TREETIPS

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SECURITRE Gets a Grip on NATURAL

Initial versions of SECURITRE were designed to keep a tight grip on security for ADABAS data. Execution time protection was provided for ADABAS calls originating from NATURAL and non-NATURAL programs and from ADABAS utilities. By integrating ADABAS with a System Security Facility (SSF) such as RACF, ACF2, or TOP SECRET, SECURITRE promotes a single rule base for the entire computer system.

Security for NATURAL is equally important, so SECURITRE Version 2 makes transparent control over NATURAL a reality.

SECURITRE for NATURAL includes:

- NATURAL Session Initialization Security
- Library Level Security
- Program Level Security
- DDM Level Security

SECURITRE uses the SSF to store NATURAL access rules. Department of Defense "Orange Book" standards give higher "trustworthiness" ratings to User-ID based systems which store access rules in one location. This highlights the importance of the single rule base concept and the need for User-ID based accountability.

SECURITRE's new NATURAL access controls generate the same types of pseudo dataset names used by the ADABAS component, and allow a Security Administrator to customize these dataset names to suit an installation's needs.

SECURITRE for NATURAL supports the familiar Dormant, Warn, and Fail modes at each level (i.e., Session Initialization, Library, etc.), allowing a Security Administrator to exert **as much or as little control** over access to NATURAL as needed, and **provide phased implementation** of the new security options.

NATURAL Session Initialization Security

When a user attempts to initiate a NATURAL session, they will encounter NATURAL Session Initialization Security, the first line of defense provided by SECURITRE. A given NATURAL environment is determined by the collective DBID, FNR combinations for the FNAT, FUSER, and FDIC files specified in the NATURAL module.

Using SECURITRE, the SSF verifies access to ADABAS or NATURAL by relating access rules to dataset names. These dataset names do not refer to actual datasets, but merely refer to some type of access which must be controlled. SECURITRE parameters allow a site to specify pseudo dataset names for the various FNATs, FUSERs, and FDICs. When a user invokes NATURAL, the user's

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Editor's Sproutings

by Michael Salsbury

As always, we need articles from outside Treehouse. On the job, you may have written documents describing programming standards, application design methodology, performance tricks and traps, product comparisons or reviews, or purchase justifications. Any of these can become a newsletter article. If we use your article, you can receive $100 as payment. We can publish your article anonymously or we can publish information about you and your organization. The most important thing to us is getting enough valuable information in our newsletter to keep it from being a 20 page advertisement.

WHO WANTS MY ARTICLE?

Don't worry about your article being too simple or too technical. Don't worry about your writing skills or spelling. We review and edit every article so that it is clear and concise.

A SECRET FRINGE BENEFIT

Employers look for people who can communicate their ideas clearly, especially in writing. Your article demonstrates to the prospective employer that you have become a recognized figure in the Software AG user community. Also, a TREETIPS article is an excellent way for consultants to draw attention to their technical expertise.

TSI ANSWERS THE CALL

Treehouse puts a great deal of effort into ensuring that its products are as solid as possible. We put our products through many stress tests. But sometimes our customers need help, and we are there to answer the call.

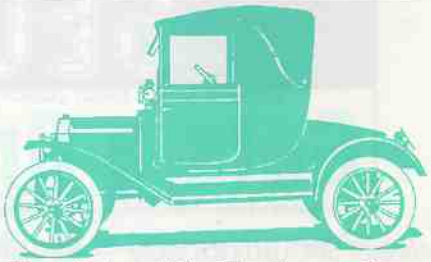
Dawn Ferrell has our 24-hour, 7-day support system running well. We received calls on New Year's Day, and others late at night and on weekends. In all cases, we were able to help our customers keep their systems running smoothly.

TSI is especially pleased that we have on our staff the technical, marketing, administrative, and management people who graciously accept phone calls at home from customers at odd hours.

This continuous support system is just one example of Treehouse Software's commitment to its customers. We want you to be pleased with the return on your investment in our products.

TREEHOUSE HITS THE ROAD

Many of you visited with us at our Hospitality Suite at the Software AG Conference in San Antonio, in November, where you had the opportunity to meet with some of our staff. We hope you enjoyed our little party as much as we enjoyed meeting all of you.



Artist's Rendering of the Treehouse Company Car

If you're at the Big D CAUCUS (University users) in April in Dallas, you'll see Treehouse there. We'll also be at the NATURAL 2 Conference in June in Boston. We may also see you at one of the dozen or so Regional User Group meetings we will be speaking at in the next few months. As a cooperative consultant of Software AG, Treehouse Software is authorized to attend all user group meetings. If your user group hasn't been contacted about a Treehouse presentation, please let us know and we will be happy to arrange a convenient date and time.

PLEASE KEEP UP WITH US!

Since each release of a product contains fixes as well as enhancements, it is important for customers to upgrade to the current version as soon as possible. This will often eliminate a problem you may be experiencing. Upgrading is also important because we do not support the previous release of a product as easily once newer releases are available.

The following chart displays the product versions you should be running.

Treehouse Product	Version(s) Supported
AUDITRE	1.1.0
AUTOLOADER	1.2.0
N_2O	2.1.2
SECURITRE	1.1.1
TRIM	4.0.0 / 5.0.2

TREEHOUSE SOFTWARE

Current Breezes
by George

Over The Horizon

It's a little easier to see over the horizon from a Treehouse, so what's over that horizon?

We've been complimented on our strong focus on N_2O and SECURITRE, getting each to a high level of quality and thoroughness quickly. One user calls SECURITRE "an elegant solution to an age-old deficiency".

We are now entering our ninth year. With all our energies on current products, can TSI be branching out into other areas? Certainly. Our new offerings will soon be announced. You can assume we'll have something in one or more of the following areas:

- DB2
- CICS
- Generalized Applications for:
  - ADABAS/NATURAL
  - DB2
- VAX/Wang versions of our products
- Oracle
- More Tools/Extensions for ADABAS and NATURAL Users

We cannot announce these things until they're nearly complete. You know how it is with competition. You have to keep them guessing.

Show Us Your Products

We've been approached by many individuals and companies, small and large, over the years, to form some alliance to get a product to market. Usually, they've developed something, and need the vehicle to deliver it. Lately, we've seen more products of better quality. We'll consider a product as long as it fits our focus, it is technically sound, and we have the resources and ability to get it to market in a cost effective manner. If you have something for us to consider, we prefer you give us your proposals, including:

- Product Overview
- Proposed User/Reference Manual Material
- Design, Development Criteria and Considerations
- User Benefits
- Planned or Proposed Extensions
- Marketability, Pricing, Competition
- Clarification on Ownership Rights
- Installation, Operation, Support Issues

We can then meet, have your verbal presentation, ask questions, discuss further development, extensions, documentation, support, marketing, and financial issues.

