N$_2$O: *One Solid Product*

Since its release in July, 1989, TSI's Change Management System for NATURAL, N$_2$O, has been enhanced substantially. Some of the major improvements include:

- **Batch Migration**
- **XREF Integration**
- **Automatic Compilation at Target**
- **Move Entire Applications**
- **Postdated Migrations**
- **Scrolling Selection Lists**
- **Batch Reporting Functions**
- **Archive Reporting**
- **Security Profile Reporting**
- **Optional Authorization Review**

The development team has many more exciting improvements on the drawing board, such as:

- **Check-In / Check-Out**
- **Move vs. Copy**
- **Migration of PREDICT Objects**
- **Multiple Target Migrations**
- **Integration with SECURITRE**
- **Additional New Reports**

BATCH MIGRATION

Batch Migration has been provided as an **alternative to on-line migrations**. This function makes it possible for users to **schedule all migration activity** at a time when on-line activity is at a minimum, or for migrating programs to and from **remote computer systems**. The Batch Migration facility will optionally allow users to compile the programs in the migration on the target node. See the Automatic Compilation discussion for more details.

Batch migration in N$_2$O is a very simple process. The user creates a migration request on-line using N$_2$O. Once the migration request is approved, N$_2$O prepares a list of the programs to be migrated. The user then submits a batch job to carry out the migration. This job runs four programs:

- **N2OSEL** prepares the code for migration

- **N2OSEND** transmits the program code being migrated to the target environment

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- **N2ORECV** completes the migration and creates a file containing audit trail information about the migration

- **N2OACKN** processes this acknowledgment information and updates N$_2$O's records about the migration event. The user may then go on-line with N$_2$O to verify that the batch migration has completed successfully.

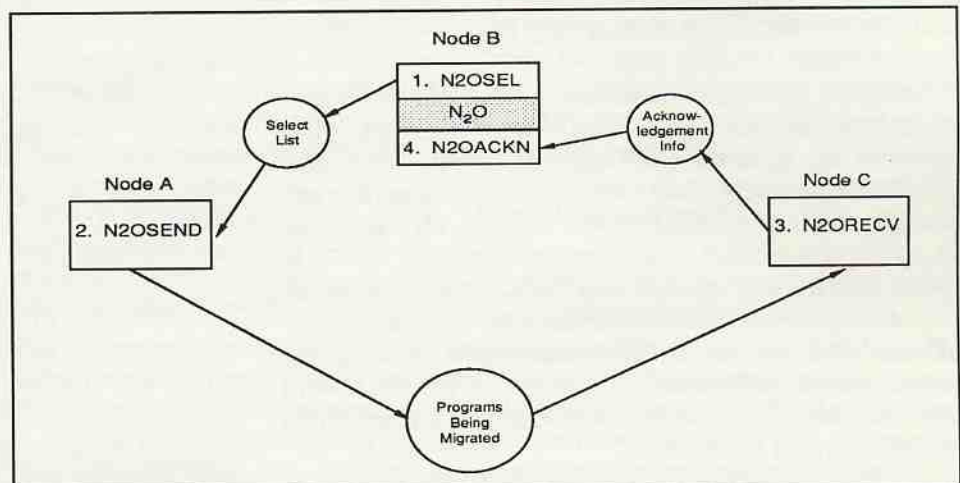The following diagram illustrates the batch migration process.

We are continually enhancing the batch migration capability. We are trying to make the process as painless and flexible as possible, so that the needs of all customers are met.

XREF INTEGRATION

N$_2$O makes use of **PREDICT XREF information** to inform users requesting migrations of any **program dependencies**. The XREF information allows N$_2$O to tell users whether the

Editor's Sproutings
by Michael Salsbury

The purpose of *TREETIPS* is to provide useful information about ADABAS and NATURAL to as many of the people who use these products as possible. It is getting increasingly more difficult to put together a newsletter which contains relevant, useful information for our readers. We don't want to put out a 20-page newsletter filled with advertisements and self-indulgent material about TSI and its products.

It helps when we can receive articles for the newsletter from our friends and customers. As I've mentioned before in this column, **we pay $100** for every article we publish. This is true whether it comes to us typewritten, handwritten (legibly), tape recorded, on diskette, or faxed. If you're reading *TREETIPS* regularly, you know the sort of articles we publish. These are the same types of articles we're hoping to have available for each issue.

We're also looking for **outside advertisements** to run in *TREETIPS*. You will notice that an outside advertisement for WH&O Publications appears in this issue. We're willing to showcase the products and services of others in the computer industry even if their products and services are competitive with ours. Call, write, or fax for additional information.

PUTTING THE WORD OUT

In September, October, and November of 1989, Treehouse Software placed ads in the *Mainframe Journal.* The September ad featured our TRIM, AUDITRE, N_2O, and SECURITRE products, while the October and November ads focused on N_2O and SECURITRE, respectively. We have also placed new product announcements for SECURITRE in several major data processing publications, such as *Mainframe Journal, Mainframe Update*, and *Datacenter Manager*. We also ran an advertisement in *InfoSecurity Product News* (*ISPNews*). If you check the crossword puzzle in the back of the September/October issue, you'll find that N_2O is one of the entries.

FREQUENT FLIERS

The people in the Treehouse have been on the "wing" traveling around the U.S., Canada and other parts of the world attending conferences and doing consulting, education and making user group presentations. We were in Toronto, Richmond, Tyson's Corner, Dallas, Los Angeles, Denver, Columbia, Washington, D.C., and at the **CAUCUS at Penn State University** talking about N_2O and/or SECURITRE. We attended **Computer Associates ACF2 user group meetings** in Baltimore and Oklahoma City. We attended the **LEGENT/ BST User Conference** for their change management product, **ENDEVOR**, in Dallas. We gave presentations in Pennsylvania, Ohio, New York, California, Kansas, Ottawa, Toronto, and

Calgary. One of our N_2O customers presented their change management methodology at the **NATURAL 2 Conference at MIT** in June. A SECURITRE customer presented how they use SECURITRE as an interface between ADABAS and ACF2 to protect ADABAS files and utilities, and control access to NATURAL at the **Computer Associates National Conference in Orlando**.

Our people have also been hard at work in Oklahoma, Iowa, Wisconsin, Arizona, New York, Pennsylvania, Texas, and Louisiana doing several NATURAL 2 classes, ADABAS 5 and NATURAL 2 installations, NATURAL 1.2 to NATURAL 2 conversions, and ADABAS and NATURAL performance evaluations. We even did two ADABAS 5 and NATURAL 2 seminars in Africa. The game reserve pictures were outstanding.

