



TRIM

ADABAS/NATURAL Performance Monitor
Product Overview

TREEHOUSE SOFTWARE, INC.

2605 Nicholson Road, Suite 230

Sewickley, PA 15143

Phone: 724.759.7070

Fax: 724.759.7067

E-mail: tsi@treehouse.com

<http://www.treehouse.com>

This page intentionally left blank.

Introduction

TRIM is a performance monitor for ADABAS and NATURAL that was developed by Treehouse Software, Inc. (TSI) to provide robust on-line and batch statistics about ADABAS and NATURAL use and performance. TRIM features a Real-Time Monitor (RTM) that provides more than 300 on-line performance statistics showing ADABAS activity by user, minute, job, and program; and a batch facility that provides total resource utilization statistics from summary or detail log data.

This product overview highlights the key features of TRIM Version 7.1.0, which supports ADABAS Version 7. The following sections are presented:

- On-line Monitoring
- TRIM Real-Time Monitor (RTM)
- Performance Control & Security Through User-Exit-1
- Hard Copy Statistics Without Logging
- Protection Log Processing
- Command Log
- Command Log Processing
- Support for Two-byte (5-digit) DBID, FNR, and RSP
- TRIM Dynamic Logging Facility - User-Exit-4
- Documentation
- Installation and Operation
- Support
- Pricing
- Conclusion

On-line Monitoring

On-line reporting and monitoring is an important feature of any performance monitor. The ease of use of ADABAS and NATURAL allows applications to be developed and placed into production faster. This often causes file growth, both in number of files and volume of data. On-line monitoring is necessary for analyzing Test and Production environments.

While on-line monitoring may not eliminate the need for logging certain statistics for later analysis, it is important to capture information about what is happening on the database in real-time. On-line monitoring must be instantly effective, since there is only one chance to capture the necessary information, and it must be efficient because it is tied into ADABAS.

NATURAL performance analysis has traditionally been limited in scope to the information that can be collected by ADABAS performance monitors and by adding timing tests to the code. The fact that development and test environments at many sites may not represent the production conditions that applications experience further complicates the situation. A program that performs well in a test environment against databases with small files may perform poorly in production against large databases with many concurrent users. NATURAL applications can include hundreds of programs, subprograms, subroutines, etc. Any one of these could be the source of a performance problem, and finding this source in high-volume production environments can be difficult. TRIM now has a NATURAL Monitor (TNM) to assist sites in analyzing NATURAL performance.

TRIM Real-Time Monitor

TRIM's on-line monitoring, Real-Time Monitor (RTM), enables users to monitor all ADABAS and NATURAL activity on multiple databases on-line. The RTM encompasses several areas, including:

- Snapshot of Current Activity
- Heaviest Users
- Session Statistics
- View of ADABAS Queues and Tables
- Warnings About Queue and Table Fill-up Conditions
- Trace of Performance Problems and Program Logic
- Database Information
- Batch Slowdown
- SECURITRE Interface
- ADABAS and TRIM Environment Information
- TRIM Real-Time Monitor Operation
- TRIM NATURAL Monitor (TNM)*

*TRIM NATURAL Monitor is new in TRIM V7.1.0.

Snapshot of Current Activity

TRIM displays the number of ADABAS calls in the current minute and for each of the past four minutes. This data can be viewed by Thread, File Number, Command, Response Code, NATURAL Application, NATURAL Program, Job, User-ID, Security-ID, etc. This provides a clear picture of who or what is currently affecting performance.

Heaviest Users

TRIM displays the heaviest users of ADABAS for each of the past five hours, which can be viewed by Thread, File Number, Command, NATURAL Application, NATURAL Program, Job, User-ID, Security-ID, etc. This can quickly show where the activity has been throughout the past five hours.

