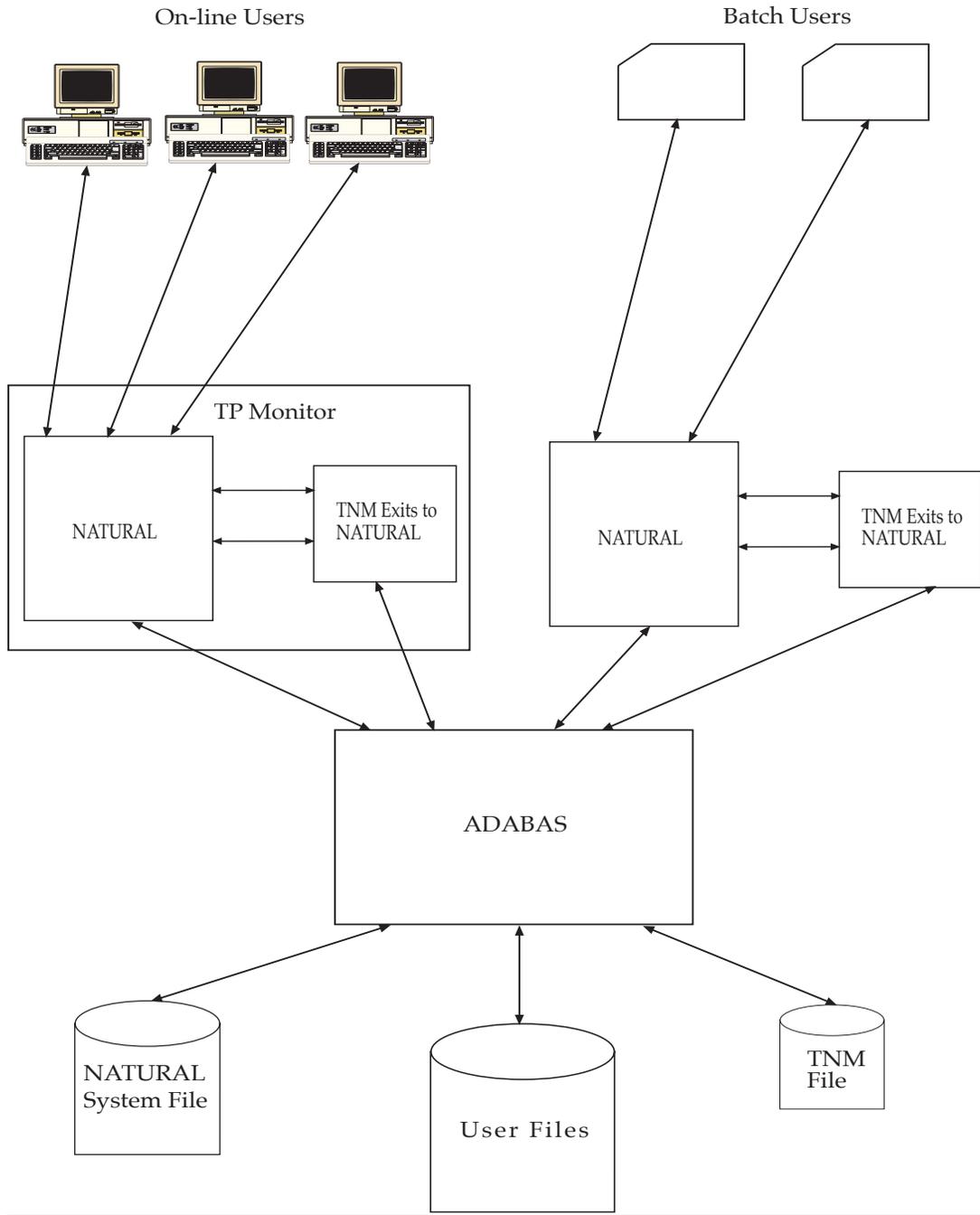
The TRIM RTM requires NATURAL Version 4.1.2 and above.

TRIM does not require Zaps for any operating system, teleprocessing system, or to ADABAS, NATURAL, or their associated software.

The TRIM RTM runs equally well in CICS, COM-LETE Version 4.5 and later, TSO, CMS, or any other teleprocessing environment capable of running NATURAL.

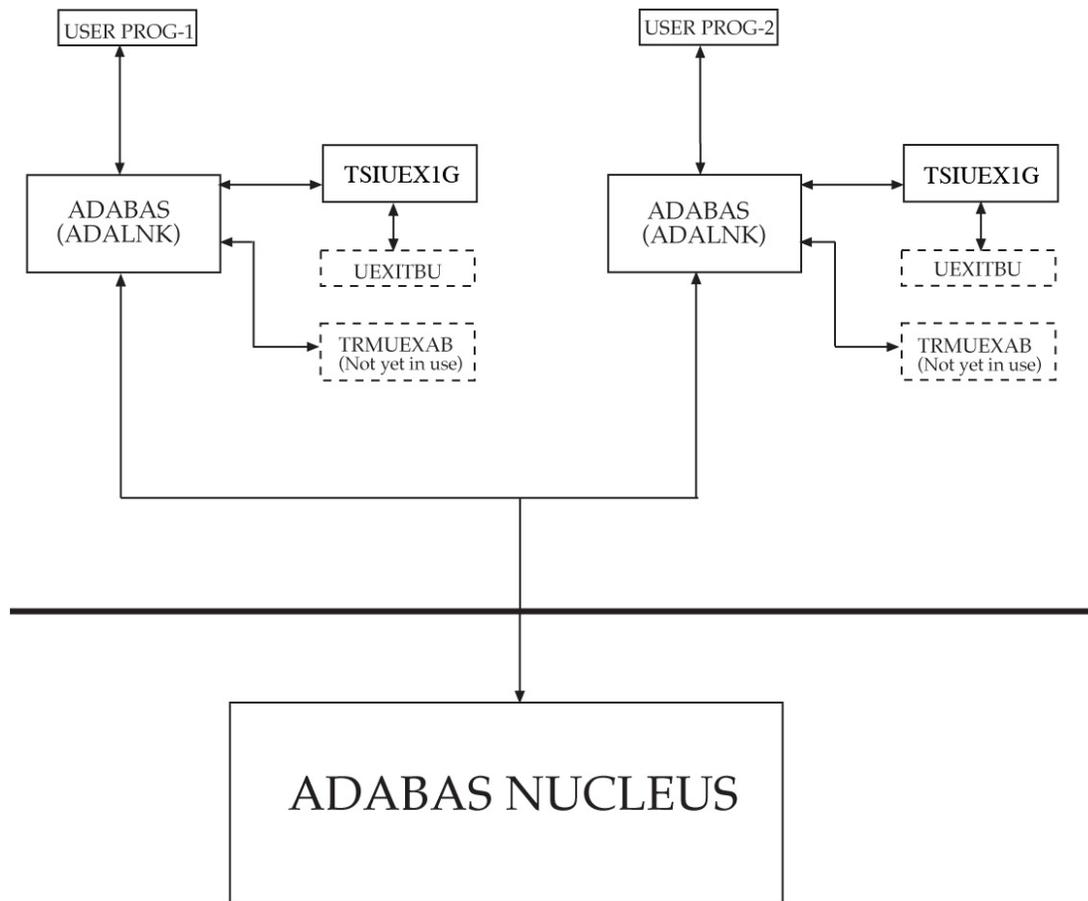
The ADABAS / TRIM environment is shown in Figure 2.

<p>Note: The TRIM NATURAL Monitor is referred to as TNM throughout this manual. TNM is installed with, and accessed via, the TRIM RTM.</p>



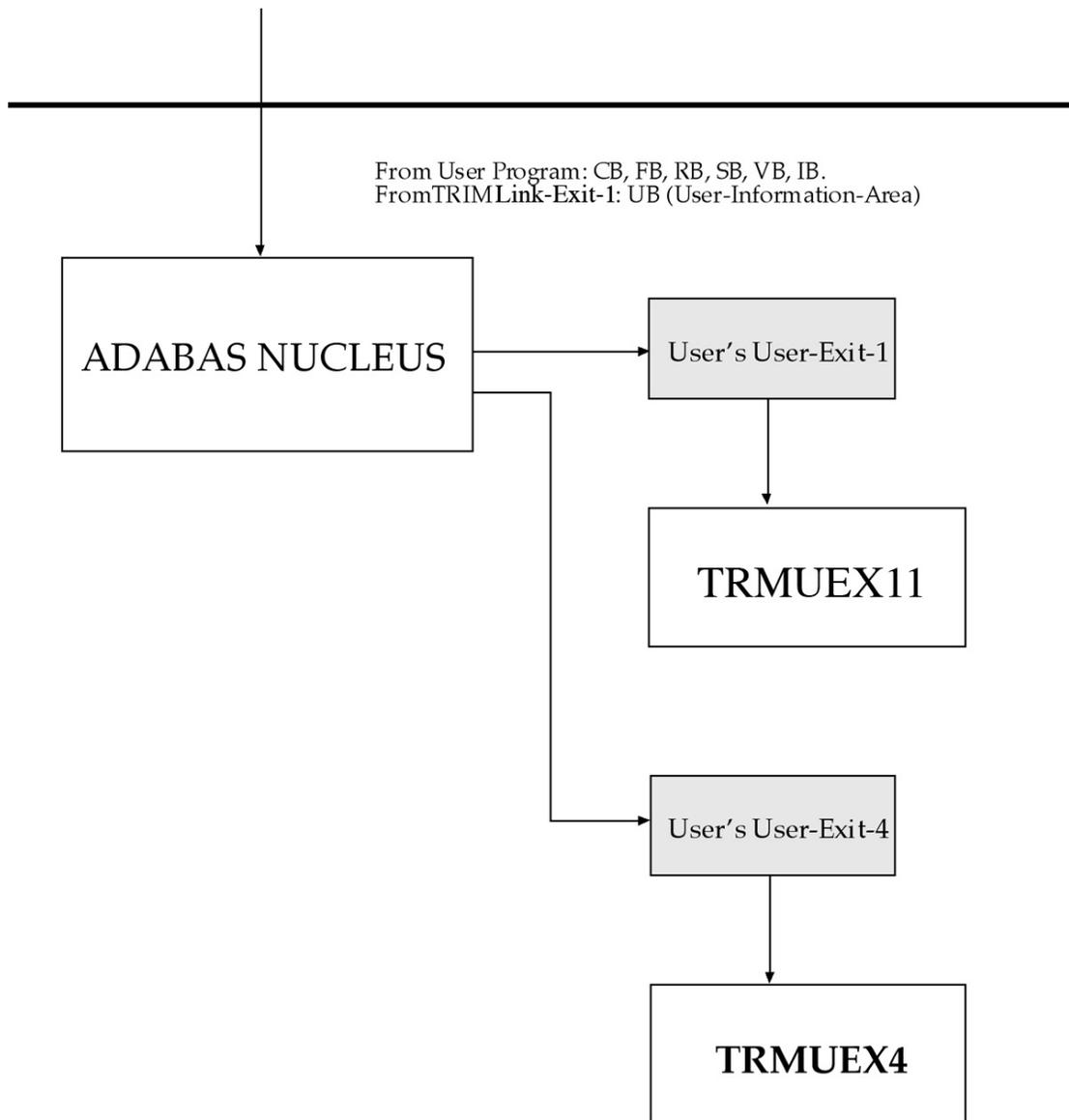
NATURAL TRIM Environment

Figure 1



ADABAS TRIM Environment

Figure 2



ADABAS TRIM Environment

Figure 2 (continued)

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SECTION II

INSTALLATION

II.1 Installation Tape

TRIM is distributed in a compressed zip file

Zip distribution contents

The TRIM ZIP file contains the following files:

File	Description
TRMV _{vrs} RN.PDF	TRIM Release Notes
TRMV _{vrs} Ref.PDF	TRIM Reference Manual
TRMV _{vrs} Install.PDF	TRIM Installation and Operations Manual
TRMV _{vrs} .SYSOBJH	NATURAL source/object code
TRMV _{vrs} .SOURCE.XMIT	PDS containing source code (xmit format)
TRMV _{vrs} .LOAD.XMIT	PDS containing load modules (xmit format)
TRMV _{vrs} .README.TXT	Details on fixes created after the initial release
TRMV _{vrs} .TNMFILE.SYSOBJH	SYSOBJH FDT
TRMV _{vrs} .TNMFILE.SYSOBJH.DDM	TNM reporting DDM
TRM.XMITRECV.JCL.TXT	Sample JCL to receive XMIT datasets (zOS)
TRMV _{vrs} .VSE.LIBR	VSE distribution in LIBR format
TRMV _{vrs} .LOAD.FIX.XMIT	PDS containing load modules (xmit format) (if fixes are available)
TRMV _{vrs} .VSE.MSHP.FIX	VSE corrections in MSHP format (if fixes are available)

Section II.2.1 Load datasets from an electronic distribution details how to copy the datasets to the ZOS environment, into datasets named the same as the tape distribution dataset names.

TRIM distribution datasets

OS

The TRM.Vvrs. SOURCE dataset contains several members to assist in the installation and operation of TRIM. The following members are contained in this file:

JOSLOAD	(JCL for Loading Datasets from Tape to Disk)
JOSLINK	(JCL for Linking Load Modules in an ADABAS V8 system)
JOSLINK7	(JCL for Linking Load Modules in an ADABAS V7 system)
JOSCLOG	(JCL for Command Log Analysis)
JOSPLOG	(JCL for Protection Log Analysis)
JOSUX11	(JCL for User-Exit-11 Communication Run)
JOSUX4	(JCL for User-Exit-4 Communication Run)
JOSNLOAD	(JCL for Installing the NATURAL Real-Time Monitor)
JOSDDE	(JCL for Loading the TNM DDE File)
JOSSMFEX	(JCL extracting CLOG records from SMF data)

VSE

The TRM.Vvrs.VSE.LIBR dataset contains several members to assist in installation and operation of TRIM. The following members are contained in this file:

JVSLINK	(JCL for Linking Load Modules in an ADABAS V8 system)
JVSLINK7	(JCL for Linking Load Modules in an ADABAS V7 system)
JVSCLOG	(JCL for Command Log Analysis)
JVSPLOG	(JCL for Protection Log Analysis)
JVSUX11	(JCL for User-Exit-11 Communication Run)
JVSUX4	(JCL for User-Exit-4 Communication Run)
JVSNLOAD	(JCL for Installing the NATURAL Real-Time Monitor)
JVSDDE	(JCL for loading the TNM DDE file)
JVSMSPH	(JCL for Defining TRMvrs to MSPH for zaps)
JVSALNK1	(First step to link ADALNK)
JVSALNK2	(Second step to link ADALNK)

VM

The TRM.Vvrs.VM.EXECS dataset contains several members to assist in the installation and operation of TRIM. The following members are contained in this file:

JVMLOAD	EXEC	(EXEC to load all of the TRIM modules to a minidisk)
JVMCLOG	EXEC	(EXEC for Command Log Analysis)
JVMPLOG	EXEC	(EXEC for Protection Log Analysis)
JVMUX11	EXEC	(EXEC for User-Exit-11 Communication Run)
JVMUX4	EXEC	(EXEC for User-Exit-4 Communication Run)
JVMNLOAD	EXEC	(EXEC to SYSOBJH the NATURAL Real-Time Monitor)
JVMDE	EXEC	(EXEC for loading the TNM DDE file)
JVMGEN	EXEC	(EXEC to generate executable files)
JVMGMAC	EXEC	(EXEC to generate TRIM MACLIB)

All Operating Systems

The following members are included in the source (and MACLIB for VM) datasets for each of the operating systems:

PCLOG	(Parameters for Command Log Analysis)
PPLOG	(Parameters for Protection Log Analysis)
PUX11	(Parameters for User-Exit-11 Communication Run)
PUX4	(Parameters for User-Exit-4 Communication Run)
PPRESUM	(Parameters for PRESUM Run)
PSTARTUP	(Parameters for TRMTAP, TRMLOG, and TRMRSP)
PSLOW	(Parameters for Batch Selective Slowdown)
TRMTAP	(Macro - Time Adjustable Parameters)
TRMLOG	(Macro - Start-up Logging Parameters)
TRMRSP	(Macro - Exceptional Response Code Parameters)
TRMRPT	(Macro - Extended Summary Reporting)
TRELOG	(Macro - tRelational Logging Parameters)
TRMSLO	(Macro - Batch Selective Slowdown)
TSIUINFO	(Macro - Map TRIM User Information Area Segment)
UINFO	(Macro - Find or Build a User Information Area Segment)

The Source Library requires seven tracks of 3380 disk space or the equivalent.

The Object Library (VSE only) contains approximately 60 object members and requires 15 tracks of 3390 disk space or the equivalent.

The Load Library (or Core Image Library for VSE) to be created via several link-edits requires two cylinders of 3390 disk space or the equivalent.

Link-edit Process

Link-edit steps for each operating system combine specific members into the appropriate load modules necessary in a TRIM environment, including:

TRIM	(Batch Multi-Purpose Program)
TRMUEX11	(User-Exit-11)
TRMUEX4S	(Small User-Exit-4)
TRMUEX4R	(Regular User-Exit-4)
TRMUEX4L	(Large User-Exit-4)
TRMUEX8	(User-Exit-8)

The TRIM Natural Code

TRM.Vvrs.SYSOBJH contains the Natural code in SYSOBJH format.

These SYSOBJH files contain Real-Time Monitor object code and three source members (TRMCUST, TRMFIN, and TRMIPSWD). The SYSOBJH dataset requires 90 tracks of 3390 disk space or the equivalent.

The TRIM. TNM File

The TRM.Vvrs.SYSOBJH.TNMFILE dataset contains the TNM file. This dataset requires a minimum of 15 tracks of 3390 disk space.

II.1.1 Installation Checklist

The installation procedure steps for TRIM, which are described in detail later, for all operating systems and TP monitors, are summarized on the checklist below. This checklist can be used when installing TRIM.

Note: TNM is not a required component of TRIM.

X	STEP	FUNCTION	SECTION	REQUIRED
	T1	Allocate space for, and catalog, the TRIM source and load libraries/mini-disks.	II.2	Y
	T2	Copy the datasets from the installation tape (or electronic distribution) to DASD.	II.2	Y
	T3	Apply TRIM authorization zap, maintenance, and any customization zaps.	II.3	Y
	T4	Link and Incorporate TRMTAP, TRMLOG, TRMRSP, TRMRPT and/or TRELOG. Link the TRIM load modules.	II.4.1 II.4.2	N Y
	T5	Install the TRIM Real-Time Monitor.	II.5	Y
	T6	Create the TNM ADABAS file.	II.6	TNM ONLY
	T7	Load the TNM DDM	II.7	TNM ONLY
	T8	Modify the NATPARMS.	II.8	Y
	T9	Link the TRIM Link-Exits to the ADABAS Link Routine.	II.9	Y
	T10	Create a Re-entrant ADABAS Link Routine.	II.10	TNM ONLY
	T11	Incorporate Co-Existing User-supplied Link-Exits.	II.11	N
	T12	Modify ADABAS Startup Parameters.	II.12	Y
	T13	Increase Sizes for ADABAS and NATURAL.	II.13	N
	T14	Restart the database(s), NATURAL(s), and TP Monitor(s).	II.14	Y
	T15	Modify TRMCUST.	II.15	
	T16	Define TNM data collection parameters.	II.16	TNM ONLY
	T17	Verify the TNM installation.	II.17	TNM ONLY

II.2 Load Datasets

TRIM is distributed via zip distribution.

II.2.1 Load datasets from an electronic distribution

You must have an FTP server running on your mainframe and an FTP client running on your PC in order to transfer these files.

1. z/OS sites

a. Allocate the following datasets:

<u>Dataset</u>	<u>DCB information</u>
TEMP.TRMVvrs.SOURCE	RECFM=FB,LRECL=80, BLKSIZE=3120, SPACE=(CYL,(2,2),RLSE)) ,DSORG=PS
TEMP.TRMVvrs.LOAD	RECFM=FB,LRECL=80, BLKSIZE=3120, SPACE=(CYL,(4,4),RLSE)) ,DSORG=PS
TEMP.TRMVvrs.SYSOBJH	RECFM=FB,LRECL=256, BLKSIZE=2560, SPACE=(CYL,(3,3),RLSE)) ,DSORG=PS
TEMP.TRMVvrs.SYSOBJH.TNMFILE	RECFM=FB,LRECL=256, BLKSIZE=2560, SPACE=(CYL,(3,3),RLSE)) ,DSORG=PS
TEMP.TRMVvrs.SYSOBJH.DDM	RECFM=FB,LRECL=256, BLKSIZE=2560, SPACE=(CYL,(3,3),RLSE)) ,DSORG=PS
TRM.Vvrs.README	RECFM=FB,LRECL=80, BLKSIZE=8000, SPACE=(CYL,(1,1),RLSE)) ,DSORG=PS
TRM.XMITRECV.JCL	RECFM=FB,LRECL=80, BLKSIZE=8000, SPACE=(CYL,(1,1),RLSE)) ,DSORG=PS

b. Transfer the following files in BINARY mode:

- TRMVvrs.SOURCE.XMIT to TEMP.TRMVvrs.SOURCE
- TRMVvrs.LOAD.XMIT to TEMP.TRMVvrs.LOAD
- TRMVvrs.SYSOBJH to TRMVvrs.SYSOBJH
- TRMVvrs.SYSOBJH.DDM to TRMVvrs.SYSOBJH.DDM
- TRMVvrs.SYSOBJH.TNMFILE to TRMVvrs.SYSOBJH.TNMFILE

- c. Transfer the following files in ASCII mode
- README.TXT to TRM.Vvrs.README
 - TRM.XMITRECV.JCL.TXT to TRM.XMITRECV.JCL

Once the binary transfers are complete, customize the TRM.XMITRECV.JCL according to site standards, then execute it. This job will receive the files transferred in binary format to the following datasets (named the same as the tape distribution).

TRM.Vvrs.ZOS.SOURCE

TRM.Vvrs.ZOS.LOAD

2. VSE sites

a. Allocate the following datasets:

<u>Dataset</u>	<u>DCB information</u>
TRMVvrs.VSE.LIBR	RECFM=FB,LRECL=80, BLKSIZE=80, SPACE=(CYL,(30,30))
TRMVvrs.SYSOBJH	RECFM=FB,LRECL=256, BLKSIZE=2560, SPACE=(CYL,(3,3)), DSORG=PS
TRMVvrs.TNMFILE.SYSOBJH	RECFM=FB,LRECL=256, BLKSIZE=2560, SPACE=(CYL,(3,3)), DSORG=PS
TRMVvrs.TNMFILE.SYSOBJH.DDM	RECFM=FB,LRECL=256, BLKSIZE=2560, SPACE=(CYL,(3,3)), DSORG=PS
TRM.Vvrs.README	RECFM=FB,LRECL=80, BLKSIZE=8000, SPACE=(CYL,(1,1)), DSORG=PS

b. Transfer the following files in BINARY mode:

- TRMVvrs.VSE.LIBR to TRMVvrs.LIBR
- TRMVvrs.SYSOBJH to TRMVvrs.SYSOBJH
- TRMVvrs.TNMFILE.SYSOBJH.DDM to TRMVvrs.TNMFILE.SYSOBJH.DDM
- TRMVvrs.TNMFILE.SYSOBJH to TRMVvrs.TNMFILE.SYSOBJH

c. Transfer the following files in ASCII mode

- README.TXT to TRM.Vvrs.README

d. Code and submit a LIBR run using the FTP'd LIBR dataset as SYSIPT to CATALOG the sample JCL, objects, macros and sample source members to a private library..

```
* $$ JOB JNM=TRIMLOAD,CLASS=0,DISP=D
* $$ LST DISP=D,CLASS=A
*
* *****
* VSE JCL TO INSTALL (LOAD) TRIM JCL &TEXT
* USE OUTPUT TAPE FROM JVSDBLK FOR INPUT TO THIS JOB
* *****
*
// JOB TRIMLOAD RESTORE TRIM VSE SUBLIB
// DLBL IJSYSIN,'ftp'e libr'
// ASSGN SYSIPT,cuu POINT TO FTP'E LIBR File
/// DLBL TSILIB,'TSILIB.LIBRARY',,VSAM,CAT=USERCATX,DISP=(OLD,KEEP)
// EXEC LIBR,PARM='ACCESS S=TSILIB.TRIMvrs'
*
/&
* $$ EOF
```

3. VSE sites running VSE-ESA

Sites running a non-Z version of VSE must install a further package from the electronic distribution package.

TRMVvrs.VSE.LIBR.ESA contains those components, which have been customized to use the ESA instruction set only.

- Transfer TRMVvrs.VSE.LIBR.ESA to the already allocated to TRMVvrs.LIBR file on disk
- Re-run the TRMLOAD job from above

The sequence first LIBR, second LIBR.ESA is mandatory!

II.3 Apply TRIM Fixes and Zaps

II.3.1 Authorization Zap

A TRIM Authorization Zap (Trial or Sold) is required to operate TRIM.

Before proceeding with the TRIM installation, apply a zap to set the expiration date for a trial or a sold site. This zap is necessary for the proper functioning of TRIM. .

OS

Apply the authorization zap provided from Treehouse support.

We strongly recommend to apply the zap to the individual modules named in the zap data, to avoid the risk of losing the authorization zap if a re-link should become needed (module replacement as maintenance and/or customization changes (TRMTAP, TRMLOG, etc.)).

VSE

Before applying the authorization zap, it is necessary to define the current TRIM version to MSHP.

Modify the supplied JVSMSHP.J sample JCL to conform to your local library naming conventions <lib> and standards before submitting the job.

```
* $$ JOB JVSMSHP,CLASS=0,DISP=H,PRI=3
* $$ LST LST=SYSLST,CLASS=Q
// JOB JVSMSHP          DEFINE TRIM Vvrs TO MSHP
// OPTION LOG
// EXEC MSHP
  ARCHIVE TRMvrs
  COMPRISES 9999-TRM-00
  RESOLVES 'TREEHOUSE SOFTWARE - TRIM vrs

  ARCHIVE 9999-TRM-00-vrs
  RESIDENCE PRODUCT=TRMvrs      -
            PRODUCTION=<lib>.TRIMvrs      -
            GENERATION=<lib>.TRIMvrs

/*
/&
* $$ EOJ
```

II.3.2 Apply TRIM Fixes and Zaps

There may be corrections or fixes in the form of Zaps or replacement modules that must be applied to the distributed code. Refer to the TRM.Vvrs.README dataset for information on additional fixes and Zaps. If the README file indicates zaps and/or fixes have been included in the distribution, they must be applied before attempting to use TRIM.

Sites that are installing only the fix datasets as maintenance for an existing TRIM installation should re-link the following after loading the fixes:

TRIM
 TRMUEX4*
 TRMUEX8
 TRMUEX11
 and all ADALNKs/CICSGBLs with TSIUEX1/2G included.

TRM.Vvrs.README may contain more details about further changes.

Sites performing a full install of the full product will link the above components in the further course of the process.

zOS:

TRMVvrs.LOAD.FIX[*].XMIT

This dataset contains replacement modules as official fixes (in XMIT format). FTP and RECEIVE this dataset using the same steps used to process the TRM.Vvrs.LOAD.XMIT dataset.

TRMVvrs.SYSOBJH.FIX[*]

This dataset contains all NATURAL fixes as of the date of distribution. This dataset should be loaded using the Natural Object handler utility (SYSOBJH) into the TRMVvrs library with the REPLACE option specified. If a complete TRIM install is being done load this dataset immediately after loading the TRIM RTM NATURAL modules (**Section II.5.1 Load the Real-Time Monitor Natural Objects**). If a new set of official fixes is being applied, load this dataset now (be sure to specify REPLACE).

The JCL used to load the RTM can be modified to load these objects.

Note:

[*] The name may vary from A – Z depending on the fix level available.

VSE**TRMVvrs.VSE.MSHP.FIX[*]**

This dataset contains replacement modules and official fixes. These modules should be activated using MSHP, which will automatically select the defined library..

- a. Allocate the following dataset:

<u>Dataset</u>	<u>DCB information</u>
TRMVvrs.VSE.MSHP	RECFM=FB,LRECL=80, BLKSIZE=80, SPACE=(CYL,(30,30))

- b. If running zVSE transfer the following file in BINARY mode:

TRMVvrs.VSE.MSHP.FIX[*] to TRMVvrs.MSHP

Sites running a non-Z version of VSE have to transfer the following file in BINARY mode:

TRMVvrs.VSE.MSHP.FIX[*] to TRMVvrs.MSHP

- c. Code and submit a MSHP run using the FTP'd MSHP dataset as SYSIPT...

```
* $$ JOB JNM=TRIMLOAD,CLASS=0,DISP=D
* $$ LST DISP=D,CLASS=A
*
*
// JOB TRIMLOAD RESTORE TRIM VSE SUBLIB
// DLBL IJSYSIN,'ftp'e MSHP'
// ASSGN SYSIPT,cuu POINT TO FTP'E LIBR File
/// DLBL TSILIB,'TSILIB.LIBRARY',,VSAM,CAT=USERCATX,DISP=(OLD,KEEP)
// EXEC MSHP'
*
/&
* $$ EO
```

TRM.Vvrs.SYSOBJH.FIX[*] contains all NATURAL fixes as of the date of distribution. This dataset should be loaded into the TRMVvrs library using the Natural Object Handler utility with the REPLACE option specified.

If a complete TRIM install is being done load this dataset immediately after loading the TRIM RTM NATURAL modules (**Section II.5.1 Load the Real-Time Monitor Natural Objects**) If a new set of official fixes is being applied load this dataset now (be sure to specify REPLACE).

The JCL used to load the RTM can be modified to load these objects.

Note:

[*] The name may vary from A – Z depending on the fix level available.

II.4 Create the TRIM Load Modules

TRIM arrives with default settings for a reasonable amount of statistics to be retained and for the manner in which they will be displayed. There are several ways that these default settings may be altered.

If a temporary change is desired until the database session ends, the best way to make the change is through the TRIM Real-Time Monitor CTRL screen.

If a permanent change is desired and will be the same for later database sessions, the best way to make the change is by tailoring with Zaps. Follow the directions in **Section VI Tailoring with Zaps**.

II.4.1 Link and Incorporate TRMTAP, TRMLOG, TRMRSP, TRELOG (Optional)

In order to make TRIM as efficient as possible, statistics collection should be turned off when the statistics will not be viewed. This can be described as a permanent change, but for some sites, the change needs to be flexible during different hours of each day. The way to make the change is to use the TRMTAP, TRMLOG, and TRMRSP macros. These macros are supplied on the distribution tape. Assemblies must be run with JCL pointing to the TRIM source library as the macro library.

VM assemblies must be run using the TRMVvrs MACLIB macro library. A TRMTAP, TRMLOG, TRMRSP sample assembly may be done with the following commands:

```
GLOBAL MACLIB TRMVvrs
ASSEMBLE PSTARTUP
```

If tRelational statistics are to be accumulated, a TRELOG module must be assembled and linked into the appropriate TRMUEx4x. For information on the macros, refer to **Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, and TRMSLO**.

If TRMTAP, TRMLOG, TRMRSP, and/or TRELOG are used, the resulting assembled code must be included in an appropriate TRMUEx4 link-edit. The following is an example of the OS link-edit parameters:

```
INCLUDE TRMLOAD(TRMUEx4R) (or can use TRMUEx4S or TRMUEx4L)
INCLUDE TRMLOAD(USRTAP) (Optional Assembled TRMTAP macro)
INCLUDE TRMLOAD(USRLOG) (Optional Assembled TRMLOG macro)
INCLUDE TRMLOAD(USRRSP) (Optional Assembled TRMRSP macro)
INCLUDE TRMLOAD(USELOG) (Optional Assembled TRELOG macro)
NAME TRMUEx4R(R) (or can use TRMUEx4S or TRMUEx4L)
```

This job generates a condition code of 4.

TRMUEx11, TRMUEx8 and TRMUEx4x may be copied into the ADABAS Load Library or may remain in the TRIM Load Library, as long as the Trim Load library is concatenated as a STEPLIB to the ADABAS nucleus job/procedure.

Change the AMODE and RMODE values of the linkage editor parm statement to agree with the MODE of the ADABAS nucleus.

II.4.2 Link the TRIM Load Modules (Required)

If TRMTAP, TRMLOG, TRMRSP, and/or TRELOG are used, the resulting assembled object must be included in the appropriate TRMUEX4x link-edit step.

OS

Create the TRIM batch program and ADABAS user exits in the Trim load library. The OS JCL to link the TRIM modules is provided on the installation tape source library, member JOSLINK if you are running ADABAS V8. For sites using ADABAS V7 the sample JCL and IEWL control statements are found in JOSLINK7.

Comments in the JOSLINK member outline the changes needed for execution in a zIIP-enabled ADABAS nucleus.

The TRIM v8 JOSLINK job does not include a step to create load versions of the non-reentrant modules. The non-reentrant modules are included in the NATURAL link job from the TRIM v8 load library (as noted in **Section II.8 Link-edit TRIM User-exits into NATURAL**).

NOTE – As of Trim v8.2 the Trim authorization zap must be applied BEFORE running JOSLINK/JOSLINK7(see step II.3.2).

VSE

As of TRMv832 there is no longer a need to define the system date format via the include of TRMXDS (MM/DD/YYYY) or TRMXSDT (DD/MM/YYYY),

The format selected at IPL will be evaluated dynamically.

Sample JCL can be found in the members JVSLINK (for ADABAS V8) or JVSLINK7 (for ADABAS v7).

VM

If TRMTAP, TRMLOG, TRMRSP, and/or TRELOG are used, the resulting assembled text is included in the appropriate TRMUEX4 by the JVMGEN EXEC procedure.

The TRIM component modules are generated by running an EXEC supplied with each release. This is the JVMGEN EXEC, which has been loaded from the release tape. (When executing JVMGEN to build the batch TRIM MODULE, the ADABAS text library containing ADAUSER (ADABAS) must be available. If this is not handled automatically, use the CMS command "GLOBAL TXTLIB ADAVxxx" before JVMGEN.)

Before executing JVMGEN, be prepared to answer prompts for:

- the filemode desired for the batch TRIM MODULE file
- whether the ADABAS exits (11 and 4) are to be generated as a TXTLIB or as separate TEXT files
- the filename(s) and filemode desired for the TEXT or TXTLIB file(s) to contain the ADABAS exits
- the filenames of TEXT files (if any) containing TRIM start-up parameters and user-supplied ADABAS exits to be included with TRIM
- the size of TRIM User-Exit-4 desired
- the filemode where the TRIM files reside (refer to **Section II.2 Allocate Space, Install Code from Tape to Disk**)

When the EXEC prompts for the filemode for the user link routine, respond with a null line, indicating to skip building this file. This step will be completed later.

Enter the command "JVMGEN". The EXEC will then prompt for required information. Once completed, the EXEC will have created the TRIM Batch Module and the TRIM User-Exit-11 and User-Exit-4.

II.5 Install the TRIM Real-Time Monitor

II.5.1 Load the Real-Time Monitor Natural Objects

The TRIM Real-Time Monitor must be installed using the Natural Object Handler Utility (SYSOBJH) under NATURAL 4.2 or above. If the Software AG NATURAL SECURITY SYSTEM is installed, define the library TRMVvrs with the PREDICT XREF feature set to OFF. The TRIM SYSOBJH dataset contains no XREF data.

Note: It is strongly recommended that you run the TRIM RTM out of the TRMVvrs library. If the RTM modules are moved to a different library, excess data collection will occur and may cause User-Exit-4 tables to fill up quicker.

OS

Sample SYSOBJH related ZOS JCL and NATURAL commands to load the Real-Time Monitor

NATURAL modules are in member JOSNLOAD.

```
//SYSOBJH EXEC NATURAL
//CMWKF01 DD DSN=TRM.Vvrs.SYSOBJH,DISP=SHR
//CMPRINT DD SYSOUT=*
//DDCARD DD DISP=SHR,DSN=... (...)
//CMSYNIN DD *
//CMSYNIN DD *
SYSOBJH
LOADALL WHERE REPLACE STOP /*
```

The sample above assumes a PROC "NATURAL" exists as the installation standard.

Natural v4.2 sites may encounter an error using the above SYSOBJH load statement. If an error is encountered try this statement instead:

LOAD * LIB TRMV832 WHERE REPLACE ALL BATCHREPORT

Note: If the TRIM distribution included a SYSOBJH FIX[*] dataset, it should be loaded immediately after the TRM.Vvrs.SYSOBJH dataset. Replace should be specified on the SYSOBJH statement (i.e., LOAD * lib TRMVvrs WHERE REPLACE).

VSE

Sample SYSOBJH related VSE JCL and NATURAL commands to load the Real-Time Monitor NATURAL modules are in member JVSLOAD:

Sample JCL to load the SYSOBJH file:

```

* $$ JOB JNM=TRIMLOD3,CLASS=0,DISP=D,LDEST=*,PRI=3 /
* $$ LST CLASS=Z,DISP=D *
// JOB TRIMLOD3 - LOAD SYSOBJH *
// ASSGN SYS000,READER *
// DLBL CMWKF01,'TRIMv8x',,SD,BLKSIZE=2560 *
// EXTENT SYS001,VSE166,1,0,15,1500 *
// ASSGN SYS001,DISK,VOL=VSE166,SHR *
// EXEC NATBATCH,SIZE=NATBATCH,PARM='SYSRDR' *
DC='.',IM=D,MADIO=0,MT=0,OBJIN=R,MAXCL=0,ID=', ' *
WORK=(1),RECFM=F,LRECL=256,BLKSIZE=2560,SYSNR=1) *
/* *
ADARUN DBID=3,DEVICE=8391 *
/* *
SYSTEM,xxxx,xxxx *
LOGON SYSTEM *
SYSOBJH *
LOADALL WHERE REPLACE *
FIN *
/* *
/& *
* $$ EOJ *
```

The sample above assumes a "NATBATCH" exists as the installation standard.

Edit and modify the JCL to conform to local devices, libraries, and standards.

Note: If the TRIM distribution included a SYSOBJH FIX[*] dataset, it should be loaded immediately after the TRM.Vvrs.SYSOBJH dataset. Replace should be specified on the SYSOBJH statement (ie: LOAD * LIB TRMVVRS WHERE REPLACE).

