DECUS U.S. CHAPTER SIGs NEWSLETTERS

1961-1986 Leading Toward The Future
25 Years

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QUESTIONNAIRE SECTION

Software Product Licenses

The following letters from C. W. Goldsmith to Digital and Digital's response are of general interest to the membership:

To Rose Ann Giordano, Vice President, Digital Delegate,

At the recent DECUS U. S. Chapter Symposium in San Francisco, Digital announced significant changes in the software licensing policy. The changes described caused sufficient concern that 1200 members attended a meeting about licensing with only 3 hours notice.

We are concerned that the decisions concerning this policy were made without a clear understanding by Digital of the potential impact. Some of our members, Marge Knox and Leslie Maltz among them, are members of a joint DECUS-Digital committee on licensing and this was unknown to them. We are now concerned that future efforts by this committee are jeoparodized because of this decision being made without any information from our membership.

We also understand that Digital has already changed the policy to permit the transfer of licenses between tiers. While we appreciate this response to the membership's objections in San Francisco, we do not feel that a really adequate assessment has been made of all the aspects of this policy. Therefore, we suggest that Digital delay the implementation of the policy for 6 months. During this time we like for the joint committee to explore the rationale behind these proposed changes and to evaluate interim tactics that might better serve both DECUS members and Digital.

In addition to the concerns with the policy, the Board of Directors of the U. S. Chapter is also disappointed that Digital did not bring an issue of this magnitude to the Board prior to announcing it to the membership. We also noted that none of the Digital Counterparts seemed to be aware of this change. While it is true that our membership is primarily interested in technical information, most of them also have some responsibility for ensuring that the financial investment in computing products is sound. They were justifiably upset when the rules concerning the cost of software and the subsequent value of used equipment were changed without apparent consideration of the effects that change.

Should you need any additional information, please contact me.

Sincerely,

C. W. Goldsmith, President
For the Board of Directors of the
DECUS U. S. Chapter

Dear Clair,

Thank you for your comments relative to the recent software licensing announcement at DECUS. We share your concerns with the way the announcement was delivered. The Digital employees who were involved in the announcement clearly understand the problems that were created by not involving DECUS leadership upfront. They discussed this at length, unfortunately after the fact, in a meeting with some DECUS Board members the week of symposium.

We have heard the DECUS feedback and have thoroughly revisited the license transfer issue. The following information was sent to our U. S. Sales Force on November 11, to clarify and modify the messages heard at DECUS.

1. System Upgrade and Movement of Software within a Corporate Entity

We will protect our customers' investment in Digital Layered Software Product Licenses.

When moving layered software products to a higher price tier, the customer will pay a price equal to the difference in cost of the product on the old and new systems. This is no change from our current practice but different than the message heard at DECUS and communicated in Sales Update.

Movement of layered software will be allowed to other systems of the same or lower price tier, but no excess credit will be granted.

Our existing policy on operating systems remain unchanged. Operating systems cannot be moved between CPU's.

2. Resale of a System to another Corporate Entity

We will no longer grant permission for the transfer of either layered or operating system software licenses from one corporate entity to another.

In practice, we have frequently agreed to approve license transfer requests. As of March 1, 1987, we will no longer approve license transfer requests. The implementation date was previously communicated as January 1, 1987. New owners of used equipment must be licensed by Digital for use of Digital software products. These changes do not affect our OEM's rights to sublicense Digital software.

Digital is committed more than ever to work with the joint DECUS-Digital committee on software licensing. We are working on a number of software licensing and pricing programs which we believe will address our customers' needs for flexibility, ease of compliance, pricing for volume software purchases, and protection of their software investment. We appreciate the feedback you provided on the license transfer issue and will be counting on your input and support for our evolving software license architecture.

The relationship that has grown between Digital and its customers through the efforts of the DECUS Board is very important in meeting one of the prime goals of the Corporation, that being customer satisfaction. The DECUS symposia have served us well in the past as forums for getting information to our customers. It is unfortunate that this mechanism was not utilized properly by Digital through contact with the DECUS Leadership.

Please note that Digital has indeed listened to the customers through it's follow-up meetings with DECUS leaders. The implementation date of the license tranfer request has been extended by 60 days. This should allow more time for customers to analyze the effect on their organization.

A by-product of this incident, while not an excuse for it happening, is that Digital, as a Corporation, realizes even more the importance of DECUS and the service it supplies both to the customer and the Corporation.

Sincerely,

Rose Ann Giordano, VP, Digital Delegate
Peter Jancourtz, Digital Alternate

ARTIFICIAL

INTELLIGENCE

DECUS

(THE (LINKED LIST))

The Newsletter of the DECUS Artificial Intelligence Special
Interest Group

"...It's The Real Thing"

Vol. 3 No. 1   January 1987

FROM THE EDITOR:

Welcome to the first 1987 issue of (THE (LINKED LIST)). This
month's contributions include a book review by Becky Wise well as
an AI event list and a review of a DEC AI videotape by Jim Sims.
SIG Counterpart Art Beane also submitted an article, but it will
be deferred until next month because I was unable to transcribe
and key the manuscript into the DCS VAX. (That's what I get for
attempting to edit a newsletter with a laptop computer and
questionable phone service from my improbable location in a
geodesic dome in the woods of upstate New York--proof that
"remote job entry" is a concept that can be taken too far!)

As usual, I welcome your comments and newsletter submissions.
You can send them to me via DCS or at my work address.

Terry C. Shannon
Digital Review
800 Boylston Street Suite 1390
Boston, MA 02199
(617) 375-4321

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UPCOMING AI EVENTS

By Jim Sims

Jan '87

19-21
    Expert Systems Technology Transfer Seminar
    Orlando, Fla.
        Sponsored by Digital Equipment Corp.

    John Gwinn
    DEC/Center for Mgmt. Research
    55 William St.
    Wellesley, Ma.   (617) 239-1111

27-29
    Winter Convention on Aerospace and Electronic Systems
    Wincon '87
    Westin South Coast Plaza Hotel, Coasta Mesa, Ca.

    Wincon '87
    P.O. Box 6876
    Burbank, Ca. 91510-6876   (818) 847-6805

Feb '87

2-6
    Third International Conference on Data Engineering
    IEEE Computer Society Pacifica Hotel - Los Angeles, Ca.
        Expert Systems, Design of Knowledge Based Systems,
        Architectures for ES & KBS, Logical & Physical DB design.

    Third International Conference on Data Engineering
    c/o IEEE Computer Society
        1730 Massachusetts Avenue, N.W.
        Washington, D.C. 20036-1903   (202) 371-0101

17-19
    1987 ACM Computer Science Conference
    Association for Computing Machinery
    Overview of Expert Systems, Evaluation of ES tools, use of ES
    in the Defense Industry. Special Session on Expert Systems on
    Feb 17.

    Arlan R. Dekock
    McDonnel Douglas Research Lab
    P.O. Box 516
    St Louis, Mo 63166

March '87

12-13
    Thirteenth Northeast Bioengineering Conference
    Philadelphia, Pa.
        Computers in medicine, expert systems/artificial
        intelligence, clinical engineering, bioelectric phenomena,
        biomaterials, mathematical modeling & simulation, imaging,
        signal/image processing, etc.

    Univ. of Pennsylvania
    220 S. 33rd Street
    Philadelphia, Pa. 19104-6392   (215) 898-8534

18-20
    20th Annual Simulation Symposium
    Bay Harbor Inn, Tampa, Fla.
    James Leonard
    255 Patterson Lane
    Florissant, Mo. 63031   (314) 925-6829

30- April 3
    1987 IEEE International Conference on Robotics and Automation
    IEEE Council on Robotics and Automation
    Radisson Hotel and Raleigh Civic Center
        Computer vision in robotics, Robot kinematics and control,
        mobile robots, and Expert Systems. Workshop for Advanced
        Computer Architectures for Robotics and Machine
        Intelligence on April 3.

    Robotics
    North Carolina University
    Division for Lifelong Education
    Box 7401
    Raleigh, NC 27695-7401   (919) 737-2261

April
1-8
    Industrial Robots/Assembly Technology '87
        part of Industry '87
        Hanover Fairgrounds, Hanover, West Germany

    Hanover Fairs USA Inc.
    103 Carneige Center
    P.O. Box 7066
    Princeton, NJ. 08540   (609) 987-1202

6-10
    AISB-87
        Society for the Study of Artificial Intelligence and the
        Simulation of Behavior
        University of Edinburgh
        Vision, Robotics, Cognitive Modeling, Learning and Memory,
        and Natural Language Processing.

    Dr. Chris Mellis
    Program Chairman
    AISB-87 Conference
    Arts D Building
    University of Sussex
    Falmer, Grighton, BN19QN, UK

20-24
    Second Symposium on Complexity of Approximately Solved
    Problems System Development Foundation
    New York City
        All papers are by invitation.

    Susan Maser
    450 Computer Science Building
    Columbia University
    New York, NY 10027   (212) 280-8832

22-24
    AI 87 Third Annual Conference/Exhibition on Artificial
    Intelligence and Advanced Computer Technology
    Digital Design Magazine, DM Data Inc., Society for Computer
    Simulation, USAI, & Applied AI Reporter
    Long Beach Convention Center, Long Beach, Ca.

    Tower Conference Management Co.
    331 W. Wesley Street
    Wheaton, Il. 60187

23-24
    18th Annual Pittsburgh Conference on Modeling and Simulation
    Univ. Of Pittsburgh, Pittsburgh, Pa

    Marlin Mickle
    Conference Co-chairman
    Univ. Of Pittsburgh
    School of Engineering
    Pittsburgh, Pa. 15261   (412) 624-4141

27-28
Twenty-Fourth Annual Rocky Mountain Bioengineering Symposium
Fargo, N.D.
   (see description for Northeast Bioengineering   Conference
   above)
North Dakota State University
Fargo, N.D. 58105   (710) 237-7689

May '87
13-15
Seventh Annual International Workshop on Expert Systems and
Their Applications - Avignon '87
Avignon, France
   New implementations, basic tools and techniques, practical
   guidelines for applications.

Agence de l'Informatique
Tour Fiat Cedex 16
92084 Paris-La Defense, France   331-47964314

25-30
International Workshop on Parallel Algorithms and
Architectures Suhl, GDR

Thomas Zeugmann
Mathematics Dept
Humboldt University Berlin
P.O. Box 1297
Berlin 1086, GDR   Telex 011 2823

June '87

22-25
Second Annual Symposium on Logic in Computer Science
Ithaca, N.Y.
   Abstract data types, foundations of logic programming,
   software specifications, logic-based languages, logic in
   complexity theory.

Dept. of Computer Science
Cornell University
Ithaca, N.Y. 14853   (607) 225-9207

July '87

13-17
AAAI-87 Sixth national Conference on Artificial Intelligence
Seattle, Washington
   Science and Engineering Tracks

   Call for Papers to:

AAAI-87
American Association for Artificial Intelligence
445 Burgess Drive
Menlo Park, Ca. 94025-3496

August '87

23-28
IJCAI-87 10th International Joint Conference on Artificial
Intelligence Milan, Italy
   Separate tracks for Science and Engineering

CFP - due by Jan 5,1987
John McDermott
Dept. of Computer Science
Carneige-Mellon University
Pittsburgh, Pa. 15213

Conference Information
Alan Bundy
Dept. of Artificial Intelligence
University of Edinburgh
80 South Bridge
Edinburgh, EH11HN, UK

Sept

21-25
European Congress on Simulation Conference and Exhibition
Prague, Czechoslovakia

ECS '87
c/o Director , Institute of Computer Sciences
Czeckoslovak Academy of Sciences
182 07 Prague
P.O. Box 5, Czeckoslovakia   846669

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Performance and Evaluation of Lisp Systems
By Dr. Richard P. Gabriel
MIT Press series in Computer Science

Reviewed by Becky Wise

"Performance and Evaluation of Lisp Systems" looks at several
lisp systems, both dedicated lisp processors and general purpose
computers with well known lisp implementations, and presents
benchmark results, architectural evaluations and comparisons
between the different machines. The book is written by Dr.
Richard P. Gabriel and presents the results of the Stanford
Lisp Performance Study. Those of you who attended the San
Fransisco Symposium may have heard Dr. Gabriel speak on the
topic of lisp performance and evolution at that time.

This book is organized into three major sections. The first
section presents an introduction to lisp architectures and
benchmarking. The second gives a detailed introduction to the
implementations being addressed in the book. The final section
presents an analysis of the benchmarks and the results obtained
from executing the benchmarks on the various machines.

The introductory section gives an excellent description of the
art of benchmarking. It presents some of the common problems
people encounter in benchmarking systems, as well as tips for
spotting biases in the design of benchmarks. In addition, the
description of lisp architectures is helpful for those attempting
to understand why a lisp machine is useful. This description,
however, is introductory only.

The implementation section gives a thorough description of the
architectural features of the different implementations that
impact performance. I would like to have seen more detail on the
specifics of the architectures to allow a more thorough
understanding of the machines being studied. As an example, the
i/o subsystems were virtually ignored in this section even though
the benchmark suite included disk read and disk write operations.
This section, however, is quite useful for someone trying to
optimize performance on these machines.

The benchmark section is organized by benchmark. First a very
thorough analysis of the purpose and content of the benchmark is
given. Included in this description is a section on porting the
benchmark to the various machines. This section includes any
modifications required in the ports that might affect the
performance of the benchmark. The raw data for the benchmarks is
given in this section as well as an analysis of why the machines
performed the way they did. Both execution and paging statistics
are given in the results to allow for more detailed analysis.

I would conditionally recommend this book. For those unfamiliar
with studying machine architectures, this book could be
unapproachable. The information is concisely stated, assuming a
good understanding of lisp and computer architectures. For those
attempting to understand lisp architectures or trying to optimize
performance on these machines, this book is an excellent guide.
The section on the art of benchmarking is valuable for anyone who
is undertaking a major benchmarking effort.

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INTRODUCTION TO ARTIFICIAL INTELLIGENCE

Digital Educational Services Videotape

Reviewed by Jim Sims

Digital Educational Services Introduction to Artificial
Intelligence videotape provides s a fairly good, brief
introduction to AI. The course is divided into managers' and
engineers' sections, overlapping for the first modules. The
entire tape is suitable for viewing by anyone with a slight
background in data processing.

The course consists of 5 videotapes, with the content divided
into three topics and an introduction. The topics include Expert
Systems, AI Languages and Tools, and Practical Applications.

The first module introduces expert systems. It includes an
overview of expert systems and their history, components and
construction. The entire whirlwind tour takes about 1 hour and
10 minutes.

The next module discusses languages and tools for AI. It covers
LISP, Prolog and AI tools in 45 minutes and spends an additional
25 minutes presenting examples of different tools. This portion
is entirely too brief.

The last section is on the Practical Applications of Expert
Systems. The course again discusses XCON/XSEL and SPEAR, then
throws in one more example system for good measure. All this
transpires in 20 minutes.

The workbook that accompanies the course includes copies of the
most important screen displays and leaves room for student notes.
The workbook also includes a 10 page set of "Notes for Building
Expert Systems", but these are really usable for ANY project, not
just for ES development. The workbook also includes a glossary
and a reference list that is fairly good for general AI texts,
Expert System overviews, LISP, and PROLOG but has
no references for OPS5.

Overall this videocourse is a fairly good, slightly technical
introduction to Artificial Intelligence. It is available for
free through the NLO for distribution to LUGs, and at this price,
it's worth the money. If you are new to AI, this video will
provide a basic introduction to much of the terminology and a few
of the practical applications.

INFO-the DMS SIG NEWSLETTER
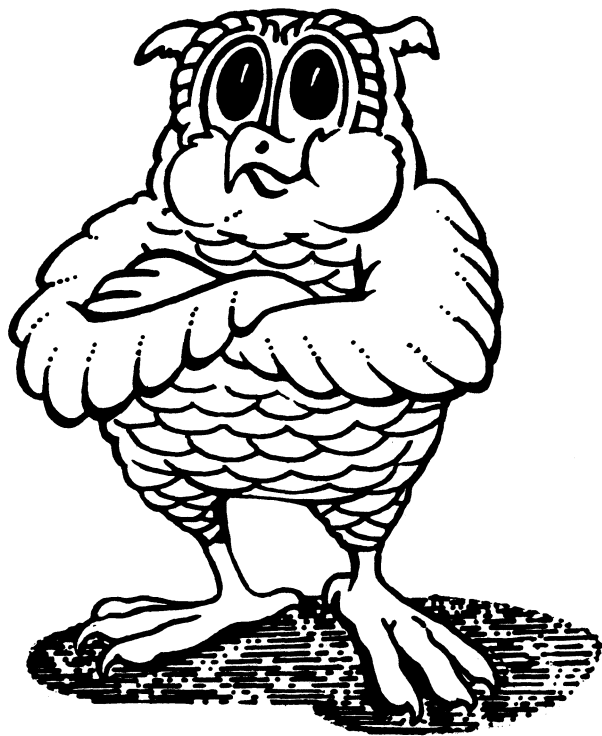
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Doug Dickey
GTE Goverment Systems
1700 Research Blvd.
Rockville, MD 20879
(301) 294-8400

Selecting a DBMS

When selecting a DBMS you are faced with a large, complex task, when do you need to start using the product? What are your application requirements? Are your expectations realistic? Are hardware and system specifications defined? Do you want stability and maturity or state-of-the-art?

DBMS selection is of upmost importance to an application that can take advantage of the features of a full-function DBMS product in order to reduce the amount of application specific software that would otherwise need to be developed. Features that are significant in this context are the separation of data definitions from its usage in programs, a language of ad-hoc data querying and modification, application development tools, such as screen painters and report generators, and data administration facilities. Depending on the application, a reduction of 1J% to 90% in required development is possible, as well as the advantage of using of tested commercial software that is currently being used in other ongoing systems.

There are certainly cases when a DBMS is not appropriate. These include but are not limited to those that have simple data structures, data to be used by single programs, small data quanities, and temporary data, that is data that is not needed for days, but rather hours or minutes. This is not to say that a DBMS would not be utilized in these cases, but rather would not provide a significant savings in the development effort. DBMS products are more typically applied to applications that require data sharing and data integrity, are data storage and/or retrieval intensive, have complex data structures, and deal with large quantities of data.

General Directions for DBMS Industry

The Data Base market is ever changing, with current activity at its highest point thus far in the minicomputer marketplace. The mainframe marketplace has somewhat leveled out and microcomputer DBMS products have undergone a shakeout. Hardware data base products are starting to make a comeback and distributed data base capabilities are in the future plans of most DBMS vendors.

The microcomputer DBMS market has had its heyday during the past five years, with only a few of these vendors still surviving the shakeout. One microcomputer DBMS vendor, Ashton-Tate is expanding in two directions: an Apple Macintosh version and a VAX based version of its dBASE product - the leading IBM-PC based DBMS product. Elsewhere in the microcomputer would, new products are emerging in three arenas:
- Products coming from traditional relational data base vendors, such as Oracle Corp. and Relational Technology Inc.,
- PC/Link products that download data from host nmachines' data bases, and
- Icon-based systems for bit-mapped graphics workstations and personal computers.

Products from DBMS vendors such as Oracle and Relational Technology, provide close to the full capabilities in there micro-based versions, as those provided in their other versions. These micro-based DBMSs not only can download data from larger machines (data bases) and use the data locally in the same ways it was used on the host, but also can be used as a standalone DBMS.

The mainframe IBM-based DBMS vendors are also providing a limited subset version of their products that run on a micro, also to be used for downloading of data. These products, however, tend to be used primarily to make request for and convert the downloaded data, so that it can be used in other micro-based software packages such as speadsheets and plotting packages. Examples of this capability is provided by Computer Corporation of America's Model 204 and Applied Data Research's DATACOM products.

Finally, Sybase, is producing an Icon-based interactive DBMS front-end, called Data Workbench, for handling queries, reports, and application development based on high performance workstations such as the Sun and VaxStation. The Sybase back-end, called DataServer, is discussed in the Data Base Machines section.

Mainframe-based DBMS Directions

The mainframe DBMS market, dominated by IBM machines, has stablized, with the exception of the compatibility issues raised by IBM's DB2. It's SQL facilities, as well as the ANSI support of SQL as the standard relational data base language, have spurred the mainframe DBMS vendors to promise SQL interfaces into their DBMS products.

The SQL standard, based on IBM's Standard Query Language and the DBMS vendors' current implementations of IBM's research, have presented the DBMS vendors with a new requirement of their respective DBMS products - to be "SQL compatible". What does "SQL compatible" mean? To most vendors the query (read-only) capability, in the syntax defined by the SQL standard, will be the first part of making their products "SQL compatible". Both Cullinet and Software AG have announced support for SQL by their DBMS products. The SQL standard primarily addresses how a 3rd generation language should interact with the DBMS. It does not, however, address SQL interactive use, data base sizes, multi-user capability, and many other DBMS issues.

Another area of interest is from IBM-based DBMS vendor Computer Corporation of America. Their Adaplex program is a new general purpose DBMS written in Ada and said to be targeted at aero-space companies and the real-time sector. The use of an Ada-based DBMS is said to provide a more transportable, high performance system than CCA's Model 204 or other traditionally developed DBMS products. Adaplex will go into beta testing during the first half of 1987 and by widely available by the end of the year.

IMS, the mainstay of data base software in the IBM market, is slowly fading out of the picture. IBM will continue for the foreseeable future to support IMS, while bringing DB2 to the forefront. IBM is not currently forcing IMS users to convert, however they are encouraging user consideration of DB2 for new application development.

Minicomputer-based DBMS Directions

Minicomputer DBMS products come in two basic varieties: those from the hardware manufacturers and those from DBMS software vendors. The hardware manufactors that offer their own software DBMS products include Data General, DEC, Hewlett-Packard, Prime, and Wang. This minicomputer DBMS market is ripe for the minicomputer oriented DBMS software vendors - Oracle, Relational Technology, Unify, Seed Software, Groton Database Systems, Software House, and Relational Database Systems. These vendors are adding significant new features and capabilities to their products, especially for distributed data base support.

Many of the mainframe oriented DBMS vendors are now moving into the minicomputer marketplace. Software AG has had a version of Adabas for the DEC VAX for the past several years. Cullinet has also announced plans for expanding into the DEC VAX market with a relational DBMS product offering. The Cullinet-DEC joint effort on the VIDA (VAX-IBM Data Access) product bring VAX access to existing IBM IDMS data bases. CCA's Adaplex mentioned earlier is being developed on a DEC VAX.

The other growth market in minicomputer DBMS products is on machines that support the UNIX operating system. Oracle (Oracle), Relational Technology (Ingres), Unify (Unify), and Relational Database Systems (Informix), provide products that run on a wide variety of hardware. Unify not only is the leading DBMS under UNIX, but also has been benchmarked as the fastest UNIX-based DBMS available.

Data Base Hardware Solutions and Futures

The data base hardware field has been dominated by Britton-Lee over the past several years with its IDM set of products. The future success of Britton-Lee hinges on the ability for an order of magnitude performance gain to be achieved over general purpose computers with software solutions and that third party vendors such as Signal Technology Inc. and Metaphor Computer Systems provide comprehensive end-user and programmer interfaces and tools for the Britton-Lee machines.

A newcomer to the data base hardware field is Teradata with its DBC/1012 products. They are becoming the high-end hardware solution for extremely high performance/volume DBMS applications. The DBC/1012 uses a proprietary bus with multiple data access modules for parallel operations.