Our next big trip is to **San Antonio** for the **Software AG User Conference**. Drop by our hospitality suite and say hello. We're looking forward to seeing you there!

Current Breezes
by George

The Treehouse is growing fast. Our product line has increased to five: **TRIM, N_2O, SECURITRE, AUTOLOADER**, and **AUDITRE**. Our hardware has grown to several PCs, three Macintoshes, and an IBM 9370. We've gone to seven affiliates with six "sub-affiliates". Our customer base has expanded. Our staff size has doubled, business affiliations have increased, and we want to grow a lot more.

The expansion in our product line, coupled with change enhancements, increases our need for quality technicians and marketing individuals. It is difficult to find developers who know IBM Assembler, as well as ADABAS, NATURAL, and DB2. Our senior people must have a "systems programmer" ability coupled with a "product developer" discipline, and must be able to communicate and work with others while being in a TREEHOUSE environment.

MARKETING / BOB POOLE

I asked Robert Poole of Professional Sales Solutions, Ltd., to give Treehouse Software some marketing and management consulting. Bob jumped right in, and now heads up our enhanced marketing program. He's committed his entire company to the effort.

Bob says, "The popularity of Treehouse products and services is unquestionable. When I visit potential customers, I don't
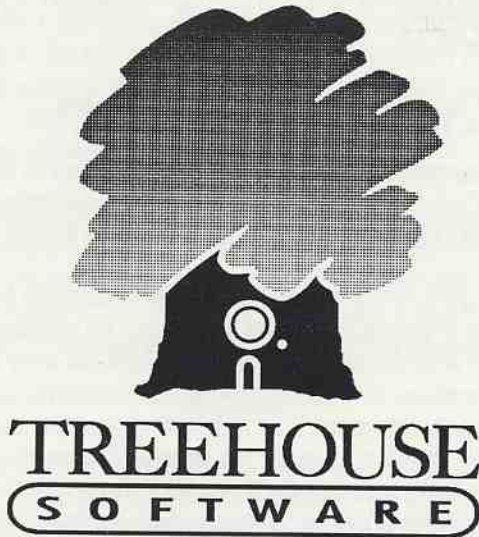
have to try to sell them something. They already know Treehouse products are the best." Bob notes his discussions quickly get down to how to get the purchase through upper management, how to handle budget issues, and how to get the people trained to use the products.

Bob is revamping the Treehouse image, starting with our logo:

TREEHOUSE
SOFTWARE

More on Bob and his efforts in the next (revamped) *TREETIPS*.

TREEHOUSE "DELIVERS"

Our current product line has increased the number of requests for site visits, demos, user group presentations, consulting, and education about our products. Give us a call. We may be able to send someone to your site to deliver the software, help with installation, and train your people.

SCHOOL IS IN SESSION

We are interested in branching out our education activities from private offerings to teaching public classes in ADABAS Concepts and Facilities, NATURAL 2, Performance and Tuning, PREDICT, etc.

We are also interested in "branching in," holding intensive training sessions in-house. We've been successful at this with our own people, and want to open it up to the customers. The deal is: The customer sends prospective ADABAS DBAs or NATURAL applications persons here and we send them home fully trained in all aspects of their work. The customer's time and money will be well spent.

Most of those who attend our classes give us a glowing evaluation. The reason for their enthusiasm is our instructors. They all have several years of experience with ADABAS and NATURAL (3+ years with NATURAL 2), and they have all used NATURAL 2 to develop applications. They are not just expert instructors. They are expert ADABAS and NATURAL people. Their enthusiasm can't help but rub off on the students.

NO MORE BARGAIN BASEMENT PRICES

The Treehouse had outstanding response to the bundling of our five products into a "system" at a greatly reduced price that was announced in the U.S. and Canada in March. The "system" marketing test ended June 30, 1990. Only standard discounts are now available.

Price increases and group pricing will be instituted shortly. The pricing will more accurately reflect the increased value of each product, due to significant enhancements. Also, there is an increase in costs of bringing these products to market, testing in a variety of environments, and providing support around the world.

The ADABAS world is telling us that they need products which address performance monitoring, auditing, change management, and security issues. Hundreds of sites are now using Treehouse products.

Why aren't you running our products? Are you waiting for something else? Can you afford to wait much longer? Can you ensure the auditors that data was not inappropriately changed? Can you tell management that your source code matches your object? Can you convince the CEO or the IS Manager that your data is secure?

PRODUCT UPDATES

The latest N_2O developments are highlighted in this newsletter. Enhancements and improvements are extensive; it is practically "rewritten". If you have not tried N_2O lately, you are really missing out on an excellent tool, one which should be an absolute requirement at each NATURAL site. If you call before the conference, Bob may be able to work with you to give you the current price before the upcoming increase.

TRIM V5.0.2, intended as a maintenance release, received a great deal of enhancement over previous versions. I would not allow us to become side tracked on this effort. Not by a newsletter or anything else. Now, we're working on V5.0.3, V4.0.1, and the big winner, V5.1.0. We'll discuss TRIM in the next *TREETIPS* issue, 1st Quarter, 1991.

Vendor Relations
By Rich Jacobson

TSI knows our image and sales improve if we develop working relationships with other members of the data processing community. While TSI is not likely to become a household name like IBM, we want our customers to know that industry giants support us in our efforts to provide the highest quality products at the most competitive prices especially when we complement their line of products and services so well.

Besides Software AG, we must look beyond, seeking to associate ourselves with names like IBM, LEGENT, CIScorp (see the article about them elsewhere in this issue), Computer Associates, and others. We like the very professional, serious attitude these major corporations have taken toward Treehouse Software and its products.

TSI Meets IBM

One of our earliest efforts was an attempt to build a working relationship with IBM. It didn't take long to become an IBM Business Partner. Our relationship with IBM has been very beneficial. It has allowed us to acquire the products to run on our 9370 mainframe and documentation necessary to keep our software in tune with the latest in IBM hardware and system software. We are also entering the DB2 world, with IBM's help.

SECURITRE Gets a Boost

When we released SECURITRE a year ago, we realized that it would be important to the success of the product if Treehouse could develop a relationship with IBM and Computer Associates. IBM realizes that SECURITRE can influence its sales of RACF. Computer Associates produces ACF2 and TOP SECRET, two of the security systems with which SECURITRE interfaces. Our discussions with CA were fruitful, and we are looking forward to participating in their Vendor Relations Program.