A PAC Upgrade Policy

We are offering a "PAC Upgrade" policy for a limited time. If you purchased PAC, this shows you have an interest in Change Management for NATURAL. We can provide you with a discount on N_2O equal to the PAC cost (up to the full list price for N_2O). You can then upgrade to the premier Change Management System for NATURAL, N_2O. If management needs convinced, we'll be happy to come to your site and show them what they will be getting for their money. They may also save on the price of ENDEVOR or another 3GL solution, as TSI may also provide that solution.

Going Against the Current

In the course of running into PAC competition, we've uncovered a new money-making strategy of the competition. We are seeing them reducing the length of free technical support provided with their products from one year to 90 days. According to them, this is an industry trend. We like to keep current, but there are some trends we refuse to follow. This is one of them. From what we've heard, many users are not pleased with such strategies (see the N_2O vs. PAC article). Also, we're seeing maintenance rates climbing to 18, 20, 25%. We'll keep ours at 15% on current products. And, we'll give you maintenance and enhancements.

Another trend is the "no trial purchase", usually at a very low introductory price, and usually only for products competitive with ours. We do not foresee a time when we would discourage trials of our products.

Calling all DOS Sites

We recently sent a letter to known DOS users, to locate beta test sites for our SECURITRE product. SECURITRE is fully functional for MVS, and now DOS is our focus. A smaller percentage of DOS sites have acquired an SSF (RACF, ACF2, or TOP SECRET). I guess they typically are smaller sites, have less users, and see less complication in securing their data.

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Current Breezes

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However, DOS users have data which is just as important as anyone else's. They would be happy to consider an SSF if a SECURITRE solution was available for the ADABAS/NATURAL issue. But they can't consider the SSF if its price is high.

So, to help everyone out, **TSI may be developing a basic SSF-like facility as a reasonably-priced add-on to SECURITRE.** Many DOS, VM, Siemens, and MVS users should be interested in this. Many have hesitated to buy an SSF because it couldn't secure their most important data on ADABAS and programs on NATURAL. They were stuck with inadequate ADABAS and NATURAL security options from the ADABAS/NATURAL vendor.

With SECURITRE, an SSF of your choice is a viable alternative to secure your important ADABAS/NATURAL resources. **With the new SECURITRE add-on to provide an SSF capability, you can forget purchasing an expensive SSF** and still get your important ADABAS/NATURAL resources secured.

ADABAS Is #1

In the February 25 issue of ComputerWorld, there's an interesting article on pages 74-75. ADABAS was rated by the surveyed user base to be the **best DBMS** on the market. Those relational DBs don't quite make it, **yet.** We are seeing that many ADABAS sites are declaring "switchovers" to DB2, etc. Well, it just won't happen, **yet.** "Switching to DB2" is better termed **"also getting DB2".**

New applications can appear to safely be developed and run using DB2. What's the difference to the user if the screen appears in 1/10 or 3/10 of a second? But wait until applications proliferate. They'll run slower than with ADABAS, and make each other run slower. But who will know - I mean slow compared to what? IBM will sell you hardware upgrades, you can buy more software (about 15 DB2 performance monitors already exist), and you can hire more people to administer the data. Users who have tried switching over existing applications say that you'll notice the difference.

So, while we hear "switchover", we see little or none. An existing ADABAS application switched to DB2 has the distinct possibility of running slow enough, taking enough space, and causing enough DBA interaction as to relegate DB2 to the shelf for the time being. This is not meant to knock DB2. It's only that ADABAS is better, for now.

DB Who?

We plan to join the "switch" to **DB2,** too. We may have some software to help you do your "switchover". You may want to retain your current NATURAL applications by getting NATURAL DB2. However, **this costly product may not be necessary.** Besides, it wouldn't handle non-NATURAL applications you've developed or purchased. TSI may have a more elegant solution, and we'll tell you more in the next newsletter.

System Security Integration

Back to the Article. ADABAS is first, but is rated deficient in its ability to deal with "System Security Integration". Solution? SECURITRE! If more than two deficiencies had been reported, we think that Change/Management, Auditing, and other ADABAS/NATURAL utilities and tools would be mentioned.

ORACLE

In second place is ORACLE, the largest selling database mostly because of its portability across various platforms. But its deficiency is a lack of a "performance and systems monitor". Hmmm, we may be able to do something about that.

Cooperation

We'd like ComputerWorld to publish another article about outside vendor influence on the strengths of the SAGs, ORACLEs, CAs and IBMs of the world. TSI has had, by far, the greatest influence on SAG's strength and sales of any outside influence or company, big or small. But TSI's influence pales by comparison to the wide variety of individuals and companies who have been enlisted and encouraged as "cooperatives" by the ORACLEs, CAs, and IBMs. We see the SAG situation changing for the better, by the day, with a new corporate vision. We are seeing a new SAG trend of cooperation, with TSI and other companies, big and small. We expect TSI sales to triple this year, and this will not reduce SAG sales, but enhance them.

TREEHOUSE SOFTWARE

TRIM Developments

TRIM 5.0.3 is soon to be released. Although this is primarily a "maintenance release", TRIM 5.0.3 introduces some interesting new capabilities.

Batch Slowdown

Many users asked us, **"Can't TRIM do something to slow down those batch jobs?"** Batch jobs are usually scheduled at night or during non-prime times. Prime time batch runs are sometimes unavoidable, causing competition with on-line applications for ADABAS resources. Unfortunately for on-line users, batch jobs submit so many commands so quickly that they tend to monopolize ADABAS. This severely impacts on-line response times.

To avoid this performance problem, TRIM includes the new 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 batch link routine) will cause the batch job to pause for a specified number of milliseconds after a certain number of commands have been issued to ADABAS by this job. This allows on-line applications to more smoothly interact with the database, less affected by batch jobs. TRIM User-Exit-BB is given a time range during which to slow down batch jobs (e.g., 8 a.m. to 5 p.m.).

SECURITRE Information On-Line

The TRIM 5.0.3 Real-time Monitor displays SECURITRE performance and violation statistics. Security administrators can use this information to **monitor potential security violations and determine how efficiently SECURITRE is performing.**

Security violation statistics may be displayed by:

- User-ID
- JOB
- NATURAL Program
- ADABAS File Number
- NATURAL Security Application

In addition, TRIM displays SECURITRE performance information, such as SECURITRE internal table activity statistics:

- Direct table access, no SSF check needed
- Direct table access, also SSF check needed
- Found in table, no SSF check needed
- Found in table, also SSF check needed
- Not found in table, SSF check needed

The above information is helpful for determining whether or not to change SECURITRE's internal table size to promote greater efficiency. Violation counts can be used to quickly monitor the system for questionable activity without a need to examine the logs maintained by RACF, ACF2, or TOP SECRET, the System Security Facility.