Also new to the data base machine group is Sybase. They do not make a data base machine per se, but rather turn a general-purpose computer into a data base server via their DataServer software. Sybase seperates the DBMS into two independent components: The DataServer (data base server) and the Data Workbench (interactive front-end) that can be used seperately or in conjunction with one another. Several former Britton-Lee employees brought their experience to Sybase, and thus have produced a very high performance DBMS solution.
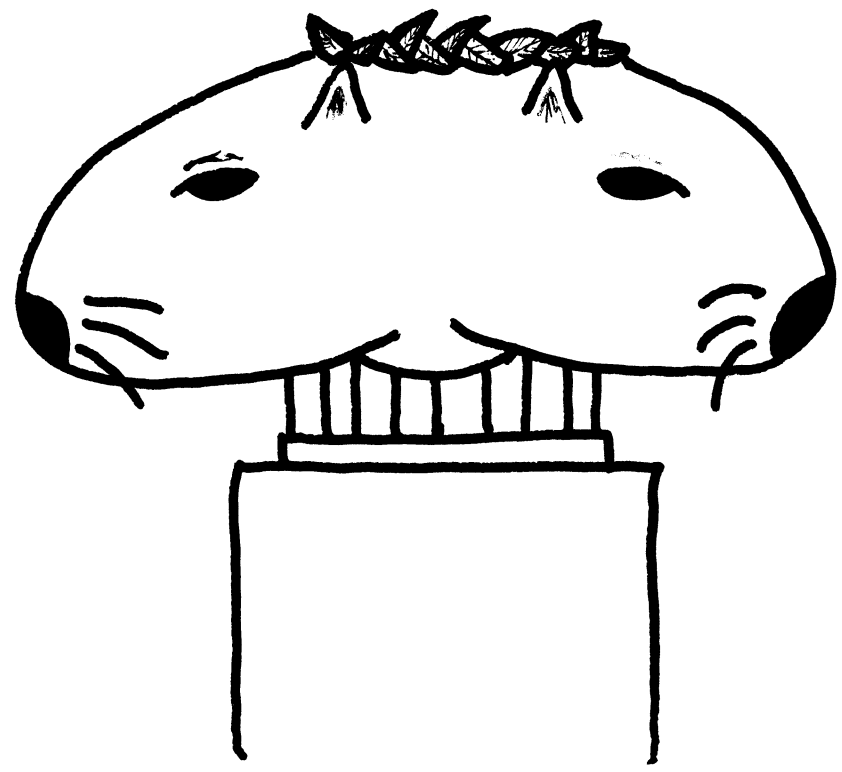
DTR

Contributions

Submissions to this newsletter are constantly sought. A submission can be an article, a letter to the Wombat Wizard, a technical tip, or anything of interest to people using or considering the use of Datatrieve or any 4GL product. Submissions on magnetic media are preferred but almost any type will be considered.

Contributions for the newsletter can be sent to either of the following addresses:

Editor, DATATRIEVE Newsletter
c/o DECUS U.S. Chapter
219 Boston Post Road, BP02
Marlboro, MA 01752

Donald E. Stern, Jr
Warner Lambert Company
10 Webster Road
Milford, CT 06460

Table of Contents

The Architecture of VAX Datatrieve

Philip A. Naecker, Consulting Software Engineer, Altadena, CA

For the next two issues of the Wombat Examiner. we're going to explore the architecture of VAX Datatrieve - the way that the software is put together from it's many pieces. Understanding the architecture of DTR is important for several reasons. First, understanding the software architecture will help us better use the software. Second, if you want to expand the power of Datatrieve by adding functions, incorporating Datatrieve procedures in your third-generation language programs, or customizing the error messages or help files, you need to understand the software architecture before you begin. Last, a thorough knowledge of the way Datatrieve is "put together" is key if you want to be a real Wombat Wizard.

What is an architecture, anyway?

"OK", you say. "I'm convinced. But just what is a software architecture?" Software architecture is to software engineering what building architecture is to building engineering. For example, a building architect is concerned with:

o   How the pieces of the building fit together?
o   How the occupants will use the building?
o   How the building systems work together?
o   The architect may even be concerned with what seem to be trivial "details", such as the doorknobs. They ARE concerned, in that they want all the doorknobs to be functional, and all of them to operate in the same fashion, and all look the same - like they "belong."

The architect is probably NOT concerned with things such as how the size of the interior roof beams (as long as they are big enough to hold up the roof, and not so big that they get in the way), the exact strength of the concrete, or exactly how the walls are attached to the beams. Those are construction details that the architect will likely leave to the engineer.

Similarly, a software architect is involved with decisions on the following aspects of a software product like Datatrieve:

o   How do the pieces of the software fit together?
o   How will people use the software?
o   Are the functions of the software being assigned to the correct software components?
o   Are all the external aspects of the software consistent with one another?

Software architecture is not supposed to be concerned with exactly how the software is constructed and tested - although a good architecture includes aids to the proper construction and testing of the product.

Software Modularization and Layering

If you are a software developer, you are probably familiar with the concept of modular programming. Modular programs have individual functions divided into separate parts, or modules, with each module performing only one function. Furthermore, in a properly structured modular program, that function is done ONLY by that one module. There are many advantages to modular programming, including the fact that there is only one module to change if you want to change the way a function is performed.

Even with a very modularized program, it is still possible for a complex program (such as Datatrieve) to have very complex interdependencies that make development, maintenance, and even use of the program very difficult and hurt software performance. These interdependencies occur because although a single module is performing a particular function, that module may be invoked (called) from many different parts of the program. This causes especially nasty problems when you need to change the interface to a module, because that interface may be used in many other modules throughout the software system, and changing many modules may cause other unforeseen side effects or require data that those modules might not have access to. Pretty soon, all the benefits of modularity are lost as each module becomes increasingly complex to support the interfaces to all the other modules.

The Datatrieve software architecture uses a concept called software layering to avoid these difficulties. Software layering is heavily used throughout the VAX/VMS family of software products - indeed, the entire set of optional VMS software is usually called "Layered Software" because it is layered upon the rest of the VMS operating system, such as the SORT utility and the language Run Time Libraries.

Software layering can be visualized like a birthday cake (the kind with layers, of course!) Each layer of software is built upon the layer below, and supports the layers above. The layers are connected above and below, but not to any layers except the adjacent ones. Thus, there is no direct connection between the first layer and the third layer - the only connection is through layer two. If you change the way a module in one of the layers works, you can be pretty sure that there are at most two modules that need to be changed - the one above and the one below. If you decide that layer three is getting too complex, you can replace it with two layers and insert a layer 3A and 3B in between layers two and four.

Similarly, the layers define very clean interfaces (the icing!). By making an interface public, you can give user programs access to the functionality in the layer, and access to the layers below, without requiring them to bear the overhead of the layers above or be limited by the upper layers' functionality.

Consider now a simplified form of the Datatrieve Layering Diagram. (Figure 1.)

Figure 1
Simplified Datatrieve Layering Diagram

Layer 3	DTR	User Progr.	DEC Layered Products	DDMF			
Layer 2	Datatrieve Shareable Image (DTRSHR)					Terminal Server	
Layer 1	CDD	SORT	RMS	DECnet	DSRI	DBMS	Forms Products
Layer 0	VMS (Message utility, Run Time Libraries, etc.)						
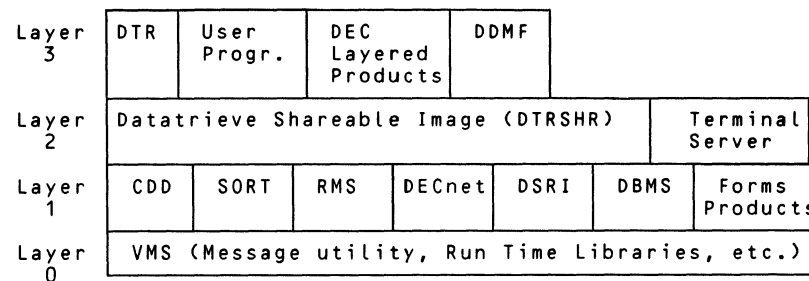
At the bottom of the diagram is the operating system, VMS. It provides support for such functions as error messages, the Lock Manager, help libraries, and the like. It also provides disk drives, communications devices, and so on for use by all the layers above. The next layer, layer 1, consists of a number of products that support the Datatrieve Shareable Image (layer 2) via calls. For example, Datatrieve calls the CDD to obtain information about domains and records. The CDD in turn uses the VMS Lock Manager (in layer 0) to assure that the CDD is not being changed while it's in use. DTRSHR uses the VMS SORT utility to do sorting, rather than having a separate sort function inside of DTR. It uses RMS to access files, rather than directly accessing those files via a QIO interface. And so forth.

An ordinary user can write a program to use all the same calls into layer 1 that DTRSHR uses - there is nothing magic about that interface. It is public, and many users do in fact write programs to directly access many of those utility routines such as SORT and the Forms Products (FMS and TDMS.) But it may be much harder to use some layer 1 products directly than to use them via Datatrieve.

The next layer, layer 2, contains the Datatrieve Shareable Image (DTRSHR.) DTRSHR is where the largest part of what we call "Datatrieve" is located. Inside of DTRSHR is the part that understands DTR syntax, the context searcher, the report writer, and most of the code that performs the functions invoked by DTR commands and statements. Also in layer 2 is the DTR Terminal Server - that part of Datatrieve that you actually see on your terminal. You can extend Datatrieve by adding functions to it, and those functions are added by becoming part of DTRSHR.

You can write programs - called Callable Datatrieve Programs - to access DTRSHR directly. That's the box called "User Progr." in layer 3 of the diagram. Other programs from DEC, DEC Layered Products, do this sort of thing all the time - programs like Teamdata and DECgraph that use DTR to get data. The easiest way to access DTR from these programs is to call the Datatrieve Terminal Server, which then turns around and calls DTRSHR. It is the Terminal Server that performs such functions as invoke

the editor, interface to the forms products, and call Guide Mode for you - and you can get all these functions yourself by calling the Terminal Server from your program. In fact, that is exactly what happens when you type $ DTR - a very, very small program invokes the DTR Terminal Server, which then takes over completely and does all the work of interacting with your terminal and DTRSHR.

Note that layer 3 programs that call DTRSHR or the Terminal Server don't need to access any of the layer 1 programs directly. DTRSHR handles all the interaction with the layer 1 programs automatically. For example, if your program requests information from the CDD, Datatrieve will automatically generate a call to the CDD programs to get that information. Similarly, if you want to sort the data, DTRSHR calls the VMS sort package to do it for you.

The DDMF program (Distributed Data Management Facility) is the component of DTR that is invoked when you perform network access to Datatrieve. In this kind of access, DTR is communicating with a remote server process running DDMF and DDMF is talking to DTRSHR. Since the server process is talking to the network and not to a terminal, it doesn't call the Terminal Server but calls DTRSHR directly to perform such operations as READY, SHOW, and so forth.

Architectural Goals of Datatrieve

I should point out that although I have been involved with VAX Datatrieve as a field-test site and interested observer since before Version 1.0, I am not one of the software developers. Thus, I can only speculate on some of the architectural goals, based on the expression of those goals in the result. But here are my guesses as to what the Datatrieve architects were trying to do, based on what I think they accomplished.

o The product should be completely callable.

> That is, any function that you can accomplish from within the program you get when you type $ DTR, you should also be able to accomplish by writing a program and calling a shareable image.

> There are lots of virtues to being callable. First of all, it allows multiple interfaces to Datatrieve, a feature DTR itself exploits because Remote Datatrieve (DDMF) is itself just a Callable DTR program that talks to the other end of the DECnet link and translates those messages into DTR statements. Most importantly, it guarantees that you will never be "moded in" by the functionality of the DTR> interface. It also allows other DEC layered products (such as DECreporter and DECalc and DECgraph) to access data via DTR.

o The product should have no arbitrary limits on sizes of objects or data structures.

> This function requires a great deal of discipline, because at every turn the software designer (as well as the architect) must be careful that he is not imposing arbitrary limits. For the most part, DTR has met this goal very successfully - there are very few limits in the use of DTR: you can have as many records as you want, as many fields in a record, as many open domains or tables, as deeply nested FOR loops, etc. There are some exceptions, but for the most part they are obscure and unlikely to cause problems. In almost all cases, you will run out of some critical system or process resource (such as Virtual Memory or Page File Quota) before you encounter any of the limits in the architecture of DTR.

o There should be a strict layering of functions.

> Functions that can be performed by VMS should be performed by VMS, and not by DTR. Sorting, for example, is done entirely by calling VMS SORT. The editor in DTR is one of the VMS Editors - not a separate editor. There is no special DTR forms product - you use the same forms product you would use with any other language, not one that works only with DTR.

> This rule cuts both ways. On the plus side, you get instant benefits in DTR when another portion of the layered software adds functionality or improves performance. For example, when VMS SORT started to work faster when VMS V4.0 was released, DTR just automatically started working faster. And when RMS Prologue 3 files were significantly improved in size and performance, DTR users got these benefits "for free." On the other hand, because there is no "DTR Forms" product, Datatrieve is limited by the functionality available in TDMS and FMS, and cannot integrate as closely with forms as some other 4GL's are able to integrate with non-layered forms products.

o Datatrieve should be the point of distribution in the VAX Information Architecture.

> The point of distribution is that layer in the software architecture that "knows about" and operates across the network. In a layered architecture, only one layer of software should know anything about the network - the other software layers should work "through" the distribution layer and not need to be concerned with the details of where (on which node) the operation is taking place.

> This goal has been somewhat modified as experience has been gained with distributed data management systems. In the current VIA architecture, DSRI (Digital's Standard Relational Interface) is the official point of distribution for VIA.

> However, this is a little tricky too, because at present there is no DSRI interface for either RMS or DBMS, so the both DSRI and DTR are points of distribution for distributed database applications. I don't know if the VIA architects can ever "undistribute" DTR without breaking existing distributed applications, but certainly future distribution efforts will not likely include DTR in the picture.

Now that we know a little about how DTR is put together, next month we will explore the interfaces between those parts and see how we can use this knowledge to do some useful work!

Passing Information from DTR to DCL

Doug Wegscheid, Whirlpool R & E, Benton Harbor, MI

I just got my (thirdhand) November DECUS SIG newsletters and saw the "Commonly asked Datatrieve question" on how to pass information from DTR back to DCL.

Carol Hauch, our resident Datatrieve person, had the same problem last week: after using her DTR procedure (complete with menus, etc) to make a listing file, she would then have to ask the user in DCL if they had just made a listing file so she could postprocess it with a FORTRAN program. Typical user reaction: "I just told it to make a listing, why do I have to tell it again that I just told it to make a listing?".

We added a Datatrieve function FN$SET_SYMBOL; the call is

       FN$SET_SYMBOL (symbolname, symbolvalue)

This sets the DCL symbol in the invoking DCL procedure to the specified value. The DCL procedure can then use the symbol for comparisons, write it out, and do all the other wonderful things that symbols are good for.

For example:

```
$ MCR DTR32
VAX Datatrieve V3.4
DEC Query and Report System
Type HELP for help
DTR> SHOW ZED
PROCEDURE ZED
DECLARE I COMP.
WHILE *."Y to continue" = "Y" BEGIN
I = I + 1
END
FN$SET_SYMBOL ("I", I)

        ! set I to # of 'Y's
FN$SET_SYMBOL ("SYMBOL","CONSTANT")
        ! set "SYMBOL" to "CONSTANT"
FN$SET_SYMBOL ("ANOTHER_SYMBOL",*.VALUE)
! set "ANOTHER_SYMBOL" to
END_PROCEDURE


! a user entered value
```

```
DTR> :ZED
Enter Y to continue: Y

    ! 1
Enter Y to continue: Y

    ! 2
Enter Y to continue: Y

    ! 3
Enter Y to continue: N
Enter VALUE: A VALUE
DTR> EXIT
$ sh sym/all
ANOTHER_SYMBOL = "A VALUE"
I = "3"
SYMBOL = "CONSTANT"
```

Following are the additions to DTRFND.MAR; instructions for editing and reassembling DTRFND and relinking Datatrieve are in the "Datatrieve Guide to Programming and Customizing". See your friendly local system manager, if you are not said person...

```
; FN$SET_SYMBOL - LIB$SET_SYMBOL
;
; no output
; inputs are string descriptors of the symbol and it's value.

$DTR$FUN_DEF FN$SET_SYMBOL, LIB$SET_SYMBOL, 2
        $DTR$FUN_OUT_ARG TYPE = FUN$K_STATUS
        $DTR$FUN_NOVALUE
        $DTR$FUN_IN_ARG TYPE = FUN$K_DESC,
            DTYPE = DSC$K_DTYPE_T, ORDER = 1
        $DTR$FUN_IN_ARG TYPE = FUN$K_DESC,
            DTYPE = DSC$K_DTYPE_T, ORDER = 2
$DTR$FUN_END_DEF
```

Wombat Magic, Fall 1986 DECUS Symposium, San Francisco, CA

Session Editor: Steve Cordiviola, Kentucky Geological Survey

This article is based upon the presentations made at the Wombat Magic session held at the Fall 1986 DECUS U.S. Chapter Symposium in San Francisco. It was a really super session with some really terrific presentations. The presentations were reproduced based upon the audio recording of the session and upon the overhead transparancies used. We apologize for any reproduction errors.

Don Stern, Warner Lambert Co., Milford CT

I have two pieces of magic. In order to use either you either have to wait for DTR version 4.0 or you have to link this function into Datatrieve which spawns a DCL subprocess.

```
! FN$DCL create a subprocess

DTR$FUN_DEF FN$DCL, LIB$SPAWN, 1
    $ DTR$FUN_OUT_ARG TYPE=FUNK$K_STATUS
    $ DTR$FUN_NOVALUE
    $ DTR$FUN_NOOPTIMIZE
    $ DTR$FUN_IN_ARG. TYPE=FUN$DESC.
        DTYPE=DSC$K_DTYPE_T. ORDER=1
DTR$FUN_END_DEF
```

Basically, you are taking advantage of the run-time library function LIB$SPAWN and you are passing it a command line. You would use it as:

> DTR> FN$DCL('DCL command line')

(Editor's note: see Wombat Examiner Vol. 1, no. 11, 1986 for additional discussion of spawning from DTR.)

First the RALLY magic... This is how to run Rally from DTR rather than the other way around....they got it backwards!

```
DEFINE PROCEDURE RALLY
    DECLARE RALLY_APPLICATION_NAME PIC X(100).
    DECLARE RALLY_COMMAND_LINE PIC X(120).
    DECLARE RALLY_FUNCTION PIC X(10) VALID IF
        RALLY_FUNCTION = "CREATE", "EDIT", "RUN".
```

```
    RALLY_COMMAND_LINE="RALLY"
    RALLY_FUNCTION=*."RALLY function (CREATE,EDIT, or RUN)"
    RALLY_APPLICATION_NAME=*."RALLY application name"
    RALLY_COMMAND_LINE=RALLY_COMMAND_LINE|||
        RALLY_FUNCTION|||RALLY_APPLICATION_NAME
    FN$DCL(RALLY_COMMAND_LINE)
END-PROCEDURE
```

Next, Don got a bit more serious. He described a Datatrieve procedure which mails exception reports. At the bottom of DTR reports he tests for certain conditions, and if true, a job (EXCEPTION.COM) is submitted using the FN$DCL function. The job which is submitted executes a MAIL command which sends the DTR report to the appropriate people.

```
DEFINE PROCEDURE MAGIC_PROCEDURE_2

READY YACHTS

REPORT YACHTS SORTED BY MANUFACTURER ON REPORT_FILE.TXT
REPORT_NAME="Demonstration Report"/
    "Wombat Magic October 1986"/"DECUS U.S. Chapter"
    AT BOTTOM OF MANUFACTURER PRINT MANUFACTURER, TOTAL
PRICE
    AT BOTTOM OF REPORT PRINT TOTAL PRICE, SKIP 1.
        CHOICE
            TOTAL PRICE BETWEEN *."Lower limit" AND
            *."Upper limit" THEN ""
        ELSE
            FN$DCL('SUBMIT/AFTER=":+1"/NOPRINT EXCEPTION')
        END_CHOICE USING B
END_REPORT
END_PROCEDURE
```

Note The /After=":+1" qualifier. This allows the DTR report to complete before the batch job attempt to mail it.

Jack Mathis, Union Carbide, New Jersey

Jack described a problem in which he was trying to calculate an inner product, that is a vector times another vector. He could do this in LOTUS and DECALC, but those products have restrictions which forced him to look to Datatrieve for a solution.

Since DATATRIEVE does not have arrays, the magic is to calculate the inner products.

These are the Domains we are basically interested in:

SALES with fields MARKET_GROUP and POUNDS.

INDICATOR with fields INDICATOR and DOMAIN

and a 3rd domain which describes the matrix.

MGINDS with fields MARKET_GROUP, INDICATOR and WEIGHT

where MARKET_GROUP is the name of the row of the matrix, INDICATOR is the name of the column, and WEIGHT is the intersection of the row and column.

Now we want to multiply the SALES domain by the INDICATOR and come up with a set of WEIGHTS for each INDICATOR based over the inner product across the MARKET_GROUP.

(This procedure shows how one can use the matrix for reporting the data.)

```
DECLARE TOTLBS PIC XXXXX.
DECLARE WGTLBS COMPUTED BY LBS*WGT.

FIND SALES
TOTLBS = TOTAL LBS

FIND SALES CROSS MGINDS OVER MG
SORT BY IND

REPORT CURRENT ON FILE.RPT
     AT BOTTOM OF IND PRINT
          (TOTAL WGTLBS)*100/TOTLBS USING ZZZ.,
          IND. IND VIA IND_NAME_TABLE
END_REPORT
```

Jack: What I like about this is that it can be generalized. You can use the same technique to do any type of matrix manipulation as long as you are not trying to do something too complicated or doing something where you need the collection afterwards. The report gives it to you but there is no way I know of to come up with the sum and collection.

Jim McMillan, Arizona Supreme Court, Phoenix, AZ

Jim described the problem of trying to do it all in DTR, although maybe we should look at alternatives....

You all know that doing a search with the "CONTAINING" clause is a real PIG. I have a very large index of case names that I have to maintain for the court. The first thing I did was implement a procedure which had a CONTAINING clause. The next day the clerk comes back and says "its taking 5 minutes to find a name. I could look it up faster!!" and I say "no no, that's a bad idea!!!" So here is an easy alternative. Each night we go out and create a regular sequential file and the next day we do. . . . .

```
DTR>FN$SPAWN
$Edit INDEX.LIS <— Sequential file.
```

Now use String Search... Much nicer hit on machine!

The next problem that I have is that we have a lot of DECmates and the people decided that they didn't want to use them as WORD processing machines but as DATA processing machines, so they said "List processing! Ha, Ha".

Well, after 3 years worth of records and you fill the DECmate's 2 megabyte hard disk, they say "We need a VAX". So we are going to load the lists into DATATRIEVE. We have a couple of little problems with list processing.

List processing doesn't care if you have blank records next to it. You have these field names:

	Fieldname	Data
Record 1	<Name>	Smith
	<Phone>	222-2222
	<DOB>	801009 ! (date of birth)
Record 2	<Name>	Jones
	<Phone>	111-1111
	<DOB>	'blank'

If you try to read this record straight into DATATRIEVE it won't work. When it hits the 'blank' DOB record, DATATRIEVE ignores it and stores the <Name> field from the next record in the <DOB> field.

So what I did was to at least put one character into all the list processing fields so that I always had something in that place.

The next step is to take that list processing text files (as most work processing list files are just text files) and throw it into an editor and add these statements to the top and bottom to create a batch command file.

```
$ RUN SYS$SYSTEM: DTR32

Add this          Set Dictionary CDD$TOP.Address
                  : Temp_Store
                  :
List records      :
to be stored      :

Add this          EXIT
```

```
DEFINE PROCEDURE TEMP_STORE
!
! This just stores records into a temporary domain where I do some ! validation etc.
     REPEAT *. 'Number of records to store'
     BEGIN
          STORE TMP_DOMAIN USING BEGIN
               TMP_Name = *.' '
               TMP_Phone = *.' '
```

```
            TMP_DOB = *.' '
      END
END

! Now I use the temporary domain to store the lists in the final domain.

      FOR TMP_DOMAIN
            Store Final_Domain using begin
            Name = FN$STR_EXTRACT (Tmp_Name.2.25) !Strip 1st char.
            :
            END
```

One of the keys here is that if you store a date in list processing you always have to put the year first so it will sort correctly. In order to compensate for that you can use:

```
            DOB usage DATE Edit_String YYMMDD.
```

Larry Jasmann, U.S. Coast Guard

I didn't realize that this was magic until I suggested it to somebody in the campground and there was sudden silence.

Did you ever have a situation where you decided you had to change a variable name in an application? Then you realize that you had 36 procedures out there. 4 or 5 record definitions, all with this same name and now you have to change them! So you edit each procedure and record definition and find out it doesn't work because you forgot to change the variable in one place. There is a real easy way to fix it. Use

```
            DTR> Edit All
```

Every thing that is in the CDD node will be put into the edit buffer and you can use a FIND or Substitute to make your changes!

(Editors note: DTR> Edit item1.item2... will also work)

Lisa Pratt, VITRO Corporation

Everyone has to do monthly reports so...instead of prompting for the starting and ending dates, you can use this procedure to calculate these dates.

```
DECLARE START_DATE USAGE DATE DEFAULT "TODAY".
DECLARE END_DATE USAGE DATE.

START_DATE=FN$MONTH (START_DATE)|||"1"
END_DATE =START_DATE + (-1)
START_DATE=FN$MONTH (END_DATE)|||"1"

PRINT START_DATE.END_DATE
```

START	END
DATE	DATE
1-Sep-1986	30-Sep-1986

Bob Hoover, HLP, Phoenix, Arizona

Forced Menu Traversing

Bob described the problem of 'menu lock', that is, as users go deeper and deeper into nested menu trees, how do you program it so they can come out to any specified menu anywhere in the application?