N2O Finds its Match

We also realized that N2O, TSI's Change Management System for NATURAL, was a perfect match for LEGENT/BST's ENDEVOR product. ENDEVOR is a "system-wide" Change Management System. ENDEVOR manages COBOL, PL/1, JCL, PROCs, etc. However, ENDEVOR does not manage NATURAL, the only language for which N2O functions. N2O's Batch Migration feature allows N2O to interface with ENDEVOR and other change management packages. TSI is a "Cooperative Vendor" in Legent's Vendor Relations Program.

What's NeXT?

Staff from Treehouse Software recently attended a meeting of the Pittsburgh High Technology Council. The focus of this meeting was the NeXT workstation, and featured Steve Jobs, the founder of NeXT. Although we are not sure how the NeXT relates to Treehouse Software and ADABAS, we are evaluating its potential.

```
FIND IN PERSONNEL WITH
     NAME = 'KATE SMITH' AND
     SING TO ME
```

Out comes "God Bless America" in stereo quality from the NeXT workstation. Just blue skying. We'll let you know if anything develops.

Increasing SAG's Market Share

We sent documentation and marketing literature to all known Software AG regional sales offices, SAG user groups, and ADABAS/NATURAL consultants around the world.

We informed the SAG offices that if they would like to market our products in addition to SAG's, TSI and its affiliates would supply them with the information and materials they needed. We sent literature, reference manuals, and demo diskettes. If they weren't interested in marketing our products, we thought they should at least be aware of the capabilities available to SAG customers through TSI products. We're presently working on establishing a more formal relationship with SAG.

User Groups Respond

We told the user groups we would love to speak to them about our products and services. We offered to help underwrite the cost of these meetings, if they would be open to all attendees. In the past several months, many user groups have called to arrange for us to speak at their meetings. The interest in our products is even higher than we had anticipated. If your user group would like Treehouse to visit, give us a call.

Lending a Hand to Consultants

We told consultants that we would like to work with them to help them serve their customers. By including our products into the applications they develop for their customers, they can deliver these systems more rapidly and less expensively. Both consultant and customer will benefit.

Treehouse Software may not be a household word outside Software AG and its user community, but it is more than a whisper at IBM, Computer Associates, LEGENT, CIScorp, and elsewhere. These companies have faith in us, confidence in our future and our abilities, and support our efforts to give our customers the finest products and services available.

NATURAL 2 on the VAX

Software AG has begun to focus its attention on the rapidly growing VAX environment. Although this release of VAX NATURAL 2 is later than originally announced, it is a viable product. It looks good, and will make most NATURAL 2 developers feel at home.

VAX NATURAL 2

As in the IBM release, the editors require some getting used to. There are a few differences between IBM and VAX, such as using the escape key to exit on the VAX, that are tricky to remember for someone using both machines. In the last VAX release, the SET TYPE command and system commands within the editors were not working, so there were some problems changing module types and trying to perform multiple functions within the editors.

The map editor presented the worst problems. Each release had different problems. It can be very frustrating working in the editor when field and line commands are unpredictable. Set aside some time to work with the map. Later releases or different approaches will solve many of the problems.

PREDICT

As of this writing, the release date for a fully compatible PREDICT had not been announced. If you don't have PREDICT, some functionality (such as processing rules being stored and accessed in PREDICT) will not be available. Depending on the type of applications the user plans to write, this may or may not be a problem. For example, generic applications 'released' to other sites lend themselves to processing rules by permitting site-specific modifications without making code changes to the programs.

There are three basic types of processing rules: inline, free, and automatic. Both free and automatic rules are stored in PREDICT. Processing rules are especially useful for repetitive code that is used for validating various fields the same way. The alternative method might be to use a CALLNAT or SUBROUTINE which would generate an unnecessary IO. It might be best to create some COPYCODE that would have the code in it, then create inline rules that access this COPYCODE. This will save the IO, and can be easily converted to free or automatic rules later.

IBM to VAX Conversion

Software AG announced its desire to provide 100% compatibility across machines. This means that the user could take an application developed on the IBM mainframe and move it to the WANG, UNIX, PC, or VAX platform simply by recataloging the application. For the VAX environment, conversion has not been an easy process, and far from 100% compatible. However, with the release of NATURAL 2 on the VAX, compatibility problems will be greatly diminished.

All programs and maps need to run through SAG's conversion program to make them compatible for the VAX. However, various releases of the conversion program work differently. Do not throw away old releases; they may be useful later.

Most programs and program-like modules (subroutines, subprograms, copycode, and helproutines) as well as external data areas go through the conversion program with no problems. A few minor errors having to do with syntax have been discovered. These include:

- T* and P* positioning commands did not work. Use the position numbers.

- ESCAPE BOTTOM (nnnn), where (nnnn) is a line number did not work, but without the line number or using labels did work.

- Empty Views in Structured Mode did not work. For example:
  DEFINE DATA LOCAL
  1 AUTO-FILE VIEW OF AUTOMOBILES
  END-DEFINE
  This technique is sometimes used when no data fields are required such as a FIND NUMBER. Add a field to the view to pass the syntax checker.

- HD= and EM= in internal data areas were not permitted. These need to be placed on the DISPLAY statements.

- Some words omitted need to be included. AT END and INPUT MAP are permitted on the IBM, but on the VAX must be AT END OF FILE and INPUT USING MAP respectively.

- ABS on the ADD statement was not accepted on the VAX (i.e.: ADD ABS field1 to field2), however COMPUTE field2 = ABS(field1) + field2 is permitted.

- C*viewname.fieldname on the IBM was changed to viewname.C*fieldname on the VAX.

You may find some other minor errors. They should be reported to SAG to make '100% compatibility' a reality.

Maps seem to have the biggest problems. The conversion program may break up lines or cause problems with the resulting source. When doing a conversion, keep a copy of the original map source. If a map will not catalog, look at the two sources. Frequently, the problem is easily identified and the map dataset can be changed and reloaded to the NATURAL system file. Map problems will be the most difficult to identify and correct since the editor has so many problems. If you have a heavily map-oriented system, you may want to wait until some of the major problems are corrected.

Execution problems are sometimes the most difficult to identify and correct. Any converted applications should have easy and complete methods to compare results across systems. Run test data and reports. This is one of the most

NATURAL 2 On the VAX
(Continued from Page 5)

dangerous areas. Just because you have gotten the entire system to catalog successfully does not mean it works. You will find that some array handling especially in the maps may not be functioning the same as it did on the IBM. You will also find that some processing will cause the system to "blow up," throwing you out of NATURAL. Frequently, these may be related to screen writes that are incompatible, or accessing multiple views in the buffer pool. You will have to comment out lines to find the exact cause and correct it.