It is possible to go directly from the TRIM RTM to the SECURITRE RTM and back. This "seamless integration" will be seen more often in Treehouse products as new releases are made available.

A More Secure Monitor

With TRIM 5.0.3 and the next release of SECURITRE installed, **TRIM RTM functions can be secured** through RACF, ACF2, or TOP SECRET. All of the major RTM features, such as Tracing, viewing session or violation statistics, etc., will be secured through SECURITRE interfacing with the SSF.

This means that use of TRIM can be safely expanded throughout the organization. For example, under previous releases, a particular user may have been given access to TRIM to monitor Test database activity, but the user could also monitor Production (which they were not authorized to do). TRIM 5.0.3 makes it possible to restrict access such that the user can monitor Test database activity, but not Production, or monitor only certain statistics against a particular database.

Environment Information

TRIM now displays a wealth of information about the **environment** in which it operates.

For ADABAS, TRIM displays the DBID, Database Name, ADABAS version, Zap Status, and Important file numbers, such as the Checkpoint, Dictionary, ADABAS Security, and NATURAL Security files.

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SECURITRE Gets a Grip on NATURAL

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authority to access each of these NATURAL system file combinations is verified by the SSF. If the user has authority, the NATURAL Session will begin. If this authority is not present, SECURITRE's response will depend upon the mode (Dormant, Warn, or Fail) in effect for that NATURAL environment.

Library Level Security

Individual NATURAL libraries may be defined "public" or "private". Attempts to access public libraries will not be validated by SECURITRE. Attempts to access private libraries will be validated and dealt with depending upon the SECURITRE mode in effect for **Library Level Security**. Library Level Security can define certain libraries as "exclusive". Only individuals with User-IDs the same as the library name can access programs stored on exclusive libraries.

Control over access to individual libraries would be incomplete if it allowed a user with authority to use one NATURAL Library to make unauthorized access to programs on another. SECURITRE secures against this type of unauthorized cross library access.

Parameter statements coded for specific libraries specify the library type (PUBLIC or PRIVATE), whether program level checking is in effect, whether the user can issue NATURAL commands (e.g., EDIT) in that library or only EXECUTE cataloged programs, and whether it is possible to SAVE or CATALOG programs in the library.

This Library Level Security can optionally specify the required logon parameters for a library. This allows a site to control not only which libraries the user can access, but also the user's logon parameter settings.

Program Level Security

SECURITRE secures programs based upon how a user is attempting to access them. With **Program Level Security**, it is possible to restrict access to:

- read only object (EXECUTE),
- read only source (EDIT),
- write object (CATALOG or STOW), or
- save source (SAVE)

This capability ensures that only users authorized to execute, edit, or store programs can do so. SECURITRE also ensures that attempts to access programs are made from the correct library.

In order to make this control efficient, SECURITRE provides a table (of site-defined size) to track each user's access to NATURAL programs. In other words, if SECURITRE determines that user ABCDEFGH is authorized to run PROGRAM1, PROGRAM2, and PROGRAM9, subsequent attempts to execute any of these programs will not require calls to the SSF.

DDM Level Security

Some sites will want to control access to particular DDMs (logical views of physical files). SECURITRE **DDM Level Security** verifies that users who attempt to compile programs referring to particular DDMs have authorization to do so. SECURITRE and the SSF validate attempts made to view or change DDMs.

All of these new checks occur transparently to the users . . .

Parameter statements for DDM access may specify alias names to use when communicating with the SSF. These parameters also define the type of access allowed to the DDM (public or private). SECURITRE supports the use of file name aliases to make security administration easier.

Pseudo Dataset Name Options

SECURITRE for NATURAL provides several very flexible options for coding pseudo dataset names to use when verifying access to NATURAL via the SSF. The Security Administrator determines the pseudo dataset names, which can contain as much or little detail as desired.

For sites with less strict control requirements, pseudo dataset names like:

```
NATURAL.PAYROLL
```

may be enough to control access to all programs in the library "PAYROLL".

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SECURITRE

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Other sites may require more detail, such as:

```
NATURAL.PAYROLL.FUSER.D030F112
```

The above rule, for example, would refer to the FUSER of the Test PAYROLL library. As a result, a user with access to only the above pseudo dataset name cannot access the FUSER on the Production PAYROLL library which has a different database and/or file number.

In addition, users may specify the order of the components that make up the dataset name. The rule above could also have been generated as:

```
NATURAL.D030F112.FUSER.PAYROLL
```

or one of several other options. The ability to specify the order of the pseudo dataset name components and the content of the pseudo dataset name **ensures that site requirements are met** and that security administration is as easy as possible.

Transparent Security

All of these new checks occur transparently to the users. To implement SECURITRE for NATURAL, SECURITRE must be installed and the pseudo dataset names defined to the SSF. Programmers are not required to code additional logic into applications. No changes are required to NATURAL itself to add these new features.

For More Information

SECURITRE Version 2 is currently in beta testing and should be available by the **end of the first quarter of 1991.** New materials will be available on or before the release date. If you request a free 30-day no obligation trial, we will send you this pre-release information about SECURITRE for NATURAL. We are receptive to visiting your site to install, demonstrate, and explain how SECURITRE works.

TREEHOUSE SOFTWARE

Where Are They Now?

Paul Peterson, well known to Software AG users, **has joined TSI**. Paul spent nearly **18 years at SAG**. He was one of a handful of people who were expected, in the early years, to do just about anything from technical support to sales to sales support. He handled demos, benchmarks, RFPs, sales calls, technical solutions, etc.

In 1979, Paul established and directed the **Customer Support Center** for Software AG in Denver. He managed this operation for five years.

In 1984, Paul directed a new division, **Professional Services**, which employed the technical heavyweights within SAG to provide solutions for some of the more sophisticated ADABAS/NATURAL disciplines, such as performance and tuning.

In 1988, Paul started another new division, providing **SAG solutions for state government welfare offices.**

"Treehouse has an excellent reputation. Its products are solid, popular, and constantly being improved."

Paul Peterson

Paul resides in Evergreen, Colorado, with his wife, **Sherry**, and four children. Paul is an active skiing enthusiast, a stand-out on the Software AG "Luftwaffe" ski team (downhill racing). Sherry operates a wall covering business called **The Paper Dolls.** Paul and Sherry **want to retain contact** with the many friends they have made over the years as a result of working for Software AG. That certainly will be possible, out of the **Rocky Mountain Treehouse** office.