Session Statistics

The Real-Time Monitor (RTM) can display full Session Statistics on-line, including:

- The number of ADABAS calls for each Command Code, File Number, NATURAL Program, Job, User-ID, Security-ID, etc.
- The number of ADABAS calls for each Command for a selected File Number
- The Highest Duration (most inefficient) commands encountered during the session, which can be collected, printed, and cleared, so that a new group can be collected
- Format Buffer Translations & Overwrites, Buffer Calls & Efficiency, Thread Statistics, I/Os for ASSO, DATA, and WORK
- Nucleus ADARUN parameters

View of ADABAS Queues and Tables

TRIM provides detailed on-line viewing of the ADABAS User Queue "cross-referenced" with the Hold Queue, Command Queue, Table of Sequential Commands, Table of Search Results, and the Internal Format Buffer. In addition, a TRIM "Extended User Queue" is maintained. Several important questions can be answered using these screens:

- Who are the active users?
- Which NATURAL Security Application-IDs are currently active and on which terminals?
- Which NATURAL programs are currently being executed and which users are executing them?
- How many commands and I/Os and for what duration has a particular user been responsible for during this session?
- Which users are accessing a particular file?
- Which users have the most records on hold?
- Are commands stacked up in the Command Queue?
- Do any users have several entries in the Table of Sequential Commands that could result in a full table at peak times?
- Is the Table of Search Results of adequate size?
- Does the Internal Format Buffer indicate that subtle changes in NATURAL Programs could relieve ADABAS from constant Format Buffer translation?
- What are the high water marks on certain queues or tables?

Warnings About Queue & Table Fill-up Conditions

TRIM watches for Response Codes that indicate Queue and Table Fill-up Conditions. Usually, there is one user or program excessively utilizing ADABAS resources. TRIM detects these conditions and others, such as files growing to five extents, and prepares warning messages that can be viewed on-line. Hard-copy print (MVS DDPRINT or VSE SYSLST) at ADAEND will ensure that the DBA sees these warnings.

Trace of ADABAS Calls

The Trace Facility may be used to assist in debugging programs. Trace screens show each ADABAS call or those issued by a selected User, Job, Security-ID, or each NATURAL Program against a selected File or those receiving a selected Response Code. By scrolling through a list of the 85 most recent commands meeting the selection criteria, the user can often uncover accidental loops or inefficient data access techniques through NATURAL.

A wide range of selection criteria are available. Wildcarding, ANDing, and ORing of selection criteria are supported. Multiple users can activate the Trace Facility simultaneously, each with unique selection criteria.

Database Information

It is possible to view Database, File, and Field information as a form of "enhanced ADAREP" to answer questions on-line, such as:

- Is field XY on file 17436 on the Production Database?
- How many descriptors does file 65 on database 6743 have?
- Are there any MU within PE conditions in file 7689?
- Does file 76 have any superdescriptors made up of data fields that are NU?

Batch Slowdown

Prime time batch runs are sometimes unavoidable, causing competition with on-line applications for ADABAS resources. To avoid this performance problem, TRIM includes the Batch Slowdown feature. The DBA will be able to slow down certain batch jobs so that on-line users may experience better response times.

The TRIM User-Exit-BB to ADALNK (the link routine for batch) will cause selected batch jobs to pause for a specified number of milliseconds after a certain number of commands have been issued to ADABAS by the batch jobs. This pause allows on-line applications to be less affected by batch jobs and to interact more smoothly with the database. TRIM User-Exit-BB is instructed to slow down selected batch jobs based on specific criteria provided by the site.

SECURITRE Interface

The TRIM Real-Time Monitor displays performance and violation statistics for SECURITRE, TSI's ADABAS and NATURAL security interface to System Security Facilities (SSFs). Security administrators can use this information to monitor potential security violations and to determine how efficiently SECURITRE is performing.

With SECURITRE, TRIM RTM functions can be secured through an SSF, such as RACF, ACF2, or TOP SECRET. All of the major RTM features, such as Tracing, viewing session or violation statistics, will be secured through SECURITRE's interface with the SSF.

It is possible to go directly from the TRIM RTM to the SECURITRE RTM and back.

ADABAS and TRIM Environment Information

TRIM displays a wealth of information about the environment in which it operates. For ADABAS, TRIM displays the addresses of various ADABAS modules and many ADABAS Queues and Tables for the current nucleus session.

These addresses are available both on-line and in hard-copy form on the TRIM Nucleus Session Statistics. If the database crashes, the availability of these addresses will enable the DBA to quickly locate queues and tables in the dump and determine which users were active at the time of the crash.

TRIM displays information about its on-line environment, which consists of the various user-exit types (UEXB, UEX1, and UEX4). Items displayed include date assembled, combinations of User-Exit-Bs, Batch Slowdown information, User-Exit-1 and 4 Communication Runs, and statistics about Locking, Logging, etc. This information is very helpful for solving problems caused by incorrect versions of link routines or user-exits.