VM

Sample SYSOBJH related EXEC and NATURAL commands to load the Real-Time Monitor NATURAL modules are in file JVMNLOAD EXEC. Modify the dfttape, dftmodname, and dftprint lines to specify site specific information:

```

/* LOAD NATURAL MODULES FOR TNM          */
dfttape   = 'TAP1'                        /* tape unit */
dftmodname = 'NATURALX'                   /* NATURAL module name */
dftprint  = 'TERMINAL'                    /* FILEDEF options for print */

Arg tape modname print
If tape   = '' Then tape   = dfttape
If modname = '' Then modname = dftmodname
If print  = '' Then print  = dftprint
Address 'COMMAND'
/* Is tape attached? Rewind tape. */
Do Forever
  Parse Var tape x 'TAP' y
  If x = '' & Index('0123456789ABCDEF',y) > 0 Then Do
    'TAPE REW ('tape
    If rc = 0 Then Leave
  End
  Say 'Enter the tape unit id (TAPn, or QUIT to quit):'
Pull tape
  If tape = 'QUIT' Then Exit 8
  End
/* Get NATURAL module name */
Do Forever
  If modname ^= '' Then Do
    Address 'CMS' 'STATE' modname 'MODULE *'
    If rc = 0 Then Leave
  End
  Say 'Enter the name of your NATURAL module file (or QUIT to quit):'
Pull modname
  If modname = 'QUIT' Then Exit 8
  End
/* Setup to call Natural */
'ERASE LUOUT1 CMSYNIN A'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A 0 F 80 (STRING B'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (FINIS STRING FIN'
'FILEDEF * CLEAR'
'FILEDEF CMWKF01' tape 'SL 1 (RECFM VB LRECL 254 BLKSIZE 2540'
'FILEDEF CMSYNIN DISK LUOUT1 CMSYNIN A'
'FILEDEF CMPRINT' print
/* Load INPL file */
Say 'Starting INPL for TNM NATURAL modules'
'EXEC' modname 'BATCH STACK=(INPL) WORK=(OS) AUTO=OFF',
'MADIO=0 IM=D MT=0 EJ=OFF'
If rc ^= 0 Then Do
  Say 'INPL for TNM NATURAL modules failed, return code = ' rc'.'
  Exit rc
  End
  Say 'TNM NATURAL modules loaded.'
'FILEDEF * CLEAR'
'ERASE LUOUT1 CMSYNIN A'
'TAPE RUN ('tape

```

Note: If the TRIM distribution included a SYSOBJH FIX dataset, it should be loaded immediately after the TRM.Vvrs.SYSOBJH dataset. Replace should be specified on the LOAD statement.

All Operating Systems

Logon to the TRIM NATURAL library (i.e., TRMVvrs) and use the command "LIST * *" to confirm that the Real-time Monitor modules are installed. There should be over 500 modules (MENU and all others starting with "TNM" or "TRM").

The TRMCUST, TRMFIN, and TRMIPSWD source programs are provided for user tailoring related to the NATURAL environment. For more information, refer to Section VIII NATURAL Source Modules.

NATURAL for DB2 is supported by TNM only if the TNM file, which is an ADABAS file, is available.

II.5.2 TRMUXCPY - Copy Software AG supplied user-exits

TRIM requires some Software AG supplied Natural Application Programming Interfaces (APIs) from the 'SYSEXT' library. The following API routines are used by TRIM:

USR0011N
USR0050N
USR0330N
USR0340N
USR0610N
USR1009N
USR1022N
USR1023N
USR1043N
USR2004N
USR2013N

The NATURAL documentation offers various options for using the NATURAL API contained in the SYSEXT library. Details can be found in the NATURAL for mainframe documentation -> Utilities -> SYSEXT -> Using a NATURAL API.

The supplied TRMUXCPY program in the TRIM library can be used to copy the needed API routines to the library of your choice. Start a NATURAL session, logon to the TRIM library (TRMVvrs).and invoke TRMUXCPY.

Note: It is always recommended to run the version of TRMUXCPY supplied with the latest delivery instead of manually copying the modules mentioned above.

II.6 Modify / ADD entries in the NATURAL parameter module

If the ADALNK/CICSGBL, etc. module is called from a NATURAL environment the TRIM Link-Exit-1 module exploits the NATURAL specific information from the control block passed as the 7th parameter.

For this reason, NATPARM module must define:

ADAPRM=ON

II.7 Link-edit User-exits to ADABAS Link Routine

ADABAS V8 introduced a new feature to define ADALNK defaults. Please refer to the Software AG Documentation "Installing ADABAS with TP-Monitor" for details.

TRIM makes use of Link-Exit-1/2 to gather information about the user's environment and to pass this information to TRMUEX11 and TRMUEX4x. Refer to **Section IV.5 Reporting on the NATURAL Module Name** for a description of the NATURAL information gathering process.

The TRIM Link-Exit-1 module must be installed in order to view NATURAL Program, User-ID, and Application information.

If a user-supplied Link-Exit-1 is to pass additional information in the USERINFO Area, it must use the method shown in **Section III Co-existing User-exits** for creating a user-defined USERINFO Area segment. Each segment requires six bytes plus the length of the user data, rounded up to a multiple of eight, to be added to the number of bytes required by TRIM (see description of LUINFO= below). **Section III Co-existing User-exits** of this manual shows the fields passed by TRIM Link-Exit-1. This section also indicates how a user-supplied Link-Exit-1 may access data within the TRIM USERINFO segment and/or pass non-TRIM data in the USERINFO Area.

Batch jobs may be slowed down by TRMUEX1G. For more information, refer to **Section VI Tailoring with Zaps and Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSLO**.

TRIM and SECURITRE exits may co-exist. Please refer to the Co-Existing User-exits section for more information.

TRIM makes use of Link-Exit-2 to gather ADABAS version and ADABAS Link Routine information.

To install the TRIM link exits into the ADABAS link routine follow these steps:

Add the following parameters to the global link definitions (LGBLSET macro)

- USERX1=YES
Specifies that the Link-User-Exit 1 should be called
- LX1NAME=TSIUEX1G
Name of the TRIM Link-User-Exit 1
- USERX2=YES
Specifies that the Link-User-Exit 2 should be called
- LX2NAME=TSIUEX2G
Name of the TSI Link-User-Exit 2
- LUINFO=nnn
nnn must be set to a value of at least 336 bytes to allow TRIM Link-User-Exit 1 to pass the relevant information about each command to TRMUEX4.
If any non-Treehouse Software Link-User-Exit 1 requires LUINFO, the value must be calculated by nnn+336, where nnn is the LUINFO size required by the other exit.

If Batch Selective Slowdown is being used, a TRMSLO module must be assembled and linked with TRMUEX1G (batch only) as follows:

OS

Add the following DD-statements and include cards to the definitions described in the Software AG documentation:

```
//TRMLOAD DD DISP=SHR,DSN=TRM.Vvrs.ZOS.LOAD
          INCLUDE TRMLOAD(TSIUEX1G)      (TSI Link-Exit-1)
          INCLUDE TRMLOAD(TSIUEX2G)      (TSI Link-Exit-2)
          INCLUDE TRMLOAD(TRMUEx1G)      (TRIM User-Exit-1)
          INCLUDE TRMLOAD(TRMSLO)        (Optional, only needed for batch slowdown)
```

OS

If Securitre and TRIM co-exist the TRIM specific additions (s. above) will create ADALNK/CICSGBL modules to be usable by both products.

However, we recommend including the most current versions of TSIUEX1G/TSIUEX2G, which are in common for both products.

VSE

Sample VSE JCL to create the ADALNK object is on the tape in member JVSALNK1.

```
* $$ JOB JVSALNK1,CLASS=0,DISP=H,PRI=3
* $$ LST LST=SYSLST,CLASS=Q
// JOB ASSEM          ASSEMBLE ADALNK TO CREATE OBJECT
// OPTION DECK
// LIBDEF *,SEARCH=ADALIB.ADABAST
// DLBL IJSYSPH,'SMA.SYSPCH.ONE'
// EXTENT SYSPCH,TEST00,1,0,1,350
// OPTION SYSPARM='99/01/01'
ASSGN SYSPCH,DISK,VOL=TSTWK1,SHR
// EXEC ASMA90,SIZE=(ASMA90,64K),C
          PARM='CPAT(SYSL),EXEC(LIBEXIT(EDECKXIT(ORDER=AE))),FOLD,C
          OP(VSE),LINECOUNT(056)'
+INC DBA.ADALNK
/*
CLOSE SYSPCH,PUNCH
*
* CATALOG ADALNK
// DLBL IJSYSIN,'SMA.SYSPCH.ONE'
// EXTENT SYSIPT,TEST00
ASSGN SYSIPT,DISK,VOL=TSTWK1,SHR
// EXEC LIBR,PARM='AC S=ADALIB.NATUPGD;CATALOG ADALNK.OBJ R=Y'
/*
CLOSE SYSIPT,READER
/. EOJ
/&
* $$ EOJ
```

Sample VSE JCL to create the PHASE ADALNK is found on the tape in member JVSALNK2.

```
// LIBDEF *,CATALOG=ADALIB.NATUPGD
// LIBDEF *,SEARCH=(ADALIB.NATUPGD,ADALIB.TRMvrs)
// EXEC PROC=MSHPTECH
// OPTION CATAL
...*
          INCLUDE TRMLOAD(TSIUEX1G)      (TSI LINK-Exit-1)
          INCLUDE TRMLOAD(TSIUEX2G)      (TSI LINK-Exit-2)
          INCLUDE TRMLOAD(TRMUEx1G)      (TRIM Link-Exit-1)
          INCLUDE TRMLOAD(TRMSLO)        (Optional if batch slowdown is selected)
// EXEC LNKEDT
*
/*
/&
* $$ EOJ
```

For more information, refer to **Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, and TRMSLO.**

II.8 Incorporate Co-existing User-supplied User-exits

Co-existing Link-Exit-1s

User-supplied Link-Exit-1 may also be included as part of the link-edit process. To interface the TRIM Link-Exit-1 with user-supplied Link-Exit-1s, refer to Section III Co-existing User-exits.

The TRIM Link-Exit-1 will be invoked by the appropriate ADALINK routine and will, in turn, invoke the user-supplied Link-Exit-1 before returning to ADALINK.

Co-existing Link-Exit-2s

User-supplied Link-Exit-2s may also be included as part of the link-edit process. To interface the TRIM Link-Exit-2 with user-supplied Link-Exit-2s, refer to Section III Co-existing User-exits section.

The TRIM Link-Exit-2 will be invoked by the appropriate ADALINK routine and will, in turn, invoke the user-supplied Link-Exit-2 before returning to ADALINK.

Co-existing User-Exit-11

If it is desired to have the TRIM User-Exit-11 and the user's own User-Exit-11 "co-exist", the user's User-Exit-11 should be invoked first by ADABAS. Then it should call the TRIM User-Exit-11 in the manner described in **Section III Co-existing User-exits**. User-Exit-11 is called immediately before ADABAS processes a command.

For an ADABAS V7 system User-Exit-1 should be used in the same way.

Co-existing User-Exit-4

If it is desired to have the TRIM User-Exit-4 and the user's own User-Exit-4 "co-exist", the user's User-Exit-4 should be invoked first by ADABAS. Then it should call the TRIM User-Exit-4 in the manner described in **Section III Co-existing User-exits**. User-Exit-4 is called immediately after ADABAS processes a command and before the Command Log Record is written.

Co-existing User-Exit-8

If it is desired to have the TRIM User-Exit-8 and the user's own User-Exit-8 "co-exist", the user's User-Exit-8 should be invoked first by ADABAS. Then it should call the TRIM User-Exit-8 in the manner described in **Section III Co-existing User-exits**. User-Exit-8 is called whenever a command is received from or a message is sent to the operator.

Co-Existing TRIM and SECURITRE User-exits

The new TSI Link-Exit-1/2 modules TSIUEX1G/2G allow TRIM and Securitre to co-Exist without any additional includes in the ADALNK. SECURITRE's User-Exit-11 should be invoked first, then an optional user-supplied User-Exit-11, followed by the TRIM User-Exit-11. SECURITRE's User-Exit-4 is not necessary when co-existing with TRIM. To interface TRIM with SECURITRE, refer to **Section III Co-existing User-exits**.

Co-Existing NATURAL User-exits

TNM exits have been written to interface with user-supplied user-exits. Refer to **Section III Co-existing User-exits**.

Note: If SECURITRE for NATURAL is being used, TRIM user-exits for NATURAL must co-exist with the SECURITRE NATURAL user-exits. Refer to **Section III Co-existing User-exits**.

II.9 Modify ADABAS Startup Parameters

The TRIM RTM requires ADABAS to be running and ADABAS Command Logging to be turned on in order to run its User-Exit Communication Runs, use its Real-Time Monitor, and generate Nucleus Session Statistics. However, it is not necessary to actually log any data.

Command logging must be turned on in ADABAS and the Command Log dataset may not be "DUMMY" because ADABAS will only transfer control to User-Exit-4 if it senses that the command logs are to be written to a live dataset.

Usage of TRIM's PRESUM feature only works if either DUAL or multiple logging is in effect. PRESUM will not work if single logging (DDLOG) is in effect!

The ADABAS parameters required are:

	LOGGING=YES	
	LOGCB=YES	other buffer logging at user's discretion
	UEX4=TRMUEx4x	(where x is S, R, or L).
	UEX11=TRMUEx11	for dynamic Control and Security Facility
		in an ADABAS V8 system
or	UEX1=TRMUEx1	for dynamic Control and Security Facility
		in an ADABAS V7 system
	UEX8=TRMUEx8	for PRESUM writing to CLOG

The load modules indicated in UEX11/UEX1, UEX8 and UEX4 must be in the Adabas load library that is specified in the Adabas nucleus).

The logging of CLOG records may be completely turned off, may be selectively turned on/off, and/or may have various ADABAS call buffers removed from log records. These logging selections may be specified via TRIM User-Exit-4 Communication Runs and/or TRMLOG parameters.

NATURAL generates additional user-IDs and TNM will generate an additional user-ID for each TNM user. The increase in user-IDs may cause response code 72 errors. This may be avoided by increasing the size of the NU ADARUN parameter.

II.10 Increase Sizes for ADABAS, NATURAL

The additional storage requirements in the ADABAS partition/region to accommodate the TRIM user-exits to ADABAS are as follows:

TRMUJEX11	8K	RMODE(24)
TRMUJEX4S/R/L	75K	RMODE(24)
TRMUJEX8	4K	RMODE(ANY)

The storage for the accumulators and traces is dynamically allocated (LOC=ANY) at start-upload:

TRMUJEX4L	910K
TRMUJEX4R	674K
TRMUJEX4S	314K

Note: The TRMUJEX4S, R, or L size will be increased by the size of TRELOG if tRelational logging is included.

For more information about the limits and restrictions for the different sizes of TRMUJEX4x, refer to **Section IV Real-Time Monitor Operations**.

Additional storage is required for NATURAL with TNM.

For Batch/TSO, COM-LETE/TPF, and IMS, the additional storage requirements for NATURAL are 6K for the TNM assembler modules and an additional 8K for each NATURAL user.

For CICS, the additional storage requirements for NATURAL are 6K for the TNM assembler modules. It may be necessary to increase the thread size by 8K or more. Use the NATURAL BUS utility to monitor thread usage and to reclaim unused space from other buffers.

VM

Increase the Size of the Virtual Machine

If a site is not running NATURAL from a DCSS (Discontiguous Shared Segment), then increase the size of each virtual machine that will be running TNM. A machine size of 4M should be sufficient. To increase the size of the virtual machine, issue the following command:

```
DEF STOR 4M
```

If a site is running NATURAL from a DCSS, the DCSS needs to be saved at 2M or higher. See a VM System Administrator on loading a DCSS for NATURAL.

II.11 Restart the Database(s), NATURAL(s), TP Monitor(s)

To invoke the newly installed TRMUJEX4x and optional TRMUJEX11 and TRMUJEX8 to ADABAS, all appropriate ADABAS Nuclei must be brought down and up.

For execution in a zIIP-enabled ADABAS nucleus the start-up JCL must be customized to define the SYSOUT name for the separate PRINT dataset used by TRMUJEX4* (default TSIPRINT).

To invoke the newly modified ADABAS link routines with TRIM user-exits and the newly linked NATURALs with TRIM user-exits, the TP system(s) that run NATURAL must be "recycled" according to site standards and procedures.

II.12 Modify TRMCUST

TRIM RTM will as default try to connect to the database, where the FUSER file with the TRIM RTM modules is stored.

If that database does has not been configured to run TRMUJEX4x or you want to set another default DBID for TRIM RTM then TRMCUST must be modified.

Logon to the TRIM installation library (the default is TRMVvrs), edit the TRMCUST module and modify the line that reads (approximately 830ff)

```
IF #DEFAULT-DBID EQ 0
  MOVE 3      TO #DEFAULT-DBID      /*SET THE DEFAULT DBID
END-IF
```

Other options are documented at the top of the TRMCUST module.

II.13 TNM Installation

II.13.1 Customize TNM settings (TNMCONF)

TNM is customized using the TSICCFG macro:

```
TNMCONF  TSICCFG TNMWORKB=USERBUF,      +
          ADALNK=ADALNKR,                +
          CICSLNK=ADACICS
```

TNMWORKB WORK BUFFER LOCATION
USERBUF
ZSIZE

By default, TNM GETMAINs its statistics accumulation area from the NATURAL User Buffer (USERBUF).

When assembling the NATPARM module with the USERBUF parameter specified, the following message will appear in the listing:

```
USERBUF PARAMETER IS NO LONGER USED FOR THE DATA COLLECTOR.  
PLEASE USE RDCSIZE INSTEAD.
```

These messages may be ignored.

If the default installation of TNM interferes with the use of the NATURAL User Buffer by another system installed under NATURAL, TNMWORKB=ZSIZE should be defined.

ADALNK Name of the reentrant ADALNK created for TNM
ADALNKR

CICSLINK NAME OF ADABAS LINK ROUTINE FOR CICS
ADACICS

Must match the value of the ENTPT keyword of the LGBLSET definitions for CICS.

INTVR Interval (minutes) reading TNM parameters
allowed values 1 - 10

INTVW Interval (minutes) writing reading TNM session recording data
allowed values 1 - 10

All other keywords of the TSICCFG macro should only be modified if requested by Treehouse support!

This macro must be assembled and the resulting load module (zOS) should be stored under the name TNMCONF into the TRM.Vvrs.load. For zVSE the object should be place into TRMLIB.TRMVvrs.

II.13.2 Modify / ADD entries in the NATURAL parameter module

For TNM the following parameters must be added / adjusted to the NATPARM generation:

NTPRM macro

USERBUF/ZSIZE=12 depending on TNMWORKB value in TNMCONF
If USERBUF or ZSIZE is already in use, the amount needed
by TNM (12) should be added to the currently defined values.

CSTATIC= TNMOPTS, add to existing definitions

NTLFILE macro

NTLFILE 121,ddd,fff where:
ddd represents the ADABAS Database-ID
fff represent the file number of the TNM-DATA file

NTRDC macro

NTRDC ON,EVENT=ALL,EXIT=(TSIRDC,2024),SIZE=2
If a RDC exit is already in use please refer to
Section III Co-existing User-exits

If different NATPARM modules are used for batch and on-line, all NATPARM modules must be changed.

As shown below, supplied modules must be linked into all NATURAL environments, including: BATCH, TSO, CICS, and COM-LETE. The TRIM/TNM modules are coded re-entrant and marked "RENT,REUS".

Add the following INCLUDE statements before NATLAST:

zOS and VSE

TRMLOAD DD should point to the TRIM LOAD library.

For all NATURAL nuclei

```
INCLUDE TRMLOAD(TNMCONF)                      or other name selected
INCLUDE TRMLOAD(TSIRDC__)
INCLUDE TRMLOAD(TNMOPT__)
INCLUDE TRMLOAD(TNMOD__A)
INCLUDE TRMLOAD(TNMOD__B)
INCLUDE TRMLOAD(TNMOD__C)
INCLUDE TRMLOAD(TNMOD__D)
INCLUDE TRMLOAD(TNMDRV__)
INCLUDE TRMLOAD(TNMRDC__)                      where __ represents the used Natural Version and
Release (41, 42, 82 or 91)

INCLUDE TRMLOAD(TNM__DRV)                      where _ represents the operating system
M = zOS
D = VSE
```

TNM under CICS

INCLUDE TRMLOAD(TSICIADA)

INCLUDE CICSLOAD(DFHEAI)

INCLUDE CICSLOAD(DFHEAIO)

if not already specified and no DFHELLI

if not already specified

Note: If a site is using a shared NATURAL nucleus, all the modules mentioned above, except TNMOPT__ , must be included in both portions of the NATURAL nucleus (environment dependent and shared).

This is also true if TRIM (TNM) is installed under CICS where TSICIADA (from the TRIM load library), DFHEAI/DFHELLI and DFHEAIO (both from the CICS load library) must be added to the environment and the shared portion.

TNMOPT__ must only be included in the environment-dependent nucleus or to the parameter module only.

VM

Use the standard EXEC (NAT\$LOAD) to link NATURAL, and add the following statements (based on Natural version):

Non-TNM installation

Loadlist = loadlist 'TSIRDC__', where __ represent the used Natural Version and Release (41, 42, 82 or 91.)

TNM Installation

Natural 4.1

Loadlist = loadlist 'TNMVDRV'
Loadlist = loadlist 'TNMCONF'
Loadlist = loadlist 'TNMOPT__'
Loadlist = loadlist 'TNMMOD__A'
Loadlist = loadlist 'TNMMOD__B'
Loadlist = loadlist 'TNMMOD__C'
Loadlist = loadlist 'TNMMOD__D'
Loadlist = loadlist 'TNMDRV__'
Loadlist = loadlist 'TNMRDC__' where __ represent the used Natural Version and Release (41, 42, 82 or 91)

If your NATURAL generation procedure uses LKED rather than LOAD/INCLUDE, use:

```
FILEDEF TNMVDRV DISK TRMVvrs TXTLIB * (PERM MEMBER TNMVDRV)
FILEDEF TNMCONF DISK TRMVvrs TXTLIB * (PERM MEMBER TNMCONF)
FILEDEF TNMMODA DISK TRMVvrs TXTLIB * (PERM MEMBER TNMOD__A)
FILEDEF TNMMODB DISK TRMVvrs TXTLIB * (PERM MEMBER TNMOD__B)
FILEDEF TNMMODC DISK TRMVvrs TXTLIB * (PERM MEMBER TNMOD__C)
FILEDEF TNMMODD DISK TRMVvrs TXTLIB * (PERM MEMBER TNMOD__D)
FILEDEF TNMDRV DISK TRMVvrs TXTLIB * (PERM MEMBER TNMDRV__)
FILEDEF TNMOPTS DISK TRMVvrs TXTLIB * (PERM MEMBER TNMOPT__)
FILEDEF TNMRDC DISK TRMVvrs TXTLIB * (PERM MEMBER TNMRDC__)
FILEDEF TSIRDC DISK TRMVvrs TXTLIB * (PERM MEMBER TSIRDC__)
```

where __ represent the used Natural Version and Release (41, 42, 82 or 91)

If using NAT\$LOAD (via NATBLDM/NATBLDS), the simplest procedure is using the following:

- Modify NAT\$LOAD by removing the statement (approximately line 105):
if rc=0 then exit 0
and change the statement (approximately line 116):
do while rc>0
to read:
do forever

II.13.3 Create Re-entrant ADALINK

TNM maintains statistics through an independent link to the ADABAS address space by issuing an ADABAS OPEN command with a newly-generated and unique ADABAS User-ID. This separate connection needs to be established because the transaction logic used by TNM to maintain statistics would normally conflict with that being used in the NATURAL application being monitored. This process requires a re-entrant ADABAS link routine.

This separate link to ADABAS is established by creating a duplicate ADABAS link routine for use specifically by the TNM exits to NATURAL. The Re-entrant ADALNK is created by selecting the re-entrant option in the global link definitions.

II.13.4 Create the TNM ADABAS File (TNM Only)

The statistics collected by the TRIM NATURAL Monitor user-exits to NATURAL are accumulated in the TNM file, which is a standard ADABAS file. The TNM file maintains certain parameter and control information needed by TNM to determine what activity is to be monitored.

Load the TRM.Vvrs.SYSOBJH.TNMFILE dataset to the appropriate ADABAS database(s). The TRM.Vvrs.SYSOBJH.TNMFILE file is an SYSOBJH FDT dataset. This dataset may be input directly into the NATURAL SYSOBJH utility. The sample JCL assumes a cataloged procedure named NATURAL exists in the system to invoke NATURAL. This JCL is provided for reference only and will not execute as displayed here.

OS

Sample JCL (located in the TRM.Vvrs.VM.SOURCE library, member JOSFDT) to load the TNM FDT follows:

```
//JOSFDT EXEC NATURAL
//CMWKF01 DD DSN=& TRM.Vvrs.SYSOBJH.TNMFILE,DISP=SHR
//CMPRINT DD SYSOUT=*
//DDCARD DD DISP=SHR,DSN=...(...)
//CMSYNIN DD *
LOGON SYSTEM
SYSOBJH
LOAD FDT DBID 1 FNR 121 WITH NEWFDTDBID ### NEWFDTFNR ###%
WHERE REPORT FIXED
STOP
FIN
```

VM

A sample VM EXEC (located in the TRM.Vvrs.VM.SOURCE library, member JVMFDT) to load the TNM DDM follows:

```
/* LOAD FDT for TNM-DATA file */

dfttape = 'TAP1' /* tape unit */
dftmodname = 'NATURALX' /* NATURAL 2 module name */
dftprint = 'TERMINAL' /* FILEDEF options for print */

Arg tape modname print
If tape = '' Then tape = dfttape
If modname = '' Then modname = dftmodname
If print = '' Then print= dftprint
Address 'COMMAND'
/* Is tape attached? Rewind tape. */
Do Forever
  Parse Var tape x 'TAP' y
  If x = '' & Index('0123456789ABCDEF',y) > 0 Then Do
    TAPE REW ('tape
    If rc = 0 Then Leave
  End
  Say 'Enter the tape unit id (TAPn, or QUIT to quit):'
  Pull tape
  If tape = 'QUIT' Then Exit 8
End
```

Section II - Installation

```
/* Get NATURAL module name */
Do Forever
  If modname ^= '' Then Do
    Address 'CMS' 'STATE' modname 'MODULE *'
    If rc = 0 Then Leave
  End
  Say 'Enter the name of your NATURAL module file (or QUIT to quit):'
  Pull modname
  If modname = 'QUIT' Then Exit 8
End

/* Setup to call Natural */
'ERASE LUOUT1 CMSYNIN A'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A 0 F 80 (STRING LOGON SYSTEM'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING SYSOBJH'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING LOAD FDT DBID 1 FNR 121 WITH%'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING NEWFDTDBID ### NEWFDTFNR ###%'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING WHERE REPORT FIXED'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING STOP'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (FINIS STRING FIN'
'FILEDEF * CLEAR'
'FILEDEF CMWKF01' TAPE 'SL 11 (RECFM FB LRECL 256 BLKSIZE 2560'
'FILEDEF CMSYNIN DISK LUOUT1 CMSYNIN A'
'FILEDEF CMPRINT' print
/* Load INPL file */
Say 'Starting SYSOBJH FDT LOAD for TNM-DATA file'
'EXEC' modname 'BATCH',
      'WORK=(OS) AUTO=OFF MADIO=0 IM=D MT=0 EJ=OFF'
If rc ^= 0 Then Do
  Say 'Load for TNM-DATA file failed, return code = ' rc'.'
  Exit rc
End
Say ' TNMFILE-DATA FDT loaded.'
'FILEDEF * CLEAR'
'ERASE LUOUT1 CMSYNIN A'
'TAPE RUN ('tape
```

VSE

A sample VSE JCL and NATURAL commands (located in the TRM.Vvrs.VSE.SOURCE library, member JVSFDT) to load TNM DDM follows:

```
* $$ JOB JNM=JVSLOAD,CLASS=0,DISP=L,PRI=8
* $$ LST LST=SYSLST,CLASS=Q
// JOB JVSINPL
* THIS JOB MUST BE RUN IN THE ADABAS BATCH
* PARTITION AND A TAPE UNIT MUST BE ATTACHED
// ASSIGN SYS000,READER
// ASSIGN SYS001,380          FOR RELEASE TAPE
// MTC REW,SYS001
// MTC FSF,SYS001,22        TAPE POSITIONING
// TLBL CMWKF01
* ISSUE ADABAS DLBLS HERE
// EXEC NATXXXX,SIZE=(AUTO,64K),PARM='SYSRDR'
FUSER=(009,207),FNAT=(009,206)
BWORKD=(1,1,2560,FB)
BWORKDL=(1,NL)
BWORKDR=(1,NOREWIND)
OBJJIN=R
IM=D
MADIO=0
MAXCL=0
MT=0
STACK=OFF
/*
* PLACE STANDARD ADARUN PARMS HERE
/*
LOGON SYSTEM
SYSOBJH
LOADALL WHERE REPLACE REPORT FIXED
STOP
FIN
/*
// MTC REW,SYS001
/&
* $$ EOJ
```

Once the SYSOBJH FDT is loaded, SYSAOS should be used to create the corresponding ADABAS file. The SYSAOS Display FDT option can be used to view the FDT. It will show the FDT and say >>> FILE DELETED, BUT FDT KEPT <<<. Execute the DEFINE NEW FILE function from the SYSAOS File Maintenance screen to define the file.

The following information applies to the TNM file:

NAME: TNM-DATA
 SPACE: DSSIZE=(Calculate using formula below)
 NISIZE=50B

The space required varies, based on the number of records to be written to the file. The number of records depends on how TNM is used and how often the data is purged. Keep in mind that if TNM Detail Data Collection is being used, the file may fill up very quickly.

Summary Requirements

- 1 record for each user
- 1 record for each program/subprogram/subroutine executed

Detail Requirements

- 2 records for each program/subprogram/subroutine executed
- 2 records for each ADABAS call
- 1 record for each terminal I/O

Formula for Estimating the DSSIZE of the TNM File

$$\frac{(\text{Estimated Summary Records} + \text{Estimated Detail Records}) \times 100}{4338}$$

For example,

$$\frac{(5000 + 1000) \times 100}{4338} = 138 \text{ blocks.}$$

II.13.5 Load the TNM DDM into PREDICT

The TNM DDM allows the site to write NATURAL program(s) to report on information in the TNM data file. This is an optional step of the installation and should not be performed if site specific reporting will not be done.

Execute the SYSOBJH Load function to load the TNM DDM from the TRM.Vvrs.SYSOBJH.TNMFILE.DDM dataset.

The sample JCL assumes a cataloged procedure named NATURAL exists in the system to invoke NATURAL. This JCL is provided for reference only and will not execute as displayed here.

Once the TNM-DATA DDM has been loaded into PREDICT, users may reference it in their customer report programs.

Note: After loading the DDM, modify the database-ID and file number to the values assigned to the TNM ADABAS file.

OS

Sample JCL (located in the TRM.Vvrs.ZOS.SOURCE library, member JOSDDM) to load the TNM DDM follows:

```
//JOSDDM      EXEC   NATURAL
//CMWKF01    DD     DSN=TRM.Vvrs.SYSOBJH.TNMFILE.DDM,DISP=SHR
//CMPRINT    DD     SYSOUT=*
//DDCARD     DD     DISP=SHR,DSN=... (...)
//CMSYNIN    DD     *
LOGON SYSTEM
SYSOBJH
LOADALL WHERE REPLACE REPORT FIXED
STOP
FIN
/*
//
```

VM

A sample VM EXEC (located in the TRM.Vvrs.VM.SOURCE library, member JVMDDM) to load the TNM DDM follows:

```

/* LOAD DDM for TNM-DATA file */

dfttape =      'TAP1' /* tape unit */
dftmodname    =      'NATURALX' /* NATURAL 2 module name */
dftprint      =      'TERMINAL' /* FILEDEF options for print */

Arg tape modname print
If tape =      '' Then tape = dfttape
If modname    =      '' Then modname = dftmodname
If print      =      '' Then print= dftprint
Address 'COMMAND'
/* Is tape attached? Rewind tape. */
Do Forever
  Parse Var tape x 'TAP' y
  If x = '' & Index('0123456789ABCDEF',y) > 0 Then Do
    'TAPE REW ('tape
    If rc = 0 Then Leave
  End
  Say 'Enter the tape unit id (TAPn, or QUIT to quit):'
  Pull tape
  If tape = 'QUIT' Then Exit 8
End
/* Get NATURAL module name */
Do Forever
  If modname ^= '' Then Do
    Address 'CMS' 'STATE' modname 'MODULE *'
    If rc = 0 Then Leave
  End
  Say 'Enter the name of your NATURAL module file (or QUIT to quit):'
  Pull modname
  If modname = 'QUIT' Then Exit 8
End
/* Setup to call Natural */
'ERASE LUOUT1 CMSYNIN A'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A 0 F 80 (STRING LOGON SYSTEM'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING SYSOBJH'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING LOADALL WHERE REPLACE FIXED'
'EXECIO 1 DISKW LUOUT1 CMSYNIN A (STRING STOP'EXECIO 1 DISKW LUOUT1 CMSYNIN A (FINIS STRING FIN'
'FILEDEF * CLEAR'
'FILEDEF CMWKF01' TAPE 'SL 12 (RECFM FB LRECL 256 BLKSIZE 2560'
'FILEDEF CMSYNIN DISK LUOUT1 CMSYNIN A'
'FILEDEF CMPRINT' print
/* Load INPL file */
Say 'Starting SYSDICBE LOAD for TNM-DATA file'
'EXEC' modname 'BATCH',
      'WORK=(OS) AUTO=OFF MADIO=0 IM=D MT=0 EJ=OFF'
If rc ^= 0 Then Do
  Say 'Load for TNM-DATA file failed, return code = ' rc'.'
  Exit rc
End
Say ' JVMDDE-DATA DDM loaded.'
'FILEDEF * CLEAR'
'ERASE LUOUT1 CMSYNIN A'
'TAPE RUN ('tape

```

VSE

A sample VSE JCL and NATURAL commands (located in the TRM.Vvrs.VSE.SOURCE library, member JVSDDM) to load TNM DDM follows:

```
* $$ JOB JNM=JVSLOAD,CLASS=0,DISP=L,PRI=8
* $$ LST LST=SYSLST,CLASS=Q
// JOB JVSINPL
* THIS JOB MUST BE RUN IN THE ADABAS BATCH
* PARTITION AND A TAPE UNIT MUST BE ATTACHED
// ASSIGN SYS000,READER
// ASSIGN SYS001,380          FOR RELEASE TAPE
// MTC REW,SYS001
// MTC FSF,SYS001,24        TAPE POSITIONING
// TLBL CMWKF01
* ISSUE ADABAS DLBLS HERE
// EXEC NATXXXX,SIZE=(AUTO,64K),PARM='SYSRDR'
FUSER=(009,207),FNAT=(009,206)
BWORKD=(1,1,2560,FB)
BWORKDL=(1,NL)
BWORKDR=(1,NOREWIND)
OBJJIN=R
IM=D
MADIO=0
MAXCL=0
MT=0
STACK=OFF
/*
* PLACE STANDARD ADARUN PARMS HERE
/*
LOGON SYSTEM
SYSOBJH
LOADALL WHERE REPLACE REPORT FIXED
STOP
FIN
/*
// MTC REW,SYS001
/&
* $$ EOJ
```

Note: Detail collection in production environments may cause excessive data to be accumulated and the TNM file could become full. Therefore, extensive detail collection in production environments is not recommended.

II.13.6 **Modify TRMCUST for TNM**

To activate TNM processing, edit the TRMCUST module in the TRIM installation library (the default is TRMVvrs) and modify the line that reads

MOVE 'N' TO #TNM-ACTIVE (approximately lines 990 and 1060)

To

MOVE 'Y' TO #TNM-ACTIVE

This will tell TRIM to check for TNM exits, file, etc.

II.13.7 **Define TNM Data Collection Parameters (TNM Only)**

The first user to enter TNM must define the Data Collection Parameters.

The default has both Summary and Detail Data Collection turned off. Refer to **Section II.16.2.2 Define Data Collection Parameters** of the TRIM Reference Manual.

Note: Detail collection in production environments may cause excessive data to be calculated and the TNM file could become full. Therefore, extensive detail collection in production environments is not recommended.

II.13.8 Verify the TNM Installation (TNM Only)

TNM includes a NATURAL program (TNMA110P), which verifies that the TNM file is properly installed. It writes records to and from the TNM file to ensure that all of the fields are defined correctly and then deletes these records.

To run the TNM verification program, log on to the TRMVvrs Natural library and type "TNMA110P" on the command line.

Following the completion of program execution, a screen is displayed identifying any installation problems. The following problems may be displayed:

Error number: 920
Common cause: CSTATIC entries are not properly defined

Error number: 3017
Common cause: Logical files defined improperly

Error number: 3041
Common cause: Logical file defined is not the TNM file

Error number: 3061
Common cause: Logical files defined improperly

Error number: 3062
Common cause: Logical file defined is not the TNM file

Error number: 3075
Common cause: Not enough space in the TNM file

Error number: 3077
Common cause: Not enough space in the Associator

The following problem may be displayed:

```
THIS USER DID NOT SUCCESSFULLY INSTALL TNM MODULE TNMMODA.  
THERE IS NO WORK AREA DEFINED FOR THIS USER.
```

SECTION III

CO-EXISTING USER-EXITS

III.1 Introduction

There are linkage and parameter passing rules that must be strictly followed for user-supplied user-exits to co-exist with TRIM user-exits.

Co-existing Link-Exit-1s

A user-supplied Link-Exit-1 may be included with the ADABAS Link Routines. The TRIM Link-Exit-1 will be invoked by the ADABAS link routines and will, in turn, invoke the user-supplied Link-Exit-1 before returning to the link routine. For more information about interfacing TRIM Link-Exit-1 with user-supplied Link-Exit-1, refer to **Section III.2 Co-existing Link-Exit-1**.

Co-existing Link-Exit-2

A user-supplied Link-Exit-2 may be included with the ADABAS Link Routines. The TRIM Link-Exit-2 will be invoked by the ADABAS link routines and will, in turn, invoke the user-supplied Link-Exit-2 before returning to the link routine. For more information about interfacing TRIM Link-Exit-2 with user-supplied Link-Exit-2, refer to **Section III.3 Co-existing Link-Exit-2**.

Co-existing User-Exit-11

If it is desired to have the TRIM User-Exit-11 and the user's own User-Exit-11 "co-exist", the user's own User-Exit-11 should be invoked first by ADABAS. Then it should call the TRIM User-Exit-11 in the manner described in **Section III.5 Co-existing User-Exit-11**. User-Exit-11 is called immediately before ADABAS processes a command.

Co-existing User-Exit-4

If it is desired to have the TRIM User-Exit-4 and the user's own User-Exit-4 "co-exist", the user's own User-Exit-4 should be invoked first by ADABAS. Then it should call the TRIM User-Exit-4 in the manner described in **Section III.6 Co-existing User-Exit-4**. User-Exit-4 is called immediately after ADABAS processes a command and before the Command Log Record is written.

Co-existing User-Exit-8

If it is desired to have the TRIM User-Exit-8 and the user's own User-Exit-8 "co-exist", the user's own User-Exit-8 should be invoked first by ADABAS. Then it should call the TRIM User-Exit-8 in the manner described in **Section III.7 Co-existing User-Exit-8**. User-Exit-8 is called immediately after ADABAS receives a command from the operator console.

Co-existing TRIM and SECURITRE User-exits

The details for co-existence between TRIM and SECURITY are outlined in **Section III.7 Co-existing TRIM and SECURITRE User-exits**.

Co-existing TRIM User-exits to NATURAL

If TRIM user-exits to NATURAL are to co-exist with an additional user-exit, the TRIM user-exit should be invoked first. Then it should call the additional user-exit in the manner described in **Section III.8 Co-existing NATURAL User-exit**.

III.2 Co-existing Link-Exit-1

Note: zIIP-enabled ADALNK/CICSGBL will not execute any customer LINK-EXIT-1 when running in SRB-mode.
Because of that there is no way that TSIUEX1G can invoke a co-existing LINK-Exit-1.