Using the idea of an 'OK?' variable that most application developers put at the bottom of a screen form, Bob expanded this to include a 'next' variable so users can branch to whatever screen or procedure they wish. In this example the variable VNEXT is used to point to the next item the user wants to access.

Bob: One of the first things you have to come up with in this technique is a good menu-naming convention, so you know how to get to them.

This is the overall menu, the one which begins the overall process:

```
PROCEDURE MENU_ACCOUNT2
DECLARE VNEXT x(4).
DECLARE LOOPER PIC 9.
READY ACCOUNT SHARED WRITE
WHILE VNEXT NE "E"."EXIT"
BEGIN

DISPLAY_FORM MENU_ACCOUNT IN ACCOUNTS.FLB
LOOPER="0"
WHILE VNEXT NE "Q"."QUIT"."E"."EX"."EXIT"
      BEGIN
            IF VNEXT="SACC'
            BEGIN
                  :STORE_ACC
                  LOOPER=0
            END
            IF VNEXT="MACC"
            BEGIN
                  :MODIFY_ACC
                  LOOPER=0
            END
            LOOPER=LOOPER = 1

            IF LOOPER GT 5 VNEXT="QUIT"   ! (What if they make
                                          ! a mistake on the
                                          ! menu?)
      END
END
END_PROCEDURE
```

This is an example of one of the procedures called by the above menu, accessed by user requesting 'SACC' in variable VNEXT:

```
DEFINE PROCEDURE STORE_ACC
VNEXT="SACC"
WHILE VNEXT="SACC",""
BEGIN
     DISPLAY_FORM GETACCT IN ACCOUNTS.FLB USING

     BEGIN
          PUT_FORM ACCT            =VACCT
          PUT_FORM FIRST_NAME      =VFIRST_NAME
          PUT_FORM LAST_NAME       =VLAST_NAME
     END RETRIEVE USING
     BEGIN
          VACCT                    =GET_FORM ACCT
          VFIRST_NAME              =GET_FORM FIRST_NAME
          VLAST_NAME               =GET_FORM LAST_NAME
     END
IF NOT ANY ACCOUNT WITH ACCT=VACCT
BEGIN
     DISPLAY_FORM STOREACC IN ACCOUNTS.FLB USING
     BEGIN
          PUT_FORM ACCT            =VACCT
          PUT_FORM FIRST_NAME      =VFIRST_NAME
          PUT_FORM LAST_NAME       =VLAST_NAME
     END RETRIEVE USING
     BEGIN
          VNEXT =GET_FORM NEXT
          IF VNEXT="C","CONT"       VNEXT=""
          IF VNEST="Q","QUIT"       VNEXT="QUIT"
          IF GET_FORM FIRST_NAME="Q"
VNEXT="QUIT"
          IF VNEXT NE "QUIT"
          BEGIN

               STORE ACCOUNT USING     ! (This provides a
               BEGIN                    ! method to traverse
                    ACCT=VACCT          ! menus.)
                    FIRST_NAME=GET_FORM FIRST_NAME
                    LAST_NAME =GET_FORM LAST_NAME
               END
          END
     END
END ELSE
     FOR ACCOUNT WITH ACCT=VACCT
          MODIFY USING
          BEGIN
```

```
          DISPLAY_FORM MODIFYACC IN ACCOUNTS.FLB USING
          BEGIN
               .
               .
               .
          END RETRIEVE USING
          BEGIN
               .
               .
               .
          END
     END
END_PROCEDURE
```

Pam Valentine, Montgomery Engineers, Pasedena, CA

This is magic that is always a favorite at Wombat Magic:

To get the report writer to stop writing to the terminal screen at end of each page use:

```
REPORT A
     SET LINES_PAGE = 20
     PRINT NAME
     AT BOTTOM OF PAGE PRINT SKIP 3.
          FN$STR_EXTRACT(" "|||
          *."any character and <RETURN> to continue", 1, 0)
END_REPORT
```

Diane Pinny, CSC, Ridgecrest, CA

Diane expanded on Pam Valentine's magic by showing how a report can be routed to any device at run time:

```
READY FOO READ
DECLARE OUTPUT PIC X(80).
OUTPUT = *. "FILE OR TT;"
CHOICE
     OUTPUT = "TT" THEN FN$CREATE_LOG("LINES_PAGE". "TT_LINES")
     ELSE FN$CRERATE_LOG ("LINES_PAGE". "FILE_LINES")
END CHOICE

REPORT FOO ON OUTPUT
     : LINES_PAGE ! CALLS 'LOGICAL' PROCEDURE
     .
     .
```

```
        AT BOTTOM OF PAGE PRINT
        CHOICE
            OUTPUT = "TT" THEN *."PRESS ANY KEY TO CONTINUE"
            ELSE " "
        END_CHOICE
END REPORT

DEFINE PROCEDURE TT_LINES
    SET LINES_PAGE = 24
END_PROCEDURE
DEFINE PROCEDURE FILE_LINES
    SET LINES_PAGE = 80
END_PROCEDURE
```

[Added by Steve Cordiviola and Kathy Wrobel:

You can direct output to more than device using:

ON *.'device 1', *.'device 2'...]

Pat Scopelletti - Corning Glass Works, Corning, N.Y.

Dualing Logical Names...Part 153

(Editor's note: Most of Pat's presentation was lost on the tape. From memory and Pat's notes, I constructed the following problem.)

Problem: run this procedure.

$ DEFINE DEPT "1234" ! AT DCL LEVEL

$ DTR ! RUN DTR

DTR> DECLARE MY_DEPT COMPUTED BY FN$TRANS_LOG("DEPT").

DTR> READY BUDGET (Budget has 1000 records)

DTR> FIND ALL BUDGET WITH DEPARTMENT = MY_DEPT
                                        ————
                                          ^
                                          |
                                  INDEXED FIELD

2 MINUTES LATER.... ! WOW !

[250 records found]
DTR>

WHY ???

Maybe it has to do with the logical name 'Dept" so:

Look in file DTR$LIBRARY:DTRFND.MAR...

                    Original definition

```
$DTR$FUN_DEF FN$TRANS_LOG, LIB$SYS_TRNLOG, 3
    $DTR$FUN_OUT_ARG TYPE = FUN$K_STATUS
    $DTR$FUN_NOOPTIMIZE  <== Ha, here's the culprit!
    $DTR$FUN_IN_ARG TYPE = FUN$K_DESC, DTYPE = DSC$K_DTYPE_T,
        ORDER = 1
    $DTR$FUN_IN_ARG TYPE = FUN$K_NULL
    $DTR$FUN_IN_ARG TYPE = FUN$K_TEXT, OUT_PUT = TRUE
$DTR$FUN_END_DEF
```

If we comment out the DTRFUN_NOOPTIMIZE line, follow directions in DTR Manual for modifying DATATRIEVE, and try example again we get

DTR> Find all Budget with Department=MY_DEPT
10 seconds later.... <=== What we expected to see.
[250 records found]

DTR>

Pat's second magic deals with turning the printer port on and off using DTR. One problem is putting the ESC (escape) character into procedures without having to use 'funny' characters in an edit file. Pat gives this new function to be used in DATATRIEVE.

Add to DTR$LIBRARY:DTRFND.MAR:

```
$DTR$FUN_DEF FN$CHAR, LIB$CHAR, 2
    $DTR$FUN_OUT_ARG TYPE = FUN$K_STATUS
    $DTR$FUN_NOOPTIMIZE
    $DTR$FUN_IN_ARG TYPE = FUN$K_TEXT, OUT_PUT = TRUE
    $DTR$FUN_IN_ARG TYPE = FUN$K_REF,
        DTYPE = DSC$K_DTYPE_BU, ORDER = 1
$DTR$FUN_END_DEF
```

You can use this new function to put any character into a printable line....

DEFINE PROCEDURE TEMP

DECLARE ESC COMPUTED BY FN$CHAR (27).
        :
        :   ! PRINTER ON
    PRINT ESC|"[?5i.... "
        :
        :   ! PRINTER OFF
    PRINT ESC|"[?4i.... "
        :
END_PROCEDURE

Joe Gallagher, 4GL Solutions, Overland Park, KS

Joe presented some magic he found as a result of a problem someone brought to his attention. Basically, in the reportwriter how do you get an indication that a page break has occurred in the middle of a group field like:

```
<FIRST-PAGE>
```

RIG WEIGHT	MANUFACTURER	MODEL	LENGTH OVER ALL
KETCH			
	ALBERG 37 MK II	37	20.000
" " "			
MS			
	AMERICAN 26-MS	26	5.500
" " "			
SLOOP			
	NEWPORT 30 II	30	8.000
" " "			

```
<NEXT PAGE>
```

RIG WEIGHT	MANUFACTURER	MODEL	LENGTH OVER ALL
SLOOP			
CONTINUED ! <=== This would be a nice feature!			
	CAPE CORY TYPHOON	19	1.900
" " "			

This procedure will print the word 'continued' beneath the group field name on continuation pages:

```
declare continue_flag computed by choice of
      running count ne 1 then continue_flag = rig|" CONTINUED"
      else " "
      end-choice
      edit-string is t(10).

ready yachts
report yachts sorted by rig
      at top of page print column-header. col 10. continue_flag(-)
      at top of rig print col 10. rig
      print type. loa. disp
end-report
```

DTR-19

Joe's second piece of magic has to do with getting page numbers at bottom of page...

```
REPORT YACHTS SORTED BY RIG
      SET NONUMBER
      AT TOP OF RIG PRINT RIG
      PRINT TYPE. LOA. DISP
      AT BOTTOM OF PAGE PRINT SKIP. COL 38.
      "-" | FORMAT RUNNING COUNT USING 9 | " -"
END_REPORT
```

RIG WEIGHT	MANUFACTURER	MODEL	LENGTH OVER ALL
KETCH			
	ALBERG 37 MK II	37	20.000
"			
"			
MS			
	LINDSEY 39	39	14.500
"			
"			
		-1-	

```
<FF>
```

RIG	MANUFACTURER	MODEL	LENGTH OVER ALL
SLOOP			
	NEWPORT 30 II	30	8.000
"			
"			
	BAYFIELD 30/32	32	9.500
		-2-	

```
<FF>
```

Joe's third magic was for PRO-DATATRIEVE where there is no 'CROSS' statement so some things have to be done using views. He gave the example of an invoicing procedure which took. for each client. the listing of outstanding balances and invoiced the customer automatically.

```
define domain customers using
      customers-record on dzZ:[userfiles]customers. dat;


define record customers-record using
01 customers-rec.
      02 cust-id                        pic x(6)
            query-name is customers-id.
      02 customers-rest.
            03 cust-co-name             pic x(30).
            03 cust-address             pic x(30).
```

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```
        03 cust-city                    pic x(15).
        03 cust-state                   pic x(2).
        03 cust-zip                     pic x(5).
        03 cust-phone                   pic x(10).
             edit-string is xxx-xxx-xxxx.
        03 cust-name                    pic x(25).
        03 cust-title                   pic x(20).
define domain statements using
     statements-record on dz2:[userfiles]statement.dat;

define record statements-record using
01 statements-rec.
        03 cust-id                      pic x(6)
             query-name is statements-id.
        03 amount                       pic s99999v99
             edit-string is $$.$$9.99.
        03 posting-date                 usage is date.
        03 flag                         pic x.
        03 description                  pic x(140)
             edit-string is t(35).
define domain vcustomersstatements of
     customers,statements using
01 vcustomersstatements occurs for customers.
        03 customers-rec from customers.
        03 statements-r occurs for statements -
             with statements-id = customers-id.
        05 statements-rec from statements.

delete report_statement;
define procedure report_statement
ready vcustomersstatements

find vcustomersstatements with cust-id = *."Customer number"
select

declare l1 pic x(30).
declare l2 pic x(30).
declare l3 pic x(25).
declare l4 pic x(31).
declare l5 pic x(20).
declare pitch5 pic x(4).
declare pitch10 pic x(4).
declare enhanced_density pic x(5).
declare today usage is date.
today = "today"
pitch5 = "<ESC>[5w"
pitch10 = "<ESC>[1w"
enhanced_density = "<ESC>[2""z"
l1 = cust-co-name
l2 = cust-address
```

```
l3 = cust-city||", "|cust-state||" "|cust-zip
l4 = "Attn: "|cust-name
l5 = cust-title

find statements-r with flag = "N" sorted by posting-date

print enhanced_density(-) on lp:

report current on lp:
set no number
set no date
at top of page print col 70, today(-) using nn/dd/yyyy,
        skip 8, pitch5(-), skip, col 20, "STATEMENT OF ACCOUNTS", pitch1-
        (-), skip 4, col 11, l1(-), col 46, l4(-), skip, col 11, l2(-),
        col 52, l5(-), skip, col 11, l3(-), skip 5, col 11,
        "Thank you for your business. We look forward to serving you in",
        skip, col 11,
        "the future with your user training, consulting, system
        development.", skip, col 11,
        "programming, data entry, and technical word processing needs.",
        skip 4, col 12 ." Amount",
        col 40, "Item Description", skip 2
print col 10, amount, col 25, description using t(55)
at bottom of report print col 10, "—————-", skip, col 10,
total amount using $$.$$9.99CR, space 4, "Current balance"
end-report
finish
end-procedure

DELETE REPORT_STATEMENTS;
DEFINE PROCEDURE REPORT_STATEMENTS
DECLARE L1 PIC X(30).
DECLARE L2 PIC X(30).
DECLARE L3 PIC X(25).
DECLARE L4 PIC X(31).
DECLARE L5 IC X(20).
DECLARE PITCH5 PIC X(4).
DECLARE PITCH10 PIC X(4).
DECLARE ENHANCED-DENSITY PIC X(5).
DECLARE TODAY USAGE IS DATE.
TODAY = "today"
PITCH5 = "<ESC>[5w"
PITCH10 = "<ESC>[1w"
ENHANCED_DENSITY = "<ESC>[2""z"

READY VCUSTOMERSSTATEMENTS

PRINT PITCH10(-), SPACE 0, ENHANCED_DENSITY(-) ON LP:

FOR VCUSTOMERSSTATEMENTS with any statements_r with flag = "N" BEGIN
        L1 = CUST_CO_NAME
        L2 = CUST_ADDRESS
```

```
L3 = CUST_CITY||", "|CUST_STATE||" "|CUST_ZIP
L4 = "ATTN: "|CUST_NAME
L5 = CUST_TITLE
REPORT STATEMENTS_R WITH FLAG = "N" SORTED BY
POSTING_DATE ON LP:
    SET NO NUMBER
    SET NO DATE
    AT TOP OF PAGE PRINT COL 70, TODAY(-) USING NN/DD/YYYY,
        SKIP 8, PITCH5(-), SKIP, COL 20, "STATEMENT OF ACCOUNTS",
        PITCH10(-),
        SKIP 4, COL 11, L1(-), COL 46, L4(-), SKIP, COL 11, L2(-),
        COL 52, L5(-), SKIP, COL 11, L3(-), SKIP 5, COL 11,
        "Thank you for your business. We look forward to serving you
        in",
        SKIP, COL 11,
        "the future with your user training, consulting, system
        development,",
        SKIP, COL 11,
        "programming, data entry, and technical word processing
        needs.",
        SKIP 4, COL 12 ," AMOUNT",
        COL 40, "ITEM DESCRIPTION", SKIP 2
    PRINT COL 10, AMOUNT, COL 25, DESCRIPTION USING T(55)
    AT BOTTOM OF REPORT PRINT COL 10, "———————",SKIP, COL 10,
        TOTAL AMOUNT USING $$.$$9.99CR, SPACE 4, "Current balance"
    END_REPORT
    END
FINISH
END_PROCEDURE
```

Ed McQuire - Grennell College, Grennell, Iowa

Problems with Concatenating Boolean Expressions

Ed showed how performance can be enhanced by properly constructing multiple boolen expressions...

First, 2 record definitions:

```
Define Record A_Rec using
01 A_Rec. ! Keyfield
    02 T usage is date.:

Define Record B_Rec using
01 B_Rec.
    02 S usage is date ! Keyfield
    02 E usage is date.: ! Keyfield
```

Now use more than one boolean to select records. The choice of boolean and their order can improve performance.

For A
For B with (T GE S) AND (T LT E) real slow...3-6 hours!!

Now try => (T LT E) AND (T GE S) not much better

however, => (T BT S AND E) AND (T LT E) much better...15 seconds!!!

        !!! DTR optimized this search !!!

The trick is, when you concatenate 2 or more Booleans, DTR uses INDEXED access on first test, creating a collection, then steps through the second (like a FIND). Therefore, the Booleans AND, OR, etc., create intermediate collections.

BETWEEN is a single operation so DTR uses INDEX access to make the collection. In this example, DTR only had a smaller subset to step through after using the BETWEEN expression to eliminate most of the records.

Editor's note: the remaining magic was not recorded on the audio tape. I had to rely on the presenter's slides and memory to reconstruct their magic...

Philip Dickerson, Northern Telecom

                DATATRIEVE DATES ARE WONDERFUL

DTR Date - Binary number -> number of clunks

DTR will subtract dates and give number of days...

        DATE_TODAY - DATE_YESTERDAY —> 1 DAY

However, can also calculate elapsed time if date contains time value...

```
DATE_NOW = "NOW"
OLD_DATE = "YESTERDAY"
```

Treat dates as numbers:

```
(FORMAT DATE_NOW USING 9(20) - FORMAT OLD_DATE USING 9(20) )
```

returns elapsed clunks:

```
DIVIDE BY 10,000,000 FOR SECONDS
"  " 600,000,000 FOR MINUTES
ETC.
```

USING A NON-DTR DATE/TIME VALUE CREATED BY ANOTHER LANGUAGE

Another language stored a date and time as a text string:

"09-JUN-86 15:35"

DTR will almost use this except it expects 4-digit year (1986).

Use FORMAT to convert:

DECLARE DTR_DATE COMPUTED BY
    (FORMAT TEXT_DATE USING X(7)"19"X(8)).

FORMAT inserts "19" in date string -> 09-JUN-1986 15:35 and DTR converts string to DTR date format.

James Getman

Jim pointed out that although DATATRIEVE is very versatile, there are times when other tools may be more appropriate for getting the job done.

Most users like to set up an on-line telephone book using DTR. Jim did the same and added the following symbols to retrieve and add names in his telephone database.

$PN = "DTR execute procedure_name" ! procedure finds name
$ADD = "DTR execute another_proc." ! procedure adds name

But this was unacceptably slow and he found that:

$PN = "SEARCH SYS$Login:Phone Book.Dat"
$PN Joe

gave a much more satisfactory response.

Mary Meyer

Mary demonstrated how the FORMAT USING clause can be used to create the desired field, overriding DTR's method of formating...

Define Record MYREC using
01 MYREC.
    02 WELLKEY PIC X(7).
    02 WELL redefines WELLKEY.
        03 PROP_CODE PIC XXX.
        03 WELL_NO PIC 9999.:

Declare MOD_PROP PIC XXX.
Declare MOD_WELL_NO PIC 9999.
Declare MOD_KEY PIC X(7).

MOD_KEY = MOD_PROP||MOD_WELL_NO

If the user is prompted for both MOD_PROP and MOD_WELL_NO to create a concatenated field MOD_KEY. to be used in searching the database. a problem will occur if there are only 3 digits in MOD_WELL_NO. DATATRIEVE will strip off the leading zero in MOD_WELL_NO.

To override this "feature" the user can specify that MOD_WELL_NO be explicitly formated.

MOD_KEY = MOD_PROP|| MOD_WELL_NO FORMAT USING 9999

Chris Carvalho, Intel Corp.

RETRIEVAL OF X. Y VALUE FROM A STRING ARRAY IN DTR

Assume you have a 20x20 array which can be denoted by a scaler value...

Declare MAP Pic X(400).   ! 20x20 characters

Each line has 20 characters and there are 20 lines. therefore top line is Y=0. leftmost character is x=1.

Declare X integer.
Declare Y integer.

To retrieve any character in the array use an index....

Declare INDEX computed by X + 20 * Y.

Now use the FN$STR_EXTRACT function to retrieve the desired character.

PRINT "Your character is," FN$STR_EXTRACT (Map. Index. 1) (-)

You can expand this concept to retrieve a specific set of characters from the array.

B. Z. Lederman ITT World Communications, NY

The following procedure calculates a biorhythm chart. It's of interest because:

It shows how to treat character strings as arrays.

It shows how to create graphs and plots that work on ordinary terminals and line printers.

It shows how to calculate half days (DTR does well in calculating whole days. but not fractions).

Note: I do not believe in biorhythms, and the following is for novelty value only.

```
$ dtr
VAX Datatrieve V3.2
DEC Query and Report System
Type HELP for help
DTR> :make-bio-print
Enter your birthday: 8/8/52

You are  12,474  days old.

Enter file name or TT : tt:
```

Biorhythm chart for a birthdate of Friday   8-Aug-1952

```
                              (-)       (0)      (+)
Fri 10/03                               I                        P
                               S    :   I                    P
Sat 10/04              S        :      I              P
                          S         :       I      P
Sun 10/05           S            :          IP
                 S                  :        P   I
Mon 10/06           S                  :  P          I
                  S                     P            I
Tue 10/07       S                 P   :              I
                 S            P       :                  I
Wed 10/08     S             P           :               I
               S          P             :                  I
Thu 10/09   S         P                 :                   I
             S     P                    :                     I
Fri 10/10  S     P                      :                     I
            S  P                        :                       I
Sat 10/11   S                           :                       I
             S                          :                       I
Sun 10/12 P S                           :                       I
           P    S                       :                     I
Mon 10/13  P      S                     :                     I
            P        S                  :                   I
Tue 10/14     P        S                :                   I
               P         S              :                 I
Wed 10/15        P         S            :               I
                  P          S          :             I
Thu 10/16            P         S    :            I
                        P        S  :         I
```

DTR> show make-bio-print
PROCEDURE MAKE_BIO_PRINT
!
! Calculate biorhythms for a given birthdate starting with
! "TODAY" and going on for 14 days. 2 values per day (midnight and
! noon), store it in a file in "graphic" format, then report it.
!
! B. Z. Lederman
!
!
! The following is faster than erasing old records, but you have
! to purge old files once in a while. Other alternatives (like
! erasing an indexed file) aren't as fast.
!
DEFINE FILE FOR BIO_DAT:
!
READY BIO_DAT WRITE
!
! Need some temporary variables
!
DECLARE P USAGE REAL EDIT_STRING S9.999.
DECLARE S USAGE REAL EDIT_STRING S9.999.
DECLARE I USAGE REAL EDIT_STRING S9.999.
DECLARE IP USAGE INTEGER.
DECLARE IS USAGE INTEGER.
DECLARE II USAGE INTEGER.
DECLARE J USAGE INTEGER.
DECLARE N PIC S9999999V9 EDIT_STRING Z,ZZZ.ZZZ.9.
!
DECLARE D1 USAGE DATE.
DECLARE D2 USAGE DATE.
DECLARE D3 USAGE DATE.
DECLARE Q1 USAGE QUAD.
DECLARE Q2 USAGE QUAD.
DECLARE Q3 USAGE QUAD.
!
! The following is used to format the "graph"
!
DECLARE BLANK PIC X(51).

BLANK = "   :
!
! Get the subject's birthday, and today's date.
!
D1 = *."your birthday"
D2 = "TODAY"
!
! The whole trick to calculating half days is to convert dates
! to quad-word integers to do the calculations in "clunks", then

```
! back to dates for formatting output
!
Q1 = D1 ! have to convert days to quads
Q2 = D2
Q3 = Q2 - Q1 ! Number of days interval
IF Q3 < 0 THEN Q3 = 1 ! any date in the future becomes yesterday
!
N = D2 - D1 ! Want whole days here. use Dates
!
PRINT SKIP, " You are ", N (-) USING ZZ.ZZ9, " days old.", SKIP


!
REPEAT 28 BEGIN          ! store data for 14 days by half day
        N = Q3 / 864000000000 ! convert clunks to days

! Convert number of days to radians by multiplying by 2 PI and
! dividing by the number of days in the cycle (because SINE wants
! it's argument in radians).
!
        P = FN$SIN(N * 0.273182)
        S = FN$SIN(N * 0.2243995)
        I = FN$SIN(N * 0.1903996)
!
        D3 = Q1 + Q3 ! convert clunks back to date
!
! store the data
!
        STORE BIO_DAT USING BEGIN ! into new or empty file
                DAY = D3
                P = P
                S = S
                I = I
                PRINT_STRING = BLANK
        END
!
        Q3 = Q3 + 432000000000 ! go to next half day (in clunks)
END
!
! Now go back over the data and make the print string into a
! horizontal graph.
!
FOR BIO_DAT BEGIN
!
! Scale the variables to fit a -25 to +25 graph (51 print positions)
!
        IP = FN$NINT(P * 25)
        IS = FN$NINT(S * 25)
        II = FN$NINT(I * 25)
!
```

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```
! Run through the graph and find out where things print.
!
! Note the use of the re-defined field to treat PRINT_STRING as an
! array.
!
        J = -25
        FOR PRINT_CHAR MODIFY USING BEGIN
                IF IP = J THEN CHAR = "P"
                IF IS = J THEN CHAR = "S"
                IF II = J THEN CHAR = "I"
                J = J + 1
        END
END
!
! Now all that has to be done is to print it out.
!
REPORT BIO_DAT ON *."file name or TT "
SET COLUMNS_PAGE = 72
AT TOP OF REPORT PRINT "Biorhythm chart for a birthdate of",
        SPACE 1, D1 USING W(9)BDD_MMM_YYYY, SKIP 2, COL 29,
        "(-) (0) (+)"
PRINT COL 2, CHOICE ! print date for only one
        FN$HOUR(DAY) = 0 THEN DAY ! of the two data points
        ELSE " "
        END_CHOICE USING WWWBNN/DD, SPACE 2, PRINT_STRING
AT BOTTOM OF REPORT PRINT SKIP 2
END_REPORT
!
END_PROCEDURE
!
! Note the use of a sequential file, as the data is always going
! to be accessed in order from beginning to end.
!
DTR> show bio-dat
DOMAIN BIO_DAT USING BIO_REC ON BIO.SEQ:
DTR> show bio-rec
RECORD BIO_REC USING
01 BIO_REC.
        05 DAY USAGE DATE.
        05 NUMBERS.
                10 P USAGE REAL EDIT_STRING S9.999.
                10 S USAGE REAL EDIT_STRING S9.999.
                10 I USAGE REAL EDIT_STRING S9.999.
        05 CHARACTERS.
                10 PRINT_STRING PIC X(51). ! once as a string
                10 PRINT_ARRAY REDEFINES PRINT_STRING.
! redefine as an array of single characters
                        20 PRINT_CHAR OCCURS 51 TIMES.
                                30 CHAR PIC X. :
```

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Enhanced Datatrieve Graphs

Ernie Megginson - Texaco, Backersfield, CA

I've gotten a lot out of reading the different articles in the *Wombat Examiner* during the past year and thought that I might be able to repay some of this benefit by sharing an enhanced ("modified") Datatrieve plot that I came up with.

