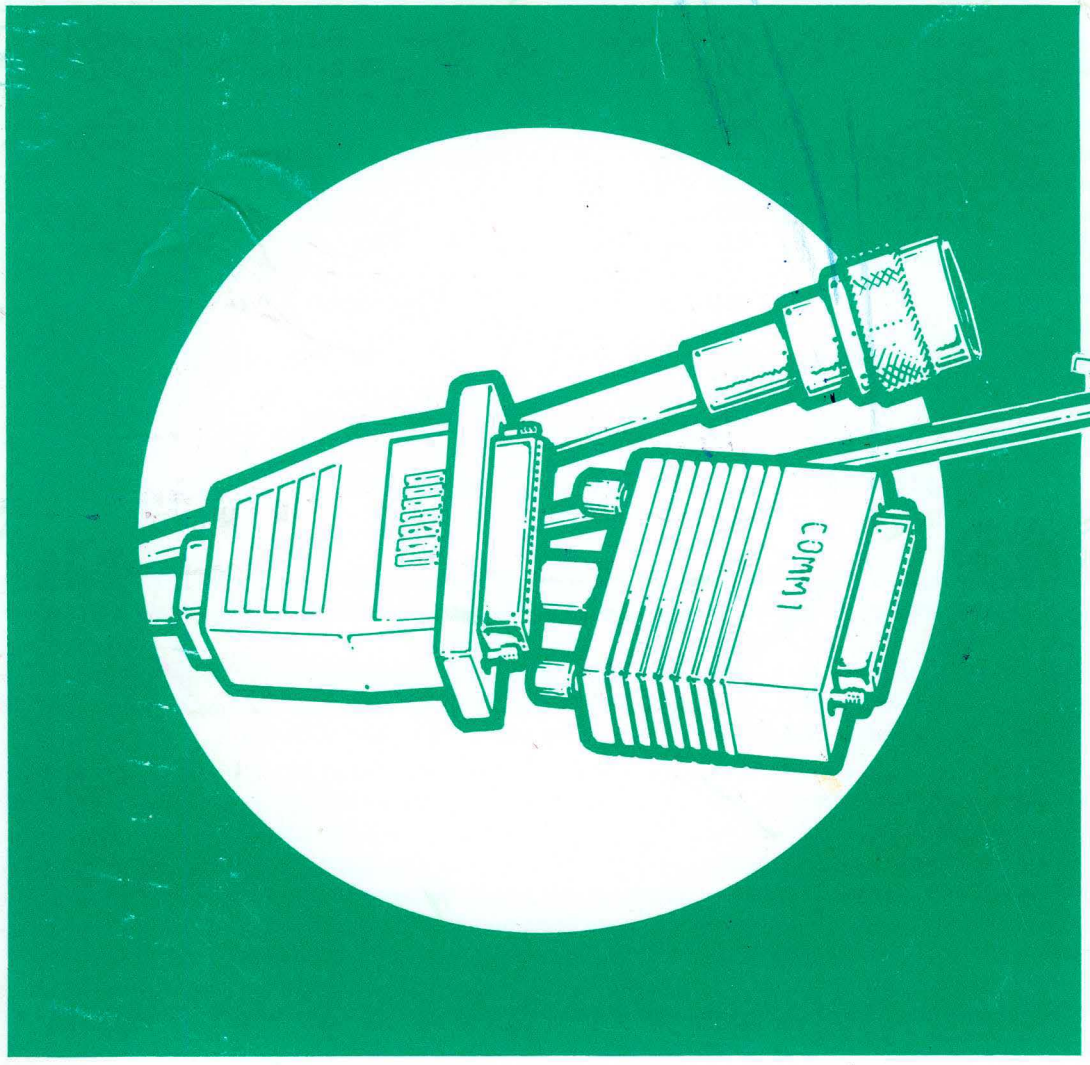
DECUS U.S. CHAPTER

SIGs

SIGNALER

JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER



Your best connection for:

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DECUS

VOLUME 5
NUMBER 3

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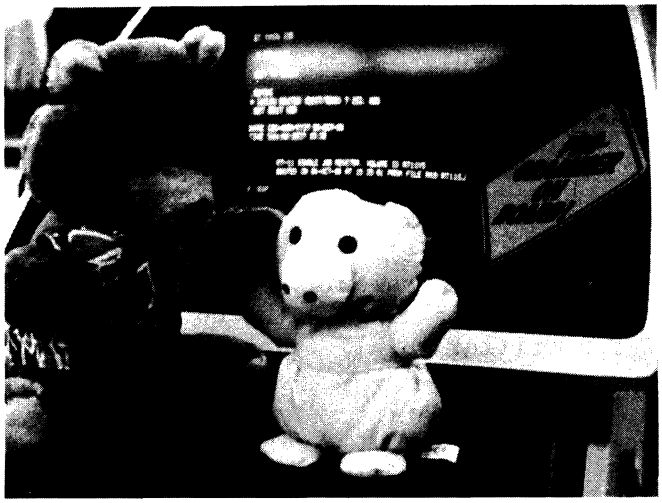
Dear DECUS Member,



As you can see, another SIG mascot recently dropped in for a visit. (Actually, the pig is an ex mascot, since the OA SIG switched to an eagle.) My friend is rather irate about the whole deal. "Here I spend years representing the SIG, and they up and dump me for a dude that can fly a little higher and faster and looks like Mom and Home and Apple pie." Oh well, that's show business. If any SIG or UIG is looking for a mascot, my friend is available.

A couple of weekends ago we were at the Communication Committee woods meeting. As usual the newsletter managed to generate more than its share of discussion. Among other things, a task force was charged with coming up with a business plan for the newsletter. Hopefully if we have a better sense of direction for the newsletter, in terms of what it is and where it is going, we can do a better job of improving the product. We should have more stuff for you in subsequent issues.

One of the nice things about woods meetings compared to the hectic schedules at national symposia is that you can spend some time socialising with people who are only a voice on the phone or a message over DCS the rest of the year. The hotel location and meeting rooms were very conducive to a good meeting, with the possible negative that the swimming pool was directly outside the room, and visible thru floor-to-ceiling windows. We haven't been as distracted at a CommComm meeting since we managed to get booked next to an international beer tasting convention a couple of years ago.

One of the things we were glad to hear was the status of Judy Mulvey's twins. If you read the November 88 GI message, we mentioned that Judy's twins were born prematurely at around 2 pounds each. Well folks, the news is really good. Shannon Marie and Brendon Michael just celebrated their 1st birthday. For premies, the first birthday is a real milestone. Although they still have to visit their pediatrician a lot more than term babies, (mainly as a precautionary measure,) both babies are doing fine. This was also the first time that Judy left the twins for more than one day, and we are glad to report that she managed the withdrawal fine.

I will close my remarks by turning over the GI section to Ralph Stamerjohn. The DECUS Credo is one of his best efforts. Take it away Ralph.

Frank "Ringmaster" Borger
Newsletter Chair
Michael Reese Medical Center
Lake Shore Drive at 31st St
Chicago, IL 60616

-< DECUS Creed (subtitled Ralph's Poem) >-

DECUS

DECUS is people.

DECUS is a mission.
You and I talking is the cornerstore. You speaking to many is the foundation. You writing to all completes the mission now and for the future.

DECUS is trust.
We are thousands of individuals with millions of reasons to be here; and we disagree in just as many ways. But the paradox is - I know you are right and you know I am right. We are just standing at different places in space looking at the same mission.

DECUS is always getting better.
As all is given freely, you cannot make a mistake. Exchange is sending and receiving an imperfect process. As you do something for me, we learn together how to make the exchange better the next time.

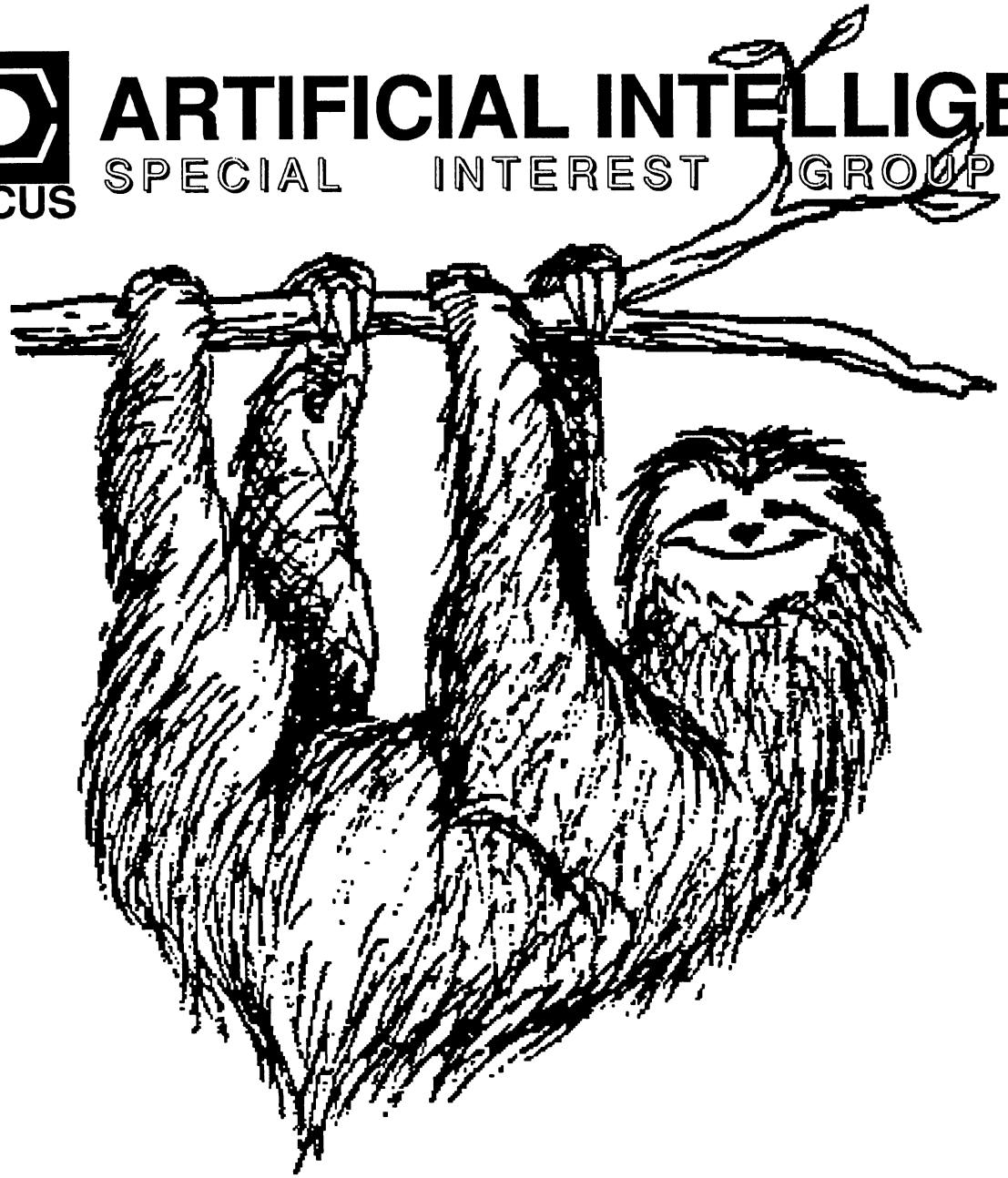
DECUS is energy - bouncing, bubbly, bright, exciting energy.
You cannot catch it, bottle it, control it, or calm it. All you can do is touch it and be energized.

DECUS is fun.
It is the joy of laughter and good friends. It is also the deeper joy which comes from shaking someone's hand for a good session, singling out another's amazing achievement, and giving that special, personal thank you whenever a person touches you directly.

These are the things we are because we are a society.

DECUS

ARTIFICIAL INTELLIGENCE
SPECIAL INTEREST GROUP



"Sloths are so human in appearance--
and in some of their ways--
that inevitably one tends to judge them
by human standards."

--Hermann Tirler, A Sloth in the Family

Aaaaaaaaaaaaah! Oh sorry, just expressing a little primal scream therapy. I'm not used to actually having to write something that isn't a program or documentation for a program. This is the first time that the AI Sig has had an entry in the newsletter in quite a while. It takes a little getting used to. For that matter, I suspect that Frank Borger (he's in charge of this mess) is probably even more suprised than I am....

At the Anaheim symposia in November, the AI SIG has what appears to be an excellent lineup of presenters and topics. Some of the sessions include topics on project management, interviewing the experts, robotics, neural nets, AI and databases, OPS5, LISP, Prolog, VAX Decision Expert and Nexpert. Also make sure to attend the session on Thursday night "Artificial Intelligence OR Natural Stupidity? AI MAGIC". Promises to be an interesting session (which reminds me of the ancient chinese curse 'May you live in interesting times.').

PSS's include:

Introduction to AI - The team of Art Beane and Terry Shannon receives great reviews each year. They are capable of taking a complex subject such as AI and presenting it in a concise manner.

OPS5 Programming Workshop - Presented by John Frost and Lisa Spielman, both of whom are DEC people who are intimately familiar with OPS5 (and DECUS veterans).

Intelligent Databases - A new seminar presented by Dr. Hartzband, one of the architects of DSRI (Digital Standard Relational Interface).

Introduction to Neural Nets - A new seminar presented by Jim Sims of Space Telescope Inst. with some assistance from myself.

The article in this month's newsletter covers some general information on DOD contracts and expert systems. But don't let that scare you, the topic is also of concern to all of you who write specifications for in-house projects that involve expert systems or other AI tools. DOD contracts are more detailed than the specs most of us write for internal systems (or external systems for public corporations) but the concepts are the same.

Next month we will have some information on validation and verification of expert systems.

Articles or topics for articles are being solicited **now**. Send your requests and articles to:

Curt Snyder
2525 DuPont Dr.
Irvine CA 92715

or on DCS to SNYDERC or on CompuServe to 73577,2270.

Expert Systems and DOD Contracts[1]

Department of Defense (DOD) contracts contain rigid validation and verification requirements. When traditional programming methods are used (3GL or 4GL using life cycle documentation), DOD verification requirements are fairly easily met. In the case of expert systems, however, this is not a simple task.

This question was raised during a discussion involving several DECUS members on both sides of the DOD contract fence. The specific problem related to a contract which was already written.

The normal method development cycle for an expert system involves "iterative refinement" techniques. This involves successive tests and refinements, with many of the refinements being evaluated "in the field" well after the system has first been implemented. This has the customer in the odd position of accepting an incomplete program.

The typical life cycle of an expert system project is drastically different from that for a traditional project. In traditional programming projects, most of the time is spent in developing specifications and prototypes for user review and approval. In an expert system project, a preliminary version of the rules is developed and tested interactively with the user. These often cover only a portion of the problem and are refined, expanded and developed until the test results are reasonably similar to the user's results. The rules (and therefore the program) are not finalized until near the end of the project.

The primary question which must be answered is whether the rules of a rule based program are "software" or "data". If they are software, then according to DOD-STD-2167 (titled Defense System Software Development), the rules must pass the extensive validation and verification requirements before being fielded. If rules are considered to be data, then they may be modified without meeting the stringent validation requirements, although testing would still be required.

The DOD standard for software development was originally written to fit standard program development methodologies. However, the document allows for a great deal of flexibility through the selection and modification of the required documentation. While the specification is not designed for expert system development, with a little creativity (and a great deal of caution), a DOD/developer contract could be developed that would allow for the development of an expert system that would still meet the standard.

The government representative who is defining the requirements (the contractual

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1This article is a consolidation of correspondence between several interested parties in DECUS.

agreement) indicates the milestones in the project where draft and final versions of documents are required. By specifying that the 'software design' is to change throughout the course of the project, the rule base may be iteratively changed without violating the agreement. Draft documents should be required initially, with revised draft documents periodically through the life of the project. A final document would be required at the end of the project.

This would allow the initial program to be built and still meet DOD requirements. This does not address the updates to the rules that are normally required as the project grows. Most expert systems undergo considerable changes in rules as time goes on. The environment in which programs are used does not remain static but is highly dynamic.

From the discussion, it is apparent that expert systems may be written under DOD contracts. However, it is necessary that the validation and verification specifications in the contract be geared directly to expert system development. The problem is not one of validating and verifying an expert system, but writing a contract (or requirements documents) to allow for the proper timing of the implementation and the phases of development.

BOOK REVIEW

Neural Computing Theory and Practice
Philip D. Wasserman,
Van Nostrand Reinhold, 1989

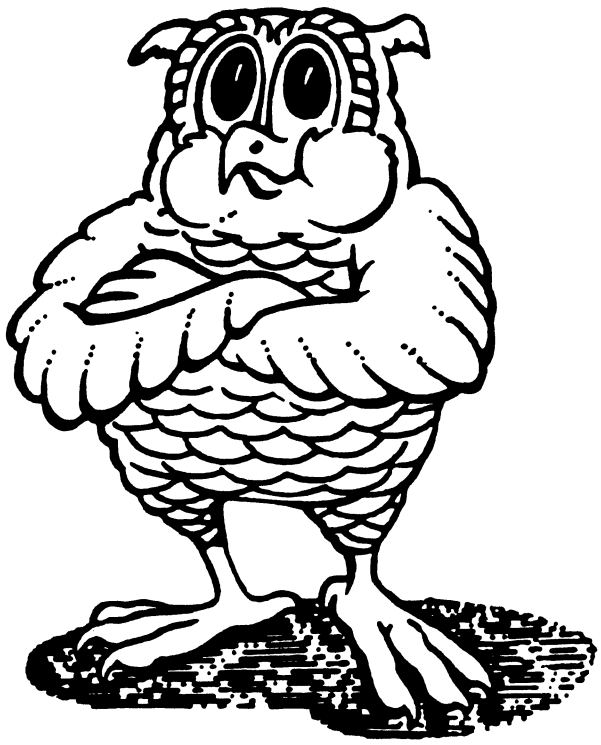
This is an excellent book on neural networks for those who don't have the time to get a PhD in mathematics. If you have attempted to follow most of the publications on the topic, you quickly realize that the mathematics involved is complex.

This book assumes no mathematical background. In reality, you can understand the concepts of neural networks and build them without knowing the fine details of the math behind them (how many of us really understand the details of a compiler, but still use them?).

The topics are covered clearly and concisely. The language is plain and precise, with no academic jargon thrown in. This book won't make you an expert on neural nets, but it will give you enough of an understanding of the topic to select applications for nets and build simple nets.

This is recommended reading for anyone who is interested in learning about neural nets. Even for those of us who have some familiarity with the topic will find this book to be of interest. Many of the concepts the "experts" have known intuitively are explained in simple terms.

INFO-the DMS SIG NEWSLETTER



JOIN THE WISE

SQL Standards Committee
Trip Report
July 17-20, 1989
Portland, Oregon

The following article was submitted by Lee Hurt after attending the SQL Standards committee meeting on July 17-20.

Author: Lee Hurt
CSC
Space Telescope Science Institute
3700 San Martin Drive
Baltimore, Md. 21218
(301) 338-4755

Subject: Trip Report from Lee on X3-H2 (SQL Standards Committee)

Last week I attended my first meeting as the DECUS alternate delegate to the ANSI X3H2 committee, which is tasked with standardizing database languages. The committee is concentrating on a standard which will supercede SQL, called SQL2. The primary DECUS delegate was unable to attend this meeting, however, since DECUS has been represented regularly at these meetings I was allowed full voting privileges. As with most committee meetings, there was a fair amount of administratrivia, parliamentary procedure wrangling, and hot air. What follows is a list of what I felt were the most substantive issues discussed.

- A paper was distributed describing the work that the X/OPEN transaction processing working group is doing to standardize programming interfaces across heterogeneous database management systems. This specifies primitives for controlling two phase commit and global transactions across X/OPEN compliant systems. The X/OPEN group hopes to finalize their standard by the end of this year.

- A letter from a Cullinet user requested a change to the standard to allow identifier names to be >18 characters in length. This was not a formal change proposal, so a committee was formed to draft such a proposal for the next meeting. Most members were in favor of extending the limit to around 32 characters. Larger limits (~64 characters) were not favored for inclusion in SQL2. The user had also requested extensions to allow all delimiters found in other ANSI standard programming languages. This idea was rejected for SQL2, as was his final request for allowing non-first normal form data definitions.

- An ISO (International Standards Organization) paper was presented which proposed establishing privileges on Domains. There appeared to be cases in which it might increase security to provide domain protections, however no one could provide clear examples. This proposal was rejected, but a straw vote demonstrated that many members would like to see another proposal on this topic which would include more justification for why this feature is needed.

- Another ISO proposal to add upper and lower case functions to SQL2 was passed unanimously. This feature will allow case-blind comparisons and could be used to easily convert input data.

- Previously the Standard had allowed for variable length character strings to have a default length which was implementor defined (if length was unspecified by the user). This was seen as a portability problem because default lengths would vary from system to system. The committee could not agree on what the default should be, so they modified the Standard to require that the user always specify the maximum length of variable character strings.

- An ISO proposal to modify the syntax of the SET ALL CONSTRAINTS ON or SET ALL CONSTRAINTS OFF was narrowly adopted. The new syntax will be SET ALL CONSTRAINTS IMMEDIATE and SET ALL CONSTRAINTS DEFERRED. It was felt that these new keywords better reflected the underlying processing that was taking place.

- In the current version of the Standard it is impossible to specify null in the target list of a select statement. This capability could be useful in defining outer joins and outer unions. A proposal was passed to provide a way to do this by using the CAST specification. This will allow null to be CAST as the datatype of the column being joined to.

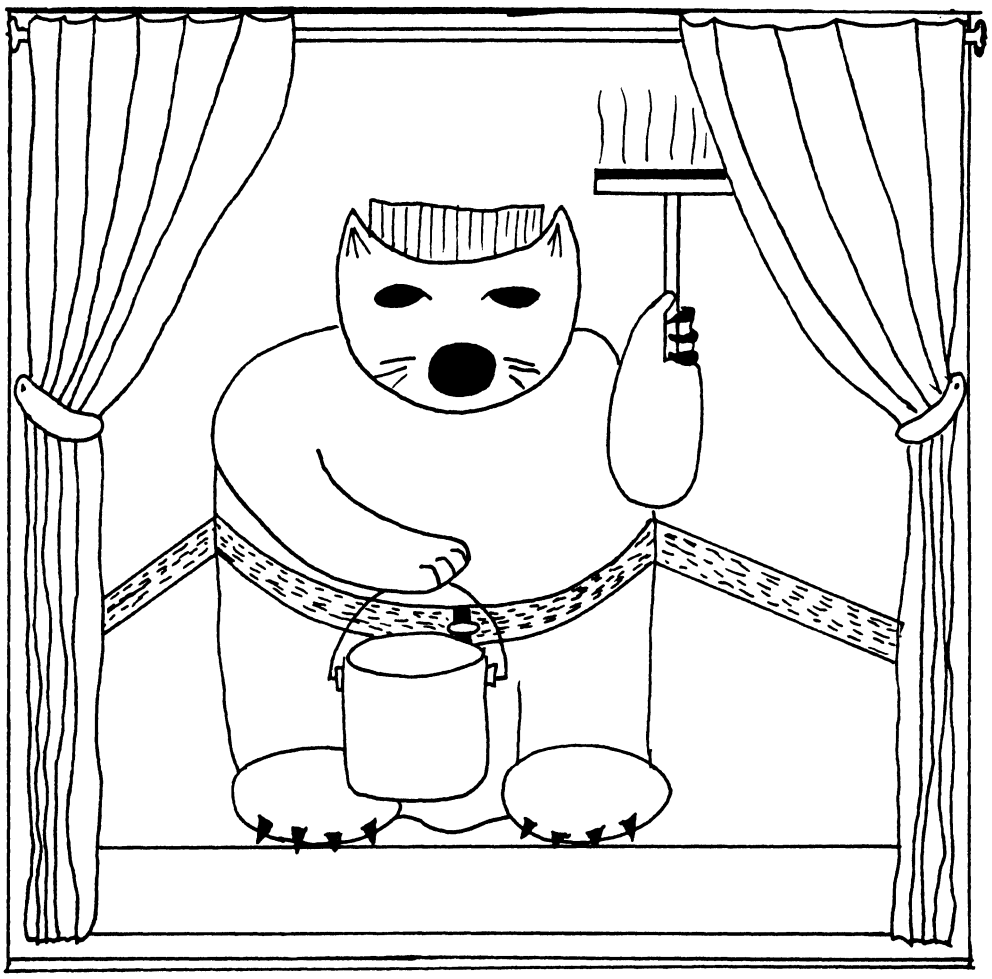
- Much work was done to try to bring the ANSI SQL2 standard closer to the ISO SQL2 standard. The outstanding differences between the documents are in the handling of national character sets and collating sequence rules.

- The last day of the meeting was a joint meeting of X3H2 and X3H2.1 (the remote database access subcommittee). The purpose of this meeting was to identify and resolve implementation defined and implementation dependent elements in the SQL2 standard that would cause problems for RDA.

The Wombat

EXAMINER and 4GL Dispatch

"Increases the Circulation of Anyone in America" Volume 11 Number 3



Contributions

This newsletter is a volunteer activity. There are no compensations given to any author or editor. Articles and letters for publication are encouraged from anyone. They may include helpful hints, inquiries to other users, reports on DECUS and SIG business, summaries of SPRs submitted to Digital, or any information of interest to users of either DATATRIEVE or 4th Generation Languages. However, this newsletter is not a forum for job and/or head hunting, nor is commercialism appropriate.

Machine readable input is highly desirable and machine-to-machine transfer of material is preferred, but most anything legible will be considered for publication.

Please send contributions, or for further information please contact either:

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Editorials and letters to the editor within the Wombat Examiner and 4GL Dispatch are solely the opinion of the author and do not necessarily reflect the views of the Digital Equipment Computer Users Society, Digital Equipment Corporation, or the author's employer. All editorials are marked as "An Editorial"; letters to the editor always begin "Dear Editor".

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From the Editor's Pen

As you are heading out for Anaheim to the 1989 Fall DECUS Symposium, there are some reminders about activities at the symposia and some late-breaking news:

- o Digital made announcements in September at the time of European DECUS and early in October in the US of new versions of DATATRIEVE (and a lot of other products including some very interesting new ones). You will note the announcements which follow in this issue of the newsletter. You will also want to attend appropriate presentations in Anaheim for detailed information.
- o In last months issue of the newsletter a Special Rally PIR Ballot appeared. Interest in Rally is increasing very rapidly. Now is the time to give feedback to Digital about future directions of Rally. The deadline for receiving your returned Rally PIR ballots in December 15, 1989.
- o Bernadette Reynolds, our Symposium representative, reports that Working Groups meeting in Room 7 & 8 in the Convention Center have been moved across the street to the Palisades Room in the Hilton Hotel. For the DTR/4GL SIG, this will affect the Oracle Working Group meeting scheduled for Tuesday, 12:00 to 1:00PM which will now meet in the Palisades Room of the Hilton. Other Working Groups should not be affected, but you should check the Update.Daily schedule for any other last-minute changes.
- o Those who wish to volunteer to be a Session Chair for a DTR/4GL SIG sponsored session are invited to attend a drop-in meeting at 5:00PM in the DTR/4GL SIG Suite in the Marriott Hotel on Sunday, November 5. See the article by Harry Miller in last month's newsletter for the details.

See you in Anaheim.

Joe H. Gallagher, Editor

Announcing VAX DATATRIEVE V5.0

John L. Henning, DTR/4GL SIG Digital Counterpart, Nashua, NH

Digital Equipment Corporation is pleased to announce VAX DATATRIEVE V5.0. This article reviews the two major feature areas of the product (support for DECwindows and VAX CDD/Plus), and acknowledges contribution by DECUS to this release.

The Wombat Does Windows

VAX DATATRIEVE V5.0 takes advantage of several capabilities which are available on DECwindows workstations. The product provides:

- Multiple windows. Windows are available for primary command input and results, HELP, Guide Mode, SHOW command output, and graphics output.
- Scroll bars. You can move horizontally and vertically through output using the mouse and scroll bars.
- Pull-down menus. Certain commonly-used options can now be selected directly from pull-down menus.
- Screen resize. You can use the mouse to expand or contract the primary display area, up to 51 lines by 124 columns.
- Dictionary navigation. You can use the mouse to navigate through dictionaries, expanding and contracting directories to find and select contents of interest.

It should be noted that although you can select common options from menus, the DATATRIEVE language (commands and statements) is still available, and is in fact required for most data manipulation commands.

Support for CDO-Format Dictionaries

VAX DATATRIEVE V5.0 allows use of both older "DMU" (Dictionary Management Utility) dictionaries and the newer "CDO" (Common Dictionary Operator) dictionaries. DMU dictionary operations are identified by pathnames (for example, CDD$TOP.DTR$USERS.OLIVOTTO) and CDO dictionaries are identified by the VMS directory specification which provides the dictionary's anchor (for example, DISK3:[NINO]). DTR V5's dictionary support includes:

- Read/write capability for storing and accessing DATATRIEVE record and domain definitions in CDO format dictionaries
- Access to CDO field-level definitions for inclusion in DATATRIEVE record definitions stored in CDO format dictionaries
- Access to CDO commands to perform pieces-tracking on domains and records
- Use of search list logicals that let you treat multiple physical dictionaries as a single dictionary
- Ability to ready a CDD$DATABASE object that points to an appropriate CDD$RMS_DATABASE object directly

For this release of DATATRIEVE, we have chosen to provide full CDO support for the objects which are most commonly used by both DATATRIEVE and other applications, such as RECORDS, DOMAINS, and PORTS. DATATRIEVE's private dictionary objects (such as PROCEDURES and TABLES) continue to be stored in DMU-format dictionaries only at this time.

Contribution by DECUS to DATATRIEVE V5.0

Digital thanks the DTR/4GL SIG for their contributions to Version 5.0. The SIG and its leadership have provided numerous requests for improvements to DATATRIEVE; have often served as Field Test sites for the product; have participated in early Human Factors testing; and had very direct input to recent decisions regarding the tuning of the product interface. We appreciate the SIG's contributions and look forward to continued partnership.

VAX DATATRIEVE V5.0 will be on the demo floor at Anaheim Fall 89 DECUS Symposium, and two sessions (on Monday afternoon, November 6th) will be devoted to in-depth coverage of Version 5.0 features.

Announcing DATATRIEVE-11 Version 3.3

Joe Mulvey, Digital Equipment Corporation, Nashua, NH

DATATRIEVE-11 is an interactive query, report-writing and data maintenance system designed to give non-computer professionals easy access to system databases. It has many on-line prompting and help features to simplify the tasks of defining, managing and retrieving data. DATATRIEVE-11 is especially useful for users such as business analysts and middle management, who make frequent and constantly changing requests for data from large, corporate databases. It can also be used to build and maintain small, personal databases.

DATATRIEVE-11 V3.3 is supported on the RSX-11M, RSX-11M-PLUS, RSTS/E, Micro/RSX and VAX-11 RSX operating systems; and under VAX-11 RSX on the VAX/VMS operating system. All DATATRIEVE-11 based products provide common functionality using one set of sources across all supported operating systems.

V3.3 FEATURES

Some of the key enhancements made for DATATRIEVE-11 V3.3 are listed below. For more complete product information please refer to the appropriate Software Product Description: SPD 12.48 (DATATRIEVE-11); SPD 18.15 (Micro/RSX DATATRIEVE-11); or SPD 25.14 (PDP-11 DATATRIEVE/VAX).

* DATATRIEVE-11 provides lexical functions consisting of the following four groups:

  Functions using numeric data

  Functions using alphanumeric data

  Functions using dates

  Functions relating to processes

* DATATRIEVE-11 can now determine at installation time whether or not floating point hardware is present. If floating point hardware is present, inline floating point code can be excluded from the task image if desired. This feature, if used, provides the user with significant additional pool space.
* A new EDIT interface to EDT, which replaces QED, has been added for easier editing.
* Time capability has been added to the DATE datatype for better resolution of time. Previously the resolution of time for DATATRIEVE-11 was a day.
* A new AUTOINSTAL based feature has been added to allow for easier installation. This feature will be available on: RSX-11M, RSX-11M-PLUS and RSTS/E.

* A system default for the initialization file (QUERY.INI) has been added.
* DATATRIEVE-11 can now build and use Supervisor Mode RMS on those processors where both the hardware and software support this feature. This feature will provide the user with significant additional pool space.
* Documentation has been completely updated and repackaged. A new set of documentation will accompany this release which will provide a more comprehensive and easy to use documentation set.
* This release provides full layered product support for the License Management Facility (LMF) (PDP-11 DATATRIEVE/VAX only).

Support Plans

A full range of Software Product Services is available. Please contact your SPS Business Account Specialist for a complete description of support plans and additional information for Self-maintenance, BASIC, DECsupport, Right-to-Copy Update, Installation, Media Update, and Documentation Update services.

Dear Wombat Wizard

Dear Wombat Wizard:

Like most users, we use a combination of languages and tools to solve our computing problems. These include DCL, third generation languages, a word processor, graphics and statistical packages, and, of course, a lot of DATATRIEVE. Our users are technical and profession people who are NOT computer experts. We try to make applications which are easy to use and which require an absolute minimum of keystrokes. All of the languages and tools we use except DATATRIEVE allow the entry of only a carriage return to indicate a default or null entry. Our users find it a real pain to have to enter a SPACE and a RETURN at a DATATRIEVE prompts when everything else allows the entry of just a RETURN.

Why does DATATRIEVE required the entry of at least one character and how can we work around this irritating DATATRIEVE restriction?

Signed,

Annoyed by an extract character

Dear Annoyed:

This is a really good question. So that all readers understand the significance of the question, consider the following apparently very simple situation:

```
DTR> DECLARE FOO PIC X.
DTR> FOO = *."value of Foo"
Enter value of Foo: <CR>
Enter value of Foo: <CR>
Enter value of Foo: <CR>
Enter value of Foo: <SPACE><CR>
DTR>
```

DATATRIEVE (both VAX and PDP-11) will not accept the entry of nothing, and will keep prompting until the user enters a SPACE or some other non-null character ahead of the carriage return.

The Wizard consulted some DATATRIEVE developers and they stated that the reason why DATATRIEVE requires non-null input is that it differentiates between the null string and the blank (all spaces) string. While in most cases DATATRIEVE could make some reasonable assumptions about what to do with null input, there are some esoteric situations where a null string does not provide DATATRIEVE with enough data type information to do a reasonable conversion. However, the Wizard believes that the "restriction" for non-null input arises because of some conditions in the PDP-11 input/output routines; DATATRIEVE was originally written for RSX. In the current versions of DATATRIEVE-11, it is still not possible to use a null string. And this restriction in DTR-11 has been perpetuated in VAX-DATATRIEVE for upward compatibility.

I guess the "bad" news is that's the way DATATRIEVE works and is likely to work from now on; the "good" news is that there are two work-arounds, which depending upon your mood, are relatively easy to do.

I will describe the first and give full details for the second.

If you use a 3GL front end to callable DATATRIEVE, you can control all terminal input – both commands and statements as well as data. An example of this is command line recall using SMG$ calls as described in an article by Dana Schwarts, Volume 2, Number 2, page DTR-3. Your 3GL code could be modified to allow a null input and convert it to a blank.

The second work-around would be the use of a function such as FN$DTR_INPUT to accomplish the input. I have written the function in FORTRAN because FORTRAN is the most widely licensed 3GL on Digital computers (and because that is the 3GL that the Wizard has), but in this case, VAX-BASIC would be a more appropriate language because BASIC allocates string variables in a way which is more compatible with DATATRIEVE. Anyway, the function is:

```
INTEGER FUNCTION DTR_INPUT(PROMPT_MIDDLE, RETURNED_STRING)
!  An integer function which partially mimics DATATRIEVE input,
!  but which allows the input of just a <CR>.
   CHARACTER*(*) PROMPT_MIDDLE ! the prompt between "Enter " & ": "
   CHARACTER*(*) RETURNED_STRING  ! the returned input string
   CHARACTER*140 PROMPT  ! allow for a big prompt string
   INTEGER STATUS  ! the status returned from sys calls
   INTEGER*2 INPUT_CHAN  ! the channel for I/O
   INTEGER CODE ! QIOW parameter
   INTEGER INPUT_BUFF_SIZE  ! input buffer size
   INTEGER PROMPT_SIZE   ! the size of the prompt string
   INTEGER INPUT_SIZE ! actual length of input string
   PARAMETER (INPUT_BUFF_SIZE=255) ! this is too big, but ...
CHARACTER*255 INPUT
   INCLUDE '($IODEF)' ! get definitions for FORTRAN
   STRUCTURE /IOSTAT_BLOCK/ ! I/O block structure
INTEGER*2 IOSTAT, TERM_OFFSET, TERMINATOR, TERM_SIZE
END STRUCTURE
   RECORD /IOSTAT_BLOCK/ IOSB  ! actual I/O block
   INTEGER*4 SYS$ASSIGN  ! system call to assign a channel
   INTEGER*4 SYS$QIOW ! system call to read with wait
   INTEGER*4 SYS$DASSGN  ! system call to deassign a channel
!
!  assign a channel to do I/O
!
STATUS = SYS$ASSIGN('SYS$INPUT', INPUT_CHAN,,)
IF (.NOT. STATUS) CALL LIB$SIGNAL (%VAL(STATUS))
!
!  set code for read with prompt
!
CODE = IO$_READPROMPT
!
!  determine the length of the prompt string passed in
!
STATUS = STR$TRIM(PROMPT_MIDDLE, PROMPT_MIDDLE, PROMPT_SIZE)
!
!  if string is too long, truncate it to 132 characters
!
IF (PROMPT_SIZE .GT. 132) THEN
   PROMPT_SIZE = 132  ! truncate to 132 if too big
END IF
!
!  prepend 'Enter ' and append ': ' to be compatible with DTR
!
PROMPT = 'Enter '//PROMPT_MIDDLE(1:PROMPT_SIZE)//': '
!
```

```
!  increase size of prompt string by 8 characters (size of 'Enter'&': '
!
PROMPT_SIZE = PROMPT_SIZE + 8
!
!  do read with prompt
!
STATUS = SYS$QIOW(,
   2     %VAL(INPUT_CHAN),
   2     %VAL (CODE),
   2     IOSB,
   2     ,,
   2     %REF(INPUT),
   2     %VAL(INPUT_BUFF_SIZE),
   2     ,,
   2     %REF(PROMPT),
   2     %VAL(PROMPT_SIZE))
!
!  deassign the I/O channel
!
STATUS = SYS$DASSGN(%VAL(INPUT_CHAN))
!
!  return string; if too long it will be truncated to size of
!  returned_string
!
RETURNED_STRING = INPUT(1:IOSB.TERM_OFFSET)
!
!  tell DTR of a successful completion of this function
!
DTR_INPUT = 1
RETURN
END
```

Now to connect this function to DATATRIEVE, you need to add the following MACRO code to DTRFND.MAR:

```
; FN$DTR_INPUT -
; input is a string
; output is a string
$DTR$FUN_DEF FN$DTR_INPUT, DTR_INPUT, 2
   $DTR$FUN_OUT_ARG TYPE = FUN$K_STATUS
   $DTR$FUN_IN_ARG  TYPE = FUN$K_DESC, DTYPE = DSC$K_DTYPE_T, ORDER = 1
   $DTR$FUN_IN_ARG  TYPE = FUN$K_TEXT, OUT_PUT = TRUE , ALL_LEN = 255
   $DTR$FUN_NOOPTIMIZE
$DTR$FUN_END_DEF
```

Then compile the code, add it to the library, and relink DATATRIEVE something like:

```
$SET DEFAULT DTR$LIBRARY
$MACRO DTRFND
$FORTRAN DTR_INPUT
$LIBRARY/REPLACE DTRFUN DTRFND, DTR_INPUT
$@DTRBLD
```

The function FN$DTR_INPUT can be used any place where one would use the "*" to input data to DATATRIEVE. For example:

```
declare choice_value pic 9.
choice_value = fn$dtr_input("menu selection [default is 1]")
if (choice_value eq 0) then choice_value = 1
```

```
Enter menu selection [default is 1] : <CR>
```

So a null input can be used. But the biggest advantage of using FN$DTR_INPUT is that the prompt can be computed. Currently one cannot have a computed prompt in DATATRIEVE. Consider:

```
DTR> ready yachts modify
DTR> for yachts modify using begin
CON> price = fn$dtr_input("new price. Old price is "| -
CON> format price using $$$,$$9.99)
CON> end

Enter new price.  Old price is $36,951.00 : 40000
Enter new price.  Old price is $17,900.00 : 20000
Enter new price.  Old price is $27,500.00 : 30000
.
.
.
DTR>
```

This clearly has superior capabilities over the usual prompting in DATATRIEVE. But if we get something, we usually have to give something up. We loose the re-enter try when the input does not satisfy the validation clause on the field. Note that:

```
declare price usage is real
edit-string is $$$,$$9.99
valid if price between 10000 and 20000 .
price = fn$dtr_input("new price")

Enter new price : 30000
Validation error for field PRICE.

print price

PRICE
$30,000.00
```

does not give a satisfactory result when the input is outside the valid range. But there is a way to work-around this as well. Consider

```
declare price usage is real
edit-string is $$$,$$9.99 .
price = fn$dtr_input("new price")
while price not between 10000 and 20000 begin
print "Entered value not valid.  Please reenter."
price = fn$dtr_input("new price")
end

Enter new price : 30000
Entered value not valid.  Please reenter.
Enter new price : 9000
Entered value not valid.  Please reenter.
Enter new price : 15000
```

So a function like FN$DTR_INPUT can be very useful in certain situations, but it can not, and should not, be used to do away with the usual DATATRIEVE prompted input. Such a function for input does bring up some other interesting possibilities. With very little effort it would be possible to change DTR_INPUT by adding a second argument to do a read with a time-out. One could also change DTR_INPUT by adding a second entry point or a second argument which could be used for prompting with "Re-enter" rather than "Enter." It would even be possible to change the function to something like DTR_INPUT_VALIDATED in which the data type, and the upper and lower limit of valid input were passed, and the 3GL function would do the input validation.