General Information

TRIM Linkr-Exit-1 is re-entrant. It is not only marked "RENT,REUS", but also coded in re-entrant fashion. The user-supplied Link-Exit-1 for ADALNK does not need to be re-entrant unless the re-entrant source modification to ADALNK is made (see the ADALNK source) and the composite is linked as re-entrant. Link-exits for TP-environments should always be coded re-entrant, otherwise abends or incorrect data may result.

When setting up the linkage from the ADABAS Link Routine(s) to the TRIM Link-Exit-1 (and the user's user-exits), the USERINFO Area length must be set to at least **the LUINFO value documented in section II.9 Link-edit User-exits to the ADABAS link routine.**

It must be set to a larger value if a user-supplied Link-Exit-1 is to pass additional information in the USERINFO Area. **Section III.4 USERINFO Area** illustrates the definition and access of a user segment of the USERINFO Area. Each segment requires 6 bytes plus the length of the user data, rounded up to a multiple of 8, to be added to the LUINFO value required by TRIM.

The TRIM Link-Exit-1 will be invoked by the ADABAS link routines and will, in turn, invoke the user-supplied Link-Exit-1 before returning. Upon entry to the user's Link-Exit, the entry rules, register settings, etc., are identical to the entry for the first user-exit, TRIM Link-Exit-1. That is, when TRIM Link-Exit-1 is finished, control is passed to the user's Link-exit with the registers all restored to what they were when TRIM Link-Exit-1 was entered with the obvious exception that R15 is set to the address of the user's Link-Exit. In addition, the TRIM USERINFO Area will be provided to UEXITBU.

Note: TRIM V8 no longer supplies Link-Exit-1 modules depending on the environment (Batch, TSO, CICS, COM-LETE, etc.)

The user's user-exit will normally not be entered if the call comes through a Network environment or if TRIM Link-Exit-1 detects the USERINFO Area to be too small or improperly set. TRIM Link-Exit-1 may be zapped to force a transfer to the user's user-exit for all calls (refer to **Section VI Tailoring with Zaps**).

The user's user-exit is entered via a "BR R15", and when exiting, the user must do a "BR R14" to return to the ADABAS Link Routine directly.

The user must set R15 to zero to indicate acceptance or non-zero to indicate rejection of the call. If setting R15 to non-zero, the ADABAS Control Block Response Code field should be set to decimal 216 (meant for this condition) or another appropriate non-zero value, such as 200 (security violation).

The user's Link-Exit-1 must have an entry point UEXITBU and must be linked with the ADABAS Link Routine and the TRIM Link-Exit-1.

III.3 **Co-existing Link-Exit-2**

Note: zIIP-enabled ADALNK/CICSGBL will not execute any customer LINK-EXIT-2 when running in SRB-mode.
Because of that there is no way that TSIUEX1G can invoke a co-existing LINK-Exit-2.

General Information

TRIM Link-Exit-2 is re-entrant. It is not only marked "RENT,REUS", but they are also coded in re-entrant fashion. The user-supplied Link-Exit-1 for ADALNK does not need to be re-entrant unless the re-entrant source modification to ADALNK is made (see the ADALNK source) and the composite is linked as re-entrant. Link-exits for TP-environments should always be coded re-entrant, otherwise abends or incorrect data may result.

The TRIM Link-Exit-2 will be invoked by the ADABAS link routines and will, in turn, invoke the user-supplied Link-Exit-2 before returning. Upon entry to the user's user-exit, the entry rules, register settings, etc. are identical to the entry for the first user-exit, TRIM Link-Exit-2. That is, when TRIM Link-Exit-2 is finished, control is passed to the user's Link-Exit-2 with the registers all restored to what they were when TRIM Link-Exit-2 was entered with the obvious exception that R15 is set to the address of the user's Link-Exit-2.

The user's user-exit is entered via a "BR R15", and when exiting, the user must do a "BR R14" to return to the ADABAS Link Routine directly.

The user's Link-Exit-2 must have an entry point UEXITAU and must be linked with the ADABAS Link Routine and the TRIM Link-Exit-2.

Note: TRIM V8 no longer supplies Link-Exit-2 modules being depended on the environment (Batch, TSO, CICS, COM-LETE, etc.)

III.4 USERINFO Area

This section shows the layout of the TRIM-formatted segment of the ADABAS USERINFO Area, describes how the USERINFO Area is passed to a user's user-exit (UEXITBU), and shows how the user's user-exit may co-exist with the TRIM user-exit.

When setting up the linkage from the ADABAS Link Routine(s) to the TRIM Link-Exit-1 (and the user's Link-Exits), the USERINFO Area length must be set to at least **the LUINFO value documented in section II.9 Link-edit User-exits to the ADABAS link routine.**

. It must be set to a larger value if a user-supplied Link-Exit-1 is to pass additional information in the USERINFO Area. The definition and access of a user segment of the USERINFO Area is illustrated in Figure 3 - USERINFO Area. Each segment requires 6 bytes plus the length of the user data, rounded up to a multiple of 8, to be added to the LUINFO value required by TRIM.

As shown in the sample code later in this section, the supplied macros TSIUINFO and UINFO may be used to map and locate both TRIM and user-defined segments within this area. (Detailed documentation on the operands or these macros is included in the macro source.)

The offsets in the USERINFO DSECT (TSIUINFO DSECT in Figure 3) are correct for this release of TRIM and begin at R3 + 72 bytes on entry to UEXITBU. However, to minimize difficulties in installing subsequent releases, it is strongly recommended that access to fields be made symbolically and the TSIUINFO and UINFO macros be used as in the examples.

The field labeled UISPSUM in the TRIM USERINFO Area segment is a sixteen-byte area initialized to blanks and reserved for "Special PRESUM" data. A user-supplied Link-Exit-1 may set any 16-byte value (16X'00', 16X'40', and 16X'FF' are best avoided) to be used for accumulating PRESUM TYPE=Y data. Be aware that PRESUM=SPE must be in effect for this data to be accumulated. It may be set by a TRMTAP macro, ZAPSWITCH, or dynamically via the RTM.

Section III - Co-existing User-exits

TSIUINFO AX (Suffix for field names)

***** NOTE: *****			
* WITH THE EXCEPTION OF &L.SPSUM ALL FIELDS IN THIS USER-INFO-BUFFER *			
* SEGMENT SHOULD BE CONSIDERED READ-ONLY FOR ANY USER SPECIFIC *			
* LINK-EXIT-1. *			

* TSI USER INFORMATION AREA SEGMENT			
	DS	0D	
AXLEN	DC	AL2 (AXEND-AXLEN)	LENGTH OF SEGMENT
AXSEG	DC	CL4 'TSIG'	SEGMENT ID
* -----			
AXOSYS	DC	CL4 ' '	OPERATING SYSTEM TYPE
AXFACIL	DC	CL4 ' '	FACILITY (CICS, TSO, ETC.)
AXENVI	DS	0XL14	INFO FOR ENVIRONMENT
AXUEXBID	DC	CL2 ' '	LINK EXIT ID
AXASMDT	DS	0CL4	USER EXIT ASSEMBLY DATE
AXASMMM	DC	CL2 ' '	MONTH
AXASMDD	DC	CL2 ' '	DAY OF MONTH
AXZAPSW	DC	8XL1 '0'	ZAP SWITCHES
* -----			
AXGENJOB	DC	CL8 ' '	GENERAL JOBNAME
AXGENSTP	DC	CL8 ' '	GENERAL STEPNAME
AXGENPGM	DC	CL8 ' '	GENERAL PGMNAME
AXGENJID	DC	CL5 ' '	GENERAL JES NUMBER
* -----			
AXUSRID	DC	CL8 ' '	SECURITY (RACF) USER ID
AXGRP	DC	CL8 ' '	SECURITY GROUP ID
AXNODE	DC	CL4 ' '	NODE (SMFID)
* -----			
AXNATPGM	DC	CL8 ' '	NATURAL PROGRAM
AXNATAPL	DC	CL8 ' '	NATURAL APPLICATION ID
AXNATUID	DC	CL8 ' '	NATURAL USERID
AXNATDB	DC	XL2 '0000'	NATURAL FUSER DBID
AXNATFUS	DC	XL2 '0000'	NATURAL FUSER FILE NUMBER
* -----			
AXTPMTRM	DC	CL4 ' '	COMPLETE TID / CICS TERMID
AXTPMTRN	DC	CL4 ' '	CICS TRANID
AXTPMOPI	DC	CL3 ' '	CICS OPID
AXTPMTSK	DC	CL5 ' '	CICS TASKID
* -----			
	DC	CL3 'STR'	PRODUCT ID
AXSTRFLG	DC	XL4 '0'	SECURITRE INFO
* -----			
	DS	XL32	RESERVED
* -----			
	DC	CL3 'TRM'	PRODUCT ID
AXTRMFLG	DC	XL5 '0'	TRIM INFO
* -----			
AXSLOWTS	DS	XL12	RESERVED
* -----			
AXUX1PW	DS	XL20	RESERVED
* -----			
AXTIMES	DS	XL16	RESERVED
* -----			
AXSPSUM	DC	CL16 ' '	USER/SPECIAL PRESUM VALUE
* -----			
AXCALLN	DC	3F '0'	RESERVED
AXTOTLEN	EQU	*-AXLEN	LENGTH OF FIXED PART

USERINFO Area
Figure 3

A UEXITBU may access the TRIM-formatted segment of the USERINFO Area. A sample exit to accomplish this is shown below. Note that two macros from the TRIM source library (UINFO and TSIUINFO) and a copy from the ADABAS source library (UB) are used.

```

UEXITBU   CSECT      ,                ADABAS LINK EXIT
          USING      UB,R3            provided by TRIM Link-Exit-1
*
          STM        R14,R12,12(R13)  SAVE ADALNK REGISTERS
          LR         R11,R15          PROGRAM BASE
          USING      UEXITBU,R11
*
          LA         R15,SAVEAREA     STANDARD
          ST         R15,8(R13)       SAVE AREA
          LR         R13,R15          LINKAGE
*
          UINFO     R10,'TSIG'        FIND TSI USER INFO AREA
          BNZ       EXIT              NO TRIM AREA FOUND - QUIT
          USING     UI,R10            TRIM USER INFO AREA
*
* TRIM AREA IS ADDRESSABLE BEGINNING HERE via R10
*
          ...
*
EXIT      L         R13,4(R13)        RESTORE SAVE AREA POINTER
          LM        R14,R12,12(R13)  RESTORE ADALNK REGISTERS
          XR        R15,R15          R15 = 0 TO PROCESS CMD
          BR        R14              RETURN TO ADALNK
*
SAVEAREA  DS        18F
*
          COPY      UB                ADABAS USER BLOCK DEFINITION
TRIMINFO  TSIUINFO UI              TRIM USER INFORMATION AREA
*
          END

```

User-exits may share the USERINFO Area with TRIM. A 4-byte identifier is required to distinguish the user's area from the TRIM-generated areas; identifiers beginning with "U" or a non-alphabetic character are reserved for users. A sample UEXITBU that accesses a user area is shown below. Note that a macro from the TRIM source library (UINFO) and a copy from the ADABAS source library (UB) are used.

```

UEXITBU      CSECT
             USING  UB,R3              ADABAS USER BLOCK
*
             STM   R14,R12,12(R13)    SAVE ADALNK REGISTERS
             LR    R11,R15            PROGRAM BASE
             USING UEXITBU,R11
*
             LA    R15,SAVEAREA        STANDARD
             ST   R13,4(R15)          SAVE
             ST   R15,8(R13)          AREA
             LR    R13,R15            LINKAGE
*
             UINFO R10,'USER',USRSIZE  FIND/BUILD USER AREA
             BZ   NOTFIRST             AREA EXISTS, CAN UPDATE
             BP   FIRST                INITIALIZE AREA
             B    EXIT                 NO ROOM TO BUILD THE AREA

             USING  USER,R10
*
* USER AREA IS ADDRESSABLE BEGINNING HERE
*
FIRST        DS      0H                SET UP THE USER AREA
             ...
NOTFIRST     DS      0H                UPDATE THE USER AREA
             ...
*
EXIT         L      R13,4(R13)         RESTORE SAVE AREA POINTER
             LM    R14,R12,12(R13)    RESTORE ADALNK REGISTERS
             SLR   R15,R15            R15 = 0 TO PROCESS CMD
             BR    R14                RETURN TO ADALNK
*
SAVEAREA     DS      18F
USRSIZE      DC      AL2(USEREND-USERLEN)  LENGTH OF USER AREA

COPY         UB
             ADABAS USER BLOCK DEFINITION

USERINFO     UINFO  USER,MAP='USER'   USER INFO AREA SEGMENT
    
```

III.5 Co-existing User-Exit-11

If it is desired to have the TRIM User-Exit-11 and the user's User-Exit-11 "co-exist", the user's User-Exit-11 should be invoked first by ADABAS. Then, it should call the TRIM User-Exit-11 in the manner illustrated below.

To call a linked TRIM User-Exit-11 from a user's User-Exit-11, add the following code to the user's User-Exit-11.

```

*           INSERT AT END OF USER'S USER-EXIT-1 LOGIC
*-----
DONE      DS      0H
          L       R15,=V(TRMUEx11)   R15 = A(TRMUEx11)
          L       R13,4(,R13)        R13 = A(PREVIOUS SAVE AREA)
          L       R14,12(R13)        R14 = RETURN POINT IN ADABAS
          LM      R1,R12,24(R13)     RESTORE REGS 1-12
          BR      R15                GO TO TRMUEx11
          LTORG

```

This method requires link-editing the user's User-Exit-1 with TRMUEx11, as follows:

For OS

```

INCLUDE USERLIB(USRUEX11)
INCLUDE TRIMLIB(TRMUEx11)
ENTRY USRUEX11
NAME ADAUEX11(R)

```

For VSE

```

PHASE ADAUEX11,*
INCLUDE USRUEX11
INCLUDE TRMUEx11

```

User-Exit-11 is called immediately before ADABAS processes a command

Note: Prior to calling TRMUEx11, it is mandatory to set the registers (except R15) to the values they contained when ADABAS called the user's own User-Exit-11. TRMUEx11 will return control directly back via BR 14.

If the user's User-Exit-11 decides that this command should not be processed by the ADABAS nucleus, the call to TRMUEx11 must be skipped.

III.6 Co-existing User-Exit-4

Note: The processing differs if running in a zIIP-enabled ADABAS nucleus or not. See comments in <<<...>>> below.

If it is desired to have the TRIM User-Exit-4 and the user's User-Exit-4 "co-exist", the user's User-Exit-4 should be invoked first by ADABAS. Then, it should call the TRIM User-Exit-4 in the manner illustrated below.

To call a linked TRIM User-Exit-4 from a user's User-Exit-4, add the following code to the user's User-Exit-4.

```

*          INSERT AT END OF USER'S USER-EXIT-4 LOGIC
*-----
DONE      DS      0H
          L        R15,=V(TRMU4ZIP)    R15 = A(TRMU4ZIP)
<<< replace the above with
          L        R15,=V(TRMU4ZIP)    R15 = A(TRM zIIP FRONT:EDN
if running zIIP enabled>>>
          L        R13,4(,R13)         R13 = A(PREVIOUS SAVE AREA)
          L        R14,12(R13)        R14 = RETURN POINT IN ADABAS
          LM       R1,R12,24(R13)     RESTORE REGS 1-12
          BR       R15                GO TO TRMU4ZIP
          LTORG
    
```

This method requires link-editing the users User-Exit-4 with TRMU4ZIP as follows:

For OS

```

INCLUDE USERLIB(USRUEX4)
INCLUDE TRIMLOAD(TRMU4MAI)
INCLUDE TRIMLOAD(TRMU4SU1)
INCLUDE TRIMLOAD(TRMU4SU2)
INCLUDE TRIMLOAD(TRMU4SU3)
INCLUDE TRIMLOAD(TRMX4CFx)
<<<add
INCLUDE TRIMLOAD(TRMU4ZIP)
if running zIIP enabled>>>
INCLUDE TRIMLOAD(TRMXOS)
INCLUDE TRIMLOAD(TRMTAP) (optional)
INCLUDE TRIMLOAD(TRMLOG) (optional)
INCLUDE TRIMLOAD(TRMRSP) (optional)
ENTRY USRUEX4
NAME ADAUEX4(R)
    
```

For VSE

```

PHASE ADAUEX4,*
INCLUDE USRUEX4
INCLUDE TRMU4MAI
INCLUDE TRMU4SU1
INCLUDE TRMU4SU2
INCLUDE TRMU4SU3
INCLUDE TRMX4CFx

not applicable

INCLUDE TRMXDS or TRMXSDT
INCLUDE TRMTAP (optional)
INCLUDE TRMLOG (optional)
INCLUDE TRMRSP (optional)
    
```

where x = R(REGULAR), L(LARGE), or S(SMALL)

Please refer to the sample jobs (JOSLINK / JVSLINK) for further details.

User-Exit-4 is called immediately after ADABAS processes a command and before the Command Log Record is written.

Note: Prior to calling TRMU4ZIP, it is mandatory to set the registers (except R15) to the values they contained when ADABAS called the user's own User-Exit-4. TRMU4ZIP will return control directly back via BR 14.

TRMU4ZIP will **always** set the indicator that the record should be logged or not by ADABAS.

The user's User-Exit-11 and User-Exit-4 may access the USERINFO Area. The same technique is used to access either the TRIM segment or a user segment built in UEXITBU. Following is an example of a user's User-Exit-4 that examines both the TRIM-formatted USERINFO Area segment and the area built by the sample UEXITBU above. Note that two macros from the TRIM source library (TSIUINFO and UINFO) are used.

```

USEREX4      CSECT
              USING PARM4,R1                USER EXIT 4 PARM LIST

              STM      R14,R12,12(R13)     SAVE ADABAS REGISTERS
              LR       R11,R15             PROGRAM BASE
              USING    USEREX4,R11

*
              LA       R15,SAVEAREA        STANDARD
              ST      R13,4(R15)          SAVE
              ST      R15,8(R13)          AREA
              LR      R13,R15             LINKAGE

*
*          SET R3 to UIB in the ADABAS buffers
*
              UINFO   R9,'TSIG',LUINFO=R3   FIND TRIM USER INFO AREA
              BNZ     EXIT                  TRIM AREA NOT FOUND - QUIT
              USING   UI,R9                TRIM USER INFO AREA

*
*          TRIM AREA IS ADDRESSABLE BEGINNING HERE
*
              UINFO   R10,'USER',LUINFO=R3  FIND USER SEGMENT
              BNZ     EXIT                  USER SEG NOT FOUND - QUIT
              USING   USER,R10

*
*          USER AREA IS ADDRESSABLE BEGINNING HERE
*
              ...

EXIT         L        R15,=V(UEX4)         GET TRIM'S UEX4 ADDRESS
              L        R13,4(,R13)        RESTORE SAVE AREA POINTER
              L        R14,12(,R13)       RESTORE
              LM       R0,R12,20(R13)     ADABAS REGISTERS
              BR      R15                 TRANSFER CONTROL TO TRIM

*
SAVEAREA    DS      18F

*
PARM4       DSECT ,                      USER EXIT 4 PARM LIST
P4SWITCH    DS      A                    A(LOG/DON'T LOG SWITCH)
P4LOGREC    DS      A                    A(START OF LOG RECORD)
P4LOGEND    DS      A                    A(END OF LOG RECORD)
P4CQE       DS      A                    A(COMMAND QUEUE ELEMENT)

*
TRIMINFO    TSIUINFO UI                  TSI USER INFORMATION AREA
*
USERINFO    UINFO USER,MAP='USER'       USER INFO AREA SEGMENT
              ...
              UINFO USER,MAP=SUFFIX     USER'S DATA AREA MAP

*
              END

```

III.7 Co-existing TRIM and SECURITRE User-exits

If TRIM and SECURITRE are to co-exist, the following steps are necessary:

1. create ADALNK with STRUEX1G and TRMUEX1G included as documented in Section II.9
2. Optional:
Define UEX11=TRMUEX11 in STRDEF macro for STPnnnnnn if there is a need to execute the Dynamic Secure and Control facilities of TRIM
3. Define UEX11=STRUEX11 in ADABAS parameters
4. Define UEX4=TRMUEX4 in ADABAS parameters

The SECURITRE User-Exit-4 must be omitted from a TRIM/SECURITRE install. All necessary SECURITRE functions are performed by the TRIM User-Exit-4.

III.8 Co-existing NATURAL User-exits

TRMv8.x no longer uses any NATURAL User-Exits except those available through the RDC feature.

Multiple RDC exits can be defined using the NTRDC macro as part of the NATPARM generation

NTRDC ON,EVENT=ALL,EXIT=(TSIRDC,2024,XXXXXXXX,nnnn),SIZE=2

Where XXXXXXXX represents the entry point of the non-TSI RDC-exit and nnnnn the size of the global work area needed for that.

In the above sample TSIRDC will be invoked first, but that is not mandatory.

Note:

NTRDC will generate WXTRN entries for the CMCSTAT CSECT. Because of that any CSTATIC definitions for a non-TSI RDC-exit must be removed.

TNMMODD (User-Exit-3, User-Exit-4, User-Exit-5, User-Exit-7)

The user's User-Exit-3 must contain the entry point "USRUEX3", must **not** contain an entry point of "NATUEX3", and NATURAL must be linked with TNMMODD and the user's User-Exit-3.

The user's User-Exit-4 must contain the entry point "USRUEX4", must **not** contain an entry point of "NATUEX4", and NATURAL must be linked with TNMMODD and the user's User-Exit-4.

The user's User-Exit-5 must contain the entry point "USRUEX5", must **not** contain an entry point of "NATUEX5", and NATURAL must be linked with TNMMODD and the user's User-Exit-5.

The user's User-Exit-7 must contain the entry point "USRUEX7", must **not** contain an entry point of "NATUEX7", and NATURAL must be linked with TNMMODD and the user's User-Exit-7.

At entry to NATURAL user-exits, including the TRIM NATURAL user-exit described above, and any co-existing user's user-exits, the following register conventions apply:

- The following registers are set:
 - R1 = address of parameters for link routine
 - R12 = address of NATURAL BB
 - R13 = address of an 18 full-word register save area in NATURAL
 - R14 = return address within NATURAL
 - R15 = entry address of the user's User-Exit
- Standard subroutine register saving and restoring conventions should be used.
- At exit, all registers should be restored, and the return should be via a "BR R14".

In order to co-exist the TRIM and SECURITRE NATURAL User-Exit-5s, the following changes need to be made to the link-edit cards.

From:

```
INCLUDE STRLIB(STND)
INCLUDE TRIMLIB(TNMMODD)
```

To:

```
CHANGE DCNEX5(TNMMODD3)
INCLUDE STRLIB(STND)
CHANGE NATUEX5(TNMNOEN5)
INCLUDE TRIMLIB(TNMMODD)
```

SECTION IV

REAL-TIME MONITOR OPERATIONS

IV.1 TRIM RTM Requirements

There can be no "mixing" of modules from various TRIM versions, or the results may be unpredictable.

The TRIM Real-Time Monitor (RTM) NATURAL modules are required to be installed on only one database, preferably TEST, although they may be installed on multiple databases.

The RTM requires NATURAL Version 4.2 or above. TRIM is prepared for and tested with DBID and File Numbers of two bytes (i.e., greater than 255).

The RTM NATURAL modules may be installed into a default library or any other library the user chooses, but the default library is strongly suggested. The default library is TRMVvrs. Usage of the RTM is described in **Section II Real-Time Monitor** of the **TRIM Reference Manual**.

The RTM requires ADABAS to be running and ADABAS Command Logging to be turned on, although records do not necessarily have to be logged. The RTM also requires TRIM User-Exit-4 to be active with ADABAS for each database to be monitored.

LOGGING=YES must be specified in the ADARUN parameters in order for ADABAS to call the User-Exit-4. It is preferable to also log the Control Block (LOGCB=YES), which contains some important information that will be output to the eventual command log detail records only if LOGCB=YES is stated. (For the Real-Time Monitor, the Control Block and buffers are not necessary to log.)

Therefore, the ADARUN parameters should be stated as:

```
LOGGING=YES
LOGCB=YES      (and other buffers if desired)
UEX11=TRMUEX11 (optional)
UEX8=TRMUEX8  (only for PRESUM to CLOG)
UEX4=TRMUEX4x (where x is S, R, or L)
```

A dataset must be available for logging (a temporary dataset is adequate, but DD DUMMY is not); otherwise ADABAS will not call User-Exit-4. However, it is not necessary to actually log any records for the Real-Time Monitor to be operational. Unless start-up parameters or Zaps instruct differently, TRMUEX4 inhibits all logging until instructed to do otherwise via a User-Exit-4 Communication Run.

The ability to reduce Command Logging via start-up logging Zaps, parameters (TRMLOG), and the Dynamic Logging Facility have no effect on the RTM. In other words, the RTM displays statistics for all commands, whether or not they end up on the Command Log.

The RTM NATURAL modules are invoked by keying the following sequence on-line:

```
LOGON TRMVvrsx  
MENU
```

(or whatever LIB was used for installation)

If NATURAL Security is used, the application TRMVvrs (or whatever library is used) must be made available to every intended user of the RTM.

IV.2 TNM Requirements

When instructed to do so, the TRIM NATURAL Monitor (TNM) collects Summary and Detail data about NATURAL activity. This data is kept in a workarea obtained from one of the NATURAL buffers (USERBUF by default). Periodically, the data is written to the TNM file. The amount of data written to the TNM file depends upon the parameters specified on the Define Data Collection Parameters screen. The more data TNM is instructed to collect, the more data will be written to this file.

When collecting Detail data, TNM retains up to 50 events in its workarea or the NATURAL thread. When the 50th event is recorded, all 50 events are compressed into a single record and written to the TNM file. The 50 events are then removed from memory to make room for the next 50 events.

Before the compressed Detail data records can be used in a report, they must first be decompressed into 50 separate records on the TNM file. The Convert Detail Data function expands the compressed Detail data records into individual records for each event.

IV.3 Limits and Restrictions

The RTM minute statistics screens always show the 19 files, commands, etc. of highest usage for each hour with these maximums:

	TRMUJEX4S	TRMUJEX4R	TRMUJEX4L
• Thread	100	100	100
• File Number	100	100	100
• Command	100	100	100
• Response	100	100	100
• JOB	100	100	100
• NATURAL Program	100	100	100
• User-ID	100	100	100
• Security-ID	100	100	100
• NATURAL Application Library	N/A	100	100
• NATURAL Security User-ID	N/A	100	100
• CICS Transaction-ID	N/A	100	100
• User-Area of Control Block	N/A	100	100

If more than 19 files, commands, etc., are contained in the TRIM tables, TRIM will report 18 files, commands, etc., with an "other" line indicating the total of the statistics for all other files, commands, etc. not included in the 18 that are explicitly listed.

The RTM's hourly statistics breakdown always shows the 19 files, commands, etc. of highest usage for each hour with these maximums:

	TRMUJEX4S	TRMUJEX4R	TRMUJEX4L
• Thread	256	256	256
• File Number	256	512	1024
• Command	40	40	40
• Response	256	256	256
• JOB	64	128	512
• NATURAL Program	128	512	1024
• User-ID	64	512	1024
• Security-ID	64	128	512
• NATURAL Application Library	N/A	512	1024
• NATURAL Security User-ID	N/A	512	1024
• CICS Transaction-ID	N/A	512	1024
• User-Area of Control Block	N/A	512	1024

If more than 19 files, commands, etc., are contained in the TRIM tables, TRIM will report 18 files, commands, etc., with an "other" line indicating the total of the statistics for all other files, commands, etc. not included in the 18 that are explicitly listed.

The on-line and hard-copy Nucleus Session Statistics include these maximums:

	TRMUEx4S	TRMUEx4R	TRMUEx4L
• Thread	256	256	256
• File Number	256	256	256
• Command	40	40	40
• Command within file 16 command groups for 256 files	N/A	YES	YES
• Response	256	256	256
• JOB	128	512	1024
• NATURAL Programs	128	1024	2048
• User-ID	128	512	1024
• Security-ID	128	512	1024
• NATURAL Application Library	N/A	512	1024
• NATURAL Security User-ID	N/A	512	1024
• CICS Transaction-ID	N/A	512	1024
• User-Area of Control Block	N/A	512	1024

The PRESUM statistics are output hourly with these maximums:

	TRMUEx4S	TRMUEx4R	TRMUEx4L
• Thread	256	256	256
• File Number	256	512	1024
• Command	40	40	40
• Response	256	256	256
• JOB	64	128	512
• NATURAL Programs	128	512	1024
• User-ID	64	512	1024
• Security-ID	64	128	512
• NATURAL Application Library	N/A	512	1024
• NATURAL Security User-ID	N/A	512	1024
• CICS Transaction-ID	N/A	512	1024
• User-Area of Control Block	N/A	512	1024
• Special	N/A	512	1024

Additional RTM facilities are available as follows:

<input type="checkbox"/> RACE concurrent users	3	10	10
<input type="checkbox"/> Entries in one trace	85	85	85
<input type="checkbox"/> Extended User Queue (XUQ) Entries	256	512	1024
<input type="checkbox"/> Hold Queue "Highest Users" sort	40	400	400

XUQ Limits

XUQ processing has been modified to avoid excessive processing whenever table overflow conditions are encountered due to extremely heavy processing activity. Only the most recent users will be maintained in the XUQ. The number of most recent users is determined by the User-Exit-4 size selected (Large = 1024, Regular = 512, and Small = 256). If the number of users exceeds 1024, the oldest (least recently used) entry will be reused.

IV.4 Reporting on the NATURAL Module Name

One of the primary features of TRIM is identification of NATURAL Program, Application, and User-ID for every ADABAS call.

Other than defining the USERINFO Area length in the Link-Exit-1, TRIM requires no source changes, Zaps, or Zap removal regarding any SAG code. TRIM obtains NATURAL information whenever possible, using the USERINFO Area of the ADABAS User Information Block (UIB) as the vehicle to transport this information.

In ADABAS 8, it is possible to pass the UIB as an additional parameter to ADABAS via the ADABAS Link Routines. This is done transparent to application programs. This UIB is available on all calls to ADABAS.

In order to create a UIB and populate it with meaningful information, the ADABAS 8 Link Routines have exit capabilities, Link-Exit-1 (before the call), and Link-Exit-2 (after the call).

TRIM supplies a common Link-Exit-1 for all ADABAS Link Routine environments (TSO, Batch, CICS-COM-LETE, etc.), which accomplishes the task of populating the UIB with information about the NATURAL Program, Application, User-ID, Security-ID, CICS Tran-ID, RACF-ID (for SECURITRE use), etc. The ADABAS Link Routine transfers this UIB to ADABAS.

The user may also contribute to the UIB information through the user's Link-Exit-1.

ADABAS ignores the UIB, but TRMUEX4 obtains information from it. The UIB may be output to the Command Log. (To be consistent with the other log buffers (FB, RB, SB, VB), the UIB is termed UB or User Buffer further in this documentation.)

Details on the USERINFO Area, Link-Exit-1, and Co-existing user-exits are presented in previous sections of this manual.

NATURAL information obtained in TRIM includes:

- NATURAL Program Name (NATPROG in TRIM)
- NATURAL Application-ID (NSA or NATAPPL in TRIM)
- NATURAL User-ID (NSU or NATUSER in TRIM)

The NATURAL information is obtained solely through the Link-Exit-1. TRIM no longer uses the Reserved Field, source changes to NATURAL modules, or "intuitive logic" in TRIM User-Exit-4 to obtain NATURAL information.

Regarding non-NATURAL program names (COBOL, HLASM, PL/1 etc.), TRIM Link-Exit-1 obtains these names from the operating/TP system (OS systems only, currently) and places it into the UIB. The name will remain unused unless the user has TRMUEX4 tailored for use of the "alternate program name". This alternate logic involves using the alternate program name when the NATURAL program name is unknown (#NOTEBxx).

It is anticipated that larger, more complex sites will leave out a TRIM module or link-exit here and there. An example is linking TRIM Link-Exit-1 to some CICSs, but not all, that may actually be preferred while testing. In these types of cases, TRIM will try to let the user know of the "incomplete environment". This is through several "#NOTE"s that may appear about the NATURAL information these user-exits are intended to develop. So, when viewing the RTM Screens, the NATURAL information will often appear with interspersed notes. The possible #NOTE entries are listed below.

- #NOTEB01 TSIUEX1G cannot determine the NATURAL Program, Application or User-ID because this call did not originate in NATURAL.
- #NOTEB02 TSIUEX1G could not determine the NATURAL Program, Application, or User-ID, probably because the information was not passed to the Link-Exit-1 as 7th parameter (ADAPRM=ON missing).
- #NOTEB03 TSIUEX1G could not (yet) determine the NATURAL Program, Application, or User-ID, because no such information was passed to the Link-Exit-1. #NOTEB03 may be received when NATURAL does its ADABAS Open Command to start a session, and a Close to end a session. At that time, no particular NATURAL program is being executed, but rather NATURAL itself is running. Rather than assign a blank NATURAL program name or assume it is some previously assigned NATURAL program, a "note" is assigned. These notes start with #, so that they sort to the top of most screen displays and reports, in order to draw the user's attention.
- #NOTE401 No Command Queue Element address was passed to User-Exit-4. This is usually the case when ADABAS is running in Single User Mode. Without a CQE, TRMUEX4 cannot receive a User Information Block (UIB), and may therefore not determine NATURAL or CTI information.
- #NOTE402 No UIB address was passed to User-Exit-4. This address is necessary to receive the data passed from Link-Exit-1. Either Link-Exit-1 was not in use in the particular environment from which this call was made, the ADABAS link routine cannot pass a UIB, or the ADABAS Link routine did not allow for a UIB of adequate size. Without this UIB, NATURAL and CTI information cannot be determined.
- #NOTE403 A UIB was received by TRIM User-Exit-4, but there is no indication it originated from a TRIM Link-Exit-1 or from a TRIM Link-Exit-1 of the proper version number. Without this User Information Block, NATURAL and CTI information cannot be determined.
- #NOTE405 No program information was available.

Some of the notes above imply "missing parts", accidentally missing or intentionally left out, in the set up of the users ADABAS/NATURAL environment. Using the TRIM RTM, the combinations of Link-Exit-1s involved in calls to the database may be viewed. Refer to **Section II.14 Environment Information** of the **TRIM Reference Manual**.

The Command Log Reserved Field would normally contain the Global ID, zeros, or some special value, which would be of little use. A TRMUEX4 Zap option exists to have TRMUEX4 place the NATPROG value into the Reserved field of the output Command Log record, assuming LOGCB=YES. For batch TRIM processing, use the field named "RESERVED" to refer to the NATURAL program name.

A TRMUEx4 Zap option exists to have TRMUEx4 place the NSA and NSU values into the ADDITIONS-3 and ADDITIONS-4 fields, respectively, in the Command Log record. Normally these fields would contain the password and cipher values, but would be better used as NSA and NSU values. For batch TRIM processing, use the field names "ADD3" and "ADD4" to refer to the NSA and NSU values.

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SECTION V

BATCH OPERATIONS

V.1 TRIM Execution Requirements

TRIM includes support for running TRIM Batch above the 16MB line and exploiting the large buffer capabilities of the QSAM access method.

TRIM requires ADABAS to be running and ADABAS Command Logging to be turned on to run its User-exit Communication Runs, use its Real-Time Monitor, and generate Nucleus Session Statistics. However, it is not necessary to log any data.

To generate data on Command Logs, the ADABAS parameter required is LOGGING=YES. LOGCB=YES is suggested. Any other buffer logging is at the user's discretion.

For processing Command or Protection Logs, TRIM may be run on any CPU, whether it runs ADABAS or not.

Command Logs (or Protection Logs) from one or more CPUs and one or more ADABAS databases may be input to TRIM.

Multiple OS Command or Protection Log datasets are processed by specifying concatenated datasets in the execution JCL. Command and Protection Logs cannot be input together in the same TRIM run.

While TRIM expands the capabilities of Command Logging to contain other useful data, TRIM takes advantage of ADABAS facilities for defining and maintaining logs. Pertinent ADABAS Operations Manual explanations should be consulted for single/dual logging, tape or disk, switching the dual log areas, copying disk logs to tape, etc.

TRIM does not require the log records or log datasets to be in any particular order. If records are sorted out of the standard date/time order, TRIM will be unaffected.

V.2 PRESUM Run

TRIM uses the Command Log containing PRESUM records (created in TRIM User-Exit-4) for this batch run. The Control Screen settings, start-up Zap settings, or start-up TRMTAP parameters for TRMUEx4 must have requested PRESUM by Thread, Command, File Number, NATURAL Program, Job Name, User-ID, Response Code, NATURAL Application Library, NATURAL Security User-ID, User-Area, Security-ID, or Special for this run to be of any use.

Other records on the Command Log will be ignored in this run. Switching the Detail Records and Buffers on and off will not affect this run. Switching PRESUM specifications on and off will not affect the run except to make the PRESUM figures incomplete.

PRESUM runs cannot be executed against PRESUM data stored in the SMF log. To execute a PRESUM run against PRESUM data that has been placed in the SMF log, PRESUM data must first be extracted from the SMF log and written to a dataset in the format expected by the TRIM batch facility. An example of a NATURAL program that performs this extraction and reformatting appears in **Appendix E: PRESUM Data Extraction From SMF** of the **TRIM Reference Manual**.

V.3 TRELOG Run

TRIM uses the Command Log containing TRELOG records (created in TRIM User-Exit-4) for this batch run. Other records on the Command Log will be ignored for this run. The TRELOG records will cover only the time that tRelational Logging was active.

V.4 Command Log Analysis Run

TRIM uses the ADABAS Command Log Detail data as one type of input. ADABAS should be activated with the ADARUN LOGGING=YES parameter and, preferably, LOGCB=YES. Format, Record, Search, and Value Buffers may optionally be turned on. These ADARUN parameters are LOGFB=YES, LOGRB=YES, LOGSB=YES, and LOGVB=YES.

Actual logging of all Detail records and buffers generally takes an unreasonable amount of space. TRMUEx4 has the capability of selectively logging Detail records and the various buffers. Refer to **Section IV Dynamic Logging Facility** of the **TRIM Reference Manual**.

PRESUM records produced by TRIM User-Exit-4 may be interspersed with Command Log Detail data. Any other modifications to these standard record formats or to the field contents via the user's User-Exit-4 or other similar manipulation should be avoided.

Switching the Detail Record Logging on and off or changing the logging of the Control Block and Buffers will not affect TRIM, except to make non-logged records, fields, and buffers unavailable. Switching PRESUM logic on and off will not affect Detail log processing.

V.5 Protection Log Analysis Run

TRIM may be used to analyze the ADABAS Protection Log (PLOG), sometimes known as SIBA.

Modifications to the standard PLOG record format or field contents should be avoided.

There is no ADABAS standard user-exit facility available for manipulation or reducing PLOG data. Protection Logging may be turned on or off for any ADABAS session. Lack of a PLOG for any period of time will not affect TRIM, except to make the missing update images unavailable. Lack of a PLOG for any period of time may affect user ability to recover from failures using standard ADABAS facilities.