To put it in perspective, I work for an oil company and we use a VAX as a production reporting tool for the engineers and technicians. Our production database is accessed extensively through Datatrieve queries by the users, to help them be able to identify trends in a well's production, we started to write simple Datatrieve procedures that would plot the data to the screen for the users to view. That was fine, but one of the biggest complaints was that normally the legend would not show up on the same screen as the plot, and even though the procedure would allow flipping between the legend and the plot (using PLOT LEGEND and PLOT RE_PAINT), the users were still not satisfied.

Therefore, I went into the Datatrieve plots and modified MULTI_LINE to show the legend to the right of the Datatrieve plot. This was simple and effective (no more angry users!), and was fun to do. The plot actually combines a lot form previous articles in the *Wombat Examiner*. One was a modification of the MULTI_LINE plot in order to handle dates on the X axis. [ed. September 1985, *Wombat Examiner* Vol. 7, No. 1, pp: DTR-38 - DTR-40] I've included two versions of the modification, one plotting a linear Y scale (Figure 1) and the other a log Y scale (Figure 2). The semi-log plot was useful for showing both oil and water on the same plot.

```
DELETE DATE_MULTILINE_LEGEND;
REDEFINE PLOT DATE_MULTILINE_LEGEND
!—————————————————————————————+
! DATE_MULTILINE_LEGEND PLOT - EAM 8/86
!   This will plot a legend to the right of the plot and a title at
!   the bottom. Plot uses a Dates for X axis and Linear scale for
!   Y axis. Format for calling plot is:
!
!   PLOT DATE_MULTILINE_LEGEND date, title, f1, f2, f3
!
!—————————————————————————————+
DECLARE X_REF, X_LENGTH, X_MIN, X_MAX
DECLARE Y_REF, Y_LENGTH, Y_MIN_VALUE, Y_MAX_VALUE
DECLARE I.J.K.N. COUNT, MX, WIDTH
DECLARE VECTOR DATES, Y1, Y2, Y3, Y_MIN, Y_MAX,
    Y_MX, COLOR
DECLARE STRING VECTOR CHR, Y_LABEL
DECLARE STRING TITLES, D_LABEL
```

```
ENTRY 0 (X_LABEL : STRING,
    TITLES : STRING,
        LABEL_1 : STRING,
        LABEL_2 : STRING,
    LABEL_3 : STRING)
BEGIN
    PLOT HOUSEKEEP 0
    SET_SEGMENT 0
    PRINT 'S(M0(L0)1(L33)2(L66)3(L99))'
    PRINT 'S(M0(AD)1(AR)2(AC)3(AY))'
    PRINT 'L(A2)'
    PRINT 'L"5"00FF8181818181FF'
    PRINT 'L"6"0018244281422418'
    PRINT 'L"0"00FF814242242418'
    OUTPUT_SEGMENT 0
    SET_SEGMENT 1
    X_REF = 100
    Y_REF = 360
    X_LENGTH = 550
    Y_LENGTH = 350
    X_LABEL = ""
    PLOT LABEL 0 (X_REF, Y_REF, X_LENGTH,
        Y_LENGTH, X_LABEL, D_LABEL)
    CHR(1) = '6' COLOR(1) = 1 Y_LABEL(1) = LABEL_1
    CHR(2) = '5' COLOR(2) = 2 Y_LABEL(2) = LABEL_2
    CHR(3) = '0' COLOR(3) = 1 Y_LABEL(3) = LABEL_3
    INCR I OVER Y_LABEL
        IF LENGTH(Y_LABEL(I)) NE 0 THEN
            COUNT = COUNT + 1
END
ENTRY 1 (X : DATE, TITLE : STRING, Y1_VALUE,
    Y2_VALUE, Y3_VALUE)
BEGIN
    DATES(SIZE(DATES)+1) = X
    Y1(SIZE(Y1)+1) = Y1_VALUE
    Y2(SIZE(Y2)+1) = Y2_VALUE
    Y3(SIZE(Y3)+1) = Y3_VALUE
    TITLES = TITLE
END
ENTRY 2
BEGIN
    Y_MIN(1) = MIN(Y1)
    Y_MAX(1) = MAX(Y1)
    Y_MIN(2) = MIN(Y2)
    Y_MAX(2) = MAX(Y2)
    Y_MIN(3) = MIN(Y3)
    Y_MAX(3) = MAX(Y3)
    Y_MIN_VALUE = MIN(Y_MIN)
    Y_MAX_VALUE = MAX(Y_MAX)
```

```
        PLOT LABEL 3 (Y_MIN_VALUE, Y_MAX_VALUE)
        X_MIN = MIN(DATES)
        X_MAX = MAX(DATES)
        PLOT LABEL 6 (X_MIN, X_MAX, DATES)
        SORT(DATES, Y1, Y2, Y3)
!
! Print Plot Title under the Graph
!
        PRINT 'P', 'W(I', CVT(2), ')'
        PRINT CENTER (375, 420, TITLES, 9)
!
        IF COUNT GE 1 THEN
            PLOT DATE_MULTILINE_LEGEND 3 (Y1)
        IF COUNT GE 2 THEN
            PLOT DATE_MULTILINE_LEGEND 3 (Y2)
        IF COUNT GE 3 THEN
            PLOT DATE_MULTILINE_LEGEND 3 (Y3)
!
        WIDTH = X_LENGTH / 30
        Y_MX(30) = 0
        INCR I OVER DATES
        BEGIN
        Y_MIN(1) = Y1(I) Y_MIN(2) = Y2(I)
        MX = MIN(Y_MIN)
        J = ((DATES(I) - X_REF) / WIDTH) + 1
        Y_MX(J) = 1000
        IF Y_MX(J) GT MX THEN
            Y_MX(J) = MX
        END
        INCR I OVER Y_MX
            IF (I NE 1) AND (Y_MX(I) EQ 0) THEN
                Y_MX(I) = Y_MX(I -1)
        OUTPUT_SEGMENT 1
        PLOT HOUSEKEEP 2
END
ENTRY 3 (Y : VECTOR)
BEGIN
        PRINT 'T(BA2S[8.16])'
        PLOT LABEL 8 (Y)
        N = N + 1
        PRINT 'P', LXY(DATES(1), Y(1)), 'W(I',
            CVT(COLOR(N)), ')'
        INCR I OVER DATES
        PRINT 'V', LXY(DATES(I), Y(I))
        PRINT 'W(R)'
        INCR I OVER DATES
        PRINT 'P', LXY(DATES(I)-5, Y(I)-9),
            'T', QUOTE(CHR(N))
        PRINT 'W(V)'
```

```
!
! Prints Legend on Right Side of Plot
!
        PRINT 'P', LXY(675,((360/(COUNT+1))) * N),
            'W(I', CVT(COLOR(N)), ')'
        PRINT 'V', LXY(675,((360/(COUNT+1))) * N),
            LXY(750,((360/(COUNT+1))) * N)
        PRINT 'W(R)'
        PRINT 'P', LXY(683, (((360/(COUNT+1) * N) - 8))),
            'T', QUOTE(CHR(N))
        PRINT 'P', LXY(708, (((360/(COUNT+1) * N) - 8))),
            'T', QUOTE(CHR(N))
        PRINT 'P', LXY(733, (((360/(COUNT+1) * N) - 8))),
            'T', QUOTE(CHR(N))
        PRINT 'W(V)'
        PRINT 'T(E)'
        PRINT CENTER (712, (((360/(COUNT+1) * N) + 10)),
            Y_LABEL(N), 9)
END
END_PLOT

DELETE DATE_MULTILOG_LEGEND:
REDEFINE PLOT DATE_MULTILOG_LEGEND
!———————————————————————————————————+
! DATE_MULTILOG_LEGEND PLOT - EAM 8/86
!    This will plot a legend to the right of the plot and a title at
!    the bottom. Plot uses Dates for X axis and Log Scale for Y Axis.
!    Format for calling plot is:
!
!    PLOT DATE_MULTILOG_LEGEND date, title, f1, f2, f3
!
!———————————————————————————————————+
DECLARE X_REF, X_LENGTH, X_MIN, X_MAX
DECLARE Y_REF, Y_LENGTH, Y_MIN_VALUE, Y_MAX_VALUE
DECLARE I,J,K,N, COUNT, MX, WIDTH
DECLARE VECTOR DATES, Y1, Y2, Y3, Y_MIN, Y_MAX, Y_MX, COLOR
DECLARE STRING VECTOR CHR, Y_LABEL
DECLARE STRING TITLES, D_LABEL
ENTRY 0 (X_LABEL : STRING,
        TITLES : STRING,
        LABEL_1 : STRING,
        LABEL_2 : STRING,
        LABEL_3 : STRING)
BEGIN
        PLOT HOUSEKEEP 0
        SET_SEGMENT 0
        PRINT 'S(M0(L0)1(L33)2(L66)3(L99))'
        PRINT 'S(M0(AD)1(AR)2(AC)3(AY))'
        PRINT 'L(A2)'
```

```
PRINT 'L"5"00FF8181818181FF'
PRINT 'L"6"0018244281422418'
PRINT 'L"0"00FF814242242418'
OUTPUT_SEGMENT 0
SET_SEGMENT 1
X_REF = 100
Y_REF = 360
X_LENGTH = 550
Y_LENGTH = 350
X_LABEL = ""
PLOT LABEL 0 (X_REF. Y_REF. X_LENGTH.
     Y_LENGTH. X_LABEL. D_LABEL)
CHR(1) = '6' COLOR(1) = 1 Y_LABEL(1) = LABEL_1
CHR(2) = '5' COLOR(2) = 2 Y_LABEL(2) = LABEL_2
CHR(3) = '0' COLOR(3) = 1 Y_LABEL(3) = LABEL_3
INCR I OVER Y_LABEL
     IF LENGTH(Y_LABEL(I)) NE 0 THEN
          COUNT = COUNT + 1
END
ENTRY 1 (X : DATE. TITLE : STRING. Y1_VALUE. Y2_VALUE. Y3_VALUE)
BEGIN
     DATES(SIZE(DATES)+1) = X
!
! Converts zero values to ones to stop log plots from blowing up
!
     IF Y1_VALUE EQ 0 THEN
          Y1_VALUE = 1
     IF Y2_VALUE EQ 0 THEN
          Y2_VALUE = 1
     IF Y3_VALUE EQ 0 THEN
          Y3_VALUE = 1
!
     IF COUNT GE 1 THEN
          Y1(SIZE(Y1)+1) = LOG(Y1_VALUE)
     IF COUNT GE 2 THEN
          Y2(SIZE(Y2)+1) = LOG(Y2_VALUE)
     IF COUNT GE 3 THEN
          Y3(SIZE(Y3)+1) = LOG(Y3_VALUE)
!
     TITLES = TITLE
END
ENTRY 2
BEGIN
     IF COUNT GE 1 THEN
     BEGIN
          Y_MIN(1) = MIN(Y1)
          Y_MAX(1) = MAX(Y1)
     END
     IF COUNT GE 2 THEN


BEGIN
     Y_MIN(2) = MIN(Y2)
     Y_MAX(2) = MAX(Y2)
END
IF COUNT GE 3 THEN
BEGIN
     Y_MIN(3) = MIN(Y3)
     Y_MAX(3) = MAX(Y3)
END
Y_MIN_VALUE = MIN(Y_MIN)
Y_MAX_VALUE = MAX(Y_MAX)
PLOT LABEL 5 (Y_MIN_VALUE. Y_MAX_VALUE)
X_MIN = MIN(DATES)
X_MAX = MAX(DATES)
PLOT LABEL 6 (X_MIN. X_MAX. DATES)
SORT(DATES. Y1. Y2. Y3)
!
! Print Plot Title under the Graph
!
PRINT 'P'. 'W(I'. CVT(2). ')'
PRINT CENTER (375. 420. TITLES. 9)
!
IF COUNT GE 1 THEN
     PLOT DATE_MULTILOG_LEGEND 3 (Y1)
IF COUNT GE 2 THEN
     PLOT DATE_MULTILOG_LEGEND 3 (Y2)
IF COUNT GE 3 THEN
     PLOT DATE_MULTILOG_LEGEND 3 (Y3)
!
WIDTH = X_LENGTH / 30
Y_MX(30) = 0
INCR I OVER DATES
BEGIN
     Y_MIN(1) = Y1(I) Y_MIN(2) = Y2(I)
     MX = MIN(Y_MIN)
     J = ((DATES(I) - X_REF) / WIDTH) + 1
     Y_MX(J) = 1000
     IF Y_MX(J) GT MX THEN
          Y_MX(J) = MX
END
INCR I OVER Y_MX
IF (I NE 1) AND (Y_MX(I) EQ 0) THEN
     Y_MX(I) = Y_MX(I -1)
OUTPUT_SEGMENT 1
PLOT HOUSEKEEP 2
END
ENTRY 3 (Y : VECTOR)
BEGIN
     PRINT 'T(BA2S[8.16])'
```

```
        PLOT LABEL 8 (Y)
        N = N + 1
        PRINT 'P', LXY(DATES(1), Y(1)),
            'W(I', CVT(COLOR(N)), ')'
        INCR I OVER DATES
        PRINT 'V', LXY(DATES(I), Y(I))
        PRINT 'W(R)'
        INCR I OVER DATES
        PRINT 'P', LXY(DATES(I)-5, Y(I)-9),
            'T', QUOTE(CHR(N))
    PRINT 'W(V)'
    !
    ! Prints Legend to Right Side of Plot
    !
        PRINT 'P', LXY(675,((360/(COUNT+1))) * N),
            'W(I', CVT(COLOR(N)), ')'
        PRINT 'V', LXY(675,((360/(COUNT+1))) * N),
            LXY(750,((360/(COUNT+1))) * N)
        PRINT 'W(R)'
        PRINT 'P', LXY(683, (((360/(COUNT+1) * N) - 8))),
            'T', QUOTE(CHR(N))
        PRINT 'P', LXY(708, (((360/(COUNT+1) * N) - 8))),
            'T', QUOTE(CHR(N))
        PRINT 'P', LXY(733, (((360/(COUNT+1) * N) - 8))),
            'T', QUOTE(CHR(N))
        PRINT 'W(V)'
        PRINT 'T(E)'
        PRINT CENTER (712, (((360/(COUNT+1) * N) + 10)),
            Y_LABEL(N), 9)
    END
    END_PLOT
```
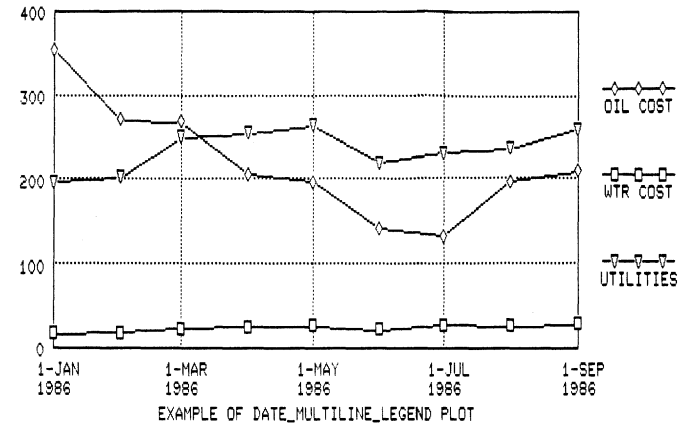

Figure 1 - Sample of Plot using DATE_MULTILINE_LEGEND
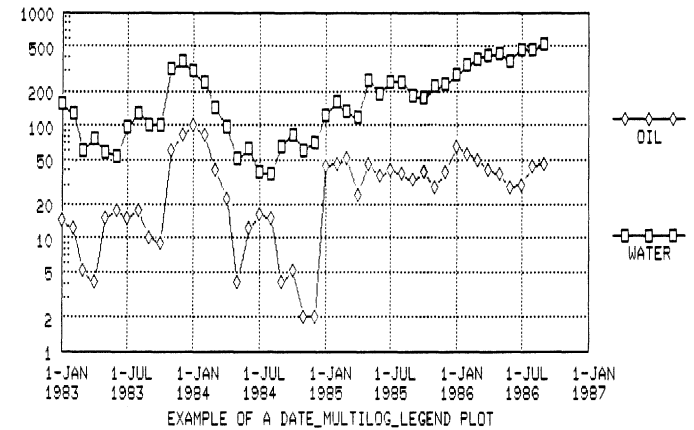
Figure 2 - Sample of Plot using DATE_MULTILOG_LEGEND

DECUS

edusig
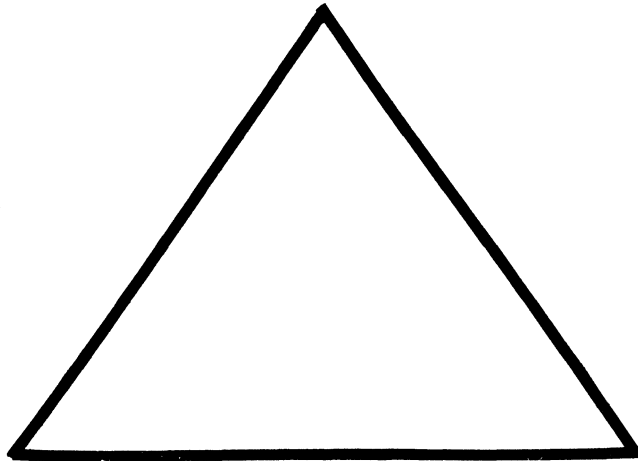
Fellow Readers:

Since I have taken the job of the infamous newsletter editor I have a lot more compassion for other Sig editors. Contending with the mail service and changing deadlines makes it impossible to look the least bit honorable or at all punctual. As they say in the movies "that's life in the big city". Believe, me I try.

Think about it! It's December, the time to think about mistletoe, presents and hot buttered rum. Sounds great! But as a newsletter editor I must put away my childish dreams and think about the spring Decus. Plans have already been laid to make it the best Decus ever in Nashville. I borrowed this PSS abstract from Don Fuhr. (Via the electron mail). I think you will find it worthy of your attention.

Maybe I'll write about spreadsheets and their applications. If any of you have a special application or spreadsheet you use, share it with us.

Until next time.

The Key School
534 Hillsmere Dr.
Annapolis, Md. 21401
Oct. 24, 1986

Fred Bell
EDUSIG
Taft College
29 Emmons Park Dr.
Taft, CA 93268

Dear Mr. Bell:

I have recently received information about EDUSIG. I am training to be the system manager of VAX 11/730 for a private pre-K through 12 school. I am in the process of setting up the system for school use. We plan to use the system for both business and academic purposes. I would like to receive information about educational software and business software designed for schools. If you have any information which many be of interest to me I would appreciate receiving it. I would also like to be one the mailing list for EDUSIG'S newsletter. Thank you for any assistance which you can provide.

Sincerely,

Deborah Povich

ADMINISTRATIVE SYSTEMS FOR EDUCATION

Are you satisfied with the administrative system at your educational institution? If not, are you considering a change? Are you wondering how to go about selecting a new system? This seminar can help solve these problems with an integrated set of useful tactics for assessing the administrative needs of an educational institution.

Much preliminary work should be done before beginning to research software vendor literature or hearing sales presentations. It is necessary first to decide what the institution and its component parts should do to improve administrative management. Furthermore, one must decide which of those functions can best be accomplished or improved by a new computer system. Only then can the market be intelligently searched.

Participants in this seminar will not merely receive a survey of available systems, but will participate in an in-depth discussion of effective preparatory steps for the system selection process. The cost of this seminar can be repaid many times over in time and dollar savings for any institution contemplating such a project.

Mr. Robert Green has a B.A. degree in Economics from California State University in Los Angeles and an Advanced Mathematics Degree from the University of Cambridge, England. He has held the position of Director of Corporate Information Systems for an international transportation firm, and presently has his own management consulting partnership. He specializes in financial and information systems planning, concentrating on the integration of information systems planning into the overall organizational master plan, serving both corporate and educational clients.

Attendees should have an interest in the acquisition of Administrative systems, although no special background is required.
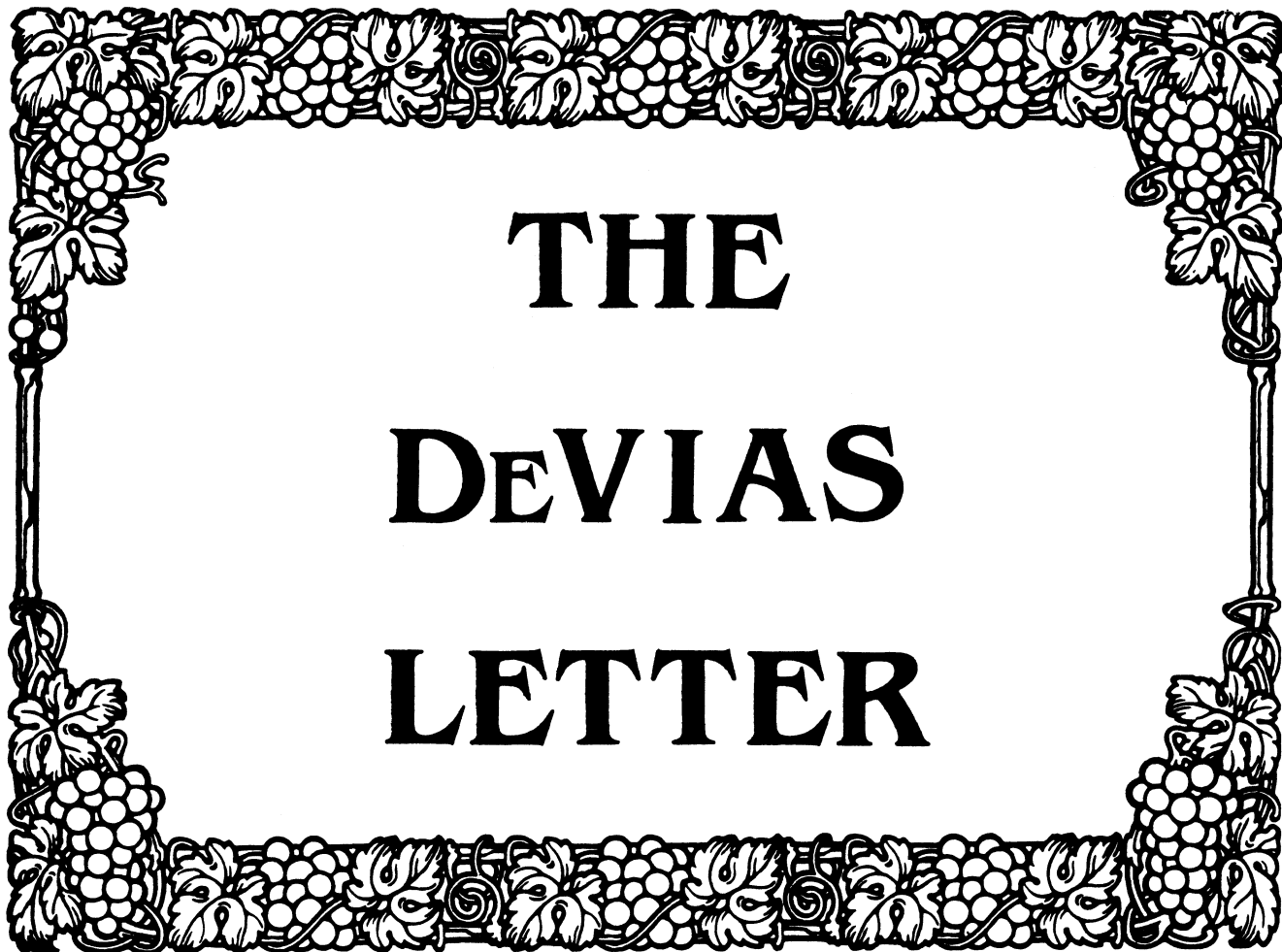
THE DeVIAS LETTER

CONTRIBUTION GUIDELINES

Contributions for the newsletter should be sent to:

Frank R. Borger
Michael Reese Medical Center
Department of Radiation Therapy
Lake Shore Drive at 31st St
Chicago, IL 60616

Contributions of letters, articles, important SPR's etc will be accepted in any form, (including notes jotted in pencil on gravy-stained tablecloths.) Contributions will be much more graciously accepted in one of the following formats:

1. Non machine readable sources, (SPR's etc,) should be reasonably dark to insure good photocopying. Text whatever should be the equivalent of 66 lines at 6 lpi, with 4-line top margin, 5-line bottom margin, left-margin 10, right margin 74 at 10cpi. If using a DEC LN03 for output, use left-margin 8. right margin 72.