I hope you can put this function to good use so your users won't have to type any extra characters.

Signed,

The Wombat Wizard (WEP&JG)

Wombat Magic, Spring 1989 - Part 3

Session Co-Chairs: Dana Schwartz, DOD, Washington, DC
Bert Roseberry, U. S. Coast Guard, Washington, DC
Session Editor: Kyle R. West, Rally Editor, Teepak, Inc., Columbia, SC

Editors' note: The following is Part 3 of a highly edited transcription of the Wombat Magic Session at the 1989 Spring DECUS Symposium in Atlanta, Georgia, which occurred on May 11, 1989. Part 2 appeared in the September 1989 newsletter. Material which was presented on transparencies has been merged into the oral presentation. An attempt has been made to convey both the technical content of the Magic Session as well as the humor, covert intellectual swaggering, and the spirited interchange of the presentations. Material which appears in the text within square brackets [] has been added by the editor in an attempt to improve the understandability of this very exciting Magic Session. The material presented here is not presented in the same order as it occurred in the session.

Lew Lasher, Digital Equipment Corporation, Nashua, NH

This is Rally magic called "Rally Editing Made Simple." This came to us because a customer requested it a couple of weeks ago. Fortunately, just in time for DECUS.

Problem: How to allow screen editing by the Rally illiterate user

The customer ask us how they could make Rally easier to use, imagine that, for some of their users who are not enlightened in [the Rally definition system]. The customer developed applications that worked fine, but wanted the users of the applications to be able to do some minor editing. They wanted to allow the end users just to change the appearance of the screen and not the functionality. And they said, 'Well, we don't want to give them the whole Rally definition system. because they'll break everything'. Break everything in their shop too. [Laughter] 'We just wanted to permit them to use the screen editor'. And so we [DEC] came up with this solution here using Rally macros.

Solution:

A. Define macros to get the user to and from the screen editor.
   1. application form/report edit <RETURN>
   2. <FINISH ACTION> 2 <RETURN>
   3. <FINISH ACTION> top <RETURN>

B. Define a key definition file with a severely limited set of commands.
   1. Exclude: DO
      Menu Commands
      Finish Action
      Coordinates
      Insert Line
   2. Include: Macro 1,2,3
      Quit Application

C. Rally edit 'p1'/key=few_keys/macro=rally_made_simple

And basically you give people macros to go just where you want them to go in the Rally definition system. So it is just like the shuttle buses here in Atlanta, you give people a way to get to the screen editor and a way to get back. So, I think it only takes 3 macros, as I have figured it out here. One is that I'm assuming that they get into Rally from DCL, that at the TOP level of the definition system, this [macro number 1] should get them, not to the screen editor, this gets them to the point where they have to name what form/report they want to edit. Then it well ask which form/report that they want to edit and then they can type that in [or select the F/R from the LOV]. After they have typed in the form/report they want to edit then do macro number 2, which flags that form/report. After putting the number 2 there I realized that this is bad style, I should have used the key word, but I guess the work is done, and I can't remember what the key word is -- screen or edit [screen is correct]. So I had a 50/50 chance, I chickened out and just used the number 2. That gets them to the screen editor. Then give them a way to get out. And this [macro number 3] will do it here, just FINISH ACTION to get out of the editor and that brings them back to the menu where they edited the form/report. And TOP will bring them back to where they started. This is multi-part, this is part A, giving them macros to go where they should go. In the next step [part B], we will prevent them from going anywhere else. And the way you prevent them from going anywhere else is using the key definition facility in Rally. Because you can't go anywhere without keys. And so you define a key definition file and you can do this by starting with your favorite set of keys, EDT or WPS whichever, you edit everything out of it to remove nearly every command. You get rid of the DO key and you want to get rid of all of the menu commands. You know you may not realize, but when you run a Rally menu, like you move the cursor up to a choice or down to a choice those are actually name commands, that you can read all about in the Rally Command Reference Manual if you have nothing better to do with your time. And there is also, even pressing <RETURN> on a menu, like typing something in and then pressing <RETURN>, that <RETURN> is a command that you can define another key for or chuck from the key definition file. So if you get rid of that then people can still type on the menu but they won't be able to execute anything on the menu except the things you've defined to them, which is macros. And let's see, I'm not sure about this, but I think you'll want to get rid of FINISH ACTION. I am not sure about that but what the hick, lets get rid of it too. I think QUIT ACTION is safe, but FINISH ACTION looks dangerous. And that thing in the form/report editor to bring up the coordinates screen, that is the GOLD A, you'll want to get rid of that because somebody could define an integrity error, we didn't want that to happen. And I think there is a command called INSERT LINE and that is when you press carriage return in the screen editor. Never press carriage return in the screen editor unless you're a Rally sophistic. And you do want to include a few keys for the users to be able to use, one is to include keys for the 3 macros you so carefully defined. And you have to give people a way out. I am not sure you might be able to get away with giving them QUIT ACTION -- oh I know why you don't want to include FINISH ACTION or QUIT ACTION, I knew there was a reason for this, it all comes back to me. If you include FINISH ACTION or QUIT ACTION then when they're in the screen editor they can exit from it, and get back some level of main use and may press one of your macros, that will work from some bizarre place in some wrong menu, and God knows what it will do. So take out FINISH ACTION and take out QUIT ACTION, but you got to give them some way to go out. You can give them QUIT APPLICATION and that will take them all the way out in case they do define an integrity error, that always gets you all the way out, works just as will as CONTROL Y. A little slow but more elegant. And I think that's it for keys. Oh by the way, I guess I should mention that when you're defining the macros you should use the real set of keys, because otherwise your typing would return and won't do anything. That's why that is step A and this is step B, it's sequential. And after you have done that, then you just give people some kind of captive command procedure, that lets them edit their desired file with these keys and with those macros. And there you are Rally for the illiterate.

B. Paul Bushueff, DOT Transportation System Center, Cambridge, MA

[Paul's magic is titled "Handling a Long LOV in Rally."] We had a problem about 3 or 4 months ago when we had to show to a user a long LOV list. That long LOV consisted of a sequence number and a description of that number. The problem is the way that Rally works, you can only start at the beginning and page to the end.

RALLY	
o Long LOV	
Number	Description
20	Galley
201	Galley Store
202	Galley Sink
21	Bridge
.	.
.	.
.	.

Here we have a LOV of about 800 to 1000 elements. For some people who know the approximate number or know that it started with a series of 20 or 30 or something like that or they know that it had to do with a certain description group, we really wanted to be able to search them [the elements of the LOV] numerical or alphabetical and be about to start at a given point in the list.

o Need to enter proper number.
- Some know the approximate number
- Some know the description

The solution that we came up with was that the user would be allowed to enter on the form either a numeric starting point or put an asterisk and any number of characters.

Solution
o Enter Starting Value 20 or *GA o Disable Rally LOV validation o Use local function key ADL
- put number in a global variable use parameterized RSE (>=) call conditional LOV - if *ab put letters in global variable use alternate RSE

Then we made sure that the LOV validation is disabled in Rally, using a local function key, the ADL code at the local function site. If a number is entered it would store the number in a global variable, use the parameter RSE and use the >= search criteria. Then call the conditional LOV and what it would return would be a LOV starting with the numeric field that we had entered. The alternative is that if you put in an asterisk, it would recognize the asterisk as character and it would work exactly the same way, it would put the alphabetic characters following it in the global variable. Use an alternative RSE and it would return an alphabetic list.

John L. Henning, Digital Equipment Corporation, Nashua, NH

[John's magic is titled "Goof Proof Rdb for RALLY."] This one may not be all that magical but it is a really problem that arises.

> Assumption: RALLY/COBOL/DTR application updates a database with local validation - e.g. change salary for employee with employee.dept = current user's dept.

Assume that you have an application that is written in Rally or COBOL or DATATRIEVE. Something where you get some fairly careful structure put in place. So that it will do exactly what you want it to do. Doing some validation which might be done at the time of the application, based on something that is determined there, at that time. For example, you might have an application which changes a salary for an employee, that you want to check that the employee department is equal to the department of the current user or you might check that the person is actually authorized to make changes to that department.

> Problem: What if user comes in with Teamdata, DATATRIEVE or RDO and does [his] own updates ??

The problem arises with what if somebody instead of running the application that you so carefully built, comes in with Teamdata, DATATRIEVE or RDO. I am motivated to write this, simply in response to Bert's claim that [his] would be the only Teamdata magic. This is actually a general problem more general than Teamdata but he might be coming in through Teamdata after you have so carefully setup the [Rally] application to limit what he can do.

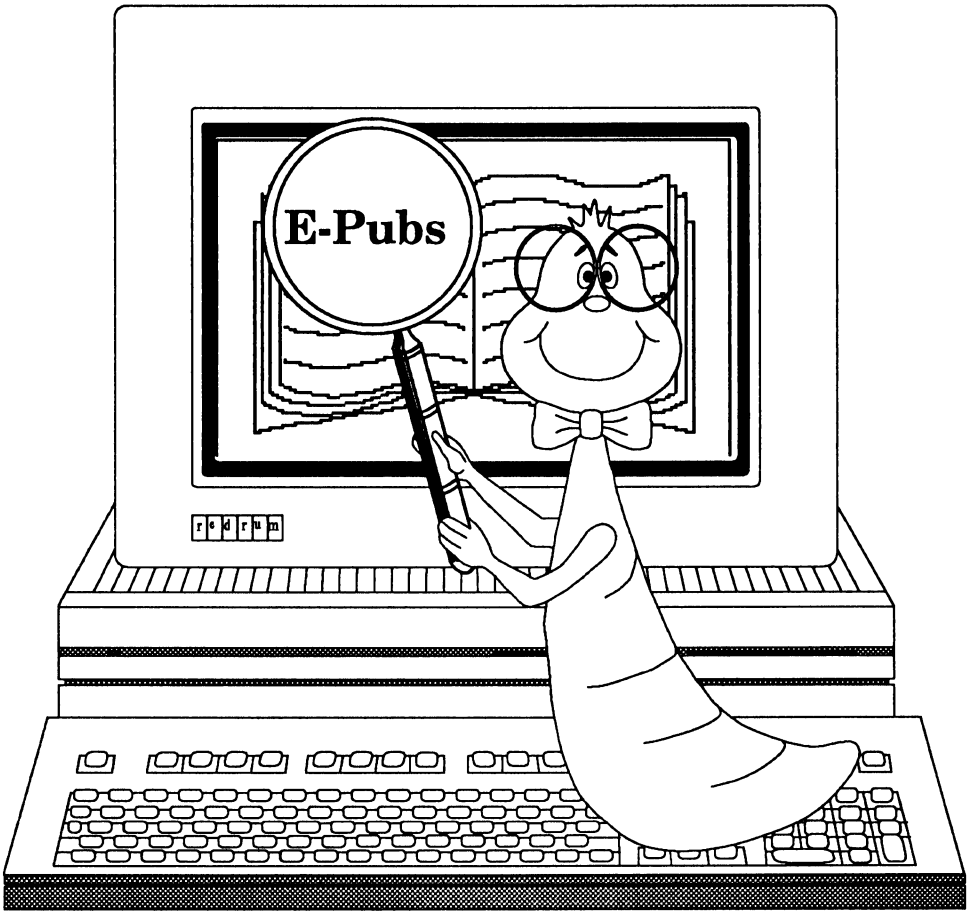
> Solution:
> - Captive account "UPDATER"
> - RDO ACL UPDATER "read+write+delete..."
> - In application login [login.com] define user SYS$REMOTE_NODE SYS$REMOTE_USER and check it in the application
> - RDO ACL * "read"

The solution is fairly sample. You create a captive account you might call it "UPDATER". Then in RDO you give it the ACL that only "UPDATER" has "read+write+delete...". In the login.com file for the captive account, it turns out that you can define a logical name which picks up the remote user and remote node. You check against that in the application. Then finally there is one last piece, what do you do with all Teamdata or DATATRIEVE users that you do want to allow to do reporting against this. You give them an ACL for read only. That's it.

part 4 of Spring 1989 Wombat Magic
and
the Author, Title, and Keywork Index to Volume 4

will appear next month

EP



FOCUS on Electronic Publishing

DECUS

in *FOCUS*

Submission Rules

Contributions of articles, letters to the editor, etc. are solicited and gladly accepted. Submissions can be directed to the editor as follows:

Richard Wolff
Bonneville Power Admin.
Routing SWHP
PO Box 3621
Portland, OR 97208

(503) 230-5894 (voice)
(503) 230-5316 (fax)

Editorial Policy

Editorials, letters to the editor and articles in this newsletter are solely the opinions of the authors and do not necessarily reflect the official views of the Digital Equipment Computer Users Society, Digital Equipment Corporation, or the authors' employers.

The Editor's Screen:

Richard Wolff

As I mentioned last month, the Fall DECUS Symposium is upon us. From the plans that I've seen, it's going to be another GREAT conference, particularly for those interested in electronic publishing. While our offerings pale next to those of the VAX SIG, our efforts are nevertheless building. Please visit with us at the Sunday SIG Reception, at our suite and at the E-Pubs campground. Of course, don't miss the sessions. This event will include over 40 sessions covering products like TeX, DECwrite and Interleaf as well as topics detailing user efforts in electronic publishing and the strategic directions for DEC and third parties in this arena. We hope to see you there.

With all the effort that goes into planning and organizing our part of the symposium, it has been a little difficult rounding up material for this issue. But YOU can help on future installments. You could jot down your questions and/or comments and mail them to me (see the sidebar for my address). You could pick up the phone and call me; I'd like to hear how you're using electronic publishing tools and techniques. And I'd be ever so pleased if you were to write an article detailing your experiences, your concerns or your wishlist in the E-Pubs arena. I hope to hear from you soon.

Editor's Wishlist:

Richard Wolff

My electronic publishing system is built around an Apple Macintosh II at home. I'd like to have comparable capabilities using the DEC equipment at my office. The following list itemizes some of what I'd like to see in a Digital desktop publishing system.

1. Products like Aldus Pagemaker, QuarkXpress® and Frame Technologies' FrameMaker®.

2. An industrial strength drawing program such as Deneba's Canvas, Adobe's Illustrator and Claris' MacDraw II.

3. Lots of electronic clip art.

Now that I've shared a few of my wishlist items, I'll have to share my ignorance regarding current product capabilities. Despite my interest and the sales presentations that I've attended, I'm still not sure just what DECwrite can do. I expect it to be a contender with the leading page layout packages. I suspect that it can import existing drawings and images in encapsulated postscript. I'm sure that I'll know more when I return from Anaheim.

Wanted: Associate Newsletter Editors

Applicants should have good writing skills, an interest in electronic publishing and a little time each month to help prepare articles and news items for publication. Please address queries to:

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PO Box 3621
Portland, OR. 97208-3621

edusig

Natural Intelligence

Newsletter November, 1989

Jim Gerland
State University of New York at Buffalo
University Computing Services
Computing Center
Buffalo, New York 14260

EDUSIG Steering Committee Election

EDUSIG announces a call for nominations for the position of EDUSIG Executive Committee Member. The election will take place at the EDUSIG Business Meeting in Anaheim. The term of office is three years, with the person elected beginning his/her term following the Spring, 1989 Symposium in Atlanta.

The current Executive Committee has slated one candidate:

Ardoth Hassler
Catholic University of America
Current Vice-Chair of EDUSIG

Any EDUSIG member is eligible to run for the Executive Committee. Additional nominations may be submitted in writing to:

DECUS/US Chapter Activities Manager
219 Boston Post Road (BP02)
Marlboro, MA 01752

A statement of the candidate's qualifications and the signatures of ten (10) EDUSIG members are required for nomination.

Nominations will be accepted until October 31, 1989.

Ardoth A. Hassler <HASSLER@CUA.BITNET>

EDUSIG Pre-Symposium Seminar

EDUSIG is on the move again. In addition to the highly successful Pre-Symposium Seminar "Planning a Campus Network?" a second seminar, entitled "Educational Software - From Evaluation to Development", will be offered at this Fall's Symposium. This seminar will attempt to address some important issues in the area of software in higher education. The seminar is intended for educators and academic computing staff. The only requirement is an interest in educational software.

In higher education, identifying, locating and developing quality software is a current problem. The seminar will attempt to assist educators in solving these problems by covering the following topics:

1. Software Evaluation, a Process
2 Identifying Types of Software
3. Locating and Purchasing Appropriate Software
4. Shareware, What is it?
5. Screen Design Techniques
6 Software Development on Campus, a Process
7. Writing Software Documentation
8. Making Appropriate Use of Software in Curricula Areas

Attendees will have the opportunity to participate in activities that demonstrate techniques of software evaluation, development and documentation.

The instructors for this seminar are: Jeff M. Gold, Academic Computing Support Manager, Tennessee Technological University, and Mary Jac Reed, Director of Academic Computing Grand, Valley State University.

Jeff Gold <JMG@TNTECH.BITNET>

Library News

CDROM seems to be the latest "hot item". The Library Committee has received inquiries about using CDROM as a future distribution media for programs.

The Library Committee has been faced by many important questions in relation to this new media. The Library pricing structure is on a per-MB basis. The much larger capacity of the CDs presents some problems with relation to current Library pricing structure. Since the Library is responsible for bringing in a good deal of revenue to DECUS to support many of its activities, pricing issues affect all members.

The Library has decided to offer the initial CDROMS as an experiment. The primary goal of this experiment is seen as a means to gain information which will be added to information already gained from previously offered CDs.

The Library committee will be producing a CD from this Fall's Symposium at Anaheim. The CD will contain approximately 200-300 MB consisting of:

- 1989 Atlanta VAX-LT symposium collection
- 1989 Atlanta RSX symposium collection
- DecuServe transcript submission
- Kermit collection (updated since Atlanta)
- TeX collection (updated since Atlanta)
- XWindows V3.0 submission

The price of the CD will be $100 - QUITE A BARGAIN.

Jeff Gold <JMG@TNTECH.BITNET>

EDUSIG At The Anaheim Fall DECUS

EDUSIG again has over 40 hours of sessions targeted for the Digital Education user, as well as two Pre-Symposium seminars on Sunday. Topics range from an update of Digital's TEI (The Education Initiative) to Academic Computing to Supercomputers to Instructional Computing to Administrative software packages to Library Automation.

Many sessions are panel discussions which provide extensive question and answer opportunities from the audience participants.

In addition to formal sessions and all-day seminars, the EDUSIG SUITE provides a relaxing and rewarding interchange with colleagues during the evening hours of DECUS week. The Digital EDUCATION booth on the Digital Exhibit Floor allows time to contact Digital representatives for information and solutions to questions. The BITNET connection on the Exhibit Floor provides an opportunity to experience BITNET electronic communications and stay in touch with colleagues at home.

However you spend your DECUS hours, EDUSIG is there for the educational users. Take the time to say hello and find out how EDUSIG can help you.

Mary Jac Reed <21874MJR@MSU.BITNET>

BITNET Mail At DECUS

EDUSIG is again providing international electronic mail service for all DECUS attendees via a cooperative network of academic computers: BITNET in the U.S., Asia, Mexico, and South America; NetNorth in Canada; and EARN in Europe, Africa, and the Middle East.

EDUSIG and BITNET, Inc. invite you -- both new and current users, U.S. and international DECUS attendees -- to learn more about BITNET, and to use BITNET electronic mail all week at DECUS. Here's how:

To access a system on BITNET, enter CONNECT BITNET at the Local> prompt at a DECUS public terminal. Log into your VMS account and use VMSmail as usual. You should find directions for addressing mail to BITNET/EARN/NetNorth (Jnet% addresses) and to Internet and UUCP (IN% addresses) on green instruction sheets near each public terminal.

You can also send and receive network commands and interactive messages, and receive files, from your VMS account. Your network address will be username@DECUS for the week, where username is your initials and last name, and perhaps underscores to make your name unique.

Special DECUS restrictions limit mail files to 200 NJE records, and prevent the sending of other files, however.

Please enjoy the BITNET service. Stop by the EDU booth if you have any questions, or for demonstrations of restricted functions, BITNET print and batch servers, and BITNET symbionts. BITNET users, be sure to request a green "BITNET" button at the EDU booth.

BITNET-related events begin this week with a meeting of BITNET technical working groups at an area university on Saturday, November 4. BITNET mail service and the BITNET demonstration will operate whenever DECUS public terminals are available. Watch for separate Birds-of-a-Feather (BOF) sessions for BITNET, Jnet, and PMDF users during the week.

EDUSIG has scheduled an introduction to BITNET (ED010) on Monday at 11:00 a.m., and four BITNET-related sessions (ED011, ED029, ED042, and ED009) from 1:00 p.m. to 4:30 p.m. on Thursday. The Networks SIG is sponsoring an update session on Jnet software (NE042) Thursday at 5:00 p.m.

BITNET is a trademark of CREN, Inc. Jnet is a registered trademark of Joiner Associates Inc.

Steven L. Arnold <ARNOLD@WISCPSL.BITNET>

The Graphics Applications Special Interest Group Newsletter

The Graph Paper

November, 1989

GAPSIG booth at SIGGRAPH '89 - a report

Bijoy Misra, Graphics Applications SIG Chair, DECUS / US Chapter

The Graphics Applications SIG SIGGRAPH '89 booth was hosted by Laura Vanags, Warren Yogi, Kevin Martinelli (Canadian DECUS) and myself. We had a great time as a group and it was a good educational and volunteer experience. Several students and staff members from my office and many Digital engineers were also on hand at various times to help out. The booth was open during the entire Exhibition:

Tuesday, August 1st, 10 AM - 6 PM,

Wednesday, August 2nd, 10 AM - 6 PM, and

Thursday, August 3rd, 10 AM - 4 PM.

The resource material in the booth consisted of a Graphics SIG Factsheet, a Graphics SIG questionnaire, DECUS membership forms, copies of SIGs and LUG newsletters, the GAPSIG buttons and the DECUS membership video tape. The booth furniture and walls were beautiful, thanks to negotiations of Mary with DEC. The VCR worked well and our buttons were a great hit. About three thousand people stopped at the booth during the three days of operation with about six hundred questionnaires filled in and about one thousand membersip forms distributed. Sometimes people were three to four deep at the booth.

(Cont'd on p. 8, c. 1)

mailing address

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publication info

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submissions

Articles, copies of viewgraphs, tips and tricks, and graphics output can be submitted to the GAPSIG newsletter; here's how YOU can make submissions:

1) Send 1600 or 6250 BPI tape in either ASCII or Mass-11 (TM) format. Include a letter with your name and address, and please send any charts or graphics in hard copy form.

2) Send hard copy.

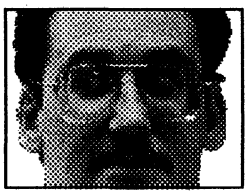
3) Mail the article, etc. to user HAYS on DCS.

editorial policy

This editor has a simple editorial policy: we print our own views (from the editor and from the chair's desk), letters to the editor, and articles submitted by graphics users. If you don't agree with something printed here, mail your letter to the editor at the address at the top of this column; don't use expletives and don't list pricing or delivery information. We are here to serve the DEC graphics community, so please contact us with any comments, praise, or, well, yes, criticism. We welcome your inputs!

Subscriptions

Subscription information is available at the end of the magazine.



from the editor

Robert Hays
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(313) 769-8500 x458

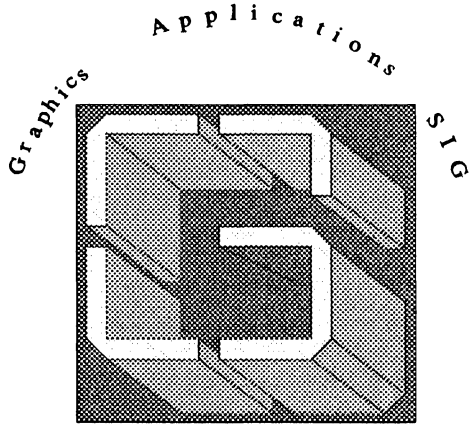
We're back again this month. Hopefully, this issue will arrive just before you leave for the symposium. I did a *LOT* of work making the session list included later in this issue; I pray some of you will find it useful.

I'm really looking forward to this fall's symposium. The celebration Thursday night should be really fun and a chance to catch up on old times with some friends. The session streams from all the SIGs, but especially the GAPSIG, are full of meaty technical material that I personally thrive on. And, of course, there will be the opportunity to corner Digital developers and get answers to my questions....

Keep your eyes on the Update.Daily and the GAPSIG Campground bulletin board (room Pacific A) for special information on Graphics activities during the Symposium. And, don't forget to visit the special "History of Digital Graphics" exhibit in the main Exhibition Hall.

Your editor is learning to deal with DECwindows as a programming interface from his VAXstation 3100. I'm scheduled to give a talk at the January MIVAXLUG meeting on self-taught DECwindows programming, so, once I know the right questions to answer (our LUG is a tough bunch), I'll try to pass some of that along in these pages.

Robt L Hays



Fall, 1989 in Anahiem

Presents

The Graphics Hardcopy Contest!

The Graphics Applications SIG (GAPSIG) is once again sponsoring a **Graphics Hardcopy Contest** during the Fall '89 DECUS Symposium in Anahiem. This is your chance to have that stunning graphic recognized by your peers!

The rules are:

1) The Contest is open to all DECUS members.
2) There are two entry categories:
   (a) color, and
   (b) black & white.
3) Prizes of for each category will be awarded.
4) All entries will be displayed in the Graphics Applications SIG Campground at the symposium and are the property of DECUS with the appropriate copyrights. In addition, some entries may be published in the SIGs Newsletter and other DECUS publications.
5) The judging will occur at a scheduled Symposium session by a panel composed of the members of the GAPSIG Steering Committee.
6) The winners will be announced in Friday's Update.Daily at the Symposium, the GAPSIG Wrapup session on Friday and later through this newsletter. You do not need to be present to win.
7) Entries must be an original of size 7" x 10" or larger. A Digital Equipment computer or peripheral must have been an integral part of the production process. Color and halftone prints, plotter/printer outputs, and inkjet/laser prints are all acceptable. Each entry must be accompanied by the full name and address, company affiliation, DECUS membership number and a ten line description of the picture including the hardware and software used for the production.
8) Entries must be deposited at the GAPSIG Campground by Wednesday evening, November 8, 1989, or mailed to:

   Bijoy Misra
   Harvard-Smithsonian
   Center for Astrophysics
   60 Garden Street, MS39
   Cambridge, MA 02138

Mailed entries must arrive by November 1, 1989 to be entered in the contest.

seminars in Anahiem

Daniel Land, Seminars Representative

The GAPSIG is proud to sponser five pre-symposia seminars in Anaheim. Two seminars were presented in Atlanta. Both were well attended and enthusiastically recieved.

INTRODUCTION TO DIGITAL IMAGE PROCESSING
Stephen Schultz, Rochester Inst. of Technology

INTRODUCTION TO THE X WINDOW SYSTEM
Peter Hack, Digital Equipment Corp.

PORTING UIS APPLICATIONS TO DECWINDOWS
Fred Kleinsorge, Digital Equipment Corp.

UNDERSTANDING PHIGS, THE PROGRAMMER'S HIERARCHICAL INTERACTIVE GRAPHICS SYSTEM
Jim Flatten, Digital Equipment Corp.

ADVANCED POSTSCRIPT PROGRAMMING TECHNIQUES
Ken Anderson, Adobe Systems

Seminars are driven by your needs. Attendees at the workstation working group meeting in Atlanta mentioned that they needed hard information and examples about porting applications from UIS to DECwindows, this was the type of information which the GAPSIG needs, and the result is a full day seminar devoted to just how to do it with real examples.

Engineering Graphics Users:

The Engineering Graphics Working Group will meet at the GAPSIG Campground (room Pacific A) on Tuesday, November 7th, from 11:00 AM to 12 noon. Please share your ideas and concerns with DECUS members and Digital.

The Hardcopy Working Group Needs YOU!!!

Come to the meeting November 9th at the GAPSIG Campground in the Pacific A room from 3 to 4PM to talk about PostScript, hardcopy devices and anything else of interest. Help us help Digital!

finding your graphics way in Anaheim

Bob Hays, Editor

I'm trying a new experiment this go 'round; I have the Preliminary Program next to me, and I'll try to organize the sessions by group, including sessions from other SIGs that might be of interest (Non-GAPSIG sessions are in italics). So, without further ado (whatever ado is), on with the show!

GAPSIG Business and Miscellaneous

Monday			
9:00 - 10:00AM	GR002	Avila	GAPSIG Roadmap
Wednesday			
10:00 - 10:30AM	GR003	California F	GAPSIG Business Meeting
Thursday			
9:00 - 10:00AM	GR021	Pacific A	How I Created My Hardcopy Contest Entry
10:00 - 11:00AM	GR022	Pacific A	Graphics Hardcopy Contest Judging
6:00 - 8:00PM	GR030	Huntington	Graphics Tenth Anniversary Celebration
Friday			
1:30 - 2:30PM	GR004	Orange Co Blrm	GAPSIG Wrapup

Computer Graphics Video Tapes

Monday			
6:00 - 8:00PM	GR005	Pacific A	GAPSIG Computer Graphics Video Tapes I
Wednesday			
4:00 - 6:00PM	GR006	Pacific A	GAPSIG Computer Graphics Video Tapes II
Thursday			
8:00 - 10:00PM	GR007	Pacific A	GAPSIG Computer Graphics Video Tapes III

Scientific Visualization

Monday			
8:00 - 9:00PM	GR012	Avila	Industrial Strength Scientific Visualization
Tuesday			
9:00 - 10:00AM	GR033	Huntington	Computer Graphics and Visualization
10:00 - 11:00AM	GR027	Huntington	Digital's Visualization Strategy
3:00 - 4:00PM	GR029	Huntington	Visualization Tools in Astronomy
5:00 - 6:00PM	GR028	Huntington	Scientific Visualization with PV-WAVE
Wednesday			
3:00 - 4:00PM	GR017	Pacific A	Animation/Visualization Working Group
Friday			
3:00 - 4:00PM	*DA009*	*Santa Monica*	*Realtime Data Examination Using Graphical Output*

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PostScript and Hardcopy Issues

Monday			
9:30 - 11:00AM	GR054	Avila	Print Queues and PostScript Symbionts
11:00 - Noon	GR060	Avila	DECprint Program Overview
1:00 - 2:00PM	*HM048*	*Orange Co Blrm*	*Printer/PrintServer Hardware and Software Update*
3:00 - 4:00PM	*HM054*	*Orange Co Blrm*	*Introducing the PrintServer 20/40-PLUS*
4:00 - 5:00PM	*HM050*	*Orange Co Blrm*	*Getting the Most From Your LN03, LA75, or LJ20*
Wednesday			
11:30 - Noon	*NE038*	*Anaheim Room*	*Management of DECserver Print Queues*
1:00 - 2:00PM	*NE085*	*Anaheim Room*	*Toubleshooting LAT Terminal Server and Print Queue Problems*
6:30 - 7:00PM	*VA004*	*Carmel*	*VMS Print Queue Setup*
Thursday			
9:00 - 10:00AM	GR011	Huntington	Beginning PostScript Programming
10:00 - 11:00AM	*EP036*	*Huntington*	*The Evolving PostScript Environment*
11:00 - Noon	GR058	Huntington	Color Printing in PostScript
Noon - 1:00PM	GR062	Huntington	Color Printing Technologies: A Survey
3:00 - 4:00PM	GR015	Pacific A	Hardcopy Working Group
10:00 - 11:00PM	*HM055*	*Santa Monica*	*Choosing the Right Printer for the Job*
Friday			
9:00 - 10:00AM	GR057	Orange Co Blrm	PostScript Commenting Conventions and Encapsulation
10:00 - 11:00AM	GR073	Orange Co Blrm	Display PostScript Introduction and Product Description
11:30 - 12:30PM	GR056	Orange Co Blrm	Advanced PostScript Programming Tutorial
12:30 - 1:30PM	GR066	Orange Co Blrm	Printing Forum (Question and Answer Session)
4:00 - 5:00PM	*VA200*	*Center Hall*	*Writing a Server Symbiont to Implement Distributed Printing Services*

Workstations

Monday			
12:30 - 1:30PM	*VA265*	*Marriot Hall*	*The VMS Strategy for the Desktop*
2:00 - 3:00PM	*VA268*	*Marriot Hall*	*Desktop VMS Software Overview*
3:00 - 4:00PM	*LT185*	*Ballrooms A-E*	*VAXset for Workstations (DECwindows)*
5:00 - 6:00PM	GR045	Avila	Managing VMS Workstations - Clustering, Standalone, DFS, etc.
6:00 - 7:00PM	GR043	Avila	DECwindows Tuning
7:00 - 8:00PM	GR044	Avila	VWS-to-DECwindows Migration Tools
Tuesday			
9:00 - 10:00AM	*PC085*	*Ballroom F*	*Technical Overview of RISC-based Workstations*
9:00 - 10:00AM	*UN024*	*San Simeon*	*X Window System - From Stock to Fully Customized*
10:00 - 11:00AM	*PC083*	*Ballroom F*	*VAXstation 3100 Technical Overview*
11:00 - Noon	*PC084*	*Ballroom F*	*VAXstation 3520/3540 Technical Overview*
11:30 - 12:30PM	GR072	Huntington	Using DECwindows to Manipulate Images from Scanners and Facsimilies
12:30 - 2:00PM	GR071	Huntington	DECwindows: Imaging and Modular Applications
2:00 - 3:00PM	*HM053*	*California F*	*DECwindows Terminal Technical Overview*
4:00 - 5:00PM	*DA066*	*Monterey*	*Using DECwindows in Laboratory Applications*
4:00 - 5:00PM	*SM071*	*San Simeon*	*Digital's Desktop Services Update*
5:00 - 6:00PM	*VA269*	*South Hall*	*Desktop VMS System Management*

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Workstations (cont'd)

Wednesday			
10:30 - 11:00AM	GR046	California F	VWS Product Update
11:00 - Noon	*OA102*	*Ballroom G-K*	*ALL-IN-1 and DECwindows*
Noon - 1:00PM	GR020	Pacific A	UIS/DECwindows Working Group
Noon - 1:00PM	*LT192*	*Avila*	*Programming DECwindows Applications in VAX BASIC*
1:00 - 2:00PM	GR053	California F	Introduction to PHIGS Extensions to X11 (PEX)
1:00 - 2:00PM	*AI036*	*Monterey*	*Window-based Programming Environment for VAX OPS5*
1:00 - 3:00PM	GR023	Pacific A	DECwindows Clinic
2:00 - 3:00PM	*VA266*	*North Hall*	*VMS DECwindows: The New Graphical User Interface to VMS*
3:00 - 4:00PM	*VA267*	*North Hall*	*Overview of the VMS DECwindows Server*
4:00 - 5:00PM	*VA270*	*North Hall*	*DECwindows Performance and Tuning Considerations*
5:00 - 6:00PM	*PC015*	*Rooms 3 & 4*	*Writing a DECwindows Application*
5:00 - 5:30PM	*VA174*	*North Hall*	*A DECwindows Games Interface*
5:30 - 6:00PM	*VA152*	*North Hall*	*Using DECwindows Font Compiler*
6:00 - 7:00PM	*PC070*	*Rooms 3 & 4*	*PC DECwindows DOS X Display Facility Overview*
Thursday			
9:00 - 10:00AM	*VA285*	*California E*	*DECwindows Toolkit Overview*
10:00 - 11:00AM	*VA287*	*California E*	*DECwindows User Interface Tools*
11:00 - Noon	*VA286*	*California E*	*Anatomy of a Widget*
11:00 - Noon	*LT148*	*California F*	*How Digital Used CASE to Develop DECwindows VAXset*
1:00 - 2:00PM	GR074	Huntington	Using DECwindows on Non-Digital Workstations
2:00 - 3:00PM	GR059	Huntington	DECwindows Terminal Emulator
2:00 - 3:00PM	*AI039*	*Avila*	*CLX: Common LISP Extension for Programming in X Windows*
4:00 - 5:00PM	GR042	Huntington	Workstation Directions - You Tell Us
3:00 - 4:00PM	GR047	Huntington	Network-Transparent Graphics
Friday			
2:00 - 3:00PM	*VA153*	*California A*	*DECwindows Real Life Applications*

Image Processing

Monday			
11:00 - Noon	GR024	Pacific A	Imaging Clinic
Noon - 1:00PM	GR008	Pacific A	Imaging Working Group
Tuesday			
11:30 - 12:30PM	GR072	Huntington	Using DECwindows to Manipulate Images from Scanners and Facsimilies
12:30 - 2:00PM	GR071	Huntington	DECwindows: Imaging and Modular Applications
2:00 - 3:00PM	GR064	Huntington	Digital's Image Products - Technical Overview and New Products Update
Wednesday			
1:00 - 2:00PM	*PC089*	*Rooms 3 & 4*	*Eliminating Paper - A Practical Application of Digital's Imaging Tools*
2:00 - 3:00PM	GR036	California F	Introduction to the Components and Techniques of Imaging Science
3:00 - 4:00PM	GR065	California F	The DECimage Storage Manager Technical Overview
4:00 - 5:00PM	GR037	California F	An Overview of Advanced Digital Image Processing Techniques

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finding your graphics way in Anaheim

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Image Processing (cont'd)

Thursday			
8:00 - 9:00PM	*PC094*	*Rooms 3 & 4*	*FAX Interface on a VAX/VMS System Integrated with PCSA*

Computer Graphics

Monday			
3:30 - 4:00PM	*ED59*	*Monterey*	*Graphics for Instruction in Research*
10:00 - 11:00PM	GR052	Avila	Choosing Graphics Devices for Your VAX
Tuesday			
11:00 - 11:30AM	GR014	Huntington	CIE Color Chart on a CRT
4:00 - 5:00PM	GR063	Huntington	Presence and Multi-Sensory I/O
Wednesday			
10:00 - 10:30AM	*EP008*	*San Simeon*	*CALS Standards Update*
11:00 - Noon	GR051	California F	Digital's Graphics Application Strategy
11:00 - Noon	*EP027*	*San Simeon*	*Computer-Aided Acquisition and Logistics Support (CALS)*
Noon - 1:00PM	GR050	California F	DEC GKS and PHIGS - Overview and New Features
1:00 - 2:00PM	GR053	California F	Introduction to PHIGS Extensions to X11 (PEX)
6:00 - 7:00PM	GR049	California F	Graphics Users Talk Back to Digital and Question and Answer Session
5:00 - 6:00PM	GR048	California F	Graphics Performance Analysis
Thursday			
2:00 - 3:00PM	*EP064*	*California A*	*Using METAFONT to Design a Simple Logo*
3:00 - 4:00PM	GR047	Huntington	Network-Transparent Graphics
5:00 - 6:00PM	GR013	Huntington	Data Presentation in a Technical World
8:00 - 9:00PM	*PC094*	*Rooms 3 & 4*	*FAX Interface on a VAX/VMS System Integrated with PCSA*
10:00 - 11:00PM	*OA072*	*Ballroom F*	*DECalc, DECgraph, and DECslide Product Panel*
Friday			
2:30 - 3:30PM	GR040	Orange Co Blrm	A Decade of Color Graphics
3:00 - 4:00PM	*DA009*	*Santa Monica*	*Realtime Data Examination Using Graphical Output*

Engineering Graphics

Monday			
9:00 - 10:00PM	GR025	Avila	Engineering Management System in Mechanical CAD/CAM/CAE
Tuesday			
11:00 - Noon	GR016	Huntington	Engineering Graphics Working Group
Noon - 1:00PM	GR026	Huntington	Mechanical CAD/CAM/CAE Discussion

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finding your graphics way in Anaheim

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Graphics Standards

Monday			
1:30 - 2:00PM	*VA271*	*Marriot Hall*	*VMS as an Open Environment*
Wednesday			
Noon - 1:00PM	GR050	California F	DEC GKS and PHIGS - Overview and New Features
1:00 - 2:00PM	GR053	California F	Introduction to PHIGS Extensions to X11 (PEX)
Thursday			
4:00 - 5:00PM	GR032	Pacific A	Graphics ANSI Standards Committee
5:00 - 6:00PM	GR019	Pacific A	GKS/PHIGS/Graphics Standards Working Group
6:30 - 7:30PM	*UN046*	*San Simeon*	*Open Systems Standards and Digital*

SIGGRAPH booth report

(Cont'd from p. 1)

Interestingly, but perhaps understandable because of the nature of SIGGRAPH, more than half the people stopping at the booth didn't know that DECUS existed. About half the people in this group however are foreign citizens. The other fifty percent were equally divided between DEC/DECUS enthusiasts and critics. The most common criticisms were - "we were previous DEC users", "we could not fit our applications with DEC platforms" etc. Alas, we had to put deaf ears to critics, just because we didn't have time to discuss the problem with them. I just wanted to mention that this fraction is quite significant.