While on-line with TRIM, the DBA will be able to use the TRIM Memory Display function to determine whether Software AG zaps have been correctly applied to the current running ADABAS modules, whether TRIM zaps are correctly applied to the User-Exit-1 and User-Exit-4 currently running, the contents of ADABAS and TRIM queues and tables, etc.

TRIM Memory Display makes it easier for TSI to help its customers solve TRIM or ADABAS problems.

TRIM Real-Time Monitor Operation

The Real-Time Monitor is the most significant part of the TRIM package because it includes the following important advantages:

- A medium-sized TRIM User-Exit-4, which meets the needs of most installations. A smaller version is available for sites with memory constraints, and a larger version is available for expanded data collection at large installations.
- A front end that is coded in NATURAL, which can be controlled through SECURITRE and/or NATURAL Security System.
- Support for multiple databases with only one copy of the TRIM RTM NATURAL Modules eases installation and operation, and enhances performance.
- Start-up parameters that specify which statistics to collect and what to log, with automatic hourly adjustments able to be made without DBA intervention.
- Easy navigation through user-friendly menus, PF-keys, and screen names.
- Selection from screen displays rather than by entering hex user-IDs, for example.
- Help screens that explain certain TRIM functions.
- Detail display screens that show information about selected entries.
- Operation that has no noticeable effect on ADABAS operation with the proper use of on-line tailoring.
- An "Idle Mode" feature offered by TRIM User-Exit-4, which deactivates the collection of RTM statistics to minimize resource consumption when the RTM is not being used.
- Absolutely no need for records to be logged to the Command Log to run.

These Real-Time Monitor capabilities, combined with an easy installation, set TRIM apart from other ADABAS monitors.

- **User Activity Summary Report** - displays statistics collected about a user during the current day, helping to identify the most active users of NATURAL.

```

01-12-31          TRIM NATURAL MONITOR          11:38:00
                  USER ACTIVITY SUMMARY
                  Page 1
Starting User-ID:  USER22      Ending User-ID:  ****      Date: 01-12-31
                               Active User-IDs Only: Y

Reposition User-ID: _____

-----
User-ID  Avg Rsp  --- Last Executed  ----- Total  ----- Last Trans  ----- Last Transmission ----- -- NATURAL Start ---
 (secs)  Library Program Line  Pgm Exec  ADA Calls Time  Date      Pgm Exec  ADA Calls Date  Time
-----
*USER22  03:42.3  PAYSYS  TEST12  0032      3048      44092 10:32:05  01-12-31      66      9126 01-12-31 11:22:02
*USER23  00:03.3  PAYLIB  PGM1     5172      8096      709 09:22:48  01-12-31      11      55 01-12-31 10:13:25
*USER26  00:22.7  PAYTEST PGM7     0032      943      3571 11:13:00    01-12-31      92      237 01-12-31 09:12:12
*USER31  00:12.7  PAYLIB  XLOGON   0032      861      2638 02:19:04    01-12-31      0      0 01-12-31 07:13:15
*USER33  00:02.0  PAYTEST PGM3     0032      5599      5205 08:03:44    01-12-31      23      81 01-12-31 07:13:00
*USER43  00:05.4  PAYSYS  FIN24    5440      1380      3620 09:44:59    01-12-31      5      37 01-12-31 10:45:11
*USER48  00:02.3  PAYLIB  TEST     0032      26      170 09:33:11    01-12-31      26      170 01-12-31 08:00:49
-----
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  PARM  END          UP  DOWN  LEFT  RIGHT EXIT

```

- **User Activity History Report** - displays statistics collected about users over a period of time. This report can help the site detect abnormal activity levels for a given user, perform analysis of performance trends, and collect information for capacity planning.
- **User Percentage Summary Report** - displays the percentage of total resource usage attributed to particular users. It helps identify users who may be running inefficient programs and assists in comparing user activity levels with one another.
- **Program Nest Report** - displays program relationships in a nested format, demonstrating how an application flows from one program to another. This information is very useful in learning the structure or design of an application.

```

01-12-31          TRIM NATURAL MONITOR          11:38:00
                  PROGRAM NEST REPORT
                  Page 1
User-ID: USER17      Starting Date: 01-12-30      Starting Time: 00:00:00.0

-----
Elapsed Time  Program Start Time  Program End Time  Lev Library/Program  Date
-----
                16:08:14.7                1  PAYTEST PAYROLL    01-12-30
                16:08:15.0                2  PAYTEST PGM1       01-12-30
                16:08:15.0                3  PAYTEST MAP1       01-12-30
00:00:01.0001  16:08:16.1                3  PAYTEST MAP1       01-12-30
00:00:01.3207  16:08:16.3                2  PAYTEST PGM1       01-12-30
                16:08:16.3                2  PAYTEST PGM2       01-12-30
                16:08:16.3                3  PAYTEST PGM3       01-12-30
00:00:06.9810  16:08:23.2                3  PAYTEST PGM3       01-12-30
00:00:07.3207  16:08:23.5                2  PAYTEST PGM2       01-12-30
-----