In order to decompress the "before" and "after" compressed record images on the PLOG, TRIM requires a description of the files for which records will be decompressed. This description is obtained from ADAWAN (file loader) card images provided as input to TRIM. ADACMP format card images may be used rather than ADAWAN card images.

Note: The Treehouse Software product AUDITRE may be used for more extensive Protection Log Auditing.

V.6 TRIM Misc-Log Analysis Run

TRIM may be used to process other logs. Examples are:

- TRIM summarized statistics, which were previously output to a sequential dataset
- Data extracted from ADABAS startup parameters, shut-down statistics, ADAREP reports, utility execution statistics, ADABAS Files, etc. and placed into a sequential dataset in a form definable as log input to TRIM
- The logs of other database systems or TP systems, as long as these logs are definable to TRIM
- Other sequential data, such as time-cards, expense reports, etc.

V.7 Dynamic Control and TRMUEx11

User-Exit-11 (TRMUEx11) and three User-Exit-4s (TRMUEx4L, R, and S) are provided. They should be placed into the ADABAS load library (or, in OS terminology, the TRIM.Vvrs.LOAD library should be concatenated to the ADABAS load library), and the ADARUN parameters "LOGGING=YES", "UEX1=TRMUEx11", and "UEX4=TRMUEx4x" (where x = S (Small), R (Regular), or L (Large)) must be specified for ADABAS startup.

Anytime while ADABAS is running, a TRIM "User-Exit-11 Communication Run" may be run (Refer to the *TRIM Reference Manual*) to screen out commands, lock files, do password checks, and/or set passwords.

TRMUEx11 in its "dormant" state allows all commands, locks no files, and does no security checking.

User-Exit-4 is required when using User-Exit-11.

V.8 Dynamic Logging and TRMUEx4

To reduce the amount of Detail log data and to summarize (PRESUM) certain data, User-Exit-4 is provided (TRMUEx4x). TRMUEx4x should be placed onto the ADABAS load library (or, in OS terminology, the TRIM.Vvrs.LOAD library should be concatenated to the ADABAS load library), and the ADARUN parameter "UEX4=TRMUEx4x" must be specified for ADABAS startup. Additionally, LOGGING must be turned on within ADABAS (LOGGING=YES), and the Control Block should be logged (LOGCB=YES). Format, Record, Search, and Value Buffers may optionally be turned on. These ADARUN parameters are LOGFB=YES, LOGRB=YES, LOGSB=YES, and LOGVB=YES.

A dataset must be available for logging (a temporary dataset is adequate, but DD DUMMY is not). However, it is not necessary to actually log any records for the Dynamic Logging Facility to be operational.

Default "start-up logging" parameters may be defined through the TRMLOG macro. Linked with TRMUEx4x, these remain in force throughout the session unless replaced or complemented with additional "user logging" parameters. The user or DBA may run a TRIM "User-Exit-4 Communication Run" (refer to the **TRIM Reference Manual**) to log data that will later be used in TRIM Command Log Analysis. Without start-up or user parameters, TRMUEx4 by default instructs ADABAS to log no Detail records.

V.9 Batch Execution Procedure

OS, VM

TRIM Command Log analysis, PRESUM runs, TRELOG runs, and Protection Log processing are executed with the following datasets:

<u>Dataset</u>	<u>Meaning</u>
TRMPARM	Input Parameters to TRIM.
TRMACLOG	Input ADABAS Command Log(s), other logs, or previously output sequential data (tape or disk). (For PRESUM or TRELOG.)
TRMCLOG5	Input ADABAS Command Log(s), other logs, or previously output sequential data (tape or disk). (For CLOGLAYOUT=5.)
TRMAPLOG	Input ADABAS Protection Log(s) (tape or disk).
TFDNNNNN	Protection Log Analysis ADABAS Loader (ADAWAN or ADACMP) card images describing each file. NNNNN represents the ADABAS FNR.
TRMPRT00	Dataset for printing the input parameters, error messages, and execution statistics.
TRMPRT01, 02, 03, etc.	First dataset for printing the first detail report and all summary reports. Remaining datasets for subsequent detail reports.
TRMOUT01, 02, 03, etc.	Output datasets for first, second, etc., output detail logs or summary statistics, allocated with characteristics similar to TRMACLOG or TRMAPLOG.

Multiple Input Tapes/Files

For VM, if the INPUT parameter statement specifies TAPES=0, multiple VM Command or Protection Log tapes or files are processed by operator response to a console message issued by TRIM. The message asks if more input tapes are to be processed. A 'Y' (for YES) instructs TRIM to open another file for processing. An 'N' (for NO) instructs TRIM to end the job. If the INPUT parameter statement specifies a fixed number of tapes, exactly that number will be processed by TRIM, and no console messages will be issued. (For VM, "TAPES=1" should be specified when processing logs from a disk file.)

ADAWAN/ADACMP Cards

To accommodate two-byte ADABAS file numbers in Protection Log runs, the SHOW statement FNR parameter allows for file number values from 1 to 65535. Correspondingly, the file description (known in TRIM as the FDT or ADAWAN/ADACMP card images) is expected to be in datasets TFDxxxxx (for OS). Formerly, these were in datasets TRMFDxxx. VM EXECs for PLOG processing are similarly affected. There is a limit of 99 files in any one run.

VSE

TRIM Command Log analysis, PRESUM runs, TRELOG runs, and Protection Log processing are executed with the following files:

<u>VSE LBL</u>	<u>VSE ASSGN</u>	<u>Meaning</u>
	SYSIPT	Input Parameters to TRIM.
TRMACLG	SYS010	Input ADABAS Command Log(s), other logs, or previously output sequential dataset from tape.
TRMACLD	SYS012	Input ADABAS Command Log(s), other logs, or previously output sequential dataset from disk.
TRMAPLG	SYS010	Input ADABAS Protection Log(s) from tape.
TRMAPLD	SYS012	Input ADABAS Protection Log(s) from disk.
TRMFD01, TRMFD02, TRMFD03, TRMFD04, TRMFD05	SYS006, SYS016, SYS026, SYS036, SYS046	Protection Log Analysis ADABAS Loader (ADAWAN or ADACMP) card images describing each file. The first file referenced in a SHOW statement is assumed to have ADAWAN card images in SYS006, second file in SYS016, etc., up to 5 files.
	SYSLST	Dataset for printing the input parameters, error messages, and execution statistics.
	SYS005, 015,025, 035,045	The first dataset is for printing the first detail report and all summary reports. The remaining datasets are for subsequent detail reports.
TRMOUT1 TRMOUT2 TRMOUT3 TRMOUT4 TRMOUT5	SYS011 SYS021 SYS031 SYS041 SYS051	Output datasets for first, second, etc., output detail logs or summary statistics from tape, allocated with characteristics similar to TRMACLOG or TRMAPLOG. All output detail records are placed on SYS011 and all output summary records are placed on SYS021, unless OUTPUT statement SYSNO parameters specify otherwise.
TRMOT1D TRMOT2D TRMOT3D TRMOT4D TRMOT5D	SYS013 SYS023 SYS033 SYS043 SYS053	Output datasets for first, second, etc., output detail logs or summary statistics from disk, allocated with characteristics similar to TRMACLOG or TRMAPLOG. All output detail records are placed on SYS011 and all output summary records are placed on SYS021, unless OUTPUT statement SYSNO parameters specify otherwise.

Multiple Input Tapes/Files

If the INPUT parameter statement specifies TAPES=0, multiple VSE Command or Protection Log tapes or files are processed by operator response to a console message issued by TRIM. The message asks if more input tapes are to be processed. A 'Y' (for YES) instructs TRIM to open another file for processing. An 'N' (for NO) instructs TRIM to end the job. If the INPUT parameter statement specifies a fixed number of tapes, exactly that number will be processed by TRIM, and no console messages will be issued.

ADAWAN/ADACMP Cards

The accommodation of the two-byte ADABAS file numbers in Protection Log runs has no effect on VSE JCL, since the FDTs are still expected to reside in SYS006, SYS016, etc.

For Protection Log runs, ADAWAN/ADACMP cards for the first file to be decompressed (the first file referenced in a SHOW statement) must be in SYS006, and the second through fifth files in SYS016, SYS026, SYS036, and SYS046 respectively.

V.9.1 OS**Sample OS JCL for a Command Log Analysis, PRESUM Run or TRELOG Run**

(Refer to source library member JOSCLG)

```

//TRIM      EXEC      PGM=TRIM
//STEPLIB  DD         DSN=TRIM.Vvrs.LOAD,DISP=SHR
//TRMACLOG DD         DSN=ADABAS.Vx.COMMAND.LOG,DISP=SHR CLOG FORMAT=4      (1)
//TRMCLOG5 DD         DSN=ADABAS.Vx.COMMAND.LOG,DISP=SHR CLOG FORMAT=5
//TRMPRT00 DD         SYSOUT=A
//TRMPRT01 DD         SYSOUT=A
//TRMPRT02 DD         SYSOUT=A
//TRMPRT03 DD         SYSOUT=A
.
.
.   CONTINUE PRINT LINES AS NEEDED
.
//TRMOUT01 DD         DSN=ADABAS.Vx.CLOGSAVE.XXX,DISP=(OLD,PASS)          (1)
//TRMOUT02 DD         DSN=ADABAS.Vx.CLOGSAVE.YYY,DISP=(OLD,PASS)          (1)
.
.   CONTINUE OUTPUT LINES AS NEEDED
.
//TRMPARM  DD         *
                (TRIM parameters)          (2)

//

```

NOTES:

- (1) The "Vx" in this step should correspond to the ADABAS Version being used (e.g., V851). TRMACLOG or TRMCLOG5, not both, should be used.
- (2) TRIM parameters are discussed in **Section VI Log Analysis Parameter Statements** of the **TRIM Reference Manual** and sample parameters may be found in the report related appendices of the **TRIM Reference Manual**.

Sample OS JCL for a Protection Log Analysis Run

(Refer to source library member JOSPLG)

```

//TRIM      EXEC      PGM=TRIM
//STEPLIB  DD         DSN=TRIM.Vvrs.LOAD,DISP=SHR
//TRMAPLOG DD         DSN=ADABAS.Vx.PROT.LOG,DISP=SHR                      (1)
//TFD00001 DD         DSN=ADABAS.Vx.LOADER(FDT001),DISP=SHR              (1)
//TFD12345 DD         DSN=ADABAS.Vx.LOADER(FDT12345),DISP=SHR           (1)
.
.   CONTINUE FDT LINES AS NEEDED
.
//TRMPRT00 DD         SYSOUT=A
//TRMPRT01 DD         SYSOUT=A
//TRMPRT02 DD         SYSOUT=A
//TRMPRT03 DD         SYSOUT=A
.
.   CONTINUE PRINT LINES AS NEEDED
.
//TRMOUT01 DD         DSN=ADABAS.Vx.PLOGSAVE.XXX,DISP=(OLD,PASS)          (1)
//TRMOUT02 DD         DSN=ADABAS.Vx.PLOGSAVE.YYY,DISP=(OLD,PASS)          (1)
.
.   CONTINUE OUTPUT LINES AS NEEDED
.
//TRMPARM  DD         *
                (TRIM parameters)          (2)

//

```

NOTES:

- (1) The "Vx" in this step should correspond to the ADABAS Version being used (e.g., V851).
- (2) TRIM parameters are discussed in **Section VI Log Analysis Parameter Statements** of the **TRIM Reference Manual** and sample parameters may be found in the report related appendices of the **TRIM Reference Manual**.

Sample OS JCL for a User-Exit-11 Communication Run

(Refer to source library member JOSUX11)

```

//TRIM      EXEC    PGM=TRIM
//STEPLIB   DD      DSN=TRIM.Vvrs.LOAD,DISP=SHR
//          DD      DSN=ADABAS.Vx.LOAD,DISP=SHR          (1)
//TRMPRT00  DD      SYSOUT=A
//TRMPARM   DD      *

                (TRIM UEX11 parameters)          (2)

//DDCARD    DD      (as supplied for any batch ADABAS job)
//

```

Sample OS JCL for a User-Exit-4 Communication Run

(Refer to source library member JOSUX4)

```

//TRIM      EXEC    PGM=TRIM
//STEPLIB   DD      DSN=TRIM.Vvrs.LOAD,DISP=SHR
//          DD      DSN=ADABAS.Vx.LOAD,DISP=SHR          (1)
//TRMPRT00  DD      SYSOUT=A
//TRMPARM   DD      *

                (TRIM UEX4 parameters)          (3)

//DDCARD    DD      (as supplied for any batch ADABAS job)
//

```

NOTES:

- (1) The "Vx" in this step should correspond to the ADABAS Version being used (e.g., V813).
- (2) TRIM UEX11, ALLOW/DISALLOW, LOCK/UNLOCK, PASS/FAIL, and SETPW parameters are discussed in **Section III.2 Using Dynamic Control and Security** of the **TRIM Reference Manual**.
- (3) TRIM UEX4 and LOG parameters are discussed in **Section III.2 Using Dynamic Control and Security** of the **TRIM Reference Manual**.

V.9.2 VSE

Sample VSE POWER JCL for a Command Log Analysis, PRESUM Run or TRELOG Run

(Refer to source library member JVSCLOG)

```

* $$ JOB JNM=TRIM,CLASS=0,DISP=L,PRI=8,USER='ADABAS'
* $$ LST LST=SYS005,CLASS=Q
* $$ LST LST=SYS015,CLASS=Q
      .
      . CONTINUE PRINT LINES AS NEEDED
      .
* $$ LST LST=SYSLST,CLASS=Q
// JOB TRIM                                TRIM REPORTS
*                                     *****
// PAUSE      *** MOUNT COMMAND LOG ON 18X      ***
*                                     OUTPUT      ON 18N
*                                     ***
// ASSGN SYS010,18X      TRMACLG INPUT TAPE
// TLBL TRMACLG
// LIBDEF PHASE, . . .
// ASSGN SYS011,18N      TRMOUT1 OUTPUT TAPE
// TLBL TRMOUT1
// EXEC TRIM,SIZE=200K

      (TRIM parameters)                                (1)

/*
/&
* $$ EOJ

```

NOTE:

- (1) TRIM parameters are discussed in **Section VI Log Analysis Parameter Statements** of the **TRIM Reference Manual**, and sample parameters may be found in the report related appendices in the **TRIM Reference Manual**.

Sample VSE POWER Execution JCL for a Protection Log Analysis Run

(Refer to source library member JVSPLOG)

```

* $$ JOB JNM=TRIM,CLASS=0,DISP=L,PRI=8,USER='ADABAS'
* $$ LST LST=SYS005,CLASS=Q
* $$ LST LST=SYS015,CLASS=Q
      .
      . CONTINUE PRINT LINES AS NEEDED
      .
* $$ LST LST=SYSLST,CLASS=Q
// JOB TRIM                                TRIM REPORTS
*                                           ***
// PAUSE                                  *** MOUNT PROTECTION LOG ON 18X   ***
*                                           OUTPUT ON 18N
*                                           ***
// ASSGN SYS010,18X                       TRMAPLG INPUT TAPE
// TLBL TRMAPLG
*           CHANGE ddd IN NEXT CARD TO DISK ADDRESS
// ASSGN SYS006,ddd ADAWAN CARDS FOR FIRST FILE
*           CHANGE **** IN NEXT DLBL CARD TO SEQ DISK FILE-ID
*                                           OF ADAWAN CARD IMAGE FILE
// DLBL TRMFD01,'****',0,SD
*
*           CHANGE xxxx IN NEXT EXTENT CARD TO DISK START ADDRESS
*           CHANGE yyyy IN NEXT EXTENT CARD TO # OF TRACKS OR FBA BLOCKS
*
// DLBL XXXCL,'CORE.IMAGE.LIBRARY',01/365,SD
// EXTENT SYS006,1,0,xxxx,yyyy
// LIBDEF PHASE, . . .
// ASSGN SYS011,18N                       TRMOUT1 OUTPUT TAPE
// TLBL TRMOUT1
// EXEC TRIM,SIZE=200K

                                (TRIM parameters)                                (1)

/*
/ &
* $$ EOJ

```

NOTE:

- (1) TRIM parameters are discussed in the **Section VI Log Analysis Parameter Statements** of the **TRIM Reference Manual**, and sample parameters may be found in **Appendix H: Sample Protection Log Analysis Input Parameters and Reports** of the **TRIM Reference Manual**.

Sample VSE POWER JCL for a User-Exit-11 Communication Run

(refer to source library member JVSUX11)

```
* SAMPLE VSE JCL FOR TRIM USER-EXIT-1 COMMUNICATION RUN
*
* $$ JOB JNM=TRIM,CLASS=0,DISP=L,PRI=8,USER='ADABAS'
* $$ LST LST=SYSLST,CLASS=Q
// JOB TRIM
// LIBDEF PHASE, . . .
// ASSGN SYS000,SYSIPT
// EXEC TRIM,SIZE=200K

      (TRIM UEX1, ALLOW/DISALLOW, LOCK/UNLOCK, PASS/FAIL          (1)
      AND SETPW PARAMETERS)
/*
      (ADARUN PARAMETER CARDS AS SUPPLIED FOR ANY BATCH ADABAS JOB)
/*
/&
* $$EOJ
```

NOTE:

- (1) TRIM UEX11, ALLOW/DISALLOW, LOCK/UNLOCK, PASS/FAIL, and SETPW parameters are discussed in **Section III.2 Using Dynamic Control and Security** of the **TRIM Reference Manual**.

Sample VSE POWER JCL for a User-Exit-4 Communication Run

(refer to source library member JVSUX4)

```
* SAMPLE VSE JCL PROC FOR TRIM USER-EXIT-4
*
* $$ JOB JNM=TRIM,CLASS=0,DISP=L,PRI=8,USER='ADABAS'
* $$ LST LST=SYSLST,CLASS=Q
// JOB TRIM          TRIM REPORTS
// LIBDEF PHASE, . . .
// ASSGN SYS000,SYSIPT
// EXEC TRIM,SIZE=200K

      (TRIM UEX4, LOG PARAMETERS)          (1)

/*
      (ADARUN PARAMETER CARDS AS SUPPLIED FOR ANY BATCH ADABAS JOB)
/*
/&
* $$ EOJ
```

NOTE:

- (1) TRIM UEX4 and LOG parameters are discussed in **Section III.2 Using Dynamic Logging Facility** of the **TRIM Reference Manual**.

V.9.3 VM**Sample VM EXEC for a Command Log Analysis, PRESUM Run, or TRELOG Run**

(refer to source library member JVMCLOG)

```

&TRACE ON
*
*   SAMPLE VM EXEC FOR TRIM COMMAND LOG ANALYSIS
*
FILEDEF      TRMACLOG          DISK CLOG DATA1 T4 (RECFM VB BLOCK 10000
FILEDEF      TRMPRT00         DISK TRIMCLOG LISTING
FILEDEF      TRMPRT01         DISK TRIMREP1 LISTING
FILEDEF      TRMPRT02         DISK TRIMREP2 LISTING
FILEDEF      TRMPRT03         DISK TRIMREP3 LISTING
      .
      .   CONTINUE PRINT LINES AS NEEDED
      .
FILEDEF      TRMOUT01         DISK TRIMOUT1 OUTPUT A4 (RECFM VB BLOCK 10000
FILEDEF      TRMOUT02         DISK TRIMOUT2 OUTPUT A4 (RECFM VB BLOCK 10000
      .
      .   CONTINUE OUTPUT LINES AS NEEDED
      .
FILEDEF TRMPARM DISK PCLOG TRMPARM *
CP SPOOL PRINTER CONT
TRIM
CP CLOSE PRINTER NAME TRIMCLOG LISTING
CP SPOOL PRINTER NOCONT CLOSE

```

The PCLOG TRMPARM file must contain the TRIM parameters to use with this execution. These parameters are discussed in **Section V Log Analysis Parameter Statements** of the **TRIM Reference Manual** and sample parameters may be found in the report related appendices in the **TRIM Reference Manual**.

Sample VM EXEC for a Protection Log Analysis Run

(refer to source library member JVMPLOG)

```

&TRACE ON
*
*   SAMPLE VM EXEC FOR TRIM PROTECTION LOG ANALYSIS
*
FILEDEF TRMAPLOG DISK PLOG DATA T4 (RECFM VB BLOCK 10000
FILEDEF TRMPRT00 DISK TRIMPLOG LISTING
FILEDEF TRMPRT01 DISK TRIMREP1 LISTING
FILEDEF TRMPRT02 DISK TRIMREP2 LISTING
FILEDEF TRMPRT03 DISK TRIMREP3 LISTING
      .
      .   CONTINUE PRINT LINES AS NEEDED
      .
FILEDEF TRMOUT01 DISK TRIMOUT1 OUTPUT A4 (RECFM VB BLOCK 10000
FILEDEF TRMOUT02 DISK TRIMOUT2 OUTPUT A4 (RECFM VB BLOCK 10000
      .
      .   CONTINUE OUTPUT LINES AS NEEDED
      .
FILEDEF TFD00001 DISK FDT001 ADAWAN *
FILEDEF TFD12345 DISK FDT12345 ADAWAN *
      .
      .   CONTINUE FDT LINES AS NEEDED
      .
FILEDEF TRMPARM DISK PPLOG TRMPARM *
CP SPOOL PRINTER CONT
TRIM
CP CLOSE PRINTER NAME TRIMPLOG LISTING
CP SPOOL PRINTER NOCONT CLOSE

```

The PPLOG TRMPARM file must contain the TRIM parameters to use with this execution. These parameters are discussed in **Section V Log Analysis Parameter Statements** of the **TRIM Reference Manual** and sample parameters may be found in **Appendix H Sample Protection Log Analysis Input Parameters and Reports** of the **TRIM Reference Manual**.

Sample VM EXEC for a User-Exit-11 Communication Run

(refer to source library member JVMUX11)

```
&TRACE ON
*
*           VM/CMS EXEC FOR USER-EXIT-11 COMMUNICATION RUN
*
FILEDEF TRMPRT00 DISK TRIMUEX1 LISTING
FILEDEF TRMPARM  DISK PUX1 TRMPARM *
FILEDEF DDCARD  DISK PINSTA TRMPARM *
TRIM
```

The PUX1 TRMPARM file must contain the UEX11 statement and associated parameters to use with the User-Exit-11 Communication run. These parameters are discussed in **Section III.2 Using Dynamic Control and Security** of the *TRIM Reference Manual*.

Sample VM EXEC for a User-Exit-4 Communication Run

(refer to source library member JVMUX4)

```
&TRACE ON
*
*           VM/CMS EXEC FOR USER-EXIT-4 COMMUNICATION RUN
*
FILEDEF      TRMPRT00          DISK TRIMUEX4 LISTING
FILEDEF      TRMPARM DISK PUX4 TRMPARM *
FILEDEF      DDCARD  DISK PINSTA TRMPARM *
TRIM
```

The PUX4 TRMPARM file must contain the UEX4 statement and associated parameters to use with the User-Exit-4 Communication run. These parameters are discussed in **Section III.2 Using Dynamic Logging Facility** of the *TRIM Reference Manual*.

Sample TRIMRUN DDCARD to use with the User-Exit-1 and User-Exit-4 Communication Runs:

```
ADARUN DATABASE=001          (1)
ADARUN DEVICE=3380
ADARUN MODE=MULTI
```

NOTE:

(1) This must identify the database intended for the User-exit Communication.

V.10 Batch TNM Administration Functions

Note: All TNM Batch jobs should be executed using Delimiter Mode.

All TNM Administration functions that are available on-line are also available in batch, except for the Define Data Collection Parameters function. Executing Administration functions in batch is recommended when functions access large amounts of data.

TNM includes a collection of NATURAL programs that perform various administrative and reporting functions:

- Defining (updating) data collection parameters to determine which statistics are to be collected for which users and programs, etc.
- Converting (expanding) the compressed statistics on the TNM file for reporting purposes.
- Purging (deleting) obsolete data from the TNM file.

These functions can be performed on-line or in batch (except for the Define Data Collection Parameters function) and are password-controlled to prevent unauthorized use.

When performing a TNM Administration function in batch, it is necessary to replace #PROGRAM in the sample JCL/EXEC with the Administration function to be executed and to replace #CONTROL with the Administration function parameters in the exact order described, separated by the delimiter character (the default is comma). Optional parameters (or parameters used by other functions with the same #PROGRAM), which are omitted, must be designated with the delimiter character if other parameters follow. The standard format is as follows:

 Password, Menu code, Parameters

Multiple Administration functions may be run in the same job stream.

Note: In the following Batch Administration functions, the password is the default TRIMTRIM, and menu codes are the codes that identify Administration functions on menu screens.

OS

The following JCL is an example used to support Batch Administration functions for OS. This JCL must be tailored to accommodate site-specific needs.

```
//TNMBATCH JOB(20000),'TNM BATCH ADMIN'
//*
//ADMIN      EXEC PGM=NAT
//CMPRINT    DD      SYSOUT=*
//CMPRT01    DD      SYSOUT=*
//CMSYNIN    DD      *
LOGON TRMVvrs
#PROGRAM
#CONTROL
FIN
/*
//
```

VSE

The following JCL is an example used to support Batch Administration functions for VSE. This JCL must be tailored to accommodate site-specific needs.

```
//JOB
//EXEC NATXXX,...
LOGON TRMVxxx
#PROGRAM
#CONTROL
FIN
/*
//
```

VM

The following EXEC is an example of VM EXECs used to support the Batch Administration functions. This EXEC must be tailored to accommodate site-specific needs.

```
/*Execute TNM Batch Administration functions */
address 'COMMAND'
'ERASE TNM CMSYNIN A'

'EXECIO 1 DISKW TNM CMSYNIN A 1 F 80(STRING LOGON TRMVxxx'
'EXECIO 1 DISKW TNM CMSYNIN A 2 F 80(STRING #PROGRAM'
'EXECIO 1 DISKW TNM CMSYNIN A 3 F 80(STRING #CONTROL'
'EXECIO 1 DISKW TNM CMSYNIN A 4 F 80(STRING FIN'

'FILEDEF * CLEAR'
'FILEDEF CMSYNIN DISK TNM CMSYNIN A'
'FILEDEF CMPRINT PRINTER'
'FILEDEF CMPRT01 PRINTER'
'EXEC NAT BATCH'

'ERASE TNM CMSYNIN A'
exit
```

V.10.1 Convert TNM Detail Data

#PROGRAM TNMBCONV is used for the Convert Detail Data function. There are no required parameters for this function. However, a User-ID may optionally be specified to convert data belonging to that User-ID only. If a User-ID is not specified, the optional parameter must be designated with the delimiter character.

The Convert Detail Data function expands Detail data records, allowing Detail data to be included in Detail reports. If no User-ID is entered, records for all User-IDs are converted. The standard format is as follows:

```
#PROGRAM:          TNMBCONV
#CONTROL:          Password,User-ID
```

#CONTROL	DESCRIPTION
PASSWORD (required)	Password to access TNM Administration functions.
USER-ID (optional)	Converts detail data for the specified User-ID.

Example:

```
#PROGRAM:          TNMBCONV
#CONTROL:          TRIMTRIM,USER24
```

Note: The session for which you are doing a conversion must have ended in order to flush all buffers before running a batch conversion.

V.10.2 Purge TNM Program Summary Data

#PROGRAM TNMBPPS is used for the following functions: Purge Program Summary Data By Date, Purge Program Summary Data By Days, and Purge Program Summary Data By Library. The standard format is as follows:

```
#PROGRAM:          TNMBPPS
#CONTROL:          Password, Menu code, Date, Days of retention, Library, Starting
                  program, Ending program
```

Required parameters for the selected function must be specified. Optional parameters not specified and parameters for the other functions must be designated with the delimiter character, and spaces must not be included.

#CONTROL	DESCRIPTION
PASSWORD (required)	Password to access TNM Administration functions.
MENU CODE (required)	Code used to access function (A, B, or C).
DATE (required for Purge Program Summary Data By Date only)	Deletes program summary data collected on or before the specified date.
DAYS OF RETENTION (required for Purge Program Summary Data By Date only)	Deletes program summary data collected prior to number of days specified to be retained.
LIBRARY (required for Purge Program Summary Data By Library only)	Deletes program summary data belonging to the specified library.
STARTING PROGRAM (optional)	Deletes program summary data starting with the specified program.
ENDING PROGRAM (optional)	Deletes program summary data ending with the specified program.

Purge Program Summary Data By Date

The Purge Program Summary Data By Date function allows users to delete all Program Summary data collected on or before a specified date.

Example:

```
#PROGRAM:          TNMBPPS
#CONTROL:          TRIMTRIM,A,20011231,,,
```

Purge Program Summary Data By Days

The Purge Program Summary Data By Days function allows users to delete Program Summary data based on the number of days that Program Summary data is to be retained. (For example, if the default value of 7 days is used, data collected within the past 7 days will be retained. All other data will be deleted.)

Example:

#PROGRAM: TNMBPPS
#CONTROL: TRIMTRIM,B,,21,,,

Purge Program Summary Data By Library

The Purge Program Summary Data By Library function allows users to delete Program Summary data belonging to a specified library. A library must be entered, and a starting program and/or an ending program may optionally be entered to limit the deletion of Program Summary data.

Example:

#PROGRAM: TNMBPPS
#CONTROL: TRIMTRIM,C,,,PAYROLL,PAYIN,PAYOUT

V.10.3 **Purge TNM User Summary Data**

#PROGRAM TNMBPUS is used for the following functions: Purge User Summary Data By Date, Purge User Summary Data By Days, and Purge User Summary Data By User-ID. The standard format is as follows:

#PROGRAM: TNMBPUS
 #CONTROL: Password, Menu code, Date, Days of retention, User-ID

Required parameters for the selected function must be specified. Optional parameters not specified and parameters for the other functions must be designated with the delimiter character, and spaces must not be used.

#CONTROL	DESCRIPTION
PASSWORD (required)	Password to access TNM Administration functions.
MENU CODE (required)	Code used to access function (D, E, or F).
DATE (required for Purge User Summary Data By Date only)	Deletes user summary data collected on or before the specified date.
DAYS OF RETENTION (required for Purge User Summary Data By Date only)	Deletes user summary data collected prior to number of days specified to be retained.
USER-ID (required for Purge User Data By User-ID only)	Deletes user summary data belonging to a specified user-ID.

Purge User Summary Data By Date

The Purge User Summary Data By Date function allows users to delete User Summary data collected on or before a specified date.

Example:

#PROGRAM: TNMBPUS
 #CONTROL: TRIMTRIM,D,20011231,,

Purge User Summary Data By Days

The Purge User Summary Data By Days function allows users to delete User Summary data based on the number of days the User Summary data is to be retained. (For example, if the default value of 7 days is used, data collected within the past 7 days will be retained. All other data will be deleted.)

Example:

#PROGRAM: TNMBPUS
#CONTROL: TRIMTRIM,E,,14,

Purge User Summary Data By User-ID

The Purge User Summary Data By User-ID function allows users to delete User Summary data belonging to a specified User-ID.

Example:

#PROGRAM: TNMBPUS
#CONTROL: TRIMTRIM,F,,,USER24

V.10.4 **Purge TNM Detail Data**

#PROGRAM TNMBPEV is used for the following functions: Purge Detail Data By Hour and Purge Detail Data By Library. The standard format is as follows:

```
#PROGRAM:          TNMBPEV
#CONTROL:          Password, Menu code, Hours of retention, Library, Starting
                   program, Ending program
```

Required parameters for the selected function must be specified. Optional parameters not specified and parameters for the other functions must be designated with the delimiter character, and spaces must not be used.

#CONTROL	DESCRIPTION
PASSWORD (required)	Password to access TNM Administration functions.
MENU CODE (required)	Code used to access function (A or B).
HOURS OF RETENTION (required for Purge Detail Summary Data By Date only)	Deletes detail summary data collected prior to number of hours specified to be retained.
LIBRARY (required for Purge Detail Summary Data By Library only)	Deletes detail summary data belonging to the specified library.
STARTING PROGRAM (optional)	Deletes detail summary data starting with the specified program.
ENDING PROGRAM (optional)	Deletes detail summary data ending with the specified program.

Purge Detail Data By Hour

The Purge Detail Data By Hour function allows users to delete Detail data based on the number of hours the Detail data is to be retained.

Example:

```
#PROGRAM:          TNMBPEV
#CONTROL:          TRIMTRIM,A,168,,,
```

Purge Detail Data By Library

The Purge Detail Data By Library function allows users to delete Detail data belonging to a specified library. A library must be entered, and a starting program and/or an ending program may optionally be entered to limit the deletion of Detail data.

Example:

```
#PROGRAM:          TNMBPEV
#CONTROL:          TRIMTRIM,B,,PAYROLL,PAYIN,PAYOUT
```

V.10.5 Purge TNM Non-Converted Data

#PROGRAM TNMBPNC is used for the following functions: Purge Non-converted Data By Date, Purge Non-converted Data By Days, and Purge Non-converted Data By User-ID. The standard format is as follows:

#PROGRAM: TNMBPNC
 #CONTROL: Password, Menu code, Date, Days of retention, User-ID

Required parameters for the selected function must be specified. Optional parameters not specified and parameters for the other functions must be designated with the delimiter character, and spaces must not be used.

#CONTROL	DESCRIPTION
PASSWORD (required)	Password to access TNM Administration functions.
MENU CODE (required)	Code used to access function (C, D, or E).
DATE (required for Purge Non-converted Summary Data By Date only)	Deletes non-converted summary data collected on or before the specified date.
DAYS OF RETENTION (required for Purge Non-converted Summary Data By Date only)	Deletes non-converted summary data collected prior to number of days specified to be retained.
USER-ID (required for Purge Non-converted Data By User-ID only)	Deletes non-converted summary data belonging to a specified user-ID.

Purge Non-Converted Data By Date

The Purge Non-converted Data By Date function allows users to delete all non-converted data collected on or before a specified date.

Example:

#PROGRAM: TNMBPNC
 #CONTROL: TRIMTRIM,C,20011231,,

Purge Non-Converted Data By Days

The Purge Non-converted Data By Days function allows users to delete non-converted data based on the number of days the non-converted data is to be retained. (For example, if the default value of 7 days is used, data collected within the past 7 days will be retained. All other data will be deleted.)

Example:

```
#PROGRAM:          TNMBPNC
#CONTROL:          TRIMTRIM,D,,14,
```

Purge Non-Converted Data By User-ID

The Purge Non-converted Data By User-ID function allows users to delete non-converted data belonging to a specified User-ID.

Example:

```
#PROGRAM:          TNMBPNC
#CONTROL:          TRIMTRIM,E,,,USER24
```

V.11 Storage Requirements

The storage requirements for running TRIM Batch Command Log facilities vary. TRIM may be run in approximately 200K bytes of real memory, if it only has to produce detail reports and a few simple summary reports. More virtual storage is required when TRIM is expected to produce several complex summary reports. This is because summary report figures are all maintained in memory until the end of the input has been reached. Then the figures are formatted and printed on the various reports.

Excessive storage requirements may be caused by any of the following summary report conditions:

- The CONTROL field(s) cause excessive numbers of figures to be maintained. For example, a summary report by COMMAND would yield about 30 sets of figures (because there are about 30 different ADABAS Commands), by FILE possibly 65,535 sets of figures, and by COMMAND within FILE possibly 1,966,050 sets of figures.
- The number of summary calculations may cause excessive numbers of figures to be maintained. For example, calculating the SUM, MAXIMUM, MINIMUM, and AVERAGE of CPUTIME, ASSOIO, DATAIO, and WORKIO requires 16 "accumulators". Assuming 4 bytes per accumulator for each of 16 calculations for each of 1,966,050 sets of figures (COMMAND within FILE), 31,456,800 bytes of storage would be required.

The user should carefully choose the CONTROL fields and summary calculations for the several summary reports typically required.

Furthermore, the user may choose to INCLUDE or EXCLUDE certain records for certain reports or to run only a subset of all log records in any one TRIM execution. A further option may be to OUTPUT certain detail log records to a sequential dataset for later extensive summary calculations in a separate TRIM run or through COBOL or NATURAL programs.

TRIM Batch may now be run above the 16MB line (in OS/390 and VM environments). This will relax the virtual storage constraints that exist below the 16MB line.

In the unlikely event that TRIM runs out of available storage after processing many log records, TRIM will not ABEND. Instead, TRIM will print all summary calculations accumulated to that point, zero its accumulators, and continue processing uninterrupted. The user will notice all reports are in two (or more) parts. The user should modify the TRIM parameters or increase the storage for future TRIM runs.

A TRIM Protection Log Analysis Run usually will require less than 200K because there are few, if any, summary reports worth obtaining from the Protection Log.

A TRIM User-Exit-11 or User-Exit-4 Communication Run (batch run) requires less than 200K bytes of real memory.

V.12 Processing Time Requirements

The amount of CPU time required for any TRIM Command Log analysis or PRESUM execution is widely variable and depends upon several factors, primarily the following:

- CPU model
- Number of input log records
- Size of input log records
- Number of input records INCLUDED in reports
- Number of user defined FIELD and VALUE statements
- Number of summary reports and their complexity (number of CONTROL and summary calculation fields).

Significant improvement in processing time (sometimes by a factor of 100 or more) may be experienced if PRESUM records are used for resource statistics, rather than using thousands or millions of Detail Log records.

TRIM Protection Log processing execution time figures are not currently available.

A TRIM User-exit Communication Run usually takes less than one second.

V.13 Limits and Restrictions

Every effort has been made to minimize the restrictions and keep TRIM limits well beyond commonly reached levels.

The number of input log records is unlimited.

The number of output log records and report print lines is unlimited.

The number of detail reports is limited to 99 for OS and VM, and 5 for VSE. A typical TRIM run may require two to three detail reports.

The number of summary reports is unlimited (within storage constraints). A typical TRIM run may require one to five summary reports.

Each OS and VM report line size may be set to a minimum of 72 characters and a maximum of 4000 characters, with 133 being the most typical line size. POWER and VSE considerations limit report line size to 121. The page size may be set to a minimum of 10 lines and an unlimited maximum, with 55 being the most typical page size.

The number of fields that may be stated on a detail report DISPLAY statement is 50, with 8 to 10 being typical. Fields may be stated more than once.

The number of fields that may be stated on a summary report CONTROL statement is 10. This means 10 control levels. One to three control levels are most typical.

The number of "list" values within parentheses for each INCLUDE, EXCLUDE, VALUE, or LOG statement is 10. For example: INCLUDE COMMAND=(A1,A4,E1,E4,N1,N2) has 6 list values. Multiple INCLUDE, EXCLUDE, VALUE, LOG, ALLOW/DISALLOW, LOCK/UNLOCK, PASS/FAIL, and SETPW statements are permitted, which nearly eliminates this restriction.

Summary calculations are limited to 18 decimal digit values. Command Log Detail, PRESUM Records, and TRELOG Records contain no numeric fields larger than 4 bytes binary. Therefore, the largest summary calculation, SUM, for 10 million log records could not reach 18 decimal digits.

The number of "derived" fields the user may state via the FIELD parameter statements is limited to 40. Each field may have a stated length of a maximum of 16 characters (format = 'C' or 'H') or a maximum of 4 bytes (format = 'B'). Each field may have an unlimited (within storage constraints) number of potential values (VALUE statement).