2. Machine readable sources may be submitted on 9-track Mag-tape, (800,1600, or 6250 BPI,) DEC-tape II, DecMate floppies, or whatever. We're not fussy, we'll even accept paper tape or cards. Preferred format is DOS or BRU for tapes, Files-11 for DEC-tape II.

3. 1200 baud dial-up modems are available on our IAS system and our VAX, with various servers available. Give the editor a call at (312)-791-2515 (preferably later in the day,) to obtain access information, etc.

4. If long distance dialout is not possible on your system, we'll be willing to call your system and do the work, (unless you want to transfer the entire manual set at 300 baud.)

Any media sent to us will be promptly returned.

ASK THE DEVIAS WIZARD

If you have a problem you would like to submit to the Devias wizzard, write a letter or fill out a copy of a standard SPR and send it to the Editor at the above address. Answers to problems from members (or anyone) should also be sent to the Editor.

Dear IAS Enthusiast:

Surveillance Systems Division
Grumman-CTEC, Inc.
6862 Elm Street
McLean, VA 22091

As you all doubtless found out in the October '86 DEVIAS, John Roman has resigned as IAS SIG Chair, and I have agreed to replace him. The "official" point in time agreed to transfer the chairmanship was immediately after the San Francisco symposium. Personally, while I am glad to see John move on to more challenging opportunities, his absence will be felt in the IAS SIG.

Yet another symposia has run its course and left those of us who attended with much to ponder. Digital announced a new licensing policy, and aroused the ire of many participants. I don't want to repeat what I heard for fear of telling the tale incorrectly and stirring up even more of a ruckus. Just give your local DEC sales rep a call and ask him about it. We were all assured that the new policy had been promulgated to all DEC sales people, so they should know every thing you want to know about it.

As the symposia committee representative for IAS, I was busy throughout the week making sure the sessions would work out, and adding my new status as SIG Chair on top of that meant that I really didn't get to see much of the sights in San Francisco. However, I did get to ride on the cable cars, so I am content.

The sessions went well, and we were introduced to the new IAS Product Manager, Nancyfaye Autenzio. Tim Leisman, Bill Aupperlee, Rick Robles, Wayne Blair and Bob Mack comprised the remainder of the DEC contingent. Nancyfaye, in turn, was given her baptism of fire during the QA session. While she had a tough time smoothing out some tempers about the fact that RMS V2.0 had slipped to Update D, she definitely had her ducks in a row about the IAS System Logic Manual – NO WAY! Another fine tradition continues.

As I just mentioned, RMS V2.0 has slipped again, and DEC has decided to go ahead and field Update C without it. SORT V2 still has life. However, Update C will include the ASN utility, and a drastically re-written DEV utility. Among other things, ASN will allow us to dynamically create pseudo-devices, and DEV will now display more detail about a given device.

Finally, Lynda Roenicke of NOSC, San Diego has agreed to become the IAS Symposia Coordinator in my place. There are a few additional "hats" looking for volunteers to wear them. Among these are the Presymposia Seminar Coordinator and the SIG Librarian. If you are interested or just plain curious about what's involved, just give me a call and I'll be happy to give you a quick rundown.

I am also interested in identifying a person that would like to serve as a focus for IAS+. There are quite a few of these systems out there, and I think that they would appreciate a point of contact not only into DECUS, but with Digital as well.

Til Next Month,
Mike Robitaille

```
                       From the Editor's Terminal
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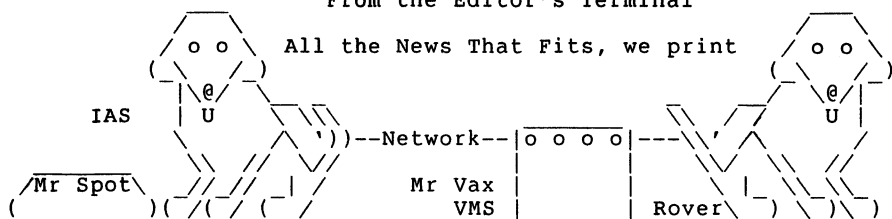
It's been a fun month. Now that DECUS is over and things are
settling down to a normal state of furor, I actually was able to
do some PROGRAMMING this month. Although the effects do not ap-
pear in this month's article on my conversion program on Reese
Basic, I actually got started again on the project.

I also spent some time on DECNET. (The latest version of VMS
DECNET actually got intelligent enough to realize that some op-
erating systems use C to request MCR or DCL, as a result, I can
now do a set host from VMS to IAS that works.) This is a bit of
a cluge, since the IAS HT driver does not support read with
prompt, read with special terminator, or set terminal charac-
teristics, so that some versions of MCR don't work, and our fan-
cy editing MCR cli doesn't work. The reverse option, using RMT
to set host to our VMS system is still in Limbo, and DEC can't
tell me why.

This month's program of the month is a very simple one, but one
no one should be without. Its a guide to dealing with the bad
file headers, (file header blocks that are unused, but still
have their file header bitmap bit indicating that they are in
use.) We don't use it often, but when we do, it saves a lot of
time and is much less prone to error. (I only wish that ZAP
would accept and indirect command file!)

After some thinking about the slippage in delivering RMS V2.0 to
update D, (when it was supposed to be a part of the initial re-
lease,) I have decided that its about time DEC committed itself
to a delivery date. If any of you DECNET IAS users out there
agree, give Nancyfaye a call or write her a letter.

By the time you read this, Thanksgiving will be over and the
Holiday weekends either just past or breathing down your neck.
In that spirit, I hope that you had much to be thankful for on
Thanksgiving, and that the spirit of the season will carry on
into the new year.

                        Till next year

Ten Years Ago Today

The Multi-Tasker contained information about some recent addi-
tions to the DECUS library.

o   11-281 GETBIN, a program to convert a binary PAPER TAPE into
     a task image. (Remember paper tape?) The program was only
     available on PAPER TAPE.

o   11-282 M.I.T. GARBAGE COLLECTION #1. Submitted by Glen Ev-
     erhart.   A collection of programs including a VT01 handler,
     (VT01 was a Tektronics storage scope, the first PDP11 graph-
     ic output device.) Also had a "black hole" handler, and the
     first release of DSKFIX, an absolute disk block patcher.
     Available on DECtape or floppy disks.

o   11-283 M.I.T. GARBAGE COLLECTION #2. Submitted by Glen Ev-
     erhart.   It included a version of TECO that could use the
     previously mentioned VT01 as its display device via a common
     mapped to the external page. There was even a version of
     spacewar. (Spacewar done in TECO, now that's something that
     todays VAX programmers would throw up their hands over, ed.)
     Program was also available on DECtape or floppy disks.

o   11-284 RSX-11D FOCAL. Submitted by Glen Everhart.   A ver-
     sion of FOCAL for the PDP11 that included extensions to do
     real-time I/O and CAMAC control. Available on DECtape and
     Floppies.

There was also a follow-up to a previous article on using the
traceback feature when using Macro subroutines in Fortran pro-
grams. The author (Joop F. Lanting, of the University of Am-
sterdam, the Netherlands) gave a very good description of su-
broutine linkage, argument passing, and use of traceback for the
person limited to using the FOR compiler (instead of F4P.)

The Program of The Month Club

One of the things that should be in the system manager's manual but isn't is a description of how to deal with bad file headers found by VFY. When they do occur we allways have to look back in old issues of the software dispatch to get the article on how to correct this problem.

We finally wrote the following small basic program and installed it on our system disk. Now whenever a crash occurs while a file is being deleted and leaves that file header corrupted, we use this program to enable us to ZAP the INDEX file to correct the index file bitmap.

LISTING OF DR3:[001,001]HEADERMAP.BAS;1 ON 16-NOV-86 AT 14:31:37

```
10 ! program to calculate bitmap block, word and bit number
11 ! corresponding to an entered file id number
20 print
30 print "Disk must be mounted '/UNL'"
40 print "ZAP>DDn:[0,0]INDEXF.SYS/AB"
60 print "3:nnnnnvvv"
65 print "clear bit to show header available, set to show used"
70 print "-bbb"
80 print "-x"
90 print
100 input "File ID number (octal) ";fi$
110 fi=oct(fi$)
120 fi=fi-1
130 hi=int(fi/8) : lo=fi-8*hi
140 print "Byte number = ";oct$(hi)
145 ma=2^lo
150 print " Bit mask    = ";oct$(ma)
160 goto 100
```

Macro 16 to Macro 32
A Tale of Two Systems

Frank R. Borger
Michael Reese Medical Center

Since things have been hectic here, and my schedule is slipping badly, I've decided to describe the programs for converting IAS macro to VMS macro. The programs are listed in the order of their operation on a file. Note that all programs may not be required for all sources, (i.e. the program to convert FPP would not be necessary if you do not use FPP instructions.) Also note that a few of the features of MRH BASIC, (the macro case conversion routine for example,) make things easier, but the programs could be easily re-written for BASIC-PLUS-II.

The first program does two things: It converts the source to lower case. It breaks large modules down into smaller modules by allowing the user to specify a new name at each occurrence of a ".sbttl" command.

LISTING OF DR2:[102,002]BREAK.BAS;4   ON 16-NOV-86 AT 12:53:59

```
10 !Program to break large modules down into small ones :
        ! 1 prompts for new file name at each .sbttl :
        ! 2 turns all text into lower case
20 dim a$[132]v,na$[20]v
30 input "Input file ";na$
40 load "LOWCAS.ATK"
50 open #3, na$+".MAC/LN:132" : if end #3 then 500
60 open #7, na$+".TXT/WR"
70 input "Output file";na$
80 open #4, na$+".MAR/LN:132/WR"
90 OU=4
100 input line #3, a$
110 if ou=7 then 200
115 call "LOWCAS"(a$,a$)
120 if pos(a$,"sbttl")1 then 170
125 print a$
130 input "New output file";na$
140 if len(na$)2 then 170
150 close 4
160 open #4, na$+".MAR/LN:132/WR"
170 if pos(a$,";+")=1 then let ou=7 : goto 200
180 print #4, a$
190 goto 100
200 print #7, a$
210 if pos(a$,";-")=1 then let ou=4
220 goto 100
500 close
510 stop
```

The second program is a variation of the first. For the first program, you had to go all the way thru a large file. In certain cases one might want to extract a small piece of a large program and throw away the rest. This variation of BREAK does that.

```
LISTING OF DR2:[102,002]SEARCH.BAS;4     ON 16-NOV-86 AT 12:53:59
10 !Program to break large modules down into small ones :
            ! 1 prompts for new file name at each .sbttl :
            ! 2 turns all nto lower case
            ! 3 does initial text search
20 dim a$[132]v,na$[20]v,ck$[20]v,an$[1]
25 set upper on
30 input "Input file ";na$
35 input "Search for ";ck$
40 load "LOWCAS.ATK"
50 open #3, na$+".MAC/LN:132" : if end #3 then 500
60 open #7, na$+".TXT/WR"
70 input "Output file";na$
80 open #4, na$+".MAR/LN:132/WR"
90 OU=4
92 input line #3 a$ : if pos(a$,ck$)1 then goto 92
93 print a$
94 print "Found ";ck$ " start output "; : input an$
95 if an$="Y" then goto 110
96 goto 92
100 input line #3, a$
110 if ou=7 then 200
115 call "LOWCAS"(a$,a$)
120 if pos(a$,"sbttl")1 then 170
125 print a$
130 input "New output file";na$
140 if len(na$)2 then 170
150 close 4
160 open #4, na$+".MAR/LN:132/WR"
170 if pos(a$,";+")=1 then let ou=7 : goto 200
180 print #4, a$
190 goto 100
200 print #7, a$
210 if pos(a$,";-")=1 then let ou=4
220 goto 100
500 close
510 stop
```

This program changes all the standard instructions, to VAX format. It changes MOV to MOVW, ADD to ADDW, etc. Depending on your choice of default format, one might want to change it to change MOV to MOVL, etc. It also flags the four instructions, ASL, ASR, ROL and ROR with a ???? because these cannot be easily converted. The programmer is left to himself to decide how to convert these instructions. (Sorry about that folks.)

```
LISTING OF DR2:[102,002]MOV.BAS;37     ON 16-NOV-86 AT 12:53:25
10 ! Program to change all mov, add etc to movw, addw
20 dim in$[8]v(40),ou$[8]v(40),ln$[132]v,lo$[132]v
25 dim na$[30]v,ar$[10]v,ll$[132]v
```

```
30 set upper on : input "Name ";na$ : set upper off
40 open #3, na$+".MAR/LN:132"
50 open #4, na$+".MAR/LN:132/WR"
60 if end #3 then 400
100 in$(1)="    mov    " : ou$(1)="    movw    "
105 in$(2)="    add    " : ou$(2)="    addw    "
110 in$(3)="    sub    " : ou$(3)="    subw    "
115 in$(4)="    cmp    " : ou$(4)="    cmpw    "
120 in$(5)="    bic    " : ou$(5)="    bicw2   "
125 in$(6)="    bis    " : ou$(6)="    bisw2   "
130 in$(7)="    bit    " : ou$(7)="    bitw    "
135 in$(8)="    inc    " : ou$(8)="    incw    "
140 in$(9)="    dec    " : ou$(9)="    decw    "
145 in$(10)="   clr    " : ou$(10)="   clrw    "
150 in$(11)="   tst    " : ou$(11)="   tstw    "
155 in$(12)="   br     " : ou$(12)="   brw     " :! Branch if
160 in$(13)="   beq    " : ou$(13)="   beql    " :! Z=1
165 in$(14)="   bne    " : ou$(14)="   bneq    " :! Z=0
170 in$(15)="   blt    " : ou$(15)="   blss    " :! (N.OR.Z)=1
175 in$(16)="   bmi    " : ou$(16)="   blss    " :! N=1
180 in$(17)="   bgt    " : ou$(17)="   bgtr    " :! > signed
185 in$(18)="   ble    " : ou$(18)="   bleq    " :! = signed
190 in$(19)="   bge    " : ou$(19)="   bgeq    " :! >= signed
195 in$(20)="   bhi    " : ou$(20)="   bgtru   " :! hi unsigned
200 in$(21)="   blo    " : ou$(21)="   blssu   " :! lo unsigned
205 in$(22)="   blos   " : ou$(22)="   blequ   " :! los unsigned
210 in$(23)="   bhis   " : ou$(23)="   bgequ   " :! hos unsigned
215 in$(24)="   call   " : ou$(24)="   jsb     "
220 in$(25)="   jsr  pc," : ou$(25)="      jsb      "
221 in$(26)="   return " : ou$(26)="   rsb     "
222 in$(27)="   rts  pc" : ou$(27)="   rsb     "
223 in$(28)="   sob    " : ou$(28)="   sobgtr  "
224 in$(29)="   neg    " : ou$(29)="   mnegw   "
225 in$(30)="   negb   " : ou$(30)="   mnegb   "
230 in$(31)="   com    " : ou$(31)="   mcomw   "
235 in$(32)="   comb   " : ou$(32)="   mcomb   "
240 in$(33)="   asl"  :! rest are oh-oh ones to be flagged
245 in$(34)="   asr"
250 in$(35)="   rol"
255 in$(36)="   ror"
300 input line #3, lo$
305 if pos(lo$,";")=1 then print #4, lo$ : goto 300
315 y=1
320 x=pos(lo$,in$(y)) : if x>0 then 340
325 y=y+1 : if y37 then 320
330 goto 395                  : ! no match, just print
340 if y33 then 350           : ! if subsitution needed, do it
345 lo$="???"+lo$             : ! flag no-no line
346 goto 390                  : ! and print it
350 lo$=sbs$(lo$,1,x-1)+ou$(y)+sbs$(lo$,x+len(in$(y)))
355 if y29 then 390           : ! if necessary, add 2nd operand
360 x=x+len(ou$(y))
365 y=pos(lo$," ",x) : if y1 then let y=pos(lo$," ",x)
370 if y1 then let y=len(lo$)
375 ar$=seg$(lo$,x,y-1) : ll$=sbs$(lo$,y)
```

```
380 lo$=sbs$(lo$,1,x+len(ar$)-1)+","+ar$+11$
390 x=pos(lo$,"@sp") : if x1 then 395
391 lo$=sbs$(lo$,1,x-1)+"(sp)"+sbs$(lo$,x+3)
395 print lo$
396 print #4, lo$
397 goto 300
400 close
410 goto 30
```

This program is used to change ".word" ".byte" etc directives to
include an optional ^o radix control before the variable itself.
This is necessary because default radix for the VAX is base 10.

LISTING OF DR2:[102,002]WORD.BAS;12   ON 16-NOV-86 AT 12:54:08
```
10 ! Program to change all .word, .byte and = :
            ! optionally puts in a ^o
20 dim in$[8]v(40),ou$[9]v(40),ln$[132]v,lo$[132]v
25 dim na$[30]v,ar$[10]v,11$[132]v
30 set upper on : input "Name ";na$ : set upper off
40 open #3, na$+".MAR/LN:132"
50 open #4, na$+".MAR/WR/LN:132"
60 if end #3 then 400
100 in$(1)=".word      " : ou$(1)=".word        ^o"
105 in$(2)=".byte      " : ou$(2)=".byte        ^o"
110 in$(3)="=" : ou$(3)="=^o"
120 set upper on
300 input line #3, ln$
301 !Don't convert comments, RNO source is there
305 if pos(ln$,";")=1 then print #4,ln$ : goto 300
310 y=1
320 x=pos(ln$,in$(y)) : if x>0 then 340
325 y=y+1 : if y4 then 320
330 print #4, ln$ : goto 300
340 print ln$;chr$(7);" ";
350 input "Insert ^o (Y/N) ";an$
360 if an$="Y" then 380
370 print ln$ : print #4, ln$ : goto 300
380 lo$=sbs$(ln$,1,x-1)+ou$(y)+sbs$(ln$,x+len(in$(y)))
390 print lo$ : print #4, lo$
395 goto 300
400 close
410 exit
```

This program is used to optionally convert variables of the form
"#nnn" to the form #^onnn, since the default radix for VAX macro
is decimal.

LISTING OF DR2:[102,002]POUND.BAS;5   ON 16-NOV-86 AT 12:53:41
```
10 ! Program to take macro file and edit all #xxxx numbers
20 dim in$[8]v(40),ou$[9]v(40),ln$[132]v,lo$[132]v
25 dim na$[30]v,ar$[10]v,11$[132]v
30 set upper on : input "Name ";na$ : set upper off
40 open #3, na$+".MAR/LN:132"
50 open #4, na$+".MAR/WR/LN:132"
60 if end #3 then 400
120 set upper on
300 input line #3, ln$
301 !Don't convert comments, RNO source is there
305 if pos(ln$,";")=1 then print #4,ln$ : goto 300
320 x=pos(ln$,"#") : if x>0 then 340
330 print #4, ln$ : goto 300
340 print ln$;chr$(7);" ";
350 input "Insert ^o (Y/N) ";an$
360 if an$="Y" then 380
370 print ln$ : print #4, ln$ : goto 300
380 lo$=sbs$(ln$,1,x)+"^o"+sbs$(ln$,x+1)
390 print lo$ : print #4, lo$
395 goto 300
400 close
410 exit
```

This program is used to change one and two character ascii char-
acters to the appropriate octal value, since VAX macro does not
support the #'A or #"AA variable format.

LISTING OF DR2:[102,002]ASCII.BAS;5   ON 16-NOV-86 AT 12:52:51
```
10 ! Program to take macro file and change all #' and #" code
20 dim in$[8]v(40),ou$[8]v(40),ln$[132]v,lo$[132]v
25 dim na$[30]v,ar$[10]v,11$[132]v
30 set upper on : input "Name ";na$ : set upper off
40 open #3, na$+".MAR/LN:132"
50 open #4, na$+".MAR/WR/LN:132"
60 if end #3 then 400
65 in$(1)="#'"
70 in$(2)="#"+chr$(34)
300 input line #3, ln$
301 !Don't convert comments, RNO source is there
305 if pos(ln$,";")=1 then print #4, ln$ : goto 300
310 x= pos(ln$,in$(1)) : if x>1 then 330
320 x= pos(ln$,in$(2)) : if x>1 then 360
325 goto 390
330 print ln$
335 y=asc(sbs$(ln$,x+2))
340 ln$=sbs$(ln$,1,x)+"^o"+oct$(y)+sbs$(ln$,x+3)
350 goto 380
360 print ln$
365 y=asc(sbs$(ln$,x+3))*256+asc(sbs$(ln$,x+2))
370 ln$=sbs$(ln$,1,x)+"^o"+oct$(y)+sbs$(ln$,x+4)
380 print ln$
390 print #4, ln$
395 goto 300
400 close
410 exit
```

This program changes all MUL and DIV commands to their VAX equi-
valents.

LISTING OF DR2:[102,002]MATH.BAS;2   ON 16-NOV-86 AT 12:53:17
```
10 ! Program to change all mul, div etc commands
20 dim in$[8]v(40),ou$[8]v(40),ln$[132]v,lo$[132]v
```

```
25 dim na$[30]v,ar$[10]v,11$[132]v
30 set upper on : input "Name ";na$ : set upper off
40 open #3, na$+".MAR/LN:132"
50 open #4, na$+".MAR/WR/LN:132"
60 if end #3 then 400
100 in$(1)="     mul     " : ou$(1)="     mulw2    "
105 in$(2)="     div     " : ou$(2)="     divw2    "
300 input line #3, ln$
301 !Don't convert comments, RNO source is there
305 if pos(ln$,";")=1 then print #4, ln$ : goto 390
315 y=1
320 x=pos(ln$,in$(y)) : if x>0 then 340
325 y=y+1 : if y3 then 320
330 print #4, ln$ : goto 300
340 x1=x+len(in$(y))
350 ln$=sbs$(ln$,1,x-1)+ou$(y)+sbs$(ln$,x1)
360 print ln$
390 print #4, ln$
395 goto 300
400 close
410 exit
```

This program converts all floating point code to the VAX equiva-
lent.