Paul is excited about the possibilities at Treehouse. He says, "Treehouse has an excellent reputation. Its products are solid, popular, and constantly being improved. The customers appear happy with the benefits they have realized from TSI products. Quietly, TSI has gone about training and consulting. I was surprised to hear about the thousands of individuals trained by TSI in ADABAS and NATURAL. The new products TSI will shortly be marketing will require additional consulting and education services. I'm sure I can contribute significantly to product enhancement, consulting, education, and sales."

Paul may be calling on you soon. If you have a critical need for consulting help, a class, or quick installation and demo of one of the Treehouse products, call TSI and ask for Paul.

TREEHOUSE SOFTWARE

N_2O: Changing the Face of Change Management

Those of you who follow N_2O developments in TREETIPS know the many improvements made in the product since its introduction in 1989. Our product development staff continues to implement new features our current and prospective customers have requested. N_2O Version 2.2 is in beta test, with a release planned by the **end of the first quarter of 1991.**

What's in Store for Version 2.2?

The many interesting features include:

- **Check-Out/Check-In**
- **Program Dependent Master Events**
- **Program Compare Function**
- **On-line Submission of N_2O Batch Jobs**
- **Reporting System Enhancements**

N_2O beta test sites are putting these new capabilities through their paces while you are reading this newsletter.

Check-Out/Check-In

In shops where more than one programmer could potentially be working on the same code, enhancements and maintenance can be duplicated or overlaid accidentally. Without N_2O, two programmers could have a copy of the same source code, make changes to it, and migrate it. One programmer's work would destroy the other's. Bug fixes or enhancements might be lost and have to be recovered or rewritten later.

Many customers asked for N_2O to provide protection against this problem. We designed the **Check-Out/ Check-In** function to meet the needs of all users, including those who might not want Check-Out/ Check-In capabilities. Check-Out/Check-In is **transparent to users.** Programs are flagged as "checked out" during normal migration requests.

Check-Out/Check-In can be set to one of three modes: None, Warn, or Fail, each of which provides a different level of protection.

In **None mode**, N_2O will not keep track of Check-Out information and will not provide any protection.

In **Warn mode**, N_2O will notify a user who attempts to migrate "checked out" code that another user has checked out that code, but will not stop the user from migrating the code.

In **Fail mode**, as long as code is checked out by one user, it cannot be migrated by another.

Program Dependent Master Events

More than one application may reside in the same NATURAL library. For example, Payroll and Human Resources applications' code may reside in the PERSNEL Library. One programmer may be authorized to migrate only Human Resources code, while another only Payroll.

Under previous N_2O releases, authorized users could migrate any program in the PERSNEL library. This enhancement uses program naming conventions to **enforce site-specific rules** about which users may migrate which objects.

In other words, if all Payroll application programs follow a naming convention whereby the first character of all of the program names begin with "PP" and all Human Resources application program names begin with the letters "HR", events may be created such that Payroll programmers may only migrate programs with names beginning with "PPA" through "PP9" while Human Resources programmers may only migrate programs with names beginning with "HRA" through "HR9". Ineligible programs will not appear in the selection lists and therefore cannot be migrated.

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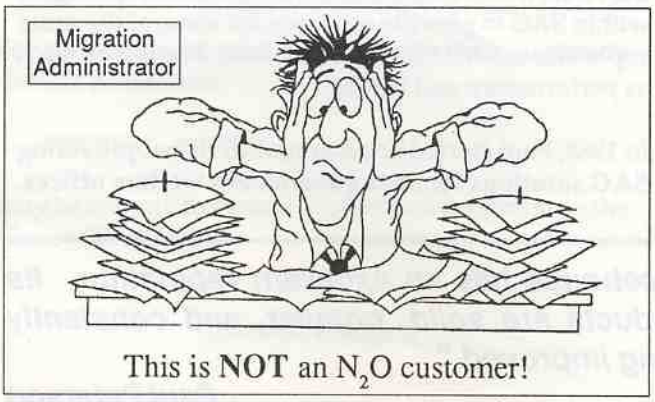

N_2O: Changing the Face of Change Management

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Program Compare Function

As part of the audit trail and authorization process, changes made in the source code since a previous version must often be documented. N_2O Version 2.2 can **compare any two programs** and produce a report showing the differences. The two programs may be located on different "NATURALs" (PROD or TEST) or can be different versions of archived programs. The report identifies the differences (lines added, changed, or deleted) between a base program and a second program. A number of options make it possible to include or exclude comments, blanks, etc. from the comparison.

On-line Submission of N_2O Batch Jobs

N_2O Version 2.2 will include a menu subsystem to allow users to submit various N_2O batch jobs to the internal reader without leaving the N_2O on-line environment. The user will provide Control Card parameters through an on-line input screen.

Reporting System Enhancements

As we discussed in the last issue of TREETIPS, the N_2O Reporting System is continually undergoing improvement. New reports are being added, existing reports are being studied and revised as necessary, and the reporting mechanism itself is being refined and made friendlier. Auditors, Security Administrators, DBAs, and Applications Managers will get the information they need from N_2O quickly and easily.

This release will include additional reports which reflect information related to the new Check-Out/Check-In feature. N_2O reports will include:

- All modules checked out by a user
- The Check-Out/Check-In status for a given NATURAL, library, and/or program
- All modules checked in since a specified date

Looking Toward the Future

The N_2O developers plan significant improvements, to be released soon. They discuss how they can increase N_2O functionality, improve its ease of use, and enhance its performance with **the people who matter most, our customers.** Their list of planned enhancements for future releases includes:

- **Move vs. Copy Option**

  N_2O currently copies programs from one environment to another. Eventually, the user will find that an environment such as TEST is cluttered with a number of programs which may no longer be needed. In the future, N_2O will optionally delete the migrated programs from the sending environment once they have been successfully migrated to the receiving environment. This deletion may be set to take place after a user-defined delay, i.e., allowing the site enough time to verify that the migrated programs are operational in the receiving environment.

N_2O beta test sites are putting these new capabilities through their paces while you are reading this newsletter.

- **Multiple Target Migrations**

  Migrations may specify two or more target environments. Sites which use the same application on more than one CPU distributed across a network will appreciate this capability. N_2O will be able to migrate the application to all desired environments with a single migration request.

- **Automatic Recovery on Migration Errors**

  N_2O will automatically restore the old version of an application from its archive if all of the programs in the new version cannot be successfully migrated to the target environment. This ensures that Production operations are not disturbed by migration errors, and that errors related to mixed versions of an application's components do not occur when all components of an application are not successfully migrated.