Substitution parameters were not working in the INPUT and REINPUT statement. (i.e.: REINPUT ':1:',#FIELDA does not substitute) on the last release. For those of you dependent on this, the next release will hopefully correct the problem.

Because of the variability in the releases, it may not be a good time to go to production with your NATURAL 2 systems. However, you can at least start planning conversions, standards, templates, identifying problems, and start training.

These observations were provided earlier in the year by a consultant who has several years of experience with ADABAS and NATURAL. The views expressed in this article are not necessarily those of Treehouse Software, its employees, or affiliates. The official release of VAX NATURAL 2 may solve some or all of the problems identified in the article.

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AUTOLOADER Update

AUTOLOADER is an Automatic File Reload/Dump Facility for ADABAS. AUTOLOADER scans the ADABAS Associator to detect files in multiple physical extents. At the DBA's direction, AUTOLOADER submits JCL to the internal reader to reload or dump these files. Reports are generated detailing the status of all files on the database, listing the JCL submitted to the internal reader, and operating statistics.

AUTOLOADER eliminates the need to manually check the ADABAS database report each day to see which files are in multiple extents and schedule time to prepare and submit the unload/reload jobs. This frees the DBA's time to perform more important functions.

After TSI acquired AUTOLOADER from Targhee Technology, the documentation staff dressed up the manual. The development team improved many of the product's functions. The result is a clean, stable product. AUTOLOADER is no longer a free option to those who purchase TRIM, but is still available for a very low price.

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Affiliate Profile

APEX-CRYSTAL Ltd.

APEX-CRYSTAL Ltd. is Treehouse Software's representative in Israel. APEX-CRYSTAL Ltd. (ACL) is the result of the merger of APEX COMPUTERS Ltd., and CRYSTAL COMPUTER SERVICES Ltd. early in 1988. ACL consists of several independent market oriented business units focused on the MIS market.

In 1988 ACL became the sole distributor for McDonnell-Douglas ISE products in Israel. One of these products is PRO-IV, a leading 4th generation programming language and application generator. PRO-IV allows high productivity gains and transportability of applications between platforms without a conversion or adaptation effort. ACL also distributes financial packages such as McDonnell Douglas' Global Integrated Banking System and the ASC Application Systems Inc., Accounting Series. A data entry system called ODE, developed by IST Inc. and endorsed by IBM, is also available from ACL.

Other activities that ACL participates in are large system conversion projects from the IBM DOS operating system to the MVS operating system. Special systems consulting services are also available. In addition, the company has expertise as a software house for the PC, IBM S/3x, and AS-400 mini computers. ACL develops applications packages for these markets.

ACL offers Treehouse Software's entire product line, which includes TRIM, AUDITRE, N2O, AUTOLOADER, and SECURITRE besides their own extensive line of software. ACL also provides technical support to their customers and Information Center services using and developing end-user oriented applications based on SAS, FOCUS, and NATURAL.

We look forward to a lasting relationship with ACL. For more information about APEX-CRYSTAL Ltd., its software products and services, contact them at:

APEX-CRYSTAL Ltd.
3 Bezalel Street
Ramat-Gan 52521
Israel

Phone: 3-751-4299
Fax: 3-751-3097

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programs they are about to migrate affect other modules or require other modules for a successful recompile. At the end of a migration request, N$_2$O provides the requestor the opportunity to either:

- select additional programs which are impacted in some way by the list of programs being migrated,

- automatically select all programs impacted by the migration, or

- ignore XREF entirely.

Any or all of these options may be presented to the user, based on their security entry in N$_2$O, which may be tailored by the site's N$_2$O Administrator.

AUTOMATIC COMPILATION AT TARGET

A common enhancement request was to make it possible for multiple N$_2$O users to **compile migrated source code at the target FUSER.**

The target compilation feature is very easy to use. Once the migration is completed, the user logs on to the target environment and issues the command "N2OCAT". Screens like the following will appear, showing the compilation in progress:

```
90-08-01                    N-2-O AUTOMATIC COMPILE                  TSI0373
11:37:15                    EVENTS AWAITING COMPILE                  TSI1
          EVENT    SEQUENCE   DATE       TIME      USERID    LIST
   x      A-TEST   00030      90-08-01   11:34:55  TSI0373   ON2O0002
   x      A-TEST   00031      90-08-01   11:35:40  TSI0373   ON2O0003
          A-TEST   00032      90-08-01   11:35:47  TSI0373   ON2O0004
          A-TEST   00033      90-08-01   11:36:02  TSI0373   ON2O0005
   x      A-TEST   00034      90-08-01   11:36:17  TSI0373   ON2O0006




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ---- END  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

```
90-08-01               N-2-O AUTOMATIC COMPILE SUBSYSTEM             TSI0373
11:37:20                                                            TSI1


          AUTOMATIC COMPILE HAS BEEN REQUESTED FOR

          EVENT : A-TEST          SEQUENCE : 30




                   PRESS ENTER TO PROCEED


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ---- END  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

These screens will also inform the user if any syntax errors occur during compilation:

```
MORE
11:37:30           ***** Recatalog  Application *****         90-08-01
User: TSI0373               Error Report              Library: N2OCAT

Program  Error-Number Error-Line        Program  Error-Number Error-Line
-------  ------------ ----------        -------  ------------ ----------
PAYROLL1 920          0290              PAYROLL2 920          0370
```

N$_2$O also supports **Automatic Compilation at the target for batch migrations.** This feature does not require users to logon to the target to run N2OCAT. If Automatic Compilation is requested for a Batch Migration, AUTO COMPILE is invoked transparently to compile the migrated programs.

Users have found the Automatic Compilation feature very helpful for maintaining and updating application systems.

MOVE EVERYTHING!

The ability to **migrate an entire application** without the need to mark every program in the application is now available. If the user selects * as the starting program in a migration request, the entire application is marked for migration. This will make it much easier to migrate large applications.

DATE AND TIME DRIVEN MIGRATIONS

Currently, N$_2$O has the capability of directing a batch migration to occur at some future date. This enhancement will allow this **postdated migration** to occur on a given date AND time.