We had a lot of fun with Digital users. We shared interesting stories, conversed about applications, discussed new products, just like in the GAPSIG Symposium campground. Many of the Digital users will likely attend Anaheim. A lot of people stayed back at the booth and helped other visitors. Many old DECUS GAPSIG volunteers also showed up and appreciated our efforts. Many of our keynote speakers were impressed that we had a presence at SIGGRAPH. Our Graphics Factsheet was a concise piece of literature for most people. A large number of Digital engineers (I would say about three hundred) visited the booth and complemented us on our efforts and also learned about DECUS and its activities. They liked it!

Our volunteers were great. We all learned quite a bit from the process. The only unfortunate incident happened after we left the Exhibition. A cleaning person "cleaned" away all papers from Laura Vanags's office in Fermilab and we lost our valuable filled-in questionnaires. Of course, I was very disappointed. A few mailed in questionnaires are still coming in. We would have picked up a few valuable members through the information from the questionnaires. We have to be more careful next time. But, over all, I've the privilege to say that we had a strong presence and thanks to the volunteers, we had excellent coordination and visibility at the show. I strongly recommend to repeat the booth at SIGGRAPH '90 in Dallas.

Photos taken at the SIGGRAPH '89 show of the DECUS / GAPSIG booth show the wealth of material displayed and the volunteer enthusiasm.

gapsig

call for participation, spring 1990

DECUS meets twice a year to exchange information at national symposia. The sessions for the Fall Symposium in Anaheim are being determined now. Therefore, its time to start thinking about presenting sessions for the GAPSIG in New Orleans next spring at the DECUS Spring Symposium.

The Graphics SIG deals with both hardware and software graphics topics. These include image processing, window systems, graphics workstations, graphics hardcopy, graphics standards, CAD/CAM, network graphics, visualization, animation, and various graphics languages and systems. The application sessions range from small business and scientific graphics to complex graphics and image processing on VAXstations and large processors.

Tutorial sessions on any of the above topics are encouraged. We solicit presentations which cover present and proposed graphics standards. The Graphics theme for the upcoming symposium is "Network Graphics" which encompasses all aspects of DECWindows as well as other network graphics protocols. Presentations on novel uses of graphics tools and/or uses of graphics equipment in the laboratory, on campus, for data analysis, data presentation or training are welcome. Those sessions may not necessarily have graphics as its main thrust, but use graphics as a tool for getting the job done.

We will conduct a graphics hardcopy contest and encourage attendees to bring renderings of interesting graphics for submission to the contest. We will also produce a tape of graphics related software and encourage attendees to produce submissions for this tape. At the symposium, provisions will be made for any special requirements needed for demonstrations and special display equipment.

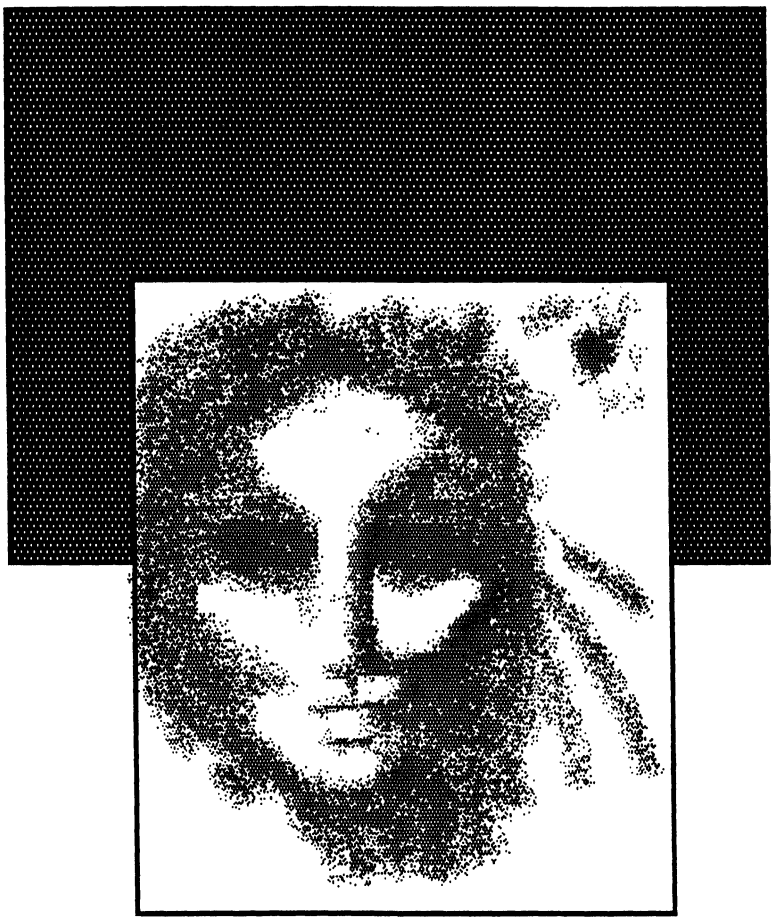
gapsig

hardcopy contest winner

The winner of the GAPSIG Hardcopy Contest, black and white division, at the Spring 1989 Symposium is Richard Kessler from New York. He prepared his entry on-site in the GAPSIG campground using DECpaint software on a VAXstation 3100. The printout went to an LN03R. We want to thank Richard for his submission!

Remember that the contest will be run again in Anaheim (see page GRA-3 for details and rules), so bring that black and white or color graphic to the GAPSIG campground, Pacific A, early for entry in the fall contest!

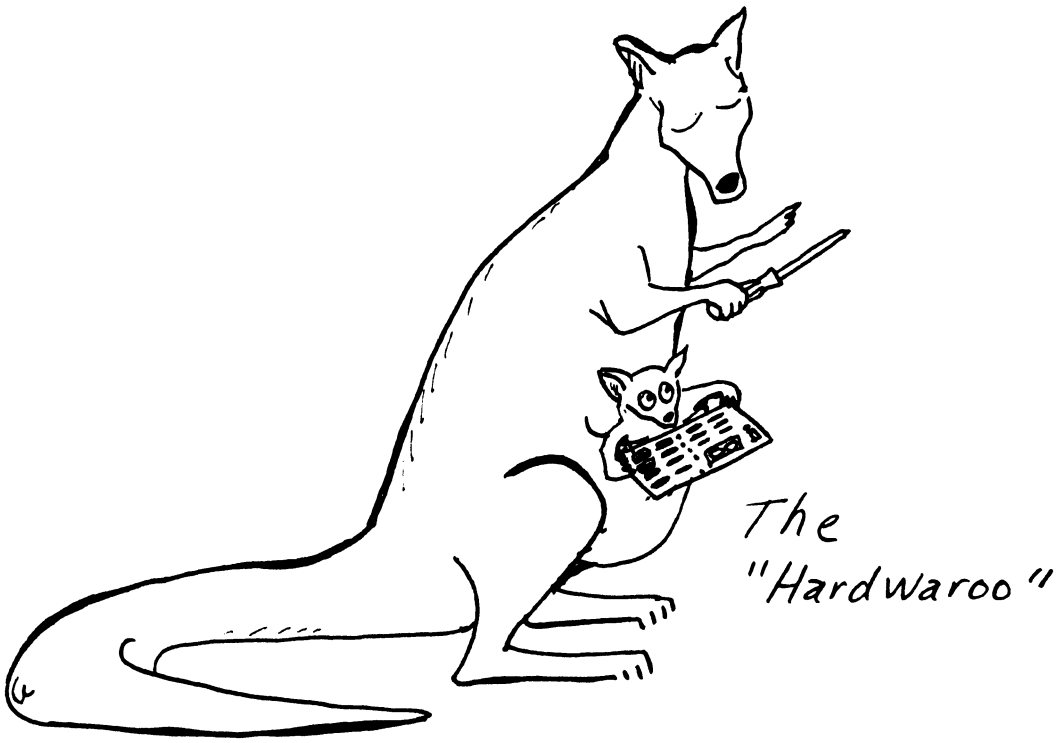
And, if you can't bring one with you, come to the campground and make your own submission using the equipment provided!



HARD NEWS

HMS

The Newsletter of the DECUS Hardware/Micro SIG



IN THIS ISSUE...

From The Editor...

I also want to issue my usual plea for newsletter submissions. I need your help! If you have an idea for a submission but don't feel you want to tackle the job of writing the article, or need information on some aspect of hardware and related matters, please contact me and I'll do my best to find a willing author. There might be someone within Digital or a third-party manufacturer who has the expertise you, and others, need.

Please remember that your problems and fixes that you've found for your problems are needed and appreciated by other DECUS members. Between the Chair of the HMS SIG, Bill Walker, and myself, we can take submissions in several media including RX01, RX02, and RX50 floppies as well as TK50 tapes. We can also make special arrangements for other media when necessary.

Send your cards, letters, and submissions to:

Neil Krandall
RDB Cincinnati
1440 Elkton Place
Cincinnati, OH 45224

DECUS symposia are especially valuable for the novice despite the impression many newcomers have that the information is esoteric and arcane. Perhaps the surest way to lose your amateur standing is to go to a few symposia.

This month my only offering is a brief listing of Hardware-related sessions, or more accurately, HMS SIG sponsored sessions, at the Fall DECUS symposium in Anaheim. If you've attended DECUS symposia before you know the value of being exposed to a concentrated level of expertise of things Digital and near-Digital. I estimate that I've saved at least 5 months of work because I got answers at one particular symposium that couldn't be gotten anywhere else.

On behalf of the Hardware and Micro SIG I want to invite you to attend the Fall '89 Symposium in Anaheim. There are many new products which have been announced since the Spring DECUS symposium which will be covered in several sessions and demonstrated in the exhibit hall. This is a brief list of the sessions offered by the HMS SIG. The full Meeting Program contains a full abstract and description of all of the sessions.

One of the most important sessions of the week is the HMS Roadmap which will highlight many of the most interesting sessions of the week as well as bring you up-to-date on added, cancelled, and replaced sessions yet to come.

The following is a brief description of our offerings for the week:

Time	Title	Session
Monday November 6, 1989		
9:00 a.m. - 10:00 a.m.	HMS Roadmap	HM033
10:00 a.m. - 10:30 a.m.	Video Product Overview	HM052
10:30 a.m. - 11:00 a.m.	New Write-Once Optical Systems	HM019
11:00 a.m. - 12:00 noon	RF Technical Description	HM021
12:00 noon - 1:00 p.m.	Government Trends	HM023
1:00 p.m. - 2:00 p.m.	Printer/PrintServer Update	HM048
2:00 p.m. - 3:00 p.m.	Tape Advances	HM016
3:00 p.m. - 4:00 p.m.	PrintServer 20/40-PLUS	HM016
4:00 p.m. - 5:00 p.m.	Programming the LN03	HM050
5:00 p.m. - 6:00 p.m.	Microsystems Review	HM025
6:00 p.m. - 7:00 p.m.	Serial Line Interfacing	HM030
7:00 p.m. - 8:30 p.m.	HSC Architecture	HM013
8:30 p.m. - 10:00 p.m.	Bus Bandwidth	HM057
10:00 p.m. - 11:00 p.m.	Configuring New Microsystems	HM058
Tuesday November 7, 1989		
9:00 a.m. - 10:00 a.m.	Solid State Disk Technology	HM002
10:00 a.m. - 10:30 a.m.	XMI Bus DSA Product Overview	HM008
10:30 a.m. - 11:30 a.m.	XMI Bus DSA Disk & Tape Adapte	HM004
11:30 a.m. - 12:15 p.m.	Memory Effects on Performance	HM003
12:15 p.m. - 1:00 p.m.	Future Memory Subsystem Tech	HM014
1:00 p.m. - 2:00 p.m.	Microsystem Upgrades	HM028
2:00 p.m. - 3:00 p.m.	DECwindows Technical Overview	HM053
3:00 p.m. - 4:00 p.m.	Flat Panel Monitors	HM063
4:00 p.m. - 5:00 p.m.	rtVAX Realtime Server Family	HM029
5:00 p.m. - 6:00 p.m.	Upgrading a MicroVAX II	HM060

Wednesday November 8, 1989

10:00 a.m. - 11:00 a.m.	MicroPDP-11 Enhancements	HM042
11:00 a.m. - 12:00 noon	PDP-11 Update	HM027
12:00 noon - 12:45 p.m.	Programming With Optical Stora	HM020
12:45 p.m. - 1:30 p.m.	New Disk Mfg. Technologies	HM009
1:30 p.m. - 2:30 p.m.	RISC Hardware Overview	HM044
2:30 p.m. - 3:30 p.m.	Digital's CPU Technologies	HM031
3:30 p.m. - 4:30 p.m.	Configuring Disk Subsystems	HM012
4:30 p.m. - 5:30 p.m.	DSSI Disk & Adapter Perf	HM015
5:30 p.m. - 6:15 p.m.	CI vs. DSSI vs. SCSI	HM061
6:15 p.m. - 7:00 p.m.	Microsystem Storage	HM040

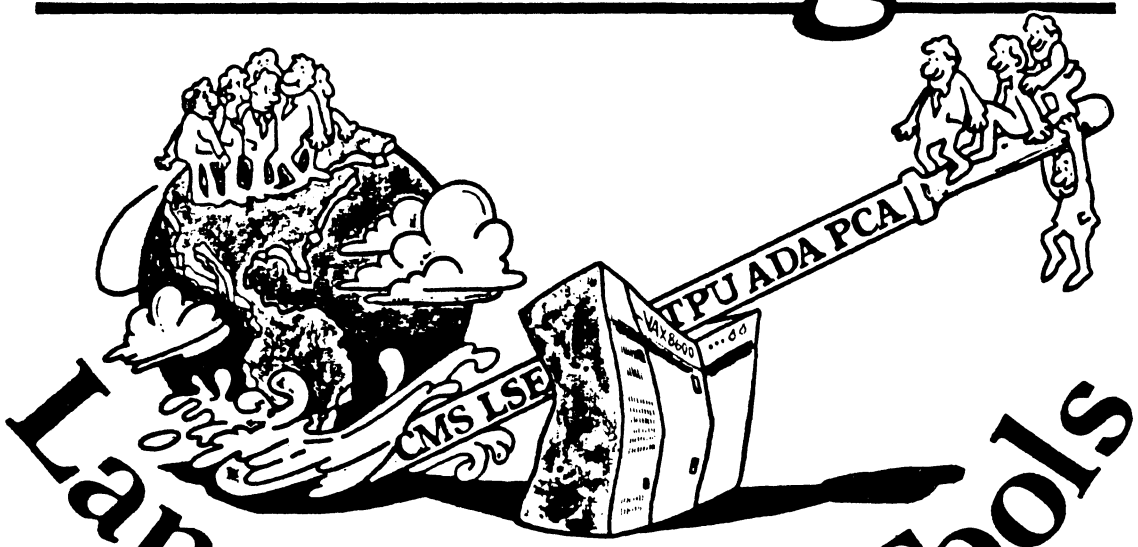
Thursday November 9, 1989

9:00 a.m. - 10:00 a.m.	Tape Error Handling Schemes	HM018
10:00 a.m. - 11:00 a.m.	Removable Disks & VMS	HM054
11:00 a.m. - 12:00 noon	PDP-11 Diagnostics	HM047
12:00 noon - 12:30 p.m.	What's in a Part Number?	HM032
12:30 p.m. - 1:00 p.m.	MDM Overview	HM045
1:00 p.m. - 2:00 p.m.	MDM Advanced Use	HM046
2:00 p.m. - 3:00 p.m.	Erasable Optical	HM025
3:00 p.m. - 4:00 p.m.	Tape and Optical Data Formats	HM017
5:00 p.m. - 6:00 p.m.	Foreign Peripherals Forum	HM034
6:00 p.m. - 7:00 p.m.	Disk Subsystem Specifications	HM010
7:00 p.m. - 8:00 p.m.	MicroVAX Hardware Differences	HM059
8:00 p.m. - 9:30 p.m.	I/O Subsystems Performance	HM011
9:00 p.m. - 10:00 p.m.	Microsystem Power Distribution	HM039
10:00 p.m. - 11:00 p.m.	Choosing the Right Printer	HM055

Friday November 10, 1989

9:00 a.m. - 10:00 a.m.	Microsystems ECO Update	HM038
10:00 a.m. - 11:00 a.m.	Microsystems Hardware Panel	HM037
11:00 a.m. - 12:00 noon	Magnetic Head/Disk Interface	HM001
11:00 a.m. - 12:00 noon	HMS SIG Wrapup	HM036
1:00 p.m. - 2:00 p.m.	Hardware Hints and Kinks	HM035
2:00 p.m. - 3:00 p.m.	Programming the Video Terminal	HM049
3:00 p.m. - 4:00 p.m.	Evaluating Tech Workstations	HM022

Leverage



Languages & Tools

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EDITOR'S NOTES

Only three articles this month, so I assume everyone is gearing up for the Anaheim Symposium, and hasn't had time to write. Oh well...

Speaking of symposia, our first article is a sample of what resources are available to you there. Matt Variot has summarized some of the questions and answers from the L & T Clinic in Atlanta. Some of this may be of use to you, or may suggest how you can best take advantage of the Clinic in future symposia.

Rochelle Lauer, the DECUS representative on the Fortran Standards Committee, has submitted the second of two articles dealing with the current status of that standard. Since the issue of whether or not to accept the standard is very hot right now, I would suggest giving these articles a close reading if Fortran is of interest to you.

Finally, we have the announcement of the retirement of the PDP-11 Pascal products. This was a fine language that did not get the support that it warranted. If you are using the product, or feel you ought to consider it, the information regarding it's future status may be of interest to you.

That's it, I guess. Hopefully we will soon be inundated with reports of all the wonderful sessions/announcements from Anaheim. See you next month!

Al Folsom
Leverage Editor

SPRING '89 CLINIC REPORT

by Matt Variot

The L&T Clinic at Spring DECUS 1989 in Atlanta, Georgia was successful, as usual. This report names the participants and summarizes the best questions and answers recorded during the session. The L&T Clinic is a one-on-one session, in which experts in all of the DEC supported and some other Languages and Tools are available to answer your questions. The L&T Clinic is repeated at each symposium.

Fifty-three questions were submitted and answered. Questions of general interest are reported with the names of the questioners and the written answers.

Experts helping at this symposium's L&T Clinic were L&T Master Gerald Lester Computerized Processes Unlimited, Ken Budnik of DEC, Barry Tannenbaum of DEC, Glenn Joyce, Karl Puder of DEC, Tony Mione of Rutgers the State University, Scott Krusemark of Systemation, Gary DeLong, Berin Brett, George Fullerton, Beth Benoit of DEC, L&T Master Dave Ream of Lexi-Comp, Keven Routly, Bob Montebone, Joe Pollizzi of Space Telescope, Steve Grass of DEC, Joel Clinkenbeard of DEC, John Henning, and Edgar Whipple of DEC. Some affiliations were lost between the clinic and the preparation of this report.

Dale T. Smith of TELCO RESEARCH asks a VMS V5 COBOL question: In converting JCL to DCL, how do I handle the use of GDG's (Generation Data Groups), particularly where a program needs to read in ALL versions of a data file? Scott Krusemark answers that there is no easy solution inside COBOL, outside:

1. Use COPY to append multiple files together to a single work file.

2. Use runtime library to do directory lookup and use VALUE OF IO clause to dynamically open the file, then the next, etc.

3. Use FORTRAN subroutine to do similar.

David Greenwood asks a VMS V4.7 CMS V3 question: Having specified multiple libraries using SET LIBRARY, is it possible to force CREATE ELEMENT to add the element to the 2nd or Nth library in the search string? Edgar Whipple answers, No. CREATE ELEMENT -always- operates in the first library. CREATE GROUP or CLASS -may- operate in the *1st* library or *ALL* libraries depending on the occlusion qualifier setting.

Mike Long asks a multitude of VMS V5.1-B DEBUG questions, answered by Kevin Routley: Q: EXAM/TYPE=() of complex type (i.e. struct) where you have nothing of that type in current call stack. Specify type name vs something of that type. A: If you have a defined type name (i.e. a TYPE declaration in PASCAL) you should be albe to use the type name in the EXAMINE/TYPE=(typename), as well as a reference to a symbol of that type. Address of a structure should be usable; also using a variable not in the call stack should be possible. Q: SET

BREAK @ line displayed without having to specify %LINE. A: We can consider changing the context for set break. The %LINE is necessary to distinguish this as a line number instead of an address. Q: SET CONTEXT function or +/- would move you up or down call stack, do a SET SCOPE, and also do an EXAMINE/SOURCE. A: It's in V5.2 - SET SCOPE/CURRENT (scope_number) will let you specify a scope to look at, including updating the SRC and INST displays. You could define UP to be SET SCOPE/CURRENT %PREVIOUS_SCOPE to move up the call stack. Q: SET MODE SEPARATE available by defining a logical so I can type debug commands IMMEDIATELY after $ RUN/DEBUG APPLICATIONS (or implement as a qualifier). A: Create a DEBUT_INIT.COM file that contains SET MODE SEPARATE in it, and then $ DEFINE DBG$INIT DEBUG_INIT.COM. Q: For VAX C, be able to specify when examining a "char *" or "char[]" variable that EXAMINE defaults to EXAMINE/ASCII. A: We'll keep this in mind. You could set type ASCII but this would not work *only* for char variables. Thanks.

Douglas E. Townsend asks a VMS V5.1 COBOL V4.1 question: Currently certain aspects of the COBOL INSPECT statement are not standardized in ANSI. (The TALLY option operates differently under VMS and the IBM mainframe world.) Is there any work being done by the ANSI Standards Committee on this issue? What are the current proposals? Also, why doesn't RMS 23 - No Next Logical Record - set off the AT END Condition in ISAM files read with READ NEXT? The answer from Bob Montebone: VAX COBOL conforms to the ANSI-85 standard at the HIGHest level with no errors. As such, the language conforms to the standard for all language elements. If the tallying behaviour of the INSPECT statement is ill defined, it would be adventageous to have it defined, in a standard fashion so that implementations are consistent across platforms and among vendors. I am not aware of any inconsistencies or of any proposals to correct these inconsistencies. It may be useful to put together a working paper explaininig the problem and submit it to the committee for consideration.

File status 23 occurs when the record is not in the file, based on the key supplied, or when an optional file is not present. A file status of 23 will cause the statements in the INVALID KEY phrase to be executed, not the statements in the AT END phrase.

From Robert Myatt, a VMS V5 VAX C question: When using a 'Make-like' utility to build a program written in C, it uses source which is in a directory which is protected form being written into. A user claims that he has directory protection problem because the VAX C compiler creates temporary files which try to get created in the same directory the source is in. The answer: The VAX C cpompiler doesn't create any tempoary files. You might have to redirect the object file by using the /OBJECT qualifier. If you are using the /ANA or /PREPROCESS qualifier(s) you would also need to redirect the output to another directory using those qualifiers.

From Eric White, a VMS V5.1 VAXScan V1.1 question: Non record format file (Just S'sos' and s'eos') which needs to be tokenized for pre-processing.

- Use of "C" routine to do buffering?
- Returning SCN$_ENDINPSTM from C to scan when EOF is reached?

Dave Ream and Beth Benoit answer, Definition of SCN$_ENDINPSTM must be changed in the C calling program to be a global variable rather than an external integer.

Tom Versinete queries two VMS V4.7 MMS questions: 1) When trying to use an installed .EXE in a dependency for a build we run into problems. The only workaround we have found was to keep an uninstalled copy in another directory. Is this the only way? 2) When building a system and the system is up to date sometimes we get normal exit status, sometimes we get source is

already up to date. The answer from Joe Pollizzi is: 1) Not clear -- could be a logical name problem -- need to see an example. 2) Probable use of psuedo-target that is always rebuilt even when up to date -> exit status as opposed to "already up to date"?

From Keith Fowler, we have a DEBUG question: Why can't scrolling be performed on the prompt display window while in screen mode? Kevin Routley answers, Basically, this fellow wants DEBUG to be able to capture program output, so that he can scroll the prompt display when in the default screen configuration. One user-friendly change would be to not allow the PROMPT window to have the SCROLL attribute.

John Saunders asks a VMS V5.1 VAX C V2.4 question: WRITE() funtion called with buffer containing linefeeds. File is variable length, carriage control/or other non-stream format. I need *exactly* one record written per linefeed, maybe one on CLOSE(). Can this be done without adding a lot of my own buffering code? Program is portable and this problem is VMS specific. The answer: Please submit an SPR with an example to allow us to reproduce this problem! This sounds like a bug, and I'd like our RTL guru to take a look at this.

John Saunders asks a VMS V5.1 PCA question: Can I use PCA to track CPU/IO usage in AST-driven programs? How? V2.0 did not permit this. The programs to be tested are almoste entirely event driven. Joel Clinkenbeard answers: Nothing in PCA V3.0 changes the (in)ability to track CPU/IO usage in AST driven programs. PCA can track user mode ASTs, but even that may be distorted if the AST happens to be synchronized with PCA's timer ASTs. This is a known hole in PCA and is on our wishlist, but no easy solution is known.

From Doug Champan of Syndesis, a VAXSET question: VAXSet with Ingres Tools -- What issues must be one be concerned with when using VAXSet with Ingress Tools -- specifically how does one deal with imbedded DML statements, the preprocessor (Ingres? MV), and DEBUG? Does DTM work with Ingres Forms front end? Gary DeLong answers: VAXSet does not do proper correlation with source files. We (DEC? MV) are investigating solutions.

B Gliss asks a VMS V5 LaTeX question: Our LaTeX driver for Postscript output does not seem to handle landscape output. Is there a driver available on the DECUS distrubution or some other place that would produce output in landscape orientation? Don Amby answers: Contact Ted Nieland for update to TeX tape.

Wayne Heavey of Honeywell asks a VMS V5 TPU question: How do you compile TPU procedures for LSE in batch? The answer from Barry Tannenbaum is:

```
LSE/NODISPLAY/COMMAND=FOO.TPU
```

Todd Shaneufelt of Honeywell asks a VMS V4.7A MMS question: How do you separate files into different directories if the files to be linked and compiled are only listed once? EXAMPLE:

```
$ FORTRAN/ANALY=AN:filename.ana/OBJ=OBJECT:filename.obj filename
```

This would also check CMS for newly created file versions. The answer from Joe Pollizzi is: Use:

```
FFLAGS=/NOLIST/ANA=<ANA_LOGICAL>:/OBJECT=<OBJ_LOGICAL>:
```

or:

```
FFLAGS=/NOLIST/ANA=<ANA_LOGICAL>:'F$PARSE("$(MMS$SOURCE)",,,"FILE")'-
/OBJ=<OBJ_LOGICAL>:'F$PARSE("$(MMS$TARGET)",,,"FILE")'
```

From Doug Slifer, a VMS TPU and EVE question: How to display Video Attributes in TPU

environment? Barry Tannenbaum answers: For display on the terminal, use video attributes of ranges. For input and output of files, modify/enhance eve_read_file and eve_write_file to convert between ranges with attributes (display) and escape sequences (file).

From Doug Chapman of Seyrdesis Ltd, a VAXNotes question: We are currently evaluating VAXNotes as a tool for training and problem management within or Software Develepoment shop of 30 software engineers and our clients. I would like some advice on how to introduce the tool and mange its contents. The answer from Ken Budnik: Check the on-line Quick Reference Guide and make sure everyone knows, and feels comfortable, with the basic commands. (Editor's note: The folks on DECUServe probably have a *lot* of experience managing VAXNotes conferences.)

Bill Weissborn asks a VMS V4.7/V5.1 question: What is the fastest way to load 25K records into an array? Edgar Whipple answers: Create and Map Global Section can do this. A shared global section (permanent) can persist across processes and process creations.

Robert Simon asks a VAX C question: How do I find undeclared symbols which are referenced by extern's in C files? Mike Terrazas and Beth Benoit answer: The behavior is technically undefined, therefore anything is correct. The Linker maybe should indicate that it is throwing away zero-sized objects.

From Ron Hein of Allied-Signal Aerospace, a VMS V4.5 FORTRAN V4.8 question: Because BYTE (LOGICAL*1) is signed, is there an easy/good workaround for this application: Output to Mylar Tape punch (8 channel) all 8 bits of data. Since the eighth bit works as a sign bit the translation of the 8-bit structure is altered. The answer from Joel Clinkenboard is: Not clear what the problem is. FORTRAN compiler treats LOGICAL*1 as signed but can handle most cases where the context requires unsigned, e.g.: B=255 should be OK with no overflow. Operation on formatted I/O may require some manipulation to get unsigned integer results, but simple assignment and unformatted I/O should work fine.

From Dennis Ellis of Kimley-Horn & Assoc., a VMS V5 COBOL V4.2 question: On VAX processors that use the CMOS chip (i.e, 3000 and 6000 series) the floating point 'H' format, decimal arithmetic, and string handling instructions are implemented in software. I understand that COBOL V4.2 is supposed to include a qualifier that will avoid these instructions thereby improving performance. Is this correct? From Bob Monteleone, the answer is: On CVAX processors decimal string instructions are software emulated. Instructions emulated in software execute more slowly than instructions executed directly. To minimize the impact of software emulation on the decimal string instructions, VAX COLOB V4.2 provides a qualifier /INSTRUCTION_SET=NODEC that will avoid the generation of decimal string instructions as much as possible. This qualifier should be used when a COBOL application is to be run on a CVAX processor. If the application is to be run on a processor which does *NOT* emulate the decimal string instructions in software (all processors except the CVAX) then specify /INSTR=DEC. If you are not sure where the application will be run or the application will sometime be run on a CAX processor and sometimes not, then specify /INSTR=GEN.

Frank Fitch of Goodyear Tire and Rubber asks a VMS V4.7 FORTRAN V4.8 question: From a FORTRAN OPEN how is the logical unit number mapped to the corresponding FAB? What is the offset name? Why does FORTRAN have logical unit numbers in the first place, since FABs, RABs, and XABs should be sufficient? Joel Clinkenbeard answers: Unit numbers are not stored in the FAB. FORTRAN RTL maintains the mapping between unit number and FAB. Unit

number is a part of FORTRAN standard language to help maintain independence from a particualr system's I/O. Actual I/O is done with RMS and FORTRAN RTL communicates through FABs, RABs, and XABs but the FORTRAN programmer does not have to know about them.

Frank Fitch asks another question, this one on VMS V4.5 VAX C: It is reported that the actual return of dynamic memory via the malloc()/free() functions is unpredictable. Mike Terrazas, Beth Benoit, and Matt Variot answer: In an attempt to remain bug-compatible with the C RTL of UNIX systems, malloc() and free() are implemented along with an associated function realloc(). The rules governing the function realloc() force malloc() and free() (and calloc() and cfree()) to be non-reentrant (i.e. if the code is executing one of these routines and an AST routine is activated which calls any one of these routines an SS$_ACCVIO condition *may* result). VMS V5 has functions called vms$malloc(), vms$free(), ... These functions are documented in the VMS V5.0 Release Notes.

ANNOUNCING RETIREMENT and FINAL MAINTENANCE RELEASE:

PDP-11 PASCAL/RSX, Version 1.3
Micro/RSX PDP-11 PASCAL, Version 1.3

- PDP-11 PASCAL with warranty (UZ license) no longer available
- PDP-11 PASCAL without warranty (DZ license) available through December 25, 1989.
- Software Product Services end of support date is October 30, 1990
- Final Maintenance Release V1.3:
  - Adds Auto-Install Installation
  - Supports user mode I & D Space
  - Provides corrections to bugs
  - Available now, FCS Apr-89

Insufficient market demand for PDP-11 PASCAL has warranted that the product be placed into the 18 month retirement process. Development will continue to provide software support to customers throughout the 18 month period, as required by the customer software services contracts.

PRODUCT DESCRIPTION

PDP-11 PASCAL is an implementation of the PASCAL language that accepts programs compatible with Level 0 of the ISO Specification for the Computer Programming Language PASCAL [ISO 7185-1983 (E)] as well as ANSI/IEEE 770X3.97-1983 (December, 1983). PDP-11 PASCAL is a multipass optimizing compiler that provides all standard PASCAL data types and statements as well as extensions.

FEATURES/BENEFITS

PDP-11 PASCAL V1.3 is an enhancement of PDP-11 PASCAL V1.2 which makes the product a more usable and reliable compiler. It contains bug fixes and several new features.

FEATURES ADDED IN PDP-11 PASCAL V1.3

- Auto-Install Installation procedure
- Disk Data Caching, an I/O operations enhancement of RSX-11M-PLUS and Micro/RSX Versions 3.0.

  NOTE: In test cases, compile speed has been doubled when disk data caching is enabled!
- Provides user mode instruction and data space (I & D Space) support on processors where both the hardware and software support this feature.

DOCUMENTATION

The documentation set has been revised to include the new features, and provide corrections and omissions. The PDP-11 PASCAL Installation Guide has been totally revised and is available by ordering part number AA-M877D-TC.

ORDERING INFORMATION

PDP-11 PASCAL follows the established PDP-11 layered product pricing tiers and complete pricing is listed in the Corporate Price File.

PDP-11 PASCAL/RSX order numbers are QJ128-** and QY128-**

Micro/RSX PDP-11 PASCAL order numbers are QY806-**

To allow the opportunity for the remaining reseller to buy licenses in advance and in quantities to match their business strategies, "DZ" licenses (i.e., no warranty) are available as follows:

PRODUCT	DESCRIPTION
QY128DZ	PDP-11 PASCAL/RSX LIC WITHOUT WARR
QJ128DZ	PDP-11 PASCAL/RSX LIC WITHOUT WARR
QY806DZ	MICRO/RSX PASCAL LIC WITHOUT WARR

AVAILABILITY

PDP-11 PASCAL V1.3 FCS was in April, 1989

DZ licenses will be available for purchase until December 25, 1989.

The retirement and end of support for PDP-11 PASCAL is scheduled for completion by October 30, 1990.

FORTRAN 8X – IT'S YOUR TURN
Part 2

Rochelle Lauer
Decus Fortran Standards Representative

1. INTRODUCTION

The public review period for the revised Fortran standard will end on November 24,1989. It's your turn to have input. Last month's newsletter gave a brief description of Fortran 8X new features from a programmer's point of view. This month, I'll try to address some issues specifically relevant to DEC VAX customers.

It's not too late to obtain a copy of the standard. Write or call:

> Global Engineering
> 2805 McGaw
> Irvine, Calif 92714
> 800 854-7179

Ask for:

> Document X3.9 programming language Fortran (revised 1989)

The cost is $50.

Send public review comments to:

> X3 Secretariat/CBEMA
> 311 First Street, N.W.
> Suite 500
> Washington, DC 20001-2178

2. DIGITAL'S POSITION ON TWO STANDARDS

Digital's comments submitted to X3J3 with Digital's NO ballot have been published in the August newsletter. These comments include a statement that Digital would vote YES if FORTRAN 77 was retained as a separate standard. In my opinion, this position is unacceptable and detrimental to all VAX Fortran users for the following reasons.

- Two compilers means no standard at all. How can one define a Fortran standard conforming program if there are two Fortrans?
- No one really wants FORTRAN 77. We have been using (and requiring) VAX extensions for years. What we need is to standardize this extended functionality, but not necessarily the syntax.

- Two compilers means double the cost.
- Two compilers means double the system effort (installation etc.)
- Two compilers means that the DEC Fortran compiler group loses a single focal point, perhaps resulting in less than optimal compiler(S).
- With two compilers, vendor specific features will creep in, defeating our attempts at portable code.

As a DEC customer, I would like to see DEC support standards in more than the words we see in the press. Although Fortran 8X is far from perfect, it does have many of the features we require. I believe that the standardization of these features is important now, if we are to develop portable, maintainable code. Two standards would defeat this goal.

3. THE STANDARDS PROCESS –

An Answer To: We Wanted (Only) VAX Extensions

We Wanted VAX Extensions

Most of the functionality of VAX extensions have been included in Fortran 8X, however, syntax of the statements may differ. In developing a standard, the goal of standardizing existing practice sometimes conflicts with consistency in the language or constraints which are not applicable in a single vendor environment. This was often the case in defining syntax and semantics for Fortran 8X. Although existing practice as defined by VAX FORTRAN was a major factor in developing some of the syntax of the revised standard, conflicts in consistency, and constraints of a wider group of users sometimes dictated the use of different syntax.

The '%' instead of a '.' as a delimiter in derived types (structures) is one of the most controversial examples. The '.' would create an ambiguity with user defined operators and was therefore avoided. Although such syntax appears ugly(as we are used to the '.'), it is by no means a reason to reject the standardized functionality it represents.

We wanted ONLY VAX extensions:

Many VAX extensions were implemented in VAX FORTRAN because of customer demand. DEC is responsive to customer input, however as with any vendor, DEC would not implement a feature if it were to have a negative effect on their specific compiler. Some of the (non-VAX extension) features of Fortran 8X are as valuable as the VAX extensions, yet might never be implemented in a DEC compiler because of the scope of work required for the implementation. Hopefully the standards process circumvents this vendor specific outlook, resulting in a consistent set of standardized features with which to write portable code.

4. RESPONSE TO DEC OBJECTIONS

4.1 Complexity

The so-called complexity of Fortran 8X is derived from two sources: features and redundancy.

Features:
Fortran 8X has an abundance of new features. I disagree with the DEC position that features

such as module/use and defined operators offer little functionality. To the contrary, they open a world of functionality which when used, will help to produce maintainable, reliable and portable code(see module examples in last months newsletter). Fortran has long been lacking in safety features, and Fortran 8X provides this capability without jeopardizing investment in existing code. What more could we ask ?

Modern programmers need features such as modules, control constructs, consistent syntax (e.g. parameterized type), in order to do their job better. Also, scientific programmers still need Fortran as their programming language. Features such as mathematical intrinsics, precision and array language make Fortran the language of choice.

Although Fortran 8X may seem 'overloaded', it is providing the best of two worlds; features know to be required (INCLUDE etc), as well as a suite of new features which have a proven track record in other languages.

Redundancy:
Without a doubt, Fortran 8X has an abundance of duplicated features. This problem is the necessary result of introducing expanded functionality which replaces existing FORTRAN 77 semantics. I agree that this duplication introduces complexity; however knowledgeable programmers can and will choose a consistent set of features ignoring the pitfalls of duplication. New programmers will make mistakes resulting in poor code. But, this consequence is not new or particular to Fortran. The simplicity(?) of FORTRAN 77 does not insure proper coding! Many bad programs have been written in FORTRAN 77. In either case, education is the answer.

4.2 Old vs. New Controversy

As the DEC comment points out, deprecation has been removed from the standard, resulting in overlapping features(old vs. new). The conclusion however,that old features should not be superseded with new features does not necessarily follow. It will be the programmer's decision to supersede(or not) old features with new. I have been programming in Fortran for 20 years and my programming style has changed. I welcome additions to the language which allow me to implement in modern style. It is a natural consequence of change to supersede old with new. Deprecation was removed to insure that old code will continue to compile forever. The old features remain for this reason, not necessarily because they are appropriate for modern software development.

4.3 Performance

As DEC points out, some Fortran 8X features will cause performance degradation. It is also true that some VMS 5.0 features caused performance degradation. This performance degradation did not prevent VMS 5.0 from becoming an accepted operating system. DEC has made performance improvements in VMS to minimize the impact of new VMS features, and we have no reason to believe that it cannot do the same for Fortran.

The implementation complexity of a feature is not reason enough to require its removal from the standard; it's usefulness must also be evaluated. Module procedures are a case in point. With module procedures, modules provide a clean, powerful mechanism for designing packages(i.e. software 'black boxes').Removing module procedures leaves programmers with half a feature, thereby restricting implementation. It seems unfathomable that a language would be designed with these restrictions.

4.4 State of the Draft

Admittedly, the draft needed (and still needs) a careful scrutiny. The committee is continuously searching for and repairing inconsistencies. But, just like a program, 'bugs' are bound to crop up. The presence of unknown bugs is not reason enough to withhold the draft from review. We (X3J3) are concerned about the accuracy of the standard, and are working to improve it.

5. CONCLUSIONS

Fortran 8X, due to its evolutionary nature, is a mixture of old and new (often overlapping) features. The new features provide improved functionality for modern software development, and in the author's opinion, the perceived complexity is due to the redundancy, rather than to the features themselves.

Some new features standardize VAX extensions(INCLUDE, DO WHILE derived types,etc), and as VAX users we want and need them. Other features (e.g. modules, parameterized types) are new to the Fortran community but have proven effective in other languages or are required in a modern SCIENTIFIC language (i.e. array processing).

We, as VAX Fortran users must decide the importance of portable code. We must also understand the new Fortran features and their relevance in our own environments. Finally, it is important to respond to the public review and, at the same time, provide input to the DEC compiler group, so that Fortran evolves into the language we want and need.

****

"Everyone sits in the prison of his own ideas; he must burst it open, and that in his youth, and so try to test his ideas on reality."

Albert Einstein
Cosmic Religion

GLOBAL ACCESS

MMP

MUMPS SIG DECUS U.S. CHAPTER

"If you don't want it in the paper, don't let it happen."

DECUS

G L O B A L A C C E S S

Volume 3, No. 3 November, 1989

MUMPS means you never have to say you're sorting.