```

Using PF8 to scroll down through the report, the administrator can see that program PGM30 had an excessive elapsed time compared to other programs called by PAYROLL.

```

                16:09:08.3                2  PAYTEST PGM28      01-12-30
                16:09:09.1                3  PAYTEST PGM29      01-12-30
00:00:01.1140  16:09:10.2                3  PAYTEST PGM29      01-12-30
00:00:04.2207  16:09:12.5                2  PAYTEST PGM28      01-12-30
                16:09:12.6                2  PAYTEST PGM30      01-12-30
00:01:21.2019  16:10:33.8                2  PAYTEST PGM30      01-12-30
                16:10:33.8                2  PAYTEST PGM34      01-12-30
00:00:05.4210  16:10:39.2                2  PAYTEST PGM34      01-12-30
00:02:24.7207  16:10:39.4                1  PAYTEST PAYROLL    01-12-30
-----
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP  PARM  END          UP  DOWN  LEFT  RIGHT EXIT

```

- **Program Statistics Report** - displays the most heavily used programs, programs making the most ADABAS calls, and programs with the most efficient/inefficient response times. The report is very useful for identifying programs that have, or are causing, performance problems.
- **User Trace Report** - follows the interaction with NATURAL of a given user, showing the events associated with the actions of the user and the impact of each of these events on system performance.

01-12-31		TRIM NATURAL MONITOR		11:38:00				
		USER TRACE REPORT						
User-ID: USER17		Starting Date: 01-12-20		Starting Time: 14:25:46.8		Page 1		
Combine Database Calls: Y								
Event	Time	Elapsed Time	Response Time	Library	Program	Line	ADABAS CMD/DB/File	Date
TERMINAL I/O	14:25:46.8			PAYTEST	MAP1	0012		01-12-20
PROGRAM END	14:25:47.2	00:00:01.4963		PAYTEST	MAP1			01-12-20
<< 1 ADABAS CALL >>		00:00:00.0283		PAYTEST	PGMRUN1	0150	RC 2 0	01-12-20
PROGRAM START	14:25:47.2		PAYTEST	PGMST5				01-12-20
<<493 ADABAS CALLS >>		00:00:07.0573		PAYTEST	PGMST5	0140	L3 1 52	01-12-20
<< 1 ADABAS CALL >>		00:00:00.0000		PAYTEST	PGMST5	0240	L3 2 231	01-12-20
<< 1 ADABAS CALL >>		00:00:00.0000		PAYTEST	PGMST5	031	RC 2 231	01-12-20
PROGRAM START	14:25:54.5		PAYTEST	MAPR7				01-12-20
TERMINAL I/O	14:26:00.5			PAYTEST	MAPR7	0220		01-12-20
PROGRAM END	14:26:06.5	00:00:12.0488		PAYTEST	MAPR7			01-12-20
PROGRAM END	14:26:07.1	00:00:19.9461		PAYTEST	PGMST5			01-12-20

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
HELP PARM END UP DOWN LEFT RIGHT EXIT

TNM Administrative Functions

TNM includes a collection of NATURAL programs, which 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.

To protect the data that is collected and to limit the use of certain functions, TNM requires a password to access any of the Administrative functions.

Performance Control & Security Through User-Exit-1

An important performance issue is stopping problems before they occur. TRIM's Dynamic Control and Security Facility employs "dynamic communication" (no need to bring the database down and up) to:

- Allow commands such as Find Sorted only for certain cases
- Lock out file access to certain users
- Plug ADABAS passwords
- Perform security checks based upon password(s)

Hard Copy Statistics Without Logging

TRIM Nucleus Session Statistics at MPM shutdown (and/or at various hourly intervals) supplement the few statistics presented by ADABAS on its DDPRINT (VSE SYSLST) report. It is often desirable to quickly and automatically obtain a hard copy of session totals.