The number of output sequential datasets (OUTPUT Statement) is limited to 99 for OS and VM, and 5 for VSE (5 tape and/or disk outputs). VSE outputs may be placed together, eliminating any real restrictions.

The five VSE output datasets are:

- SYS011 (tape), or SYS013 (disk)
- SYS021 (tape), or SYS023 (disk)
- SYS031 (tape), or SYS033 (disk)
- SYS041 (tape), or SYS043 (disk)
- SYS051 (tape), or SYS053 (disk)

A mixture of tape and disk output may be specified for VSE. However, if SYS011 is being used, for example, then SYS013 cannot be used. The number of LOG and LOGxx statements allowed for Dynamic Logging is 30 to 50, depending upon their complexity.

The total number of ALLOW/DISALLOW, LOCK/UNLOCK, PASS/FAIL, and SETPW statements allowed for Dynamic Control and Security is 30 to 50, depending upon their complexity.

ADABAS commands that receive certain response codes are not logged on the ADABAS Command Log. These include some response codes from the ADABAS Link Routines and SVC, which usually have to do with queue overflows. ADABAS itself never "sees" these commands, therefore they are not logged and not viewable on-line via TRIM.

Protection Log SHOWn (SHOW statement) fields are limited by a 10K byte output area into which the SHOWn fields are decompressed. The maximum number of fields that may be stated on one statement is 100. Multiple SHOW statements for the same file may be stated on one report. This causes a concatenation of the fields on the report and output, practically eliminating any real restriction on the number of fields.

To avoid filling up the TRIM collection tables with its own internal commands and to avoid excessive TNM data collection, any commands from any TRMV* library will not be accumulated. If the RTM modules are moved to a non-TRMV* library, the TNM file and the user-exit collection tables will fill up faster.

<p>Note: TNM Detail collection in production environments may cause excessive data to be calculated and the TNM file could become full. Therefore, extensive detail collection in production environments is not recommended.</p>
--

SECTION VI

TAILORING WITH ZAPS

VI.1 Tailoring User-Exit-4

Tailoring of User-Exit-4 may be accomplished by several simple Zaps.

Optional start-up and Time Adjustable Parameters (TAP) may be generated using a supplied macro, TRMTAP. Refer to the Time Adjustable Parameters section.

By using the Real-Time Monitor Control Screens, any and all start-up and hourly adjustment settings may be adjusted. These Zaps affect the accumulations done in User-Exit-4, the resulting logging volume, the operation of the Real-Time Monitor, and the Nucleus Session Statistics.

Some options are modifiable only by the application of a Zap. These options are **not** modifiable via TRMTAP or Real-Time Monitor Control Screens. These options are so indicated in the list that follows.

The following Zaps are for CSECT TRMU4CFG in Module (PHASE) TRMX4CFx, where x must be replaced by L = large, S = Small or R = Regular depending which flavor of the exit you are planning to use.

We strongly recommend applying the zaps to the individual TRMX4CFx module prior to linking TRMUEX4x, so that they can remain active if a re-link of TRMUEX4x becomes necessary because of replacement modules containing correction and/or enhancements to the product.

RTM Control Screen Password

Location: X'14'

Options

Should be zapped to a DBA desired password value.
This password will be required when the DBA or other authorized user desires to view or modify certain critical RTM information

Default x'E3D9C9D4E3D9C9D4' (TRIMTRIM)

Detail Logging

Location: x'1C'

Options

x'00'	Do not log detail records unless/until instructed otherwise (*default*)
x'FF'	Log all detail records unless/until instructed otherwise

PRESUM

Location: x'1D'

Options

x'00'	All below deactivated (*default*)
x'FF'	All below activated
x'01'	Activate accumulation for Thread
x'02'	Activate accumulation for File Number
x'04'	Activate accumulation for Command Code
x'08'	Activate accumulation for Response Code
x'10'	Activate accumulation for Program
x'20'	Activate accumulation for Job
x'40'	Activate accumulation for User-ID

Location: x'1E'

Options

x'00'	All below deactivated (*default*)
x'FF'	All below activated
x'04'	Activate accumulation for Security-ID
x'08'	Activate accumulation for CICS Transaction ID
x'10'	Activate accumulation for NATURAL Application Library
x'20'	Activate accumulation for NATURAL Security User-ID
x'40'	Activate accumulation for Control Block User-Area
x'80'	Activate accumulation for PRESUM SPECIAL

Minute Accumulations

Location: x'1F'

Options

x'FF'	All below activated (*default*)
x'00'	All below deactivated
x'01'	Activate accumulation for Thread
x'02'	Activate accumulation for File Number
x'04'	Activate accumulation for Command Code
x'08'	Activate accumulation for Response Code
x'10'	Activate accumulation for Program
x'20'	Activate accumulation for Job
x'40'	Activate accumulation for User-ID

Location: x'20'

Options

x'00'	All below deactivated (*default*)
x'FF'	All below activated
x'04'	Activate accumulation for Security-ID
x'08'	Activate accumulation for CICS Transaction ID
x'10'	Activate accumulation for NATURAL Application Library
x'20'	Activate accumulation for NATURAL Security User-ID
x'40'	Activate accumulation for Control Block User-Area

Hourly Accumulations

Location: x'21'

Options

x'FF'	All below activated (*default*)
x'00'	All below deactivated
x'01'	Activate accumulation for Thread
x'02'	Activate accumulation for File Number
x'04'	Activate accumulation for Command Code
x'08'	Activate accumulation for Response Code
x'10'	Activate accumulation for Program
x'20'	Activate accumulation for Job
x'40'	Activate accumulation for User-ID

Location: x'22'

Options

x'00'	All below deactivated (*default*)
x'FF'	All below activated
x'04'	Activate accumulation for Security-ID
x'08'	Activate accumulation for CICS Transaction ID
x'10'	Activate accumulation for NATURAL Application Library
x'20'	Activate accumulation for NATURAL Security User-ID
x'40'	Activate accumulation for Control Block User-Area

Session Accumulations

Location: x'23'

Options

x'FF'	all below activated (*default*)
x'00'	All below deactivated
x'01'	Activate accumulation for Thread
x'02'	Activate accumulation for File Number
x'04'	Activate accumulation for Command Code
x'08'	Activate accumulation for Response Code
x'10'	Activate accumulation for Program
x'20'	Activate accumulation for Job
x'40'	Activate accumulation for User-ID
x'80'	Activate accumulation for Command with File

Location x'24'

Options

x'00'	All below deactivated (*default*)
x'FF'	All below activated
x'04'	Activate accumulation for Security-ID
x'08'	Activate accumulation for CICS Transaction ID
x'10'	Activate accumulation for NATURAL Application Library
x'20'	Activate accumulation for NATURAL Security User-ID
x'40'	Activate accumulation for Control Block User-Area

Print Session Statistics

Location: X'25'

Options

x'FF'	Print only at end of session (*default*)
x'00'	Do not print session statistics
x'bb'	a binary number (1, 2, 3, 4, 6, 8, 12, 24) indicating the number of times to print (and optionally clear) the session statistics within a 24-hour period. The number must be evenly divisible into 24. Example: 24 will print statistics each hour.

Print Sequence

Location: x'26'

Options

x'C3' (C)	Print session statistics in ascending sequence by <u>C</u> ategory, such as FNR, JOB, etc (*default*)
x'C6' (F)	Print session statistics in descending sequence by <u>F</u> requency, so that the most used FNR, JOB, etc. is displayed first
x'C2' (B)	Print session statistics by category and then by frequency

Location: X'27' Reserved

Zero FNR

Location: X'28'

Options

x'00'

Do not adjust the FNR in the log record for any commands (*default*)

Often the FNR field remains a "valid" and reasonable value, left over from a previous call from the user program (a common occurrence in NATURAL programs).

For example, if there is an L3 on file 89, it may be followed by an RC (on file 89). In actuality, the RC has nothing to do with a particular file (in ADABAS). However, the RC has more to do with file 89 than it has to do with file 0 in terms of statistics gathering.

Therefore, the user may desire to leave the FNR field unchanged to gather meaningful statistics

non-zero

Change the FNR to zero in the log record for certain commands, such as RC, BT, OP, CL, ET, etc.

These commands will operate correctly in ADABAS with or without a "valid" file number (i.e., ADABAS ignores the file number). Non-NATURAL applications tend to properly zero or blank (hex '40') the FNR field before calling ADABAS. NATURAL applications tend not to zero the FNR field.

Statistics may show, for example, many RC commands against file 64. This may not be disconcerting unless the site has no file 64, in which case the above mentioned blanking

of

the FNR must have taken place. To get statistics to appear to be correct, the user may prefer to have the FNR field changed to zero

<p>Note: 2-byte file numbers containing blanks (hex '4040') will appear as file 16448.</p>

User-ID and User-Area in Character or Hex

Location: x'29'

Options

- x'C8' (H) Display the User-ID and User-Area of the Control lock in hexadecimal on all screens (*default*)
- x'C3' (C) Display the User-ID and User-Area as four characters on all screens

Sort Sequence

Location: x'2A'

Options

- x'C3' (C) Display screen figures in ascending sequence by Category such as FNR, JOB, etc (*default*)
- x'C6' (F) Display screen figures in descending sequence by Frequency, so that the most used FNR, JOB, etc. is displayed at the top of each screen

STOP/TERMINATE

Location: X'2B'

Options

- x'E2' (S) Execute a NATURAL STOP statement upon completion of the Real-Time Monitor. This will return the NEXT prompt (*default*)
- x'E3' (T) Execute a NATURAL TERMINATE statement upon completion of the Real-Time Monitor. This will exit NATURAL

Password Retention

Location: X'2C'

Options

- x'D5' (N) Suppress (zero out) the Additions-3 (password) field on all detail log records (*default*)
- x'E8' (Y) Retain the Additions-3 field on all detail log records
- x'E5' (V) Retain the Additions-3 field only for detail log records that show Response Codes 200-203 (password violations).

TRIM Idle Mode

Location: x'2D'

Options

x'00'

TRIM is active and will function as defined by TRMTAP, TRMLOG, TRMRSP, and Zap settings (*default*)

x'FE'

TRIM is idle and will not accumulate statistics but will process LINK-Exit-1 information.
For more information, refer to **Section IX Idle Mode** of the **TRIM Reference Manual**

x'FF'

TRIM is idle and will not accumulate statistics.
For more information, refer to **Section IX Idle Mode** of the **TRIM Reference Manual**

Location: x'2E'

reserved

Trace

Location: x'2F'

Options

x'E8' (Y)

Make the Trace function available (*default*)

x'D5' (N)

Do not allow the Trace function

High Use and High Duration

Location: X'30'

Default: X'E8' (Y)

Options:

- X'E8' (Y): High Use statistics and Long Duration Commands are kept.
- X'D5' (N): High Use statistics and Long Duration Commands are not kept.

Alternate User-ID

Location: X'31'

Default: X'E8' (Y)

Options:

- X'E8' (Y): Display CICS or COM-LETE Term-ID, when available, for most references to Internal User-ID (referred to as UIDALT).
- X'D5' (N): Always display ADABAS User-ID for Internal User-ID.

Display All User Queue Entries

Location: X'32'

Options

- x'D5' (N) Do not display inactive entries (*default*)
- x'E8' (Y) Display all User Queue entries, even those that appear to be inactive

Display STCK Sequence Error

Location: x'33'

Options

- x'E8' (Y) Display console warning message when Command Log STCK time is out of sequence (*default*)
- x'D5' (N) Ignore STCK time sequence error

SECURITRE Violator Accumulations

Location: X'34'

Options

- x'72' All below active (*default*)
- x'00' All below deactivated
- x'02' Activate accumulation for File Number
- x'10' Activate accumulation for Program
- x'20' Activate accumulation for Job
- x'40' Activate accumulation for User-ID

Location x'35'

Options

- x'14' All below active (*default*)
- x'00' All below deactivated
- x'10' Activate accumulation for NATURAL Application Library
- x'04' Activate accumulation for Security-ID

TRIM Usage Control through SECURITRE

Location: x'36'

Options

x'D5' (N) Do not control TRIM RTM functions via SECURITRE
(*default*)

x'E8' (Y) Control TRIM RTM functions via SECURITRE

Location: X'37' reserved

Use Command Queue Job Name

Location: X'38'

Options

x'C3' (C) Use Job Name from the Command Queue
(*default*)

x'E4' (U) Use Job Name from the USERINFO Area

x'..' Use Job Name as passed in the Command Log

Clear Session Stats

Location: X'39'

Options

x'FF' Clear Session Statistics each time they are printed.
Restart counts from zero
(*default*)

x'..' Do not clear Session Statistics after print

Alternate for null NATPROG

Location: x'3A'

Options

x'FF' Replace null NATPROG with COBOL or other program name
(*default*)

x'00' Do not use an alternate for NATPROG

NATURAL Application Library & User-ID in Log

Location:	x'3B'	
Options	x'00'	Do not pass NATURAL Application Library or NATURAL Security User-ID or Security-ID in the Command Log (+default+)
	x'FF'	Pass the NATURAL Application Library and the NATURAL Security User-ID in the Command Log in the Additions-3 (Password) and Additions-4 (Cipher) fields, respectively
	x'FE'	Pass the NATURAL Application Library and Security-ID in the Command Log in the Additions-3 (Password) and Additions-4 (Cipher) fields, respectively

Note: Activation of this Zap byte and the External User-ID Zap byte simultaneously will result in passing the NATURAL Application Library in the Additions-3 (Password) field and External User-ID in the Additions-4 (Cipher) field.

Activation of this Zap byte and the Password Retention Zap byte simultaneously will result in retaining the Password in the Additions-3 (Password) field and passing the NATURAL Security User-ID in the Additions-4 (Cipher) field.

It is necessary to have LOGCB=YES for ADABAS and TRIM in order to get any of the fields in the Control Block portion of the Command Log.

External User-ID in Log

Location:	X'3C'	
Options	x'00'	Do not move External User-ID to Command Log (*default*)
	x'FF'	Move External User-ID to Additions-4 (Cipher) field of the Command Log

Note
Refer to Note for Zap switch at Location x'3B'

NATURAL Program Name in Log

Location:	x'3D'	
Options	x'E8' (Y)	Pass the NATURAL Program Name in the RESERVED field in the Command Log (*default*)
	x'D5' (N)	Do not pass the NATURAL Program Name in the Command log

CTI in Log

Location: X'3E'

Options

x'D5' (N) Do not move four bytes at CTI+4 (CICS Tran-ID portion of CTI field) to the User-Area of the Command Log (*default*)

x'E8' (Y) Move four bytes at CTI+4 to the User-Area of the Command Log

Response Code on LOCK

Location: x'3F'

Default x'0011' (17)

Options

Any reasonable Response Code value, such as x'0010' (decimal 16) or x'1111' (decimal 4369), which distinguishes TRIM-induced LOCKs from normal ADABAS Response Code 17 (Invalid File Number).

Response Code on DISALLOW

Location: x'41'

Default x'0016' (22)

Options

Any reasonable Response Code value, such as x'00DF' (decimal 239) or x'2222' (decimal 8738), which distinguishes TRIM-induced DISALLOWs from normal ADABAS Response Code 22 (Invalid Command Code).

Response Code on FAIL

Location x'48'

Default x'00C8' (200)

Options

Any reasonable Response Code value, such as x'00DF' (decimal 239) or x'3333' (decimal 13107), which distinguishes TRIM-induced FAILs from normal ADABAS Response Code 200 (Password Violation)

tRelational Logging

Location x'45'

Options:

x'D5' (N) No tRelational logging (*default*)

x'E8' (Y) Activate tRelational logging

PRESUM SMF Logging (OS only)

Location x'46'

Options:

X'C3' (C) Log PRESUM to the CLOG (*default*)

x'E2' (S) Log PRESUM to the SMF only

x'C2' (B) Log PRESUM to CLOG and SMF

Note: If the "S" or "B" option is chosen, the desired PRESUM SMF Record Type must be specified.
'S' is the only option allowed if running in a zIIP enabled ADABAS nucleus!

PRESUM SMF Record Type (OS only)

Location x'47'

Options:

x'..' any binary value between 128 x'80' and 255 x'FF'

PRESUM Interval in minutes

Location x'48'

Default x'060C' (packed decimal 60)'

Options:

x'..' any packed decimal value
range 005C to 060C (5 to 60)
must evenly divide into 60

RTM SNAP feature

Location x'4A'

Options:

x'D5' (N) feature not allowed (*default*)

x'C4' (D) feature dynamically activated on first invocation

x'D7' (P) feature permanent active

Note:

Having SNAP permanently active should carefully selected because of the comprehensive amount of data checked!

VI.2 Tailoring Link-Exit-1

There are several Zap switches available in TRIM Link-Exit-1. The modification has to be applied to CSECT TSIUEX1G in the appropriate ADALNK module for Batch / TSO, ADALCO for COM-LETE or CICSGBL for CICS:

Syntax: NAME ADALNK TSIUEX1G
 VER <location value> <default>
 REP <location value> <selected option>

Sample Transfer to UEXITBU in any case
 NAME ADALNK TSIUEX1G
 VER 0138 00
 REP 0138 FF

Transfer to UEXITBU

Location: 0134

Default: X'00'

Options:

- * '00': > Do not transfer control to UEXITBU when the ADABAS call parameter list is invalid or the USERINFO area is set up improperly or call type indicator (ACBXTYP / ACBTYPE) does not indicate user logical call
- * 'FF': > Transfer control to UEXITBU in any case.

ACEE Variable Length Security-ID

Location: 0135 (OS only)

Default: X'00'

Options:

- * '00': > Try to get to ACEE variable length Security-ID.
- * 'FF': > Get the Security-ID from ASXB.

Program Name

Location: 0136 (OS only)

Default: X'00'

Options:

- * '00': > Obtain Program Name from Job Step in Batch, Task in TSO.
- * '01': > Obtain Program Name from Active Task in Batch and TSO.
- * '02': > Obtain Program Name from Job Step in Batch, PRB in TSO.
- * '03': > Obtain Program Name from Current PRB in Batch and TSO.

Attempt to Locate NATURAL Information

Location: 0137

Default: X'00'

Options:

- * '00': > Obtain NATURAL information from the control block provided as 7th parameter (ADAPARM=ON)..
- * 'FF': > Do not obtain any NATURAL information.

Slow Down Batch

Location:	0138	(BATCH only)
Default:	X'00'	
Options:	00	Do not Slow Down Batch
	FF	Slow Down Batch with parameters as shown in Zap bytes below

UB Length

Location:	0139	
Default:	X'00'	
Options:	00	Only pass the length of the TSIG segment as User-Info-Buffer
	FF	Pass the whole User-Info-Buffer as defined via the LUINFO keyword

Userid, Job information

Location:	013A	
Default:	X'00'	
Options:	00	Constant information (userid, job name, etc.) retrieved on the first call only
	FF	All information is retrieved on every call to TSIUEX1G. Needed for systems setting the Userid after the first ADABAS call (like NIM)
Locations:	- 013B	(not currently used)

Slow Down Batch nnnn Milliseconds

Location: 013C
Default: 000003E8 (decimal 1000 = 1 second)
Options: Any reasonable value of milliseconds of wait time.

Slow Down Batch Every nnnn Calls

Location: 0140
Default: 00000064 (decimal 100)
Options: Any reasonable value for number of calls to ignore before doing the wait.

Slow Down Batch Starting Hour

Location: 0148
Default: 0007 (decimal 7)
Options: Starting hour (0-23) for waiting to take effect.

Slow Down Batch Ending Hour

Location: 014A
Default: 0010 (decimal 16)
Options: Ending hour (0-23) for waiting to have an effect.

Note: The four Zaps above have the following meaning:

During prime time hours 7-16, slow down the batch job by one second every 100 calls. This slow down applies to the batch job(s) for which this ADALNx/TSIUEX1 is used.

The four Zap values for Slow Down take effect only when the Zap byte at location 013C indicates Batch Slow Down is to be in effect and is not overridden by TRMSLO. TSIUEX1G recognizes commands from TSO environments and does not slow these down. TSIUEX1G does not recognize IMS, FOCNET, etc. Therefore, Batch Slow Down should not be activated via Zap switches for ADALNx/TSIUEX1G in these environments.

VI.3 Tailoring the TRIM NATURAL Monitor (TNM)

TNM customization is no longer performed via zaps.
Please use the parameters of the TSICCFG macro to define the TNMCONF settings.

VI.4 Tailoring the zIIP front-end (TRMU4ZIP)

Certain restrictions apply, if running TRMUEX4* in a zIIP enabled ADABAS nucleus.:

1. TRMUEX4* messages can no longer share DDPRINT with the ADABAS nucleus messages
2. PRESUM to CLOG not supported,.
With PRESUM written to SMF and the TRMSMFEX utility there is a sophisticated alterne solution available.
As a side effect of that UEX8=TRMUEX8 is no longer needed

TRMU4ZIP, the TRMUEX4* font-end needed for execution in a zIIP enabled ADABAS nucleus, may be adjusted if the generated defaults do not fit into the exiting setup.

NAME TRMU4ZIP	TRMU4ZIP	
VER	<Location>	<Default>
REP	<Location>	<customer setting>

DD-Name for TRM specific messages normally written to DDPRINT

Location	x'BE'	
Default	E3E2C9D7D9C9D5E3	TSIPRINT

SYSOUT class for TRM specific SYSPRINT

Location	x'CC'	
Default	C8	H
	Only used if not pre-allocated in JCL.	

NAZPDO offset as set in LGBLSET

Location	x'CE'	
Default	0002	2
	Binary value as halfword (2 bytes)	

SECTION VII

TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSLO

The five macros supplied with TRIM version 8 have been changed. This requires reassembly of all TRMTAP, TRMLOG, TRMRSP, TRMSLO, and TRELOG modules that the user may currently have in use, along with re-linking to the various TRIM User-Exit-4s being used.

VII.1 Time Adjustable Parameters (TRMTAP)

Certain actions and calculations within the Real-Time Monitor (RTM), logging of selected Detail Command Log records, PRESUM, and TRELOG summarizations are accomplished via TRIM's User-Exit-4. Recent increased usage of the RTM by DBA and applications staff has occurred due to the ease of use and additional functionality in TRIM. This added functionality and usage has been met with a corresponding enhancement in RTM efficiency in several ways:

- Improving table lookup methods
- Improving sorting algorithms
- Making most functions optional (explained below)
- Providing three User-Exit-4s for small, regular, and large-sized tables (the small version also has certain functions disabled)
- Permitting the NATURAL programs to run from one database (usually TEST) while monitoring the activity on several databases.

Although TRIM attempts to be as efficient as possible, any processing requires some overhead within the system. When statistics will not be viewed, the associated accumulators can be made inactive to reduce machine requirements. This would apply to statistics never referenced or not used during particular time periods. For example, TRMTAP can be used to deactivate accumulations of Five-Minute statistics at the end of Prime shift, when no one would be using them. They could then be re-activated at the beginning of Prime shift the next day. Since Hourly statistics are only kept for five hours, these accumulators might be deactivated at the end of Prime Shift and restarted five hours prior to Prime Shift.

Statistics of no use (i.e., NATURAL Application Library in a system without NATURAL Security) can be deactivated by TRMTAP or made permanently inactive by tailoring TRMUEX4.

The setting of options of RTM functions is addressed on three levels:

- Zaps may be applied to the User-Exit-4 to "tailor" the exit. Each database's User-Exit-4 can be tailored differently. Refer to **Section VI Tailoring With Zaps**.
- Time Adjustable Parameters (TRMTAP) provide for automatic start-up "tailoring" during any time of the day and for adjustments on an hourly basis. Each database's User-Exit-4 can be linked with a different set of TRMTAP. The Production Database may, therefore, be tailored to keep certain statistics during prime hours, less statistics at night, and very little statistics during early morning hours. When User-Exit-4 is first entered, it knows what the current time is, analyzes its TRMTAP for the hour, and starts-up accordingly.

TRMTAP may be described as "elevating Zaps to a higher level - easier to specify and less error prone." TRMTAP is also somewhat "dynamic" in that it allows 24 sets of Zaps, one for each hour.

Refer to the usage explanation in the next subsection.

- RTM Control Screens (CTRL and CTAP) can be used to adjust the current functionality of the RTM (through User-Exit-4) and to adjust other hours' TRMTAP. Refer to **Section II.6.2 RTM Control (CTRL)** and **Section II.6.3 Time Adjustable Parameter (TRMTAP) Settings (CTAP)** of the **TRIM Reference Manual**.

VII.1.1 TRMTAP Generation and Usage

TRMTAP is generated through macro-assembly using one macro, TRMTAP, provided on the TRIM source library. TRMTAP may generate instructions for TRIM User-Exit-4 for any or all 24 hours (0-23). These "instructions" are in the form of constants and are the recommended method of customizing TRIM User-Exit-4. TRMTAP definitions will overwrite any start-up Zaps in **Section VI Tailoring With Zaps** in relative location and content. TRMTAP may be used with the small, regular, and large User-Exit-4s.

Once TRMTAP are generated into an object library, the TRMTAP must be link-edited with all desired User-Exit-4s.

When the User-Exit-4 is first entered by ADABAS, it checks for the presence of the generated TRMTAP. If not present, User-Exit-4 reverts to its default or Zap settings. If present, User-Exit-4 determines the time of day, locates the hour in the TRMTAP, and uses the appropriate hour's parameters. If no TRMTAP are generated for the start-up hour, the previous hour's TRMTAP are used. TRMTAP is "wraparound". That is, if TRMTAP are generated for hours 5, 9, and 19, and the database is brought up at 3:15 a.m., the hour 19 start-up TRMTAP are used.

The first call to User-Exit-4 each hour will cause User-Exit-4 to reevaluate its settings based on TRMTAP for the current hour, if present.

Once the database is brought up with certain TRMTAP, any change to the TRMTAP object/load module will not affect the current ADABAS session. Changes to the module linked with User-Exit-4 will affect the next session. Changes to the current session's future hours may be made via the RTM's CTAP screen.

VII.1.2 TRMTAP Macro Parameters

TRMTAP macro parameter fields and values are shown in Figure 4.

<u>Field</u>	<u>Values</u>	<u>Description</u>
HOUR	0-23	Starting hour for these parameters to take effect.
CONTROL	8 characters	RTM Control Password.
LOG	NO	Default
		Suppress any record going to CLOG.
		- TRMLOG parameters and/or User-Exit-4 Communication Run(s) may allow logging for Basic records under special conditions..
		Allow all Records representing an ADABAS call to be written to CLOG.
	BAS	This will overwrite any TRMLOG and/or User-Exit-4 communications

		runs(s) settings!!! Let records with event information pass to CLOG
	EVT	Allow records of type POST-/PRE-trigger to be passed to CLOG
	POST/PRE	Allow TLOG records (in conjunction with the ADABAS Event Replicator) to be written to CLOG
	TLOG	Pass all records on to CLOG.
	YES	
PRESUM	THD, CMD, FNR, UID, JOB, RSP, NAT, NSA, NSU, CTI, USA, SID, SPE, NONE	PRESUM records to be summarized and written to the Command Log. None means turn off PRESUM.
MINUTE	THD, CMD, FNR, UID, JOB, RSP, NAT, NSA, NSU, CTI, USA, SID, NONE	Minute statistics.
HOURLY	THD, CMD, FNR, UID, JOB, RSP, NAT, NSA, NSU, CTI, USA, SID, NONE	Hourly statistics.
SESSION	THD, CMD, FNR, UID, JOB, RSP, NAT, NSA, NSU, CTI, USA, CWF (Command within File), SID, NONE	Session statistics.
FREQ	0, n, ADAEND	Frequency of print of TRIM Nucleus Session Statistics. "n" is number of times to print in each 24-hour period (1, 2, 3, 4, 6, 8, 12, or 24). Zero means do not print. ADAEND means only at ADAEND.
NSSSEQ	CAT, FREQ, BOTH	Specifies Nucleus Session Statistics to print in ascending order of category (CAT), descending order of frequency of use (FREQ), or both.
ZEROFNR	YES, NO	Specifies the option of zeroing the file number on certain commands (ET, BT, RC, OP, etc.).
UID	HEX, CHAR	Specifies User-ID and User-Area display format.
CPU2LOG	NO YES	Default Pass the CPU path length calculated in TRMUEX4* via ACBXUSER+12 to the log record. This allows for CPU calculation in batch reports without having the FB logged.

TRMTAP Macro Parameters

Figure 4

(continued on next page)

<u>Field</u>	<u>Values</u>	<u>Description</u>
SORT	CAT, FREQ	Specifies the sort sequence for certain hourly and minute screen displays, ascending by category (CAT), or descending by frequency of use (FREQ).
STOP	STOP, TERMINATE	Specifies whether PF12 should act to STOP (return to NATURAL "NEXT" screen) or TERMINATE (exit NATURAL).
PW	YES, NO, VIO	Specifies the action to be taken on the Additions-3 field in the Control Block on Command Log records: YES Retain always. NO Do not retain. VIO Retain for response codes 200-203.
IDLE	NO, YES, UEXB	Specifies the mode of operation for TRIM: NO TRIM active. YES TRIM idle. UEXB TRIM idle but will process user information area data.
TRACE	YES, NO	Specifies whether or not to make the Tracing Facility available.
HIDUR	YES, NO	Specifies whether or not to maintain the high duration commands (Longest Duration Screen).
ALTID	YES, NO	Specifies whether the CICS TERMID should replace the ADABAS UID as the primary display UID.
UQALL	YES, NO	Specifies whether inactive User Queue entries should be displayed. YES Display inactive. NO Display active only.
CLMSG	YES, NO	Specifies whether command log STCK sequence errors should be displayed. YES Display errors. NO Do not display errors.

TRMTAP Macro Parameters
Figure 4 (continued)

(continued on next page)

<u>Field</u>	<u>Values</u>	<u>Description</u>
VIOLATE	FNR, UID, JOB, NAT, NSA, SID, NONE	SECURITRE Violation Statistics.
SECURE	YES, NO	Specifies whether or not SECURITRE is to control access to the TRIM RTM.
ALTJN	J, C, U	Specifies where to obtain the Job Name. J Use Job Name as passed in the Command Log. C Use Job Name from the Command Queue. U Use Job Name from the USERINFO Area.
SESCL	NO, YES	Controls the clearing of Session Statistics (Restart counts from zero). NO Do not clear session statistics. YES Clear session statistics each time they are printed.
NTALT	NO, YES	Specifies the use on an alternate for NATPROG. NO Do not use an alternate for NATPROG. YES Replace null NATPROG with COBOL or other program name (when available).

**TRMTAP Macro Parameters
Figure 4 (continued)**

(continued on next page)

<u>Field</u>	<u>Values</u>	<u>Description</u>
NSLOG	NO, NSA, NSU	Controls the placement of NATURAL Application Library or NATURAL Security User-ID in the Command Log.
		NO Do not use pass NATURAL Application Library or NATURAL Security User-ID or Security-ID in the Command Log.
		NSA Pass the NATURAL Application Library and the NATURAL Security User-ID in the Command Log in the Additions-3 (Password) and Additions-4 (Cipher) fields, respectively.
		NSU Pass the NATURAL Application Library and Security-ID in the Command Log in the Additions-3 (Password) and the Additions-4 (Cipher) fields respectively.
XUAD4	NO, YES	Controls the move of the External User-ID to the Command Log.
		NO Do not move External User-ID to the Command Log.
		YES Move External User-ID to Additions-4 (Cipher) field of the Command Log.
NATLG	NO, YES	Controls passing the NATURAL program name in the RESERVED field in the Command Log.
		NO Do not pass the NATURAL program name to the Command Log.
		YES Pass the NATURAL program name in the RESERVED field in the Command Log.

TRMTAP Macro Parameters Figure 4 (continued)

(continued on next page)

<u>Field</u>	<u>Values</u>	<u>Description</u>
CTILG	NO, YES	Controls the move of four bytes at CTI + 4 (CICS Tran-ID portion of CTI field) to the User-Area of the Command Log. NO Do not move four bytes at CTI + 4 to the User-Area of the Command Log. YES Move four bytes at CTI + 4 to the User-Area of the Command Log.
RSPLOCK	1 - 65535	Any reasonable Response Code value that distinguishes TRIM-induced LOCKs from normal ADABAS Response Code 17 (Invalid File Number).
RSPDSAL	1 - 65535	Any reasonable Response Code value that distinguishes TRIM-induced DISALLOWs from normal ADABAS Response Code 22 (Invalid Command Code).
RSPFAIL	1 - 65535	Any reasonable Response Code value that distinguishes TRIM-induced FAILs from normal ADABAS Response Code 200 (Password Violation).
TRELOG	NO, YES	Specifies whether or not to activate tRelational logging.
PSUMOUT	C, (S,nnn) (B,nnn)	PRESUM records written to C=CLOG S=SMF B=BOTH nnn defines the SMF record ID to be used (128 – 255) S=SMF is the only option allowed if running in a zIIP enabled ADABAS nucleus!
PSUMINT	nn	PRESUM interval in minutes allowed values 5 – 60 must divide evenly into 60
MSNAP	N, D, P	RTM SNAP feature N-not allowed D dynamic on first request P permanent

Note: Having SNAP permanently active should carefully selected because of the comprehensive amount of data checked!
--

VII.1.3 Sample TRMTAP

The following sample TRMTAP includes comments that show the strategy for setting different TRMUEx4 functionality for different time periods. (This is member PSTARTUP in the TRIM source library.)

```

*      AT 5:00 AM TAILOR TRMUEx4 TO START COLLECTING SOME HOURLY
*      AND SESSION STATISTICS OF INTEREST.  ALSO, OUTPUT SOME PRESUM
*      DATA.  NOBODY SHOULD BE ABLE TO TRACE.  NO NEED FOR HI DURATION
*      COMMANDS TO BE TALLIED - DO NOT CARE ABOUT EARLY MORNING.
*      USE THE ALTERNATE INTERNAL UID FOR DISPLAYS AND SUPPRESS
*      MESSAGES ABOUT CLOG STCK SEQUENCE ERRORS.
*
*      CONTROLS NOT SPECIFIED RETAIN THEIR PREVIOUS VALUE (DEFAULT,
*      ZAPPED OR PREVIOUS HOUR SETTING WITHIN TAP PARMS)
*
      TRMTAP HOUR=5,
          PRESUM=(CMD,FNR,UID),HOURLY=(CMD,JOB,UID,NSA),
          MINUTE=(UID),SESSION=(CWF,FNR,CMD,UID),FREQ=3,
          VIOLATE=(NAT,UID,FNR),
          SECURE=N,
          UID=HEX, SORT=FREQ,
          STOP=TERMINATE,PW=VIO,
          TRACE=NO,HIDUR=NO,CLMSG=NO,
          NSSSEQ=BOTH,ALTID=YES,CONTROL=TRMEARLY
*
*      AT 9:00 AM, CAN SEE HOURLY STATISTICS STARTED AT 5:00.
*      FURTHER
*      TAILOR TRMUEx4 TO KEEP STATISTICS OF INTEREST DURING PRIME
*      TIME.  ALLOW TRACING.  KEEP HI DURATION COMMANDS.  USE THE
*      ALTERNATE INTERNAL UID FOR DISPLAY.  DISPLAY MESSAGES ABOUT
*      ANY CLOG STCK TIME SEQUENCE ERROR.
*
      TRMTAP HOUR=9,
          PRESUM=(CMD,FNR,UID),HOURLY=(CMD,FNR,JOB,UID,NSA),
          MINUTE=(JOB,UID,CMD),SESSION=(CWF,FNR,CMD,UID),
          VIOLATE=(NAT,UID,FNR),FREQ=24,
          TRACE=YES, SORT=FREQ,NSSSEQ=BOTH,HIDUR=YES,
          ALTID=YES,CLMSG=YES,UQALL=YES,CONTROL=TRMPRIME
*
*      AT 7:00 PM, KEEP MINIMAL STATISTICS FOR VIEWING TOMORROW.
*      PARAMETERS NOT SPECIFIED RETAIN PREVIOUS OR DEFAULT VALUES.
*
      TRMTAP HOUR=19,
          PRESUM=NONE,HOURLY=(FNR,NSU),
          MINUTE=NONE,SESSION=(NAT,CWF,NSA,RSP),FREQ=24,
          UID=CHAR, SORT=CAT,NSSSEQ=FREQ,
          ALTID=NO,CLMSG=NO,CONTROL=TRMNIGHT

```

(continued on next page)

(continued from previous page)

```

*      START UP LOGGING ONLY FOR L1 and L2 COMMANDS OF
*      CERTAIN JOBS WHICH HAVE A DURATION GREATER THAN 1 SECOND

*      LOG BAD RESPONSE CODES, BUT ONLY FOR PRIME TIME,
*
*      LOG BAD DURATION CALLS WITH DURATION GREATER THAN 2 SECONDS .
*
*      LOG THE CB AND THE FB FOR ONLY RESPONSES 40-49.
*
*      THESE LOGGING PARMS WILL BE DISPLAYED BY RTM 'CLOG' SCREEN
*      UNDER THE IDENTIFICATION OF 'TRMLOG'
*

TRMLOG CMD,EQ,(L1,S2),JOB,EQ,(XXXXXXXX,T-ZZZZ),
      AAAA-BBBB,CCCC,DDDD,EEEE,FFFF,GGGG),DUR,GT,10000
TRMLOG RSP,EQ,(1,2,4-8,10-65535),HR,EQ,(8-19)
TRMLOG DUR,GT,20000
TRMLOG CB,RSP,EQ,(40-49)
TRMLOG FB,RSP,EQ,(40-49)
*
*      WOULD LIKE WARNINGS IN THE RTM ABOUT THE DEFAULT RESPONSE CODES
*      IN ADDITION TO THE FOLLOWING LIST.
*

TRMRSP 0,,DEFAULT=YESTRMRSP (009,1),'BACKED OUT, HOLD Q
FULL'
TRMRSP (009,73,99),'ADABAS TRANSACTION MANAGER'
TRMRSP 019,'ATTEMPT TO UPDATE BY ACC USER'
TRMRSP 046,'MAX NQCID EXCEEDED'

RMRSP 047,'MAX NISNHQ EXCEEDED'
TRMRSP 048,'OPEN ERROR ENCOUNTERED'
TRMRSP 076,'OVERFLOW IN INVERTED LIST INDX'
TRMRSP 079,'HYPEREXIT NOT IN ADARUN PARMS'
TRMRSP 086,'HYPEREXIT RETURN ERROR'
TRMRSP 098,'DUPLICATE FOR UNIQUE DE'
TRMRSP 152,'LU VALUE TOO SMALL'
TRMRSP 162,'SHORT ON SPACE- BUFR POOL HDRS'
TRMRSP 173,'INVALID DATA STORAGE RABN'
TRMRSP 255,'ALL ATTACHED BUFFERS ALLOCATED'
END

```

The TRMLOG and TRMRSP statements coded near the end of this sample refer to startup logging as described in the next subsection. The statements are shown here because TRMTAP, TRMLOG, and TRMRSP may be, and usually are, coded together.

VII.2 Start-Up Logging (TRMLOG)

Using the TRMLOG macro, the DBA may assemble (pre-define) selected Detail Command Logging requirements. These constants may be generated separately or along with TRMTAP (refer to **Section VII.1.3 Sample TRMTAP**), and they must be link-edited with TRIM User-Exit-4. The small, regular, and large User-Exit-4s may all use TRMLOG start-up logging parameters.