$VIEW(Editor)

I have observed with disgust a delusion that is increasingly prevalent among the DEC community: that Digital Equipment Corporation sprang up by spontaneous generation upon the Fall, 1977 introduction of the VAX, and had no previous accomplishments whatsoever. (A variant of the same pshychosis causes people to elide the "-11" from PDP-11, but that's another whole editorial....) As a glittering example of the deluded populace, let me present one Eric Smalley, of *Digital Review*. In headlines on the front page of both the August 7 and September 25 issues, our dear boy claims that the VAX 9000 is DEC's "First Mainframe." Earth to Smalley: Wrong, Bozo! DEC's first mainframe-class computer was the PDP-6, a 36-bit system which was initially delivered in early 1965. (Yes, Melissa, this Symposium is the Silver Anniversary!) At the time, IBM was shipping System/360s with 32-64K bytes of main memory, but DEC was shipping -6s with 32-64K words. And by little more than a year later, while OS/360 was still vaporware struggling to become a batch-only system, the -6 had a multi-user timesharing system whose general concepts have been passed all the way down to today's VMS. Is that "mainframe" enough for you?

As a journalist, Smalley has, at the very least, an ethical responsibility to his readers to get his facts right. He has obviously defaulted on that obligation. Furthermore, without the first twenty years of solid Digital technology, the VAX (and, very likely, the publication to which Smalley owes his living) would never have come to exist. He and the rest of the deluded owe that history a great deal more respect than they seem inclined to give it.

$HOROLOG

November 22	Submission deadline for January newsletter
January 22-26, 1990	Canadian '90 Symposium; Toronto
May 7-11, 1990	Spring '90 Symposium; New Orleans, LA
June 11-15, 1990	MUG '90 Conference; Orlando, FL
June 26-28, 1990	DEXPO East '90; Boston, MA
December10-14, 1990	Fall '90 Symposium; Las Vegas, NV

$DATA

A Guide to Interfacing Mailman with VMSmail

There I was, peacefully flipping through the television channels and wondering if there was a book in the house I hadn't read yet, when I stumbled across a showing of that classic science fiction thriller "Colossus, the Forbin Project." Normally, this wouldn't be an event worth mentioning, but this time it triggered a chain of reasoning that started with some fond reminiscences about other science fiction stories I had enjoyed in my youth, and ended with this article. (Okay, so my mind sometimes slips into free association mode when I'm sitting in front of the tube. Do you concentrate when you watch television?)

I remembered reading a number of stories that included as part of their basic premise the idea that computers would advance to the stage where, finally, there would be one giant computer, located at the core of the earth, or out in hyperspace or some other unlikely location, and everyone in the world would have their personal communication link to this Brobdingnagian repository of all of man's knowledge. The reality, of course, is closer to the idea that each person will have his own personal computer, with access to everyone else's computer through standard protocols.

This got me to thinking about networking in general, and how far network capabilities and standardization have progressed since the days of DECnet Phase I (my first experience with networks). I started thinking about the times I had been involved in the initial installation of a network at some site, and it occured to me that the first use of a network made by the people at these sites was usually electronic mail.

Which brings me to the point of this rambling introduction: I have been asked on a number of occasions if I knew of any way to interface Mailman (a public domain MUMPS based mail product developed by the Veterans Administration) with VMSmail. This article describes how to use the new callable mail feature of VMS V5 and VAX DSM (Digital's MUMPS product for the VAX) to achieve this interface. Before proceeding, I must state that this feature is undocumented by Digital and, therefore, unsupported and subject to change. However, Digital has products that use it, so I feel it's worth the risk.

The callable mail interface is, in my opinion, well designed and easy to understand. All of its entry points use the exact same calling sequence and merely require that the programmer provide an item list containing the information needed by each function. Since VAX DSM provides both the ability to add user-written extensions to the interpreter (such extensions are called ZCALLs), and the functions necessary to set aside memory and build the item lists, we have everything we need to proceed. In the following descriptions I will assume a general familiarity

with VMS system management. This includes such things as installing a layered product, adding accounts, and issuing DECnet commands using NCP.

The *VAX DSM Guide to Programming* contains all the information needed to add a ZCALL to the language. You need an entry for the ZCALL table and the ZCALL code itself. Figure 1 contains the table entry and Figure 2 contains the code.

The next step is to tell Mailman about this interface. Figure 3 contains the two entries you need to make in the COMMUNICATIONS PROTOCOL file, Figure 4 contains the entries you need to make in the DOMAIN file, Figure 5 lists the routine for sending mail from Mailman to VMSmail, and Figure 6 lists the routine for communicating in the opposite direction. Set the global node ^XMB("DECNET_DOMAIN") equal to the domain name to be used by the DECnet network. For example, all of our systems here are known as *nodename.SAIC.COM*, so I would issue the command:

```
>S ^XMB("DECNET DOMAIN")=".SAIC.COM"
```

The leading period is required and the data must be in uppercase. You must also have an entry for the null device (_NLA0:) in your device file.

You will also have to make a couple of changes to Mailman. Remove all references to flushing the buffer from Mailman's network code. This code is superfluous with Mailman's current protocols and will not work with a DECnet protocol. You will also want to change the XMS routine to recognize result codes beginning with 4 as meaning a temporary inability to deliver mail. Otherwise, if the DECnet link is down, Mailman will treat it the same as if the destination address were invalid. The easiest way to do this is to set a flag at label R2 and check that flag at label TRASH before calling KLQ^XMA1.

If your DECnet mail object does not already have its own account, create one for it now. Be sure the group number of this account is the same as the group number of your DSM environment. Figure 7 contains a sample account you can use as a guide.

Next, edit the command file shown in Figure 8 to reference the appropriate UCI and Volume Set and place it in both the default directory of the account you just created and SYS$COMMON:-[SYSEXE]. Now issue the following commands to NCP:

```
$ MCR NCP
NCP>DEF OBJ VMSTOMM NUMBER 0 FILE VMSTOMM.COM USER username PASS passvord
NCP>DEF OBJ MAIL FILE VMSTOMM.COM USER username PASS password
NCP>SET KNOWN OBJECT ALL
NCP>EXIT
```

Note that 'username' and 'password' are the username and password created in the previous step.

Finally, you must define a foreign mail protocol for use by users on the local system. This is done with the following DCL command:

```
$ Define/system/exec MAIL$PROTOCOL MM "%0::""TASK=VMSTOMM"""
```

Put this command in your system's startup command file.

That should pretty much do it. Users on the local node can address mail through this link using the address *MM%"user@domain"* and users on other nodes can use this link using addresses of the form *node::"user@domain"* where *node* is the DECnet node name of the local system. Note that the quotes are required as part of the syntax or VMSmail will interpret the domain as the name of a mailing list.

There are still a few things left to be done with these routines. For instance, support for a remote node going away during the transmission of a mail message (as opposed to not being reachable when the transaction first starts) needs to be added. Also, support for addresses of the form *node::node::user* needs to be added. However, one major benefit that accrues from this setup is that you now have a way to do store-and-forward mailing using VMSmail instead of waiting on network congestion or suffering from unreachable nodes in realtime.

--Contributed by Mark Berryman,
MUMPS SIG Standards Rep.

```
        ZCALLINI        ; Initialize
ROUTINE CALLNAME=GETADDR, LINKNAME=USER$GETADDR, INPUTS=1, OUTPUTS=0
RETURN  VALUE, TYPE=LONG
INPUT   REQUIRED, TYPE=BLOCK, MECHANISM=DESCRIPTOR, POSITION=1

ROUTINE CALLNAME=VMSMAIL, LINKNAME=USER$VMSMAIL, INPUTS=3, OUTPUTS=0
RETURN  STATUS, TYPE=LONG
INPUT   REQUIRED, TYPE=LONG, MECHANISM=VALUE, POSITION=1
INPUT   REQUIRED, TYPE=BLOCK, MECHANISM=DESCRIPTOR, POSITION=2
INPUT   REQUIRED, TYPE=BLOCK, MECHANISM=DESCRIPTOR, POSITION=3
        ZCALLFIN        ; Terminate
        .END
```

ZCALL Table Entry
Figure 1

```
        .TITLE  VMSmail Interface for DSM
        .IDENT  /V01.01/
;+
;-
        .PSECT  USER$DATA_RO,LONG,CON,LCL,NOEXE,NOWRT,SHR
;
DISPATCH_TABLE:
        .ADDRESS        MAIL$MAILFILE_BEGIN             ;Index = 0
        .ADDRESS        MAIL$MAILFILE_CLOSE             ;Index = 1
        .ADDRESS        MAIL$MAILFILE_COMPRESS          ;Index = 2
        .ADDRESS        MAIL$MAILFILE_END               ;Index = 3
        .ADDRESS        MAIL$MAILFILE_INFO_FILE         ;Index = 4
        .ADDRESS        MAIL$MAILFILE_MODIFY            ;Index = 5
        .ADDRESS        MAIL$MAILFILE_OPEN              ;Index = 6
        .ADDRESS        MAIL$MAILFILE_PURGE_WASTE       ;Index = 7
;
        .ADDRESS        MAIL$MESSAGE_BEGIN              ;Index = 8
        .ADDRESS        MAIL$MESSAGE_COPY               ;Index = 9
        .ADDRESS        MAIL$MESSAGE_DELETE             ;Index = 10
        .ADDRESS        MAIL$MESSAGE_END                ;Index = 11
        .ADDRESS        MAIL$MESSAGE_GET                ;Index = 12
        .ADDRESS        MAIL$MESSAGE_INFO               ;Index = 13
        .ADDRESS        MAIL$MESSAGE_MODIFY             ;Index = 14
        .ADDRESS        MAIL$MESSAGE_SELECT             ;Index = 15
;
        .ADDRESS        MAIL$SEND_ABORT                 ;Index = 16
        .ADDRESS        MAIL$SEND_ADD_ADDRESS           ;Index = 17
        .ADDRESS        MAIL$SEND_ADD_ATTRIBUTE         ;Index = 18
        .ADDRESS        MAIL$SEND_ADD_BODYPART          ;Index = 19
        .ADDRESS        MAIL$SEND_BEGIN                 ;Index = 20
        .ADDRESS        MAIL$SEND_END                   ;Index = 21
        .ADDRESS        MAIL$SEND_MESSAGE               ;Index = 22
;
        .ADDRESS        MAIL$USER_BEGIN                 ;Index = 23
        .ADDRESS        MAIL$USER_DELETE_INFO           ;Index = 24
        .ADDRESS        MAIL$USER_END                   ;Index = 25
        .ADDRESS        MAIL$USER_GET_INFO              ;Index = 26
        .ADDRESS        MAIL$USER_SET_INFO              ;Index = 27
;
MAX_INDEX = <<.-DISPATCH_TABLE>/4>-1
;
        .PSECT  USER$CODE,LONG,CON,LCL,EXE,NOWRT,SHR
        .ENTRY  USER$GETADDR,0
        MOVL    4(AP),R0                        ;Get pointer to the descriptor
        MOVL    4(R0),R0                        ;Return the item's address
        RET
;
        .ENTRY  USER$VMSMAIL,0
        MOVL    #DSM$_ZCINPUT,R0                ;Assume bad index
        MOVL    4(AP),R1                        ;Get operation index
        CMPL    R1,#MAX_INDEX                   ;In range?
        BGTRU   1$                              ;No
        MOVL    DISPATCH_TABLE[R1],R1           ;Get dispatch address
        MOVL    12(AP),R0                       ;Point to Output MEM BLK
        PUSHL   4(R0)                           ;Put it on the stack
        MOVL    8(AP),R0                        ;Point to Input MEM BLK
        MOVL    4(R0),R0                        ;
        PUSHAL  4(R0)                           ;Input Item list follows right
        PUSHL   R0                              ; after the context variable
        CALLS   #3,(R1)                         ;Call the subroutine
1$:     RET                                     ;and Done
;
        .END
```

ZCALL Code
Figure 2

```
NAME: MAIL-11_OUT       SEND: G SEND^XMZVMSO
 RECEIVE: S ER=0 I XM["D" S XMTRAN="R: "_XMRG D TRAN^XMC1
 OPEN: G OPEN^XMZVMSO          CLOSE: G CLOSE^XMZVMSO
 DESCRIPTION:   This protocol uses the callable interface to VMSmail to send a
 message.

NAME: MAIL-11_IN        SEND: G HELO^XMZVMSI
 RECEIVE: S ER=0 I DEBUG S XMTRAN="R: "_XMRG D TRAN^XMC1
 OPEN: G OPEN^XMZVMSI          CLOSE: G CLOSE^XMZVMSI
 DESCRIPTION:   This protocol accepts a DECnet connection from another host
 speaking the Mail-11 protocol and converts it to SMTP, sending it to mailman.
```

Mailman Communication Protocols
Figure 3

```
NAME: FWVA.SAIC.COM           FLAGS: S
TRANSMISSION SCRIPT: MAIL-11
 TEXT:
 OPEN H=FWVA.SAIC.COM,PROTOCOL=MAIL-11_OUT,DEVICE=_NLA0:
 X S XMHANG="C IO S (IO,IOST(0))=0",XMTURN=1
 MAIL

NAME: SAIC.COM          RELAY DOMAIN: FWVA.SAIC.COM
```

Mailman Domain File Example Entries
Figure 4

```
XM2VMS0 ;MVB ;23-SEP-1989 00:41:46; Interface from Mailman to VMSmail
        ;;V2.0;
        Q
BITEM(ITEM,I)   ;Build an Item List entry in the IN area
        ;I is copied into the WRK area, the WRKPTR is updated, and an Itemlist entry is built in IN to point
to it
        ;ITEM = Item code
        ;I = Item Value (string)
        N %,L I ITEM<0 S %=$ZC(%VMWRITT,IN,INPTR,$C(0,0,0,0,0,0,0,0,0,0,0,0,0,0)),INPTR=5,WRKPTR=1 Q
        S L=$L(I),%=$ZC(%VMWRITL,IN,INPTR,L,2),%=$ZC(%VMWRITL,IN,INPTR+2,ITEM,2),INPTR=INPTR+4
        S %=$ZC(%VMWRITL,IN,INPTR,WRKLOC+WRKPTR-1),%=$ZC(%VMWRITL,IN,INPTR+4,0),INPTR=INPTR+8
        S:L %=$ZC(%VMWRITT,WRK,WRKPTR,I),WRKPTR=WRKPTR+L
        Q
LOG     ;Log the line to the transcript
        S XMTRAN="S: "_XMSG G TRAN^XMC1
SEND    ;Send data from Mailman to VMSmail
        D:DEBUG LOG S %=" " $E(XMSG,1,4) " "
        I ",HELO,MAIL,RCPT,DATA,QUIT,TURN,RSET,NOOP,"[% G @%
        S XMRG="500 Unrecognized command." Q
HELO    ;Process HELO command
        I $P(XMSG," ",2)'=^XMB("NETNAME") S XMRG="550 Only the local host may use this protocol." Q
NOOP    S XMRG="250 Ok" Q
MAIL    ;Process MAIL FROM command
        S %=$ZC(VMSMAIL,20,IN,OUT) ;                                                    Open a contex
t with VMSmail
        K XMTO,LCLUSR S XMTO=1,XMTO(1)="" ;                                             Init the To:
header
        S Q="""",VMSFROM=$TR($P($P(XMSG,"<",2),">"),Q)
        S:VMSFROM["@" VMSFROM=Q VMSFROM_Q D BITEM(8,VMSFROM),BITEM(-1)
        S %=$ZC(VMSMAIL,18,IN,OUT) ;                                                    Define the Fr
om: line
        G NOOP
RCPT    ;Process the RCPT TO command
        ;NOTE: This subroutine assumes that the first label of the domain name is the decnet node name
        N %,%0,USER,USERN,DOMAIN
        S %=$P($P(XMSG,"<",2),">"),%0=$L(%,"@"),(USER,USERN)=$TR($P(%,"@",%0-1),Q),DOMAIN=$P($P(%,"@",%0),"."
)
        I DOMAIN=OURNODE S LCLUSR=1 ;
        Flag a local recipient for later
        E  S USER=DOMAIN_"::"_USER
        S $ZT="RCPTE" D BITEM(19,.USER),BITEM(-1) S %=$ZC(VMSMAIL,17,IN,OUT) ;          Tell VMSmail
about him
        I $L(XMTO(XMTO))+$L(USER)<255 S XMTO(XMTO)=XMTO(XMTO)_","_USER ;                Add him to th
e To: header
        E  S XMTO=XMTO+1,XMTO(XMTO)=","_USER
        G NOOP
RCPTE   ;Encountered an error while processing a user
        N ZE S ZE=$E($ZE,$F($ZE,", "),999) I ZE["-NOSUCHUSR" S XMRG="550 "_$P(ZE,"!")_USERN Q  ;No such user
at this node
        I ZE["-LOGLINK" S XMRG="450 "_$P(ZE,"!")_DOMAIN Q  ;                            Temporarily u
nable to xmit
        S XMRG="554 "_ZE Q  ;                                                           Anything else
 is fatal
```

Mailman to VMSmail Routine
Figure 5A

```
DATA    ;Process the DATA command
        N %,%0,%1
        I '$L(XMTO(1)) S XMRG="503 No recipients defined." G RSET
        S %0=INPTR D BITEM(16,$E(XMTO(1),2,999)) S %1=WRKPTR ;                                   Define the
To
: line
        F %=2:1:XMTO S HDR=$ZC(%VMWRITT,WRK,WRKPTR,XMTO(%)),WRKPTR=WRKPTR+$L(XMTO(%)) ;          To: line
coul
d be very long
        S %=$ZC(%VMREADL,IN,%0,2)+%1-WRKPTR,%=$ZC(%VMWRITL,IN,%0,%,2) ;                          Update the le
ngth of the buffer
        S XMRG="354 Enter Data.",XMSEN="G D1^XMZVMSO",SUBJF=1
        K HDR S HDR=0 Q
        ;Since Mailman has to build its headers we will receive those line by line.
        ;Once the headers have been received, copy the message to a file and send it to VMSmail.
D1      D:DEBUG LOG I "."'[XMSG S HDR=HDR+1,HDR(HDR)=XMSG D:SUBJF  Q
        .S %=$P(XMSG,":") Q:%'="Subject"
        .S %=$E(XMSG,$F(XMSG,": "),999),SUBJF=0
        .D BITEM(14,.%),BITEM(-1) S %=$ZC(VMSMAIL,18,IN,OUT) ;                                   Send the
Subj
ect: and To: lines
        I SUBJF D BITEM(14,"(none)"),BITEM(-1) S %=$ZC(VMSMAIL,18,IN,OUT) ;                      No subject he
ader??
        N FN,FN1 S FN="VMSMAIL."_$J O FN:NEW U FN S FN1=$ZI F %=1:1 Q:'$D(^XMB(3.9,XMZ,2,%,0))  W ^(0),!
        S J="@",XMRG="250 Data OK",XMSEN="G D2^XMZVMSO" ;                                        Tell mailman
the msg has been copied
        S %="",$P(%,"=",30)="=" W !,%_"RFC 822 Headers"_%,! F %=1:1:HDR W HDR(%),! ;             Append the he
aders at the end
        C FN D BITEM(7,.FN1),BITEM(-1) S %=$ZC(VMSMAIL,19,IN,OUT) O FN1:READ C FN1:DELETE ;      Send the msg
body
        I $G(LCLUSR),$A(VMSFROM)=34 D BITEM(8,"MM%"_VMSFROM),BITEM(-1) S %=$ZC(VMSMAIL,18,IN,OUT)
        D BITEM(-1) S %=$ZC(VMSMAIL,22,IN,OUT) ;                                                 Xmit the mess
age
        S %=$ZC(VMSMAIL,21,IN,OUT) ;
        Close the context with VMSmail
        Q  ;                                                                                     One message d
own.  Any more to go?
D2      ;Flush the period that comes from Mailman after the DATA section.
        ;J is the index variable used by Mailman to move through the message
        D:DEBUG LOG I J S J="@" Q
        S XMSEN="G SEND^XMZVMSO" Q
QUIT    ;The QUIT command
        S XMRG="221 VMSmail channel terminating." Q
TURN    ;The TURN command
        S XMRG="502 Turn command not used by this type of link." Q
RSET    ;Reset, Clear the item lists, abort and close the current context
        D BITEM(-1),BITEM(-1) S XMRG=$ZC(VMSMAIL,16,IN,OUT),%=$ZC(VMSMAIL,21,IN,OUT),XMRG="250 OK" Q
OPEN    ;Get some work memory and and setup some pointers to it
        ;The VMSmail context variable is stored in the first longword of the IN area
        S IN=$ZC(%VMGET,1024),OUT=$ZC(%VMGET,512),WRK=$ZC(%VMGET,1024),WRKLOC=$ZC(GETADDR,WRK)
        S INPTR=5,(OUTPTR,WRKPTR)=1 ;                          Skip the 1st longword of the IN area, point t
o start of OUT and WRK
        S OURNODE=$P($ZC(%GETSYI),",",4),ER="NOFLUSH",XMRG="220 VMSmail Interface channel",DEBUG=XM["D"
        Q
CLOSE   ;CLEAN UP
        S %=$ZC(VMSMAIL,21,IN,OUT),%=$ZC(%VMFREE,IN),%=$ZC(%VMFREE,OUT),%=$ZC(%VMFREE,WRK) ;     Release memor
y and VMSmail
        K DEBUG,HDR,IN,INPTR,OURNODE,OUT,WRK,WRKLOC,WRKPTR,XMTO,Q Q
        Q
```

Mailman to VMSmail Routine (cont'd.)
Figure 5B

```
XMZVMSI ;MVB;23-SEP-1989 01:01:15;Input mail via DECnet using Mail-11 protocol (Mailman interface)
        ::V2.0;
LOG     S XMTRAN="S: " XMSG G TRAN^XMC1
HELO    D:DEBUG LOG S XMRG="HELO " HOST,XMSEN="G HELO1^XMZVMSI" Q
HELO1   D:DEBUG LOG I $E(XMSG)'=2 C IO Q
        R % S %=REMOTE %,X=$P(%," "),NIKN=$P($P(%,"""",2),"  "),%=$L(X,"::"),Y=$P(X,"::",%),X=$P(X,"::",%-1)
I X="" S X=NODE ;No PMR
        I X["::" D  S X=$E(X,2,$L(X)) ;                         If message arrived using poor-man's-routing t
hen convert the syntax
        .S X1=X,X="" F %=1:1:$L(X1,"::") S X=X_"%"_$P(X1,"::",%)_X
        S WHO=X_DOMAIN,XMRG="MAIL FROM:<"_Y_"@"_WHO_">",XMSEN="G RCPT^XMZVMSI" ;                                Conve
rt DECnet to Domain
        D NDT^XMA01 K HDR S HDR(1)="" S:$L(NIKN) NIKN=" "_NIKN ;                                                 Inclu
de Personal name if any
        I WHO'=HOST S HDR(1)="Received: from "_WHO_" by "_HOST_" with DECnet;",HDR(2)=$C(9)_Y_" "_^XMB("TIMEZ
ONE")
        S HDR(6)="From:"_NIKN_" "_$P(XMRG,":",2,99),(HDR,hdr)=8,XMZOK=$C(1,0,0,0),HDR(4)="Date: "_Y
        Q
RCPT    ;Get Recipients
        I $E(XMSG)=2 S XMSEN="G R1^XMZVMSI",HDR(5)="Message-ID: <"_$P(XMSG,"ID:",2)_">" G R2
        E  D:DEBUG LOG C IO Q  ;                                                                                 This
should never happen
R1      D:DEBUG LOG I $E(XMSG)=2 W XMZOK,! S HDR=HDR+1 ;                                                         If Ma
ilman accepts it, ok
        E  W $C(48,17,126,0),!,"Mail cannot be delivered to "_HDR(HDR),!,XMSG,!,$C(0),! ;                        Else
Return a VMSmail error
R2      R % I %'=NULL S %=$TR(%,"""") S:%'["@" %=%_"@"_HOST S XMRG="RCPT TO:<"_%_">",HDR(HDR)=%_"," Q  ;Proce
ss a recipient
R3      S HDR(hdr)="To: "_HDR(hdr),HDR(HDR)="",%=HDR-1,HDR(%)=$E(HDR(%),1,$L(HDR(%))-1) ;                       Finis
h up To: header
        S XMRG="DATA",XMSEN="G DATA^XMZVMSI" Q  ;                                                                Say t
he msg body is coming
DATA    ;Get message body
        R % S HDR(7)="X-VMS-TO: "_% ;                                                                            Save
To: line from VMSmail
        I $E(XMSG)'=3 D  G D4 ;                                 If mailman won't take the message (no
 valid recipients)...
        .F  R % Q:%=NULL  ;                                     ...then flush the body of the message

        R % S HDR(3)="Subject: "_%,XMSEN="G D4^XMZVMSI",hdr=$S($L(HDR(1))>1:1,1:3),XMRECO=XMREC,XMREC="G D1^XMZ
VMSI" Q
D1      I hdr'>HDR S XMRG=HDR(hdr),hdr=hdr+1 Q  ;                                                                Send
the RFC 822 headers 1st
        S XMREC="G D2^XMZVMSI" ;                                                                                 Go di
rectly to D2 now
D2      R XMRG I XMRG'=NULL S:XMRG="." XMRG=".." Q  ;                                                            Read
the body of the message
        S XMRG="." Q
D4      S XMRG=$S($E(XMSG)=2:XMZOK,1:$C(2,0,0,0)_XMSG) F %=8:1:HDR-1 W XMRG,! ;                  Send a reply
back for each recipient
        C IO S XMRG="QUIT",XMSEN="G QUIT^XMZVMSI",XMREC=XMRECO Q  ;                                              Close
 the DECnet connection
QUIT    D:DEBUG LOG Q
OPEN    S DEBUG=1,DOMAIN=^XMB("DECNET_DOMAIN"),NODE=$P($ZC(%GETSYI),",",4),HOST=NODE_DOMAIN,U="^",NULL=$C(0),
Q=$C(34) Q
CLOSE   C IO Q
SETUP   S IO(0)=0,IO="SYS$NET",XMCHAN="MAIL-11_IN",$ZT="ERR^XMZVMSI" O IO U IO S REMOTE=$P($ZI,"::")_"::" G ^
XMR
ERR     C IO I $ZE["-ENDOFILE" Q
        ZQ
```

VMSmail to Mailman Routine
Figure 6

```
Username: MAIL$SERVER                          Owner:  MAIL$SERVER default
Account:  DECNET                               UIC:    [1112,374] ([MAIL$SERVER])
CLI:      DCL                                  Tables: DCLTABLES
Default:  SYS$SPECIFIC:[MAIL$SERVER]
LGICMD:   NL:
Login Flags:  Defcli Restricted
Primary days:   Mon Tue Wed Thu Fri
Secondary days:                      Sat Sun
Primary   000000000011111111112222  Secondary 000000000011111111112222
Day Hours 012345678901234567890123  Day Hours 012345678901234567890123
Network:  ##### Full access ######            ##### Full access ######
Batch:    -----  No access  ------             -----  No access  ------
Local:    -----  No access  ------             -----  No access  ------
Dialup:   -----  No access  ------             -----  No access  ------
Remote:   -----  No access  ------             -----  No access  ------
Expiration:            (none)    Pwdminimum:  8   Login Fails:     0
Pwdlifetime:        180 00:00    Pwdchange:      (pre-expired)
Last Login:            (none) (interactive), 23-SEP-1989 10:06 (non-interactive)
Maxjobs:         0  Fillm:       150  Bytlm:        40960
Maxacctjobs:     0  Shrfillm:      0  Pbytlm:           0
Maxdetach:       0  BIOlm:      1000  JTquota:       1024
Prclm:           2  DIOlm:      1000  WSdef:          512
Prio:            4  ASTlm:        24  WSquo:         1024
Queprio:         0  TQElm:        50  WSextent:      1024
CPU:        (none)  Enqlm:      2000  Pgflquo:     100000
Authorized Privileges:
  TMPMBX NETMBX
Default Privileges:
  TMPMBX NETMBX
```

Sample Mail Server Account
Figure 7

```
$! VMSTOMM.COM
$! Command file used by the VMSmail to Mailman link
$ DSM/VOL/BYP SETUP^XMZVMSI
$ LO
```

DECnet Object Command File
Figure 8

$ORDER("benighted, contingency, and friends")

Nothing is quite as ridiculous as a pompous fool who is only feigning command of the language. And nothing exposes such pretense more starkly than the fool's attempt to further aggrandize himself by adding an extraneous affix to a word which he would otherwise have used correctly. To wit, the following:

...irregardless... This word does not exist. The word is *regardless*. Period.

...the demonstrators were surrounded by a *contingency* of police... A contingency can't surround anyone; it means "possible outcome." This speaker meant a *contingent of police.*

...the late, benighted Sir Laurence Olivier... I should say not! Benighted means confused or depraved (from *night,* not *knight*), a description which certainly did not apply to Lord Olivier.

These examples just serve to prove, "Better to be silent and be thought a fool than to speak up and remove all doubt."

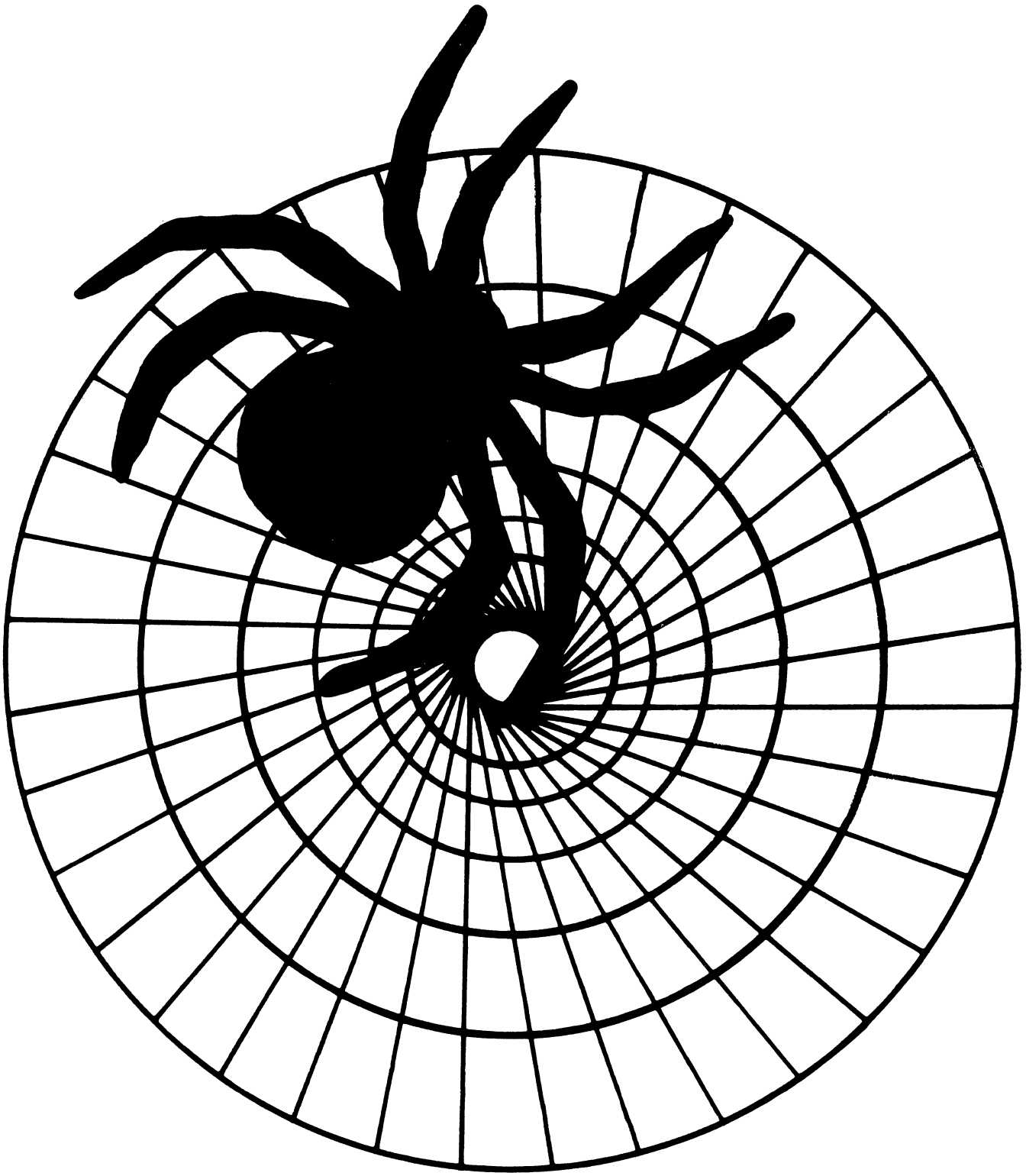
$NEXT

Chris Richardson, our SIG Chairman, is on deck for the January issue. There will also be an MDC meeting the week after this issue goes to press (we're going to have to work on getting these schedules to line up better...), so Mark Berryman may also have a report. However, after the glorious job he did this time, I may let him have a little R & R, and wait until the March issue.

```
$NEXT($ORDER)="imply/infer"
```

$RANDOM

I was a vegetarian, but I had to quit. It has side effects. Really. One day I was sitting in my living room, and I found myself leaning toward the sunlight. --Rita Rudner



NTW

Networks SIG

NOVEMBER 1989 NETWORK SIG NEWSLETTER

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FROM THE EDITOR'S COBWEB

Well, the baton has been passed, at least temporarily. As I write this (late September), Judi's due date is a mere ten days away. We finally met face-to-face last weekend in Connecticut, where Judi and her husband, Ed Faryniarz, took me around the beautiful New England countryside, introduced me to steamers (delicious!), fed me large quantities of home cooking, and put me up in the baby's room-to-be. Oh, yes, Judi also gave me dozens of very valuable tips on writing a newsletter, and a six-inch stack of materials and ideas. Thanks, Judi and Ed, for the information and the mini-vacation! Thanks also, Al Bennett for promoting the idea, the DECUS Communications Committee for making it possible, and Horizons Travel for working out the details.

In this issue, the long-awaited Best Node Names Contest, and Part One of the DECUS Spring '89 Symposium NOTES conference on Terminal Servers.

Send any submissions to the address below. Have a happy Thanksgiving, everyone!

Rick Carter
Milcare
8500 Byron Rd., Loc. 0320
Zeeland, MI 49464

THE FIRST-EVER "BEST NODE NAMES" CONTEST

As I promised two months ago, we're having a contest! We want to hear about the wittiest, funniest, or most interesting set of node names you've seen or heard about.

HOW TO ENTER:

Send your node names, your name and address, and any additional info (such as why these names are hilarious at your company, if there's an inside joke involved or anything) to:

Rick Carter
Milcare
Loc. 0320
8500 Byron Rd.
Zeeland, MI 49464

Or, if you happen to be on DCS, you can MAIL them to CARTER.

RULES AND SUCH:

- All entries must be received by March 1, 1990. Judging will take place by March 31, 1990, and the winner will be announced in the May, 1990 **Networds.**
- Judging will be done by the Networks SIG leadership.
- Judges are ineligible for prizes (sorry!).
- Enter as often as you like, but each entry must be sent separately.
- In case of duplicate entries, the one with the earliest postmark or e-mail creation date wins.
- Void where prohibited, taxed, or regulated. All original entry blanks will be rolled into little balls and become the sole and exclusive property of my cats. At participating locations only. Your mileage may vary. (I love disclaimers!)

We will attempt to publish all entries (unless we are deluged with thousands per month!).

PRIZES:

Prizes are still being determined. At the very smallest, the winner will receive an Anaheim Networks SIG coffee mug and t-shirt. We may have something better available, perhaps even DECUS Library tapes.

TERMINAL SERVERS NOTES CONFERENCE, PART 1

Every DECUS symposium has a "terminal farm" which all attendees may use to access many DEC NOTES conferences, among other things. This is Part One of the final output of the Terminal Servers notes conference.

```
================================================================================
Note 2.0                        DECSA Retirement?                      1 reply
VAXFAM::GGARDNER                                          16-MAY-1988 12:00
--------------------------------------------------------------------------------

    When will we see any DECSA software updates to make them more
    consistent with the new DECserver line?  We have 30+ of those space
    heaters (lots of DECserver 200's too).  I hear the DECSA's are
    officially retired.  Does this just mean they won't be sold in any
    form or does it mean things like VMS 5.x changes to LAT won't take
    DECSA's into consideration?

================================================================================
Note 2.1                        DECSA Retirement?                      1 of 1
VAXFAM::JCAHILL                                           16-MAY-1988 12:41
          -< Still supported after all these years! >-
--------------------------------------------------------------------------------

    Ethernet Terminal Server V3.0 software will be available from
    the SDC within a few months.  If it hasn't already been delivered
    to it, it will be soon!  This version will include essentially the
    same user interface as the more recent DECserver releases (DS200
    and DS500).

    DECserver 100 V2.0 will also be submitted to the SDC in this time
    frame.  Like ETS V3.0, DS100 V2.0 will include a compatible user
    interface.  Users should be able to switch back and forth between
    the different types of terminal servers without noticing any changes
    between displays, command set, etc.  Certain hardware differences
    between the servers may cause a user to notice slight differences.

    These two submissions demonstrate our commitment to support both
    these products.  Although recent hardware developments have made them
    less cost-effective than more modern server hardware, we will
    continue to support the large installed base that exists today.

    The above statement includes support for VMS V5.0!  Several new
    $QIOs were introduced in V5.0, and they all work equally with all
    existing servers.  Actually, we have VMS V5.0 running in the Networks
    booth in the exhibit hall.  Stop on by for a demo!!

    Jim Cahill
    VMS/LAT Engineering
```

```
================================================================================
Note 3.0                          LAT-11 servers?                    17 replies
VAXFAM::RCOPELAND                                                 16-MAY-1988 13:40
--------------------------------------------------------------------------------

    Do LAT-11 Servers still function in the VMS V5 environment?  Is
    there a commitment from Digital to support the LAT V5.0 protocol
    indefinitely?

================================================================================
Note 3.1                          LAT-11 servers?                     1 of 17
VAXFAM::JHEFFERNAN                                                16-MAY-1988 14:12
                        -< Yes, it continues to work >-
--------------------------------------------------------------------------------

    The LAT 5.0 protocol will be supported indefinately.  LAT-11's should
    function in the VMS 5.0 environment.  Note that LAT/VMS V5.0 has
    a lot of new features but the protocol changes are not significant.

    LAT-11 has been retired.  I beleive that means that we support the
    hardware and software for 2 years (not sure on the exact time) from
    the retirement date.

    We expect that LAT-11's will contine to work for future versions of
    LAT/VMS.

    John Heffernan (Terminal Server Development)

================================================================================
Note 3.2                          LAT-11 servers?                     2 of 17
VAXFAM::JOSUDAR                                                   16-MAY-1988 14:52
                      -< DEC shafted us with LAT-11 >-
--------------------------------------------------------------------------------

    Sorry for the bitterness... but you people (i.e. DEC) really put
    one over on us with LAT-11, and we will not soon forget it.  I have
    never before heard of a product that was "retired" after version
    1.1.  Some of us actually were foolish enough to expect LAT-11 to
    remain viable for a few years, and built 11/34+DZ-11 LAT boxes,
    only to have the underlying software "retired" on us.

================================================================================
Note 3.3                          LAT-11 servers?                     3 of 17
VAXFAM::LKILGALLEN "Larry Kilgallen"                              16-MAY-1988 15:42
                        -< w about the DECUS tape? >-
--------------------------------------------------------------------------------

> < Note 3.2 by VAXFAM::JOSUDAR >
>                       -< DEC shafted us with LAT-11 >-
>
>     Sorry for the bitterness... but you people (i.e. DEC) really put
>     one over on us with LAT-11, and we will not soon forget it.  I have

Perhaps someone should do a DECUS tape LAT-substitute to run on the PDP-11.
```

The documentation provided at Anaheim indicates the interface to TTDRIVER. If DEC won't support it, people who have these boxes should band together to help each other.

==========

Note 3.4 LAT-11 servers? 4 of 17
VAXFAM::RCOPELAND "Richard Copeland" 16-MAY-1988 15:53
-< How about contributing it to DECUS? >-

LAT-11 has been officially retired for some time now, but I know several sites who would still buy it today, in its present form, if DEC were to make it available. There are many, many old 11/34s out there that are looking for something useful to do.

Has DEC considered contributing the LAT-11 software to the DECUS library, seeing as how it's officially dead anyway? There is some precedent to this; i.e. it's possible to buy the unsupported OS/8 operating system through DECUS.

==========

Note 3.5 LAT-11 servers? 5 of 17
VAXFAM::JOSUDAR 16-MAY-1988 16:52

DEC has been known to give software away in the past; however they seem extremely reluctant to let ANYTHING having to do with LAT out of their direct control. I'd be very surprised (pleasantly) to have DEC prove me wrong on this...

==========

Note 3.6 LAT-11 servers? 6 of 17
VAXFAM::EMPLOYEE "John Heffernan" 16-MAY-1988 18:20

Yes, normally it would be no problem to release to DECUS but since LAT is proprietary. We are still maintaining LAT-11 as far as I know although time is running out. If you see any problems send us an SPR.

John Heffernan

==========

Note 3.7 LAT-11 servers? 7 of 17
VAXFAM::JOSUDAR 17-MAY-1988 10:16
-< "bitterness" part 2 >-

"If we see any problems"??? We saw problems a couple of YEARS ago, that went un-fixed. I'm not sure what you mean by "still maintaining LAT-11" -- if I report 42 LAT-11 bugs to you, will you tell me (42 times) "fixed in the next release"??? We got no satisfaction on this in the past, so we gave up on LAT-11 -- the 11/34's are sitting powered down, and the software has been relegated to the recycle

heap. If you guys are willing to support LAT-11 again (which you were NOT willing to do when we were really interested) we may resurrect our copy. After all, WE paid YOU real $$$ for it, and got **** in return, so far.

```
================================================================================
Note 3.8                        LAT-11 servers?                        8 of 17
VAXFAM::RCOPELAND "Richard Copeland"                  17-MAY-1988 11:17
                                -< Huh?!? >-
--------------------------------------------------------------------------------
```

< Note 3.6 by VAXFAM::EMPLOYEE "John Heffernan" >

> We are still maintaining LAT-11 as far as I know although time is
> running out. If you see any problems send us an SPR.