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N_2O vs. PAC: A User's Comparison

A customer provided the following information comparing Treehouse Software's NATURAL 2 Organizer (N_2O) to Software AG's PREDICT Application Control (PAC). We have edited the text for readability and to remove references to the customer's organization. We have not altered any of the customer's comments about either product. Neither Treehouse Software nor the customer makes any claims as to the accuracy or completeness of this material or the opinions contained in it. Anyone considering a NATURAL Change Management System should develop their own criteria and make their own determination of the best Change Management System for their organization.

Why a migration tool for NATURAL?

Our environment will soon include **three databases** (development, test, and production) and two CICS environments (test and production). The scope and complexity of this arrangement requires us to ask a number of questions:

- When a program is ready to move to a new stage (i.e., test), how do you ensure that **all of the relevant pieces** (data areas, copycode, subroutines, subprograms, maps, verification rules, etc.) move with the program(s)?
- How do you minimize the duplication of effort and the risk associated with **more than one person working on the same code** in the development environment?
- How can you minimize the time, effort, and risk associated with **"backing out" code** from the production environment?
- How can audit trails be created to satisfy the need to **track the movement of items** to and from the various database environments?
- What can be done to **minimize** the need to generate, track, and file the seemingly **endless stack of authorization forms?**

The answer to all of these questions seems to be a **migration tool**, or the addition of more forms, standards, procedures, and personnel.

Until recently there were no "off the shelf" migration products available. Each shop developed their own way to get code from database A to database B. Last summer *(Editor's note: summer of 1989)*, **Treehouse Software** released **N_2O (NATURAL 2 Organizer)**, and last month **Software AG** released **PAC (PREDICT Application Control).** Both products will be compared based on current features, futures, and cost vs. benefits.

"Until recently, there were no 'off the shelf' migration products available."

Both products are touted as being "change management systems", and each addresses some or all of the issues posed at the beginning of this document.

What a Change Management System Will Do For Us

To control our environment it is necessary for us to assign version numbers to all objects (programs, maps, copy code, etc.). The version number is then used to correlate versions between different objects (program ABC version 6 uses map XYZ version 4). This type of cross reference information is kept in the data dictionary (PREDICT). With the cross reference information available, either product can verify whether all necessary objects have been omitted from the move request.

Without a programmed solution, manually performing the cross reference function to ensure all components move together is an enormous task. The "backout" procedure would involve tracking down the request form, restoring ADABAS files back to a given point in time (depending upon the backups available) and copying objects one-by-one. Audit reports would consist of change management documents that have been stored or filed somewhere. All functions would be subject to resource constraints.

By defining authorization levels, code can be requested for code review and/or production status electronically, but must be reviewed/tested before the event takes place.

An audit file makes reporting functions available, and facilitates the "backout" function by keeping track of objects (with version numbers).

It is possible to "write" systems to emulate the functionality of N_2O and/or PAC. The labor and trial-and-error testing would probably end up costing more

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N_2O vs. PAC

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than both products, and the system would not be available for the implementation of our next major application system.

The amount of savings we realize depends upon the number of modules to be moved, how often, when audit trails will be needed for reviewing, and if a large number of modules need recovery. These factors determine how much money a migration tool will "save" us.

Another company wrote some in-house tools to move code (they have 2 databases). They currently have staff dedicated to dictionary functions, security, data analysis, database administration, and a librarian. The function of the librarian is to obtain and file the move requests, to submit the jobs to move and catalog code, and to route the request to the dictionary administrator and/or DBA.

A migration tool acts as the librarian, data analyst (cross reference), and router (authorization definitions). By replacing these personnel **with a migration tool, we have developed a cost effective solution to the change management problem.**

The purpose of the following product comparison list is to compare N_2O and PAC. Each item listed at the beginning of this document ("Why a Migration Tool?") will be discussed. Additional information concerning availability, support, and cost/benefits will be presented.

Item: **Code Check-Out**
Advantage: **N_2O**

Treehouse has announced plans to release an update to N_2O to facilitate checking out code from the Production environment. The release is currently in beta test at several sites, and will be available in the first quarter of 1991. Software AG has announced no plans to add this feature to PAC.

Item: **Migrating to Production**
Advantage: **N_2O**

N_2O allows on-line and batch migration, while PAC is batch only (on-line capabilities will be addressed in a future release). On-line migrations in N_2O may be modified based upon interaction with the cross reference data from PREDICT during the migration. Additionally, N_2O supports postdated migrations.

Item: **Audit Trails**
Advantage: **N_2O**

Both products have audit reports. N_2O allows access to its archive file so that the user may code additional reports if needed. PAC severs the audit trail when you purge members (implied).

Item: **Archival of Source Code**
Advantage: **N_2O**

N_2O has archival capabilities, and the archival file is accessible for reporting, inquiry, and retrieval purposes. PAC will address archival functions in a future release, but its current method of archival is to manually select and purge versions of modules you no longer wish to keep. The PAC source code file will keep every version of code moved into systems test and/or production. The PAC file has the potential to become enormous.

Item: **Handling of Source Code (Flexibility/Risk)**
Advantage: **N_2O**

"There is a big difference in philosophy on this point. N_2O lets you define the environment . . . "

There is a big difference in philosophy on this point. N_2O lets you define the environment you will be using (i.e., you continue to use your current FUSER files). PAC controls the environment by placing the source code in a "PAC file", keeping track of versions in its control file, and moving object code to the defined FUSER file. What happens if there is a problem with the PAC source code file? You no longer have production source code in FUSER. PAC will address dynamic variables in a future release, but it currently does not handle them (N_2O does).

Item: **Module Recovery**

Both products address recovery of modules to previous versions.

Item: **Product Support/Warranty**
Advantage: **N_2O**

PAC is a new product, and as such Software AG's customer support personnel have limited knowledge of its capabilities and/or limitations. I have had **no problem getting detailed technical answers** from

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ADABAS 5 Experiences

by Ron Sutherland, Moore Canadian Division

Editor's Note: We are aware that many ADABAS sites have not finished the conversion from ADABAS 4 to ADABAS 5. In some cases, this may be due to concerns about the time and effort required to make the conversion, or fear that the environment may not be as stable as ADABAS 4. Moore Canadian Division's experience in converting its systems from ADABAS 4 to ADABAS 5.1.4 was generally pleasant, and they are sharing it with us in the hope that others will find their observations helpful when they decide to do their own conversion. Treehouse Software's consultants and programmers are familiar with the Software AG product line and can help you make the conversion quickly and smoothly. Call for more information.