These TRIM statistics show the number of ADABAS commands for the entire session broken down by Thread, Command Code, File Number, Command within File, NATURAL Program, Job Name, User-ID, NATURAL Security Application-ID, and NATURAL Security User-ID.

In addition, TRIM displays the Nucleus Parameters, Highest Duration commands seen during the session, and addresses of ADABAS and TRIM Modules, Queues, and Tables useful in Abend situations.

While some products and/or user-written code may produce similar statistics, TRIM is unique in that the statistics are tailorable and go directly to DDPRINT/SYSLST, requiring no changes to ADABAS or its start-up JCL.

Protection Log Processing

Many ADABAS users need a simple way decode or decompress ADABAS Protection Log data. While this is not a performance consideration, a decompression capability was added to TRIM as an additional type of input log to be processed.

AUDITRE, another TSI product, provides more detailed auditing of Protection Log data with much smaller reports by identifying only the changed fields on each update.

TRIM 7 should be used to process the ADABAS 7 generated PLOGs. In ADABAS 6, the format of the Protection Log has changed slightly to accommodate larger file numbers, ISN values, etc. TRIM 6 can only process PLOGs generated from ADABAS 6, and TRIM 5 can only process PLOGs generated from ADABAS 5.

Command Log

Rather than write millions of detail log records, the TRIM philosophy is to pre-summarize (PRESUM) certain statistics directly in User-Exit-4. These statistics are maintained for each Thread, File, Command, Job, Response Code, User-ID, NATURAL Program, NATURAL Security Application-ID, NATURAL Security User-ID, and Control Block User-Area. The statistics include Command Counts, I/Os, Duration, and CPU-time. Every hour these summarizations are output directly onto the Command Log.

TRIM 7 should be used to process PRESUM data generated from ADABAS 7 with the TRIM 7 User-Exit-4. A change to the PRESUM data record length and format was necessary in TRIM 6 to accommodate the two-byte DBID. TRIM 6 can only process PRESUM data generated from ADABAS 6 with the TRIM 6 User-Exit-4. TRIM 5 can only process PRESUM data generated from ADABAS 5 with the TRIM 5 User-Exit-4. In the case of the PRESUM SMF option, user programs to extract PRESUM records from the SMF log should not be affected. The SMF prefix to the PRESUM data has not changed.

ADABAS procedures are used for writing to the Command Log as single or dual datasets and for copying logs to tape. Exceptional Command Log detail records and PRESUM data records are interspersed in the Command Log so that no ADABAS JCL changes are required to use PRESUM. The extensive Command Log reporting capabilities of TRIM may be used against this PRESUM data, with summary reporting sometimes being 100 times (or more) faster when using PRESUM versus detail log records.

PRESUM data provides:

- Resource Utilization Information
- Peak Period Identification
- Response Time Statistics
- Charge-back Data
- Trend and Capacity Planning Data

TRIM 6 and 7 supports ADABAS CLOGFORMAT=4 and 5. When ADABAS 5 was released, there was the option within ADABAS to generate a new format CLOG containing additional information beyond what had previously been available. With numerous user sites processing CLOGs using TRIM or other performance monitors, support for the "old" format of CLOG data from the ADABAS 4 era had to be maintained. This was named CLOGFORMAT=4 in ADABAS 5 startup parameters. The new format was named CLOGFORMAT=5. At the time of release of TRIM 6 (with ADABAS release 6.1.2), there is no change to the CLOG data formats (i.e., there is no new data available beyond what has been available with CLOGFORMAT=5).

Command Log Processing

TRIM Command Log processing features include:

- The ability to process logs from multiple ADABAS sessions in one pass to produce multiple reports and file outputs
- Reports and outputs of selected fields from selected records or summarized data broken down in various ways
- Sums, averages, minimums, maximums, and chargeback figures
- NATURAL Program Name, Statement Number, NATURAL Security Application-ID, and User-ID identification
- Format and Search Buffers broken down to give information about Field Usage and Descriptor Usage
- "Derived" fields, such as Date, Time, CPU-time, I/Os (a total of ASSO I/O, DATA I/O, and WORK I/O), and "understandable" duration (wall clock time)
- User fields definition, such as Department, System, Command-group, Weekday/Weekend, Batch/On-line, etc.
- No requirement for ADABAS to be active, and no requirement for data to be stored back into ADABAS
- The ability to output report data to a sequential data set for Trend Analysis, Capacity Planning, or other Historical Analysis purposes using SAS or home-grown COBOL or NATURAL programs, or for loading onto the database

Year 2000 Support

TRIM offers full Year 2000 support. It has been tested with the system (MVS) IPLed to dates in 1999, 2000, and 2001.