```
LISTING OF DR2:[102,002]FLOAT.BAS;11    ON 16-NOV-86 AT 12:53:11
10 ! Program to change all necessary fpp commands
20 dim in$[8]v(40),ou$[8]v(40),ln$[132]v,lo$[132]v
25 dim na$[30]v,ar$[10]v,11$[132]v
30 set upper on : input "Name ";na$ : set upper off
40 open #3, na$+".MAR/LN:132"
50 open #4, na$+".MAR/WR/LN:132"
60 if end #3 then 400
100 in$(1)="     ldf     " : ou$(1)="     movf     "
105 in$(2)="     stf     " : ou$(2)="     movf     "
110 in$(3)="     subf    " : ou$(3)="     subf2    "
115 in$(4)="     addf    " : ou$(4)="     addf2    "
120 in$(5)="     mulf    " : ou$(5)="     mulf2    "
125 in$(6)="     divf    " : ou$(6)="     divf2    "
135 in$(7)="     ldcif   " : ou$(7)="     cvtwf    "
140 in$(8)="     ldcid   " : ou$(8)="     cvtwd    "
145 in$(9)="     stcfi   " : ou$(9)="     cvtfw    "
150 in$(10)="    stcdi   " : ou$(10)="    cvtdw    "
155 in$(11)=".flt2" : ou$(11)=".float"
156 in$(12)="     abs"
160 in$(13)="     mod"
165 in$(14)="     cfcc    "
170 in$(15)="     setf    "
175 in$(16)="     setd    "
180 in$(17)="     seti    "
185 in$(18)="     setl    "
300 input line #3, ln$
301 !Don't convert comments, RNO source is there
305 if pos(ln$,";")=1 then print #4, ln$ : goto 300
315 y=1
```