The TRMLOG parameters state which ADABAS Detail Log records and buffers to output to the Command Log. Any records and buffers not meeting the criteria are not logged.

TRMLOG parameters always have the ID "TRMLOG". Changes and additions to the start-up logging criteria are provided via TRMUEx4 Communication Runs described in the *TRIM Reference Manual*. These Dynamically communicated logging requirements are incremental, or in addition to, existing parameters.

For example, the DBA pre-defines some TRMLOG parameters:

(refer to TRMTAP and TRMLOG sample in the previous subsection)

User-A desires to log certain records and submits a User-Exit-4 Communication Run with ID=BIGTEST.

```
UEX4  ID=BIGTEST
LOG   JOB=A4910763
```

User-B also desires to log certain records and submits a User-Exit-4 Communication Run with ID=JOE.

```
UEX4  ID=JOE
LOG   FNR=(13,14,16-18,63178)
```

User-A then desires to log more records and submits a User-Exit-4 Communication Run with ID=USERA.

```
UEX4  ID=USERA
LOG   FNR=3,CMD=L1
```

User-A then desires to change the requirements for ID=BIGTEST.

```
UEX4  ID=BIGTEST
LOG   JOB=(A4917000-A4917999)
```

The DBA then desires to change the original TRMLOG parameters for the duration of the ADABAS session.

```
UEX4  ID=TRMLOG
LOG   RSP=0
LOG   DUR>20000
```

The DBA desires to delete the requirements for ID=JOE.

```
UEX4  ID=JOE
```

By viewing the Real-Time Monitor E4LO screen, the DBA can see that three sets of logging requirements are in effect for IDs:

- TRMLOG
- USERA
- BIGTEST

The DBA may view any or all of these parameters on-line by following the instructions on the E4LO screens.

VII.2.1 TRMLOG Macro Parameters

The first parameter to TRMLOG is the Command Log Buffer indicator. Valid values are CB, FB, RB, SB, VB, IB, IO, and UB. If no buffer is indicated, the TRMLOG parameters are assumed to be for the log record rather than a buffer. For example:

TRMLOG	...	refers to logging the record
TRMLOG	RB, ...	refers to logging the Record Buffer

The remaining parameters, all separated by commas, must be stated in sets of three as follows:

keyword, operator, value-list

keyword:	One of the fields in the Command Log Basic Part or Control Block, along with Duration and Hour (refer to Figure 4).
operator:	EQ Equal NE Not Equal GT Greater than LT Less than
value-list:	A single value or a list in parenthesis (maximum 10). Ranges are allowed.

An example of the use of the TRMLOG start-up logging macro follows: 72

```
TRMLOG CMD,EQ,(L1,S2),JOB,EQ,(AAAAAAA-BBBBBBBB,
CCCCCCC,DDDDDDDD-EEEEEEEE) *
```

To only log the Record Buffer for the above criteria, insert the "RB" parameter as follows:

```
TRMLOG RB,CMD,EQ,(L1,S2),JOB,EQ,(AAAAAAA-BBBBBBBB,
CCCCCCC,DDDDDDDD-EEEEEEEE) *
```

The valid keywords are listed in the following table.

Entries with note [CL5] are only valid if CLOGLAYOUT=5 is defined!

TRMLOG Macro Parameters

<u>Keyword</u>	<u>Description</u>	<u>Length</u>	<u>Format</u>	<u>Note</u>
PRI	Priority	1	B	
CTY	Command Type	1	B	THD
	Thread Number1	B		
NUP	Number of Descriptors Updated	2	B	
JOB	JOB-NAME	8	C	
CPU	CPUID	8	C	
UID	User-ID	4	C	
OPS	OPSYSID	4	C	
UBU	UBUID	8	C	
UAC	UACSN	4	C	
DBD	DBID	2	B	
AIO	Associator IOs	2	B	
DIO	Data IOs	2	B	
WIO	Work IOs	2	B	
PHY	PHYS	2	B	
AR1	ARCH5A	1	C	
ARB	ARCH5B	4	C	
RV1	REVIEW1	4	C	
RV2	REVIEW2	4	C	
AD1	Additions-1	8	C	
AD2	Additions-2	4	C	
AD3	Additions-3	8	C	
AD4	Additions-4	8	C	
AD5	Additions-5	8	C	
AD6	Additions-6	8	C	
OP1	Command Option-1	1	C	
OP2	Command Option-2	1	C	
OP3	Command Option-3	1	C	
OP4	Command Option-4	1	C	
OP5	Command Option-5	1	C	
OP6	Command Option-6	1	C	
CMD	Command Code	2	C	
CID	Command ID	4	C	
FNR	File Number	2	B	
RSP	Response Code	2	B	
ISN	Internal Sequence Number	4	B	
ISL	ISN Lower Limit	4	B	
ISQ	ISN Quantity	4	B	
FBL	Format Buffer Length	2	B	[CL5]
RBL	Record Buffer Length	2	B	[CL5]
SBL	Search Buffer Length	2	B	[CL5]
VBL	Value Buffer Length	2	B	[CL5]
IBL	ISN Buffer Length	2	B	[CL5]
NAT/RES	NATURAL Program(Reserved Field)	8	C	
USA	User-Area	4	C	
USN	User-Area	4	B	
DUR	Duration in tenths of milliseconds	4	B	
HR/HOUR	Hour	1	B	
XERRB	Error field name	2	C	
XERRC	Error subcode	2	B	
XERRD	Error buffer id	1	C	

Figure 5

VII.3 Exceptional Response Setup (TRMRSP)

Exceptional Response Codes to be monitored may be selected through the TRMRSP macro, which may be assembled with or without the TRMLOG and TRMTAP macros for Linking to TRMUEX4.

When TRIM User-Exit-4 encounters one of the Response Codes selected in the TRMRSP parameters, an Exceptional Response Code Warning will be displayed on the RTM screen and on the Nucleus Session Statistics (Refer to **Section II.15 Exceptional Response Codes** of the *TRIM Reference Manual*).

Exception response definitions can start with an optional header statement in the form

TRMRSP num,DEFAULT=def

where:	'num'	is 0 (zero) for Header statement
	def	indicates whether TRIM defaults are also to be used. valid values Y or YES N or NO

Only one Header statement is permitted, and it may be omitted if TRIM defaults are also to be used.

VII.3.1 TRMRSP Macro Parameters

The TRMRSP parameters consist of two positional parameters and a one-time keyword parameter. The format is:

TRMRSP num,msg

where:	'num'	may be defined as rsp (rsp,scode) (rsp,scodef,scodet)
		rsp Response Code scode Error Subcode scodef Subcode Range from scodet Subcode Range to

'msg' is the Response Code message of up to 30 characters.

Entries must be entered in ascending sequence of Response Code value.

Note: Sample use of TRMRSP is shown earlier in the Sample TRMTAP section.

VII.3.2 Sample TRMRSP

```
TRMRSP 0,,DEFAULT=YES
TRMRSP (009,1),'BACKED OUT, HOLD Q FULL'
TRMRSP (009,73,99),'ADABAS TRANSACTION MANAGER'
TRMRSP 019,'ATTEMPT TO UPDATE BY ACC USER'
TRMRSP 046,'MAX QCID EXCEEDED'
TRMRSP 047,'MAX NISNHQ EXCEEDED'
TRMRSP 048,'OPEN ERROR ENCOUNTERED'
TRMRSP 076,'OVERFLOW IN INVERTED LIST INDX'
TRMRSP 079,'HYPEREXIT NOT IN ADARUN PARMS'
TRMRSP 086,'HYPEREXIT RETURN ERROR'
TRMRSP 098,'DUPLICATE FOR UNIQUE DE'
TRMRSP 152,'LU VALUE TOO SMALL'
TRMRSP 162,'SHORT ON SPACE- BUFR POOL HDRS'
TRMRSP 173,'INVALID DATA STORAGE RABN'
TRMRSP 255,'ALL ATTACHED BUFFERS ALLOCATED'
```

This TRMRSP would cause TRIM to watch for and warn about twelve response codes in addition to the thirteen response codes that compose the normal TRIM defaults.

The normal Defaults are:

<u>Response</u>	<u>Message</u>
1	OVERFLOW LS SETTING FOR A SORT
2	OVERFLOW HQ SETTING
27	INSUFF WORK AREA FOR SBL + VBL
70	OVERFLOW OF LQ SETTING
71	OVERFLOW OF LI SETTING
72	OVERFLOW OF NU SETTING
73	OVERFLOW WORK CONTAINING ISNS
74	NO WORK AREA FOR COMPLEX FINDS
75	MAX ASSO/DS EXTENTS REACHED
77	INSUFF SPACE FOR ASSO/DS EXTENT
145	HOLD QUEUE IS FULL
151	OVERFLOW OF CQ SETTING
152	INTERNAL USER BUFFER TOO SMALL

The DBA may view any or all of these parameters on-line by the following the instructions on the RTM E4RS screen.

Note: A response code of 145 can be returned for two reasons: the *hold queue is full* or the requested *record is on hold by another user*. The default message (shown above) is HOLD QUEUE IS FULL. This message implies that there is only one possible reason for the response code of 145. To modify the message to indicate both of these possible causes, include 145 in the TRMRSP macro.

VII.4 tRelational Logging (TRELOG)

If tRelational logging is desired, a TRELOG macro must be assembled and linked with TRIM's User-Exit-4. Using the TRELOG macro, the DBA may define the size of the tRelational log table, the file number(s) to log, and the number of entries to write to the CLOG when the table fills up. If the required memory is available, the table can be defined large enough to minimize any writes to the CLOG. Likewise, if memory is constrained, a small table can be defined and frequent writes to the CLOG will be required.

VII.4.1 TRELOG Generation and Usage

TRELOG modules are generated through macro-assemblies using the macro TRELOG provided on the TRIM source library. TRELOG generates a table to accumulate tRelational data. The parameters for TRELOG may specify: the size of the table, how much of the table to empty when full, and what FNRs are to be monitored. Once TRELOG modules are generated into an Object library, the TRELOG modules must be link-edited with TRIM User-Exit-4. Only one TRELOG module may be linked with any one TRIM User-Exit-4. Once the TRELOG is linked as part of TRIM User-Exit-4, tRelational Logging may be activated via Zap switch, TRMTAP parameter, or dynamically via the CTRE screen in the RTM.

VII.4.2 TRELOG Macro Parameters

<u>Field</u>	<u>Values</u>	<u>Description</u>
FNR	1-65535	The file number(s) to be logged (N ₁ , N ₂ , N ₃ ,...N _x).
ENTRIES	Any reasonable number	The number of 60 byte entries in the table. The size of the table will be 60 x (this number) bytes.
WRITES	Any number = or < than entries	The number of entries to write to the log whenever the table is full.

VII.5 OS/VM Batch Selective Slowdown (TRMSLO)

TRIM Link-Exit-1 (TSIUEX1G) for batch may be customized to slow selected batch jobs by a specified criterion. This may be useful in a situation in which the volume of batch activity overruns on-line response time.

When Batch jobs execute during the time allotted for on-line activity, these jobs may impact the performance of the on-line environment. Batch jobs issue commands at a faster rate than the on-line environment, creating a bottleneck for the execution of commands for on-line programs.

TRIM Link-Exit-1 may be used to slow down the execution of Batch jobs and enable the on-line environment to issue commands with decreased impact on response time. The DBA may define what times these batch jobs are to be delayed. If the on-line environment is active from 09:00 until 18:00, this may be when the DBA wishes to delay the batch jobs. After this time, however, the DBA may not want to impede the performance of the batch jobs.

To delay a batch job, TRIM Link-Exit-1 causes the commands that the job is issuing to be queued for a specified number of seconds (set by the DBA). The commands are queued after a specified number of commands have already executed. This delay enables the on-line environment to have increased access to the database.

VII.5.1 TRMSLO Generation and Usage

TRMSLO modules are generated through macro-assemblies using the macro TRMSLO provided on the TRIM source library. TRMSLO may generate data for TSIUEX1G to slow selective jobs based on specified criteria (if all batch/VM jobs are to be slowed, TSIUEX1G may be zapped as described in **Section VI Tailoring with Zaps**).

Once TRMSLO modules are generated into an object library, the TRMSLO modules must be link-edited with all desired ADABAS Link Modules.

Whenever TRMSLO is included with TSIUEX1G, it will override the TSIUEX1G Slow Down Zaps for any job that meets the TRMSLO criteria. For more information, refer to **Section II Installation**.

VII.5.2 TRMSLO Macro Parameters

<u>Field</u>	<u>Values</u>	<u>Description</u>
JOBNAME	8 characters	Any jobname to be slowed. An asterisk (*) can be used as a wildcard character at the end of the value.
WAIT	1-99999999	Any reasonable value of milliseconds of wait time (decimal 1000 = 1 second).
COUNT	1-99999999	Any reasonable value for number of calls to ignore before doing the wait.
START	0-23	Starting hour for waiting to take effect.
STOP	0-23	Ending hour for waiting to take effect.

VII.5.3 Sample TRMSLO

```

TRMSLO JOBNAME=BATCH*,WAIT=1000,COUNT=20,START=08,STOP=18
*   Every 20 commands, have BATCH01, BATCH02, etc., wait
*   one second between 8 AM and 6 PM.
*
TRMSLO JOBNAME=TREE32,WAIT=8000,COUNT=10,START=10,STOP=03
*   Every 10 ADABAS commands, hold TREE32 back 8 seconds.
*
TRMSLO JOBNAME=TREE3*,WAIT=500,COUNT=99,START=08,STOP=18
*   Every 99 commands, hold TREE3-TREE39 back 1/2 second.
*
TRMSLO JOBNAME=TH99903,WAIT=9000,COUNT=1,START=08,STOP=18
*   Every command, hold TH99903 back 9 seconds between
*   8 AM and 6 PM.
*
END
    
```

SECTION VIII

PRESUM SPE exit

VIII.1 Customer exit TRMU4CEX

Before TRMv831 PRESUM SPE data (maximum 16 characters) could only be provided via customer Link-Exit-1 routines in the various ADALNK/CICSGBL modules in use.

TRMv831 introduced a centralized exit, which will be activated from TRMUEX4* and allows to define PRESUM SPE keys up to 64 characters.

The exit is invoked in AMODE=31 with
R15 entry point
R14 return address

Other register values vary depending on the type of call.
On return all registers (except R15) and addressing mode must be unchanged.

Only the parameter area pointed to by R1 on INIT call and the key area pointed to by R2 on command processing call are subject to change within the size limits defined. Unpredictable results including abends of the ADABAS nucleus may occur if any other area is modified by the exit.

A customer exit must have an entry point of TRMU4CEX and must be included during linkage of TRMuEX4*.

INIT processing

TRMU4CEX will be invoked for INIT processing at the first call for TRMUEX4*, independent of the setting for PRESUM SPE.

R1 has address of an area mapped by the following DSECT

```

U4CEXP    DSECT ,
U4CEXPTP DS    CL2          CALL TYPE
*          C'PS'          PRESUM
U4CEXPFC DC    AL1(0)      CALL FUNCTION
U4CEX_FI EQU    0          INIT CALL
U4CEXPFSF DC    AL1(0)      CALL SUB-FUNCTION
*          reserved
U4CEXR    DS    0F          RETURN INFO (INIT ONLY)
U4CEXRSZ DS    AL2(0)      LENGTH OF ENTRIES
*          allowed value 1 - 64
U4CEXRM# DS    AL2(0)      NUMBER OF ENTRIES
    
```

TRMU4CEX will only remain active if on return to TRMUEX4* from the INIT all the following conditions are true:

R15 has return code of zero
 U4CEXRSZ contains an allowed value
 U4CEXRM# has non zero value

The virtual storage (from above the line) needed for the PRESUM SPE table is calculated as $((U4CEXRM# + 1) * U4CEXRSZ) + 8$.

TERM processing

TRMU4CEX will be invoked for TERM processing at if ADAEND was signaled to TRMUEX4*, independent of the setting for PRESUM SPE.

R1 has address of an area mapped by the following DSECT

```

U4CEXP    DSECT ,
U4CEXPTP DS    CL2          CALL TYPE
*          C'PS'          PRESUM
U4CEXPFC DC    AL1(0)      CALL FUNCTION
U4CEX_FE EQU    255        INIT CALL
U4CEXPFSF DC    AL1(0)      CALL SUB-FUNCTION
*          reserved
    
```

Command processing

The customer exit TRMU4CEX will only be invoked for command processing if PRESUM SPE was activated via TRMTAP, zap and/or RTM CTRL.

R1 has address of an area mapped by the following DSECT

```

U4CEXP    DSECT  ,
U4CEXPTP DS     CL2                CALL TYPE
*          C'PS'                   PRESUM
U4CEXPFC DC     AL1(1)             CALL FUNCTION
U4CEX_FI EQU    0                  INIT CALL
U4CEXPFSF DC     AL1(0)           CALL SUB-FUNCTION
*                                     reserved

```

R2 is pointing to the area for building the key with size = U4CEXRSZ from INIT

R3 has address of the ADABAS command queue element as mapped by the CQX macro from ADAvrs.SRCE.

R4 has address of the User-Info-Buffer created by TRIM's Link-Exit-1 and mapped by the TSIUINFO macro from TRMvrs.SOURCE.

R5 has address of ADABAS Control Block Extended as mapped by the ADACBX macro from ADAvrs.SRCE.

No PRESUM SPE data will be gathered for the current command if R15 on return from TRMU4CEX has a non-zero value.

VIII.2 Extended Summary Reporting (ESR)

TRMv841 introduces a further enhancement to the reporting capabilities which exceeds the options given by PRESUM and PRESUM SPE, and also avoids high-volume Detail Logging for batch analysis.

TRMRPT offers options to specify in detail WHAT to log and sophisticated filters to define WHEN.

TRMRPT specifications are handled similar as TRMTAP; TRMLOG and TRMRSP definitions and incorporated in the TRMUEx4* module to be used.

ESR is connected to TRIM's PRESUM processing for interval and target (SMF and/or CLOG). It is strongly recommended to consider using SMF only.

Sample:

To generate a report showing the

- a) number of calls
- b) total CPU
- c) total IOS and
- d) maximum compressed record length

separated by job and file-number

for all jobs starting with AB3

define a report as following;

```
TRMRPT ID=SUMJOBFN,          +
      SUM=(CPU6,CPU-SEC,8),    +
      (IOS,TOT-IO,6)          +
      CRL,MAX-CRL,7,MAX)),    +
      CONTROL=(JOB,FNR),      +
      WHERE(JOB,LK,AB3)
```

and execute batch evaluation with TRMPARM like:

```
INPUT LOGTYPE=ESR,CPU-FACTOR=60000000
REPORT TYPE=DETAIL,REPID=SUMJOBFN
  INCLUDE TYPE=#,ESR=SUMJOBFN
```

or

```
INPUT LOGTYPE=ESR,CPU-FACTOR=60000000
REPORT TYPE=SUMMARY,REPID=SUMJOBFN
  INCLUDE TYPE=#,ESR=SUMJOBFN
CONTROL DBID,HOUR
```

A complete sample of TRMRPT definitions can be found in the supplied PESR member of the TRM841.SOURCE dataset.

A complete sample of ESR analysis can be found in the supplied JOSESRS member of the TRM841.SOURCE dataset.

Keyword description:

ID=	Name of the report for later reference in batch
	END mandatory last TRMRPT invocation
SUM=	Fields to summarize in the form
	fff field name (s. below)
	hhh Heading for report
	n length of report value
	MIN/MAX/AVG calculation type
CONTROL=	fff field name (s. below)
	hhh Heading for report
	n length of report value
WHERE=	fff field name (s. below)
	op EQ equal
	GT greater than
	LT lower than
	LK like/prefix,
	val compare value

SUM, CONTROL and WHERE may specify multiple values, which must be enclosed in brackets:

For SUM and WHERE each individual value must be enclosed in bracket as well.

TRMRPT handled field names

RSP	Response code
FNR	File Number
IOS	Sum of all IO counters
CPU	CPU time in milliseconds
CPU6	CPU time in seconds (0.000000)
DUR	duration in milliseconds
DUR6	duration in seconds (0.000000)
ENQ	Queue time in milliseconds
ENQ6	Queue time in seconds (0.000000)
CRL	compressed record length
DRL	de-compressed record length
PGM	NATURAL program name
NSA	NATURAL application
CLIOS	Number of IOS as reported with CL-cmd
CLCNT	Number of calls as reported with CL-cmd
CLCPU	CPU value as reported with CL-cmd

CPU and CPU6 cannot be used in WHERE= because the calculation will need the value for CPUFACTOR supplied in batch.

The following TRIM-derived fields are reserved names available for ESR reports in batch only and cannot be specified with the TRMRPT definitions:

DBID
NUCID
SEQUENCE
SEQ7
SEQ8
DATE
TIME
DATETIME
YEAR
QUARTER
MONTH
MONAME
WEEK
DAY
WEEKDAY
HOUR
MINUTE
YYMMDD
DATE4
DATE4TIM
YEAR4
YYYYMMDD

Please refer to section V.1.5 ADABAS Command Log PRESUM Fields in the TRIM Reference Manual for contents and format.

As with PRESUM, date and time value are related to the moment when the summary record is written to SMF/CLOG

***** ACBX Fields

ACBXCMD	DS	CL2	Command Code
ACBXRSP	DS	H	Response code
ACBXCID	DS	XL4	Command ID
ACBXDBID	DS	F	Database ID
ACBXFNR	DS	F	File number
ACBXISN	DS	F	ISN
ACBXISL	DS	F	ISN lower limit
ACBXISQ	DS	F	ISN quantity
ACBXCOP1	DS	C	Command option 1
ACBXCOP2	DS	C	Command option 2
ACBXCOP3	DS	C	Command option 3
ACBXCOP4	DS	C	Command option 4
ACBXCOP5	DS	C	Command option 5
ACBXCOP6	DS	C	Command option 6
ACBXCOP7	DS	C	Command option 7
ACBXCOP8	DS	C	Command option 8
ACBXADD1	DS	CL8	Additions 1
ACBXADD2	DS	XL4	Additions 2
ACBXADD3	DS	CL8	Additions 3
ACBXADD4	DS	CL8	Additions 4
ACBXADD5	DS	XL8	Additions 5
ACBXADD6	DS	CL8	Additions 6
ACBXERRC	DS	H	Error subcode
ACBXERRD	DS	C	Error buffer ID
ACBXERRF	DS	H	Error buffer sequence number (per ID)
ACBXSUBR	DS	H	Subcomponent response code
ACBXSUBS	DS	H	Subcomponent response subcode
ACBXSUBT	DS	CL4	Subcomponent error text
ACBXLCMP	DS	D	Compressed record length
ACBXLDEC	DS	D	Decompressed length of all returned data
ACBXCMDT	DS	D	Command time (in 1/4096 microsecs units)
ACBXUSER	DS	XL16	User field (not touched by Adabas)

*

*-----

Type

***** Command Queue Element (CQE) info for Adabas User Exits

*

CQXJName	DS	C18	User JobName
CQX1SB	DS	F	Length of user's buffers
CQXACB	DS	A	Address of original ADACB or zero

*

CQXUSID	DS	X128	User ID
---------	----	------	---------

*

CQXRBL	DS	X12	Actual (returned) RB length
CQXIBL	DS	X12	Actual (returned) IB length
CQXCmDt	DS	X	Command type
CQXETID	DS	X18	ETID

*

*-----

Section VIII – PRESUM SPE exit

***** Basic log-record

LOX1DB	DS	XL2	Database ID
*			
LOX1CTYP	DS	XL1	Cmd Type (Simpl/Cmplx/Upd)
LOX1THDN	DS	XL2	Thread Number
LOX1DUPD	DS	XL2	Number of Descriptors updated
*			
LOX1JNAM	DS	CL8	Job Name
LOX1ETID	DS	CL8	UserID from Addit1 of OP
LOX1SEQN	DS	XL4	Unique Command Sequence number
LOX1DUR	DS	XL8	Cmd time (in 1/4096 us units)
LOX1CTME	DS	XL8	Cmd duration w/o I/O
*			
* Number of I/OS done but may not be attributed to this cmd			
LOX1ASSO	DS	XL4	Number of async read ASSO I/OS
LOX1DATA	DS	XL4	Number of async read DATA I/OS
LOX1WORK	DS	XL4	Number of async WORK I/OS
LOX1PLOG	DS	XL4	Number of async PLOG I/Os
*			
LOX1BNUM	DS	XL4	Number of ABDXs given with cmd
LOX1BINC	DS	XL4	Number of ABDXs included in log
LOX1DTME	DS	XL8	DTIME Time increment
LOX1SAFU	DS	CL8	SAF user id, blank if unknown

*-----
*

```

***** TSI USER INFORMATION AREA SEGMENT

UIOSYS   DC   CL4' '   OPERATING SYSTEM TYPE
UIFACIL  DC   CL4' '   FACILITY (CICS, TSO, ETC.)
UIGENJOB DC   CL8' '   GENERAL JOBNAME
UIGENSTP DC   CL8' '   GENERAL STEPNAME
UIGENPGM DC   CL8' '   GENERAL PGMNAME
UIGENJID DC   CL5' '   GENERAL JES NUMBER
UIUSRID  DC   CL8' '   SECURITY (RACF) USER ID
UIGRP    DC   CL8' '   SECURITY GROUP ID
UINODE   DC   CL4' '   NODE (SMFID)
UINATPGM DC   CL8' '   NATURAL PROGRAM
UINATAPL DC   CL8' '   NATURAL APPLICATION ID
UINATUID DC   CL8' '   NATURAL USERID
UINATDB  DC   XL2'0000' NATURAL FUSER DBID
UINATFUS DC   XL2'0000' NATURAL FUSER FILE NUMBER
UITPMTRM DC   CL4' '   COMPLETE TID / CICS TERMID
UITPMTRN DC   CL4' '   CICS TRANID
UITPMOPI DC   CL3' '   CICS OPID
UITPMTSK DC   CL5' '   CICS TASKID
UISPSUM  DC   CL16' '  USER/SPECIAL PRESUM VALUE

```

A complete list of the fields available can be generated using the JOSESRF JCL supplied in the TRM841.SOURCE dataset.

SECTION IX

NATURAL SOURCE MODULES

There are three NATURAL source modules supplied with TRIM for use with the Real-time Monitor. The source modules provided are TRMCUST, TRMFIN, and TRMIPSWD.

IX.1 TRMCUST

The TRIM RTM has features that may be customized to meet site requirements. These features are controlled by values set in a NATURAL subprogram, TRMCUST. This NATURAL subprogram is called at the startup of the TRIM RTM and at every database switch in order to retrieve these customized values.

The RTM features may be tailored by modifying the appropriate values and then STOWing this subprogram.

```
0010 *****
0020 *
0030 * PROPRIETARY SOFTWARE OF TREEHOUSE SOFTWARE, INC. ALL RIGHTS RESERVED
0040 *
0050 * NAME: TRMCUST
0060 *
0070 * DESCR: CONTAINS VALUES FOR SITE CUSTOMIZED OPTIONS
0080 *
0090 * NOTES: THIS SUBPROGRAM IS INVOKED AT THE STARTUP OF THE TRIM
0100 * RTM AND WHEN A DBID SWITCH TAKES PLACE.
0110 * IT IS USED TO SET CERTAIN CUSTOMIZATION VALUES FOR THE RTM.
0120 * THE PARAMETERS AND THEIR VALID VALUES ARE AS FOLLOWS:
0130 *
0140 * #DEFAULT-DBID - 0 - INDICATES THE DEFAULT DATABASE IS
0150 * THE ONE WHERE THE RTM IS INSTALLED.
0160 *
0170 * - 1-65535 - INDICATES A DEFAULT DATABASE
0180 * OTHER THAN THE ONE WHERE THE RTM IS
0190 * INSTALLED.
0200 *
0210 * #DEFAULT-MENU-OPTION - '.' (DOT) - A DOT WILL BE SHOWN AS
0220 * THE DEFAULT OPTION FOR ALL MENU
0230 * SCREENS.
0240 *
0250 * - ' ' (SPACE) - A SPACE WILL BE SHOWN AS
0260 * THE DEFAULT OPTION FOR ALL MENU
0270 * SCREENS.
0280 *
0290 * #DB-OPEN-REQUIRED - 'N' - INDICATES THAT AN OPEN IS NOT
0300 * REQUIRED TO ACCESS THE DATABASE(S),
0310 * I.E., THE ADABAS STARTUP PARAMETER
0320 * OPENREQ IS SET TO NO.
0330 *
0340 * - 'Y' - INDICATES THAT AN OPEN IS REQUIRED
0350 * TO ACCESS THE DATABASE(S),
0360 * I.E., THE ADABAS STARTUP PARAMETER
0370 * OPENREQ IS SET TO YES.
0380 *
0390 * #DISPLAY-BANNER - 'Y' - INDICATES THAT THE TRIM RTM
0400 * BANNER SCREEN WILL BE DISPLAYED AT
0410 * RTM STARTUP.
```

(continued on next page)

(continued from previous page)

```

0420 *
0430 *           - 'N' - INDICATES THAT THE TRIM RTM
0440 *           BANNER SCREEN WILL NOT BE DISPLAYED
0450 *           AT RTM STARTUP.
0460 *
0470 *           #STR-LIB           - THE STR RTM LIBRARY.
0480 *
0490 *           #STR-VERSION      - THE STR VERSION.
0500 *
0510 *           #RTM-ACTIVE      - 'Y' - THE TRIM ADABAS MONITOR FUNCTIONS
0520 *           ARE AVAILABLE
0530 *
0540 *           - 'N' - THE TRIM ADABAS MONITOR FUNCTIONS
0550 *           ARE NOT AVAILABLE
0560 *
0570 *           #TNM-ACTIVE      - 'Y' - THE TRIM NATURAL MONITOR FUNCTIONS
0580 *           ARE AVAILABLE
0590 *
0600 *           - 'N' - THE TRIM NATURAL MONITOR FUNCTIONS
0610 *           ARE NOT AVAILABLE
0620 *
0630 *           THIS SWITCH SHOULD NOT BE SET ON A
0640 *           PER DATABASE LEVEL.  TRIM WILL ONLY
0650 *           READ THIS PARAMETER ONCE DURING A USER
0660 *           SESSION.
0670 *
0680 *
0690 * *****
0700 *
0710 DEFINE DATA
0720   PARAMETER
0730     01 #DEFAULT-DBID           (N5)
0740     01 #DEFAULT-MENU-OPTION   (A1)
0750     01 #DB-OPEN-REQUIRED      (A1)
0760     01 #DISPLAY-BANNER        (A1)
0770     01 #STR-LIB               (A8)
0780     01 #RTM-ACTIVE            (A1)
0790     01 #TNM-ACTIVE            (A1)
0800     01 #STR-VERSION           (A3)
0810 END-DEFINE
0820 *
0830 IF #DEFAULT-DBID EQ 0
0840   MOVE 0          TO #DEFAULT-DBID          /*SET THE DEFAULT DBID
0850 END-IF
0860 *
0870 DECIDE ON EVERY VALUE OF #DEFAULT-DBID   /*SET DEFAULTS FOR EACH DBID
0880   VALUE 4
0890     MOVE ' '      TO #DEFAULT-MENU-OPTION
0900     MOVE 'Y'     TO #DB-OPEN-REQUIRED
0910     MOVE 'Y'     TO #DISPLAY-BANNER
0920     MOVE 'Y'     TO #RTM-ACTIVE
0930   ANY VALUE                                           /* AFFECTS ALL DATABASES
0940     MOVE 'Y'     TO #TNM-ACTIVE
0950   NONE VALUE                                           /*DEFAULT SETTINGS WHEN THE
0960     MOVE ' '      TO #DEFAULT-MENU-OPTION /* DBID IS NOT FOUND ABOVE
0970     MOVE 'Y'     TO #DB-OPEN-REQUIRED
0980     MOVE 'Y'     TO #DISPLAY-BANNER
0990     MOVE 'Y'     TO #RTM-ACTIVE
1000     MOVE 'Y'     TO #TNM-ACTIVE
1010 END-DECIDE
1020 *
1030 MOVE 'STRV412' TO #STR-LIB          /*SET THE STR RTM LIBRARY
1040 MOVE '412'    TO #STR-VERSION      /* SET THE STR VERSION
1050 *
1060 END

```

If the #DEFAULT-DBID is zero, the database of the current FUSER will be viewed each time the RTM is invoked. Line 0880 in TRMCUST must be modified to set the #DEFAULT-DBID parameter value to allow the initial database to be viewed through the RTM to be one other than the database where the RTM is installed. If, for example, the production database statistics are to be viewed from the RTM installed on the test database, #DEFAULT-DBID will need to be set to the DBID of the production database and the subprogram will need to be STOWed.

TRMCUST allows for a seamless flow from the TRIM RTM to the SECURITRE RTM. Modify the #STR-LIB value on line 1090 to point to the correct SECURITRE library and STOW the subprogram. This enables the TRIM RTM to transfer directly to SECURITRE from the TRIM RTM menu without exiting the TRIM RTM.

Modify the #STR-VERSION library on line 1100 to specify the version of SECURITRE currently installed.

If SECURITRE is not installed, no changes need to be made to the #STR-LIB or #STR-VERSION values.

#TNM-ACTIVE allows the DBA to control access to the TNM. If #TNM-ACTIVE = 'N', the user will not be able to access any direct command that starts with 'N' (TNM screens).

#RTM-ACTIVE allows the DBA to control access to the TRIM RTM. If #RTM-ACTIVE = 'N', the user will only be able to access direct commands that begin with 'N' (TNM screens).

IX.2 TRMFIN

Each NATURAL user's session totals can be maintained within the TRIM User-Exit-4 Extended User Queue. **Section II.10.2 User Queue Element (QUQE)** of the **TRIM Reference Manual** introduced this Extended User Queue concept, showing counts of ADABAS calls, I/Os, and Duration for the selected user's session. It also showed the NATURAL Program (Module) Name, NATURAL Application Library, and NATURAL Security User-ID currently in effect for the user.

The NATURAL user's calls, I/Os, duration, and estimated number of instructions (for estimating CPU usage -- refer to **Appendix B: CPU Time Calculations** of the **TRIM Reference Manual**) are maintained during the user session. Once the user ends the session (which is normally done by typing "FIN"), TRIM may display one or more screens about the user's activity, give NATURAL Security information, estimate CPU usage, translate usage to charge-back figures, etc., and end the session through its TRMFIN feature.

Without TRMFIN, a user exits from NATURAL by issuing the "FIN" command. With TRMFIN installed, the user still issues the "FIN" command, but the results of this action are different. The TRMFIN program will:

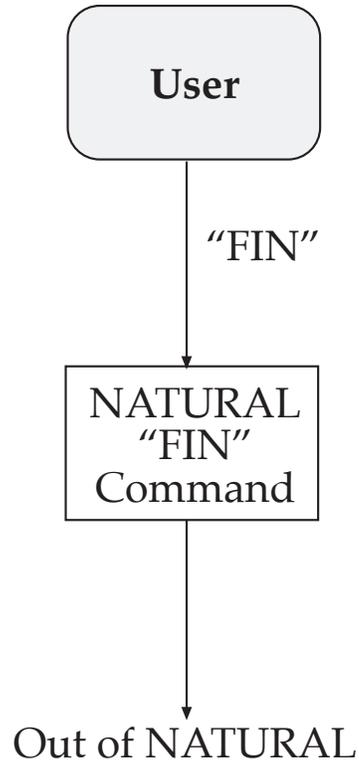
- CALLNAT "TRMFINX" to obtain the desired statistics from the TRIM Extended User Queue
- Display the desired statistics
- Stack the "REALFIN" command
- Terminate

During debugging, the supplied TRMFIN source program should be edited and stowed as "TRMFIN". The "return program" name passed to TRMFINX should therefore be "TRMFIN". The program could stack "EX MENU" so that the debugging session is not terminated during each trial run.

Once the desired statistics are displayed in an acceptable fashion, the TRMFIN program must be changed, so that it passes "FIN" for the program name and stacks the "REALFIN" command. The DBA must then disable the "FIN" command in NATTEXT (refer to the *NATURAL DBA Guide*), renaming the "FIN" command to "REALFIN" (or any other desired name). The "TRMFIN" program should then be cataloged as "FIN" in the NATURAL "SYSTEM" library on both the FNAT and FUSER files. Thus, when the user issues a "FIN" command, NATURAL will execute the TRMFIN program named "FIN" rather than issuing the NATURAL "FIN" command (which has been renamed).

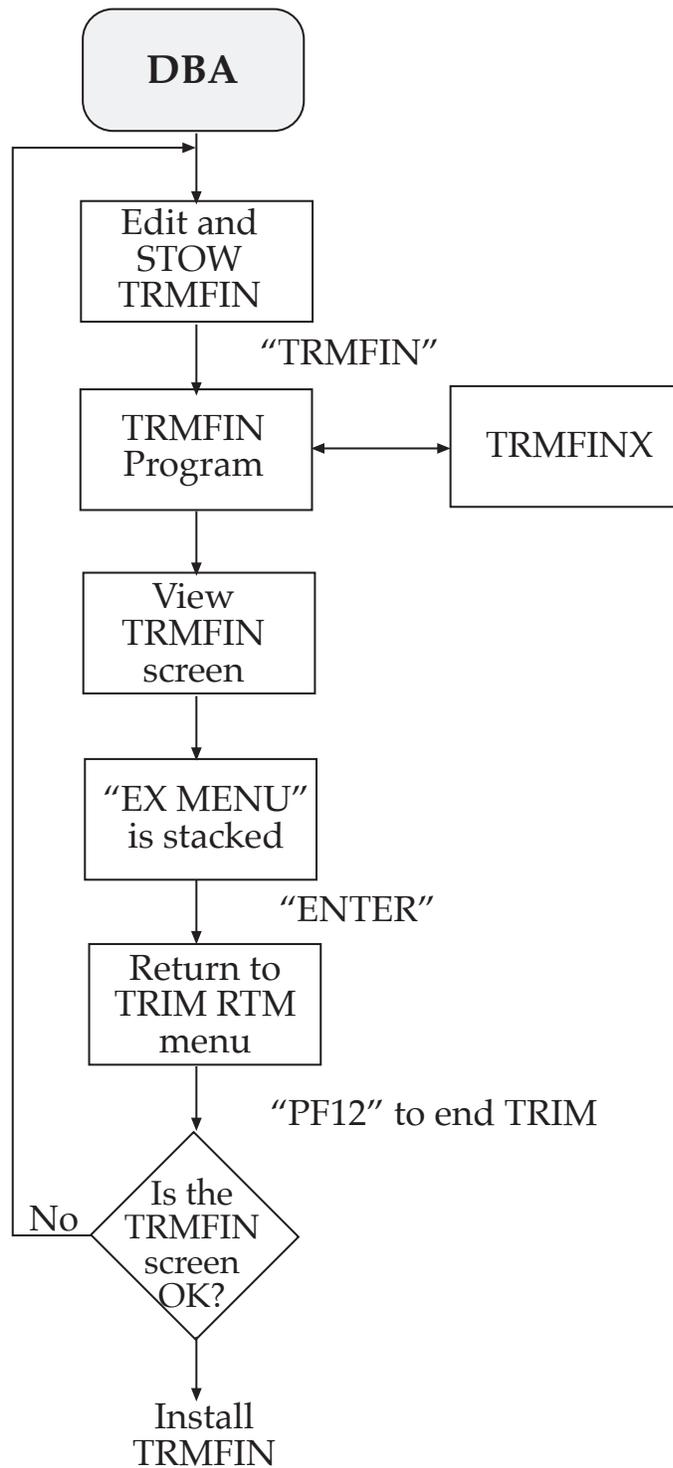
The following diagrams illustrate the effect of the "FIN" command before and after TRMFIN is installed.