SCROLLING SELECTION LISTS

Selection lists for migrations can span tens of screens for large systems. Users frequently remember after a screen has passed that they should have chosen some of the programs which were listed on it. Several relevant N$_2$O screens have been given the ability to **scroll up and down through the selection list.**

BATCH REPORTING

Several Batch reports are now available. This will provide users a hardcopy of certain information they are typically interested in. These same reports will be available on-line. In addition, these reports will serve as the basis of the new reporting subsystem in general. Soon, **all reports** generated by N$_2$O will be **available both on-line and in batch.**

ARCHIVE REPORTING

This function gives users reports on relevant information in the archive files. This can be helpful for determining the **recoverability of a particular application** system, or in determining which objects should be purged from archive.

SECURITY PROFILE REPORTING

This enhancement provides the capability to report on a variety of information related to N_2O security. This is especially useful to find out all users who have authority to migrate to or from an existing library. **Auditors will find this feature of great use** when trying to determine which users are authorized to perform particular functions, including both migration and authorization.

OPTIONAL AUTHORIZATION REVIEW

This enhancement gives users an opportunity to NOT review the program list being migrated at authorization time. If hundreds of programs are being migrated, it is somewhat tedious to review all of them. While it would be desirable to understand what you are approving, not all users require such an in-depth level of accountability and have asked for this enhancement.

WE RE-WROTE THE BOOK

The code is not all that has been enhanced. Nick Viola, one of our new staff members, has worked with the developers to provide a greatly improved reference manual. The documentation was reorganized into three major divisions:

- general introduction to N_2O
- information for programmers and support personnel
- aid for the DBA and Systems personnel who install and maintain N_2O.

WHAT'S ON THE DRAWING BOARD?

The development staff has a list of several dozen change enhancement requests for N_2O. Many of these are changes to the way certain N_2O functions operate.

- **Check-In / Check-Out**
  This feature will allow users to assign NATURAL programs to specific programmers. This will provide better control by preventing multiple users from updating the same program simultaneously.

- **Move Vs. Copy**
  Programs are currently copied to the target. Optionally, the programs may be moved, with the source of the migration being deleted immediately, or at a later, user-specified date.

- **Migration of PREDICT Objects**
  Many users have wanted the capability to include PREDICT objects in a migration. A future release of N_2O will include this important capability.

- **Multiple Target Migrations**
  This carefully controlled feature will make it possible to migrate the same programs to more than one destination with the same migration request. For instance, it might be desirable to migrate programs from Test to Production1 and Production2.

- **Integration with SECURITRE**
  N_2O has a built-in security system to prevent unauthorized use and migrations. However, this creates the problem of security information being maintained in two separate locations. We plan to include an option to allow SECURITRE to override N_2O's internal security. Integrating N_2O's security functions with SECURITRE's ADABAS and NATURAL access controls will centralize security administration by placing N_2O under the RACF, ACF2, or TOP SECRET "umbrella".

- **New Reporting Functions**
  Users have asked for some additional reporting functions related to migrations and automatic archiving, etc. These will continue to be developed and added to N_2O.

- **Performance Improvements**
  TSI is always striving to improve the performance of its software products. N_2O will contain improvements designed to increase the efficiency and performance of the system.

As change enhancement requests come in from the N_2O user community, our development staff evaluates them and implements as many as possible. We try to ensure that our customers have all the functions and features they need to effectively manage changes in the NATURAL environment.
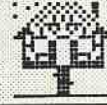
HOW CAN I LEARN MORE ABOUT N₂O?

N_2O is available for a free 30-day trial. Demo Diskettes, Product Overviews, and the Reference Manual are all available for the asking. These will enable you to become familiar with the product's features and decide for yourself if N_2O is the solution to your organization's Change Management needs. For more information about N_2O or to arrange a trial, contact Treehouse Software or one of our affiliates.

TSI Affiliate Information

South America	The Far East	Africa
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More SECURITRE for ADABAS and NATURAL

In the last issue of *TREETIPS*, we introduced SECURITRE, our ADABAS interface to RACF, ACF2, TOP SECRET, and other SAF-compatible System Security Facilities. Many new features and enhancements have been added since the article was printed, and many more are planned. As always, customer requests were the source of many of the new features, as well as the features planned for the next release.

🔒 DIAGNOSTIC TRACE FACILITY

Security software is a vital part of any computer system. Any problems that might occur with SECURITRE will require a rapid solution. This is why the SECURITRE Diagnostic Trace Facility was implemented. When invoked, this feature will produce diagnostic trace messages which enable Treehouse Software's technical support personnel to quickly determine why a problem occurs. This minimizes downtime for the customer.

🔒 THE SECURITRE REAL-TIME MONITOR

One of the most significant developments was the introduction of the SECURITRE Real-time Monitor (RTM). With the RTM, the Security Administrator can verify parameter settings, reload parameters and User-Exits, purge SECURITRE's internal table of a single user or all users, and toggle the diagnostic trace facility on or off.

🔒 USER-EXIT-4 DISPATCHER

In order for the SECURITRE Real-time Monitor to function, SECURITRE User-Exit-4 must be installed. Because the user may already have a User-Exit-4 (such as TRIM's User-Exit-4) installed, SECURITRE includes a "User-Exit-4 Dispatcher" program. This dispatcher makes it possible for several User-Exit-4s to co-exist transparently with one another.

🔒 UTILITY SECURITY

The SECURITRE Utility security feature was first designed to function with ADABAS 4 Utilities. In the current release, SECURITRE can control access to ADABAS 5 Utilities as well. Utility security answers the question: Can the user run the Utilities, execute particular Utility functions, against the database and file?

🔒 THE STRNAT/STRASM MISCONCEPTION

In the previous issue, and in much of our marketing material, we described the STRNAT feature of SECURITRE. STRNAT was described as a way to add new types of run-time access controls to NATURAL applications. Some users misunderstood this to mean that the only way to secure ADABAS from NATURAL programs was to use STRNAT. This is not so.

To access an ADABAS file, a NATURAL program must issue a call to ADABAS. With SECURITRE's User-Exit-1 in place, this call will automatically be verified, whether or not STRNAT is incorporated into the program in question. Thus, ADABAS is secure when accessed from NATURAL even if STRNAT is never used. The role of STRNAT is to increase the overall level of security by providing additional levels of control.

SECURITRE Version 2 will directly control which users can run NATURAL programs or access certain libraries. Meanwhile, STRNAT (and its counterpart, STRASM) can be used for exceptional cases, extra checks, or for control over certain functions within a particular application.

🔒 WHAT ABOUT VERSION 2?

Many current SECURITRE users have told us that they are pleased with the level of control provided in SECURITRE. However, others have expressed a need for additional controls, such as program pathing sensitivity, DDM access restrictions, and transparent security for NATURAL.