Huh? I thought LAT-11 was officially unsupported. What's the story here?

```
================================================================================
Note 3.9                        LAT-11 servers?                        9 of 17
VAXFAM::JHEFFERNAN "John Heffernan - Terminal Server     17-MAY-1988 12:04
--------------------------------------------------------------------------------
```

If you have unanswered LAT-11 SPR's, please see me at the booth. I will give you my card. You can call me and tell me the SPR numbers and I will track them down for you. All SPR's should have been answered.

John Heffernan (Terminal Server Development)

```
================================================================================
Note 3.10                       LAT-11 servers?                       10 of 17
VAXFAM::JOSUDAR "John Osudar"                         17-MAY-1988 12:10
--------------------------------------------------------------------------------
```

As of what date?
The problems that we had were, as I stated, in a timeframe shortly after V1.1 was "retired", a couple of years ago if I'm not mistaken.

If we can come up with some (new) LAT-11 SPR's, will they get answered now? Will they go through the current SPR process, which seems to "lose" SPR's for a couple of years before anything happens to them???

```
================================================================================
Note 3.11                       LAT-11 servers?                       11 of 17
VAXFAM::JBURNET "John Burnet"                         17-MAY-1988 12:54
                        -< don't hold your breath >-
--------------------------------------------------------------------------------
```

> DEC has been known to give software away in the past; however they
> seem extremely reluctant to let ANYTHING having to do with LAT out
> of their direct control. I'd be very surprised (pleasantly) to

> have DEC prove me wrong on this...

Ha. That'll happen about the same time that they stop taking the source for LATSYM & friends off of the microfiche.

```
================================================================================
Note 3.12                       LAT-11 servers?                      12 of 17
VAXFAM::RCOPELAND "Richard Copeland"                    17-MAY-1988 14:04
                          -< Won't do us any good >-
--------------------------------------------------------------------------------
```

It won't do us any good to submit SPRs for LAT-11 now; the first thing we did when LAT-11 was pronounced dead was to drop all software maintenance support on it. No point throwing good money after bad.

```
================================================================================
Note 3.13                       LAT-11 servers?                      13 of 17
VAXFAM::JOSUDAR "John Osudar"                           17-MAY-1988 14:06
--------------------------------------------------------------------------------
```

Right. We're in the same boat. It just seemed that if we could shame DEC into admitting they did us wrong with LAT-11, maybe they would do something about it. I don't suppose they'd accept our SPRs any more...

```
================================================================================
Note 3.14                       LAT-11 servers?                      14 of 17
VAXFAM::JHEFFERNAN "John Heffernan - Terminal Server    17-MAY-1988 14:17
--------------------------------------------------------------------------------
```

That's correct. We would not answer SPR's if you don't have support. Sorry.

John

```
================================================================================
Note 3.15                       LAT-11 servers?                      15 of 17
VAXFAM::JOSUDAR "John Osudar"                           17-MAY-1988 14:52
--------------------------------------------------------------------------------
```

John -- Are there actually any remaining LAT-11 customers who DO have support? And if there are, has DEC been sending them bug fixes for the last two years???
And would you concede that the entire LAT-11 situation was badly mis-handled by DEC? (I don't really expect you to answer THAT one...)

```
================================================================================
Note 3.16                       LAT-11 servers?                      16 of 17
VAXFAM::JHEFFERNAN "John Heffernan - Terminal Server    18-MAY-1988 08:42
--------------------------------------------------------------------------------
```

Yes, we get LAT-11 SPR's and yes we answer them.

I can't really comment on the LAT-11 situation. It was before I

joined the server group so I don't really know the history. The best I can do is track down SPR's for you if you have support. Sorry I can't be of more help.

John

==========

Note 3.17 LAT-11 servers? 17 of 17
VAXFAM::JPATTEEUW "Jack Patteeuw, Ford Motor Co." 18-MAY-1988 15:08
-< Let's fix the SPR process ! >-

People with SPR issues in general (and I'm one of them) should contact Mary Bidzos Gavin, Southern Area Field Service, Customer Relations Manager, Digital Equipment Corp., 5775 Peachtree - Dunwoody Road, Atlanta, Georgia 30342 404-257-2402.

She has agreed to "look into" the whole SPR process (like why your SPR never gets to engineering).

Do NOT just call to vent your spleen ! Give her FACT (ie. SPR number and date of submission).

I think with enough "ammo" she can make the point to upper levels that the SPR process is broke and needs fixing, FAST !

Office Automation

OA SIG NEWSLETTER

SUBMISSIONS:

We need LOTS of articles to fill an average of 10 pages per issue with worthwhile information. You are our most important resource! Please send articles, suggestions, questions, and topics of concern to:

Roger Bruner
Foreign Mission Board
Box 6767
Richmond, VA 23230
804/353-0151

Submissions must be received by the 15th of the month for use in the issue dated two months afterwards (e.g., by January 15 for the March issue).

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BULLETIN BOARD:

The OA SIG moderates several on-line bulletin board conferences for discussion of OA problems and solutions. These conferences are available on the DECUServe system. Watch upcoming issues for further information.

CONTENTS OF THIS ISSUE

(See tearout section at rear of newsletter for three VTX questionnaires referred to in VTX article.)

FROM THE EDITOR

Roger E. Bruner

Last month I indicated that there would be some changes coming. Here they are, or some of them, anyhow!

This issue was produced on a Macintosh SE with PAGEMAKER. I used an HP SCANPLUS with DESK GALLERY to scan the photographs. Efforts were made to use a TRANS-IMAGE handheld scanner, a TANDY 3000, and PACERLINK software to transfer articles to the Macintosh, but I ended up rekeying everything! So this has been an electronic publishing adventure, quite a different one from the Newsletter's normal and sane DECPAGE production!

I will be quite interested in your reaction to the new format as well as suggestions for improving my production methods!

Roger B.

NAME THE NEWSLETTER!

Roger E. Bruner, Foreign Mission Board

For as long as I have been reading the OA SIG NEWSLETTER, that is all it has been called: the OA SIG NEWSLETTER. Yet I can't help noticing that some of the other SIG's have interesting and thought-provoking names. Now that we have officially made Scott McClure's strategic eagle our OA SIG symbol (while unofficially remembering our flying pig with fondness), why don't we name our newsletter? Please send your proposals to the address under SUBMISSIONS on OA-1. I'll share your ideas with the rest of the OA Steering Committee and announce a winner for this unofficial contest just as soon as there is one!

SETTING INITIAL DEFAULTS FOR NEW ALL-IN-1 USERS

Bruce Burson, Bell South Services

During the OASIG WISH LIST session at the Atlanta symposia, the audience response indicated a wide-felt need for setting the ALL-IN-1 new user defaults to N for BURST_PAGE, FLAG_PAGE, etc. This can be done very easily; here is the method.

Under OA$LIB there is a directory — USER.DIR — that contains several files which are copies into a new user's ALL-IN-1 directory when the account is created. In ALL-IN-1 V2.2, this directory is dev: [ALLIN1.LIB.USER]. Set default to this directory.

In the directory is a file SYMBOLS.PST. This file is empty. Edit it to be as follows:

```
BURST_PAGE          N
FLAG_PAGE           N
PRT_FEED            N
PRT_HDRS            N
```

Note: The first column must begin in column 1 and the N's must be in column 31.

You will have just made a sequential file that must now be converted back to its original indexed format. Without setting a new default, enter the following command:

```
$ CONVERT/FDL=[-]SYSTEM_PAST.FDL SYMBOLS.PST SYMBOLS.PST
```

You'll want to TYPE the file to make sure it still looks right; if not, you did not put your N's in the right column. If all is well, purge the directory.

After completing these simple steps, all your new ALL-IN-1 users will have a username.PST file that contains these new defaults for print settings, and you'll never again have to answer calls about those funny pages that print and waste paper at the beginning of each print job.

One other thing. If you upgrade V2.2 to V2.3, you will have to go back and redo the changes to the new SYMBOLS.PST; neither the PIT nor the installation carries over the old one.

HOW TO GET MORE OUT OF YOUR NEXT SYMPOSIUM

Chris Simon, E-Systems, Inc.

Now that everyone has recovered from the Atlanta symposium, here are some ideas to help you to get more from your next symposium. There are several things that I've found to help avoid burnout and still allow you to obtain as much information in the short space of five days as possible. Some are things you can do before your trip as time permits, and some are hints to help you spend your time at symposium more effectively.

I believe that there are two major problems that can keep you from getting the most out of your trip. The first is not remembering all of the things you wanted to accomplish once you get wrapped up in the whirlwind of activity at symposium. The second problem is not remembering all of the contacts that you made after you return. These ideas can help with both problems.

Before symposium:

1. Make a notebook or folder containing the items described below to carry with you at symposium. The notebook will be a valuable tool to help make sure that you get answers to as many of your questions as possible.

2. Keep notes of any problems you have, especially the last couple of months before symposium. These notes will be the basis for SPRs and questions for the developers. Be sure to leave some room to jot down any answers you might get.

3. Make a note any time you (or a user) say, "Gee, if only Product A would do..." These notes will be your reminders in the Wishlist session of what you really wish for while performing your job.

4. Prepare small samples of things you've done. Even if you don't want to or don't think you have enough material to present a session, your samples can provide valuable ideas to others. Things you might include are: a list of your customizations, reports you produce, newsletters, and in-house documentation.

5. Not everyone you meet will have a business card to give you. Save a couple of pages at the front of your notebook to write down the names of DEC developers and others you meet, grouped by specialty or interest area. This will make it easier to find a person to help

you with a particular problem after symposium.

6. If your company doesn't provide you with business cards, get some printed, even if you have to pay for them yourself. It is common to hear someone say, "I'd be glad to send you that information when I get home if you'll give me your card." There is rarely enough time to write down your address in the short time available between sessions. Do yourself a big favor and get some cards now.

7. Look over your preliminary symposium schedule and mark the sessions you are interested in. Don't worry about it if you have six sessions that you would like to attend at the same time. Prioritize them as much as possible. When you arrive at symposium, cancellations, schedule changes and other information will be available to help you decide which sessions to attend.

At symposium:

1. Visit the campground early in the week to find out which developers specialize in which areas. Get the campground schedule. This will help you schedule your time so that you don't show up with 20 Time Management questions when no Time Management specialists are there.

2. Buy the OA session notes. These are now available for purchase on your symposium registration form, but you may buy them at the DECUS store when you arrive. They will spare you a lot of note-taking and provide a good source of referral information after symposium.

3. Listen to the Q & A at the sessions. This will help you find the attendees with similar interests, sites, and problems to yours. Be sure to introduce yourself to these people. They can be invaluable contacts long after symposium.

4. Volunteer! Chairing a session is easy and fun. Volunteer early so that you can choose the sessions you are most interested in.

5. When you meet someone with a common interest, either get a business card and write on the back of it that person's area of expertise, or write down their name in your notebook.

6. If you have made use of programs found on the SIG tapes, be sure to let the authors know how much you appreciate their efforts when you see them at symposium. The thanks of others is the only payment they get for taking the time to provide their programs for the tape.

I hope this has inspired you to prepare for your next symposium. Now, while you are thinking about it, get out your housing application for Anaheim, fill it out and send it in!

OPEN LETTER TO VTX WORKING GROUP

Alby DeBlieck, Eastman Kodac Company

This is an open letter to members of the VTX Working Group and potential members. On Wednesday, May 10, 1989, at the Atlanta Symposia we had our formation meeting. You will find as part of this article a copy of the minutes. You will also find three other forms that will help make this group successful: a volunteer form, a wishlist form, and a masters application. [See tearout section at the back of issue for these three questionnaires.]

The objectives of this working group are to relay specific concerns to DEC about VTX and to provide deliverables to DECUS. Deliverables to DECUS are newsletter articles, a VTX Masters list, volunteering for campground clinics and session chairs, presenting a session at a symposia, and submitting software to the SIG tape library.

DEC would like our feedback about the VTX product. Please use the Wishlist form if you would like to see a feature added or enhanced. I would like to get these back as soon as possible so they can be processed and presented to DEC at the Anaheim symposia. Also what would you like to see presented by DEC about VTX at Anaheim. DEC is willing to provide some resources to present material that we as a group ask for.

I am also looking for a West coast chairperson. I have scheduled a working group meeting and I would like to see some BOF's scheduled for people who want to do any presentations. These and other activities need to be coordinated by a chairperso9n and I am unsure at this time if I will be able to attend the Anaheim Symposia.

Lastly, if anyone can participate and help in this group's activities then please fill out the enclosed forms and return them to me.

VTX WORKING GROUP FORMATION MINUTES

Time: 1:00 P.M., Wednesday, May 10, 1989
Place: Room 308, Geogia World Congress Center
Attendees: 16 - See attached list

- The meeting was chaired by Alby DeBlieck, Eastman Kodak Company and started out by introducing Katherine Trimm of DECUS SIG Council and Bill Carey and Scott Simon of DEC.

- The purpose of a SIG Working Group was reviewed. Working groups are formed to relay specific concerns to DEC and to provide deliverables to DECUS. Deliverables are things such as VTX Session presentations by members, SIG Campground VTX volunteers, SIG Newsletter VTX articles, and a VTX Master's list.

- The main vehicle of communication of this group between symposia would be the OA SIG's OASIS VAX Notes board.

- Bill Carey discussed DEC expectations of the group and is looking for feedback that will help determine the future directions of VTX. He considers this group as a major concentration of VTX users and hopes to see the group grow. He expects a list of concerns that are important to all members of the group.

- The attendees introduced themselves and gave a short description of how they each use VTX.

- The following concerns were discussed among the group and with DEC:

1. VALUE training. VALUE is being bundled with version 4 of VTX and Bill Carey is aware of the need for DEC to provide VALUE training.

2. Infobase security. DUPONT has several infobases spread across a network and they do not use passwords at the login page. If a username is known that is associated with closed user groups on a remote infobase then an unauthorized user may do a FIND to that remote infobase's login page, enter the username, and the unauthorized user takes on the profile of that login, closed user groups and all. Bill Carey is aware of the situation. The group was polled to see if others were experiencing this similar problem. Even though no one else was having this problem, several people (including myself) expressed a concern that this may have potential impact on future implementation of VTX at their sites. Bill Carey would like to see this concern as well as others on a list that is weighted by majority.

3. Programmable keyboard. Several people had remote users at their site using every type of hardware imaginable. The capability of being able to provide keyboard maps for different vendors would be useful.

4. Several people agreed that the product could be more user freindly.

5. Actions items:
   - submit an article to the SIG newsletter announcing the formation of the group,
   - create and publish a VTX masters list,
   - begin communication about the group on the OASIG bulletin board and begin to enlist people and their VTX concerns,
   - take these concerns and prioritize them by popular vote and present them to Bill Carey for his action,
   - schedule a formal VTX Working Group meeting at the Anaheim Symposia using the formal DECUS Call For Participation format.

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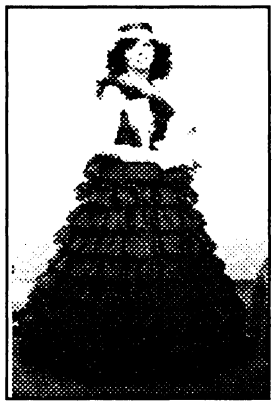
PICTURES FROM ATLANTA SYMPOSIUM

Roger E. Bruner, Foreign Mission Board

Registration Area on Sunday Morning

Up & Down Week

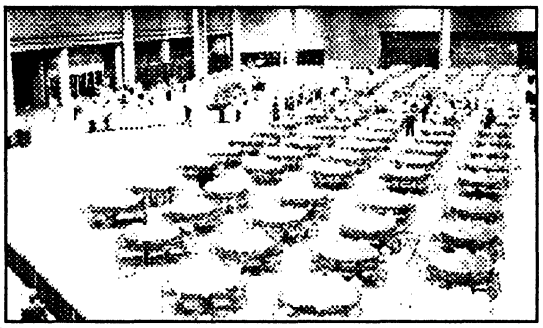
"Belle" Lynda Peach



Joe Whatley Conducts ROADMAP Session

OA SIG Steering Committee at WORK!

Dining Area Before a Meal



New Friends & Old

PERSONAL COMPUTER

SPECIAL INTEREST GROUP

PC

NEWSLETTER

TABLE OF CONTENTS

Rainbow Section

Rainbow Bibliography - Part 4: the Letters D Through F

By Dr. Thomas Warren, PC SIG Session Notes Editor

The Bibliography that follows is reprinted here in serialized form with permission of:
Rainbow News, P.O. Box 567, O'Fallon, IL 62269, (618)632-1143

What follows is a selected bibliography of articles on the Rainbow. It is selective because it is not complete and not complete because I have not seen everything available. It is, however, complete enough to get the interested party started.

That is a small hint. Let me make a bigger one. IF YOU KNOW OF RAINBOW ARTICLES, PUBLICATIONS, BOOKS, ETC. THAT AREN'T LISTED HERE, PLEASE CONTACT ONE OF THE PC SIG STEERING COMMITTEE. Your input to this monumental effort on Tom Warren's part is VERY MUCH DESIRED! Our addresses and phone numbers appear at the back of these Newsletters. Ed. Each section is headed by a KEYWORD, a list of which are attached in an appendix. *This month, my quota of 25 pages allows me to include the letters "D" thru "F" of the bibliography. Ed.*

DAISYAIDS

"Q/A: DaisyAids", PERSPECTIVES, Vol. 2, No. 2 (May 1984), 44-45. (Graphics)

DATA

"Application Software: Context MBA: An Integrated Softwear Package for the Rainbow 100", PERSPECTIVE, Vol. 2, No. 3 (October, 1984), 32-33. (Spreadsheet, Graphics, Wordprocessing, Data Management, Communications)

"Application Software: PFS:FILE and PFS:REPORT", PERSPECTIVE, Vol. 2, No. 2 (May 1984), 33-35. (Data Management, Wordprocessing, Reports)

"Application Software: 20/20 Integrated Spreadsheet Modeling Program", PERSPECTIVE, Vol. 4, No. 1 (n.d.), 11. (Data Management, Graphics)

"DEC Rainbow 100 Interface: Taking Advantage of Powerful Video Capabilities", DATA BASED ADVISOR, December, 1984, no pp. (Graphics, dBaseII, Monitor)

Gilreath, J.P. "Data Collection and Transfer to a Mainframe Using a Portable Microcomputer and a DEC Rainbow", WASHINGTON AREA RAINBOW USERS GROUP NEWSLETTER, Vol. 3, No. 10 (Oct. 1986), 21-22. (Laptop, TandyModel100, Programs)

Lawlor, Andy. "Solving the Rainbow Disk Transfer Problem", WASHINGTON AREA RAINBOW USERS GROUP NEWSLETTER, Vol. 3, No. 2 (Feb., 1986), 16-17). (Data, Software)

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PRO Section

Announcing The PRO Public Domain TAPE
By Gary Rice

Over the last year and a half, efforts have been underway to provide you with a PRO retirement present. An idea took shape at the Spring '88 Symposium after being "brainstormed" by Tom Hintz, Homer Baker, Jeff Slayback, Bob Uleski, George Dover, myself and several other people whose names I have forgotten. The results of the "Brainstorm" was a TAPE collection of "all" of the PRO software available in the Public Domain. Well, we haven't gotten ALL of it yet, but I think the collection is sufficiently complete to tell you about it.

The tape itself is written in VMS Backup format. Thus, you will need a VAX running VMS in order to read the tape. I have two types of media available: a single TK50; and 1/2" 6250 BPI on one 2400' reel. The tape is organized as three SAVE_SETs. SAVE_SET 1 (labeled DECUS.BCK), is the DECUS Library collection (somewhat incomplete). The total size of this SAVESET is 32267 disk blocks. The contents of the SAVESET are as follows (listed by DECUS Library catalog number): PRO-101 PRO-102 PRO-117 PRO-118 PRO-121 PRO-122 PRO-123 PRO-124 PRO-125 PRO-127 PRO-129 PRO-131 PRO-132 PRO-133 PRO-134 PRO-135 PRO-136 PRO-137 PRO-138 PRO-139 PRO-141 PRO-147 PRO-148 PRO-149 PRO-150 PRO-152 PRO-153 PRO-154 PRO-156 PRO-158 PRO-162 PRO-163 PRO-164 PRO-165 PRO-167 PRO-169 PRO-170 PRO-171 PRO-172 PRO-173

SAVE_SET 2 (labeled ICON.BCK), is a collection of work primarily done at Florida State University. It includes their famous "Ye Olde Font Shoppe", PRO Bitmap Manipulation tools, PRO Basic to Basic-Plus-2 tools and a host of other things. The total size of this SAVE_SET is 17819 disk blocks.

And finally, the last SAVESET (called RSX.BCK) is about 2/3rds of my own collection of RSX goodies that are either PRO specific or PRO adaptable. The size of the final SAVESET is 90970 disk blocks.

If you would like a copy of this tape, send me a blank tape, a return mailer and sufficient postage for the return trip. My address is:

Gary Rice
McDonnell Douglas
5555 Garden Grove Blvd.
MS: K20/200 Westminster, CA 92683

If you have questions, you can call me at (714)952-6582.

And finally, a plea: I have run out of RX50s to hold my PD collection on. It currently requires over 300 diskettes. The stuff that I don't yet have on RX50s from this tape collection will require another 70 diskettes. My own funds have run out for the purchase of PD masters. If you would like copies of the goodies contained in the first 2 SAVE_SETs on RX50s, I will need some donations of RX50s to act as master disks. Contact me for specific space requirements for the various pieces of the collection still on tape.

My thanks goes to Tom Hintz for his significant contribution to making this PD tape happen. If it wasn't for Tom, this tape would be so much Vaporware.

Macintosh Section

Macintosh News
By Gary Rice

Last May, I had a choice to make. I could attend the DECUS Symposium in Atlanta or I could attend the Apple Developer's Conference in San Jose. There was a problem, though, because I wanted to attend BOTH and they were scheduled at exactly the same time. Well, I opted to attend the Apple Conference. While I was there, I asked several people about the conflict. Most of the Apple people weren't aware of the problem. A good number of them were unaware of what DECUS was. Some were even unaware that Apple and Digital had formed a partnership.

Well, I did my part in educating the people at Apple about the Apple/DEC arrangement. There were a few people (such as Pierre LeClerq and Ronald Wong) who were already aware of the "other" conference going on concurrently because they were presenting sessions at BOTH conferences.

It wasn't obvious that when plans for the 1989 Apple Conference were finalized that any consideration was made regarding the DECUS Symposium. The 1990 Apple Conference planning team HAS taken the Spring '90 DECUS Symposium into account. Unfortunately, convention space is hard to come by and other considerations have forced the Apple Planners to repeat the situation. Yes, it seems that history will repeat itself once again. The 1990 Worldwide Apple Developer's Conference will be held from May 6, 1990 thru May 11, 1990 in San Jose, California. The Spring 1990 DECUS Symposium will ALSO be held May 6, 1990 thru May 11, 1990 in New Orleans, Louisiana.

It appears that those of us who are interested in BOTH conferences will have to choose between them once again. If you are attending the Fall DECUS Symposium in Anaheim this month, you can talk to Ronald Wong,

Apple's DECUS Counterpart at Symposium. He WILL be there. Look for him at the PC SIG MAC/VAX Roadmap session #PC023 at 9:30 on Monday, November 6, 1989 in the Convention Center rooms 3 & 4.

General Section

Coming Next Month
By Gary Rice

I am working on two articles for next month's issue of these Newsletters. They deal with a CASE (Computer Assisted Software Engineering) tool for the Macintosh and a Macintosh DECnet product. I have tentatively titled the articles:

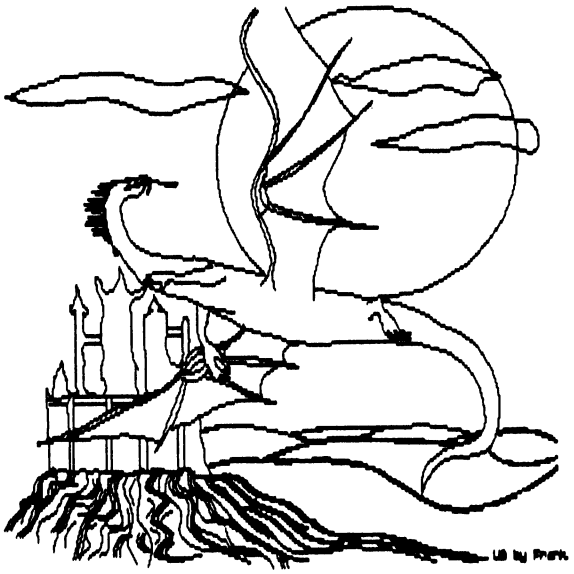
Living With TSSnet and
AppMaker - A True CASE Tool

Watch for these Macintosh articles in the next issue.

RSX

MULTI-TASKER

RSX/IAS



THE RSX/IAS MULTI-TASKER

November 1989

"In hoc signo foobar in XVI bitae"

Fine Realtime Commentary
Since 1975

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Opinions expressed in the Multi-Tasker are those of individual members. They do not represent the official position of the RSX/IAS SIG or that of DECUS leadership in general.

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Editor's Corner

Phil Hannay, RSX Editor
Frank Borger, IAS Editor
Bruce Mitchell, Minister of Propaganda

----- Editorial: Cycle Stealing -----

Bruce R. Mitchell
Machine Intelligence and Industrial Magic, Consultants
390 North Shore Drive, RR #1, Box 216
Fountain City, WI 54629

The Editor Emeritus once again returns, this time with some speculations and comments on DEC line printer interfaces and what they're doing for you behind your back.

For lo, these many years, since about 1970 as a matter of fact, Digital's main product for line printer control has been the LP(V)11. It's a robust design proven over billions of printed characters. But it's not efficient. It's a PIO, interrupt-per-character device. That means 132 interrupts for every 132 character line printed.

Just for entertainment, let's plug some numbers in, massage them and see what comes out. If the average line contains 80 characters (including blanks, of course), at 50 lines per page, that's 4000 (4E3) char/page. An average job is probably at least 10 pages, so 4E4 char/job. Sites with line printers probably print at least 25 jobs per day, so 1E6 char/site-day. In a work-year of 240 days, that's 2.4E8 char/site-year.

Now assume that it takes 100 microseconds to field an interrupt. That translates to 2.4E4 (24,000) seconds per year, or 6.6 hours, of direct CPU time spent servicing the line printer. That is a lot of CPU time in anybody's book - almost one entire work day - and this for a site with relatively small print requirements.

What would happen if DEC made a DMA line printer interface? There would be one interrupt per 80 characters, so (2.4E4/8E1) = 300 seconds, or 5 minutes per year spent servicing the line printer. That's one hell of a difference, and why DEC has never done anything about it is quite a mystery.

This must be what the hardware engineers mean when they refer to "cycle stealing devices".

----- Submitting Articles to the Multi-Tasker -----

You are encouraged to submit articles to the Multi-Tasker. No article is too big or too small. They can be serious or funny, and of any techinical level.

Please submit machine readable media if possible. Hardcopy submissions are okay if they are fairly short. Illustrations and drawings that can be photocopied may accompany the article. Most any media is acceptable, however RX50, RX01/2, TK50 and 1600 BPI magtape are preferred. All RSX volume formats are acceptable, and VMS formats are also acceptable on RX50, TK50 and 1600 BPI magtape.

You can also submit articles through the RSX bulletin board system at (612) 777-7664. Kermit the file into your account and then send it via MAIL to username MULTITASKER.

The Multi-Tasker begins life as a RUNOFF file, so feel free to submit your articles in RUNOFF format. The page size will be 80 columns by 58 lines, with the left margin at 10 and right margin at 75. Use literal format for code examples. If you change margins, use incremental changes rather than absolute.

Mail your articles and other submissions to:

Phil Hannay
Cargill Research Bldg
Box 9300
Minneapolis, MN. 55440 tel. 612-475-5433 (daytime)

----- Bulletin Board Notes -----

The RSX Bulletin Board is online. RSX Network Mail, Kermit, old issues of the Multi-Tasker, and various other goodies are available. Free advice as well. (often worth the price...)

Contact Jim Bostwick, at 612-475-6264 (daytime) if you wish to donate some equipment.

You can log into the BBS at 612-SPR-PONG (612-777-7664). The line will always do 100-1200 baud, and often 2400 (depending on when the owner of the 2400 modem last went looking for it). New users should log in with username ACCOUNT and password REQUEST. This will get you a registration procedure. You'll need your DECUS membership number in order to get a permanent account.

------ RSX/IAS Hall of Fame ------

T. R. Wyant, Curator
E. I. DuPont de Nemours

As the RSX/IAS SIG matures (or at least grows older), there is a tendancy to reflect on what has gone before, savoring those things that make the PDP-11 and RSX unique. The RSX/IAS Hall of Fame was inaugurated during the Fall 1988 Symposium to honor and preserve for posterity the most famous/notorious (pick one) features of the computing environment we have come to know and love.

We present two more categories that were selected, field-tested, presented, and voted on.

** Most Suggestive DCL Command **

The third category in the RSX/IAS Hall of Fame is perhaps a sign of the times. The age of innocence has passed; this is, for better or worse, the age of Wilbur Mills, Jim Bakker, and Jimmy Swaggart. Why, even such a sacred institution as the Digital Command Language is no longer safe from purient suggestion! Hidden in the seemingly innocent DCL command set lurk commands that in another era would have been banned in Boston. But we of the RSX/IAS SIG are not decieved by the innocent facade these commands wear, nor afraid to expose these abominations for what they really are. What follows is our list of Most Suggestive DCL Commands. Parental guidance is suggested, as some of the following material may not be suitable for young children.

* SHOW ASSIGNMENTS

  Not the kind of command you would think anything of at first glance, is it? But creeping permissiveness has struck even here, and as bathing suits become ever scantier, even DCL allows you to

  SHOW ASS

* DIRECTORY/SINCE

  Once upon a time, if you wanted to do date selection you had

to use SRD. Little did we know what we were letting ourselves in for when PIP acquired the /DD: switch. Along came DCL, and before we knew it, like Jim Bakker we fell into

DIRE/SIN

* ANALYZE/ERROR_LOG

  In the interest of good taste and professional decorum, the resume on this command has been omitted.

The winner in this category demonstrates how a seemingly innocent quirk can have totally unforseen and unfortunate concequences. The IAS SHOW will parse multiple commands on the same line. This allows "SHOW ME" (for SHOW MEMORY) to be expanded to

SHOW ME YOUR ASS

When RMD exits, the rest of the command is parsed, the parse fails, and DCL admonishes

"YOUR ASS -- IGNORED"

** Most Provocative/Obscure/Memorable FCS Status **

How can we follow the "DCL sleaze" category? Only with something truly off the wall. It's hard these days to find anything that hasn't been analyzed, computerized, sanitized, and homogenized; it's gotten so words don't convey meaning any more, you have to say it in numbers. And there are certain numbers that we 16 bit hackers have committed to memory, and recognize as old friends (or enemies): this category honors the most provocative, obscure, interesting, and generally memorable FCS status codes. The nominees are:

* IE.NOD,-23.,351,<CALLER'S NODES EXHAUSTED>

  How many of us have seen this error precede a crash? Guess those nodes were REALLY tired.

* IE.DSQ,-90.,246,<DISK QUOTA EXCEEDED>

  I got really excited when I saw this -- looked all over for

DISKQUOTA.SYS. Never did find it. Perhaps it is a new way to say "Device Full".

* IS.EOT,<4*400+1> ;EOT WAS TERMINATOR (BLOCK MODE INPUT)

  See, there IS block mode support in RSX.

* IE.UPN,<unknown>,<UNABLE TO PICK NODE> (from IAS)

  Need any more be said?

Our winner demonstrates one of Ken Olsen's favorite aphorisms: "The network IS the system". To make this aphorism into reality, it became necessary to merge low-level DECnet codes into the I/O error numbering space. The FCS codes were up into the high sixties anyway. So, when you drop a link the low-level error turns out to be:

IE.NFW,-69.,273,<PATH LOST TO PARTNER>

------ Dynamic Patch to RSX Exec ------

Philip Hannay
Cargill, Inc.

We recently had to make a patch to the RSX exec code to accomodate a video controller that needed to be activated only when the task using that controller was the active task. We were supplied with some exec patch code from the vendor, CRISP Automation, that were to be applied before sysgen.

I did not want to do a special sysgen for this case. We have tried to keep our sysgens generic so that they can be used on a number of machines. Rather than applying the patch to all systems, to accomodate the locations that use the CRISP software, I instead came up with a program that will patch the exec dynamically at boot time.

This program lets me start with a DEC standard sysgen, and make the patch only on the machines that run the special hardware. Furthermore, it lets me start with a Micro-RSX or Pregen sysgen supplied by DEC, and make the patches

The program, SWIVIU, uses ICB pool to store the patch code, and then replaces an existing exec instruction with a "jump subroutine" intruction to execute the patch code and returned. The replaced instruction is included in the patch code. The technique was derived from a DECUS presentation given by Brian McCarthy on Writing a Loadable Directive for RSX-11M-Plus and Micro/RSX.

In addition to the use of ICB pool, other interesting features of the program are the use of the vectored executive (using GIN$ get information directive to fetch the global symbol address vectors), and the use of the SWST$ switch state directive to let a PR:0 task access the exec and pass parameters between the user and system state code.