As any data processing professional will tell you, it is best to phase in the implementation of new systems software. Incompatibility problems, changes in existing features, and additional new features could render existing application systems inoperative or cause them to become unstable. By phasing in the new version of ADABAS, Moore Canadian Division was able to keep these problems to a minimum.

Our implementation process was organized into three phases:

1. Isolated Testing in a Demonstration Environment
2. Implementation to the Development Environment
3. Implementation to Production.

For those of you who do not yet have a "game plan" for accomplishing this conversion, the following discussion should help you develop one. Since your environment may differ substantially from ours, you will need to tailor this plan to meet your organization's needs.

Isolated Testing in Demonstration

Once we were comfortable that ADABAS 5.1.4 had been released for some time and was stable, we installed it in a Demonstration environment. The use of the Demonstration environment enabled us to work with ADABAS 5 without impacting the Development or Production environments. We tested the product for about three weeks. This gave us the opportunity to become familiar with the new features, as well as to ensure that both new and old features worked as expected.

Documentation

The ADABAS documentation was generally improved over previous releases. The manual indexes were much better, which was very helpful during the conversion process. We were also pleased to see that the Utility JCL documentation had been moved to the Utility manual. We did have some problems with the documentation, however. The following notes refer to ADABAS 5.1.4. These comments may not be true of later releases.

- The ADASAV FMOVE option documentation indicated that a file range could be specified, when in fact this feature had not been implemented yet.
- ADAICK still uses ADABAS 4 syntax, rather than the ADABAS 5 syntax suggested in the manual.
- The ADAFRM documentation indicated that the formatting of SORTR2 is available, but this is incorrect. In version 5.1.4, you must change DLBL and format as SORTR1.
- The DBA Reference Card indicated that the Block Size of the WORK and PLOG datasets for 3370s is 3072 bytes, with 10 blocks per track, when it should have read 5120 bytes, with 6 blocks per track.
- The new ADABAS 5 Error Messages are not listed in the NATURAL 2.1.4 Error Messages. This is not a major problem, but should be kept in mind. NATURAL 2.1.6 may correct this deficiency.

Installation

We installed our Demonstration database on the same DOS machine as the Development environment, using a different SVC number from the Development environment, but the same DBID. Use of the same DBID allowed us to copy the NATURAL system files from the Development database to the Demonstration database (i.e., the FNAT control record was not a problem). We have heard that the latest releases of NATURAL no longer have a problem with the Control Record.

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ADABAS 5 Experiences

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Testing Under ADABAS 5

We then tested several NATURAL on-line and batch programs, after ensuring that the nucleus NATPARMs had the parameter ADAVER set to 51. We found that the programs functioned with V5 just as they had with V4. V5 could probably be implemented with little or no changes to existing applications.

Utility Improvements

We then tested the major ADABAS utilities, such as ADASAV, ADARES, ADALOD, and ADADBS. These all functioned as we had expected, and with no real surprises, although we discovered several improvements over V4:

- The ADASAV FMOVE option of the RESTORE function allows easy copying of files from one database to another, which simplifies the creation of test files. This also removes the necessity of running a SAVE after an ADAORD. Any file which needs restoring will be relocated with FMOVE.

- A D A O R D RESTRUCTURE allows easy change of Disk Device type without unloading and reloading every file individually. The MAXFILES setting of the target database must be at least as high as the source database or the database will be corrupted. Reorder functions are faster. All file extents are consolidated with REORFILE, REORFASSO, and REORFDATA, simplifying the reordering of files and reducing the need for running complete Reorders of Associator and Data. This can be automated with user-written programs to supply parameters to ADAORD.

- The ADAULD Search and Value Buffer Option allows unloading of selected records by descriptor. This is very useful in the creation of test files.

- ADASEL (Select from Protection Log) now allows selection from multiple files in one pass, and provides logic to select specific records.

- ADADBS OPERCOM contains several new features, three of which greatly simplify operations: STOPF, LOCKU, and DFILES. STOPF stops all users from using a certain file. LOCKU locks files for utility use only. DFILES displays users using certain files.

- ADABAS On-line Services (AOS) allows dynamic modification of certain Session Parameters and display of Session statistics. On-line execution of utilities which do not require TEMP and SORT is permitted in AOS.

Back and Forth

We then tested a backward migration path from V5 to V4, should there later be a need for us to return to V4. This was accomplished using the ADA5T4 utility. We then tried some re-conversions to V5.

Work Dataset Conversion Problem

". . . we discovered several improvements over V4 . . ."

We did discover one minor problem during the Demonstration phase. The WORK dataset conversion instructions were unclear. If the option to keep the same WORK dataset size is chosen, the ADAVUS NEWORK function should be used in place of the V5 ADADEF NEWORK function as indicated in the manual. This would seem to be a typographical error, since it must be run prior to actual V5 conversion and the ADADEF NEWORK generated an error message indicating that it wasn't running against a V5 database.

Having satisfied ourselves that we were familiar with ADABAS 5, and ready to begin development work, we moved on to the next phase.

Implementation to the Development Environment

Although we had performed some thorough testing in the Demonstration environment, we wanted to ensure that no program problems would result from using ADABAS 5 in Production. We decided to test our applications in the ADABAS 5 environment for about 2 months before moving to Production.

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ADABAS 5 Experiences

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The conversion went smoothly, as we had no ET data or Security data to be converted. The Development Department ran a series of system tests on critical application systems and were pleased to find that no major problems were discovered.

New ADABAS Parameters

Although our NATURAL code required no conversion, a few minor changes were needed to accommodate some of the new ADABAS parameters, including:

- OPENRQ=NO should be specified to avoid NATURAL programs from looping when receiving Response Code 9. Otherwise, on the next call from a user, ADABAS will expect an OPEN. When no OPEN is issued, ADABAS again returns a Response Code 9.

- NQCID=nn controls the maximum number of parallel sequential commands which a user may issue. If this limit is exceeded, a Response Code 46 is returned.

- NISNHQ=nn controls the maximum number of Hold Queue entries which a user may have. The maximum value for this parameter is NH/4. If this limit is exceeded, Response Code 47 is returned. The usual cause of this Response Code is poor program design. This parameter is very useful in preventing the Hold Queue from filling up.

NISNHQ required some changes to our programs to keep the Hold Queue from filling up. NQCID and OPENRQ did not require us to change any of our programs, but we had to monitor how the programs operated to ensure that they functioned properly under these parameters. Note that NQCID and NISNHQ may be modified dynamically if AOS is installed. Otherwise, ADABAS must be brought down and up to change these parameters.