🔒 PROGRAM PATHING

At some sites, simply controlling who can read or write to a particular ADABAS file is not all there is to security authorization. For them, it is important that the user accessing a particular file is doing so from an appropriate NATURAL library and program. For example, ad hoc queries against these files are not permitted.

In SECURITRE Version 2, a "Program Pathing" feature is being added. This feature will ensure that file access is limited to authorized users running authorized programs in authorized libraries. This will greatly increase SECURITRE's control over ADABAS file access.

🔒 SECURITY FOR NATURAL

SECURITRE Version 2 will include some new security features for NATURAL. SECURITRE's new features will be Library level security, Program level security, DDM level security, and EDIT level security.

The Library level security feature will stop users from accessing certain NATURAL libraries by controlling the user's ability to LOGON to these libraries.

If a user is authorized to LOGON to a particular library, the user may not be authorized to run every program in that

library. For this reason, SECURITRE will include Program level security. This will ensure that only authorized users may run a particular program.

DDM level security will verify that a user attempting to access a DDM has the authority to do so. If the SSF does not authorize the attempt, the access may fail, depending upon the SECURITRE mode in effect.

EDIT level security will control which users may EDIT NATURAL source code. Any attempt to EDIT a program will be verified by SECURITRE through the System Security Facility (SSF).

🔒 FIELD LEVEL SECURITY AND SECURITY BY VALUE

Currently, these security levels are accomplished through SECURITRE with calls to STRNAT or STRASM subprograms. This feature will continue to be available in Version 2 of SECURITRE.

TSI would like to develop a more transparent means of providing security by field value. However, the ADABAS nucleus is the best place to handle checking security by value. ADABAS contains logic to read all records while returning only appropriate ones to the user. To bypass this logic, permit ADABAS to return all records, reject some in our code, and re-call ADABAS for more records, could cause prohibitive overhead.

What we can do is to provide an enhancement to "plug in" passwords using SECURITRE, providing User-ID security while still using a password-based security by value system. Using this approach, the user does not know the password. The password will not be supplied via the user's programs. Instead, they will be obtained by SECURITRE from the SSF and plugged into the Control Block for the ADABAS calls. This will provide users with an option to use an approach more transparent than STRNAT.

SECURITRE Version 2 will also include the option of ADABAS field level security. When an ADABAS command is issued, SECURITRE will determine if field level security is in effect for the file or database. Field level security will then be handled in the same manner as security by value.

🔒 SECURITRE Q & A

Our customers, potential customers, and affiliates have asked some pretty important questions about SECURITRE. We've kept track of many of them, and would like to share the questions and answers with you.

Q: *Does SECURITRE log violations only, or is there an option to log all, or selected, transactions for debugging purposes?*

A: The function of SECURITRE is to act as an interface between the ADABAS/NATURAL environment and the SSF. SECURITRE does no logging of its own. Any logging will be done by the SSF, so all of the logging and trace functions of the SSF are available. The number of violation messages can be controlled to some extent via the SECURITRE parm LOGVIOL. This parm can be specified as ALL to cause SECURITRE to tell the SSF to log all violations by a given user for a given file. LOGVIOL may be set to FIRST, causing only the first violation to be logged by the SSF. Subsequent calls rejected by SECURITRE are not logged.

SECURITRE does provide an internal trace printout for debugging purposes. The printout is designed to help customers and TSI technical support personnel to diagnose a problem rapidly. The trace may be activated or deactivated via the SECURITRE parms, or by using the SECURITRE Real-time Monitor.

Q: *Will SECURITRE function with RACF Group-id in place of USER-ID?*

A: Using RACF groups to administer the security rules is a great way to reduce administration time. There need be no change to the SECURITRE product to take advantage of this. SECURITRE controls access to ADABAS data by generating a DATA SET NAME which can be treated in RACF as controlling access to a dataset.

The use of DISCRETE or GENERIC PROFILES is also recommended.

A DISCRETE profile contains a description of a DATA SET and a list of USER-IDs authorized to access it.

A GENERIC profile is similar to the DISCRETE profile except it can protect many datasets having a similar naming structure. This saves administrative work because the individual datasets do not have to be defined to RACF.

Note that the above options must be activated by RACF SETROPTS command. Refer to the IBM publication *RACF SECURITY ADMINISTRATOR'S GUIDE* SC28-1340 for the format and use of this command.

Q: *SECURITRE controls appear to be defined per Userid. Does a facility exist to define rules by groups of Userids similar to TOP-SECRET Profiles?*

A: SECURITRE interfaces with TOP-SECRET to determine a given user's access to a file. This means that a "PERMIT",

written to a Profile for which the user is a member, will be recognized by the interface.

Q: *You say that using Userids rather than passwords makes SECURITRE's control more effective. Why Userids instead of passwords? Does it mean that user access to all files (on the same database) is always verified once the Userid has been connected to the database?*

A: The reason that SECURITRE uses Userids instead of passwords is that the use of passwords has an inherent weakness. If the password becomes known, then access to the file is allowed. This type of security is too easily breached. In response to the second part of the question, SECURITRE will only verify authorization when access to a file is actually attempted. In other words, if a user attempts to access file 27 on database 13, SECURITRE will only check for authorization for file 27. Further, SECURITRE will not check for both READ and WRITE access if the command being verified is only a READ command.

Q: *In our ACF2 environment, datasets are secured. How does SECURITRE secure the ADABAS "datasets"? And how are these datasets defined to SECURITRE?*

A: SECURITRE breaks down, logically, each ADABAS database into 256 files (pseudo datasets). SECURITRE provides two macros that are used to describe all parameters to SECURITRE including dataset names. The first macro is STRDEF. It is used to specify default parameters in effect for the entire database. The second macro is STRFNR, and it is used to override the default settings for a given file or set of files. SECURITRE's ADABAS Utility security feature provides dataset names which also include the utility name and function.

Q: *Can SECURITRE prevent TSO users from making use of NATURAL SECURITY on one database to access another? For example, a user has access to Database 100. He uses his NATURAL profile on 100 to access 200.*

A: Yes, SECURITRE will certainly catch this. Because SECURITRE operates as an exit to ADABAS, it will get control at the time the database receives the command. Remember, the NATURAL Security product catches only NATURAL users, and only at compile time. SECURITRE catches all users, at run time.

Q: *How will SECURITRE be affected by new S.M. levels of ADABAS and NATURAL?*

A: SECURITRE is already functional for ADABAS V4 and V5. Because SECURITRE uses standard exits for ADABAS, we do not foresee any problems. SECURITRE uses ADABAS exits 1 and 4. SECURITRE is designed to co-exist with any existing User-Exits 1 and 4. In addition, for ADABAS V5, SECURITRE uses ADABAS Link Routines' exits A and B.