```
320 x=pos(ln$,in$(y)) : if x>0 then 330
325 y=y+1 : if y19 then 320
326 print #4, ln$ : goto 300
330 if y12 then 340
332 if y14 then print #4,";????";ln$ : goto 300
335 print #4,";";ln$ : goto 300
340 x1=x+len(in$(y))
350 ln$=sbs$(ln$,1,x-1)+ou$(y)+sbs$(ln$,x1)
360 print ln$
390 print #4, ln$
395 goto 300
400 close
410 goto 30
```

That's all for this month folks, the trials and tribulations will
continue next time, (that is if I can get back to the project.)
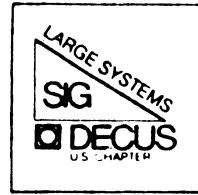
DIGITAL EQUIPMENT COMPUTER USERS SOCIETY
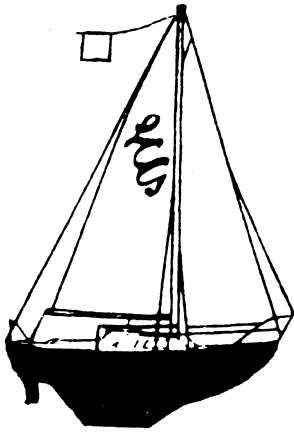
AT LARGE

The Newsletter of the Large Systems SIG

Contributions

Contributions and suggestions for this newsletter are constantly needed. Articles, letters, technical tips, or anything of interest to our SIG are greatly appreciated. The editor prefers submissions be made electronically, but magnetic tape and hard copy will be accepted.

Send your contributions to:

ARPA: ctp@sally.utexas.edu
UUCP: ctp@ut-sally.uucp ({harvard,ihnp4,seismo}!ut-sally!ctp)
CIS: 75226,3135
BITNET: use the Wisconsin Gateway

or if you must, use the U. S. Mails:

Clyde T. Poole
The University of Texas at Austin
Department of Computer Sciences
Taylor Hall 2.124
Austin, Texas 78712-1188

From the Editor

Clyde T. Poole

I want to apologize to everyone in our SIG. Due to my disorganization, the AT LARGE for November didn't make it to DECUS in time for the printing deadline. It was a good issue and I will be working the articles that you missed into this and future issues. I will not promise that it will never happen again, but I will do my best.

Please take special note of the "Chairperson's Report" and the letters in the "General Interest" section at the front of this issue of the combined newsletters. There has been another change in the Digital software license transfer policy since San Francisco DECUS. All members should acquaint themselves with this change and take appropriate action.

This newsletter marks the premiere of a new occasional feature called "From the TOPS-20 Mailing List." Clive Dawson of MCC and the Large Systems SIG Steering Committee has volunteered to extract the most intersting messages from the DARPA Internet mailing list of TOPS-20 experts for inclusion here. Most of our membership never see the information that is exchanged on this mailing list. I hope you find it as interesting as I have.

Chairperson's Report

Leslie Maltz

Last month I reported to you the events that occurred at the Fall Symposium, with considerable detail devoted to the activities related to the policy announcement on software licensing. I'd like to keep you posted on the activities that have occurred since that time. First, let me refer you to my article in the previous month's newsletter for details on the policy change. In summary, as per the announcement at the Symposium, current installations wishing to upgrade systems would have to re-buy software as if they had never purchased the products. Also, when selling systems to another installation or a dealer, the software licenses would not be transferable. All of this was to commence on 1/1/87. For further details, contact you sales representative or give me a telephone call.

A modified version of the policy has recently been circulated to the sales offices. [Editor's Note: See the letter in the section entitled "General Interest" at the front of this issue of the combined newsletters.] It contains some changes, but, in my own opinion, not nearly enough. It states that sites which plan to upgrade systems will continue to be able to pay only the delta cost between price tiers, and will not have to totally re-buy what they had previously purchased. Also, the commencement date was pushed back two months. Nothing was done about the third party sales.

I don't believe that this new version of the licensing policy is much better than the previous one. It still leaves us high and dry in the middle of our budget year without any relief. Two months' postponement is totally inadequate. Plans and budgets have a much longer lead time. It moves the date slightly, but not as far as the next symposium when further open discussion could occur. This new policy doesn't touch the third party sales issue, so no change has occurred for such sales.

I strongly urge you, your company, local user groups, and anyone else concerned with this policy (and that should be ALL current installations) to share your thoughts and comments with Digital immediately.

These comments should include your reactions to the policy change, its timing and implications to your site. I urge you to put these comments in writing to Digital, with copies to appropriate bodies such as the DECUS Board of Directors, the SIG Newsletter Editor (Clyde Poole), and myself. If you wish, you can share your comments via written communication, telephone, or electronic mail using BITNET or ARPANET. Whatever the media, timing is important! The extension of the commencement date gives us very little time to respond, and we need your comments in order to represent your views.

From the TOPS-20 Mailing List

Abstracted by: Clive Dawson

The following messages are selections taken from the TOPS-20 interest group, which is a mailing list maintained on the DARPA Internet. These items appear for information purposes only. Neither DECUS nor the authors assume any responsibility regarding the usefulness or accuracy of the information herein.

Date: Wed 20 Aug 86 00:42:08-PDT
From: Mark Crispin <MRC%PANDA@SUMEX-AIM.ARPA>
Subject: DEC's PDP's

A number of people have requested my list of all the DEC PDP's, so I thought I'd bore you all with it.

The PDP-1 was an 18 bit machine. It was DEC's first computer, and some of the first timesharing systems were designed for it. It's also unique in being one's complement; all later DEC computers were two's complement. Some machines, such as one of MIT's PDP-1s, were in operation until the late '70s.

The PDP-2 was a designation reserved for a 24 bit machine, but as far as I can tell it was never even designed and definitely none were ever built.

The PDP-3 was a 36 bit machine that was designed but never built by DEC. However, Scientific Engineering Institute built one in 1960.

The PDP-4 was an 18 bit machine that was intended to be a cheaper, slower alternative to the PDP-1. It was so slow that it didn't sell well, although it was interesting for its auto-incrementing memory registers. It was not program-compatible with the PDP-1, but its instruction set was the basis of DEC's future 18 bit computers.

The PDP-5 was a 12 bit machine designed to be a small laboratory system. It used many of the ideas in the LINC (Laboratory Instruction Computer, designed by Lincoln Labs at MIT, some of which were built by DEC).

The PDP-6 was a 36 bit machine and the first machine to implement the most wonderful computer architecture known to man. It was rather expensive and difficult to maintain, and not many were sold. As a result, DEC cancelled 36 bit computers for what was to be the first of many times.

The PDP-7 was an 18 bit machine and the successor to the PDP-4. It was a major price/performance win over the PDP-4 and the first DEC computer to use wire-wrapping.

The PDP-8 was a 12 bit machine and the successor to the PDP-8 [Editor's Note: This is the way it came off the network. I assume he means PDP-5]. It basically defined the term "minicomputer", and went through several incarnations. The original PDP-8 was followed by the extremely slow PDP-8/S (as bad as the PDP-4 was to the PDP-1, but at least the /S was program-compatible). DEC recouped with the PDP-8/I (using MSI integrated circuits) and the smaller PDP-8/L, and somewhat later came out with the "Omnibus 8" machines – the PDP-8/E, the PDP-8/F (a half-sized version of the PDP-8/E), the PDP-8/M (an OEM version of the PDP-8/F), and the final machine, the single board PDP-8/A. The PDP-8/A still exists after a fashion as a current DEC product.

The PDP-9 was an 18 bit machine and the successor to the PDP-7. It had a faster memory than the PDP-7 and was the first microprogrammed DEC computer. Modulo a 300 wire(!) ECO required in the first machines, the PDP-9 was a reliable machine and some are still in operation today. There was a short-lived PDP-9/L.

The PDP-10 was a 36 bit machine and the successor to the PDP-6. It is especially noted for its software, which represents the pinnacle of DEC software engineering and has never been equalled. The first KA10, largely installed in universities, created a whole generation of timesharing hackers. The follow-on KI10, with paging and using IC's instead of discrete components but otherwise unexciting, mostly was sold to commercial organizations. The KL10 went through several incarnations and is today the most representative of this marvelous machine. The KS10 was a small, low-speed (approximately KA10 performance) processor which was DEC's last successful implementation of this architecture.

The PDP-11 was a 16-bit machine that went through more implementations and operating systems than can be counted. Presently it superceded the less powerful PDP-8 as the representative minicomputer. While the PDP-11 used octal, it was in its deep heart of hearts a hexidecimal machine, and the first indicator of the creeping IBMification of DEC that took full fruit in the VAX. [I can hear the flames now...] Rather than fight it the customers loved it; more PDP-11's have been sold than any other DEC computer (possibly more than all the others combined).

The PDP-12 was a 12 bit machine and the successor to the PDP-8. It combined a LINC and a PDP-8 type processor in the same box and basically was a new model of the LINC-8 which was the same thing.

No PDP-13 was ever designed or built. Even DEC gets superstitious.

The PDP-14 was a 12 bit machine with a 1 bit register. It was used as a process control engine in applications that were felt to be too rugged for a PDP-8, and basically replaced a set of relays. Later DEC made PDP-8's suitable for this sort of thing, but it didn't stop them from the ultimate silliness of building a PDP-14 that used a PDP-8 as its console processor!

The PDP-15 was an 18 bit machine and the final one of this design built by DEC. More PDP-15's were built and sold than any of the others, and it went through several incarnations including some which used a PDP-11 as a front end. Apparently the cancellation of the PDP-15 came as a great surprise to the "Tiger Team" who worked on it, although considering its general ungainliness compared to comparable performance PDP-11's it wasn't surprising. In many ways the PDP-15 died for the same reason the PDP-10 did.

The PDP-16 was a "roll your own" 16 bit machine based on various "building blocks". Every PDP-16 was essentially custom-designed by the customer. It got a fair amount of attention when it was announced but evidently didn't sell very well.

There was no PDP-17 or any other designator. DEC apparently decided that "PDP" had a pejorative ring to it.

Date: Mon 25 Aug 86 17:18:11-PDT
From: Bruce Tanner <CERRITOS@USC-ECL.ARPA>
Subject: Tape drive configuration

We are going to replace 3 TU77s on 2 2060s with TU78s. We think that the cheapest and most flexible configuration is two dual-ported TU78 masters connected to both systems, giving us zero, one or two tape drives on either machine. Our CEs aren't very enthused about this configuration, without any real reason why it won't work. I recall that dual ported TU78s were discussed a couple of months ago and were said to work fine. Is there any problem with two TM78 controllers on an RH20? I would assume TOPS-20 would have an MTA and MTB set of devices.

Has anyone tried this or know why it won't work?
Thanks,
-Bruce

Date: Tue 26 Aug 86 00:19:10-EDT
From: Ken Rossman <sy.Ken@CU20B.COLUMBIA.EDU>
Subject: Re: Tape drive configuration

I probably started the discussion you were referring to...

We plan to run 3 2065's and one VAX8650 (Ultrix) from four TU78's, which are set up as two masters and two slaves. The two masters will, of course, each have a dual port kit. We currently have one 2065 and the 8650 sharing one set of 78's, and this seems to work OK, except that you have to do things in the right order when switching the drives from the 8650 to the -20 (especially if the -20 rebooted while the drives were switched to the 8650). You need to first make sure there is no tape on the drive you are switching from the 8650 to the -20, then you need to switch it, then you need to put the tape up, THEN you need to PROBABLY set that tape drive available from OPR again (if you go through the mount system). We've seen it happen several times now that OPR will refuse to set a drive available even after the thumbwheel has been switched because MOUNTR doesn't yet believe it's there. A tape has to go up on the drive first, so that the controller "pings" the channel (I guess that's about as close a description of what I think is happening as I am technically capable of right now), so that MOUNTR knows it's there.

Now, back before the 8650 came, we had those drives dual ported between two -20's, and we had problems when one system crashed and reloaded while the other system had the drives in use. I understand this is because the drive was busy at the time TOPS-20 pinged all its devices on the channel, and the controller didn't answer the ping so no controller or device blocks were set up in the monitor at the time. Try as we would at the time, we could not get the drives to be visible on the newly loaded system unless we reloaded. Since then, we just left the situation alone and didn't use those drives dual ported between two -20's.

I was told back when we discussed this on the list awhile back that this was really a non-problem, and that if I just put a tape up with the drive switched to the proper system, and readied the drive, TOPS-20 would wake up and realize it was there finally. This was NOT my experience with the 78's dual-ported between two -20's awhile back (though I might have done something wrong)... however, we have had no problems along these lines other than the ones mentioned above with the drives ported between a -20 and the 8650. Seems to work fine that way.

I *was* told, though, that I should not use thumbwheel position 2, which is the actual DUAL port position (drives visible by BOTH systems at the same time). I guess the software probably can't handle this (though in TOPS-20 if you keep track of where the drives are, you can just set them unavailable on one system and available on the other, and software regular them that way). Anyway, we just switch them back and forth physically using thumbwheel positions 0 and 1 to change systems.

/Ken

Date: Tue 26 Aug 86 00:21:05-EDT
From: Ken Rossman <sy.Ken@CU20B.COLUMBIA.EDU>
Subject: Re: Tape drive configuration

Oh, also, for a time, we had the 78's set as MTB's on the "other" system (the -20 that they weren't NORMALLY connected to) because that system had 77's on it also. Perhaps this was a source of some of our "drive not seen" problems, but we WERE able to use both the 77's and the 78's on the SAME system, same channel, no problem, as I remember.

/Ken

Date: Mon 25 Aug 86 22:05:04-PDT
From: Bob Knight <KNIGHT@SRI-NIC.ARPA>
Subject: Re: Tape drive configuration

why have two masters? one master dual-ported with a slave will work just fine...

bob

Date: Tue 26 Aug 86 13:30:37-PDT
From: Bruce Tanner <CERRITOS@USC-ECL.ARPA>
Subject: Re: Tape drive configuration

The reason for two masters is (1) you can run one drive on both machines at the same time and (2) there is no single point of failure that will knock all your tape drives out. And we would treat the drives like dual-ported disks, i.e. never leave them in the A/B position, but mount and dismount (set available/unavailable) the units.

-Bruce

Date: Tue, 26 Aug 1986 07:51 EDT
From: Mark H. Wood <IMHW400%INDYCMS.BITNET@WISCVM.WISC.EDU>
Subject: TU78s dual-ported between '20s

We have been doing this for several years here, with few problems. We DO use the thumbwheels rather than SET [UN]AVAILABLE. There is a patch to PHYM78 that makes the lost-drives-on-reboot problem happen much less often: replace

    INIUNI+5/   TRNN T1,240

with

    INIUNI+5/   TRNN T1,DI.PRS

which causes the initialization code to ask the drive, "are you present," instead of, "are

you available or in maintenance mode?" I SPR'ed this in 1984 (20-20370, 1-Nov-84 p. 4-14) but DEC has been unable to reproduce the problem. If this patch helps anyone, I'd appreciate it if you'd tell DEC.

Date: Wed 3 Sep 86 04:08:43-PDT
From: Mark Crispin <MRC%PANDA@SUMEX-AIM.ARPA>
Subject: LINK hint

If you are having problems with LINK looping in its SYCHR1 routine, try adding a /COUNTER to your LINK commands after loading all your REL files and look for a PSECT overlap. It appears that LINK doesn't report PSECT overlaps until well into the /GO processing and the SYCHR1 endless loop bug will bite you long before that.

Date: Wed 10 Sep 86 14:51:05-CDT
From: Clive Dawson <AI.CLIVE@MCC.COM>
Subject: DELNI Strangeness

Here's a bit of info to add to the general folklore:

We moved to a new building last week, and after putting everything back together, we found that TELNET connections from our Sun workstations to our DEC-20 (they're on separate Ethernets, gateway is a Sun) were suffering from horribly poor throughput. Echo delays ranged from 1 to 10 seconds, with no load to speak of on any of the systems or the nets.

After being stumped for a couple of days, we finally realized that the only thing that had changed was that the Sun gateway and the DEC-20 were now sharing the same DELNI, whereas before they had been on two different DELNIs. We made a quick switch and put the Sun onto its own transceiver two meters away from the DELNI's transceiver. The results were immediate and dramatic. Echoing delays disappeared completely and users were once again happy.

Now the obvious question:

Does anybody have an explanation? Is there something fundamentally different about intra-DELNI communication that could cause such enormous performance problems?

Thanks,

Clive

Date: Thu, 11 Sep 86 19:58:36 edt
From: leong@andrew.cmu.edu (John Leong)
Subject: Re: DELNI Strangeness

I don't really know what specifically is your problem with the DELNI. However, one thing you may care to check is this :

The DELNI (and for that matter, almost all multiport transceiver in the market) does not handle "heart beat" correctly. For all practical purposes, heart beat is a kind of acknowledgment from the transceiver to the station. Within a very short period of time after the transceiver finished sending the packet into the coax cable, it issue a heart beat signal on the collision pairs of the transceiver cable - essentially saying "all's well". In the case of the DELNI, this signal is (mistakenly) fanned out to ALL attached stations.

The station doing the transmit will know it is a heart beat. However, the other attached stations will treat it as an asynchronous collision notification. Most station will ignore it but I don't know about the DEC-20.

However, definitely, do not attached a repeater to a DELNI. Repeater will not toss away heart beat. It will act on it and generate collision reinforcement (jam) on the other side!!! The result is excessive collisions. Very bad news to the overall band width availability.

John Leong

European DECUS 1986 Activities Hamburg

Rolf Nordhagen

The Hamburg symposium was highly successful in establishing new directions towards a European Large Systems SIG. Already activities are under way in several European local chapters, notably in the UK, in Holland and the Nordic area.

In the VAX stream of sessions, a session titled "VAX users meets the LCG" focused on the issues of separating off a Large Systems activity from mainstream VAX. The New Directions for LCG users was presented. This brought forward a number of very positive responses from large system VAX users present at the meeting. Although the general turnout was moderate (around 40) hands raised upon request showed a measurable amount (approximately 10) of VAX sites present without a 10/20 background.

Two sessions in the 10/20 stream focused on migration and coexistence: A "Migration TOPS/VMS" workshop with considerable user interaction, and a session "Experience with Large Timesharing User Bases on VAX/VMS Systems". Particularly the last session drew some VAX attendance, and a number of important issues relating to management and user handling in the VMS environment was raised. It was clearly brought forward that these issues had up to now received little attention in the mainstream VAX world. Thus SIG activities relating to these and other Large System aspects of VAX/VMS were welcome.

The 10/20 Business meeting was aimed at bringing the SIG forward into the new directions. The chairman's paper was presented and well received. The activities with identical aims in progress in national chapters further strengthen the need for an European wide effort. A forum for large system issues is also supported by DIGITAL. The new directions actively pursued by the Large Systems SIG in the U.S. DECUS Chapter was considered a lead to follow. It was unanimously agreed to apply to the European DECUS Council for a name change for the SIG, to: The European Large System SIG.

To strengthen the Steering Committee in the VAX area, it was agreed to coopt 4 members from the high end VAX user community. As volunteers from several national groups had come forward in previous sessions, the Steering Committee was asked to act on this issue as soon as possible.

The present chairman volunteered to take on the responsibility for another year, and was reelected.

In the ongoing Menu activity, the cooperation from the U.S. SIG was gratefully acknowledged. The efforts by Axel Rau to present the European view to be included with the U.S. input to DIGITAL was accepted as the best way at this late moment for influencing the TOPS-10/20 process. In addition, the SIG's responsibility to secure ongoing support for the 10/20 community for the remaining lifetime of their machines, was emphasized.

Future activities would be to actively secure input to the session planning for the coming spring meetings at the national chapter level, and for the 1987 Symposium in Rome. This was further discussed by the Steering Committee at a wrap-up meeting called the following day with the 4 coopted members attending. The coopted members were urged to give their input on VAX issues. Further organizational issues were planned to be covered in a forthcoming meeting of the full Steering Committee to be called soon. Moreover, cooperation with the mainstream VAX activities would be an important issue. Appointment of DIGITAL representatives to represent the large system VAX activity was urgently called for, both on the European level and on the national chapter levels. Further activities given priority was newsletter articles aimed at the Large System users in the VAX area, and pursuing the work on a Menu/SIR aimed at Large Systems, and separate from mainstream VAX SIR.

The Hamburg 1986 DECUS Symposium can clearly be regarded as a break-through for Large System activities in Europe. The inspiration for pursuing the new directions is gratefully acknowledged as due to the input received from the U.S. Large System SIG sessions during the U. S. Spring DECUS 1986 in Dallas.

TOPS-20 to UNIX? Anyone?

Ken Rossman

There is now a COMND% JSYS emulation package written in C which is available for anonymous FTP from CU20B.COLUMBIA.EDU. The Columbia University Computer Center does not have any Unix machines directly on ARPAnet, so the source code has been copied over to CU20B.COLUMBIA.EDU, and resides in WS:<SOURCE.CCMD> (note that's structure WS:, not PS:).

This package, known as CCMD, was developed by Andrew Lowry and Howie Kaye under 4.2BSD, and later DEC ULTRIX, but is also designed to work with various micro OS's (e.g. all of the code runs under MS-DOS). It is not an entirely faithful representation of TOPS-20 COMND% (some code is more general and other parts are less general), but a good working subset is there.

Please take note of several things:

- This package is copyrighted, and the copyright notices should always accompany the software.

- The package is freely distributed, as long as it is not resold. See the actual copyright notices accompanying the software for more info.

- Neither Columbia University nor anyone working for Columbia assumes any responsibility for support of the code, or for its correct operation. However, we would appreciate it, in the spirit of friendly program development sharing, if any of you who do development with this package would let us know if you find any bugs, or make any changes, so we can incorporate the bugfixes and/or changes in the source copies here.

- This package is really still only in ALPHA test, but there was sufficient interest in the package generated at DECUS and from other folks I've talked to, that it seemed like the package should be released to those who feel adventuresome and who especially wouldn't mind helping us get it debugged and developed.

A discussion list has been created here on CU20B known as Info-TOPSUX, which exists for the purpose of discussing TOPS-20 to Unix conversion in general. Mail to Info-TOPSUX-Request if you would like to be added to this list. Any other questions should be referred to SY.KEN@CU20B.COLUMBIA.EDU.

Doctor TOPS

Dear Dr. Tops;

I am getting old and cynical waiting for VMS to grow up. Can you give me some idea as to when my VAX will really become a MAINFRAME?

/signed/ 3rd Generation Cobwebs

Dear Bug Eater;

As for when your VAX will become a mainframe depends on its backplane. The BI based systems *REALLY* are mainframes. The 8500 and up VAXen are adults already, they use the BI as an I/O bus (like the KI series processors had). Processors in the 4 to 12 MIPS range are nothing to sneeze at, even if they currently don't run SMP. Clearly DEC is making a major effort to put some horsepower into its hardware. They are also putting that hardware into the field where it can benefit the *USERS*. Does a 6 processor 8300 (or 8800) sound like a MINI??? Tri-SMP never had that many MIPS!

As for when VMS will "Grow Up", it did that while you were sleeping. VMS is currently being tutored in Civil Rights (Something about CPU Slavery), Actuarial Methods (Bean Counting?) and Diplomacy (something about being OPERATOR friendly). The school year has just started. You have mid-terms, finals, OJT and SDC to go yet. As of today, my fearless prediction is circa early 1988 for the initial version. This does assume that VMS doesn't party too hard and flunk one or more courses! You know how these "Students" can get side tracked. At any rate, don't LOGOUT just yet. DEC is serious about the commercial marketplace. They have the hardware, with MORE on the way. They have been listening to the MENU results... Now we will have to see if they give us SYSDPY back...

/signed/ Dr. Tops

Dear Dr. Tops -

Just what the heck is SYSDPY? Some kind of game? I read your articles in the NEWSLETTER, and you forever complain about the lack of SYSDPY on the VAX. If SYSDPY is the best thing since sliced bread, why don't you tell us about it so we can complain too?

/signed/ Letter Reader

Dear Reader -

SYSDPY is a utility found on TOPS20 (a similar utility is on TOPS10) that displays on most ANY tube or hardcopy device the status of the system or process (FORK) or network in realtime. If you combined MONITOR and SPM and FINGER and WHO and ... you would still lack the versatility of SYSDPY.

SYSDPY reports on monitor statistics such as DISK I/O to each disk, the status and freeblock counts, spindle location, errors, I/O counts since boot, and so on. Other displays are MONITOR RESOURCES in bar graph form, class scheduler stats, DECNET connections, ARPANET connections, ENQ/DEQ locks (and their owners), job idle times, programs mapped (images in a processes' address space), runtimes, page faults, working set size, files opened by the system or job/process, position of next/last read/write within a file, process status, last error, monitor PC if a process is executing a JSYS (system service), number of interrupts pending (ASTs), location of the interrupt trap vectors, locations of device data blocks (DDBs/KDBs/UDBs), who owns what device, number of characters in a terminals buffers, the speed/baud/bits-per-char, etc. All of this from ONE UTILITY, not 10 discontinuous, fragmented, system hacker oriented images.

SYSDPY does not record data, it merely displays it in a suitable form for system programmers/managers to digest. The purpose of SYSDPY is to give the programmer a tool to diagnose a system or problem with. It is also very useful in catching HACKERS, system HOGS and NERDS. SYSDPY was "UNSUPPORTED" but freely distributed, and SPR's were answered for it. SYSDPY is a tool designed for making life in a commercial shop easier and more friendly. SYSDPY even ran in USER MODE with enought smarts to keep non-priv'ed users from SNOOPing where they didn't belong.

As an example of how useful SYSDPY was (and still is), a user calls up OPERATIONS and complains that his terminal is stuck, won't respond to ^T, ^C or <RET>. Given either the username or line number or job number, the system programmer finds the user on the system, and looks into his JOB. The process is "TO" or waiting for terminal I/O (output in this case). Well, the user is still alive according to the system, something must be blocking the user. Looking further, SYSDPY shows the state and monitor PC to be "TTOBET", meaning output is available, but the front end is not delivering it. Hmmm... maybe the user has a physical problem with the terminal, or the front end shut off the line due to noise. A check of the "TT" display shows the baud rates are normal for that line BUT the ^S/^Q flag is on (the user typed NO-SCROLL). The user is told to type ^Q. Elapsed time is 45 seconds. Lets see you do THAT with SDA and MONITOR and SPM!

/signed/ Dr. Tops

OFFICE

AUTOMATION

In This Issue . . .
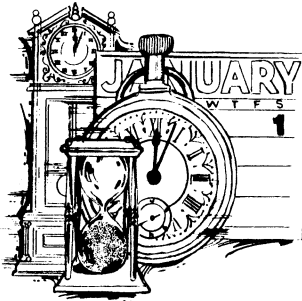
From The Editor

HAPPY NEW YEAR! Welcome to 1987. I would like to thank all of the people who have contributed articles, comments and time to the Office Automation Newsletter during 1986. Your contributions have made our newsletter an exciting, interesting forum for exchanging information and ideas. I look forward to your continued support in the coming year, and welcome all of our readers to participate by sending in articles, comments and ideas.

In the January issue we have the new System Improvement Request (SIR) list compiled between the Spring and Fall Symposium. It includes all of the 'wishes' from the San Francisco "Wishlist" session. Please make sure to read the list and send in your ballot (located in the tearout section in the back of the newsletter) to vote for your top ten items. There is also some interesting news in our regular columns; Hints and Kinks, and VAX Notes.

I would like to reprint part of a letter which was sent to me in response to my call for comments on the 1986 Fall Symposium (held in San Francisco). I think that you will find the comments interesting and useful in helping you prepare your justification for attending the Spring Symposium in Nashville.

"Outstanding and impressive would be my overall comments. The OA SIG presented some excellent sessions, as well as other SIG's. The one thing that will keep the OA SIG going is the enthusiasm of the SIG committee members and their conscious effort to enlist new volunteers. I was a new DECUS member and a 'First Timer' at Symposium, but found it extremely easy to get involved. Everyone was so willing to share their knowledge and help another solve a problem. I have other professional memberships, but never have I experienced such an organized, well planned, and inexpensive symposium."

- Cheri Korkowski,
AXEM Resources, Inc.

I am still soliciting comments, remarks and information which we can use as part of our next 'Symposia Justification Package' to be printed in the newsletter. Please share your methods for obtaining justification with our readers by sending information to me. I look forward to another great year!

Regards,

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TIME TO VOTE !

E. Catherine Ditamore
ARA Services, Inc.

Once again, it's time to vote on the SIR's! The System Improvement Request (SIR) Process provides us, Digital users, with a mechanism to help guide the development of Digital's Office Automation (OA) products. SIR's are submitted by you and then prioritized through a tally of your votes on the SIR's. It is this prioritized list that Digital will review in order to prepare their response, which will be given at the OA Wish List Session in Nashville. For those of you not attending the symposium, you'll find the response printed in the OA SIG Newsletter after symposium.

In order to give Digital an adequate amount of time to form their response, you need to vote TODAY! Any ballots received after **MARCH 1** cannot be counted. You'll find the ballot in the "tear-out" section at the end of the newsletter.
The list of SIR's was compiled from three sources: completed SIR forms (like the one in the "tear-out" section at the end of the Newsletter); wishes submitted at the OA Wish List session during symposium; and, SIR's to which Digital has not yet made response but which received votes during a prior ballot.

The SIR's are grouped below by category, to simplify your review. You have 100 points to allocate among the SIR's on the ballot, although you may not give any one SIR more than 10 points. You may assign the point values in either a positive or negative sense: a high positive value would strongly encourage change, and a low negative value would discourage the change. For example, if the positive points total 80 and the negative points total 20, the allowed 100 points have been fully utilized. Remember, only one ballot per DECUS member will be accepted!

ALL-IN-1:   GENERAL ENHANCEMENTS

385011   Provide an indication on the ALL-IN-1 screen or menus of the load on the system; when the system is heavily loaded, the users don't mind waiting a little longer, if they know it will take a little longer.

485004   Make the List function quit deleting trailing blanks and special characters; it also mishandles some Regis commands.

386003   The VAX-11 FMS Translator License should be included with the ALL-IN-1 layered product.

386013   Provide a printer option that does not display a menu, but rather goes directly to the user's default printer.

386017   Allow all selection lists to be editable, sortable, and printable.

187001   Provide a facility to abort printing of a document.

187002   Provide an abbreviated Print Index facility that would display the title and folder of the document, the creation date, and creator.

187003   Provide updates to the ALL-IN-1 documentation kits from version to version, rather than complete new documentation kits.

187004   Provide greater standardization of data entry on ALL-IN-1 forms; for example, tab, return and down arrow are inconsistent in usage from screen to screen.

187005   The contents of a document should be consistent, regardless of its origin. A document created in Electronic Messaging appears to contain both header and text; therefore, when such a document is transferred, both the header and text should be transferred. The fact that only the text is transferred is very difficult to explain to an ALL-IN-1 user.

287002   Provide the ability to save rulers for Electronic Messaging documents, as in WPS-Plus.

287003   Implement PC MEM as part of the base Action Item product; in the past, it has been an unsupported function that enhanced the Calculator function.

287004   Provide a new File Cabinet menu option that will print a list of folders, without using the Print Screen function. The following information should be printed: folder name, date created, and number of documents in folder.

287005   Enhance the Document Transfer function for importing VMS files to the ALL-IN-1 File Cabinet: provide a prompt to query if the VMS file should be deleted or not after it is imported.

287006   Provide a facility to define which ALL-IN-1 users may access a selected document/folder; access should be defined as either READ or READ/WRITE.

287007   Provide the ability to change the name/title of a document without having to refile it to another folder or creating a new document.

287008   Provide a shared folder facility for UDP's.

287009   In the Nickname Management Subsystem, change the "Mail Address" field to "Username" to minimize confusion.

287010   When printing a multi-page document, provide the capability to print selected pages or range of pages.

NEW ALL-IN-1: FEATURES AND FACILITIES

185002   Provide the capability for system-wide nicknames.

185005   Add an integrated phone message function.

185025   Provide better integration of ALL-IN-1 with the following products: DECslide, DECgraph, and DECalc.

385010   Provide a full scale office work station for the IBM PC, something on the order of the DECmate office workstation except better, ie. more functions downloaded into the PC, the calendar downloaded to some extent on the PC, allow menus to be modified on the VAX and download them onto the PC.

385013   Provide improved security and protection features for ALL-IN-1, something on the order of allowing users to see the menus and the selections on them, but not be able to execute the individual functions unless they have been authorized to do so.

385031   Improve the packaging of OA products. With an ALL-IN-1 system there are a large number of products that require coordination of different versions for compatibility. They should all be bundled together so that the user can receive one big package in the mail and know that they have everything needed to bring up a new version.

385034   For ALL-IN-1 users, non-ALL-IN-1 users, and both, provide the ability to send, receive, and all of the other mail functions, regardless of whether the user is in ALL-IN-1 or not, and have the receiver receive it whether or not he is in or out of ALL-IN-1.

485028   Provide a means of converting documents to International Telex. Give the user full control over ASCII-BAUDOT conversion and the ability to format the telex document.

485033   Provide a new service: computer conferencing/bulletin board.

187006   During the original design of Digital products, develop plans that allow for the internationalization of the product.

187007   Provide ALL-IN-1 Error Message Documentation on DSIN.

287011   Provide a Telephone Message Pad (TMP). When a secretary is answering the phone, they need to access the TMP from any screen, including the Interrupt screen. The information on the TMP should be that which appears on a standard Telephone Message Pad. ALL-IN-1 should have a "TMP-flag Waiting" like "Mail Messages Waiting"; and, the TMP message should be readable from a GOLD-Key function from any screen.

287012   Provide a supported, fully "blessed", archiving function for documents.

ALL-IN-1: SYSTEM AND SYSTEM MANAGER FUNCTIONS

185004   Provide the ALL-IN-1 system manager with the ability to manipulate mail messages.

185023   Include an additional 80-bytes in the user profile for customer specific use.

185024   Promote the ALL-IN-1 applications development capabilities by providing the following: a DSAB for Rdb applications and easy end-user application development facilities.

185029   Provide a conversion utility telling you what's been changed in your current ALL-IN-1 system.

185033   The Atlanta Hot Line should provide comprehensive user support. If the Atlanta Hot Line cannot answer a question and feels it is a responsibility of Colorado Springs, Atlanta should contact Colorado directly and pursue the problem with Colorado, rather than tell the customer to call Colorado.

385009   Provide the ability to manage the ALL-IN-1 system files separately from the janitor process. By breaking these two functions apart, the amount of dedicated system time is minimized.

385014   Provide additional development tools to aid in development of ALL-IN-1 applications, such as cross-reference utilities.

385017   In the distribution of future ALL-IN-1 releases, when menus are eliminated or modified, provide a list of them so that sites with extensive customization can more easily migrate to the new versions.

385041   When future releases of ALL-IN-1 require conversion, ensure that the conversion aids work. Also, ensure that the support center is aware of existing problems.

385042   Recognize the ALL-IN-1 script facility or language as a language and support it as a language, with the language standards. Also, provide a TPU interface so that we can get past the SYNTAX and get to the application building.

385049   Provide tools, support and/or clues on interfacing and integrating non-Digital layered products to ALL-IN-1; such as, Telegraf, 1032 and SAS.

485016   Provide a function (OA$SYM-DELETE) to delete symbols from the permanent symbol table.

485020   Provide documentation on Command Mode for non-technical users.

386001   The Atlanta Hotline should provide an automatic call transfer facility so that the caller will get the correct software specialist.

386002   The Janitor function should be enhanced to include searching for expiration dates, and to delete those documents past expiration.

386005   The ALL-IN-1 documentation set should include both WPS-Plus and DECPage documentation. Also, there should be a documentation index for WPS-Plus and DECPage.

486006   Provide a user-selectable option for the use of BELL in conjunction with Mail Notify.

486008   Provide the ability to run ALL-IN-1 user main processes at a higher priority (than other users), while any ALL-IN-1 user sub-processes would run at the normal (default) priority.

486013   ALL-IN-1 should support the IBM PC/XT/AT printer port; ie. the user should be able to select PORT IBM like PORT LA50 can be selected.

187008   Provide an ALL-IN-1 Guide to Development for new ALL-IN-1'ers.

187009   Provide additional script functions for string manipulation, similar to DCL Lexical Functions, except without having to use DCL.

187010   Establish a standard naming convention for DEC-based forms, script files and command files, ie. all forms have a "$" in the name.

287001   Provide a script function that is equivalent to a PASCAL "case" statement.

287013   Provide the capability to READ, MODIFY, and CREATE/WRITE text DSAB's that are compatible with ALL-IN-1 DSAB's; this would allow for the complete manipulation of documents. This facility should be documented in the APR manuals.

287014   Provide technical ALL-IN-1 Training, ANYWHERE (Ed. Services, DECUS, etc.)! It should consist of Introduction to Scripts, Intermediate Scripts, Advanced Scripts, etc.

ALL-IN-1:   ELECTRONIC MESSAGING

385021   Upgrade the Mail function "Delete" with confirm and no-confirm options.

485001   Provide some kind of audit trail, notification to a user or duplicate messages indicating that something was sent to him and auto-forwarded.

485009   An option is needed to present expansion of distribution list or not, as subscribers are handled, since lists of names in excess of 20 are cumbersome.

485010   Names of mail-format BLP's (i.e. MAILMEMO1.BLP) are hardcoded into ALL-IN-1. They could be logicals and therefore changeable.

485013   Allow users to modify headers from within the editor for ALL-IN-1 E-Mail messages: add Modify Header (MH) to the Interrupt Menu.

485014   Add an option to allow a user to get a list of the sender and all addressees at the MAIL ANSWER prompt.

386011   Provide a "secret" classification for mail; this type of mail would require greater security than "confidential" and the secretary would not be able to read it.

386023   Provide the ability to request Return Receipts from selected users, rather than all recipients of a mail message.

486001   Provide a user-selectable default for Received Receipts and Read Receipts; currently, NO is the default and YES must be selected on a per document basis.

486002   Provide an option to allow a user see the status of mail messages that have been sent but not yet read. Message status would include the title of the message and the addresses who have not read the message.

486004   For INBOX documents that are SELected, have a unique menu overlay which will allow Answer, Forward, Re-file, etc., that will return to the next INBOX document. (The Multiple Delete function of File Cabinet could be a model for this function.) OA-8

187012   Provide a menu option: Print INBOX.

187013   Improve the mechanism for Electronic Messaging creation
          and   delivery   on   a   multi-system   (ie.   VAX and
          workstations) network (that is NOT using Thin Wire
          Ethernet).

187014   Develop a better algorithm for calculating the number of
          names that go at the top of the document and the number
          that are placed at the bottom.

187022   Save the default print settings in Electronic Mail
          messages, rather than forcing the user to set them each
          time.

287015   Provide a feature to automatically delete all documents
          from the READ and OUTBOX folders after the documents
          have reached a specified age. The age would be set by
          the ALL-IN-1 System Manager or by an option on the
          individual's File Cabinet.

287016   Provide the ability to see which Electronic Messages you
          have sent that have been READ, without having to use
          Read Receipts.   This function would be similar to the
          Message Search (MS) function from ALL-IN-1 Version 1.3.

287017   When WPS-Plus is the default editor and the Answer (A)
          function has been invoked, GOLD-O should provide a
          "toggle" between the original document and answer.

287018   Expand the Current Item Block to include the name of the
          sender of the message.

287020   Allow messages to be deleted before they have been read.

287021   Expand the mail header on "answer" messages to include a
          reference to the title of the document being answered.

287022   For Distribution Lists, a sort capability should allow
          the sort to occur on the specified name, rather than on
          "Paper Mail".

287023   Allow mail messages to be filed in the user's directory
          (personal storage) and delete the pointers to the shared
          file. The current File Text and File Message facilities
          are not acceptable.

ALL-IN-1:   TIME MANAGEMENT

287024   Allow for "Standing Meetings":   when the option is
          invoked, parameters could be specified for dates and/or
          number of days/weeks.

287025   Provided the ability to make duplicate calendar entries,
          ie. Meetings, Appointments, Reminders, Actions Items,
          and To Do Lists. A single screen should be used to make
          the duplicate entries.

287026   All Time Management facilities should use the same entry
          screen.   This would be consistent with a user having a
          single calendar page for a day.

287027   Provide   a   Multiple   Delete/Purge   option   for Time
          Management Reminders.

287028   In Time Management Action Items, provide the ability to
          edit the class or item.

287029   In Time Management To Do Lists, provide the ability to
          print and view the items in priority sequence.

WORD PROCESSING: GENERAL

385033   Provide better journaling in WPS-Plus so that a little
          bit more of the document is left when the system crashes
          and comes back.

485049   Allow all PC's to transfer files and WPS documents to
          ALL-IN-1, Rainbow and P/OS, as part of user-friendly
          application.

485056   Enable DECmates, Rainbows, PRO's and anything else
          running WPS-Plus to directly exchange documents.

485057   Provide the capability to change the left margin on the
          DPE editor of ALL-IN-1.

386009   ALL-IN-1 should support either WPS or EDT, but not both.

386043   Allow the text to automatically wrap when editing, so
          that the user doesn't have to "advance" through it.

486029   Provide an index function that will work with both
          WPS-Plus and DECPage.

486037   Provide LN03 support for WPS: proportional spacing;
          mixed   fonts on the same page; and, portrait and
          landscape modes on the same page.

486031   Improve the multi-column composing and editing features
          of WPS -- up to 5-6 columns (side by side) of text are
          required.   The multi-column print facility also need to
          be improved.

187015   Provide a prioritized To Do List within WPS-Plus.

187016   Provide a column cut and paste facility that is the same
          for all of Digital's Word Processing software.

187017   Provide the ability to reset the right margin within a Table of Contents.

187018   Give LN03 printing capabilities on the VAX as on the DECmate. This capability should include the facility to stop the print job, and to stop before each page.

187019   Provide a Global Search and Replace function for Spell Check within WPS-Plus.

187020   Provide an auto-index function for a document within WPS-Plus.

187021   In WPS-Plus List Processing, provide the ability to use multiple forms.

287030   The location of the NEW PAGE marker should be consistent in List Processing Form Documents. Currently, the location differs between DECmate WPS and WPS-Plus/VMS documents.

287031   All WPS-Plus versions, regardless of hardware environment, should have the same functionality and user interface.

WORD PROCESSING: WPS-Plus/PC

485055   Provide the WPS-Plus's DX/DT option on the Rainbow.

486023   WPS-Plus/PC should be more like WPS/DECmate -- there are differences in the user interface, keystrokes and functionality.

287034   Provide full functionality word processing that will be on a par level with other PC-based word processing packages and will also be compatible with WPS-Plus/VMS.

287035   A Copy function should exist to allow the copying of documents from one drive to another. Currently, approximately six steps (including DOS commands) are required to accomplish this operation.

287036   Provide a Spell Check function.

287037   Provide the ability for print functions to occur in the background.

287038   Allow for multi-level indents. Currently, only one line can be indented with the word wrap tab (W).

287039   Provide support for Overstrike Mode, rather than just Insert Mode.

287041   Provide the ability to cancel an inadvertent keystroke (i.e. pressing the underline key accidentally while editing text).

287042   Provide the ability to indicate the contents of a document by a "comments" section; the "comments" could be referenced with the Index.

287043   Allow more flexibility with UDP's: the ability to insert a Pause instruction to allow for more input of variable information; the ability to go outside WPS-Plus/PC to DOS; or, the ability to name the keystroke or associate a comment with it (in order to determine its contents and use without going into edit mode and displaying the contents).

287044   Provide the ability to Get a page or specified range of pages from another document, rather than the entire document.

287045   Provide a menu option that will allow you to print more than 11-inch pages without inserting control blocks in the document.

287046   Provide more support for printers and simplify the support for printer tables. (Horizontal and vertical movement could be more easily defined by using a horizontal or vertical motion index and having the table calculate the various pitches.)

287047   Provide the ability for proportional printing on printers that support it.

287048   Implement multiple paste buffers so that you can cut and paste more than one item at a time.

287049   Develop a "hot-key" to DOS to allow simple DOS commands to be executed without exiting WPS-Plus/PC.

287050   Provide Computer Based Instruction (CBI).

287052   Allow documents to be stored in File Cabinets.

287053   Allow "expert mode" or "menu bypass".

287054   Provide data field verification.

287055   Provide the ability to retrieve deleted documents from a wastebasket.

287056   Provide a footnote facility.

WORD PROCESSING: WPS/DECmate

386045   Provide the ability in DECmate WPS to recover an index that was damaged.

386046   When defining UDK's in DECmate WPS, allow them to be executed as they are being defined.

386047   Allow vertical and horizontal lines to be easily drawn around text (to form boxes and charts) in DECmate WPS.

386053   Provide the ability in DECmate WPS to do multiple Global Search and Replace's.

386058   Provide the ability in DECmate WPS to have quarter spacing.

386059   Allow a special key on the DECmate that would print "bullets" that are filled in.

287032   New WPS keycaps should be available for consistency with the new functionality available in Version 2.1.

287033   Provide a "compare files" utility; this would be used to ensure that after copying a file, it is the same as the original.

WORD PROCESSING: WPS-PLUS/ALL-IN-1

287059   Provide documentation on all WPS-Plus/ALL-IN-1 error messages.

287060   Provide a simple to use mechanism to send the first page of a document to one paper tray of a printer and the rest of the document to the other paper tray.

287061   Allow WPS-Plus to support the escape <ESC> character, as EDT does; this would implicitly allow users to support their own non-Digital printers.

WORD PROCESSING: WPS-PLUS/VMS

187023   Provide the facility for the output document of a form document to take on print format.

187024   Improve the facility for shared documents.

187025   Remove the ALL-IN-1 references (eg. scripts) from WPS-Plus/VMS.

287062   WPS-Plus/VMS does not require a Right margin when rulers are defined; a Right margin should be required. This is inconsistent with the other WPS products and can cause problems when editing the document.

287063   The Index function in WPS-Plus/VMS should display the VMS file specification for each document.

287064   The Index function in WPS-Plus/VMS should display the VMS file size (in blocks).

287065   A new Print menu should be developed to include options such as: Cancel Print (without the user issuing a command from the DCL level), Pause Printer (to pause the printer before a specific job so that the paper can be changed), and Continue Print (to continue printing after the Pause Printer command has been executed).

287066   Enhance the RV (Receive from VMS) function to allow the use of wildcards.

287067   Enhance the GOLD-Write function to allow writing to an existing document; the function could prompt for Insert at Top, Bottom or Overwrite.

287068   The status line which is available with GOLD-Z should be permanently displayed on the bottom of the screen. This would make it compatible with DECmate/WPS.

287069   Provide procedures that will reorganize (and optimize) the WPS system files; this function should ensure that each user's default settings are preserved.

287070   Provide a document archiving and retrieval system.

287071   The editor screen width for a wide document should be "attached" to the document; therefore, when the editor is invoked for that document, the editor would automatically shift into wide-screen mode.

287072   When the cursor is not in the first position on a line and the cursor is moved up and down, there is a problem when it moves to a line with fewer characters than the previous line -- the cursor jumps back to the first position on the line when text is typed. The cursor should be positioned at the end of the line.

287073   The list processing output document should take the print settings from the form document, just as DECmate/WPS does.

MISCELLANEOUS

185019   Provide full intelligent modem support, including looping and if-then-else capabilities.

485058   Document header formats should be identical for ALL-IN-1, DECmate and Rainbows so that a document transfer will retain keywords, subject, author, etc.

386013   Upon entering DECMail, enter character mode immediately.

386019   Support VT52 terminals in ALL-IN-1.

386025   Provide a simple mechanism for easily retrieving VAX-11 Datatrieve reports.

386065	The LN03 should not produce controller errors every time pages that are more than 90 characters wide are sent to it.
386067	DECSpell's IGNORE function should not be case sensitive.
386071	DECdx should display the document name that is being deleted (for verification purposes), if the user has selected the document by number.
187026	When Spell Check is selected from Electronic Messaging (EM), ensure that it returns to the EM menu, not Word Processing.
187027	Provide an improved VAXnotes/ALL-IN-1 interface, using the Gold-Key concept.
187028	The ALL-IN-1/Message Router interface should be better integrated and easier for the System Manager to utilize.
187029	Provide an automatic interface between ALL-IN-1 and CMS; provide the ability to develop forms in CMS.
187030	Offer PC/ALL-IN-1 at a lower cost.
187031	Unbundle the PC/ALL-IN-1 software.
187032	Enhance the PC/ALL-IN-1 software to utilize the MSCP server.
187033	Enhance PC/ALL-IN-1 to run under MS-Windows and to adhere to its standards.
187034	Enhance PC/ALL-IN-1 to provide better access to applications running under ALL-IN-1.
287076	Develop a "gold" keyboard for the Macintosh.
287077	Provide support for the RD52 and RD31 disk drives.

ALL-IN-1
Hints & Kinks

by
Ray Kaplan
PIVOTAL, Inc.

November 1986

Hi there. Hope this finds you well, and happily 2.1ing.

Good News - Bad News

The Bad news is that I have been to busy to get much ALL-IN-1 writing done for you to read.

The good news is that there is a lot on the way. Future months will have an annotated transcription of the "ALL-IN-1 Hack-O-Ramma" from the San Francisco Symposium (good stuff!), and a series of ALL-IN-1 performance management articles complete with some nifty tools to help you get a hold on those elusive things like "How Much Does A Thus-and-so Activity Actually Cost Me in VAX/VMS Resource Usage Terms" (what a mouthful, huh?) and "How to Measure Response Time and Use Response Time Measurements".

Stay tuned!

Mean Time

As some of you know, I am a columnist and free lance technical writer. One of the ways that I got good at writing was to do it. A lot of it. A lot of what I have done is writing for DECUS publications like the OA SIG newsletter. Great way to learn new skills. After all, as the reader of my work in this space you do forgive my occasional misspelling, typo, and runoff indiscretion, don't you? Hope so! Why not write something for the newsletter? We all are interested in hearing your point of view and sharing your "ALL-IN-1ing". Take a few moments and write out something and send it along to Therese, won't you?

Documentation

Here are some manual numbers that you may be interested in from the ALL-IN-1 V2.0 Integration Series:

Guide to Integrating Applications AA-EG01A-TE

User Interface Standards AA-EG03A-TE

Both are available from DEC Direct at 1-800-258-1710.

In the back of the Integrating Applications manual lies the
final answer to the question to "when DEC is going to document
the DSAB/DSAR and the other undocumented internal interfaces
needed for 'code level' integration".

The two most important manuals:

TEXT Applications

and

TEXT Formats

are not available except to DIGITAL Software Services people
doing Professional Software Services. Translated, that means
that if you want to do "code level" integration of your
application with ALL-IN-1, you have to buy Software Services
consulting time. When questions were asked about this at the San
Francisco symposium, the answer was (as best as I can remember
it), "You need our help because the internal interfaces are not
well documented and are changing. To protect your investment in
software development efforts, we want to be involved with your
application integration efforts so that you don't hurt yourself."

Reasonable, but I sure wish that they would hurry up and
stabilize the interfaces so that we can get to work in
"applications integration land!".

SIG Tape News

At this writing (November 15), I am sending off the meager
collection of things that we have for the Fall 1986 DECUS OA SIG
Swap Tape to the new OA SIG SIG Tape Coordinator, Mary Bolling.
I am sure that she will be getting it together and sent off into
the National LUG Organization distribution network such that it
will be available from your Local User Group as you are reading
this. If you don't know where that is, give the U.S. DECUS
office a call, or drop me a line. Mean time, if you want to
contribute something to the next version of the tape that will
come out of the Spring 1987 Symposia in Nashville in April, send
it along to her or bring it to the Symposium with you! I am sure
that tape at 1600 BPI is the preferred submission method. You
can reach Mary at:

        Mary Bolling
        Foreign Mission Board
        3806 Monument Avenue
        Box 6767
        Richmond, VA   23230
        (804) 353-0151

OOOOOPs

The August 1986 issue of the OA SIG newsletter contained a
contributed article on ALL-IN-1 scripts by Don Vickers. Those
who have tried to use the article discovered that pages OA-21-1
and OA-21-2 were the same. The third page was missing. Here it
is, in hopes that it will complete your picture of scripts!

Until next time - Happy ALL-IN-1ing!

The text lines in a DO mode script are ALL-IN-1 functions as documented in Chapter 6 of the APR.

DO mode scripts are invoked by the DO function. It is often used in /PRE_FUNCTION and /POST_FUNCTION field and form qualifiers.

2.2 SCRIPT Mode

SCRIPT mode provides input on behalf of the terminal user just like a script in a play. The text lines in the script file are taken to be keystroke entries from the user INCLUDING the terminator key. The terminator is enclosed in braces such as {CR} or {TAB}. A common mistake is to forget to supply the terminators.

SCRIPT mode scripts are used in:

1. User Defined Procedures (UDP's).
2. OAINI.SCP (a script executed during the startup of a normal ALL-IN-1 session).
3. Computer Based Instruction (CBI's,).
4. Installation Verification Procedures (IVP's).

They are useful for implementing user tasks that are not easily done via normal ALL-IN-1 functions or where you wish the user to observe the operation.

2.2.1 The SCRIPT function

One way to 'execute' SCRIPT mode scripts would appear to be the SCRIPT ALL-IN-1 function as documented in Chapter 6 in Volume 2 of the APR. In fact, the SCRIPT function does cause the specified SCRIPT mode script to be executed. HOWEVER, the specified script is not used until ALL-IN-1 requires input from the user and NOT at the instant of the SCRIPT function. Most readers of the APR do not grasp this very important fact.

The effect of the SCRIPT function is very similar to doing a DEFINE SYS$INPUT xxx in DCL. It causes the specified file to be used at some later time when input is required.

Notes on Notes

-- Discussions on VAX Notes
   Volume 1, Number 2

by Mark Hyde and C J Trayser
VAX Notes Support Specialists
Digital Equipment Corporation
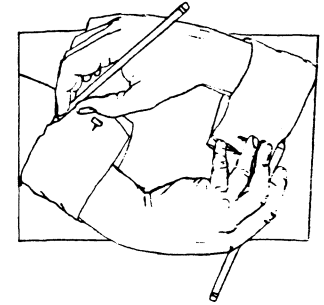
Welcome back to Notes on Notes, the monthly column on the VAX Notes conferencing utility. Hopefully the introduction last month was enough to whet your appetites for more information on Notes. Now that we are all back from the holidays, lets begin looking at VAX Notes in more detail. This time, we are going to talk about a few of the setup features used to customize and personalize your 'Noting' environment.

First a side note about VAX Notes versions. By now VAX Notes version 1.1 should have been out for over a month and many of you may already have it installed. Our discussions in this column will always be about the currently shipping version, in this case version 1.1, so if you find us talking about a feature that you can't find in version 1.0, don't worry, it's there in version 1.1.

Like electronic mail, VAX Notes is an electronic communications medium. Unlike mail, however, Notes is intended primarily for many-to-many discussions, where using mail is not feasible. To achieve this in an effective manner it must be easy to use, provide the user with a comfortable environment, and because of its conversational nature, the identity of each participant must be clear.

To illustrate the discussion here (and other discussions in the future), we are, from time to time, going to look over the shoulder of John Q. Noter, Vice President of Sales for the ACME Widget Company. ACME has recently acquired VAX Notes and John is going to give it a whirl.

Each VAX Notes user has a 'profile' in which he or she can specify information about their Noting environment. This profile information is stored in the users Notebook. Once in Notes, from the NOTES> prompt, use the command SHOW PROFILE to display the following: (...excuse us John...)