Without TRMFIN



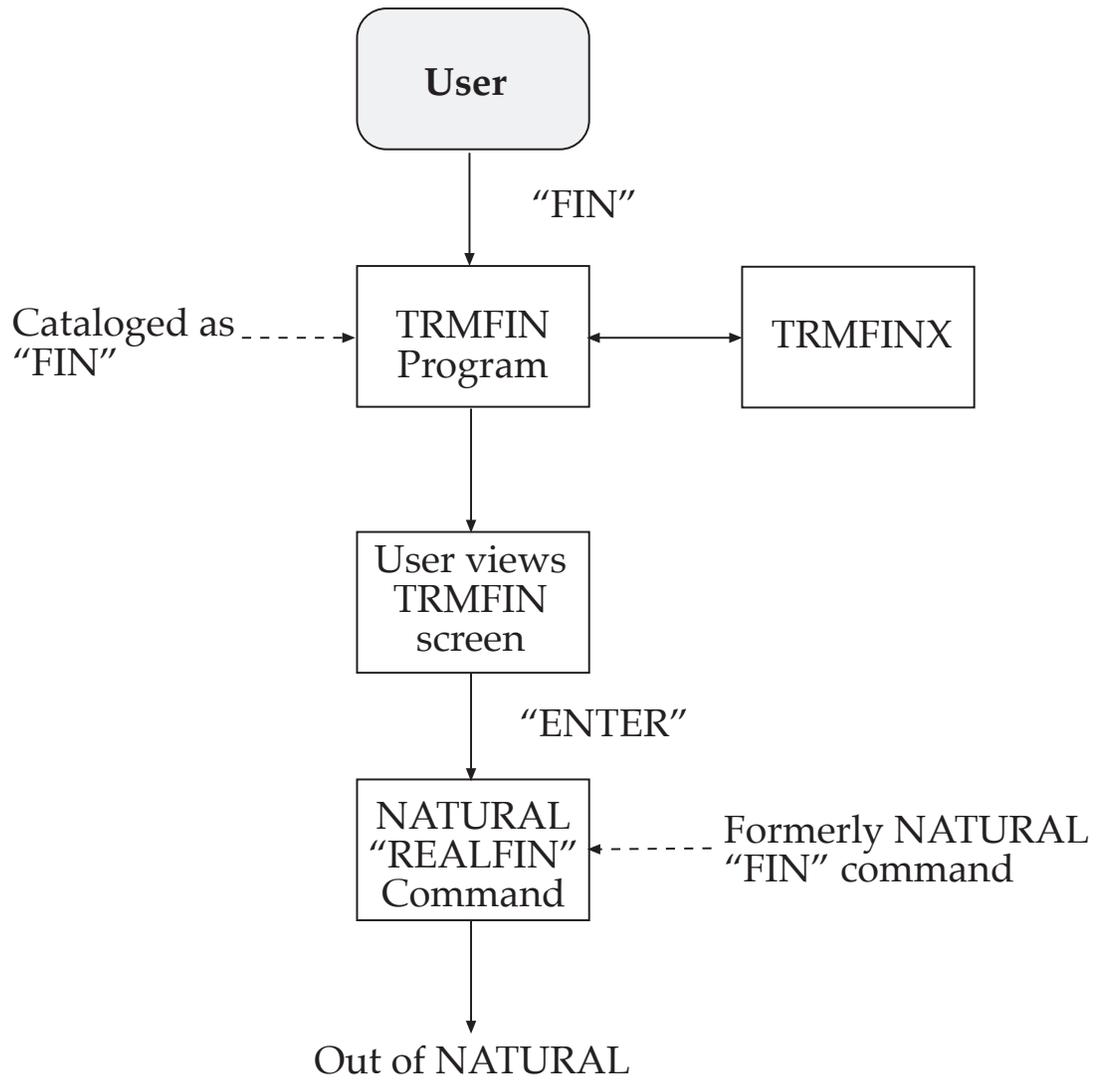
Without TRMFIN, a user issuing a "FIN" will exit from NATURAL via NATURAL's "FIN" command.

While TRMFIN is Being Tested



The DBA modifies TRMFIN until the desired screen displays are produced.

Once TRMFIN is Installed for Use



With TRMFIN installed, issuing the "FIN" command will invoke the TRMFIN program (cataloged as "FIN"), which retrieves statistics from TRIM's Extended User Queue via TRMFINX and displays them. TRMFIN then causes the user to exit from NATURAL by issuing a "REALFIN" command.

IX.2.1 TRMFIN Program

Once debugged and installed, the following NATURAL program "TRMFIN" will display statistics (as shown later in this section) for each user issuing the "FIN" command.

```

0010 *****
0020 *
0030 * PROPRIETARY SOFTWARE OF TREEHOUSE SOFTWARE, INC. ALL RIGHTS RESERVED
0040 *
0050 * NAME:          TRMFIN
0060 *
0070 * DESCR:        THIS PROGRAM REPORTS STATISTICS FOR A NATURAL SESSION
0080 *
0090 * NOTES:        CALCULATIONS AND DISPLAYS MAY BE MODIFIED TO ACCOMMODATE
0100 *                SPECIFICATIONS
0110 *
0120 *              STOW THIS PROGRAM AS FIN WHEN FINISHED TESTING
0130 *
0140 *****
0150 *
0160 DEFINE DATA LOCAL USING TRMFINL
0170   LOCAL
0180     01#FINPARM
0190       02 #UID      (B4)
0200       02 #EXTUID  (A8)
0210       02 #JOB     (A8)
0220       02 #NSA     (A8)
0230       02 #NSU     (A8)
0240       02 #IO      (B4)
0250       02 #DUR     (B4)
0260       02 #CPU     (B4)
0270       02 #COUNT (B4)
0280       02 #NOFNR   (B2)
0290       02 #DBID   (B2)          /* DBID BEING ACCESSED
0300       02 #ADARSP (B2)
0310       02 #CONDCD (B1)
0320       02 #FIN### (B4)
0330       02 #FILL1  (A17)        /* FILL TO 80 BYTES
0340     01 #DBIDN    (N5)
0350     01 #COUNTN (N10)
0360     01 #CPUN     (N10)
0370     01 #DURN     (N10)
0380     01 #ION      (N10)
0390     01 #NOFNRN   (N5)
0400     01 #UPDFLD   (A1)
0410     01 #CPUCOST  (N8.2)
0420     01 #DURCOST  (N8.2)
0430     01 #IOCOST   (N8.2)
0440     01 #TOTCOST  (N8.2)
0450   END DEFINE
0460   *****
0470   MOVE #FIN##### TO #FIN###
0480   *
0490   * CHOOSE 1 OF THE 2 GET STATS OPTIONS BELOW.
0500   *
0510   MOVE 0          TO #DBID          /* GET STATS FROM THE RESIDENT DBID
0520   * MOVE NNNNN    TO #DBID          /* GET STATS FROM SPECIFIED DBID
0530   *
0540   *
0550   CALLNAT 'TRMFINX' #FINPARM        /* GET STATS FROM SELECTED DBID
0560   *
0570   PERFORM SHOW-STATS
0580   *
0590   STACK COMMAND 'EX MENU'           /* WHILE TESTING
0600   * STACK TOP COMMAND 'REALFIN'     /* WHEN DONE TESTING
0610   *
0620   *
0630   DEFINE SUBROUTINE SHOW-STATS
0640   *
0650   * #CONCD 0 = ADABAS RESP 0 AND WE HAVE STATS FOR THE USER

```

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```

0660 *           1 = VERSION RESP IS NON ZERO (SEE #ADARSP)
0670 *           2 = VERSION MISMATCH BETWEEN TRMFINX AND UEX4
0680 *           3 = VERSION MISMATCH BETWEEN TRMFIN AND TRIMFINX
0690 *           4 = STATISTICS NOT AVAILIABLE FOR THIS USER
0700 *
0710 IF #CONCD = 1
0720   DO
0730     IF #ADARSP = 148
0740       DO
0750         MOVE #DBID TO #DBIDN
0760         INPUT (IP=OFF SG=OFF AD=AIL)
0770         *DATX (AD=OD) 3X 'FIN'
0780         25T 'NATURAL SESSION STATISTICS' (I)
0790         72T *TIME (AL=8 AD=OD)
0800         //// 15T 'DATABASE ' #DBIDN (EM=ZZZZ9 AD=OD) ' IS NOT ACTIVE.'
0810         DOEND
0820         IF #ADARSP = 17
0830           DO
0840             MOVE #DBID TO #DBIDN
0850             INPUT (IP=OFF SG=OFF AD=AIL)
0860             *DATX (AD=OD) 3X 'FIN'
0870             25T 'NATURAL SESSION STATISTICS' (I)
0880             72T *TIME (AL=8 AD=OD)
0890             //// 10T 'COMMUNICATIONS WITH DATABASE ' #DBIDN (EM=ZZZZ9 AD=OD)
0900               ' CAN NOT BE ESTABLISHED.'
0910             DOEND
0920           ELSE
0930             DO
0940               INPUT (IP=OFF SG=OFF AD=AIL)
0950               *DATX (AD=OD) 3X 'FIN'
0960               25T 'NATURAL SESSION STATISTICS' (I)
0970               72T *TIME (AL=8 AD=OD)
0980               //// 15T 'ADABAS RESPONSE CODE: ' #ADARSP
0990             DOEND
1000           ESCAPE ROUTINE
1010         DOEND
1020       IF #CONCD = 2
1030         DO
1040           INPUT (IP=OFF SG=OFF AD=AIL)
1050           *DATX (AD=OD) 3X 'FIN'
1060           25T 'NATURAL SESSION STATISTICS' (I)
1070           72T *TIME (AL=8 AD=OD)
1080           //// 10T 'VERSION MISMATCH ATTEMPTING TO GET STATS FROM TRMUEX4'
1090           ESCAPE ROUTINE
1100         DOEND
1110       *
1120     IF #CONCD = 3
1130       DO
1140         INPUT (IP=OFF SG=OFF AD=AIL)
1150         *DATX (AD=OD) 3X 'FIN'
1160         25T 'NATURAL SESSION STATISTICS' (I)
1170         72T *TIME (AL=8 AD=OD)
1180         //// 10T 'VERSION MISMATCH, STATISTICS NOT AVAILABLE'
1190         ESCAPE ROUTINE
1200       DOEND
1210     *
1220   IF #CONCD = 4
1230     DO
1240       INPUT (IP=OFF SG=OFF AD=AIL)
1250       *DATX (AD=OD) 3X 'FIN'
1260       25T 'NATURAL SESSION STATISTICS' (I)
1270       72T *TIME (AL=8 AD=OD)
1280       //// 15T 'STATISTICS NOT AVAILABE FOR THE USER'
1290       ESCAPE ROUTINE
1300     DOEND
1310   *
1320   *   THE FOLLOWING CALCULATIONS MAY BE TAILORED AS DESIRED
1330   *
1340   MOVE #DUR TO #DURN
1350   MULTIPLY #DURN BY .016

```

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```

1360 MULTIPLY #DURN BY .001 GIVING #DURCOST
1370 MOVE #COUNT TO #COUNTN
1380 MOVE #IO TO #ION
1390 MULTIPLY #ION BY .003 GIVING #IOCOST
1400 MOVE #CPU TO #CPUN
1410 MULTIPLY #CPUN BY .0001 GIVING #CPUCOST
1420 MOVE #NOFNR TO #NOFNRN
1440 ADD #DURCOST #IOCOST #CPUCOST GIVING #TOTCOST
1450 *
1460 * THE FOLLOWING STATS DISPLAY MAY BE TAILORED AS DESIRED
1470 *
1480 INPUT (IP=OFF SG=OFF AD=ALL)
1490 *DATU (AD=OD) 3X 'FIN '
1500 25T 'NATURAL SESSION STATISTICS' (I)
1510 72T *TIME (AL=8 AD=OD)
1520 // 15T '*INIT-USER:' *INIT-USER (AD=IO)
1530 40T 'INTERNAL USER-ID:' #UID (AD=IO EM=HHHH)
1540 // 54T '--- COST ---'
1550 / 15T 'ADABAS DURATION (MS) '
1560 36T #DURN (AD=OD EM=ZZZZ,ZZZ,ZZ9)
1570 54T #DURCOST (AD=OD EM=ZZZZZ,ZZZ.99)
1580 // 15T 'COMMAND COUNT'
1590 36T #COUNTN (AD=OD EM=ZZZZ,ZZZ,ZZZ)
1600 // 15T 'I/O COUNT'
1610 45T #NOFNRN (AD=OD EM=ZZ9)
1620 / 54T '===== '
1630 // 54T #TOTCOST (AD=IO EM=ZZZZZ,ZZZ.99)
1640 // 20T ' LAST NATURAL SECURITY ACCESS '
1650 // 20T 'APPLICATION:' #NSA (AD=IO) ' USER:' #NSU (AD=IO)
1660 / 77T #UPDFLD (AD=M)
1670 RETURN
1680 *
1690 END

```

IX.2.2 TRMFIN Screen

The sample TRMFIN program will produce the following screen when the user attempts to "FIN". Once the user views the screen and hits ENTER (or any key), the screen will disappear, and the user will be taken out of NATURAL (via the "REALFIN" command).

```

01-12-31 FIN NATURAL SESSION STATISTICS
11:38:00

*INIT-USER: LARRY1 INTERNAL USER-ID: C1C4F4C3

ADABAS DURATION (MS) 75,855 --- COST --- 75.85

COMMAND COUNT 32,206

I/O COUNT 8,137 24.41

CPU INSTRUCTIONS 198,175 19.81

NUMBER OF FILES 4
=====
120.07

LAST NATURAL SECURITY ACCESS

APPLICATION: TESTLIB USER: LARRY1

```

Note: TRMFINX is callable via CALLNAT from the user's own NATURAL Programs, such as Security exits, charge-back routine, etc.

IX.3 TRMIPSWD

The TRMIPSWD subprogram is used to assign an ADABAS password with Read Authority to the files on the database that are password protected. This is necessary for those RTM functions that require FCB/FDT information to be read from ADABAS. If the passwords are not supplied here, the user will be prompted when a password-protected file is accessed on the IFDT screen.

The subprogram is passed the DBID as input and passes back the appropriate password for each file on that database that is password protected.

```

0010 *****
0020 *
0030 * PROPRIETARY SOFTWARE OF TREEHOUSE SOFTWARE, INC. ALL RIGHTS RESERVED
0040 *
0050 * NAME: TRMIPSWD
0060 *
0070 * DESCR: ASSIGNS ADABAS PASSWORD TO FILES FOR TRIM RTM USE
0080 *
0090 * NOTES: THIS SUBPROGRAM IS USED TO ASSIGN AN ADABAS PASSWORD WITH
0100 * READ AUTHORITY TO THE FILES ON THE DATABASE THAT ARE PASS-
0110 * WORD PROTECTED. THIS IS NECESSARY FOR THOSE RTM FUNCTIONS
0120 * WHICH REQUIRE FCB/FDT INFORMATION TO BE READ FROM ADABAS.
0130 *
0140 * TRMIPSWD IS PASSED THE DBID AS INPUT AND PASSES BACK THE
0150 * APPROPRIATE PASSWORD FOR EACH FILE ON THAT DATABASE THAT IS
0160 * PASSWORD PROTECTED. IT ALLOWS FOR 200 PASSWORD PROTECTED
0170 * FILES PER DATABASE.
0180 *
0190 * EACH OCCURRENCE IN THE PASSWORD ARRAY CONTAINS THE FILE
0200 * NUMBER AND A PASSWORD THAT IS ASSIGNED TO IT. FOR EXAMPLE,
0210 * IF #FILENUM(1) = 25 AND #PASSWORD(1) = 'TESTTEST' THIS MEANS
0220 * THAT THE PASSWORD TESTTEST HAS BEEN ASSIGNED TO FILE 25 WITH
0230 * READ AUTHORITY.
0240 *
0250 *****
0260 *
0270 DEFINE DATA
0280 PARAMETER
0290 01 #DBID (N5) /* DBID RTM CURRENTLY MONITORING
0300 01 #FILE-PASSWORD (200) /* PSWDS USED TO READ FILES ON DBID
0310 02 #FILENUM (B2) /* FILE NUMBER
0320 02 #PASSWORD (A8) /* PASSWORD
0330 END-DEFINE
0340 *
0350 *****
0360 * BELOW IS THE CODE THAT SHOULD BE CUSTOMIZED AT YOUR SITE FOR ANY
0370 * PASSWORD PROTECTED FILES ON YOUR DATABASES. YOU CAN CODE A SET
0380 * OF PARAMETERS FOR EACH DATABASE THAT HAS PASSWORD PROTECTED FILES.
0390 * NO PARAMETERS ARE NEEDED IF THERE ARE NO PASSWORD PROTECTED FILES.
0400 *****

```

Note: TRIM will use the following values as default passwords. These values may be modified accordingly to meet the requirements of the site. Only those files that require a password need to have an entry moved into the #FILENUM and #PASSWORD arrays.

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```
0410 *
0420 DECIDE ON FIRST VALUE OF #DBID
0430 *
0440 VALUE 1                                /* VALUE 1 = DBID 1
0450     MOVE 3                               TO #FILENUM(001)
0460     MOVE 'PW-3 '                         TO #PASSWORD(001)
0470 *
0480     MOVE 92                              TO #FILENUM(002)
0490     MOVE 'TESTTRIM'                     TO #PASSWORD(002)
0500 *
0510     MOVE 120                             TO #FILENUM(003)
0520     MOVE 'PW-120 '                       TO #PASSWORD(003)
0530 *
0540     MOVE 149                             TO #FILENUM(004)
0550     MOVE 'PAYROLL '                       TO #PASSWORD(004)
0560 *
0570     MOVE 288                             TO #FILENUM(005)
0580     MOVE 'PRODCAR '                       TO #PASSWORD(005)
0590 *
0600     MOVE 12345                           TO #FILENUM(006)
0610     MOVE 'TULIPS '                       TO #PASSWORD(006)
0620 *
0630 VALUE 222                              /* VALUE 222 = DBID 222
0640 *
0650     MOVE 44                               TO #FILENUM(001)
0660     MOVE 'ROSES '                         TO #PASSWORD(001)
0670 *
0680     MOVE 299                             TO #FILENUM(002)
0690     MOVE 'TRAINS '                       TO #PASSWORD(002)
0700 *
0710     MOVE 23456                           TO #FILENUM(003)
0720     MOVE 'RAIN '                         TO #PASSWORD(003)
0730 *
0740 NONE VALUE
0750 *
0760     IGNORE
0770 *
0780 END DECIDE
0790 *
0800 END
```

SECTION X

ERROR DETECTION, PROBLEM DIAGNOSIS

X.1 Error Messages in Batch Runs

Error numbers with meaningful messages pertaining to incorrect parameters for batch runs are usually displayed directly after the parameter in error.

Any parameter error will cause TRIM to terminate with condition code 4095 without processing any input log records. In VSE, this termination is via PDUMP with Register 15 containing 4095 (hex FFF). The parameters must be corrected and the job rerun.

Error messages for a reason other than parameter errors will be printed on the applicable report(s).

Error Message:	TRM001	INVALID STATEMENT NAME
-----------------------	---------------	-------------------------------

Explanation:	The statement name encountered is not a valid TRIM statement. Possible causes may include: <ul style="list-style-type: none">• The input parameter file is not a TRIM parameter file.• Misspelled or omitted statement name.• Invalid continuation from previous line (missing comma at end of previous line).• Statement name not followed by a blank.
--------------	--

Error Message:	TRM002	INVALID PARAMETER SEPARATOR
-----------------------	---------------	------------------------------------

Explanation:	The only separators allowed are the comma, greater than symbol, less than symbol, equal sign, and not-equal symbol.
--------------	---

Error Message:	TRM003	NULL PARAMETER INVALID
-----------------------	---------------	-------------------------------

Explanation:	The parameter cannot be null. A possible cause is a double comma.
--------------	---

Error Message:	TRM004	POSITIONAL PARAMETERS NOT ALLOWED
-----------------------	---------------	--

Explanation:	Either the positional parameter is not allowed or the maximum of 50 positional parameters was exceeded.
--------------	---

Error Message: TRM005 UNKNOWN OR INVALID KEYWORD

Explanation: The keyword parameter is not valid. Possible causes may be a misspelled keyword or a keyword that is valid for another statement, but not this one.

Error Message: TRM006 LIST SIZE EXCEEDED (MAXIMUM 10)

Explanation: Only 10 entries are allowed in a list of parameters in parentheses.

Error Message: TRM007 LIST OF VALUES NOT ALLOWED

Explanation: The parameter must be a single value, not a list of values.

Error Message: TRM008 REQUIRED PARAMETER MISSING

Explanation: A required parameter is missing. Possibly it is misspelled, or a comma is missing at the end of the line and the parameter is present on the following line.

Error Message: TRM009 PARAMETER LENGTH EXCEEDED

Explanation: The parameter length is larger than permitted.

Error Message: TRM010 PREMATURE END-OF-FILE

Explanation: The parameter file has reached the end, but the previous line indicated another line to follow by having a comma at the end of the previous line.

Error Message: TRM011 INVALID END OR CONTINUATION OF STMT

Explanation: Parameters must be continued by placing a comma after the last character of the previous line and starting the next line after Column 1. No lines can extend beyond Column 71. Possibly the statement ended before an expected ending quote, a right parenthesis, or a comma was encountered.

Error Message: TRM012 INVALID NUMERIC VALUE

Explanation: Only the numeric digits 0 through 9 are allowed for numeric parameters. Possibly an excessive number of digits were specified.

Error Message: TRM013 INVALID HEXADECIMAL VALUE

Explanation: Valid hexadecimal digits are 0 through 9 and A through F. Possibly the ending quote is missing.

Error Message:	TRM014	INVALID PARAMETER VALUE
Explanation:	The parameter is not one of the acceptable values.	

Error Message:	TRM030	STATEMENT NO LONGER VALID
Explanation:	This statement is no longer valid.	

Error Message:	TRM031	PARAMETER NO LONGER VALID
Explanation:	This parameter is no longer valid.	

Error Message:	TRM038	LOG FORMAT (4) AND LOGTYPE CONFLICT
Explanation:	This parameter is no longer valid.	

Error Message:	TRM039	LOG FORMAT (5) AND LOGTYPE CONFLICT
Explanation:	This parameter is no longer valid.	

Error Message:	TRM040	INPUT OR UEX11/4 STMT REQUIRED
Explanation:	One INPUT statement is required to identify the type of log input being processed. One UEX11 statement is required to identify this TRIM run as a "UEX11 Communication Run". One UEX4 statement is required to identify this TRIM run as a "UEX4 Communication Run."	

Error Message:	TRM042	STATEMENT INVALID FOR INPUT TYPE
Explanation:	The statements permitted for this input type are listed in the <i>TRIM Reference Manual</i> .	

Error Message:	TRM044	FILE MUST BE 1 THRU 65535 FOR LOCK/UNLOCK
Explanation:	LOCK/UNLOCK for file zero is not permitted. The first (positional) parameter must be a file number in the range 1-65535.	

Error Message:	TRM045	TOO MANY FIELD STATEMENTS
Explanation:	A maximum of 40 user-defined or "derived" fields are allowed.	

Error Message: TRM046 FIELD LENGTH OR DECIMALS INVALID

Explanation: For 'C' or 'H' format, the field length may be specified as one to 16 bytes. For 'B' format, the field length may be specified as one, two, or four bytes with one to five decimal positions.

Error Message: TRM047 FIELD NAME RESERVED OR ALREADY USED

Explanation: The FIELD statement NAME=name contains a reserved field name (Refer to the Expanded Detail Record in Figure 6, Expanded PRESUM Record in Figure 7, the Expanded TRELOG Record in Figure 8, and the Expanded Protection Log in Figure 9 in the *TRIM Reference Manual*). It is possible the name was already used in a prior FIELD statement.

Error Message: TRM048 VALUE STATEMENT BYPASSED

Explanation: A previous FIELD statement is erroneous, so this VALUE statement is bypassed.

Error Message: TRM050 REPORT STMT REQUIRED BEFORE THIS STMT

Explanation: The sequence of statements is invalid. A REPORT statement that identifies the report must precede this statement.

Error Message: TRM051 INVALID PRINTER LINE-SIZE

Explanation: The printer line-size is limited to between 72 and 4000 positions.

Error Message: TRM052 AT LEAST ONE REPORT STATEMENT REQUIRED

Explanation: At least one REPORT statement must be present. Otherwise, there is no reason to run TRIM.

Error Message: TRM053 DETAIL REPORT EXCEEDS LINE-SIZE

Explanation: The detail report has been determined to exceed the line-size. Possibly an excessive number of fields are being displayed. The user may define two separate reports to get all of the desired fields displayed.

Error Message: **TRM060 INVALID FIELD NAME xxxxxxxx**

Explanation: The indicated field name is not one of the allowable Command Log Detail Record, PRESUM Record, TRELOG Record, Protection Log fields or one of its alias names, or one of the user-defined fields. Consult the following sections of the *TRIM Reference Manual*: **Section V.1.1 ADABAS Command Log Detail Record Fields**, **Section V.1.5 ADABAS Command Log PRESUM Fields**, **Section V.2.2 ADABAS Protection Log Fields**, and **Section V.1.8 ADABAS Command Log TRELOG Fields**.

Error Message: **TRM061 FIELD INAPPROPRIATE FOR SUMMARY REPORT xxxxxxxx**

Explanation: The xxxxxxxx field is not one of the numeric log fields for which summary calculations may be performed, or it is not a numeric user-defined field. Consult the sections listed above in TRM060.

Error Message: **TRM062 STATEMENT INVALID FOR SUMMARY REPORT**

Explanation: The statement is invalid for a summary report. Possibly it is valid, but only for a detail report.

Error Message: **TRM070 STATEMENT INVALID FOR DETAIL REPORT**

Explanation: The statement is invalid for a detail report. Possibly it is valid, but only for a summary report.

Error Message: **TRM071 CONTROL STMT SUMMARY LEVELS EXCEED 10**

Explanation: The CONTROL statement is limited to 10 fields, providing control levels to a depth of 10. Receiving this error possibly implies a misunderstanding of summary reports. Refer to **Section VI.2.8 Control** of the *TRIM Reference Manual*.

Error Message: **TRM074 INVALID CHARGE VALUE**

Explanation: CHARGE parameter analysis revealed an invalid value. The syntax must be: FIELD-NAME followed by an asterisk (times the value), followed by a numeric value of 5 digits or less with one possible decimal point. The value may have a preceding minus sign. Refer to **Section VI.2.14 Charge** of the *TRIM Reference Manual*.

Error Message: **TRM078 FEATURE REQUIRES TSI AUDITING FACILITY**

Explanation: An attempt has been made to use a feature available only in AUDITRE, Treehouse Software's Auditing Facility.

Error Message: **TRM080 FAILURE GETTING FDT FOR THE SHOW FNR**
Explanation: The dataset TFDnnnnn cannot be opened or read. Possibly the SHOW FNR=nnnnn is an inappropriate file number.

Error Message: **TRM081 NO FDT RECORDS**
Explanation: No FDT records are available for the TFDnnnnn dataset, where nnnnn is the file number specified on the SHOW statement.

Error Message: **TRM082 SHOW GROUP OR OCCURRING FIELD**
Explanation: The SHOW statement cannot specify a group field or an occurring field without occurrence numbers.

Error Message: **TRM083 SHOW COUNT FOR NON-OCCURRING FIELD**
Explanation: The SHOW statement cannot specify a count field for a non-occurring field.

Error Message: **TRM084 SHOW INVALID FOR LOGTYPE**
Explanation: The SHOW statement is only valid for LOGTYPE=PROTECTION.

Error Message: **TRM085 SHOW FIELD NOT AVAILABLE**
Explanation: The SHOW field is not a valid field in this file as indicated by the ADAWAN or ADACMP loader cards in the TFDnnnnn dataset or the field is a group field.

Error Message: **TRM086 HYPHEN NOT ENCOUNTERED IN RANGE**
Explanation: The SHOW statement specification of an occurring field does not contain a hyphen in what appears to be an occurring range.

Error Message: **TRM087 RANGE ERROR**
Explanation: The SHOW statement occurring field range is invalid.

Error Message: **TRM088 EXCESSIVE SHOW FIELDS**
Explanation: There are too many SHOW fields. A 10k buffer is used to decompress the shown fields. This 10k limit has been exceeded.

Error Message: **TRM089 SHOW MU IN PE SPECIFICATION ERR**
Explanation: There is an error in SHOW specifications for MU within PE (after the #).

Error Message: **TRM090 EXCESSIVE LOG STATEMENTS**
Explanation: There are too many LOG statements. The maximum is approximately 50.

Error Message: **TRM091 UEX4 COMMUNICATION UNSUCCESSFUL**
Explanation: The TRMUEx4x Communication Run was unsuccessful. Possible causes:

- The run was made against the wrong database, possibly due to an incorrect STEPLIB.
- The wrong database was being used due to the DDCARD DBID specification.
- The TRIM User-Exit-4 was not loaded because the ADARUN parameters did not specify UEX4=TRMUEx4x.
- The ADARUN parameters did not specify LOGGING=YES.
- The logging dataset is "dummied out".
- The ADARUN parameters specified LOGGING=NO, or logging was turned off by operator commands.
- The user's own User-Exit-4 does not properly co-exist with TRMUEx4x.

Error Message: **TRM092 PRESUM SPECIFICATION ERROR**
Explanation: There is a problem with the PRESUM specification.

Error Message: **TRM093 EXCESSIVE DYNAMIC LOGGING PARAMETERS**
Explanation: The combination of TRMLOG default logging parameters and user-communicated dynamic logging parameters is excessive.

Error Message: **TRM095 UEX11 COMMUNICATION UNSUCCESSFUL**
Explanation: The TRIM UEX11 Communication Run was unsuccessful. Possible causes:

- The run was made against the wrong database, possibly due to an incorrect STEPLIB.
- The wrong database was being used due to the DDCARD DBID specification.
- The TRIM User-Exit-11 was not loaded because the ADARUN parameters did not specify UEX11=TRMUEx11.

Error Message: **TRM096 UNSUCCESSFUL – UEX11 REQUIRES UEX4**
Explanation: In order to use TRMUEx11 functions, TRMUEx4x must also be used and be functional (refer to TRM091).

Error Message: TRM099 SEVERE PARAMETER ERROR(S)

Explanation: An earlier parameter error was detected and a message was printed. The run will be ABENDED with a completion condition code of 4095. No input log records are processed when there are parameter errors.

Error Message: TRM100 OPEN OPERATION FAILURE ON LOG INPUT

Explanation: The dataset defined to contain the log input could not be opened. This indicates a JCL specification problem. The run will be aborted with a completion condition code of 4093.

Error Message: TRM110 OPEN OPERATION FAILURE ON PRINTER nn

Explanation: The dataset defined to contain the indicated printer-*nn* output could not be opened. This indicates a JCL specification problem. Printer zero (TRMPRT00) is always required for printing the input parameters. Printer one (TRMPRT01) is always required to print any reports. Printer two, three, etc., are required if, and only if, there are multiple detail reports. Possibly there are not enough printer datasets defined for the number of detail reports requested. The run will be aborted with a completion condition code of 4092.

Error Message: TRM111 OUTPUT ERROR ON PRINTER nn

Explanation: The dataset defined to contain the indicated printer-*nn* output has malfunctioned. The run will not be aborted. The missing report can be run at a later time.

Error Message: TRM120 OPEN OPERATION FAILURE ON OUTPUT nn

Explanation: The *nn*th dataset defined to contain detail or summary output could not be opened. This indicates a JCL specification problem. The run will be aborted with a completion condition code of 4091.

Error Message: TRM121 OUTPUT ERROR ON OUTPUT nn

Explanation: The *nn*th dataset defined to contain the detail or summary output has malfunctioned. The run will not be aborted. The missing output can be generated at a later time.

Error Message: TRM130 OUTPUT SIZE EXCEEDS LRECL TRMOUTnn

Explanation: The nnth dataset defined to contain the detail or summary output has a LRECL too small to fit the data defined in the report. The run will be aborted.

Error Message: TRM131 TOO MANY SEGMENTS FOR TRMOUTnn

Explanation: The nnth dataset defined to contain the COMPRESS=NO output has a LRECL which needs more than 256 segments to be written. The run will be aborted.

Error Message: TRM132 INVALID DATE/TIME VALUE

Explanation: STARTDATE/STOPDATE format is invalid. Either invalid month (< 1 or > 12) or invalid day not matching the month. The run will be aborted.

Error Message: TRM190 CLOSE OPERATION FAILURE ON xxxxxxxx

Explanation: The xxxxxxxx dataset close operation has failed. The run will not be aborted. If the file is an output file, possibly the data will have to be regenerated.

Error Message: TRM200 REPORT LIMIT REACHED

Explanation: The limit of records specified for this report has been reached. Perhaps this has been a test run to view the type of report being output. If not, possibly the limit should be raised or removed altogether for subsequent runs.

Error Message: TRM201 SUMMARY REPORT EXCEEDS LINE-SIZE

Explanation: The exact format of the summary report is not determined until all input log records are processed. Only then are the values of all sums, maximums, averages, etc. known. Only then can the report be formatted to a logical columnar design. All fields up to the one that goes beyond the line-size will be printed. For subsequent runs, either:

- define a larger line-size, if possible.
- specify less summary calculations on this report.
- define another report to contain additional necessary summary figures.

Error Message: **TRM250 ADABAS RESPONSE CODE nnn**

Explanation: An ADABAS Response Code was received on a User-Exit-11 or User-Exit-4 Communication Run.

Error Message: **TRM255 INVALID OUTPUT FILE-TYPE**

Explanation: An invalid output file type has been encountered.

X.2 Condition Codes in Batch Runs

Upon successful completion in OS, TRIM will set the condition code (Register 15) to zero before returning to the caller (operating system). In VSE, TRIM will execute an EOJ.

Abnormal termination in OS will result in the setting of the following condition codes:

<u>CODE</u>	<u>MEANING</u>
4095	A parameter error has been encountered. Refer to the report on printer zero (TRMPRT00). At least one error message will identify the error. All parameter errors must be corrected before TRIM will process input log records.
4094	Insufficient storage to process desired reports.
4093	An error has been encountered in attempting to open or read the input parameter file. Check the JCL.
4092	An error has been encountered in attempting to open the input log file. Check the JCL.
4091	An error has been encountered in attempting to open an output dataset. The output dataset number (01-99) is noted in an error message on printer zero.
4090	An error has been encountered in attempting to open printer zero (TRMPRT00) or a report printer dataset. The printer number (01-99) is noted in an error message on printer zero.
4089	ADABAS Response Code encountered. Refer to associated error message.
4088	Failure in attempting to open or read the ADAWAN or ADACMP FDT for the SHOW FNR.
4087	Failure in getting the FDTs.
4081 – 4085	See 4095 above

In VSE, abnormal termination will be via PDUMP with Register 15 containing one of the above codes.

X.3 TNM Exit Codes

TNMNAT001	<p>BAD ADABAS RESPONSE CODE XXX ON COMMAND YY – ZZZZZZZZ</p> <p>XXX is replaced with the non-zero response code from ADABAS. YY is replace with the command code that received the non-zero response code. ZZZZZZZZ is replaced with a module identifier of the location where the command was issued.</p>
TNMNAT002	<p>CMDBB BUSER FIELD IS IN USE BY ANOTHER PRODUCT</p>
TNMNAT004	<p>NATURAL ENVIRONMENT IS NOT VALID</p> <p>Either NTFILE 121 has not been correctly specified or not all of the TNM NATURAL exits have been installed.</p>
TNMNAT007	<p>USERBUF AREA WAS NOT PROVIDED VIA NATURAL PARAMETER</p> <p>The USERBUF parameter of the NATPARM module has not been specified.</p>
TNMNAT008	<p>TNMMODA GETMAIN FAILURE</p> <p>An error occurred attempting to perform a GETMAIN. The most common reason for this error is that TNM was unable to obtain an 8M user area.</p>
TNMNAT009	<p>USERBUF AREA PROVIDED VIA NATURAL PARAMETER IS NOT LARGE ENOUGH</p> <p>The value for the USERBUF parameter of the NATPARM module is not large enough.</p>
TNMNAT012	<p>LUMMODA ADALNK NOT LINKED IN THE NATURAL MODE</p> <p>ADALNKR is not linked with NATURAL. Refer to Section II.10 Create Re-entrant ADALINKs for information on how to assemble and link ADALNKR.</p>
TNMNAT080	<p>READ PARM TOO LOW. NO STATISTICS WILL BE COLLECTED</p> <p>The interval specified for reading the TNM parameter record is less than one minute. Contact Treehouse Software.</p>
TNMNAT081	<p>READ PARM TOO HIGH. NO STATISTICS WILL BE COLLECTED</p> <p>The interval specified for reading the TNM parameter record is greater than ten minutes. Contact Treehouse Software.</p>
TNMNAT085	<p>WRITE PARM TOO LOW. NO STATISTICS WILL BE COLLECTED</p> <p>The interval specified for writing the TNM parameter record is less than one minute. Contact Treehouse Software.</p>
TNMNAT086	<p>WRITE PARM TOO HIGH. NO STATISTICS WILL BE COLLECTED</p> <p>The interval specified for writing the TNM parameter record is greater than ten minutes. Contact Treehouse Software.</p>

X.4 TNM Data Collection Error Codes

When entering TNM:

Group 1: ADABAS Flags:

<u>Return Code</u>	<u>Description</u>
80	TNM-FILE Open Error (ADA #1). This error occurs during open in EX2 error reference #1.
40	Event Detail Record Error (ADA #2). Error adding a record in Exit B error reference #3.
20	Program Summary Record Error (ADA #3). This error occurs with find w/hold and add/update commands in exit 4 error references #1 and 2.
10	Parameter Record Error (ADA #4). Indicates an invalid system parameter record read in Exit B error reference #6.
08	End Transaction Error (#5). Indicates a problem issuing an ET from exit 2 or exit B. Both have error reference #4.
04	Release Control Error (ADA #6). Indicates a problem issuing an RC from exit 2 (error reference #2 and 3), exit B (error reference #1 and 2).
02	Invalid Installation Parameter. User Summary Record.

Installation Error Flags:

<u>Return Code</u>	<u>Description</u>
65	User-exits not installed properly.
02	TNM Parm Error.

Collection Error Flags:

<u>Return Code</u>	<u>Description</u>
80	Collection turned off.

X.5 Frequently Encountered Problems

Problem: TRIM MODULE/LIBRARY MANAGEMENT

Explanation: The most common TRIM problem is one of TRIM Module/Library mismanagement by the user. Each new version of TRIM is distributed on a newly named library on tape, TRIM.Vxxx.LOAD(xxx = version). The member names (TRIM, etc.) tend to stay the same from version to version. Upon installing this library, users often rename, copy, move members, etc. Fixes (Zaps) supplied by Treehouse Software often get applied without resulting in any apparent fix of the problem because the wrong library or wrong member has been zapped. Some users link their own User-Exit-4 with TRMUEX4 and forget to Zap this new module. Sometimes User-exit Communication Runs are attempted with one version of TRIM and a different version of the user-exit.

This problem can be solved through better user module/library management.

Problem: ADABAS COMMAND LOG LAYOUT

Explanation: TRIM supports the log record format known as CLOGLAYOUT=5 and CLOGLAYOUT=8. There are differences in the format and data that ADABAS puts in some of the log fields in CLOGLAYOUT=5 and CLOGLAYOUT=8 as well as the number of records written, if logging is activated. For more information, refer to the ADABAS Manuals for the record layouts. Also check those manuals for the CLOGLAYOUT supported by the current ADABAS version.

Problem: COMMUNICATION FAILURE TRYING TO EXECUTE THE RTM

- Explanation:** One of the following conditions is true:
- RTM was not installed with the correct ADARUN parameters (installed on the wrong database).
 - TRMUEX4x executing is not the same Version/Release level as the RTM.
 - UEX4= was not specified or specified the wrong User-Exit-4 when ADABAS was activated.
 - The Command Log dataset (file) was "dummied out" or IGNored when ADABAS was activated.
 - The User's UEX4 does not properly co-exist with TRMUEX4x.
 - ADABAS LOGGING=NO was specified or ADABAS Logging was turned off by operator command.
 - An attempt is being made to monitor another DBID that is not valid or for which one or more of the above conditions is true.

Note: If LOGGING=NO is specified to ADABAS, turning logging on via operator command is useless as far as TRIM is concerned. This is because ADABAS makes an initial determination as to whether or not to load and use the User-Exit-4. If LOGGING=NO, the User-Exit-4 will not be loaded initially nor will it ever be loaded.

Problem: COMMAND SEQUENCE OR PARAMETER SYNTAX ERROR MESSAGES

Explanation: Parameter error messages, incorrectly processed parameters, and unexpected results can be avoided by using proper Command sequencing and Parameter syntax.

Problem: FILE 0 DISPLAYED IN TRIM BATCH OR REAL-TIME MONITOR

Explanation: Certain TRIM batch and RTM reports or displays show File 0, but no File 0 is defined on the database. This is a result of ADABAS being supplied a File Number Zero (correctly) for certain commands. These commands include BT, CL, C1, C2, C3, C5, ET, OP, RC, and RE.

Problem: STATISTICS SHOW INAPPROPRIATE COMMANDS FOR A FILE

Explanation: Certain ADABAS commands require no file number (the ADABAS commands ignore any particular value in the file number field). Values remaining in the file number field are recognized in TRIM as valid. Often this includes file 64 (caused by hex 40 - blank) or file 16448 (caused by hex 4040).

Problem: STATISTICS FROM RTM AND CLOG SUMMARY REPORT DO NOT AGREE

Explanation: Certain commands, such as RC, BT, OP, CL, ET, etc., will operate correctly in ADABAS with or without a valid file number (i.e., ADABAS ignores the file number). A "correction" is made in TRMUEx4x for on-line functions (minute, hour, session statistics, and Nucleus Session Statistics). The FNR is changed to zero for commands that should have specified FNR=0. This causes a mismatch with the TRIM batch CLOG reports for statistics based upon FNR. ZAPSWITCH X'29' provides the option to also have the FNR set to 0 in the CLOG, which would alleviate any mismatch of statistics. (See "Zero FNR" in **Section VI Tailoring with Zaps** and "Option for Zeroing FNR" in **Section II.4 Real-Time Monitor Operation** of the *TRIM Reference manual* for additional information.)

To avoid filling up the TRIM collection tables with its own internal commands, TRMUEx4x does not keep statistics on any command from the RTM or any TRMV* NATURAL library. If the RTM is moved to another library, all database calls from any TNM* module will be logged. The calls from TRM* modules will only be logged on a rare occasion.

Problem: LINK-EDIT (VSE) PROBLEM USING PRODUCT "FLEE"

Explanation: Copy the link-edit JCL from the Installation Tape and remove the SIZE= parameter from the EXEC card image.

Problem: NATURAL PROGRAM DISPLAYS AS #NOTExxx, BLANK, OR STRANGE CHARACTERS

Explanation: Possibly non-NATURAL ADABAS commands were issued. Perhaps ADALINK Link-Exit-1 is not properly in place for all NATURAL environments: Batch, TSO, CICS, COM-LETE, etc. Refer to the **NATURAL Program** sub-section in the **Real-Time Monitor Operations** section.

Problem: OUTPUT FILE APPEARS INCOMPLETE

Explanation: Output was limited by INPUT LIMIT=, INCLUDE/EXCLUDE, or OUTPUT LIMIT= statements.

Problem: PRESUM DATA IS INCOMPLETE

Explanation: TRMUEx4x start-up parameters may have PRESUM off/on, but may have been changed via Control Screens.

Problem: PRESUM REPORTS SHOW INVALID CMDs, FNRs, ETC.

Explanation: All PRESUM records have the same format with a "Type" indicator of 'C' for CMD, 'F' for FNR, etc. and the object of the PRESUM (CMD, FNR) field in bytes 36-51 of the record. When the report is involved with CMD statistics, it should INCLUDE TYPE=C, and when it is involved with FNR statistics, it should INCLUDE TYPE=F. Failure to include only the correct TYPE will cause other record types' objects to display on the report in an apparent erroneous fashion.

Problem: PROTECTION LOG PROCESSING PROBLEM (VSE)

Explanation: When processing multiple ADABAS Files in a single PLOG run, reference the Files in the same sequence as their Loader definition files are defined in the JCL (SYS006 for first file, SYS016 for second file, etc.).

Problem: REPORT APPEARS INCOMPLETE

Explanation: One of the following conditions is true:

- Report was limited by INPUT LIMIT=, REPORT LIMIT=, or INCLUDE/EXCLUDE statements.
- A summary report may be segmented because there is not enough storage to maintain all the summary accumulators requested. Providing more processing storage for the region or partition or reducing the complexity of the summary reports will reduce or eliminate segmenting.

Problem: REPORT CONTAINS DATA THOUGHT TO BE EXCLUDED

Explanation: Refer to the description and examples for the INCLUDE/EXCLUDE statements in **Section VI.2.5 Include/Exclude** of the **TRIM Reference Manual**.

Problem: TIME IS INACCURATE BY A MULTIPLE OF HOURS

Explanation: Local CPU is IPLed with a time other than the local time. Use the INPUT CLOCK-FACTOR= parameter to adjust to local time. The Clock Factor is calculated automatically in the RTM.

Problem: TRMUEX11/4 CAUSES ABEND WHEN CALLED BY ADABAS

Explanation: This is often caused by a user's UEX11/4 not correctly co-existing with TRMUEX11/4. Possibly a TRMUEX11/4 Zap is incorrectly applied.

Problem: TRMUEX11 DOES NOT APPEAR TO BE CORRECTLY LOCKING, DISALLOWING, ETC.

Explanation: TRMUEX11 parameters are not "incremental." Each Communication Run must re-specify all intended parameters.

Problem: TRIM DOES NOT PRODUCE AN EXPECTED REPORT, AND THERE IS NO ERROR MESSAGE

Explanation: One of the following conditions is true:

- No records were found of the type specified in the INPUT LOGTYPE= statement.
- No records were selected by the INCLUDE statement(s), or all records were rejected by the EXCLUDE statement(s).
- No records were found for this report within the set of records processed by the INPUT LIMIT= statement.
- Input tape (VSE) has a bad record or is missing a label record.

Problem: USER DEFINED FIELD PROBLEM

Explanation: User defined fields must not use a FIELD name already being used by TRIM. For example, the user-defined field cannot be named "FNR".

Problem: PROBLEM READING USER DEFINED FILES

Explanation: Input Files defined as INPUT LOGTYPE=* are expected to be Variable Length blocked files.

Problem: TRACE SCREEN BLANK

Explanation: When communicated from the RTM to the User-Exit-4 that the trace is for a particular user/job/file, etc., the user-exit responds with the stack of the last 19 commands for that user/job/file. On the first communication for a user/job/file, there are no commands stacked yet, since tracing has just started. Until the user/job/file executes commands, this screen will appear blank.

Problem: **TRIM BATCH PROCESSING ABENDS DUE TO SHORTAGE OF MEMORY**

Explanation: Too many SUMMARY reports or SUMMARY CONTROL fields were requested. This only occurs when a large amount of memory is used, and TRIM is forced to total and restart several times.

Less storage is used by more reports with fewer CONTROL fields than by fewer reports with more CONTROL fields. This is true because each level of control multiplies the accumulators required.

Problem: **TRM014 WITH ABEND, BUT STATEMENTS APPEAR TO BE OKAY**

Explanation: Parameters may have been specified in the wrong sequence.

Too many fields may have been defined in a single DISPLAY or SHOW statement.

Problem: **TRIM, RTM OPERATION UNSUCCESSFUL**

Explanation: At trial sites, this is often the case due to incorrect application of trial date extension Zaps. The Zaps must be applied to all appropriate modules. When TRMUJEX4x is linked to the user's own User-Exit-4, the combined exit must be date-zapped. Similarly, if TRIM and/or TRMUJEX4x are renamed or copied to another library, they must be properly zapped.

Problem: **ADABAS LINK ROUTINE DOES NOT WORK PROPERLY**

Explanation: If the Link Routine works without inclusion of TRIM Link-Exit-1, check the Link-Exit-1 Zaps for erroneous application.

An abend can result in ADARUN when ADALNK and TSIUJEX1G are linked as re-entrant, but the appropriate modifications have not been made to ADALNK source to make it re-entrant. PLEASE VIEW THE ADAGBLS SOURCE.

Problem: UNABLE TO EXTRACT DATA FROM CLOG OR PLOG FOR A DATETIME RANGE

Explanation: The DATETIME field cannot be used in an INCLUDE or EXCLUDE with a value range. The DATETIME data contains an imbedded '--' that prohibits its use in a VALUE RANGE statement. To accomplish the same effect of DATETIME in a VALUE RANGE statement, the two fields, YYMMDD and TIME, must be used in concert. An example would be:

```
INCLUDE YYMMDD=XXXXXX, TIME=( range )
INCLUDE YYMMDD=YYYYYY, TIME=( range )
```

Another option is to use the DATE4TIME field that allows for expression of the year in four digits. An example would be:

```
INCLUDE YYYYMMDD=xxxxxxxx, TIME=( range )
```

Problem: UNABLE TO LOGON TO TRIM RTM AFTER EXITING AOS

Explanation: This problem had reportedly been solved by a recent AOS release. This problem has reportedly resurfaced in a newer AOS release. Contact Software AG.

Problem: DUPLICATE "TRIM IS ACTIVE" MESSAGES

Explanation: This is probably caused by joining two TRIM User-Exit-4s in one ADABAS environment. Either the two were linked together to co-exist or a dispatcher was coded to invoke both exits. Remove one; keep the newest one.

Problem: CO-EXISTENCE WITH REVIEW

Explanation: It has been noted by customers that REVIEW may destroy certain registers before calling the TRIM user-exit. This may have been fixed in later REVIEW releases. Contact Software AG.

Problem: UNEXPECTED VALUES IN TRIM DERIVED FIELDS IN THE VM ENVIRONMENT

Explanation: If the environment module TRMXVM was not included in the UEX11 and UEX4 link-edits, unexpected results will occur. Verify that TRMXVM has been linked with the TRMUEX11 and TRMUEX4x load modules before contacting Treehouse Software.

Problem: TRELOG REQUIRED FOR TRELATIONAL (1 OR 2)

Explanation: This error message indicates that tRelational Logging has been requested, but no TRELOG module has been linked into TRMUEX4x. Assemble and link a TRELOG module with TRMUEX4x, and retry activating tRelational Logging before contacting Treehouse Software.

Problem: TRELOG LOGGING STOPPED RC=004

Explanation: An internal error with the tRelational logging table has occurred. This requires stopping the database and restarting to be able to reactivate tRelational Logging. Please contact Treehouse Software.

Problem: TRMLOG IS TOO LARGE - IS TRUNCATED

Explanation: This error message indicates an overflow of the table containing the logging parameters specified via the TRMLOG macros. To avoid an abend condition, the parameters have been truncated with the last parameter to fit into the table. Logging will continue with the truncated parameters. Refer to the TRMLOG assembly for MNOTE statements indicating an overflow of the allowable table size. An MNOTE statement indicating the accumulated size may be found for each TRMLOG statement in the TRMLOG assembly.

Problem: TRIM WILL USE TRUNCATED TRMLOG

Explanation: This message will be found as part of the start up messages when a 'TRMLOG IS TOO LARGE - IS TRUNCATED' condition has been encountered. Refer to the 'TRMLOG IS TOO LARGE - IS TRUNCATED' message for details.

Problem: PROTECTION LOG PROCESSING ABENDS WHEN LOADER DEFINITION CARD IMAGE DATASET (FILE) IS READ

Explanation: The DDCARD (File Label) for the Loader definition dataset (file) may be missing from the Job Control.

Possibly the loader dataset (file) definition is not in 80 character format (unblocked for VSE).

To accommodate two-byte ADABAS file numbers, the SHOW statement FNR parameter has been changed to allow for file number values from 1 to 65535. Correspondingly, the file description (known in TRIM as the FDT or ADAWAN/ADACMP card images) is expected to be in datasets TFDxxxxx (for OS). Formerly, these were in datasets TRMFDxxx. VM EXECs for PLOG processing are similarly affected. VSE is unaffected, as the FDTs are expected to reside in SYS006, SYS016, etc. Siemens sites should contact the TSI German Affiliate for any changes necessary.

Problem: PROTECTION LOG PROCESSING PROBLEMS

Explanation: TRIM Vvrs can process PLOGs from ADABAS V7.4.4 and above.

Problem: INFORMATION WRITTEN FROM THE USER'S USERINFO AREA SEGMENT IS MISSING. THIS COULD SHOW UP IN A COUPLE OF WAYS. IF SMF RECORDS WERE TO HAVE BEEN WRITTEN, THEY MAY BE MISSING. IF INFORMATION FROM THE USER'S USERINFO AREA SEGMENT WAS TO OVERLAY INFORMATION IN THE CLOG OR PRESUM RECORDS, IT MAY BE MISSING

Explanation: The source for the UINFO macro changed in TRIM V8. Any user exit accessing the userinfo element or adding an own segment to the user info buffer must be re-assembled to pick up the current version of UINFO and TSIUINFO.

Problem: IN TNM, A "PURGE DISALLOWED" OR "CONVERSION DISALLOWED" MESSAGE IS DISPLAYED WHEN EXECUTING A PURGE OR CONVERSION

Explanation: Another user is executing a purge or conversion for the same data. If no other users are executing a purge/conversion, the purge/conversion flag may not have been reset properly. This can happen if the last purge/conversion terminated abnormally, and the purge/conversion flag was left active for that user.

This flag will be reset if the user that experienced the abnormal termination executes the purge/conversion again and is successful.

Problem: IN TNM, WHEN USING THE REPOSITION LIBRARY/PROGRAM OR REPOSITION USER-ID FIELDS ON A REPORT, THE USER DOES NOT REPOSITION TO THE EXPECTED LOCATION

Solution: The parameters on the input screen create a subset of data to be displayed. The reposition fields can only reposition the user within that subset of data.

Problem: IN TNM, IN THE PROGRAM PERCENTAGE SUMMARY REPORT OR USER PERCENTAGE SUMMARY REPORT, THE PERCENTAGE FOR EACH PROGRAM OR USER CHANGES AS THE USER PAGES FORWARD AND BACKWARD THROUGH THE REPORT

Explanation: When the report is being executed for the current day, the data input to the report is constantly being updated. Each value that changes has the ability to cause every percentage on the report to change.

Problem: **IN TNM, THE CATALOGED DATE DISPLAYED ON THE REPORT IS NOT THE SAME AS THE DATE DISPLAYED ON THE NATURAL LIST COMMAND SCREEN**

Explanation: The date of the program's object code and source code are different. This could be caused by migrating only object code from another library or updating source code and not re-stowing the object code. To see the catalog date of the object code the user can type "LD" on the selection line next to the program name in the NATURAL editor. This will display both the source code and object code dates.

Problem: **IN TNM, NO SUMMARY DATA IS AVAILABLE FOR SELECTED USERS AND PROGRAMS**

Explanations: Under System Preferences on the Define Data Collection Parameters screen, the Enable All Data Collection field is set to "N".

The Enable Summary Data Collection field is set to "N".

The user is not executing a copy of NATURAL that includes the TNM NATURAL user-exits.

To avoid collecting access data while using the RTM, TNM will not collect statistics on any NATURAL module from a TRMV* library. If the RTM is moved to another library, collection will be done and excessive data will be collected during RTM operations. To avoid this problem, the RTM should be kept in a TRMV* NATURAL library.

Problem: **IN TNM, ON THE USER TRACE REPORT, RESPONSE TIME IS BLANK FOR A MAP**

Explanations: Response time is calculated by subtracting the start time of a map from the event time of the last terminal I/O. If data collection is turned on and a map start is executed before a terminal I/O, the response time for that map will be blank.

The Convert Detail Data function requires both a terminal I/O and map start to calculate response time. If either value is not available during the conversion, the response time will default to blank.

Terminal I/Os or Program Starts were not selected on the Define Data Collection Parameters screen to be collected, which will cause all response times to be set to blank.

Problem: **IN TNM, ON THE PROGRAM NEST REPORT, LIBRARY/PROGRAM DISPLAYS THE FOLLOWING MESSAGE: ">>>>>14 LIBRARY-NAME PROGRAM-NAME"**

Explanation: The program is executed at a level greater than 14. Programs at level 15 or above will be displayed, but they will not be indented.

Problem: **IN TNM, NO DETAIL DATA EXISTS FOR THE USER, DATE, AND TIME SELECTED**

Explanations: The data collection parameters were specified incorrectly.

The Enable All Data Collection field on the Define Data Collection Parameters screen is set to "N". If this occurs, the user will be notified when starting TNM (if the user did not leave NATURAL before starting TNM).

The data was collected, but it was not converted at this time.

The Convert Detail Data function completed before all the detail data was available for converting.

TNM experienced an error while accessing with the TNM file. If this occurs, the user will be notified when starting TNM (if the user did not leave NATURAL before starting TNM).

The user is not executing a copy of NATURAL that includes the TNM user-exits.

To avoid collecting access data while using the RTM, TNM will not collect statistics on any NATURAL module from a TRMV* library. If the RTM is moved to another library, collection will be done and excessive data will be collected during RTM operations. To avoid this problem, the RTM should be kept in a TRMV* NATURAL library.

Problem: **IN TNM, AN ADABAS ERROR OR WARNING SCREEN APPEARS AS A USER ENTERS TNM**

Explanations: The warning screen informs the user that the administrator turned TNM off by setting the Disable All Data Collection parameter to "Y" on the Define Data Collection Screen. This occurred before the user entered NATURAL or while the user was in NATURAL. Therefore, the user may see that either no TNM data was collected or that partial TNM data was collected.

The TNM Data Collection Error screen informs the user that TNM experienced an error while communicating with the TNM file. When such an error occurs, TNM displays an error message to the operator, sets the ADABAS Error flag, and automatically stops collecting data. Therefore, the user may see that partial TNM data was collected.

Refer to **Section IX.6.3 TNM Warnings and Error Messages** for an explanation of the ADABAS Error flag that appears on the TNM Data Collection Error Screen.

Problem: **IN TNM, NO DATA APPEARS FOR LIBRARIES PREFIXED WITH SYS OR TRMVxxx**

Explanation: TNM does not collect statistics for these libraries.

X.6 Problem Diagnosis Checklists

The following checklists may make it possible to diagnose or solve many TRIM problems. Four checklists are presented:

- Diagnosing an ADABAS ABEND, Possibly TRIM Related
- Diagnosing Real-Time Monitor Related NATURAL Errors
- Diagnosing TNM Warning and Error Messages
- Diagnosing TRIM Batch Reporting Errors

X.6.1 ADABAS ABENDs

The following checklist may help to uncover the cause of an ADABAS ABEND, possibly TRIM related.

- Has new Software AG software, IBM software, or any system maintenance recently been added to the system? If so, what?
New software or system maintenance may affect TRIM and its ability to function in the user's environment. Try running TRIM with the new software removed, if possible. If the problem goes away, the new software could be the cause. Call Treehouse Software for more information.
- Are all TSI published Zaps applied? Are they applied correctly?
The failure to apply all published Zaps or the incorrect application of a published Zap can have a severe negative impact on the operation of TRIM. Verify all Zaps. If the problem persists, contact Treehouse Software. At that time, verification can be made that all published Zaps have been received.
- What size TRIM User-Exit-4 was executing?
When debugging TRIM problems it is important to let TSI know what size TRIM User-Exit-4 encountered the error.
- Did any particular event seem to cause the ABEND, such as trying to execute a particular RTM screen? Which screen was being viewed (if any), and which screen was being requested next?
Make a note of the event causing the ABEND, then contact Treehouse Software.
- Can the problem be re-created?
Make a note of how the problem can be re-created and contact Treehouse Software.
- Does the abend occur across all databases? If not, what are the differences between the databases? Do all databases have TRIM User-exits operational? Is the same User-Exit-4 being used across all databases?
It is important that the TRIM versions are consistent across databases. Mixed versions can be unpredictable. Attempting to monitor a database without a TRIM user-exit in place on that database can also cause errors.
- Does the user have their own User-Exit-4 and/or User-Exit-11? Has each been properly linked with TRMUEX4 and/or TRMUEX11? Has the user's own user-exit been checked out by itself? With ADABAS?
If the user's user-exit is properly linked with TRMUEX4x and/or TRMUEX11, and the user's user-exit works on its own, contact Treehouse Software.

- Is this the first time this problem has occurred under this version of TRIM?
If this version of TRIM has been running consistently without problems and suddenly ABENDs, something may have changed. Installation of new software, application of maintenance, reorganizing load libraries, and other such changes could contribute to the problem and should be considered when attempting to solve the problem that is occurring.
- Is this the first attempt to run a new version of TRIM? If yes, did the problem occur under an older version?
If the new version of TRIM is incorrectly installed, an ABEND could result. Verify the installation before calling Treehouse Software.
If the problem did not occur under an older version of TRIM, contact Treehouse Software to determine why the problem might have occurred.
- Did the database ABEND immediately?
If inadequate storage is provided for the ADABAS region, an ABEND will occur immediately when ADABAS tries to load the user-exits.
- Does the problem still occur after TRIM is removed?
If the problem persists after TRIM is removed, the cause of the problem is not TRIM. Other areas should be researched.

Before calling Treehouse Software, be sure to have the ADAM99 information from the ADABAS SYSLOG available, along with the answers to the questions above. This information will greatly improve the speed at which the problem is resolved.

X.6.2 Real-Time Monitor NATURAL Errors

If a NATURAL error message is received, the following checklist may help to uncover the problem:

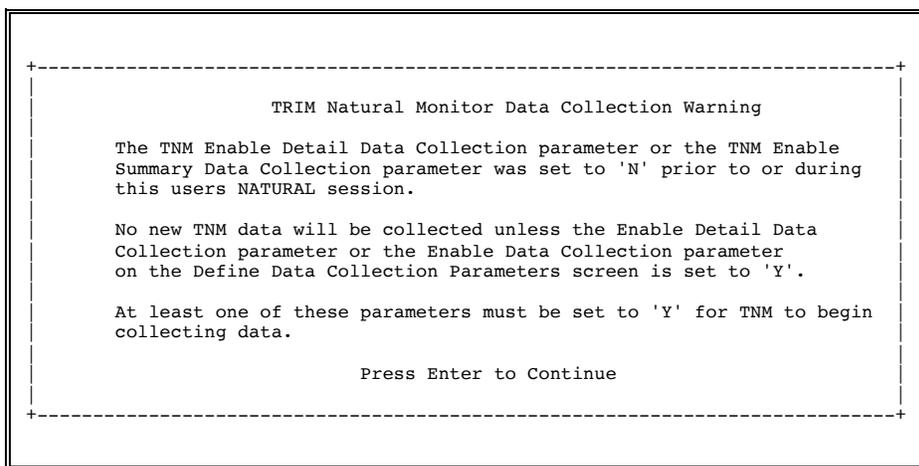
- Was a new version of NATURAL installed, or was any maintenance applied to NATURAL?
If TRIM worked with the previous arrangement, but not under the new situation, it is possible that the change to the NATURAL environment interferes with TRIM's operation. Contact Treehouse Software.
- Was a new version of TRIM recently installed?
Incorrect installation of the new version of TRIM can cause problems with operation, leading to ABENDS and NATURAL errors. Verify the installation procedure.
- Do the RTM and TRMUEx4 versions match?
Attempting to use different versions of the RTM and TRIM user-exits will cause NATURAL errors (and other unpredictable results) to occur. Be sure to install not only the new RTM, but also the new user-exits.
- Did the user specify TRMMENU instead of MENU as their NATURAL Security default start-up menu?
If so, globals are not set correctly and errors will occur. MENU should always be specified as the default start-up program.
- Which TRIM screen ABENDED? Does the error occur on more than one screen? If so, which screens encounter the error?
It is possible that a problem could cause some screens to ABEND, but not others. It will assist Treehouse Software's technical staff to know which screen(s) ABENDED. If navigating to another screen, it is helpful to know the screens involved (from and to).
- Was a new release of the NATURAL TP monitor recently installed, or was any maintenance applied to it?
Changes to the NATURAL TP monitor may cause it to become temporarily incompatible with TRIM. If TRIM was working before the changes were made, contact Treehouse Software.

Before calling Treehouse Software, be sure to have the errant program's name, line number, error code, and message text available, along with the answers to the questions above. This information will greatly improve the speed at which the problem is resolved.

X.6.3 TNM Warning and Error Messages

Data Collection Warning

The message below is displayed when the user first enters TNM.



The message above indicates that either Detail Data Collection or Summary Data Collection is set to 'N'. The user must set at least one of the parameters to 'Y' for TNM to begin collecting data. Refer to **Section II.16.2.2 Define Data Collection Parameters** of the **TRIM Reference Manual** for more information.

ADABAS Errors

The following error message is displayed on the operator's screen if an ADABAS error occurs while a user is executing code being monitored by TNM:

```
TNM001 BAD ADABAS RESPONSE CODE xxxx ON COMMAND yy-zzzzzzzz
```

This message indicates an ADABAS error has occurred while TNM was trying to access ADABAS. An explanation of the error can be obtained by examining the ADABAS response code in the ADABAS Messages and Codes Manual.

xxxx	identifies the ADABAS response code.
yy	identifies the command code.
zzzzzzzz	identifies the module and ADABAS call that experienced the error.

For example, the following message is an ADABAS response code 77 in NATURAL User-Exit-4 on the second statement that occurs in User-Exit-4:

```
TNM0001 BAD ADABAS RESPONSE CODE 0077 ON COMMAND N1 - NUEX4 #2
```

This indicates that sufficient space was not available for a required Associator or Data Storage extent.

Installation Errors

Installation errors are checked when the user first enters NATURAL, and the error detection flags are set before any data is collected.

The message below is displayed when the user first enters TNM if an Installation error has occurred.

```

+-----+
|
|           TNM Data Collection Error
|
| An error has occurred during TNM data collection.
| As a result of the error, TNM stopped collection data.
|
| The following error detection flags have been set:
|
|           ADABAS Error Flag:           0
|           Installation Error Flag:      65
|           Collection Error Flag:       0
|
|           Press ENTER to Continue
|
+-----+
    
```

The following table displays Installation Error Flags and their explanations:

ERROR FLAG	EXPLANATION
65	User-exits not installed properly.
16	TNM was unable to find its User Info Segment information. Probable cause: NATRDC is installed with NATURAL 2.2.8.
12	TNM was unable to locate sufficient space for a work area. Increase the size of the selected buffer (USERBUF or ZSIZE) or select a different buffer.
01, 02	Invalid installation parameter.

The Installation Error Flag number should be identified when contacting Treehouse Software regarding an Installation error.

Collection Errors

Collection errors are checked when the user first enters NATURAL, and the error detection flags are set before any data is collected.

```

+-----+
|
|           TNM Data Collection Error
|
| An error has occurred during TNM data collection.
| As a result of the error, TNM stopped collection data.
|
| The following error detection flags have been set:
|
|           ADABAS Error Flag:           0
|           Installation Error Flag:      0
|           Collection Error Flag:        4
|
|           Press ENTER to Continue
|
+-----+

```

If any number other than zero is displayed in the Collection Error Flag field, contact Treehouse Software and identify the Collection Error Flag number.

X.6.4 TRIM Batch Reporting Problems

If none of the “Common Problems” are the cause of a TRIM batch reporting problem, consider the following checklist:

- Is the user specifying the correct LOGTYPE parameter in the reporting parameters?
Using a CLOGLAYOUT=5 or 8 command log with LOGTYPE=COMMAND will cause a compatibility error. Make sure the command log input matches the LOGTYPE parameter setting.
- Is the user executing a TRIM module of the same version in which the CLOGs and/or PLOGs were generated?
Using older logs with newer TRIM versions and vice-versa can cause problems with TRIM batch reporting functions. Contact Treehouse Software for more information.
- Did this problem exist in prior versions of TRIM?
If this is the case, contact Treehouse Software.
- Was a large enough region supplied in which to run the report?
The lack of sufficient storage area can cause batch reporting to ABEND. Try a larger region size before calling Treehouse Software.
- What specifically is wrong with the report?
When contacting Treehouse Software, specify precisely what is wrong with the report (i.e., it contains invalid data, the headings are wrong, etc.).
- Was all necessary information logged before producing the report?
For instance, if the user wants to report on NATURAL program name, was the Control Block logged?

Failure to log the necessary information will make reporting on that information impossible.

If the user is logging the proper records and data is not appearing in TRIM reports, dump the log and see if the desired information has actually been logged.
- Does the customer’s JCL point to the correct Load Library?
When new versions of TRIM are installed, customers sometimes fail to update JCL to reflect the new Load Libraries.
- Are file definitions correct?
Protection Log problems are almost always due to the file definitions not matching what is actually on the file. Verify that the definitions are correct by dumping the Protection Log (or run a TRIM report, including the ABENDING record, and DISPLAY IMAGE), and compare it with the ADAWAN or ADACMP file definition.
- Did the correct “FNR=nnnnn” appear on the SHOW statement?
The "FNR=nnnnn" parameter states the ADABAS file number. If this parameter is missing, file zero will be assumed, ending the run as a JCL error for lack of ADAWAN or ADACMP cards for file zero.

- Did a PLOG run fail?

Usual problems that would cause an abend during PLOG processing are:

- *The PLOG being processed is from the wrong database, but it happens to have the same file number. (i.e., There are different Files 102 with different field layouts on databases 250 and 251.)*
- *The ADAWAN/ADACMP definitions and the ADABAS FDT do not match. It may be that the file definition was recently modified and the TRIM job being run is using the new file definition with an old PLOG tape. Upon closer investigation, the customer will probably discover that this happens on one particular record in a particular file, probably the first record for the file.*

An unusual problem that would cause an abend is:

- *The input for the job is a CLOG, not a PLOG.*

- Has the customer tried a PLOG "phased-test?"

When a complicated PLOG run ABENDs, the customer should attempt to assist in determining the problem by first trying one Report on one file, DISPLAYing some "fixed fields", but SHOWing no ADABAS fields. Then, if this works, try SHOWing one field, the first field. Do not SHOW ALL. Steadily increase complexity until the failure occurs.

To determine the problem, TSI (or the customer) will need the following items:

- *ADAWAN/ADACMP cards supplied to TRIM*
- *TRIM parameters used to process the file*
- *TRIM report (several pages up to the failure point)*
- *A "dump" of the PLOG for the failing record*

The PLOG "dump" can be accomplished in the following manner:

- *If the TRIM parameters report on multiple files, then temporarily reduce the complexity of the run to the failing file. Then reduce the run to the failing record. There may already be enough information to do so, such as a SEQ or TIME field value that can be used in an INCLUDE for the next run.*
- *Process the PLOG with a DISPLAY IMAGE statement included with the rest of the parameters. This DISPLAY IMAGE can be placed after any other DISPLAY statements and before any SHOW statements. The DISPLAY IMAGE will cause a hex dump of the entire compressed record that TRIM is attempting to decompress.*
- *If the DISPLAY IMAGE results in a huge printout then try running against the PLOG one time without the DISPLAY IMAGE for the purpose of determining the failing record. DISPLAY the SEQ, TIME, FNR, etc. fields. Then run against the PLOG again, "dumping" a small portion of records that include the failing record with a DISPLAY of the SEQ, TIME, FNR, and IMAGE fields.*

After acquiring the information above, often the problem can be seen if one understands the rules for decompression. If not, TSI should be able to help. As a last resort, send the collected information to TSI.

- If a TRIM report seems inconsistent or invalid, was logging somehow deactivated?

Logging could have been deactivated by an operator command, PRESUM logging turned off via the RTM, or a User-Exit-4 Communication Run may have been submitted without the user's knowledge, altering the logging specifications.

In addition, if TRMTAP and/or TRMLOG macros were used to activate logging the user should have linked the macros with a "clean" TRMUEX4 and not with a TRMUEX4x that had been previously linked with a TRMTAP and/or TRMLOG macro.

X.7 ADABAS Experiences

During the testing process for TRIM, certain observations were made regarding ADABAS 7 releases and their interaction with TRIM. Changes in subsequent ADABAS releases may correct any of the problems or inconsistencies noted below.

ADABAS COMMAND STATISTICS

A new type of ADABAS command, the INTERNAL COMMAND, is being encountered. These commands are generated by the ADABAS nucleus in response to OPERATOR commands, UTILITIES, or to perform internal processing. INTERNAL COMMANDS are not requested by a user program and are not executed in the user threads. TRIM distinguishes between INTERNAL COMMANDS and commands requested by the user on the Nucleus Session Statistics.

ADABAS and TRIM do not always agree as to the percentage used (high water marks) of the various buffers. This is primarily due to the fact that ADABAS appears to truncate when computing the percentage, and TRIM rounds when computing the percentage.

ADABAS does not appear to account for all of the users during an ADABAS session. This could result in a discrepancy when reporting commands by users and the number of users participating in an ADABAS session.

There is also a discrepancy concerning the number of OP commands and the high-water mark for the UQ. In all cases, TRIM's figures are higher than those generated by ADABAS in its final statistics printout. This is possibly because ADABAS does not count all OP commands, and it does not count all users. It is also possible that ADABAS ignores UTILITY users.

TRIM shows the number of internal commands generated by ADABAS. ADABAS does not.

ADABAS does not appear to account for all commands received when reporting commands by command-type. Furthermore, the number of commands reported by file does not always agree with the number of commands by command-type on the ADABAS session report.

When reviewing commands by file, remember that TRIM uses the file number in the Control Block, even if the command does not require a file (ET, OP, CL, RC), unless the ZERO FNR Option of TRIM is selected.

FULL XA SUPPORT

TRIM fully supports ADABAS buffer pools above the 16 MEG line (AMODE=31) and will acquire storage for its tables from above the line.

PASSWORD CONFIRMATION

In previous versions, it was possible for the user to accidentally change the RTM password to an unknown value because TRIM did not confirm that the new password was entered correctly. The Real-Time Monitor's CTRL screen now causes a "confirmation screen" to appear when password changes are requested. This screen now asks for the old password and the new password. The new password must be entered a second time to verify that it has been entered correctly. This should eliminate the problems caused by accidentally entering an incorrect password.

PLOG PROCESSING

ADACMP and ADAWAN format card images are now acceptable input for definition of fields for each file.

READ-ONLY AND OPENRQ=YES ACCOMMODATION

TRIM Communication runs have had Open commands added to insure their functionality in an environment that uses OPENRQ=YES. Also, TRIM Communication runs have been modified to permit their usage in a READONLY=YES environment.

DIAGNOSTIC MESSAGES

During the initialization of TRIM (this occurs when the first command is received by TRMUEx4) several messages are output to DDPRINT / SYSLST and to the console as WTOs to aid in problem resolution. The format of these messages is as follows:

```
TRIMX4 99999 TRIMV761 message
```

Where:

TRIMX4 indicates that the message came from TRMUEx4x.
99999 is the DBID.

The following messages are possible:

```
STARTUP IS IN PROGRESS  
ADABAS LBP - ABOVE THE 16 MEG LINE  
ADABAS LBP - BELOW THE 16 MEG LINE  
TRIM IS ACTIVE
```

If TRMTAP, TRMLOG, TRELOG, or TRMRSP parms are specified, the following messages are also possible:

```
TRIM WILL USE TRMTAP PARMS  
TRIM WILL USE TRMLOG PARMS  
TRIM WILL USE TRMRSP PARMS  
TRIM WILL USE TRELOG PARMS  
BAD TRMTAP PARM MODULE DETECTED  
TRMTAP SM LEVEL MISMATCH DETECTED
```

In the event that the expiration date for TRIM is reached, the following messages will appear:

```
TRIM HAS EXPIRED  
TRIM USER EXIT 4 NOW DORMANT
```

When an internal error has been detected and the integrity of the XUQ has been lost, the XUQ is reinitialized. The following message indicates that the table (and therefore the corresponding statistics) has been reinitialized. Statistics will be accumulated from the reinitialization time forward.

```
TRIMX4 00250 TRIMV761 XUQ REINITIALIZED
```

If TRMRSP parms are specified, the following start-up messages are possible on the Nucleus Session Statistic Report:

```
TRIM WILL USE TRMRSP PARMS  
ERROR(S) FOUND IN TRMRSP PARMS
```

When TRIM is changed from active to idle, the following message will appear:

```
TRIM IS NOW IDLE
```

When TRIM is changed from idle to active, the following message will appear:

```
TRIM IS NOW ACTIVE
```

TRMFINX IS CALLABLE

TRMFINX is callable via CALLNAT from the user's own NATURAL Programs, such as Security exits, charge-back routine, etc.

LARGE NUMBERS AS >>>>

Large numbers, such as an ASSOIO greater than 999 or 9999, occasionally failed with NAT1305 and such messages. TRIM screens have been adjusted to allow for most large numbers. In certain cases, however, formatted screen outputs containing many fields prohibit displaying unusually large numbers. In this case, the numbers are shown as ">>>>".

CO-EXISTENCE WITH REVIEW AND/OR APAS

This release of TRIM was not tested in conjunction with REVIEW or APAS. However, there is no reason to suspect that TRIM cannot be used on the same database as REVIEW or APAS. With previous ADABAS versions, both monitors could be used simultaneously on the same database, if desired by the site. If compatibility problems between TRIM and REVIEW or APAS are suspected, notify Treehouse Software.

BATCH CLOG PROCESSING

TRIM supports ADABAS CLOGFORMAT=5 and 8

<p>Note: At the time of preparation of this manual, ADABAS was known to have the errors or miscalculations listed above. Any or all of them may have been fixed in one or more versions or releases of ADABAS.</p>

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