Treehouse Software has a total of five products for the ADABAS/NATURAL environment, and is committed to providing a "seamless" integration with Software AG products across all releases and S.M. levels.

Q: *With SECURITRE, if a user tries to access protected data, does the user get a message or is the session shut down because of the violation?*

A: The program will receive an ADABAS response code 200. The user's call to ADABAS is rejected. The user's session is not terminated.

Q: *Concerning TOP-SECRET: Do all ADABAS files have to be defined to TOP-SECRET even if security is not needed for those files? Do all files have to be defined individually to SECURITRE?*

A: TOP-SECRET does not require all files to be defined. Requests to access undefined files will receive the default response from TOP-SECRET.

In SECURITRE for each database, all files that you want to control access to must be defined to SECURITRE. In many cases, one macro statement, STRDEF can supply default specifications for all files. STRFNR can be used to override these default settings for a particular file or group of files.

Q: *Is STRNAT an extra cost option? Will I have to pay more for other options added to the product later?*

A: No. STRNAT is an integral part of the SECURITRE package. There is no additional charge for Utility security, the SECURITRE Real-time Monitor, or any other component of the product. An incomplete security solution could be more harmful than no security at all, so we decided not to break SECURITRE into pieces.

Customer input is an integral part of the development process. As change enhancement requests come in from the user community, we will undoubtedly discover new features which must be included in SECURITRE. We do not intend to charge our customers extra money for these new features.

Consultants' Corner

Logic Unlimited, Inc.

Logic Unlimited, Inc. celebrated its eleventh anniversary in June 1990. Since its inception in 1979, Logic Unlimited, Inc. has grown to over 60 professionals in the exclusive support of ADABAS and NATURAL. Logic Unlimited provides contract programming, training, DBA services, logical/physical design support, project auditing, standards, performance tuning conversions, and NATURAL utilities.

Contract programming represents Logic Unlimited's largest business segment with over half the staff assigned to customer sites. The personnel are involved in all phases of programming through complete project management.

Training has always been a hallmark of Logic Unlimited's business focus. Logic Unlimited offers courses for ADABAS, NATURAL, SUPERNATURAL, PREDICT, and Data Base Administration. Logic Unlimited has taught over 7,000 students at more than 500 client sites and they are happy to customize the class or material to meet a specific need.

DBA services are provided on-site and remotely. The remote services are provided via Logic Unlimited's network with 3270 synchronous gateways to the client's site.

Logical/physical design methodologies, such as relational 3rd normal form, SDM70, and Yourdon DeMarco, are very familiar to Logic Unlimited's personnel. Logic Unlimited has the ability to translate these methodologies into highly efficient physical ADABAS files. This design knowledge is employed in its auditing and performance tuning reviews, and has been documented in its *Standards Manual* which is for sale.

In addition to this manual, Logic Unlimited has developed a *Tool Kit Utility Series* for NATURAL 2. The tools include program cross references, expander programs, and generalized help routines. Logic Unlimited also has a set of COBOL Utilities known as *MINT2SQL* which converts ADAMINT COBOL to ADABAS SQL COBOL. For further information, contact Dick Juppenlatz at (703) 827-5740.

Adept, Inc.

Like an individual, a company has a personality. Usually the personality of a company is derived from the philosophy and management style of its founders and/or senior executives. At Adept, Inc., a Massachusetts-based computer consulting and education firm, the personality is that of a technical expert who is interested in and responsive to the client's business needs. This personality clearly flows from co-founder and President Tom Schellenberg's philosophy of "providing services of the highest quality, at reasonable prices." Both Schellenberg and co-founder and Senior Vice-President Dennis Hamilton were DBAs before starting Adept, and their technical expertise sets the tone for all of the company's consultants and educators.

An example of Adept's approach may be of interest, and perhaps useful to the reader. Last year, a client of Adept's had recently installed a large ADABAS based Accounting and Reporting System. Hundreds of on-line users across the state logged in every day to enter data and inquire on balances. Although the system regularly generated over 75 monthly and weekly reports (written in NATURAL 2), certain users had frequent need of off-cycle report runs, usually requesting extra copies and special "as-of" date parameters. A clear need existed to provide users with an on-line report request facility (OLRRF). The client's programming staff suggested implementing OLRRF by writing to the Internal Reader, but the Computer Operations Dept. was opposed to this on the grounds that it would lose control over jobs running against production data, and that it did not want batch reports running during the daytime.

An Adept consultant suggested an approach that satisfied the needs of all parties. It consisted of two parts:

1. An on-line screen which allowed the user to enter the report request. The screen edited all parameters, including number of copies and requested night to run report (requests could be entered to run any night in the future) and stored the request as a record on an ADABAS file.

2. As part of the regular nightly cycle, a three step batch job which ran the reports. STEP01 was a NATURAL 2 program which read the ADABAS request file and wrote, as Work File 1, the CMSYNIN cards which would fill each request. For example, if a user had requested 3 copies of a Trial Balance, as of July 15, 1990, then part of Work File 1 might look like this:

   LOGON PRODRPTS
   EX TRIALBAL
   19900715,03

STEP02 of the job used Work File 1 from STEP01 as its CMSYNIN. The reports and parameters requested by

Q: *How can I learn more about SECURITRE?*

A : SECURITRE is available for a free 30-day trial to all ADABAS sites. Demo Diskettes, Product Overviews, and the Reference Manual are all available for the asking. SECURITRE currently runs under MVS, MVS/XA, and MVS/ESA, and supports RACF, ACF2, TOP SECRET, and any other security system which uses SAF protocol. For more information about the product or to arrange a trial, contact Treehouse Software or one of our affiliates.

Consultants' Corner

on-line users and translated by STEP01 into NATURAL 2 Commands were actually run in this step. How did a report program control the number of copies which could be printed? Part of the JCL for STEP02 looked like this:

```
//CMPRT01 DD SYSOUT=A,COPIES=1
//CMPRT02 DD SYSOUT=A,COPIES=2
//CMPRT03 DD SYSOUT=A,COPIES=3 etc.
```

Each NATURAL 2 report program had code similar to :

```
COMPRESS 'CMPRT' #NUMBER-OF-COPIES INTO #PRINTER
LEAVING NO SPACES
DEFINE PRINTER (1) OUTPUT #PRINTER
```

The program wrote its report to (1), and the output was directed to the appropriate DD statement. STEP03 of the job went back to the report request file and deleted the entries that had been printed.