New fields have been added to TRIM batch processing parameters so that years can be processed as 96 or 1996, or 00 or 2000.

Support for Two-byte (5-digit) DBID, FNR, and RSP

ADABAS 6 and 7 permits two-byte database ID numbers (DBID), file numbers (FNR), and Response Code (RSP) fields. This means values up to 65535 are possible for DBID, FNR, and RSP fields, and this is handled within TRIM 6 and 7.

TRIM Dynamic Logging Facility - User-Exit-4

Many installations have existing User-Exit-4s, which contain logic to selectively log the various records and buffers or to summarize various statistics. Changes in logging requirements usually require changes to the user-exit, which must be re-assembled and relinked. To effect the change, the database must be brought down and back up.

TRIM addresses this problem by providing a flexible User-Exit-4. It is "dormant," as far as logging is concerned, until instructed to do something. There are several ways to "instruct" TRIM User-Exit-4:

- Zap settings for statistics gathering
- Start-up parameters with automatic hourly adjustments for statistics gathering and logging instruction
- User-exit "communication runs" to adjust the logging requirements
- Real-Time Monitor adjustment to these parameters and other requests

Typically, the DBA will prepare simple TRIM parameters to summarize certain data and log only selected records and buffers, perhaps limiting these to bad response codes, security violations, excessive duration, files to have descriptor usage analyzed, etc. These may be defined differently for prime time, night time, etc. by the DBA. There is no need to interrupt ADABAS processing to do assemblies, link-edits, etc. Significant reduction in Command Logging may be gained through "dynamic logging".

To support users with existing User-Exit-4(s), TRIM User-Exit-4 "co-exists" with the user's existing user-exit(s).

Documentation

The TRIM documentation set is divided into Reference and Installation Manuals, which are fully indexed. These manuals are distributed on the TSI Documentation CD-ROM. Hard copies of these manuals are only available upon request.

Installation and Operation

TRIM is distributed on a single cartridge for OS (OS/390, MVS, MVS/XA, MVS/ESA), VSE, and VM (SP, XA, ESA) operating systems. Installation should take less than one hour. A few cylinders of disk space are required for the source and load modules on the cartridge.

Support

TSI supports TRIM from its headquarters in Sewickley, Pennsylvania. Support representatives in several foreign countries are also available to answer calls. TRIM users may have direct input to the product developers. Questions are answered quickly, problems are discussed directly, and change/enhancement requests are reviewed and implemented in a timely fashion.

Pricing

TRIM is attractively priced, and it does not require the purchase of add-on components. TRIM is available under a 30-day free trial agreement. Annual maintenance is available at 18% of the then current list price beginning in the second year.

Conclusion

TRIM offers an extensive, yet customizable, amount of on-line analysis capabilities. Its clever design does not require the user to apply zaps to ADABAS or other systems software, to modify JCL, or to learn other languages. Instead, TRIM offers a user-friendly installation that can be completed in one hour. And because TRIM is so easy to use, significant performance improvements can be achieved the first day of use.

In addition to offering software that is maintained and enhanced by proven software developers, TSI provides concise documentation and support by a team of professionals, who are ready to address any performance problems that are encountered. Perhaps that is why some ADABAS sites confidently keep the TRIM Real-Time Monitor running on their production databases 24 hours a day.

TRIM is a unique product. No other ADABAS Performance Monitor can match TRIM for its scope, attention to detail, ease of use, and excellent track record.

ADABAS, NATURAL, and NATURAL SECURITY are all products of Software AG. CA-ACF2 and CA-TOP SECRET are products of Computer Associates. RACF is a product of IBM. SAS is a product of SAS Institute. The information used in the examples in this overview is for illustrative purposes only.

This page intentionally left blank.



TREEHOUSE SOFTWARE INC.
2605 Nicholson Road, Suite 230
Sewickley, PA 15143
Phone: 724.759.7070
Fax: 724.759.7067
Email: tsi@treehouse.com
<http://www.treehouse.com>