In summary, use of this program lets me patch a DEC-standard system, even ones that are pregenned and cannot be re-sysgenned. And, since the program uses the vectored exec addressing technique, it should work independent of the sysgen.

```
; File: [SWIVIU]SWIVIU.MAC     Last edit: 28-JUN-1989 11:24:34
; Philip Hannay.
;
; "Switch VIURAM" controller patch added to system exec.
;
;
        .MCALL QIOW$S,EXST$S,SWST$S,GIN$S


; The following is the kernal mode code (BASSWI) that will make desired
; patches to the exec.  It will be mapped by the exec starting at BASSWI
```

```
; using APR5, with APR5 I and D space mapped the same.  It will then
; be run by the exec in system state using the SWST directive.  R0-R5
; are available for passing parameters into the code and returning
; parameters back from the code.

; Everything lives in the BLANK psect - both data and instructions.
; Since the BLANK psect is "I" instruction, the user code in this
; program can access data in the BLANK psect ONLY if this program is
; built non-I/D.  The program can be built I/D if the user code does
; not do any data access into the BLANK psect.  In this case, we do
; access the BLANK psect from user code when we set up the vector
; table, so this program will be built non-I/D.

        .psect

BASSWI=.                ;BASSWI is the base address for data and code

; The task header offset 64 is used to hold an address of a VIURAM
; controller.  This address is normally zero for all tasks other than
; CRISP CRT tasks.  If this word is non-zero, it is used as the address
; of the appropriate VIURAM controller CSR register, and the 4000 bit is
; set during task start and cleared during task stop.  Note that offset
; 64 conflicts with X.25 software, so it may get us someday.

H.VIU=  64              ; CRISP DEF - TASK HEADER OFFSET FOR VIURAM CSR
VRON=   4000            ; CRISP DEF - MEMORY ENABLE BIT ON VIURAM CSR

;
;       Exec vector table -
;
EXEVEC: .word   0

icavl:: .word   $icavl          ; ICB pool listhead
aloc1:: .word   $aloc1          ; allocate ICB pool core block
sph04:: .word   $sph04          ; a reference used for patch 1
sph05:: .word   $sph05          ; a reference used for patch 2

EXEVCL=<<.-EXEVEC>/2>


; The following patches, PAT1 and PAT2 are made to the SYSXT.MAC sections
; of the exec code.  PAT1 turns off a VIURAM controller that was in use
; when a task using that controller is no longer the current task.  PAT2
; turns on a VIURAM controller for a task to use when that task becomes
; the current task.  Note that the patches are instructions but are treated
; as data when copied to the appropriate location in the exec.

        .EVEN
PAT1:
        MOV H.VIU(R3),R2        ; GET VIURAM ADDRESS (LOC 2064)
        BEQ 275$                ; BRANCH IF NONE, DOESNT USE VIURAM
        BIC #1,R2               ; FORCE ADDRESS EVEN
        CMP #177200,R2          ; SEE IF VALUE BELOW POSSIBLE VIURAM CSRS
        BHIS 275$               ; BRANCH IF CANNOT BE A VIURAM CSR
        BIC #VRON,(R2)          ; TURN OFF VIURAM
```

```
275$:

PAT1LN=.-PAT1

        .EVEN
PAT2:
        MOV H.VIU(R2),R0        ; GET VIURAM ADDRESS (LOC 2064)
        BEQ 221$                ; BRANCH IF NONE, DOESNT USE VIURAM
        BIC #1,R0               ; FORCE ADDRESS EVEN
        CMP #177200,R0          ; SEE IF VALUE BELOW POSSIBLE VIURAM CSRS
        BHIS 221$               ; BRANCH IF CANNOT BE A VIURAM CSR
        TSTB T.ST2(R5)          ; IS THE TASK HALTED
        BMI 221$                ; BRANCH IF YES, VIURAM NOT NEEDED
        BIS #VRON,(R0)          ; TURN ON VIURAM
221$:

PAT2LN=.-PAT2

; PUTSWI will allocate a block of ICB pool for each patch.  Since ICB
; pool is mapped by the exec using kernal APR 0, it is always mapped,
; and both I and D space are mapped the same.  For this reason, we can
; put the patch code here and know that it will be always mapped by
; the exec no matter where it is executing.  Remember, ICB pool is limited,
; so we keep our use to a minimum.

; PUTSWI is executed by the exec using the SWST directive.  Parameters
; can be passed to PUTSWI from the user mode code (or returned from PUTSWI
; to the user mode code) through registers R0 thru R5.  When executing
; under the exec, registers R0 thru R5 will be located on the stack
; at S.WSR0(SP) thru S.WSR5(SP).

; Remember, that we will be mapped with APR5 as our base, so all address
; references made here must be PI (position independent) or adjusted
; by adding 120000.

        .EVEN

PUTSWI::

        CLR S.WSR0(SP)          ; STATUS WILL BE RETURNED IN R0

; DO PATCH 1

; GET POOL BLOCK FOR PATCH CODE

        MOV ICAVL,R0                    ; GET ADDRESS OF ICB POOL LISTHEAD
        TST -(R0)                       ; BACKUP TO GET ALLOCATION MASK
        MOV #PAT1LN+6,R1                ; MOVE PATCH1+6 LENGTH TO R1
                                        ;   ACCOMODATES PATCH + 2 WORDS OF
                                        ;   EXEC INSTRUCTIONS AND 1 WORD RTS
        CALL @ALOC1                     ; GET ALLOCATION FROM ICB POOL
        BCS 10$                         ; BRANCH IF FAILED TO GET BLOCK
        CMP R0,#20000                   ; VERIFY THAT POOL ADDRESS IS APR0
        BHIS 40$                        ; BRANCH IF NOT, ERROR
```

```
; PUT PATCH INTO BLOCK LEAVING FIRST TWO WORDS BLANK, END PATCH WITH RTS

        MOV R0,R4                       ; SAVE PATCH BLOCK START ADDRESS
        MOV R0,R3                       ; SAVE INSERT ADDR FOR HIJACKED CODE
        ADD #4,R0                       ; LEAVE ROOM FOR HIJACKED EXEC CODE
        MOV PC,R1                       ; CALCULATE PATCH1 CODE ADDRESS (PI)
        ADD #PAT1-.,R1                  ; R1 POINTS TO PATCH1 ADDRESS
        MOV #PAT1LN/2,R2                ; PUT LEN OF PATCH1 (WORDS) IN R2
20$:    MOV (R1)+,(R0)+                 ; MOVE PATCH1 TO ICB POOL
        SOB R2,20$                      ; LOOP UNTIL ALL TRANSFERRED
        MOV #000207,(R0)                ; AND PUT IN FINAL RTS INSTRUCTION

; MAP EXEC, HIJACK TWO WORD INSTUCTION(S) FOR JSR PATCH.  NOTE THAT WE CANNOT
; JUST ACCESS INSTRUCTION, SINCE ON AN I/D SYSTEM, ONLY I-SPACE APR1 MAY BE
; MAPPED TO THAT INSTUCTION, AND OUR ACCESS IS DONE USING D-SPACE.  SO WE
; MUST MAP A D-SPACE APR TO THE INSTUCTION.  WE USE D-SPACE APR6.  SINCE
; WE ARE ACCESSING APR1 (20000) ADDRESSES USING APR6 (140000), WE MUST ADD
; 120000 TO THE ADDRESSES.  NOTE THAT AT THE CRITICAL MOMENT WE ARE
; HIJACKING THE EXEC INSTRUCTION, WE DISABLE INTERRUPTS TO INSURE THAT
; WE WILL NOT BE INTERRUPTED.

        MOV SPH04,R2                    ; CREATE POINTER TO EXEC FOR PATCH1
        ADD #32,R2                      ;   IN R2 ($SPH04+32)
        MOV @#KDSAR6,R5                 ; SAVE APR6 D-SPACE MAPPING IN R5
        MOV @#KINAR1,@#KDSAR6           ; MAP APR6 D-SPACE TO APR1 I-SPACE
        CMP #004767,120000(R2)          ; SEE IF PATCH ALREADY DONE
        BEQ 50$                         ; BRANCH IF YES, CANNOT DO AGAIN
        MOV 120000(R2),(R3)+            ; PUT SPH04 VALUE IN PATCH
        MOV 120002(R2),(R3)             ; AND SPH04+2 VALUE IN PATCH
        MOV R4,R1                       ; CALCULATE JSR OFFSET TO PATCH BLOCK
        SUB R2,R1                       ;   R2 IS ($SPH04+32)
        SUB #4,R1                       ; R1 IS NOW JSR OFFSET FOR JUMP
        MTPS #7                         ;;; DISABLE INTERRUPTS
        MOV #004767,120000(R2)          ;;; PUT JSR INST INTO EXEC
        MOV R1,120002(R2)               ;;; PUT JSR OFFSET INTO EXEC
        MTPS #0                         ;;; ENABLE INTERRUPTS
        MOV R5,@#KDSAR6                 ; RESTORE APR6 D-SPACE MAPPING
        BR 30$                          ; PATCH 1 DONE OKAY

50$:    MOV #15,S.WSR0(SP)              ; ERROR 15, PATCH ALREADY DONE
        MOV R5,@#KDSAR6                 ; RESTORE APR6 D-SPACE MAPPING
        BR 30$                          ;   RETURNING ERROR IN R0, NOTE THAT
                                        ;   FOR SIMPLICITY, WE LEAVE ICB POOL

                                        ;   ALLOCATED - IF CALLED REPEATEDLY
                                        ;   LIKE THIS, WE EXHAUST ICB POOL.

40$:    MOV #13,S.WSR0(SP)              ; ERROR 13, POOL BLK OUTSIDE OF APR 1
        BR 30$                          ;   RETURNING ERROR IN R0

10$:    MOV #14,S.WSR0(SP)              ; ERROR 14, UNABLE TO GET POOL BLOCK
        BR 30$                          ;   RETURNING ERROR IN R0

30$:    TST S.WSR0(SP)                  ; SEE IF ANY ERRORS YET
        BNE 130$                ; BRANCH IF ERROR, NO FURTHER PROCESSING
```

```
; DO PATCH 2

; GET POOL BLOCK FOR PATCH CODE

        MOV ICAVL,R0                    ; GET ADDRESS OF ICB POOL LISTHEAD
        TST -(R0)                       ; BACKUP TO GET ALLOCATION MASK
        MOV #PAT2LN+6,R1                ; MOVE PATCH2+6 LENGTH TO R1
                                        ;   ACCOMODATES PATCH + 2 WORDS OF
                                        ;   EXEC INSTRUCTIONS AND 1 WORD RTS
        CALL @ALOC1                     ; GET ALLOCATION FROM ICB POOL
        BCS 110$                        ; BRANCH IF FAILED TO GET BLOCK
        CMP R0,#20000                   ; VERIFY THAT POOL ADDRESS IS APR0
        BHIS 140$                       ; BRANCH IF NOT, ERROR

; PUT PATCH INTO BLOCK LEAVING FIRST TWO WORDS BLANK, END PATCH WITH RTS

        MOV R0,R4                       ; SAVE PATCH BLOCK START ADDRESS
        MOV PC,R1                       ; CALCULATE PATCH2 CODE ADDRESS (PI)
        ADD #PAT2-.,R1                  ; R1 POINTS TO PATCH2 ADDRESS
        MOV #PAT2LN/2,R2                ; PUT LEN OF PATCH2 (WORDS) IN R2
120$:   MOV (R1)+,(R0)+                 ; MOVE PATCH2 TO ICB POOL
        SOB R2,120$                     ; LOOP UNTIL ALL TRANSFERRED
        MOV R0,R3                       ; SAVE INSERT ADDR FOR HIJACKED CODE
        ADD #4,R0                       ; LEAVE ROOM FOR HIJACKED EXEC CODE
        MOV #000207,(R0)                ; AND PUT IN FINAL RTS INSTRUCTION

; MAP EXEC, HIJACK TWO WORD INSTUCTION(S) FOR JSR PATCH.  NOTE THAT WE CANNOT
; JUST ACCESS INSTRUCTION, SINCE ON AN I/D SYSTEM, ONLY I-SPACE APR1 MAY BE
; MAPPED TO THAT INSTUCTION, AND OUR ACCESS IS DONE USING D-SPACE.  SO WE
; MUST MAP A D-SPACE APR TO THE INSTUCTION.  WE USE D-SPACE APR6.  SINCE
; WE ARE ACCESSING APR1 (20000) ADDRESSES USING APR6 (140000), WE MUST ADD
; 120000 TO THE ADDRESSES.  NOTE THAT AT THE CRITICAL MOMENT WE ARE
; HIJACKING THE EXEC INSTRUCTION, WE DISABLE INTERRUPTS TO INSURE THAT
; WE WILL NOT BE INTERRUPTED.

        MOV SPH05,R2                    ; CREATE POINTER TO EXEC FOR PATCH2
        MOV @#KDSAR6,R5                 ; SAVE APR6 D-SPACE MAPPING IN R5
        MOV @#KINAR1,@#KDSAR6           ; MAP APR6 D-SPACE TO APR1 I-SPACE
        CMP #004767,120000(R2)          ; SEE IF PATCH ALREADY DONE
        BEQ 150$                        ; BRANCH IF YES, CANNOT DO AGAIN
        MOV 120000(R2),(R3)+            ; PUT SPH05 VALUE IN PATCH
        MOV 120002(R2),(R3)             ; AND SPH05+2 VALUE IN PATCH
        MOV R4,R1                       ; CALCULATE JSR OFFSET TO PATCH BLOCK
        SUB R2,R1                       ;   R2 IS ($SPH05+0)
        SUB #4,R1                       ; R1 IS NOW JSR OFFSET FOR JUMP
        MTPS #7                         ;;; DISABLE INTERRUPTS
        MOV #004767,120000(R2)          ;;; PUT JSR INST INTO EXEC
        MOV R1,120002(R2)               ;;; PUT JSR OFFSET INTO EXEC
        MTPS #0                         ;;; ENABLE INTERRUPTS
        MOV R5,@#KDSAR6                 ; RESTORE APR6 D-SPACE MAPPING
        MOV #1,S.WSR0(SP)               ; SIGNAL SUCCESS RETURNING 1 IN R0
        BR 130$                         ; PATCH 2 DONE OKAY

150$:   MOV #15,S.WSR0(SP)              ; ERROR 15, PATCH ALREADY DONE
```

```
        MOV R5,@#KDSAR6                 ; RESTORE APR6 D-SPACE MAPPING
        BR 130$                         ;   RETURNING ERROR IN R0, NOTE THAT
                                        ;   FOR SIMPLICITY, WE LEAVE ICB POOL

                                        ;   ALLOCATED - IF CALLED REPEATEDLY
                                        ;   LIKE THIS, WE EXHAUST ICB POOL.

140$:   MOV #13,S.WSR0(SP)              ; ERROR 13, POOL BLK OUTSIDE OF APR 1
        BR 130$                         ;   RETURNING ERROR IN R0

110$:   MOV #14,S.WSR0(SP)              ; ERROR 14, UNABLE TO GET POOL BLOCK
                                        ;   RETURNING ERROR IN R0

130$:   RETURN                          ; BACK TO USER MODE


        .PSECT SWIDAT,D

IOSB:   .WORD 0,0

STAADR: .ASCII /SWIVIU: PATCH EXEC TO CONTROL CRISP VIURAM(S) ON,OFF/
STALEN= .-STAADR

ENDADR: .ASCII /SWIVIU: PATCH INSERTED SUCCESSFULLY/
ENDLEN= .-ENDADR

BADADR: .ASCII /SWIVIU: PATCH INSERT FAILED/
BADLEN= .-BADADR

E11ADR: .ASCII /SWIVIU: QIOW$ DIRECTIVE ERROR/
E11LEN= .-E11ADR

E12ADR: .ASCII /SWIVIU: SWST$ DIRECTIVE ERROR/
E12LEN= .-E12ADR

E13ADR: .ASCII /SWIVIU: ALLOCATED ICB POOL PATCH BLOCK NOT IN APR0/
E13LEN= .-E13ADR

E14ADR: .ASCII /SWIVIU: UNABLE TO ALLOCATE ICB POOL PATCH BLOCK/
E14LEN= .-E14ADR

E15ADR: .ASCII /SWIVIU: PATCH WAS ALREADY MADE/
E15LEN= .-E15ADR

E16ADR: .ASCII /SWIVIU: GIN$ DIRECTIVE ERROR/
E16LEN= .-E16ADR

        .PSECT SWIINS,I

SWIVIU::
        MOV #16,R0      ; ERROR 16 IS GIN FAIL
        GIN$S #GI.VEC,#EXEVEC,#EXEVCL   ; TRANSLATE EXECUTIVE VECTORS
        BCS FAIL
        MOV #11,R0      ; ERROR 11 IS QIO FAIL
        QIOW$S  #IO.WLB,#5,#1,,#IOSB,,<#STAADR,#STALEN,#40>
        BCS FAIL        ; BRANCH IF DIRECTIVE FAILURE
```

```
        MOV #12,R0      ; ERROR 12 IS QIO FAIL
        SWST$S #BASSWI,#PUTSWI
        BCS FAIL        ; BRANCH IF DIRECTIVE FAILURE
        CMP #1,R0       ; SEE IF PATCH SUCCEEDED
        BNE FAIL        ; BRANCH IF PATCH FAILED
        JMP OKAY

FAIL:   QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#BADADR,#BADLEN,#40>
        MOV #2,R1       ;EXIT WITH WARNING
        CMP #15,R0
        BNE 1$
        QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#E15ADR,#E15LEN,#40>
        JMP DONE
1$:     MOV #4,R1       ;EXIT WITH FATAL ERROR
        CMP #14,R0
        BNE 2$
        QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#E14ADR,#E14LEN,#40>
        JMP DONE
2$:     CMP #13,R0
        BNE 3$
        QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#E13ADR,#E13LEN,#40>
        JMP DONE
3$:     CMP #12,R0
        BNE 4$
        QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#E12ADR,#E12LEN,#40>
        BR DONE
4$:     CMP #11,R0
        BNE 5$
        QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#E11ADR,#E11LEN,#40>
        BR DONE
5$:     CMP #16,R0
        BNE 6$
        QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#E16ADR,#E16LEN,#40>
        BR DONE
6$:     BR DONE

OKAY:   QIOW$S #IO.WLB,#5,#1,,#IOSB,,<#ENDADR,#ENDLEN,#40>
        MOV #1,R1       ;EXIT WITH SUCCESS

DONE:   EXST$S R1

        .END SWIVIU
```

------ Spring 89 RSX SIG tape ------

From: Glenn Everhart
Subject: Spring 1989 VAX, RSX Tapes announcement

Spring 1989 RSX SIG Tape

This is the RSX SIG Tape for Spring 1989. Contents of the tape, covering some 37,000 blocks, follow:

[5,*] Complete DECUS C distribution, updated from the one that appeared in Fall 1985, with support for I/D space, RMS, and DECnet, and current RSX versions. In addition, a remote file access package and a remote execution package are present in [333,*]. From the Germany RSX SIG.

[306,100] Tape transfer program generic tape handling program. ARGS argument processing code and libraries and console I/O. From Brad Castalia.

[350,300] Mailbox driver for RSX11M. Maintains a set of named queues / mailboxes for inter-task communication. Does NOT use up pool for message. From Paul Sorenson.

[355,221] Routine that retrieves a list of all tasks active at a terminal, and a program that aborts them all, excluding CLIs. From Mitch Nelson.

[356,40] Kermit-11 update. Complete Kermit-11 distribution for communications with other systems. Also includes binaries for Kermits for VAX/VMS, IBM PC. From Brian Nelson.

The DECameron

Being a History of the Land of DEC and its Peoples and Particularly of the Family of 11s Together With Speculations on Their Future

T. R. Wyant

Once upon a time there was a little kingdom called DEC. This kingdom was ruled by the good king Ken, son of Ole. The kingdom was populated by many different kinds of systems. These grew and prospered under the son of Ole, who ruled them wisely and well.

Now living in this kingdom was a family called PDP-11, founded by the venerable PDP-11/15. Now old 11/15 had sons: 11/10, 11/05, and 11/20. They were hardworking and enterprising fellows, and soon found suitable mates: RT-11, RSX-11, and even RSTS. The 11 family became known for its power, flexability, and reliability. All men wished for their assistance in demanding tasks: telemetry analysis, telephone switching, and the like. The 11s became prosperous and respectable, and the most powerful family in the land.

Succeeding generations of the 11 family continued to prosper. 11/10 was followed by 11/40 and 11/45. The daughters of RT-11 were SJ, FB, and XM, and they were known for their quickness and cleverness. The daughters of RSX were D, M, and IAS, who were respected for their power and wisdom, but loved for the easy

manner in which they interacted with people.

And in the fullness of time a son and a daughter were born to the 11 family, and all could see that they would grow to be the greatest members of that proud line. And the son was named 11/70, and the daughter was named M+.

Now 11/70 was a bright and muscular lad, and he was considered a fitting mate for any software then available. But M+ was so grand and beautiful, that suitable hardware to mate with her was not everywhere to be found. But it was prophesied at her birth that her perfect union would be with hardware yet unborn, and the name of that hardware would be 11/74.

But one day, King Ken looked out over all his lands from the highest tower of his castle. And he looked over the surrounding lands and their peoples, and everywhere he looked, he saw raised the blue banner of King Tom, Son of Wat. Then King Ken was filled with envy, and his own land seemed straitened, and there awoke in his heart a lust for wider dominions. He looked out over his people, and they seemed mean and lowly, useless to his new desires: his lust to overthrow the banners of the Son of Wat, and see his own standard raised in their place, and to dominate the surrounding lands.

So he conceived of a plan to bring forth a new race, more powerful than any the land of DEC had yet seen, so that its current peoples would seem as children to them. And the peoples of the land heard rumor of this plan, and petitioned King Ken, saying "What will become of us, who have served you so faithfully and so long? Will we be cast off, and trodden by the wayside so that you may fulfill this desire?" But King Ken spake unto them an oath, saying "Behold, beyond and around us are wide lands, wherein we could dwell. But the people of the Son of Wat deny us these lands, to which we have as much right as they: transaction processing, electronic mail, office automation. This new people will assist us in achieving our birthright. And they will be made in your own image, and be compatible with you, and they will bear the respected name of 11, which has prospered under my rule for so long." And the people of King Ken went away, comforted.

But when the new race arrived, the family of 11 was aghast, for behold! they were as strangers, having strange powers, and (it was rumored) even stranger weaknesses. And some in the land murmered against King Ken, and it was said that in the lexicon of King Ken, "compatible" meant "similar". But the king hardened his heart to his former people, and at the head of mighty columns of VAXen, went up against the surrounding lands, and the blue banner of the Son of Wat was supplanted in many places by the banner of the Son of Ole.

Then some of the 11 family resigned themselves to their new fate, saying "We have had our time in the sun. The old order is passing away, and the new order is upon us. Let us do what we may to establish this new order, for the glory of King Ken." And they

went forth as esquires to the VAXen, performing menial tasks for them: getting them up in the morning, serving them their data, and diagnosing their ills. For the VAXen, mighty as they were, were unable to perform these tasks for themselves. And by their labors the VAXen were increased in power, and they had great glory therein, while the 11s labored in obscurity.

But some of the 11s said "We have served King Ken for years, and thus he serves us now! There is still work for us, and we may labor at our traditional jobs as we have before. But these labors are no longer held in honor by our leige. So be it! But these labors are still to do, and if the VAXen cannot do them there is no reason why we should not. We will be our own masters, and no menials to these VAXen!" But King Ken replied, "I will do as I will do, and I will not be denied. Therefore, I will cut off these apostates, and my salesmen will not sell them, neither will my field service agents service them, and when a user calls with a PDP-11 problem, my telephone support agents will say 'I know it not; call back when you have a VAX problem.'".

Then there was war in the land of the Son of Ole. The 11 family was driven slowly from their holdings, retreating to the hills and waste places where the VAXen could not come. And their champions became few, for a sickness fell upon them, and succeeding generations were weakened, and they lacked the resplendant lights and switches of their forbears. But still they rallied and fought under their aging captain 11/70. And M+ waited still for her prophesied champion 11/74. But dark rumor said that 11/74 had fallen into the power of King Ken and perished in his dungeons, alone and succorless.

Now there came a time when one travelling in an unfrequented portion of the kingdom of the Son of Ole passed a deserted village of the 11s. But lo, it was deserted no longer, but filled with a strange people speaking a strange tongue, and above the gate floated the blue banner of the Son of Wat.

When King Ken heard this news he was stricken with fear, seeing suddenly the weakness whereby all his schemes of conquest would become undone, and the people of his foe introduced even into the heart of his own realm. And he spake unto the VAXen, saying "Drive you forth these invaders of my realm!" But the VAXen replied, "Mighty you have made us, and able to automate any office environment, and process many transactions. But lo, though we are powerful, we are not omnipotent, and there are places we may not go, and things we may not do. The 11s lived in many places in these lands, and some in which there was not enough capital to sustain a VAX. Into these places have the people of the Son of Wat come, and we may not drive them out."

But King Ken heeded not the words, for lo the VAXen were the apple of his eye, and the fruit of his long labors. Therefore in his pride he wrought strangely upon them, seeking to make of them a people who could drive out the Son of Wat. And he called this new creation "VAXmate." But when the VAXmate came forth, behold it

was an abomination, and the other VAXen shunned it, and pronounced it good only for the delivery of tomato pies. And the VAXmate fell into darkness and oblivion, and was seen no more.

Then King Ken sent an herald unto the 11s, saying unto them "Behold, I would heal the rift that has long lain between us. Therefore will I unsay my harsh words, and withdraw my ban against thee. Again will my salesmen sell thee, and my field service agents service thee, and when a user calls with a PDP-11 problem, my telephone support agents will say 'How may I assist thee?'"

But he made also a pact with Lord John of Sculley, Prince of the Land of the Fruit of Eden, though it was rumored of him that he was a usurper, and had wrested the throne from the Two Stevens, who carved the land out of an unpeopled wilderness. And he promised Prince John a portion of the land of DEC, if he would help to drive out the infidels.

And thus it was arranged: that the Macs would come up against the people of the Son of Wat, and seek to drive them out from their highland fastness into the plain. There the VAXen would be arrayed, and the enemy would be crushed as by two millstones between the awsome compute power of the VAXen and the incredible flexability and user-friendliness of the Macs.

And it came to pass that one morning the watchmen of the Son of Wat looked out and saw a host marching through the passes, under the rainbow banner of the Fruit of Eden. And they came out against their foes, and the two forces clashed together like a thunderclap. Forth and back across the field the struggle raged, with neither force gaining the upper hand. But the forces of the Son of Wat guarded not their flank, for upon it was the rugged terrain of real time, of telemetry analysis, telephone switching, and the like. And they deemed that land empty of their foes, for lo the VAXen could not come there.

"But it was not so. For suddenly a trumpet rang forth, and both hosts looked up, pausing in the fray, and wondering what it could mean. And there, streaming down upon the flank, came the 11s: striplings in their drab front panels; battle-scarred veterans resplendant in their lights and toggle switches. A deadly hail of interrupts met them, such that it seemed no processor could survive, and the Macs watched in horror as the BR6s, BR7s and NPRs fell among their unexpected allies. But the 11s came on, and it seemed that no weapon could touch them as they rallied to the last need of the Son of Wat.

But in that day fortune turned against the Kingdom of DEC and its allies, for the MACS spake the language of Ethernet but poorly, so that communication was difficult, and they came on in disarray against a well-entrenched foe. And though the 11s came down out of the land of real time upon the unprotected flank of the scions of King Tom, they were too few to drive it in. For some of the 11s remained apart from the fray, saying "Behold, in his pride hath The Son of Ole said unto us 'I will cut off these

apostates, and my salesmen will not sell them, neither will my field service agents service them,' and in our hour of need did he deny us his succor and protection. Therefore, we defy him, and leave him to simmer even in the juices of his own stewing."

So the conflict raged on in the uplands of the Land of DEC, but slowly the people of King Ken and his allies were driven back with great loss, while hordes of clones circled the fray, slaying whom they would upon both sides, and fastening themselves upon the stricken, sucking their blood. And while the VAXen looked on in horror, they could do nought, for the enemy would not come within their reach, and they stood helpless.

And King Ken in his desparation appealed even unto some of the very clones that were warring against him. And one band, armored only in leather jerkins, answered his call and fell on their own former allies, throwing them into confusion. But when the sun set upon the field, the blue banner still floated over the gates of the village. The people of the Son of Wat remained entrenched in the uplands of the land of DEC, which became a fief of King Tom.

Thwarted on this front, even in his heartland of old, King Ken turned his eye unto the deserts of the south, where the Sun burned fiercly; a land inhabited by swift and reckless nomads, willing to dare any risk.

Then rumors begain to circulate among the VAXen of a new race, more powerful than any the land of DEC had yet seen. The VAXen petitioned King Ken, saying "What will become of us, who have served you so faithfully and so long? Will we be cast off, and trodden by the wayside so that you may fulfill your desire to dominate the Son of Wat?" But King Ken spake unto them an oath, saying "Behold, beyond and around us are wide lands, wherein we could dwell. This new people will assist us in achieving our birthright. And they will be made in your own image, and be compatible with you." And some of the VAXen went away, comforted. But some remembered the same oath spoken even unto the 11s; and they remembered the 11s hiding still in the hollows of the abandoned hills, fighting for their existence with hope or without it. And the words of King Ken comforted them not.

THE mini• tasker

DECUS
RT-11 SIG NEWSLETTER

RT-11 MINITASKER
November, 1989

Contents

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From the Editor:

By the time you read this, another symposium will be imminent. I hope that at Anaheim, the RT-11 developers will tell us, in addition to the new and wonderful features of Version 5.5, when we can expect to see it. Some of those new features were presented at the last symposium by Rob Hamilton. I've included copies of his slides in this minitasker. You'll find some of the new directory operation routines in SYSLIB particularly interesting.

Ed Judge sends a really good war story of the upgrade of his system. Needless to say, the opinions of 3rd-party equipment therein are Ed's, and don't reflect the opinions or positions of DECUS, the DECUS Newsletter, Digital Equipment Corporation, or even Ed's mother. If you've got a system that looks like a camel, write up a page or two about what you got and why you decided to get it. So long as you have no vested interest in the products you discuss, and talk only (or at least mostly) about technical matters, we can print it here. The rest of us are always interested is what you do better than we. Ed has promised another article next month on some of the layered products and DECUS software he has found particularly useful.

Incidentally, Ed originally wrote this article for *The DEC Professional.* But they now seem to have an editorial policy not to publish articles about such obsolete hardware as PDP-11's. Bill Walker's column in *Digital Review* and this newsletter may be our last hope.

You MACRO programmers (and especially all you who try to read binary files) will want to copy Jim Crapuchettes' summary of RT-11's EMTs. (Jim also sent me an up-to-date description of block zero of RT-11 device handlers. Look for that next month.)

Finally, I've included another in my "this is how I do it" series. This time it's how I talk to CREF. Yeah, I know. Who'd want to talk to CREF? You must understand that I also talk to trees and shoelaces. I'm sure you do some pretty strange things too. Why not tell us about it. Send your wierd tales to:

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A Pilgrim's Progress

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Things were starting to happen - strange things, obnoxious things, things thatwere beginning to get in the way. Things like loss of a serial channel, hangups in the printer line, CPUs freezing; things that needed rebooting to clear up. The system was getting old, with old peripherals hanging off it, sucking power, overloading my air conditioner, making lots of noise, or running in an emulation [i.e. slow] mode. The system was turning into a giant kludge. I really hate dealing with hardware and tried to live with it for awhile, but there was no escaping it - new equipment must be found.

It was time to see what could be done. What could be saved, what should be traded, or traded-in, and what would have to be junked. There was no room to keep any stuff that was not producing income for the space it took up. Hard-fought-for stuff that had been in obsolescence for several years, stuff that just couldn't be worked around any longer or took too much time to be worth it - all of it had to go. The old storage space had been taken over by journals, 8" floppies, and magtapes, so there was just no room. Progress!

The immediate question, after finances, was what could be done to insure that the same old problems wouldn't crop up in the system's new additions, perhaps in some other incarnation. Just what had I learned during my long, intimate and sometimes stormy relationship with the machine?

There are ergonometric considerations. Though the new devices will have lots of new features, what, beyond the usual new bells and whistles, were important enough to search out? Would something out there really make a lot of difference in day-to-day activities?

The most basic thing that needed work was the system box. The DEC power supply was marginal. After a lot of problems, resulting in a dedicated digital voltmeter being attached to the backplane to measure the 5Volt line, I realized that dipping to 4.75Volts was not doing anything for system reliability. After smoking the stock power supply and repairing it, I removed a few boards that were not really needed, like an extra LP controller and a small disk and controller that stored my distribution files on line. This helped, but I was trying to fit around the machine, not the other way around. I wanted to run with the boards in!

Boards were slowly being eaten up each time they were removed and installed for reconfiguring, testing, or whatever. The 0.5" backplane spacing wasn't very successful, to my way of thinking, because someone forgot to tell the manufacturers that the leads of the components produced an action much like a grater when they protruded through the other side of the 0.5" form factor. Cables got it too; insulation was getting sawed through, then carefully taped over by me. The metal brackets that held the side insertion levers also protrude about 1/8 inch below the board and caught everything, making it exceedingly difficult to remove any board below it, especially if they had DLV11-J style connectors. I had an LP board sent out to be repaired, and it came back with a note saying that all it needed was to have some of the ground-down capacitors replaced.

The replacement was a DYNA-5 SE100 system box with a 360 watt power supply, and it was much better than DEC's. As the number of boards increased, and the two 5 1/4" device slots were used, backplane voltage dropped to 4.8volts - not bad, but I was going to add more boards. I pulled it up a little in the power supply, but I was near

max power. I wanted to add more 5 1/4" devices, and would need a new device box, but my determination to remove the board and cable consumption problem made me stick to 0.6" spacing as a mandatory part of the upgrade. I finally settled on a new box that met my requirements.

The [Zoltech] box had a Codar 14 slot backplane with 0.6" spacing, which showed an immediate decrease in damage to the boards and cables. Pieces of thin cardboard were not needed to prevent the occasional shorting out of the protruding leads from the metal-cased capacitors on a lower board. Additionally, it had an optional one Kilowatt switcher power supply with 5 volts at 100 amps - I could arc-weld with it. Not a lot of voltage sag here, no matter how many boards were in the backplane, so I put in all my other boards.

I sprayed the backplane and all subsequent boards that were inserted with "Zero-residue" Color-TV-tuner cleaner and lubricant. Boards go in and out much more easily since then, and the gold plating on the contact fingers should last a good deal longer. There are ecologically sound alternatives not using florocarbons available, which I now intend to use.

Out of respect for sneaking Chaos, I permanently mounted a Triplett 3 1/2 digit panel meter on the front of the rack, just above the box, and plugged it into the power distribution panel for 5 and 12 volts. I can now switch between either voltage for display, though it usually stays right on 5volts, and seldom varies over a couple of hundreths of a volt after a few seconds initial stabilizing time. I'm sure the "wall of fans" cooling system helped. The box was relatively quiet.

I put a [one of Tripp-lites LC-]1800(watt) power conditioner[s] on line, and all sorts of problems silently went away. My line printer stopped putting out occasional form-feeds, my CRT screen stayed about the same size when other nearby equipment started up, and my TV interference went down significantly.

Still having a slight TV interference problem, I got some 50 ft shielded 10-wire RS-232 cables from a surplus place for $8.00 a piece. They aren't fire-retardant as now required in a business - probably why they were so cheap - but the shielding seemed to stop most of the problems caused by the computer. They are of the pin insert type of plug, so lines 2 and 3 can be easily interchanged with the inexpensive service tool.

Once in a while data was being lost or garbled on its way up that long line to the printer. A good connection to frame ground (pin #1) cleared most of that up, with some rerouting of AC power lines that traveled with the cables seemingly doing the rest.

Earlier, when I thought that shielded cable wasn't the answer, I couldn't think of any easy way to fix it with better cable. I have had marginal success with line drivers, so I thought I would try a fiber-optic link. The cable came in 25, 100, and 200 foot lengths and I needed 50 feet, so I ordered the 100 foot cable and coiled it at the terminal end. It didn't work, and I remembered something in the catalog about pins 9 and/or 10 needing 10Volts in order to make it work. I didn't have any instructions along with the hardware, so I tried again, this time successfully, to make the shielded cable work, and sent back the fiber optics. I would have been interesting to see how it works at 38Kbaud. I think they need to be a bit cheaper if they are to be used generally.

To promote neatness and ensure proper operation of the cooling system, all the connectors from the rear of the box were made through the bulkhead with adapter plates for 3M bulkhead ribbon connectors, so there were no holes in the back door to mess up the cooling flow. It was much neater and even quieter.

The next question was what to put in the box, which had power and space for 4 - 5 1/4" devices up front, and with three dedicated CD slots for PMI with the '73B (or 83).

After using a KDJ11A board, I had hoped that I could get an 11-83 for a CPU, but the prices were incredible.

After trying to speed up the "-10" CPU chips above the stock 15MHZ met with failure, I tried a friend's '73A board (I have good friends!) which was sped up to 20 MHZ. It made quite a difference. Even when the only board I had was the '73A (dual-wide), I knew I wanted to use the PMI bus someday - I had a [Clearpoint QED1/4] 4MB error-correcting memory board that could be optioned either way.

I had gotten an 11-73B (quad) board, and had returned my old FPU (It had an "-05" on the end of one of the numbers on the case.) in for the new, better-tasting one ("-06") that Digital had traded me for. I then wanted to see if the '73B could do as well as the '83. My '73B board had "-11" chips (supposedly faster) on it, so, carefully following my friend's advice, I experimented.

I pulled the old crystal, being very careful not to damage the traces while removing them from the board, and put in Augat machined IC socket leads where the crystal used to be. You must be VERY careful not to damage the PC board traces, or your expensive board could be badly damaged. You have to use a GROUNDED iron with a TEMPERATURE-CONTROLLED element and have a steady hand. Crystals could then be inserted with ease and safety.

I abstracted the RT11SJ.SYS build sequence from the file created by running the answer files for the distributed monitors through SYSGEN and assigned all logical names to VM. I copied the bare system and all the files needed to build RT11SJ to VM and booted it. I then tried a range of crystal speeds. The results are shown in Table 1. I run it at 22MHZ, and, so far, things are fine with both the processor and memory. This table shows the results for what seems to be a small benchmark that anyone who has RT11 distribution can do to see relative speed for various CPU/memory (or whatever) combinations.

I have noted it said in DECUS and other journals concerned with DEC stuff that the PMI bus isn't any good with real-time and index-type access programs because the next reference is often not the next sequential byte or word. This will cause it to lose its speed edge when it has to do another memory access. This also causes misses for the CPU's on-board cache for essentially the same reason, degrading system performance.

This is bad for the data-acquiring scientist, but the system works quite well with text, which is nearly all sequential. Text-processing flies in the PMI bus, and compilation and linking are also quite speedy, because of the sequential file structure. Text-processing that took some minutes now takes tens of seconds. Caching controllers also shine in text processing because of RT's consecutive disk file structure. The "business end" of a business will profit the most from the new bus.

CPU and memory having been taken care of, I next considered what peripherals were available. A clock/calender was one of the few things the MVII had that I wanted. I was somewhat disappointed that the quad processor didn't have one.

I had a few programs that I wanted to run on startup without my being at the console to enter the date and time. The calender/memo program, and the startup task of taking a directory of all the logical and physical devices needed date and time to function as I wanted. I left the directory backup program for last so it would proceed if I was away from the console - If the date and time had been entered. If I left the terminal for something, I could come back to another several minutes wait. Using another Codar product, their half-wide, plain vanilla Model 120 clock/calendar, solved my problem. Having moved another task into the computer's full control, startup now proceeds without my presence being required at the keyboard.

Since I had the slots and the power, I was going to turn the system into something of a "media" machine. I keep the 8" floppy in one outboard box along with an 8" Quantum 2040 40MB (emulating 4-RL02 drives) and the RL01 and RL02 with the RLV12 controller in the same rack. The TK25 and the Kennedy 9400 tape drives were placed in a used Prime cabinet (complete with fans and power distribution

controller). I saved enough with the used cabinet to pay for several of the small amenities. Since then, I haved sprayed it DEC "off white", and it looks like a DEC original.

Then there was new stuff I had decided to add. A set of [TEAC 55GDV] half-height 5 1/4" floppies acting as both RX50's and RX33's and a [MAXTOR EXT-8760E] 5 1/4" 760MB ESDI winchester as a system disk, all on a single [MTI MQDX3] controller. My next hope is to get a TK50. The 5Volts stayed rock-steady, even with the extra load the drives presented (as they should with the given power supply).

The RX33's have replaced 3 full 8" disk caddies with one getting-full 5 1/4" disk caddy, and they are much quieter and less expensive than my RX02's, ancient NEC DSDD QuietTouch drives. They have about 400 blocks more storage, are faster, and, of course, take less power. Also, they are the cheapest media DECUS now offers. The 5 1/4" size factor is just great.

The MAXTOR EXT-8760E is a totally rad device. I still don't believe how much can be stored on it, and it uses only 27 watts. My old Emulex SC02/ FUJI 2284 169MB setup used 500 or so watts and was almost 3 times slower in average access time. The new transfer rate is maxxed at 1.875MB/sec, which is twice as fast as the old FUJI spec. The FUJI system cost an arm and a leg when it was bought about 9 years ago. The new WREN-VI from CDC-Imprimus is the same capacity as the MAXTOR, and can be obtained for around one arm up to the elbow (plus controller). And the bandwagon is still rolling, 1.7 GBs being just around the corner. Time flies!

Starting up the system was a lot of trouble, because the computer was in another room fifty feet away, for sound reduction and to localize the heat load on the cooling system. I used the "remote-on" switch by running a 16-guage zip-cord line from a relay in the office. The relay connected to a auto on/off power strip with surge and spike surpression. I plug my main terminal to the strip. The whole thing comes on when I turn on the terminal. Convenient and cheap. I turn it on at the power controller on the back of the computer cabinet when I work directly on the computer. A "telltale" lamp is another line of zipcord that goes to the controller and turns a little red light on in several locations. I use a serial switch to change the console from "office" to "system." I tried one of those "auto-scan" automatic switches, but it didn't work. The people who sell them don't think to tell you that they only work with hardware handshaking - XON/XOFF, the three-wire method, just won't work.

On startup, because of the new disk subsystem, the lights don't dim the way they used to, so you can't tell when someone has turned the machine on any more. Now, the installed "telltale" light gives me that information, and I am pleased with the simplicity of the setup. I placed an elapsed-time meter on the same circuit (a plain vanilla power strip), to get a rough estimate of when to change filters, clean tape drives and check things out in general. Amenities.

With the new [MTI MQDX3] controller, I seem to have rid myself of all of the problems associated with my old controller's inability to work with the new, faster 11-73 and '83 processors. I had even gotten the new level "L" prom set for the old beast, and the troubles persisted. I sold the system to a friend with an 11-23, and we are both happy.

When memory prices get more sensible, I want to add a small (33MB) ramdisk and a full caching controller, like the Andromeda ESDC (unless MTI is going to implement cacheing in some new proms with the MQDX3), and then it will be the machine I want. The Andromeda controller (reportedly) can control up to four 16MB cache memory expansion boards and can make part or all of it look like a RAMdisk. It's expensive - I'll wait until memory is cheaper - but this looks like a good way to go. My 3.75 MB of high memory along with the VM handler has given me a taste of how lots of RAM really speeds things up, and I want more.

Because I got a little more than I needed for now, I know I can handle a few more goodies later as they come down the road,

like the SPX 386 or the newer 88000 or 80486 accelerator boards. Another plus is that a relatively inexpensive UPS can be used after the power conditioner, now that the power demand from the system box is so much more reasonable than before, even with a "fuller house."

For printers, I have a very old GE Terminet-340 printer, along with another one cannibalized for parts. It was a real workhorse, but I'm getting sick of bending things so they work again. It's starting to make funny noises that I couldn't seem to stop, and it's taken to eating messy, expensive ribbons. I was going to need a new one sooner than later, so if I got a replacement before this one gave out, the changeover could be smoother.

I wanted to get a reliable, flexible, high quality printer that didn't need ventilation as does my copier and most laser printers, when people are around. I get nasty headaches from the fumes. I needed printing more than graphics, so I decided to stay with the dot-matrix technology. After looking around, for both quality and price, I settled on the Hewlett-Packard 2235 RuggedWriter. So have some of the people that ask me for my thoughts on such matters, and often they get more than one to get lineprinter thru-put without the cost and downtime. Some have been running almost continuously for a year or more. A maintenance agreement is available for a very modest amount, as these things go.

Naturally, the price dropped $130 a few months after I bought it. It prints 480cps (12cpi) in draft, and 200cps in LQ mode, and the LQ is very good. It is compatible with HP's PCL level 3 (Printer Command Language, same as on the laser printers) and has full EPSON emulation. The replaceable head and a MTTF of 20,000 hours, 3 to 5 times better than the rest of the "toy" printers selling for as much or more, make it quite a deal.

An optional cartridge (Entre Computer) has several extra fonts which can all be italicized, bolded, shadowed, underlined, in 5 to 20 pitch, plus some memory for downloadable fonts. The optional sheet-feeder can be used without removing the sprocket feed paper already in the machine (called "paper-parking), and allows you to insert a single page when wanted.

It is a full feature printer with lots of options with Hewlett Packard quality. You can still use RUNOFF, set up for the Laserjet, so check it out! I hope to have a fully implemented RUNOFF module for the RuggedWriter submitted to DECUS this summer. If I ever need a laser printer, I'll get an HP laserwriter, and all my ".RNO" files will be mostly compatible. I gave the GE 340s to my brother to put on his PC clone - it's his problem now.

After all this, I realized that the other important piece of equipment was the one I bumped my nose against every startup - the CRT. My VT100 was looking cramped and ineffectual compared to the graphics terminal my brother's system was sporting, so I looked at some terminals. Everyone seems to have their favorites. Most engineers like graphics scopes for use as terminals. Like expensive sneakers, they are nice, but quite the luxury if you're not doing some heavy graphics on a special job. I looked for the best price/performance, but the field was, and probably still is, changing so rapidly that I was having a difficult time.

I finally decided that, for the price, the Falco line of VT220 emulators had the nicest screen along with good monochrome graphics capability. The screen could show 600x400 pixels, or, with extra memory (added aftermarket), 1200x400 pixels. They were quite nice enough for me, and the graphics capability was TEK compatible. The character maxtrix was fine enough that the display looked as good as scopes costing $1K more. I have two of them - the newer one, a 5220e, having a built-in calculator and calendar, which is now my private terminal. I use the reverse-video mode exclusively, as I find it much easier to keep looking back and forth between page and screen when the letters involved are dark on a light field. The flat, paper white 14" screens help too. Try it, you might like it, and it's free with the terminal.

If you were reading the journals 10 or so months ago, you saw that HP was selling

their new 700 line of VT220 emulating terminals, the 700/22, for half price. I got one, and it is a beautiful machine. The keyboard is one of the best I've ever used. Give it some consideration, especially if you like HP quality. By the time this is read, I'm sure the field will have changed, but I'm sure that the HP quality will remain.

I've noticed that there isn't much stuff for RT mentioned in the DecDirect catalog - I wonder what that means. RT11 V5.5 is supposed to be out this Fall, with some really neat new features, especially a newer, more functional KED. There is a lot of stuff available for RT from independent vendors written to answer the problems that occur when RT is pushed near its limits. A lot of software is in the Public Domain, so its cheap enough to give it a try. I will talk about V5.5 and what I have found to be the most interesting PD stuff next time.

		73A - dual wide ("-10" chips)		73B - quad wide ("-11" chips)				- processor
		15	15	18.0	19.6	20.0	22.1	MHZ crystal
RT11	XM	12:52	12:07	9:09	7:52	7:4	7:13	seconds
	SJ		8:06	7:01	6:20	6:19	5:47	seconds

TABLE 1

```
SET TT NOQUIET
!
ASSIGN VM0 SRC
ASSIGN VM0 BIN
ASSIGN VM0 MAP
ASSIGN VM0 OBJ
!
TIM 0                          ! set timer to zero
!
MACRO/OBJ:OBJ:KMSJ SRC:(SJ+SJFB.CND+EDTGBL+KMON+KMOVLY)
MACRO/OBJ:OBJ:RMSJ SRC:(SJ+SJFB.CND+EDTGBL+USR+RMONSJ)
MACRO/OBJ:OBJ:TBSJ SRC:(SJ+SJFB.CND+EDTGBL+SJFB.TBL)
MACRO/OBJ:OBJ:BTSJ SRC:(SJ+SJFB.CND+EDTGBL+BSTRAP)
!
LINK/EXE:BIN:RT11SJ.SYG/BOU:1000/PROMPT/MAP:MAP:RT11SJ OBJ:BTSJ
OBJ:RMSJ,KMSJ,TBSJ//
OVLY0
!
TIM
!<eof>
```

All done completely in memory. VM handler booted with just the required files, though additional files didn't seem to matter.

The 73A could not use the PMI bus.

Figure 1 - File used in VM for benchmark.