This solution to a relatively minor client problem exemplifies the Adept approach of using the latest technology (NATURAL 2's DEFINE PRINTER verb, in this case), sensitivity to client needs, and creative thinking to provide high quality service. Over the last eight years Adept has grown to over 100 people providing consulting services across the Northeast and education across the world (including Europe, New Zealand, and Australia).

Adept, Inc. is one of New England's largest consulting and education companies. Please call them at (617) 239-1700 for further information.

TSI'S COMMITMENT TO SERVICE

Customer support is one of the most important factors to be considered in any software purchase. Treehouse Software wants you to know that we are committed to providing our customers with the best and fastest service possible. Top management is dedicated to customer service, and this dedication filters down through all levels of the company.

Our entire staff works as a team. Our office manager, Terri Hammerschmitt, is very familiar with our products and services. Terri answers the customer's call, takes down important information, and transfers the call to the appropriate support person for immediate resolution. Dawn Ferrell, our front line support person, has a lot of experience dealing with customer questions and has a considerable amount of knowledge of how our products work. Dawn tries to solve all customer problems immediately, maintaining a Trouble Log database, and using it effectively to track and help resolve problems. Dawn encourages customer feedback, even complaints. The information in the Trouble Log database is regularly communicated to development staff, who see that bugs are fixed promptly, documentation updated when necessary, and that information is faxed to affiliates to keep our foreign customers as up-to-date as possible.

Customer feedback can take several forms. We receive faxes and letters from customers, asking about current features and requesting additional capabilities. Each of these is read and evaluated by the development staff. Often, customer suggestions lead to some of the most popular features of our products. Occasionally, our foreign affiliates will write or fax us with the concerns of their local customers. In addition, we also receive change/enhancement request forms, which we provide in every reference manual for the customer's convenience. Customers and development staff may also meet at user conferences, discussing our products and offering useful suggestions. Our primary source of feedback continues to be telephone calls. Customers with enhancement requests often speak directly to the development staff, making the developers familiar with their needs.

All of the growth and expansion has meant that we will receive more calls from our customers. Some of these calls will be received at times when there may be no one in the office. To effectively handle this service, we enlisted a local answering service to answer all calls when we are not in the office. You will now be able to get help when you need it, 24 hours a day.

As you can see, Treehouse Software takes its commitment to customer service seriously. We want you to have the best products available.

Sewickley in the News - Introducing CIScorp

Treehouse Software plans to introduce its readers to a number of Pittsburgh-based companies in TREETIPS. In this issue, we highlight one of our "working partners", Corporate Information Systems, Inc., known as CIScorp.

Joseph Ogrodnik was a regional sales manager for a company which wanted to move him to Atlanta. He decided not to leave Pittsburgh, which became his motivation for starting his own company, CIScorp, in 1981.

Fixed Fee Approach

CIScorp originally provided contract programming services. From the beginning, Ogrodnik preferred a fixed fee approach. That approach is what now separates CIScorp from other software service organizations. CIScorp will put a fixed price on a project and guarantee the results. Ogrodnik says "This is pretty risky, but our success has given us a tremendous amount of exposure and positive results. The industry wasn't quite ready for this approach in 1981, but once we successfully completed some small fixed price projects, our business began to grow dramatically."

CIScorp rapidly became the largest firm of its type headquartered in Pittsburgh. CIScorp ranked number 83 on INC Magazine's list of the 500 fastest growing private firms from 1981 to 1986. And most recently, *Business Week* identified CIScorp as one of the fastest growing start-up companies in the country and the only Pennsylvania firm to make the list. Over 30,000 high technology firms formed in the 1980's were evaluated.

Employee-Oriented

One of Ogrodnik's goals is to create a true professional employee-oriented corporate culture, by giving his people a wide variety of career opportunities. CIScorp hires highly motivated, productivity-oriented people even though they might not be an exact fit. CIScorp then provides the training and direction whereby the individual can grow and contribute in a challenging and forward-thinking environment.

Ogrodnik says "When a project ends, we don't usually lose any people." There are many opportunities within CIScorp for an individual to move into when a project is completed. The variety and challenge keep the employee interest high and the turnover rate low.

Strategic Partnerships

Another key factor in the growth of CIScorp is strategic partnerships. Hardware and software vendors have begun to realize that customized software solutions give them a marketing advantage. CIScorp formed its first strategic partnership with Tandem Computers, for the development of a numbers selection system for the Ohio lottery. This strong partnership has made CIScorp one of four companies chosen by Tandem to develop SQL Systems nationally for Tandem customers.

CIScorp is also an IBM business partner. Customers often enlist the help of IBM to do specific project management with CIScorp responsible for the development of the project. CIScorp also has strategic relationships with Apple, CINCOM, Oracle, Ingres and is pursuing several other partnerships.

Growth

CIScorp had 100 employees less than two years ago, and by the end of 1989 had nearly 300 people. Although Pittsburgh based, CIScorp currently has offices in Washington, DC (Columbia, MD), San Francisco, Philadelphia, and Dayton. CIScorp will open offices, by year's end, in Atlanta and Cleveland. Offices targeted for 1991 include New York, Boston, Chicago, and Denver.

CIScorp enjoys a low turnover rate partly because of its unique benefits and compensation plan which features vacation and sick leave buyback/rollovers, comprehensive health insurance including dental and vision, and performance incentives that include profit-sharing, 401(k) and cash bonuses. And beginning January 1, 1991, CIScorp employees will be able to take advantage of a new flexible benefits plan that is scheduled to be implemented.

Engaging an Organization

CIScorp provides a field management staff which creates a support base for all field employees. CIScorp prides itself in its ability to assign the right candidate for the appropriate opportunity. CIScorp recognizes that each client has unique needs and expectations, and responds accordingly. Clients, who engage CIScorp for a consultant or a team of consultants to work on an hourly basis or a fixed fee project, find that they are not just hiring an individual or project team, but engaging an organization. CIScorp has specialists on a variety of hardware platforms, using practically every software package available, including ADABAS, NATURAL and DB2.

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Treehouse Software Products and Services Include:

TRIM® - an ADABAS/NATURAL performance monitor
AUDITRE - an ADABAS auditing tool
N$_2$O - a NATURAL application Change Management System
SECURITRE - a Centralized Security Administration package for ADABAS/NATURAL
AUTOLOADER - an ADABAS file automatic unload/reload/dump utility
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PREDICT	Internals, Performance and Tuning)
COM-PLETE	Customized Classes

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