Direct Calls No Problem

Our Direct Call programs also required no changes, primarily because the Control Block fields were not being used for other purposes. All we had to do was re-link the Direct Call programs. Other sites should ensure that their Control Blocks are built properly in their applications or unpredictable results could occur under ADABAS 5.

At this point, we were ready to move into Production...

Implementation to Production

In order to prepare for any unforeseen problems, we made a backup of the V4 environment. This backup was labeled in such a way as to distinguish V4 from V5. We also decided that if the V4 backups would be restored later, it would be a good idea to have a copy of ADAFXSEQ (from the DBATOOLS tape) available. This may only be available in MVS format, but another site may have a converted copy. ADAFXSEQ can be used to extract the files from the V4 dump tape for restoration on the system.

Because we had worked the bugs out of things by the time we had reached Production, extensive testing and conversion was no longer required. In our environment, it was unnecessary to use the Migration Facility. The implementation was very smooth.

One of the more time-consuming parts of the implementation was re-writing all of the jobs containing ADABAS Utilities. This took us a bit of time to accomplish, but was not particularly difficult or eventful.

Our Findings

We made a number of discoveries and observations about ADABAS 5 during the course of this conversion:

- The operation was simplified, and response time improved (although we didn't measure the improvement).

- Backups are about three times faster under ADABAS 5. (If you are using a 3480 Cartridge Device, be sure to apply Zap AD51015 or the backup will be very slow!).

- The MPM can now run in a non-shared partition in DOS SP running in VAE Mode.

- ADABAS 5 uses 200K to 300K more storage than ADABAS 4, which resulted in a smaller buffer pool.

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ADABAS 5 Experiences

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- There is no longer a need to estimate SIZE on the EXEC card for the MPM and all utilities. Simply use "SIZE=ADARUN".
- Batch NATURAL requires marginally more storage. When the size was insufficient, the job cancelled with no message.

Conclusion

We experienced no major problems with the conversion from ADABAS 4 to ADABAS 5. We have been pleased with the performance and operational improvements of the new release, and strongly encourage other sites to make the switch. Hopefully, these observations and methodologies will be helpful to you when you are ready.

About the Author: Mr. Sutherland is a Data Base Analyst with the Moore Canadian Division in Toronto, Ontario. "ADABAS 5 has made my job a lot easier," he told us. This article is based on the notes Ron used to present his ADABAS 5 experiences at a recent Software AG user group meeting. The observations in this article refer to ADABAS 5.1.4, and may not be true of later versions. Please share your own ADABAS 5 observations with TREETIPS so that everyone may benefit from your experiences.

N_2O Change Management

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- **Migration of Non-NATURAL Objects**

  N_2O will begin migrating objects other than NATURAL code, possibly including PREDICT DDMs/Views, SYSERR, SUPERNATURAL, NATURAL/DB2, PREDICT Processing Rules, PREDICT Documentation (i.e., File, Field, and Module), and PREDICT XREF Information. The N_2O developers are currently studying the finer points of migrating these objects and the possible impact of the migration on the target environment. They welcome your ideas and insights into the best ways to handle these migrations.

For More Information

The best way to learn more about N_2O is to contact Treehouse Software and request a free 30-day trial. During the trial period, you can easily set up your environment, define your migration rules, and test the many features and functions of N_2O. We will even come in to help you, if you like. We can also provide you with a Product Overview, Demonstration Diskette, or Reference Manual. If you want to discuss technical aspects of N_2O, one of our developers can answer your questions.

TREEHOUSE SOFTWARE

N_2O vs. PAC: A User's Comparison

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Treehouse (they are located in Sewickley, PA). Treehouse has a free 30-day trial period, followed by a 90-day no questions asked money-back guarantee promotion (ended 12/31/90). **Software AG is not offering a trial period,** and it has announced that it is **decreasing its free technical support from 12 months to three months. Treehouse Software provides free technical support for 12 months** after the purchase, and has announced that there are no plans to change this policy.

"I have had no problem getting detailed technical answers from Treehouse . . ."

Item: Cost/Benefit

Both products offer advantages over the current paper flow process we currently use. No manual system can supply the audit trails, recovery capabilities, and authorization controls of a computer based system.

Recommendation: Bring N_2O in for a trial, and purchase it if it passes our testing requirements.

Editor's Note: The customer purchased N_2O under the money back guarantee offer and has decided to keep it.

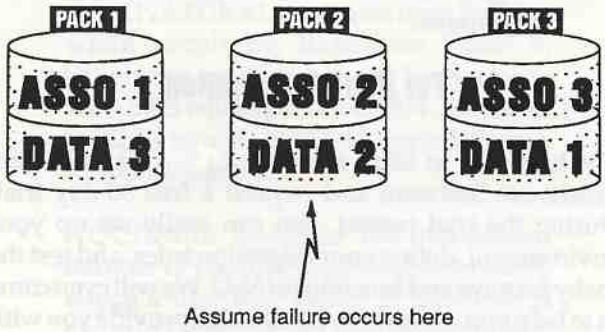
Recovering from DASD Failure

by Dave Hamacher, UNISYS - EPA National Data Processing Center

We discovered a method for reducing the amount of time it takes to recover from a DASD failure that may be of interest to other Software AG customer sites.

Assume a database is allocated on 3380s as follows:

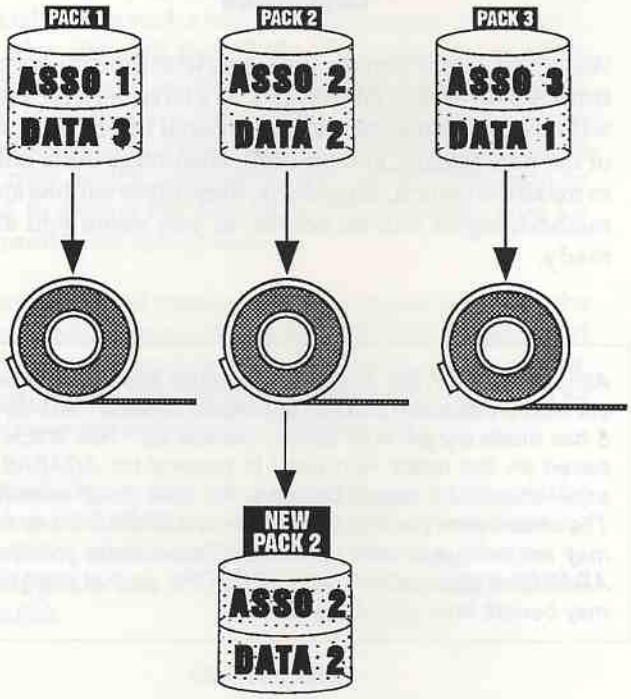
```
//DDASSOR1 DD DSN=SYS2.ASSO,DISP=(NEW,CATLG),
            SPACE=(CYL,(280,280),
            VOL=SER=(PACK1,PACK2,PACK3)
//DDDATAR1 DD DSN=SYS2.DATA,DISP=(NEW,CATLG),
            SPACE=(CYL,(600,600),
            VOL=SER=(PACK3,PACK2,PACK1)
```