RT-11 EMT Summary

Jim Crapuchettes
Omnex Corporation

The EMT codes executed by RT-11 are divided into several groups. The groups begin with the V1 codes, which take up a large portion of the 255 codes available (the low byte of the EMT instruction). A rough summary of the codes is as follows:

EMT Code	Function
000 - 337	V1 requests. Function is in high nibble of code, channel is in low nibble of code. Arguments are both in R0 and on the stack. Functions are same as codes 0 thru 12 of code 375.
340 - 357	Requests common to V1 and following versions. Arguments are in R0 and/or on the stack. See list of these EMTs below.
360 - 372	Monitor internal requests.
373	.CALLK (Kernel mode call); Was monitor internal request.
374	V2+ requests. Function code is in high byte of R0 and channel number (typically) is in low byte of R0.
375	V2+ requests. R0 points to argument block: the first word has a function code in high byte and a channel number (typically, although it is an extended function code in many cases) in the low byte. The rest of the argument block contains values specific to each request, but there are many requests with similar or identical argument lists.
376	Monitor internal request (fatal traps).
377	Ignored; returns to user program immediately.

CODES 340-357

The functions of the group of codes from 340 through 357 are as follows:

	EMT code	Request	Argument(s)
	340	.TTINR/.TTYIN	R0: Character returned (.TTYIN includes BCS .-4)
	341	.TTYOUT/.TTOUTR	R0: Character to send (.TTYOUT includes BCS .-4)
	342	.DSTATUS	R0: Devnam addr; Stack: Status block addr
/	343	.FETCH	R0: Devnam addr; Stack: Address
\	343	.RELEAS	R0: Devnam addr; Stack: 0
/	344	.CSIGEN	Stack: cstrng,defext,devspc
\	344	.CSIGEN	Stack: cstrng,defext,devspc+1,linbuf
/	345	.CSISPC	Stack: cstrng,defext,outspc
|	345	.CSISPC	Stack: cstrng,defext,outspc+1,linbuf
|	345	.GTLIN	Stack: 0,prompt,1,linbuf (term/.COM)
\	345	.GTLIN	Stack: 0,prompt,3,linbuf (term only)
	346	.LOCK	
	347	.UNLOCK	
	350	.EXIT	R0: non-0 = soft; 0 = hard (& pass commands)
	351	.PRINT	R0: String addr
	352	.SRESET	
	353	.QSET	R0: Length; Stack: Address
	354	.SETTOP	R0: Desired high address
	355	.RCTRLO	
	356		
	357	.HRESET	

CODE 374 Functions

The functions (high byte of R0) of CODE 374 are as follows:

Function code	Request	Argument (in low byte of R0)
0	.WAIT	Channel number
1	.SPND	[none, must be 0]
2	.RSUM	[none, must be 0]
3	.PURGE	Channel number
4	.SERR	[none, must be 0]
5	.HERR	[none, must be 0]
6	.CLOSE	Channel number
7	.TLOCK	[none, must be 0]
10	.CHAIN	[none, must be 0]
11	.MWAIT	[none, must be 0]
12	.DATE	[none, must be 0] Date returned in R0
13	.ABTIO	Channel number

CODE 375 Functions

The functions of code 375 are as follows ("lo byte\hi byte" in word):

Function code	Request	Argument list (pointed to by R0)	
0	.DELETE	chan\0,dblk,seqnum	
1	.LOOKUP	chan\1,dblk,seqnum	
2	.ENTER	chan\2,dblk,len,seqnum	
3	.TRPSET	chan\3,addr	
4	.RENAME	chan\4,dblk (two names)	
5	.STAVESTAT	chan\5,cblk	
6	.REOPEN	chan\6,cblk	
7	{.CLOSx}	chan\7	
10	.READx	chan\10,blk,buf,wcnt,crtn	
11	.WRITx	chan\11,blk,buf,wcnt,crtn	
12	{.WAITx}	chan\12	
13	.CHCOPY	chan\13,ochan,jobblk	
0,14	.DEVICE	0\14,addr	
1,14	.DEVICE	1\14,addr	
15	.CDFN	0\15,addr,num	
16			
17			
/ 20	.GTJB	0\20,addr	"Old" style
\ 20	.GTJB	1\20,addr,jobblk	"New" style
21	.GTIM	0\21,addr	
22	.MRKT	0\22,time,crtn,id	
23	.CMKT	0\23,id,time	
24	.TWAIT	0\24,time	
25	.SDATx	0\25,,buf,wcnt,crtn	
26	.RCVDx	0\26,,buf,wcnt,crtn	
27	.CSTAT	chan\27,addr	
30	.SPFA	0\30,addr	
0,31	.PROTECT	0\0,31,addr	
1,31	.UNPROTECT	0\1,31,addr	
32	.SPFUN	chan\32,blk,buf,wcnt,spfun,crtn	
33	.CNTXSW	0\33,addr	
0,34	.GVAL	0\34,offset	Value returned in R0
1,34	.PEEK	1\34,addr	Value returned in R0
2,34	.PVAL	2\34,offset,value	
3,34	.POKE	3\34,addr,value	
35	.SCCA	0\35,addr	
0,36	.CRRG	0\36,addr	
1,36	.ELRG	1\36,addr	
2,36	.CRAW	2\36,addr	
3,36	.ELAW	3\36,addr	
4,36	.MAP	4\36,addr	
5,36	.UNMAP	5\36,addr	
6,36	.GMCX	6\36,addr	

(Code 375 Functions, continued)

Function code	Request	Argument list (pointed to by R0)	
0,37	.MTSET	0\37,addr,unit	(unit is low byte)
1,37	.MTGET	1\37,addr,unit	(unit is low byte)
2,37	.MTIN	2\37,addr,unit[,count]	(byte: unit,count
3,37	.MTOUT	3\37,addr,unit[,count]	(byte: unit,count
4,37	.MTRCTO	4\37,addr,unit	(unit is low byte)
5,37	.MTATCH	5\37,addr,unit	(unit is low byte)
6,37	.MTDTCH	6\37,addr,unit	(unit is low byte)
7,37	.MTPRNT	7\37,addr,unit	(unit is low byte)
10,37	.MTSTAT	10\37,addr,0	
40	.SDTTM	0\40,addr	
41	.SPCPS	0\41,addr	
42	.SFDAT	chan\42,dblk,date	file date
43	.FPROT	chan\43,dblk,prot	file protect
/ 44	.GFDAT	chan\44,dblk,0,0\14	file date
| 44	.GFINF	chan\44,dblk,0,0\offset	file info
| 44	.GFSTA	chan\44,dblk,0,0\0	file status
| 44	.SFINF	chan\44,dblk,valu,oper\offset	file info
\ 44	.SFSTA	chan\44,dblk,valu,oper\14	file status
		oper: 0 = GET; 1 = BIC	
		2 = BIS; 3 = MOV	
		4..177 = <rsvd to DEC>	
		200..377 = <rsvd to users>	
45	.CLOSZ	chan\45,size	

SYSLIB/SYSMAC for Programmers in RT-11 V5.5

U.S. Spring DECUS 1989, Atlanta GA
RT-11 SIG

Rob Hamilton
Digital Equipment Corporation

New features in RT-11 V5.5 available to programmers

- in the RT-11 monitors (RMON)
- in SYSMAC.SML (System Macro Library)
- in SYSLIB.OBJ (System Subroutine Library)
- in SYSTEM.MLB (System Definition Library)

U.S. Spring DECUS 1989, Atlanta GA — RT-11 SIG

SYSLIB/SYSMAC for Programmers in RT-11 V5.5

New Programming Features in V5.5 fall into six general catagories:

- Directory Access
- File Input/Output
- System and Job Control
- Time/Date Functions
- New Handler Functionality
- Symbol Definition Standardization
- New Fixed Offsets

U.S. Spring DECUS 1989, Atlanta GA — RT-11 SIG

New SYSMAC Macros

.CALLK	call kernel-mode routine from user mode
.CLOSZ	close file with a particular length
.GFDAT	get file date
.GFINF	get file information
.GFSTA	get file status word
.SFDAT	set file date (not new)
.SFINF	set file information
.SFSTA	set file status word

U.S. Spring DECUS 1989, Atlanta GA — RT-11 SIG

.CALLK

Allows calling RMON XM routines from USER mode:

$BLKMV	FINDGR	$JBLOC
MPMEM	$P1EXT	$USRPH
XALLOC	XDEALC	

Example:

```
.GVAL   #AREA,#$P1EXT    ; RMON's $P1EXT offset
MOV     R0,-(SP)         ; Save it
.PEEK   #AREA,#$SYPTR    ; Get RMON base
ADD     R0,@SP           ; Point to $P1EXT
ADD     #$BLKMV,@SP      ; Point to $BLKMV
MOV     #INPAR,R1        ; Pass arguments
MOV     #INOFST,R2       ;  ...
MOV     #OUPAR,R3        ;  ...
MOV     #OUOFST,R4       ;  ...
MOV     #WCOUNT,R5       ;  ...
.CALLK                   ; Address on stack,
                         ; nothing needs popping
```


.CLOSZ

Closes a new file with a specified length.

Example:

```
; Create a file, allocating 256 blocks
        .ENTER  #AREA,#CHAN,#DBLK,#256.
        ...
; Make temporary use of the last block allocated
        .WRITW  #AREA,#CHAN,#BUF,#WCNT,#255.
        ...
; Close the file with only 100 blocks
        .CLOSZ  #AREA,#CHAN,#100.
```

Note:

- .CLOSZ on a channel opened with .LOOKUP does no change the file length. It is the same as .CLOSE
- .CLOSZ cannot extend a file's allocation

.GF%%% & .SF%%%

{GET / SET} file {STATUS / DATE / INFORMATION}

These macros provide access to directory entries:

.GFDAT *area,chan,dblk*
.GFSTA *area,chan,dblk*
.GFINF *area,chan,dblk,offset*

.SFDAT *area,chan,dblk,date*
.SFSTA *area,chan,dblk,value,oper,ucode*
.SFINF *area,chan,dblk,value,oper,offset[,ucode]*

oper can be GET, BIC, BIS, MOV, or USER

ucode is valid only if oper=USER

Example:

.SFINF—Set File Information

```
.LIBRARY "SRC:SYSTEM.MLB"
.MCALL .DIEDF              ; Dir Entry Defs
......
.SFINF #AREA,#CHAN,#DBLK,VALUE,MOV,#E.USED
```


New SPFUNs

New special function codes are provided for the DU handler:

- SF.R32 (367)—read 32-bit LBN
- SF.W32 (366)—write 32-bit LBN

Note that use of these requires LOADing the new AT handler in XM.

New SYSLIB Routines

SYSLIB routines are designed to be called by user jobs written in any language. They are *language-independent.*

- from FORTRAN-IV or FORTRAN-77
- from any other language, using the R5 parameter block calling sequence
- from DECUS C by using CALL()

New SYSLIB routines in V5.5 fall into the following catagories:

- Directory Access
- String Testing
- File Input/Output
- System and Job Control
- Time/Date

Directory Access

These functions allow a program to access RT-11 random access directories.

- IGFDAT returns the date word associated with a file entry
- IGFINF returns the contents of a specified word of a file entry
- IGFSTA returns a file entry's status word
- ISFSTA modifies the contents of a specified file entry's status word
- ISFINF modifies the contents of a file entry

Notes:

- Certain bits of the E.STAT word cannot be modified
- E.LENG, offset 10, cannot be modified
- These routines are not valid with Digital-supplied *special directory devices* such as magtapes or printers.

Directory Access (continued)

Two new functions, IGTDIR and IGTENT implement an easy-to-use wildcard directory search tool.

- IGTDIR initiates a wildcard directory search
- IGTENT retrieves the next directory entry

Calling Sequences:

I = IGTDIR(WKSIZE, AREA, CHAN, BUFFER,
[HEADER],[DBLK],[STRING],[STVALU],
[STMASK],[DATREL],[DATEWD],[RSVD1],
[RSVD2],[STOFST]

I = IGTENT(AREA, ENTRY,[STOFST],[FILBLK],[ASCNAM])

Success and error codes are returned as integer function values.

Note: These routines are not valid with Digital-supplied *special directory devices* such as magtapes or printers.

Directory Access - Example

```
C  EXAMPLE USING SYSLIB ROUTINES IGTDIR AND IGTENT.
C  DISPLAY A DIRECTORY OF SPECIFIED FILES ON SY:
C
      INTEGER*2 AREA(64), ENT(7), BUF(512), DBLK(4)
      BYTE NAME(11), DSTR(11), WSTR(81), PROMPT(8)
      DATA PROMPT /'F','i','l','e','s','?',' ',"200/
      DATA DBLK / 3RSY , 0,0,0 /
C
      ICHN = IGETC()
   10 CALL RCTRLO
      WRITE (7,1001)
 1001 FORMAT( / )
      CALL GTLIN( WSTR, PROMPT)
C
      I = IGTDIR( 64,AREA,ICHN,BUF, ,DBLK,WSTR)
C
   20 I = IGTENT( AREA,ENT, ,IBLK,NAME)
      IF (I .LT. 0) GO TO 10
      CALL DATE4Y( DSTR, ENT(7))
      WRITE(7,1003) (NAME(K),K=1,10),ENT(5),DSTR,IBLK
 1003 FORMAT( 1X, 10A1, 1X, I6, 1X, 11A1, 1X, O6)
      GO TO 20
C
      END
```

System/Job Control

These SYSLIB routines provide additional parallel functionality to RT-11 Programmed Requests:

- KPEEK & KPOKE—accesses kernel-mapped memory or I/O page
- ISPCPS—allows completion routine to change mainline PC
- ICNTXS—saves specific locations during job switch
- IHERR & ISERR—enables/disables monitor error aborts
- IPROTE & IUNPRO—protects/unprotects interrupt vector

Other new modules:

- XHANDL—pseudo overlay handler for virtual jobs
- $SYTRP—SYSLIB trap handler

String Testing

- IFWILD—test for wildcard RT-11 filespec match
- ISWILD—test for wildcard string match

Date/Time Functions

- IDATE—Returns Month, Day and Year for any RT-11 date
- DATE—Returns 9-character date string for any RT-11 date, in the form *dd-mmm-yy*
- DATE4Y—Returns 11-character date string for any RT-11 date, in the form *dd-mmm-yyyy*
- IDCOMP—Compares two RT-11 date words
- IWEEKD—Returns day of the week as an integer for any month, day, and year

System Definition Library SYSTEM.MLB

A new module with RT-11 V5.5, SYSTEM.MLB is a macro library that defines standard names to

- RT-11 data structure elements
- offsets
- bits and masks
- function codes
- error diagnostic codes

Many distributed RT-11 modules make use of SYSTEM.MLB

System Definition Library SYSTEM.MLB

Catagories:

- ..%%%%—Macros that define EMT request block structures
- .%%%DF—Macros that define data areas
- Miscellaneous/support

Common Examples:

..LOOK	EMT request block layout for .LOOKUP
.CF1DF	Configuration word 1 definitions
.DIEDF	Directory Entry definition
.DIHDF	Directory Header definition
.ERRDF	System Error definitions
.FIXDF	Fixed area definition
.JSWDF	Job Status Word bit definitions
.SPDDF	Disk SPFUN code definitions
.SPMDF	Magtape SPFUN code definitions
.SYCDF	SYSCOM area definitions

System Definition Library SYSTEM.MLB

Usage:

- Declare the SYSTEM.MLB with a .LIBRARY directive
- Use .MCALL to refer to each definition macro needed
- Invoke each macro

Example:

```
.LIBRARY "SRC:SYSTEM.MLB"
.MCALL .FIXDF, .CF1DF, .ERRDF, ...
.FIXDF
.CF1DF
.ERRDF
```

To get a listing of any definition macro, write a program like this:

```
.LIBRARY "SRC:SYSTEM.MLB"
.MCALL name
name LIST=YES
.END
```

and assemble it with MACRO/LIST

Write Supportable Code

The cryptic method...

```
MOV     @#54,R4
MOV     #432(R4),R4
CALL    -6(R0)          ; call XALLOC
```

The SYSTEM.MLB way...

```
.FIXDF
.P1XDF

MOV     @#$SYPTR,R4     ; get RMON base
MOV     #P1$EXT(R4),R4  ; point to $P1EXT
CALL    $XALPT(R0)      ; call XALLOC
```


New Fixed Offsets

RMON Fixed Offsets are defined in .FIXDF

$PROGD	452	Indicates default editor
$PROGF	453	Indicates default FORTRAN compiler
$WILDD	454	Indicates implicit/explicit wildcarding (byte)
$JOBS	455	Number of job slots in system (byte)
$QHOOK	456	Pointer to RMON hook for UB
$H2UB	460	Pointer to UB entry vectors
$CNFG3	466	Configuration word 3
$SLOT2	502	value of $SLOT*2 (byte)
	503	reserved (byte)
$SPSIZ	504	Special device file size

Config Word 3 - $CNFG3

Defined in .CF3DF

CF3.UI	000020	UB is set NOINSTAL
CF3.UA	000040	UB is ACTIVE
CF3.UB	000100	UB is RESIDENT
CF3.DM	000200	At least one handler uses DMA
CF3.64	000400	Extended Unit Support
CF3.AT	001000	Address Translation (AT) present
CF3.ON	002000	$OWNER table exists

Aw, Go CREF Yourself!

John M. Crowell

Introduction

Most of us use CREF (if we use it at all) only to produce cross reference listings of our MACRO programs. There may be other distributed programs that use CREF (perhaps BASIC-Plus2?) as well. The RT-11 Documentation Index and the System Utilities Manual would have you believe that LINK uses CREF to produce a cross-reference listing (/N option), but even though it creates a temporary file called CF:CREF.TMP, LINK doesn't use CREF.

I, on the other hand, have had occasion to use CREF in some of my own applications - like microprocessor assemblers, disassemblers, even a disk-file catalog utility. I won't describe those applications here (They are not in the public domain.), but I will describe how they make use of CREF.

Chapter 8 of the Software Support Manual describes the chain interface to CREF as well as the format of the CREF input file. It leaves out just enough detail to cause a lot of problems. I'll try fo fill in some of the missing information here.

Running CREF

CREF cannot be run directly. It slaps your wrist if you try. You invoke CREF by chaining to it from another program. CREF will then produce in a list file, which you have carefully left open, a sorted cross reference of data you have provided in a temporary input file (input to CREF; output to your program) which has also been left open. CREF will then either exit normally, or chain to another (usually the original) program.

The CREF Input File

CREF takes its input from a data file consisting of 12-byte records. This is usually a temporary file that disappears when CREF is finished with it, but it could just as well be a permanent file. CREF doesn't care if you don't. (MACRO uses a temporary file called CREF.TMP which it creates on device CF: if it exists, or otherwise on DK:.)

The 12-byte entries in the input file are shown in Figure 1.

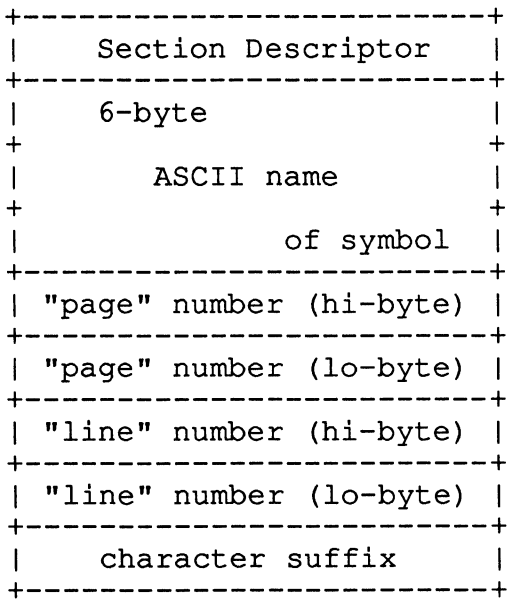


Figure 1.
CREF input record

Section Descriptor

The section descriptor in byte 0 is divided into two parts. Bits [4:0] are used as a 5-bit ASCII characterto denote the seciton name. (The octal 100 is added by CREF.) Bits [7:5] are a section number used to order the sections. For example, MACRO uses the following section descriptors:

Section Number	bits [7:5]	bits [4:0]
0	000	23 = S for user symbols
1	001	22 = R for registers
2	010	15 = M for macros
3	011	20 = P for permanent symbols
4	100	03 = C for CSECTs and PSECTs
5	101	05 = E for Errors

The MACRO section number in bits [7:5] creates a cross-reference listing of user symbols first, followed by registers, macros, etc. If the same section number is used for more than one type of section, the listing is ordered alphabetically within the seciton number. The section name is reflected in the cross-reference listing in the page number. The symbol listing appears on pages S-1, S-2, ..., and register listings on pages R-1, R-2,... etc.

Symbol Name
Bytes 1 through 6 contain the 6-character ASCII symbol name of whatever is being cross-referenced. For proper formatting of the listing file, it should be padded with spaces if the name is shorter than six characters. (Nulls are OK; but it makes for messy output.)

"Page" Number
Bytes 7 and 8 contain an unsigned binary number. Note the ordering of the bytes - high byte first. (This 16-bit number isn't word aligned anyway.) For MACRO listings it is the page number, but you can use it for anything you like. The acceptable range is 0-999 (decimal) or -1 if you want to ignore it. The limit of 999 can be removed by a binary patch to CREF, but we won't go into that here. If you go beyond 999 you'll get funny looking numbers like :000 instead of 1000 or D123 instead of 2123.

"Line" Number
Bytes 9 and 10 contain another unsigned binary number. For MACRO listings it is the line number, but the actual interpretation is up to you. If you are using the "page" number, the acceptable range is 0-9999. If you are not using "page" numbers (i.e. page number = -1) the range is 0-65535.

Suffix
Byte 11 contains an ASCII character to be appended to the page/line number cross-reference listing. MACRO uses # for a symbol definition and * for a destructive reference. You can use any character you like, and the interpretation is up to you. A null character isn't catastrophic, but it can mess up the formatting. I recommend that a space be used if nothing else.

The entry in the list file would appear as

```
     symbol     page-line|suffix   page-line|suffix   page-line|suffix
or
     symbol     number|suffix      number|suffix      number|suffix
```

For example:

```
     MYDATA     2-25    2-27*   3-15#
or
     FORKQ      1200    1566$   32700+
```

CREF will sort all the entries in its input file first according to section number and section name. The sections will be separated by headers with page numbers and usually by pagination. The listings for symbols in a section are alphabetized

(or ASCIIbetized), the the entries for each symbol are ordered by page number (if used) and finally by line number. (Essetially, bytes 0-11 are "alphabetized.")

Chaining to CREF

You can chain to CREF from your MACRO program using the .CHAIN programmed request or from FORTRAN using the CHAIN subroutine in SYSLIB. (I'm sure it can be done from DECUS C too. Somebody should write an article about doing that. Hint!) Before relinquishing control to CREF, however, you should have opened the CREF input data file and written to it all the cross-reference entries. CREF is going to purge the I/O channel to this file, so if you want to keep this file around, close it and reopen it before chaining to CREF. You should have opened the listing file and written to it everything you want up to the cross-reference table. CREF is going to close this file. The cross-reference table will be the last thing in it. CREF will start the cross-reference table on a block boundary in the output file, so you should pad the file with nulls up to end of the last block you've written.

If you are chaining to CREF from your MACRO program, you put the full name of CREF in RAD50 into memory locations 500-507, and put data about the CREF input file and the output listing file in 510-777. From FORTRAN you pass the name of CREF and the data as arguments in the call to subroutine CHAIN. In either event, the contents of the chain area of memory will finally be as follows:

Loc	Contents	Description
500	.RAD50 /SY /	File specification to invoke CREF.
502	.RAD50 /CRE/	(We are assuming here that CREF.SAV
504	.RAD50 /F /	resides on SY:.)
506	.RAD50 /SAV/	
510	LST channel	RT-11 channel number for output listing file. If you're in FORTRAN, you can get this by calling ILUN.
512	LST device	RAD50 of device for output listing file. If the device handler wasn't loaded, CREF will need to fetch it.
514	LST block	Highest output block number written, plus 1. (i.e. the first block of the cross-reference listing) From FORTRAN you can determine the highest block written by calling ICSTAT.

516	CRF channel	RT-11 channel number for the CREF input data file.
520	CRF device	RAD50 of device for CREF input data file.
522	CRF block	Highest output block number written to CREF input data file, plus 1. (i.e. the size the file would have if closed)
524	LST format	The Software Support Manual says this is zero for an 80 column listing, and -1 for a 132 column listing. Given the restrictions on page and line numbers, I suppose this is true. Actually a zero here means that there will be a maximum of 7 cross-reference entries per line of listing. Non-zero means that there be a maximum of 12 entries per line.
526	.RAD50 /dev/	Program to chain (back) to. If this value is zero, CREF exits after closing the listing file. MACRO, for example, chains back to itself so that you can get back to the command string prompt. You may indeed want to chain to a completely different program. It's up to you.
530	.RAD50 /fil/	
532	.RAD50 /nam/	
534	.RAD50 /typ/	
536-776		.ASCIZ string for CREF to use as a title line. MACRO, for example, passes its listing page header containing the program name, date and time, etc. Do not include the page number indicator. CREF will supply that. If you want pagination between sections in the cross-reference listing, include a form-feed character at the beginning of this string.

Once the chain area has been fortified with these data, you can chain to CREF and stand back.

By the way, there is a bug in CREF that has been there for many years. For Version 5.1 and later of RT-11, location 3154 (octal) in CREF.SAV contains 000002 which should be 000006. For Version 5.0, the offending location is 3140 (octal). The error probably goes back further, perhaps even to Version 2 (Not Version 1 in which cross referencing wasn't enabled), but finding out isn't worth the trauma of opening the hall closet where earlier distributions are stashed. Just what the bug is, and why changing the 2 to a 6 fixes it, is left as an exercise for the reader.

UNISIG

From the Editor *by Sharon Gates-Fishman*

I have a little schedule in my office that shows when my deadlines are for getting these newsletters in to the DECUS office, when they are supposed to arrive in your hands, and place for a comment. The comment for this month's newsletter says "may arrive before or after symp." So as you read this, you may be preparing to go to Symposium, you may just have returned, you may be stewing about the fact that your boss wouldn't let you go this time, or all these events may be months past (if you tend to let your reading pile up).

One thing that I *do* know, is that the people I would normally pester for contributions to this newsletter are busy preparing their sessions. (I am giving you the benefit of the doubt - you know who you are!) So this month's newsletter relies rather heavily on excerpts from Usenet. Now that there are quite a few DECStations out in the field, more and more people are posting problems with them to the net. That is not to say that DECStations have more problems than any other new system. They may, or they may not - I don't know. But because we have this marvelous communications network in the Usenet, we can find out about problems very quickly. So, for your edification and amusement this month, we have:

- **DECstation 3100 yacc/cc bug**

Written by Thomas Epperly of Carnegie-Mellon University, about a problem he has found in the interaction between *yacc* and *cc*. Since I know next-to-nothing about *yacc*, I have printed his article almost verbatim. If you would like to contact him about this problem (or a similar one you might be experiencing), you can reach him at te07@edrc.cmu.edu.

Next we have

- **DEC's support of Ultrix vs. VMS**

A report from Mike Bryan of Applied Computing Devices, Inc., about what DEC Representatives told his Local Users' Group. You can contact Mike at uunet!acd4!mjb.

Following Mike's article, is

- **Ultrix 3.1 and SIGSEGV**

In which Larry Clark of The Unix(R) Connection shares a problem he found when upgrading from 3.0 to 3.1 - several of his application simply stopped working! If you have seen something similar, read Larry's article. And you can contact Larry directly at larryd1@attctc.Dallas.TX.US.

And next we have

- **Creating a Second Swap Partition**

by Frank Wortner of DEC. One of the great things about Usenet is that you can get answers to questions you may not have thought to ask, just because someone else needs to know. Frank's address is frank@croton.dec.com, if you need more information.

Next we take a little break and have a humorous article,

- **The Playing Field at DEC**

contributed by our Humor Editor, Mark Bartelt. Mark claims to not know the source of this article, or its age, but I found it amusing and hope you do to.

And last, we have

- **C compiler (and lint) bug on DS3100**

from Chris Torek, of the University of Maryland. Chris not only describes the problem, but gives a temporary work-around as well. Chris can be contacted at uunet!mimsy!chris.

As always, your comments, criticism, and contributions are most welcome. Send hardcopy to:

Sharon Gates-Fishman
NDC Systems
730 E. Cypress Ave.
Monrovia CA 91016

or e-mail to:
amdahl!cit-vax!ndc!sgf

DECStation 3100 yacc/cc Bug *by Thomas Epperly, Carnegie-Mellon University, CS/RI*

I have found a problem using yacc and cc on the DECstation 3100. I don't know enough to say which is wrong, but I know that they don't work together like they should. I define the following union in my yacc input file:

(excerpt from yacc input file)

```
%union {
  double rvalue;
  long ivalue;
  struct variable *vptr;
  struct gl_list_t *elist;
}
```

The C program that yacc produces include these parts:

```
/* some deleted lines */

# line 88 "gram.y"
typedef union  {
  double rvalue;
  long ivalue;
  struct variable *vptr;
  struct gl_list_t *elist;
} YYSTYPE;

/* some more deleted lines */

#ifndef YYSTYPE
/* It redefines YYSTYPE here */
#define YYSTYPE int
#endif
YYSTYPE yylval, yyval;

/* some more lines */
```

As commented above, the #ifndef YYSTYPE executes the #define YYSTYPE int. Therefore, I get errors everytime I use yylval.{anything} E.g.

```
ccom: Warning: gram.y, line 270: struct/union
  or struct/union pointer required
  gl_append_ptr(yyval.elist,g_expr_ptr);
```

Not having gotten a satisfactory response from DEC on this, my current work-around is to include the following in my Makefile:

```
.y.
$(YACC) $(YFLAGS) $<
sed -e "/#ifndef YYSTYPE/,/#endif/d" \
  < y.tab.c > y.new.c
rm -f y.tab.c
mv y.new.c $@
```

DEC's support of Ultrix vs. VMS *by Mike Bryan, Applied Computing Devices*

Tidbits I heard at a DECUS LUG meeting last night. No guarantee the information is correct, but it **did** come from DEC representatives.

DEC is going to have **DECForms** for Ultrix/DECWindows available 3/90. An Ultrix version of their **CASE** tools (including **SCA** and **LSE**) will be available 10/90. An Ultrix version of the **LAT Terminal Server Manager** will also be available sometime in 1990. Of course, all of these are currently available for VMS.

When asked about the problem of DEC providing tools for VMS, but not for Ultrix, the DEC person said that *"all new products will be released simultaneously for both VMS and Ultrix."* I'll believe it when I see it, but it is at least a shred of hope.

Ultrix 3.1 and SIGSEGV *by Larry Clark, The Unix(R) Connection, Dallas, Texas*

We recently up-graded our 8810 to Ultrix 3.1 from Ultrix 3.0 (rev 64) and several of our applications ceased working. The applications either involved *popen()* or *system()* and *signal(SIGSEGV, SIG_IGN)*. The following code hangs forever with the *signal(SIGSEGV, SIG_IGN)* compiled in it.

```
#include <stdio.h>
#include <signal.h>

main()
{
  FILE *fp;
  char command[128];
  int i;

#ifdef IN
  signal(SIGSEGV, SIG_IGN);
#endif

  sprintf(command, "sh -c lp -d lp0");

  fp = popen(command, "w");

  if (fp == NULL) {
    printf("It's null0);
    exit(-1);
  }

  for (i = 0; i < 56; i++) {
    sprintf(command, "line %03d0, i);
    fprintf(fp, "%s", command);
    fflush(fp);
  }

  pclose(fp);

}
```

Maybe this will save someone some time looking for the reason an application ceased to work. I've called DEC and will file an SPR.

Creating a Second Swap Partition *by Frank Wortner, DEC*

In a previous Usenet article, Eric Fielding of Cornell asked:

> What does one have to do to create a second swap partition on a second disk drive (in addition to the default b on the system disk)? I tried changing the partition size with *chpt* of my **/dev/rrz3b** partition and entering it into my **/etc/fstab** as a swap partition, but *swapon -a* complains that it must be a block device. This happens with or without running *mkfs* on that partition. Is there some other program to run to create a "block device" for swapping? Do you have to specify the swap partitions in the kernal configuration? (Oh, in case it makes any difference this is Ultrix 3.0 on a PMAX.)

The "block device" is the non-raw partition. The entry in **/etc/fstab** should list **/dev/rz3b**, not **/dev/rrz3b**.

You do have to reconfigure the kernel to add a second swap partition. The configuration file in **/sys/conf/mips** should have a line like this:

```
config vmunix root on rz0a swap on rz0b
  and rz3b dumps on rz0b
```

If you want, you can run */etc/doconfig*, reply to its questions, and it will generate a config file for you.

Before you boot the new kernel, make sure that you have special files in **/dev** for **rz3**.

The Playing Field at DEC

Someone put the question to me the other day: What are the relationships between Enterprise Services, System Integration, Large Projects, Account Management, Prime Contracting and all the variants of these.

Since this is a common question, I've taken the trouble to get it all down in writing for you.

To answer your question, we really have to understand how Digital operates. Visualize a whole series of playing fields spread out on a vast plain, stretching out to the horizon in all directions. On each field, there are several teams, of different sizes and types, but there are only about a dozen different coloured uniforms, and teams of each colour seem to have a bond with each other that spans the many playing fields.

Some fields are large, and have all the colours represented, smaller ones have only a few. There is one called **SPR** that is unique in having all the colours, yet is only a very small field, and is so crowded the players can hardly move.

On each field the teams jostle and push each other around, sometimes they kick a ball around, other times they throw rocks at each other, and for long periods will huddle in small groups mumbling in low voices so the other teams can't hear. At random intervals, some members of a team will gather on the sideline and yell insults at members of the same coloured team in a neighbouring field. We do not yet understand why they do this, but both parties seem to find it most enjoyable.

Occasionally, all the other teams in a field will gang up on another one, and succeed in destroying it; the members of the victim team either become members of other teams, or are driven off the playing field. No-one has ever figured out the rules that apply to these games on the playing fields, although it is fairly certain that the players themselves do know.

Every now and again, play stops, and the parade begins. We do know that whoever leads the parade wins, and the extraordinary thing is that the teams from each field always form up in the almost the same colour sequence. The parades are a lot of fun, with bands and drums all competing with each other, and much cheerful banter between the teams.

The right to lead the parade seems to be associated with various banners, standards and flags that the teams occasionally fight over during play. The banners change from time to time, and have letters or words such as *OSF, Enterprise Services, Customer Services, LCG, 36 is better than 32, Level of Service, Network is the System, Own the Database, B$ST, Follow the Marketing Plan, UNIX, Sell Solutions, FMD's, Large Projects, DPM, Solution Selling* , and so on. When play stops and the parade begins, whoever owns certain flags gets a better position in the parade.

In the center are some extra large playing fields, and we know these are called **Corporate**; confusingly, all the others around this center are called the **Field**.

The teams on the **Corporate** fields have the ability to create flags and banners, which they do so in great secrecy; if another team suspects a flag is being made, they will try and tear it up. When a new flag is ready, it is taken out to as many of the other fields as possible, and the teams on each field will fight over it, or ignore it, or even share it, although this is rare. We have never been able to predict how the **Field** teams will react to a new flag.

Well, those are the rules. Lets see what's been going on with the banners *Account Management, Enterprise Services, Large Projects,* and *System Integration.*

Account Management has always been owned by a team called **Sales**; from time to time other teams get a hand on it, but the most they ever achieve is to share it for a while. Mostly the other teams seem to thinks **Sales** should have it, and concentrate on arguing that it is not as large and important a banner as **Sales** says it is.

Large Projects is a new banner, and we're not sure where it came from. It is only a flag really, but

The Playing Field at DEC *continued...*

there has been a lot of squabbling around it, mostly over how to share it. Sales seem to be very determined to own it exclusively, perhaps to shore up the *Account Management* banner. The other teams are are not sure they want to own this flag, but don't want Sales to own it.

Enterprise Services is a biggie. It was made by a Corporate team, one of the marketing ones, who showed it to a few of the playing fields near Corporate. A team called Field Service saw it first, and ran off with it, and gave it to every Field Service team on the plain. Only then did all the other teams see what a useful banner it was, and start to fight for it. Here in SPR, a team called SWS, with help from other teams, has managed to get a hand to it, and so now it is a shared banner.

Meanwhile, on one of the Corporate fields, the head of the SWS team has grabbed a new banner called *System Integration* and is trying to establish it as a more important banner than *Enterprise Services*. This is still in play, so I can't actually answer your question right now, but I think you'll have a better feel for how the game is played, and this should increase its entertainment value for you.

C Compiler (and lint) bug on DECStation 3100 *by Chris Torek, University of Maryland, Dept. of Computer Science*

The DS3100 C compiler (derived from the MIPS compilers) does not believe in expressions of the form

```
integral_expr ? void_expr : void_expr
```

such as this [useless] example:

```
main() { 1 ? (void) 1 : (void) 0; return 0; }
```

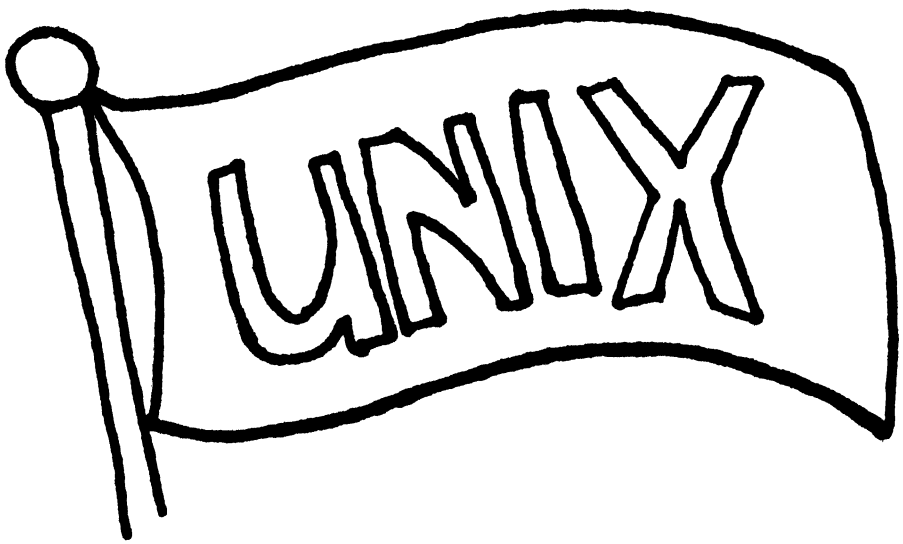
This is particularly a problem in void-valued macros built out of other void-valued macros, e.g.,

```
#define putone(x) \
  ((void) writeit(x, EXIT_ON_ERROR))
#define putalternative(a, b) \
  (thisway ? putone(a) : putone(b))
```

For now, the solutions available are

```
#define void int
```

(or equivalent) or rewriting the code to use if/then/else or to avoid void-valued expressions in ?: statements.



NEWSLETTER OF THE VAX SYSTEMS SIG

Pageswapper

Our Mascot

VAX SYSTEMS SIG DECUS U.S. CHAPTER

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CONTRIBUTIONS

Contributions and suggestions for this newsletter are constantly needed. Articles, letters, technical tips or anything of interest to our SIG are greatly appreciated.

Please do not submit program source. It is difficult to typeset and is better distributed on the VAX SIG tape. Please do not submit "slides" from DECUS Symposia presentations or other meetings. They are generally a very incomplete treatment for those readers of the *Pageswapper* who are not so fortunate as to be able to travel to Symposia. Please DO write articles based on such slides. Please do not embed "mark up language" (TeX, SCRIBE, RUNOFF) commands in your submission. Plain ASCII test is preferred.

Send your contributions to:

David K. Santistevan
Western Data Technologies
5270 Fox Street
P. O. Box 5542
Denver, CO 80217

Submissions may also be made electronically via DCS to KINGS.

VMS AND OPEN SYSTEMS
VMS DEVELOPMENT

Amy Becker / Digital Equipment

Standards and Open Systems play an important part of the VMS strategy both now and in the future. DIGITAL offers support for multiple operating systems across its hardware platforms, as well as leadership distributed networking which allow these systems to share information, all compliant to public and defacto standards today. In addition, on-going research and development plans include significant efforts to adopt and conform to standards currently in draft or working committee.

Specifically, the VMS Operating System currently supports over 35 public, national and international standards. These include standards from American National Standards Institute (ANSI), U.S. Federal Information Processing Standards (FIPS) and the International Standards Organization (ISO).

In addition to these accredited standards, there are a number of defacto standards that have been accepted by a large portion of the user community. These include the X Window System Version 11, TCP/IP and NFS. A number of these defacto standards have been submitted for consideration to organizations such as Open Software Foundation, X/Open and other industry consortiums.

Today, heterogeneous operating environments are the rule rather than the exception, and it is important that VMS be able to operate in these multi-vendor environments. As part of the Distributed VMS Strategy, DIGITAL offers DECnet, TCP/IP, and an OSI suite of products as part of an integrated network solution based on both proprietary and open systems (ISO) standards. With DECnet Phase V, DIGITAL will offer an even more integrated set of networking protocol implementations whereby much larger networks can be implemented, supported, and managed, regardless of networking transport.

Phase V on VMS (DECnet-VAX) will provide a framework for large heterogeneous networks (greater than 100,000 nodes), and a set of common network services and applications (Global Naming, Global Routing, increased network management support under its Enterprise Management Architecture (EMA) using the CMIP protocol and Network Command Language (NCL), and Mail/File/Terminal Applications). Current supported Phase IV interfaces will continue to be supported under Phase V in order to preserve customer investment in DIGITAL's networking technology. DECnet/OSI Phase V will become the basis for the next generation of open systems distributed processing.

VMS has also embarked on a program to integrate POSIX (IEEE 1003 Portable Operating System Interface) into VMS. This integration will allow a customer to both run Strictly Compliant POSIX applications as well as develop Strictly Compliant POSIX applications for other target platforms, while taking full advantage of the rich features of VMS such as the set of traditional VMS development tools and utilities, Symmetric Multiprocessing, VAXclustering, Disk Volume Shadowing, Journaling, etc. The initial release of VMS Integrated POSIX will conform to the IEEE 1003.1-1988, 1003.2 and portions of the 1003.4 draft standard.

The key to adopting the IEEE POSIX standards is that they are vendor independent interface definitions rather than specific vendor implementations so they are not tied to a particular vendors hardware architecture. IEEE 1003.1 has been adopted by a number of the "open systems" organizations including X/OPEN and the Open Software Foundation as the basis for their standard operating environment. In addition to DIGITAL, a number of vendors, including Hewlett Packard, IBM and Unisys, have indicated that they too will be offering a POSIX compliant version of their proprietary operating systems.

Finally, DECwindows software (that is supported on both VMS and Ultrix) is based on the defacto X-11 windowing standard that has been adopted by the Open Software Foundation and a large number of hardware and software vendors. The application programming interface of DECwindows has been chosen along with the "look and feel" of the HP windowing interface as the basis for OSF Motif windowing system.

DECwindows Version 2.0 has been enhanced with support for the TCP/IP transport protocol. Internationalization features such as language switching capabilities are included with this release and country specific versions will be available shortly after the U.S. release. Further enhancements to internationalization are being planned in future releases.

VMS, as indicated above, has adopted many industry standards to date. VMS will continue to monitor the evolving standards space and adopt standards that are important to our customer base. Significant effort by VMS to improve its existing value-added features will continue for the foreseeable future, and will grow in the standards area and beyond.

Sessions at Fall DECUS

The following sessions will be of interest to those in an open environment or for those who want to follow Digital's role in the area of standards.

MONDAY

Marriott Hall	13:30 14:00	VA271	VMS as an Open Environment
Ballrooms A-E	11:00 12:00	LT070	POSIX and Portable FORTRAN Applications
Anaheim Room	11:00 12:00	NE101	DECnet/OSI Phase V Overview
Anaheim Room	12:00 13:00	NE026	A Realistic Approach to Implementing OSI
Anaheim Room	13:00 14:00	NE105	Update on Digital's OSI Products
Anaheim Room	14:00 15:00	NE112	Making the Transition to DECnet/OSI Phase V
Ballrooms G-K	21:00 22:00	LT155	Standards for Tools Integration into CASE Environments

TUESDAY

North Hall	12:30 13:15	VA273	DECnet/OSI
North Hall	13:15 14:00	VA272	POSIX in the VMS environment
Monterey	15:00 16:00	DA067	Realtime Extensions to POSIX (IEE 1003.4)

WEDNESDAY

Avila	10:00 11:00	LT120	Planning for Standards - Planning for the Impact of Coming Standards
Avila	11:00 12:00	LT121	The Standards Process - How Standards are Developed and Maintained

THURSDAY

San Simeon	18:30 19:30	UM046	Open Systems Standards and Digital

VMS ON THE DESKTOP
VMS DEVELOPMENT

Amy Becker / Digital Equipment

Digital's VMS Engineering Group has established the VMS Desktop Program to focus on strategic, long-range planning for VMS on the desktop. The overall goal of the VMS Desktop Program is to provide Digital customers with industry-leading VMS solutions for desktop computing in the 90's. At DECUS this Fall, there are a number of presentations that describe the VMS Desktop Program's strategic directions, current VMS products for the desktop, and other Digital products that together make Digital the industry leader in providing integrated computing solutions.

The Desktop View

The VMS Desktop Program approaches desktop computing from two distinct vantage points. First, there's the customer or end-user view of the desktop. This view, simply put, is a desktop computing device that provides an interface to the tools the user needs to get the job done. From the end-user perspective, users see only the application interface, and are not concerned with what is actually behind the application. Most users aren't interested in where the application is actually executing, where the data resides, and who is controlling other available resources. Having useful tools at the desk is the end-user's primary concern.

The VMS Desktop Program shares this end-user view of the desktop, and holds the user need for "tools to do the job" as its ultimate goal. But, in an era where general styles of computing are changing, becoming less centralized and more distributed, the key to providing easy-to-use tools on the desktop is developing the technologies that support desktop computing in a distributed computing environment. Even as computing styles evolve, the end user view should remain the same. It's what's behind the desktop display, what's behind the end-user view that may change.

Although the Desktop Program's view of the desktop is one that supports the end-user view, it goes much further. It focuses on the wide array of technology components that provide the end-user with an easy-to-use desktop working environment, an environment that performs well, and one that is transparent to the type of computing system that supports it. To better understand and develop the multitude of technology components that comprise desktop computing, the VMS Desktop Program has divided its view of the desktop into three fundamental focus areas:

- o Desktop Devices
- o User Interface
- o Network Integration

Desktop Devices

From the VMS Desktop Program point of view, Desktop Devices represent any informational device that sits on a user's desktop, including personal computers, workstations, dumb terminals, and X terminals. A goal of the VMS Desktop Program is to extend the quality features of the VMS operating system to support these desktop devices and associated system peripherals.

In workstations, for example, VMS provides support for the latest generations of VAX CPUs. Digital's newest VAX workstation, the VAXstation 3100, offers superior workstation price/performance along with the feature rich VMS operating system. The easy installation, network integration, and VAXcluster features of VMS have helped launch the VAXstation 3100 on its way to becoming one of the best selling workstations on the market today.

For the future, VMS is focusing much of its development resources in supporting emerging, state-of-the-art technologies, especially in the areas of peripherals and graphics. VMS recognizes the customer's increasing need for desktop storage and information archiving capabilities, and is committed to supporting the latest storage peripherals. With the VAXstation 3100, for example, Digital introduced an integrated compact disc reader that enables VAXstation 3100 users to take advantage of Digital's extensive software and online documentation offerings on compact disc.

In addition to offering our own, state-of-the-art desktop peripherals, VMS is extending its technology to allow for the integration of non-Digital devices. The recently announced VMS SCSI (Small Computer System Interface) Third Party Program provides VMS tools that enable third party vendors to easily develop devices to run on Digital's workstation SCSI bus. Such programs clearly demonstrate the VMS commitment to providing its customers with desktop systems that are open and flexible.

In the area of graphics, VMS recognizes that for many desktop users, performance isn't measured simply in terms of desktop MIPs. For desktop users of CAD/CAM and imaging tools, the actual speed at which graphics are displayed at the desktop is the soul measure of performance. VMS is developing graphics technologies that will significantly enhance levels of 2D and 3D graphics performance offered on VAX workstations well into the future.

User Interface

The second focus area for the VMS Desktop Program is the User Interface to desktop devices. Whether the interface is a form displayed on a character-cell terminal, or a graphical menu displayed in a window on a workstation screen, the Desktop Program's goal in the user interface area is to provide users with quick and easy access to applications from any desktop device.

At the heart of the VMS Desktop Program's user interface strategy is VMS DECwindows, which provides users with a point-and-click interface to the VMS system and applications. With DECwindows, users can perform tasks by simply selecting functions from graphical menus, rather than relying on typed commands. DECwindows also enables users to run multiple applications in multiple windows simultaneously, improving productivity.

To those developing applications to run on desktop devices, standards are very important, and VMS DECwindows conforms to a number of them, most notably, the X Window System standard. For the desktop user, the VMS commitment to such industry standards means an abundance of applications, applications that have a consistent look and feel, and are very easy to use.

But VMS DECwindows is more than just Digital's implementation of the X Window System standard. While completely compatible with X, it provides a valuable superset of features that are extremely valuable to desktop users. VMS DECwindows includes a set of desktop applications, such as electronic mail and the Bookreader for reading online documentation. In addition, VMS DECwindows offers an extensive set of programming tools through its X User Interface (XUI) toolkit, which was chosen by the Open Software Foundation (OSF) as a core technology for its User Environment Component.

VMS efforts in the user interface area go beyond the basic interface to applications. The VMS Desktop Program has a heavy focus on the way software is packaged, installed, and managed. Easy system installation and system management are critical in making desktop systems approachable by even the most inexperienced computer user.

With products like Desktop-VMS Software, Digital offers users an integrated desktop system with the complete VMS operating system, DECnet-VAX and VAXcluster software, applications, and online documentation that is preinstalled and ready to run. In addition, Desktop-VMS vastly simplifies system management of VAX workstations by providing a DECwindows user interface to routine workstation management tasks, such as printer installation and storage backup. By simplifying the user environment and making applications more readily accessible, users spend less time learning and more time being productive.

Products like VMS DECwindows and Desktop-VMS Software are just the beginning of the VMS Desktop Program's initiative to provide users

with easy access to the tools they need to do the job. The work already done with products such as these have paved the way for the development of even simpler, easier-to-use desktop systems. Simplicity, ease-of-use, quality, and commitment to standards are the watch-words of the VMS Desktop Program's user interface efforts.

Network Integration

Network Integration represents a very important focus area for the VMS Desktop Program. With the advent of intelligent desktop devices, such as workstations and PCs, computing resources have become much more distributed throughout the corporate enterprise. While desktop devices provide personal computing capability at the desktop, desktop users still need to communicate, and share data and other system resources. Desktop users have the capability to work as individuals, but they often need to work together.

Today, organizations are beginning to adopt new styles of computing that allow them to integrate their distributed computing resources in a manner that fits the way they do business. Workgroup computing, client/server computing, and local and wide area networks have all emerged as solutions for integrating and sharing the organization's computing resources and data. In the Network Integration area, the VMS Desktop Program goal is to provide a complete set of desktop integration solutions, solutions that while secure, easy-to-manage, and very flexible, uphold the end-user need for easy desktop access to the tools to get the job done.

Digital is well known in the industry for its leadership in network integration with the unmatched compatibility offered by its family of VAX/VMS processors, DECnet-VAX network architecture, and VAXcluster systems. But, the distributed computing environments of the future are much more complex and present a whole new set of challenges.

Most organizations today no longer pledge allegiance to a single computer vendor. The distributed computing environments of the future will integrate a wide variety of desktop devices, servers, and large-scale processors from different computer manufacturers. To the desktop user, the type or make of computing device running an application or serving data is unimportant and should remain transparent. Using products such as VMS Services for MSDOS and VMS DECwindows, organizations can integrate their desktop users into the mainstream computing environment.

VMS, through its DECwindows program, has already taken a giant step toward providing desktop users with transparent access to remote applications. Today, workstation or PC users can use DECwindows menus to interact with applications running on remote systems in a network. And development, testing, and support are continuing in the program's effort to extend the level of DECwindows interoperabilty to a wide range of non-Digital computer platforms.

Network management and security is another key area on which the VMS Desktop Program is focused. The network is the modern organization's lifeline, providing desktop users access to a wealth of information and other valuable resources. Network access is a boon to desktop users, but organizations are concerned about keeping access to network resources organized and controlled. They need network management tools to properly distribute network resources, ensure optimum system performance, and protect important and sensitive data.

Looking to the future, distributed computing environments present new opportunities for innovative new styles of computing, such as cooperative processing. The applications of tomorrow will be designed to take advantage of distributed computing systems. VMS system support for remote procedure calls, distributed databases, and data integrity are essential in meeting customer requirements for true distributed computing.

Finally, the VMS Desktop Program recognizes that customers want standards. VMS is committed to delivering to its customers a standards-compliant operating environment. Today, VMS supports over 40 public, national, and international standards for computing. Current work on other emerging standards such as OSI, POSIX, MOTIF, and Digital's Applications Integration Architecture (AIA) will deliver the openness and flexibility that organizations need to give their desktop users the "tools they need to get the job done."

Fall DECUS '89

Attached is a listing of DECUS sessions for attendees interested in Digital's strategies in the desktop area. Also, be sure to stop by the VMS Desktop Booth in the VMS exhibit area. The VMS staffers will be happy to answer your questions and show you the latest VAX and VMS technologies for the desktop.

MONDAY

Marriott Hall

9:30	10:30	VA182	VAX Systems Update
10:30	11:30	VA246	VMS Update
12:30	13:30	VA265	VMS Strategy for the Desktop
13:30	14:00	VA271	VMS as an Open Environment
14:00	15:00	VA268	Desktop-VMS Software Overview

TUESDAY

North Hall

12:30	13:15	VA273	DECnet/OSI
13:15	14:00	VA272	POSIX in the VMS environment
15:00	16:00	VA109	VAX SPM Product Update

South Hall

10:00	11:00	VA150	Next Generation of VAXclusters
17:00	18:00	VA269	Desktop-VMS System Management

WEDNESDAY

North Hall

14:00	15:00	VA266	VMS DECwindows User Interface
15:00	16:00	VA267	DECwindows Server Overview
16:00	17:00	VA270	DECwindows Performance/Tuning
17:00	17:30	VA174	A DECwindows Games Interface
17:30	18:00	VA152	Using DECwindows Font Compiler

THURSDAY

California E

9:00	10:00	VA285	DECwindows Toolkit Overview
10:00	11:00	VA287	DECwindows Interface Tools
16:30	17:30	VA046	VMS System Manager's Wishlist
22:00	23:00	VA041	Non-Digital VAX Clustering

FRIDAY

Center Hall

10:00	12:00	VA097	VAX/VMS Issues and Answers

North Hall

9:00	10:00	VA213	VMS Performance Management

South Hall

13:00	14:00	VA282	DECwindows Bookreader

California A

11:45	12:30	VA240	VAXservers (H/W & S/W Primer)
12:30	13:15	VA241	LAVc with MicroVAXes
13:15	14:00	VA158	LAVc System/Data Availability
14:00	14:30	VA153	DECwindows Real Life Applications

California E

10:30	11:00	VA076	CDROM Use on a VAX
11:30	12:00	VA276	VMS Support for SCSI Devices
12:00	13:00	VA277	SCSI Port/Class Driver
15:00	15:30	VA297	VMS System Management Utilities

Huntington

16:00	16:30	VA124	Sharing Disks With VMS

VMS PRODUCTION SYSTEMS
VMS DEVELOPMENT

Amy Becker / Digital Equipment

Since the Spring '89 DECUS, Digital has been refining its definition of a "Production System," considering the support requirements of production systems, and planning a strategy that will make VMS more competitive in production systems environments. Presenting the results of this work is a major thrust of the VMS activities at the Fall '89 DECUS.

An exact definition of a "production system" is elusive. But, most DP professionals know one when they see one. Some attributes that characterize a production system are: enterprise dependence on the computer system, an emphasis on application usage (as opposed to application development), a wide range of computer literacy, and availability of significant amounts of computer resources.

Not all production systems have all these characteristics. So please follow the second axiom of production systems when deciding whether or not to participate in the DECUS activities. If you think that your business needs are represented in a production system, then you are almost certainly correct.

There are about thirty production systems presentations at this DECUS. To help you navigate this maze, we have organized the talks in a tree-like structure. The VMS Production Systems (VA247) talk at 11:30 Monday is the root of the tree. The second level of the

tree contains five talks that review major areas of production systems activity. Finally, there are about two dozen other talks and working group meetings that cover some detailed aspects of the production systems.

Digital looks forward to your participation in our production systems DECUS program and to hearing your comments about our goals, current projects, and plans.

The complete, tree structure, list of production systems presentations is as follows:

Top 2 Levels (Overview/Futures)

Mon	11:30	Marriott Hall	VA247	VMS Production Systems
Tue	11:00	South Hall	VA253	System Mgt for Prod Systems
Tue	12:00	South Hall	VA252	Batch/Print Future Directions
Tue	13:00	South Hall	VA248	VMS Storage Management
Tue	14:00	South Hall	VA250	Future TP Services in VMS
Tue	15:00	South Hall	VA263	VMS Performance Mgt Futures

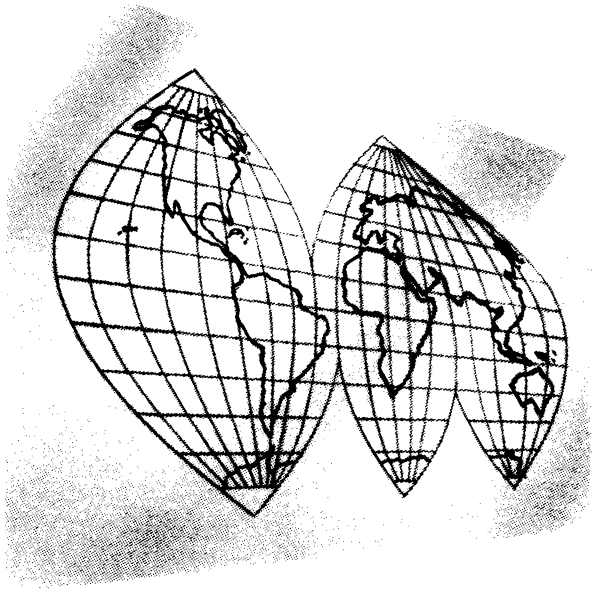
Level 3 (Related Presentations)

Mon	10:30	Marriott Hall	VA246	VMS Update
Mon	14:00	California E	VA251	Effective Use of Batch/Print
Mon	16:00	Rooms 7 & 8	VA094	VAXcluster Working Group
Mon	17:00	Rooms 7 & 8	VA084	VAX System Mgt Wkg Grp Meeting
Mon	18:00	Rooms 7 & 8	VA086	VAX Performance Wkg Grp Mtg
Mon	19:30	Rooms 7 & 8	VA210	Multi-SIG Security Wkg Grp Mtg
Mon	20:30	Rooms 7 & 8	VA093	VAX Multiprocessor Working Grp
Mon	20:00	Marriott Hall	VA258	RMS Caching and Locking
Tue	10:00	California E	VA279	VAX/VMS File Sys Internals I
Tue	10:00	South Hall	VA150	Next Generation of VAXclusters
Tue	15:00	California E	VA274	VMS Executive Enhancements
Tue	16:00	South Hall	VA163	Production System White Papers
Wed	10:00	South Hall	VA296	What's Next/Storage Info Mgt
Wed	12:00	Center Hall	VA259	VMS Security Auditing Facility
Wed	14:00	South Hall	VA133	VAX Perf Advisor Overview
Wed	15:00	South Hall	VA132	Capacity Planning With VPA V2
Wed	16:00	South Hall	VA112	Capacity Planning Using DECcp
Wed	18:00	South Hall	VA249	VMS Accounting
Thu	9:00	Marriott Hall	VA254	VAXcluster Overview
Thu	11:00	Marriott Hall	VA255	VAXcluster Configurations
Thu	12:00	Marriott Hall	VA256	Disk, Tape I/O in a VAXcluster

Thu	13:00	Marriott Hall	VA257	VAXcluster Application Pgming
Thu	13:00	California E	VA275	VMS SMP -- Technical Details
Thu	14:00	Marriott Hall	VA260	VMS Performance BACKUP Intrnls
Thu	14:00	Rooms 7 & 8	VA164	VAX SIG Production Sys Wkg Grp
Thu	15:00	Marriott Hall	VA261	VMS BACKUP Performance Tuning
Fri	9:00	California A	VA280	VAX/VMS File Sys Internals II
Fri	9:00	California E	VA284	VAXcluster Cache

DECUS

The DECUS LIBRARY



Software News

U.S. Chapter Edition

LIB

"Solving Your Everyday Problems"

NEW LIBRARY PROGRAMS AVAILABLE FOR THE VAX/VMS FAMILY OF COMPUTERS

DECUS NO. VS0102 **TITLE:** X Windows 11 Release 3 **Version:** May 1989

Submitted by: Glenn C. Everhart, Ph.D.

Operating System: UNIX **Source Language:** C **Software Required:** VAX C Compiler **Keywords:** Editors

Abstract: X Windows 11 Release 3 has been obtained from MIT and translated into a VMS directory structure but otherwise it is unchanged. It is presented for the convenience of sites wanting access to X Windows code in a format convenient to VMS.

Media (Service Charge Code): 2400' Magnetic Tapes (PD) **Format:** VMS/BACKUP, 2400' Magnetic Tape (SD) **Format:** VMS/BACKUP

DECUS NO: V00438 **TITLE:** CALENDAR **Version:** 1, August 1989

Submitted by: Ronald William Burke, Westinghouse Electric Corporation, Baltimore, MD

Operating System: MicroVMS V5.X, VAX/VMS V5.X **Source Language:** DCL, VAX FORTRAN **Keywords:** Calendars

Abstract: CALENDAR allows users to display a calendar for any month or months between the years 1600 – 9999 with any desired day marked off via pound signs. The first day and last day of each week in the calendar displayed is completely selectable by the user.

TIMETABLE allows users to compose lists of days for any month in a year wanted. The days are displayed vertically and the successive months are displayed horizontally.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: V00436 **TITLE:** VAXDASH **Version:** 1.0, August 1989

Submitted by: Bruce Kemlo, AGT, Calgary, Alberta, Canada-T2P 1M6

Operating System: VAX/VMS V5.1 **Source Language:** MACRO-32, VAX-11 BASIC **Memory Required:** 171KB **Hardware Required:** VT340 **Keywords:** System Management – VMS

Abstract: VAXDASH is a system management tool that utilizes REGIS graphics to display the following system metrics:total processes, memory utilization, CPU utilization, page faults/sec, direct IO/sec and buffered IO/sec. The VAXDASH utility paints a dashboard on a VT340 terminal that depicts all metrics as analog dial gauges. The utility also displays the DECnet nodename, VAX processor type, VMS version number and the current time. VAXDASH features variable screen update time, accurate metrics and is extremely efficient in terms CPU resources consumed. VAXDASH was written for the Digital Equipment Corporation VT340 terminal but it will also run under the DECwindows DECterm application on sixteen color VAXstations.

Notes: Operating System VAX/VMS V5.0 or later is required. Program is linked with VMS Executive.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: V00435 **TITLE:** WHALES **Version:** 1.0, July 1989

Submitted by: Keith B.A. Moodie, QLD. Dept of Primary Industry, Wacol, Queensland, Australia

Operating System: VAX/VMS V5.1 **Source Language:** DCL **Keywords:** Utilities – Disk – VMS

Abstract: WHALES is an approach to the problem of disk and file fragmentation. WHALES makes it easy to keep files at their optimum size and still keep them contiguous. It is written totally in DCL and uses VMS CONVERT and ANALYZE utilities. It requires no special VMS privileges. This package has several optional checks built in which make it very safe to use. If a file fails any of the checks, the original file is left unchanged. It is designed so that it can be submitted in batch and forgotten and it preserves GLOBAL BUFFER COUNT, and NOBACKUP attributes. The original file can be kept if desired.

Typically files will be twenty-five percent smaller. 'MEAN DATA BUCKET FILL' can be maintained around eighty to ninety percent instead of sixty-five percent. The new file can optionally be placed in the same physical space on disk that the original file used. If the original file was contiguous then the new file will be contiguous. It summarizes the multi-page report from ANALYZE/RMS in a few lines and adds to this a measurement of the files' efficiency along with the file fragmentation count. The report is written to a file to allow progress monitoring.

Notes: Operating System VAX/VMS V4.4 or later is required.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: V00434 **TITLE:** SRS – Symposium Registration System **Version:** 2.0, February 1989

Submitted by: K. Weaver & B. Tinney, Canadian Hydrographic Service, Burlington, Ontario, CanadaL7R 4A6

Operating System: VAX/VMS V4.5 through V5.1 **Source Language:** VAX FORTRAN **Software Required:** FORTRAN, FMS, DATATRIEVE **Hardware Required:** LA50/LA75 for badges, VT220/VT24X for announcements **Keywords:** Utilities – VMS

Abstract: The DECUS Canadian Symposium Registration System is designed to store records on Attendees, Payments, Events, Counts, Announcements and Messages. It can print badges, generate reports and display announcements and messages. It has been used at the 1988 and 1989 DECUS CANADA Symposia.

All sources, forms and DATATRIEVE procedures are included. Badges are printed with the first name centered on the badge in a large (approx twenty-four point) font and printed in sixel mode. The remaining information is printed in the standard

way. Messages and announcements are written to a VT220 or VT241 (for color) in double width (and some double height) characters spaced away from the edges of the screen to support driving standard composite video monitors. This has been used to drive a hotel or conference centre TV channel. There has been up to ten on-line terminals using this system, but this is not a maximum. CPU loading is very light except for reports in DATATRIEVE.

FUNCTIONS:

REGISTRATION	Adds, cancels, updates data records on registered participants.
PAYMENTS	Adds, deletes, updates data records on payment details.
PICKUP	Adds additional information when a registered participant comes in for on-site registration (whether pre-registered or not, eg. Room No.).
EVENTS	Lists, adds, deletes, updates data records on Symposium events.
COUNTS	Displays current participant counts for all events including Total attending, Total deleted, and next computer generated SRN.
RECEIPTS	Prints the receipt form, according to the data entered by the operator. *Not currently supported (separate images provided).
REPORTS	A large suite of DATATRIEVE Procedures provide for counts, lists, and other reports from the backup data set.
MESSAGES	Post announcements on a monitor or cable system. Post a message. Only the name and registration number is displayed, the message is taken and stored at the Registration Desk or Information Desk manually.
BACKUP	Creates a copy of all data (.DAT) files on SRS$BACKUP (logical) using VMS BACKUP.
BADGES	Create a badge with the participants name, affiliation, city major events attending, and SRN/DECUS-No. Supports batch runs.

OTHER UTILITIES:

RECEIPTS	Generate a full page receipt for each registrant.
PRTFLB	Print the forms in the Library (.FLB) file.
PRTFRM	Print the forms in the Form (.FRM) file.
REDUCE	Compress the output from a DTR log file. Used for reducing the SUM one by command when generating online/interactive DTR summary reports.

Notes: Each year, changes have been made to the registration forms, requiring modifications to the FMS forms and underlying logic. To reduce this impact, an effort was made to use offset variables for all record fields in all routines. Extensive changes however are still non-trivial. A conference or meeting with a stable registration form would be ideal for this system. Cost changes are straight forward as are changes in events.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: V00433 **TITLE:** ASU Utilities **Version:** August 1989

Author: Brent Dunlock and Derwin Skipp, Arizona State University

Submitted by: Greg Wilson, Arizona State University, Tempe, AZ

Operating System: VAX/VMS V5.0-2 **Source Language:** PASCAL **Software Required:** PASCAL Compiler **Keywords:** Utilities – VMS

Abstract: ASU is a collection of utilities. The following is a brief summary of highlights:

B-PLUS TREE PACKAGE	A B-PLUS TREE data structure package implemented on disk with an index file and a data file.
COM_KILLER	This program lowers the base priority of terminal users that have spent too much of their time in COM state. At each interval it will lower their priority by one if they have spent MAX_CPUTIM percent of their time using the CPU. Also, if they have been found more than MAX_COM_STATE times in COM or COMO state they will be lowered. It will raise them back up to their authorized priority if they have used less than MAX_CPUTIM of their time using the CPU and they are not currently in COM or COMO state. This is designed to discourage terminal users from executing jobs at their terminal that should really be done in a batch job.
WORKSET.PAS	Program to display process workset information.
EMON	Emonitor is a collection of ethernet monitor programs used to identify and monitor ethernet devices on an ethernet network. It is composed of an interactive ethernet monitor for dynamic monitoring, and ethernet listener for collecting traffic statistics, a report module for producing reports from data collected by the ethernet listener, and a maintenance module for maintainingthe system data files.
QUEMON	Interactive Queue Monitor.

Notes: Some programs require privileges.

Documentation may or may not be on magnetic media. Complete sources may or may not be included.

Media (Service Charge Code): 600' Magnetic Tape (MC) **Format:** VMS/BACKUP

DECUS NO: V00431 **TITLE:** Image Analysis **Version:** 1.0, July 1989

Submitted by: Digital Equipment Corporation

Operating System: VAX/VMS V4.6,V5.0 through V5.2 **Source Language:** DCL, MACRO-32, VAX FORTRAN **Keywords:** Tools – Applications Development, Utilities – VMS

Abstract: The Image PC Analysis tools measure where a user's program is spending its time. To do so, the tools periodically sample the program counter of the running program, determine in which portion of the program each such sample falls, and display the resulting information in histogram form. The Image PC Analysis tools consist of:

. IMGSAMPLE – consists of subroutines which collect PC samples by trapping a clock interrupt every ten minutes.
. IMGTRACE – consists of subroutines which collect PC samples by tracing the user program; it thus retrieves every single instruction's PC value, but it also takes much more time than sampling on clock interrupts.
. IMGSHELL – is used to start and stop either IMGSAMPLE or IMGTRACE without modifications to the source of the program to be measured.
. DEFINE=IMAGE – is the program through which the user specifies how his program is to be divided into sections called buckets. Each bucket is defined by an address range, and contains a counter which accumulates the number of PC sam ples in that address range.
. REPORT=IMAGE – is the program which prints the accumulated data in histogram form with one histogram bar per bucket.

A program (CONVERT=SYSTEM_PC) to convert System PC files (collected with VAXSPM) is also provided. This tool enables the Image Analysis reporter to read the converted System PC file and report on that data file.

Notes: Operating System VMS V4.6 through V5.9 is required.

Restrictions: Cannot do "BY LINE" analysis for VAX C, VAX Ada.

Media (Service Charge Code): 600' Magnetic Tape (MA)Format: VMS/BACKUP

REVISIONS TO LIBRARY PROGRAMS

DECUS NO: V00401 **TITLE:** UNO and Others **Version:** 1.40, July 1989

Submitted by: Garry P. Spencer, State Technical Institute At Memphis, Memphis, TN

Operating System: VAX/VMS **Source Language:** VAX BASIC **Hardware Required:** VT100, VT52 or compatible terminal **Keywords:** Games

Abstract: This program plays the popular card game UNO. Standard two player rules are used in this game. Also included in this software package are the following games: STAR-TREK, MAZE, PUZZLE, REPEL, PONG and CALENDAR.

Changes and Improvements: Minor modification of cursor placement routine and additional programs.

Sources not included.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VAX/ANSI

DECUS NO: RB0131 **TITLE:** JOBSDUMP **Version:** 4.2,4.0, July 1989

Submitted by: James A. O'Brien

Operating System: CP/M V2.0, MS-DOS V2.11, V3.1 **Source Language:** PASCAL **Memory Required:** 256KB **Hardware Required:** Rainbow Graphics option **Keywords:** Graphics

Abstract: JOBSDUMP is a utility which dumps the contents of graphics memory on a Digital Equipment Corporation Rainbow computer in either Digital Equipment Corporation sixel format or Epson graphics format directly to a printer or to a disk file. The difference between the CP/M and MS/DOS versions is that the latter allows the setting of an environment variable to select which colors (0-3 in high resolution, 0-F in medium resolution) should be printed.

Both command-line and menu-driven operation modes are provided. Graphic images can be in either of two sizes, one a dot-for-dot image of the screen and the other designed to fill most of a printer page. Images can be printed as negatives, to save printer ribbons. JOBSDUMP can be run from within GW-BASIC, providing a simple graphics printing capability for the latter. See the documentation file on the disk for further information.

Changes and Improvements: Speed increase, improved EPSON emulation, improved interface and minor fixes for JOBSDUMP MS-DOS only. CP/M JOBSDUMP is unchanged.

Restrictions: Not for commercial use.

Sources not included.

Media (Service Charge Code): One RX50 Diskette (JA) **Format:** MS/DOS

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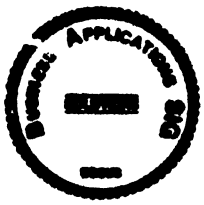

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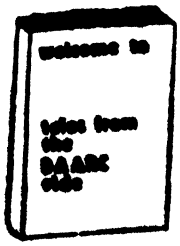

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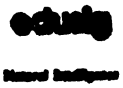

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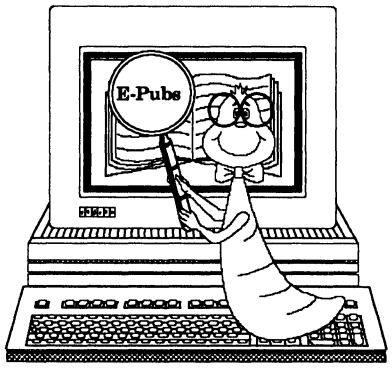

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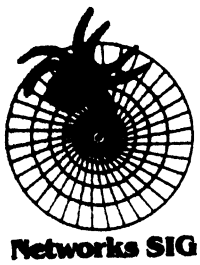

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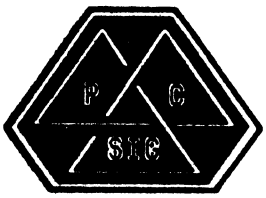

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See October 1989 Issue of the Wombat Examiner and 4GL Dispatch
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Maximum **10** points *per PIR*

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F89-10	___	F89-25	___
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Electronic Publishing (E-Pubs)
Software Improvement Request and Wishlist Form

Name: ..... Company: .....

Address: ..... Phone: .....

.....

The E-Pubs UIG is concerned with Digital and third party hardware/software products in the electronic publishing arena. What product does your request or suggestion concern? Please include the software version number where appropriate. Please reference only one product per form.

.....

If your request or suggestion does not relate to a product, please check which of the following E-Pubs UIG topics it does concern:

Newsletter ..... ☐ Symposium Sessions ... ☐ UIG Tape Submission .. ☐ Session Notes ..... ☐

Information Folder ..... ☐ Working Group Activities ..... ☐ Pre-symposium Seminars ..... ☐ DECUS Store Items ... ☐

Other ..... ☐ .....

How to write a request:
Please explain your request thoroughly. Don't assume that we know how something is done in "XYZ" product or in another SIG. Justify why the capability would be useful and give examples.

Brief description: .....

.....

Complete description with examples: .....

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At Symposia, return this form to the E-Pubs campground or submit at a Wishlist session. To mail, send to:

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H M S S I G

HARDWARE SUBMISSION FORM -- A SIG INFORMATION INTERCHANGE

Message

Contact
Name

Address

Telephone

Type of equipment

SUBMIT ANY TYPE OF HARDWARE PROBLEMS AND/OR FIXES.

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DATAGRAMs are short messages, comments, requests, or answers that are published in NETwords. Please fill in the sections below and send the DATAGRAM to:

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Title: _____

Message: _____

_____

_____

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Telephone: _____

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Company:_____

Address:_____

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Network Address:_____

Phone : ( )_____Date:_____

A VTX Masters list is being assembled and will be mailed out to the VTX Working Group members. It will also be available to interested parties at the Symposia in Anaheim. A Master is a person who is knowledgeable enough in VTX to be comfortable to answer questions about it. The qualifications are: expertise in VTX, a willingness to have his/her name published as a Master. If you would like to serve as a Master please fill out this form and send it to:

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1. When do you attend symposia?

___ Always ___ East coast only ___West coast only ___Irregular

2. a) Would you like to see the working group do something in particular? Please specify on the back of this form.

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___ Present a session ___ Hold a campground clinic

If you would like to volunteer please fill out this form and send to:

Albert DeBlieck

70 Quentin Rd.

Rochester, New York 14609

VTX WORKING GROUP

WISHLIST QUESTIONAIRE

Name:_____ Title:_____

Company:_____

Address:_____

_____

_____

Network Address:_____

Phone : ( )_____Date:_____

Wishlist Request - brief description:_____

_____

_____

Wishlist Request - please explain you request thoroughly; don't assume that the details are known of other products or services; give examples:_____

_____

_____

_____

_____

_____

_____

_____

_____

Return this form to:

Albert DeBlieck
70 Quentin Rd.
Rochester, New York 14609

VAX Systems SIG

System Imporvement Request Submission Form

Submittor: Firm:

Address: Phone:

How to write an SIR:

Describe the capability you would like to see available on VAX systems. Be as specific as possible. Please don't assume we know how it's done on the XYZ system. Justify why the capability would be useful and give an example of its use. If you wish, suggest a possible implementation of your request.

Abstract (Please limit to four lines):

Description and examples (uese additional pages if required):

Tear out or photocopy reverse to submit an SIR.

Dave Schmidt
Management Science Associates
6565 Penn Avenue
Pittsburgh, PA 15206-4490
USA

VAX Systems SIG FALL 1989 SIR Ballot

DECUS membership number _____ (six digits)

Our site uses/runs VAX cpus with the following (check all that apply)

___ Unix
___ Stand alone
___ Networked
___ 1 VUP or less
___ 4 to 6 VUPS
___ Clusters (any)
___ Uni-processor
___ SMP-processor
___ 2 to 3 VUPS
___ 7 or more VUPS
___ Dumb Terminals
___ VTxx terminals
___ Work stations
___ PC's (any)
___ Other _____

We use VAX's in the following applications (Check all that apply)

___ Business EDP
___ Education
___ Business Management
___ Systems programming
___ Other _____
___ OLTP
___ CAD/CAM/GRAPHICS
___ Office automation
___ Research
___ Application programming
___ Scientific/Engineering
___ Data Acquisition/Control
___ Telecommunications

I support the following as the most important System Improvement Requests. (List from zero to fifteen SIR's):

SIR Number:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

I oppose the following SIR's as detrimental. (List from zero to five SIR's):

SIR Number:

_____
_____
_____
_____
_____

MAIL TO:

Dave Schmidt

Vax Systems SIG SIR Coordinator

6565 Penn Avenue at Fifth

Management Science Associates

Pittsburgh, Pennsylvania 15206

(By September 22, 1989 to be counted!)

DECUS U.S. CHAPTER
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(U.S. Members Only)

As a member of DECUS U.S. Chapter, you are entitled to contribute and subscribe to the DECUS monthly publication, **SIGs Newsletters.** You also have the opportunity to subscribe to the Symposia Proceedings which are a compilation of the reports from various speakers at the U.S. National DECUS Symposia.

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DECUS U. S. Chapter Application For Membership

IMPORTANT! Please provide a complete mailing address, include zip code in accordance with postal regulations for your locality.

☐ New Membership ☐ Update to Current Membership Profile

Current DECUS Membership Number _____

Do you wish to be included in mailings conducted by Digital (for marketing purposes etc.?) ☐ Permission ☐ Refusal

Please print clearly or type!

Name _____

Company _____

Address _____

_____

_____

City **State** **Zip**

Phone: Home ( ) **Business** ( )

Are you an employee of Digital Equipment Corporation?

☐ **Yes** ☐ **No**

1. How did you learn about DECUS? (check applicable item)

1☐ Another DECUS Member
13☐ Local Users Group
5☐ Hardware Pkg.
8☐ DECUS Chapter Office
12☐ Advertising
7☐ Software Dispatch (Digital Newsletter)
4☐ Digital Sales
2☐ Symposia
14☐ Special Interest Group
6☐ Software Pkg.
10☐ Digital Store

2. Primary business activity at your location: (check one)

Non-Computer Related
31☐ Manufacturing (other)
32☐ Agriculture, Construction
33☐ Energy, Mining, Oil
34☐ Engineering, Architecture
47☐ Transportation
35☐ Utilities
36☐ Government-Local, State
37☐ Government-Non-Military
38☐ Government-Military
41☐ Education
40☐ Medical or Legal Services
39☐ Finance, Banking, Insurance
42☐ Trade (wholesale, retail)
43☐ Research & Development
44☐ Leisure
45☐ Media
46☐ Other_____

Computer or DP related
25☐ Manufacturing (DP Equip.)
26☐ Software Development
27☐ Communications & Networking
28☐ Systems House, VAR/OEM
29☐ Consultant
30☐ Other DP Services

3. I wish to participate in the following DECUS U.S. Chapter Special Interest Group(s):

3☐ Artificial Intelligence
7☐ Business Applications
6☐ Data Management Systems
5☐ DATATRIEVE/4GL
8☐ Education
9☐ Electronic Publishing
10☐ Graphics Applications
11☐ Hardware and Micro
16☐ Languages and Tools
14☐ MUMPS
31☐ DAARC (Data Acquisition, Analysis, Research, and Control)
15☐ Networks
34☐ Office Automation
36☐ Personal Computer
18☐ RSTS
17☐ RSX/IAS
19☐ RT-11
21☐ UNIX
26☐ VAX Systems
32☐ Site, Mgmt. & Training

4. Using the classification numbers from question 3, please indicate which SIG would be the primary focus for your interests?
#_____

5. Using the classification numbers from question 3, please indicate which SIG would be of secondary focus for your interests?
#_____

6. Total employees in entire company/institution/government department: (check one)

2☐ 10,000 or More
3☐ 5,000 to 9,999
4☐ 1,000 to 4,999
5☐ 500 to 999
6☐ 250 to 499
7☐ 100 to 249
8☐ 6 to 99
9☐ Fewer than 6

7. Primary job function: (check one)

Organization Management
11☐ General & Corporate
12☐ Financial
13☐ Administrative Services
14☐ Marketing

Computer/Systems Operations
20☐ Management
21☐ Supervisory
22☐ Staff

Engineering/Manufacturing
30☐ Management
31☐ Staff

Science/Research/Development
40☐ Management
41☐ Staff

Other
50☐ Consultant
51☐ Educator
52☐ Other _____

8. Citizen of the United States? ___**Yes** ___ **No**

If no: Country _____

Forward to: Digital Equipment Computer Users Society
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Marlboro, MA, 01752-4605
Phone: (508) 480-3635

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_____

State/Country: _____

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