If a DASD failure occurs, a new pack must normally be allocated, the Data and Asso datasets deleted, new Data and Asso datasets allocated and formatted, and then the ADABAS RESTORE and REGEN run. For a large database, the time required to delete, allocate, and format may be the longest part of the process. **We have learned a better way.**

After the database is originally established, take a full pack dump of each pack (such as an FDR dump). If a pack failure occurs, all that needs to be done is to restore a new pack from the full pack dump, all VTOC and catalog entries remain intact, then run the ADABAS RESTORE and REGEN. **With this technique, we have been able to reduce the time it takes to recover by over 50%.**

This will also work for existing databases. All that is required is a stand-alone dump of all the DB packs. The only time a new pack dump must be taken is when you modify the database datasets such as a DB increase. Otherwise this is a one-time backup that could save hours for each DASD failure.



About the Author: Mr. Hamacher is a Data Base Administrator for UNISYS under contract to the EPA National Data Processing Center in Research Triangle Park, North Carolina.

"With this technique, we have been able to reduce the time it takes to recover by over 50%."

TRIM Developments

(continued from page 5)

TRIM also displays the **addresses of various ADABAS modules,** including:

- ADALNK
- ADAIOR
- ADAMPM
- ADALOG
- ADANET
- ADAEX1
- ADAEX2
- ADAEX4
- ADANC0-ADANC9
- Hyper-Exits

TRIM can display the addresses of many **ADABAS Queues and Tables** for the current nucleus session, such as:

- Command Queue
- Hold Queue
- User Queue
- Internal Format Buffer Table
- Table of Sequential Commands
- Table of Search Results
- Thread Table
- Large Buffer Pool

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. One of these users probably caused the crash to occur. Without TRIM, the DBA would have to search through the dump to locate the queues and tables.

Memory Display

While on-line with TRIM, the DBA will be able to use the TRIM Memory Display function to determine:

- Whether Software AG zaps are correctly applied to the currently running ADABAS modules
- Whether TRIM zaps are correctly applied to the currently running User-Exit-1/4
- The contents of TRIM's User-Exit-4 tables, switches, etc.
- The contents of a particular ADABAS table

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

TRIM Memory Display is not documented in the reference manual. When the situation warrants, TSI will guide its customers in the use of this facility.

TRIM Environment

TRIM now displays information about its on-line **environment,** which consists of the various User-Exit types (UEXB, UEX1, and UEX4). This information is very helpful for solving problems caused by incorrect versions of Link Routines or User-Exits.

For **User-Exit-B,** TRIM displays the type of User-Exit-B, Batch, CICS, etc. TRIM shows the date the User-Exit was assembled, the TRIM version of the User-Exit, zap switch settings, and the current parameter settings for the Batch Slowdown function described earlier. This information is very helpful for determining if TRIM User-Exit-Bs have been installed correctly in each Batch/TSO/CICS environment.

For **User-Exit-1,** TRIM displays the date assembled, TRIM version of the exit, any Communication Runs in effect, and counts of activity performed by that exit, such as the number of DISALLOWs, LOCKs, FAILs, and SETPWs caused. It is also possible to display the UEX1 Communication Run parameters.

For **User-Exit-4,** TRIM displays the date assembled, the count of Command Log records written (Detail and/or PRESUM), the addresses of the various User-Exit-4 modules, the addresses of the User-Exit-4 tables, the Logging Parameters in effect, and the Exceptional Response Codes specified by the DBA.

User-Exit-B For COM-PLETE

With version 5.0.3, TRIM will include User-Exit-BC for COM-PLETE. This User-Exit allows TRIM to display NATURAL information about COM-PLETE users, such as the currently running NATURAL Program Name, Application, and User-ID.

Work Continues

Because TRIM consists of NATURAL and Assembler code, some problems may be fixed with zaps, but not others. These problems must be solved by new releases. Frequent releases ensure that our customers do not have to wait long for minor problems to be corrected, and enable us to provide needed enhancements more quickly.

TREEHOUSE SOFTWARE

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ADABAS/NATURAL Publications

NATURAL 2 Tips & Techniques Answers your questions on the how and why of NATURAL functions along with the essential do's and don'ts privy only to the NATURAL 2 guru. There's info for the NATURAL Administrator; plenty on data structures with examples; a section on enhancements; the Map Editor; batch NATURAL processing guidelines and Structured Programming notes. 210 pp.

NATURAL 2 Developers Handbook has taken the best from our training manuals and combined it with plenty of hands-on experience into a very well rounded guide to using NATURAL. We've detailed the editors with plenty of examples and workthrus for each facility. A perfect companion to the Tips & Techniques publication. It comes with an excellent set of appendices with working examples. 476pp.

NATURAL 2 Self Study Guide Is a basic working guide to using NATURAL 2. The Study Guide covers all the editors and a very large part of the programming statements with hands-on workthrus. This NATURAL 2 Study Guide is intended to get entry-level programmers, analysts, and anyone interested in working with the leader in 4GL languages started with NATURAL 2 fundamentals. 402pp.

Inside ADABAS Is designed for the developer of applications utilizing ADABAS. Associator and Data storage are detailed, file and field structures are examined, commands are explored with an eye towards performance. Reviews of the data dictionary, utilities and security, and reporting and performance monitors are included. The appendices include ADASQL and Direct Call programming to round out the developer's background in ADABAS. 226pp.

Introduction to PREDICT Takes the reader through a session building a conceptual file introducing the editor, file and field concepts with chapters on verification rules, PREDICT menus, keywords, documentation, object retrieval and direct commands. 194pp.

All these books are bound, soft-cover editions in an 8 1/2 by 11 inch format. Each is complemented by a comprehensive index and the last three have exercises intermixed to better reinforce many of the concepts presented.

European customers interested in these books should contact MaK Data System, the Treehouse Software affiliate in West Germany. Others interested in purchasing these books should contact WH&O. For ordering information, call, FAX, or write:

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TRIM® - an ADABAS/NATURAL performance monitor
AUDITRE - an ADABAS auditing tool
N_2O - a NATURAL application Change Management System
SECURITRE - a Centralized Security Administration package for ADABAS/NATURAL
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