```
Notes>
```

<div align="center">

VAX Notes Computer Conferencing
Enter the command HELP for help

Profile for user J_NOTER

</div>

```
      Editor and access: EVE
      Default class:     MAIN
      PRINT qualifiers:  None
      Personal name:     None
      Automatic on open: NEXT UNSEEN
```

Personal name

Like VMS mail, VAX Notes provides the user with the ability to set a personal name which will be displayed in the note header, (remember, 'note' is a generic term for a topic or a reply), inside quotes just behind the NODE::USERNAME. For example, without a personal name, John's notes will have a header that look like this:

```
====================================================================
Note 1.0           Welcome to the Widget Conference         1 reply
NODEA::J_NOTER                         10 lines 7-DEC-1986 14:34
--------------------------------------------------------------------
```

The only identification is NODEA::J_NOTER. If there are several NOTER's, (or SMITH's or JONES's), there could be confusion about knowing exactly who is who. However, if John does:

Notes> SET PROFILE/PERSONAL="John Noter, V.P. Sales"

his note headers will then become:

```
====================================================================
Note 1.0           Welcome to the Widget Conference         1 reply
NODEA::J_NOTER "John Noter, V.P. Sales" 10 lines 7-DEC-1986 14:34
--------------------------------------------------------------------
```

Now everyone knows who J_NOTER really is!

The personal name string can be up to 63 characters long. If the string is longer than what can be displayed in the available space in the note header, it will be truncated. The entire string can be seen by using the SHOW NOTE command.

Notes expects the string to start with an alphanumeric character and Notes automatically collapses all multiple spaces in the personal name string to a single space.

To remove your personal name use SET PROFILE/NOPERSONAL.

Editor and access

Perhaps the most important setting in the profile is the editor. It is so important that we will devote next month entirely to editing and the use of editors within VAX Notes. For now, let's look at it briefly.

The editor field in the profile is where you determine which editor you will use as you enter topics and replies. VAX Notes has 3 'built-in' editors. Actually, it is one editor, EVE, with 2 alternate interfaces, those being keypad emulators for EDT and WPS. It is also possible to have VAX Notes call or spawn your own favorite editor. The possible settings for the editor field are:

   o SET PROFILE/EDITOR=EVE specifies that you want to use EVE
      with the standard editing keypad. This is the default for
      VAX Notes.

   o SET PROFILE/EDITOR=EDT specifies that you want to use EVE
      with the EDT-style keypad.

   o SET PROFILE/EDITOR=WPS specifies that you want to use EVE
      with the WPS-style keypad.

   o SET PROFILE/EDITOR=(EDT,CALL) specifies that you want to use
      the callable version of the real EDT editor.

When you want to use an editor that is not callable, you must use the SPAWN access option. For example, if you have a command procedure that invokes an editor you want to use in VAX Notes, you need to specify the command procedure (prefaced by an at sign (@) and surrounded by quotation marks) as the editor name and SPAWN as the access option.

For example:

   o SET PROFILE/EDITOR=("@SYS$LOGIN:NOTES$EDIT", SPAWN)

Next month we will cover all these options in much greater detail.

PRINT qualifiers

The "PRINT qualifiers" field sets the default qualifiers for the VAX Notes PRINT command. These qualifiers are added to the PRINT command before any other qualifiers or parameters in the PRINT

command line. In case of a conflict, the qualifiers on the command line override the default qualifier setting.

The qualifier list must be in quotation marks.
Some standard VMS style print qualifiers are:

o /QUEUE=queue=name
o /COPIES=number
o /FORM=form-name
o /[NO]NOTIFY

Some more Notes specific kinds of qualifiers that you might want set in the profile are:

o /[NO]HEADER- prints the notes with/without header information

o /[NO]WAIT- specifies whether to print notes immediately or wait until you exit VAX Notes (similar to the way VMS Mail works)

There are many other print qualifiers explained in the manual, but they are not ones that you would usually want set permanently in your profile.

To remove all print qualifiers use SET PROFILE/PRINT="". If the print qualifiers setting is "None" then Notes applies the following defaults:

"/QUEUE=SYS$PRINT/COPIES=1/NONOTIFY/WAIT"

Automatic on open

If you have used Notes before you may have noticed that when you open a conference it immediately shows you a seemingly random note. This is because Notes has the ability to perform one of 2 functions automatically when a conference is opened.

The "Automatic on open" profile setting determines what happens when you first open a conference.

o SET PROFILE/AUTO=UNSEEN causes a NEXT UNSEEN command to be executed when you first open a conference. This is the default setting for VAX Notes. (That random note wasn't so random after all!)

o SET PROFILE/AUTO=DIRECTORY causes a directory listing of the last 16 notes to be automatically displayed upon opening a conference.

o SET PROFILE/NOAUTO causes only the conference header to be displayed when you open a conference.

Default class

And finally, the "Default class" setting determines which of your notebook classes will be displayed when you first enter Notes. A class can be likened to the folder construct of various mail utilities. Your conference entries can be filed and/or sorted by placing them in one or more classes. The default class for Notes is the "MAIN" class.

To change this setting use:

SET PROFILE/CLASS=classname

So, after a few minutes with Notes, John Q. Noter's profile now looks like this:

Notes>

                    VAX Notes Computer Conferencing
                    Enter the command HELP for help

                    Profile for user J_NOTER

        Editor and access: EDT
        Default class: MAIN
        PRINT qualifiers: "/QUEUE=SALES$PRINT/NOWAIT"
        Personal name: "John Noter, V.P. Sales"
        Automatic on open: NEXT UNSEEN

You can temporarily override the settings in your profile without changing the permanent settings in your Notebook with the /TEMPORARY qualifier.

If John also participated in a HAM radio conference, he might do the following after opening the conference:

SET PROFILE/PERSONAL="Sparky -- WF4321"/TEMPORARY

This temporary setting will override the permanent profile only during the current VAX Notes session. When John exits VAX Notes, the temporary profile settings are discarded.

That's about it for this time. Stay tuned next month when we will cover, in depth, the use of editors in VAX Notes.

Happy Noting!

Personal Computer

Special Interest Group

P C

SIG
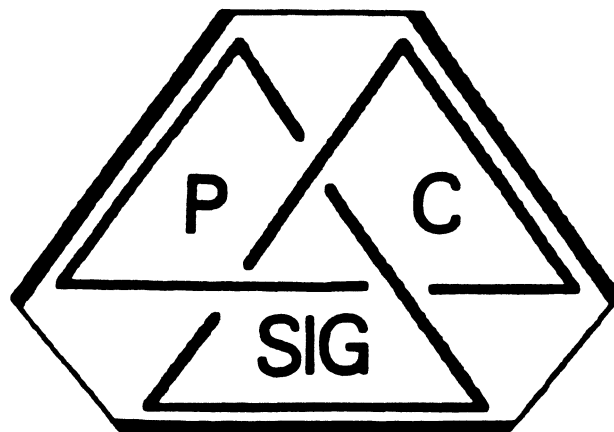
Newsletter

Since July of last year, the PC Newsletter has
been brought to you in great part by Ken LeFebvre
the current Newsletter Editor. This month, Ken
was called out of town and didn't have the means
to prepare the Newsletter, so he asked me to do
it for him. From time to time during that
period, you may have noticed my name on articles
and in the Steering Committee listing under
"Professional Contributing Editor". Well, this
month, I get a chance to take advantage of my
title and prepare the Newsletter without Ken's
guiding hand. And, since I specifically
concentrate on the PRO series computers, this
month's Newsletter will be mostly devoted to PRO
users. Also, only 2 people contributed any
Rainbow articles this month, and I received NO
DECmate or VAXmate articles at all. So I didn't
really have a choice about the Newsletter contents.
If you have something to share, please send
it to me or Ken. We can process most ANY
electronic format you have (RX50, TK50,
½"tape--any DEC format, etc. or hard copy. Hard
copy is a second choice since all submissions on
hard copy are re-typed into electronic form
before being published.

Gary Rice

Send your submission(s) to:

Gary Rice   Ken LeFebvre
P.O. Box 5536   or   Sytek, Inc.
Hacienda Heights   19 Church St.
California 91745   Berea, OH 44017

Reclaiming Disk Space After Installing P/OS v3
a Fall '86 DECUS Symposia Report
by
Gary Rice
Newsletter Contributing Editor

With the release of P/OS version 3, DEC has changed its marketing direction
regarding the PRO series. Up until now, the PRO was declared to be a
"Personal PDP-11" or essentially a single user system with multi-tasking
capability. PRO/Associate was announced about 2 years ago, giving a single
user the ability to have two terminals on the system. The second terminal was
only ideally suited for program debugging since PRO/Associate introduced a lon
list of restrictions about applications that could use the second terminal. I
didn't object because I still like to think of my PRO as a "Personal PDP-11".
However, P/OS version 3 attempts to change all that by introducing a
multi-user environment to the PRO. For those users that see this as
beneficial, they probably have lots of money to buy more disks, more memory
and more controller boards so that they can cluster a bunch of PROs together.
For myself, a second hard disk would be nice, but I can live with the 10
megabytes that I have, or so I thought.

Installing P/OS version 3 was a big shock when I found out just how much
additional disk space it required (including the toolkit). As a result, I was
very interested in a session at Fall '86 DECUS Symposia session on conserving
disk space on a P/OS v3 system.

The session was presented by Chuck Goldenshoe who stated that he was the
"Pseudo Project Leader" of the DEC P/OS Development Team. He began the talk by
stating that all (or at least MOST) of the things he would be describing
applied to single user systems ONLY. So for those of you who bought your PROs
to share with your office mate, you needn't read further. You can turn your
thoughts to buying another disk.

For those of you that still use your PRO for your own use, here are some
suggestions for returning some space to your life.

I will begin with files that all users start out with on their systems. Then,
I will detail the SYNERGY and PRO/Communications products and what you can do
to cut down on their respective disk space requirements.

First, the base system. The files that you can delete will be listed along
with the number of disk blocks that each occupies and the purpose of the file.
In addition, each file will be categorized as to the danger level associated
with deleting the file. The danger levels are as follows:

        SAFE - This file may be deleted with absolutely
               NO change in the way that the system works.
     CAUTION - This file can be deleted, but may cause some
               error messages to appear when you are using an
               application or service. This may require you to
               press the <Resume> key to continue using the
               application or service.
      DANGER - Deleting this file classifies you as a "HACKER".
               Your system could "go down in flames" if you
               delete this file. You must know a great deal
               about your system and the applications you are

using when you delete this type of file.

File	Size	Category	Purpose
LB0:[001002]RELEASE.DOC	32	SAFE	Electronic release notes - They can always be found on the diskette labled "PROACCOUNTV3"
DW2:[ZZFONT]DGMZZ.TSK	46	SAFE	LVP16 stroke fonts - This task file never passes Q/A. It doesn't work. Before deleting it, edit the file DW2:[ZZFONT]DGBASIC.FDF and remove the line that has DGMZZ in it. Then, reboot the system.
DW2:[ZZFONT]FONT08.TSK	7	CAUTION	Font file - This file is used only if you PRINT PRO/Sight or PRO/Producer generated picture files.
DW2:[ZZFONT]FONT09.TSK	15	CAUTION	Font file - ditto
DW2:[ZZFONT]FONT10.TSK	15	CAUTION	Font file - ditto
DW2:[ZZFONT]SIGHT.FDF	1	CAUTION	PRO/Sight font definition file - This file installs the previous font files.
DW2:[ZZSYS]COLOR.HLP	4	CAUTION	Help text for setting up a color monitor. If you don't have a color monitor, delete it.
DW2:[ZZSYS]COLOR.MSG	3	CAUTION	Menu file for Color monitor set up. Delete it if you don't have a color monitor.
DW2:[ZZSYS]COLOR.TSK	31	CAUTION	Program that sets the color monitor background and foreground colors. No color monitor? Delete it.
DW2:[ZZSYS]DTDRV.STB	6	CAUTION	DECtouch driver symbol table - only necessary if you have DECtouch.
DW2:[ZZSYS]DTDRV.TSK	19	CAUTION	DECtouch driver task - ditto.
DW2:[ZZSYS]GIHPGL.TSK	54	CAUTION	LVP16 Plotter driver - You don't need it if you don't have a LVP16 plotter
DW2:[ZZSYS]GIPAL.TSK	62	CAUTION	Polaroid Pallette driver - No Pallette You guessed it.
DW2:[ZZSYS]FPROT.TSK	39	CAUTION	Program used to set default file protection - If you don't want to change your default file protection, delete this file.
DW2:[ZZSYS]CBTERR.MSG	11	CAUTION	Diagnostic ROM error messages - see next file notes
DW2:[ZZSYS]CBTERR.TSK	21	CAUTION	Diagnostic ROM error translator program - In the event of a hardware failure, these two files translate the failure number into English text.
DW2:[ZZSYS]FIRSTAPP.TSK	34	CAUTION	This program provides the "First Application" feature. If you don't want a "First Application", say good-bye to this file.
DW2:[ZZSYS]YQAUTO.TSK	6	CAUTION	This file is only necessary if you have a Quad-SLU.

The following files provide printer support. If you don't use print services, they can ALL be deleted.

DW2:[ZZSYS]CPR.TSK	41	CAUTION	
DW2:[ZZSYS]CPUTL.TSK	118	CAUTION	

DW2:[ZZSYS]DEFPCHAR.DAT	2	CAUTION	
DW2:[ZZSYS]DSPL.TSK	47	CAUTION	
DW2:[ZZSYS]PRINT.HLP	35	CAUTION	
DW2:[ZZSYS]PRINT.MNU	3	CAUTION	
DW2:[ZZSYS]PRINT.MSG	37	CAUTION	
DW2:[ZZSYS]QMG.TSK	20	CAUTION	
DW2:[ZZSYS]QMGCOM.TSK	42	CAUTION	
DW2:[ZZSYS]QMGERR.MSG	16	CAUTION	
DW2:[*]QUEUE.SYS	5	CAUTION	

That's it for printer support. You can still use the printer port using your own program.

DW2:[001002]DEFACN.HLP	18	CAUTION	Default account help file - If you don't use a default login account, you can delete this file and the next 3.
DW2:[001002]DEFACN.MSG	16	CAUTION	Default account message file
DW2:[001002]DEFACN.MNU	4	CAUTION	Default account menu file
DW2:[ZZSYS]DFLACN.TSK	63	CAUTION	Default account definition task

The following HELP files may be deleted if you don't need help for the functions listed

DW2:[ZZSYS]AMT.HLP	16	CAUTION	Account manager
DW2:[ZZSYS]AREM.HLP	7	CAUTION	Application removal
DW2:[ZZSYS]MESBRD.HLP	4	CAUTION	Message board
DW2:[ZZSYS]REMINS.HLP	13	CAUTION	More application removal
DW2:[ZZSYS]SUTERM.HLP	30	CAUTION	Terminal setup

These are the ONLY help files that you can remove from the system. The programs that use these files will continue to work even though the help files are gone. Programs that use other help files have not been written to ignore the error if they can't find their respective help files. Don't assume that a help file isn't needed simply because you don't use the help key. Most programs will open the help file when they start so that you will have faster access to the file when the time comes.

If you DO use a default account and no other ones, you can delete the following files once the default account is set up.

DW2:[ZZSYS]AMT.HLP	16	CAUTION	Account manager help file
DW2:[ZZSYS]AMT.MSG	15	CAUTION	Account manager messages
DW2:[ZZSYS]AMTMAIN.MNU	3	CAUTION	Account manager menu
DW2:[ZZSYS]AMTMAN.TSK	121	CAUTION	Account manager task
DW2:[ZZSYS]DELALL.TSK	20	CAUTION	Account deletion task
DW2:[ZZSYS]SPCOPY.TSK	27	CAUTION	I don't know what this one does
[ZZUSER.*]*.*;*		CAUTION	Non-default user files
[ZZWS.*]*.*;*		CAUTION	Workstation user files - These last 2 will recover about 156 blocks for each user you defined.
DW2:[ZZSYS]COMLIB.TSK	13	DANGER	Callable COMM resident library
DW2:[ZZSYS]C23LIB.TSK	34	DANGER	COBOL-81 resident library
DW2:[ZZSYS]C81LIB.TSK	34	DANGER	COBOL-81 resident library (old)
DW2:[ZZSYS]DBLPRO.TSK	30	DANGER	DIBOL cluster library

```
DW2:[ZZSYS]DBLRES.TSK      35   DANGER   DIBOL resident library
DW2:[ZZSYS]PASCLU.TSK      33   DANGER   Pascal cluster library
DW2:[ZZSYS]PASRES.TSK      34   DANGER   Pascal resident resident library
DW2:[ZZSYS]PBESML.TSK      34   DANGER   Basic Plus-2 resident library (old)
DW2:[ZZSYS]PBFSML.TSK      34   DANGER   Basic Plus-2 resident library
DW2:[ZZSYS]PROF77.TSK      34   DANGER   FORTRAN-77 resident library
DW2:[ZZSYS]PROSE.HLP       66   DANGER   Callable PROSE help file
DW2:[ZZSYS]PROSE.MNU        3   DANGER   Callable PROSE menu file
DW2:[ZZSYS]PROSE.MSG        7   DANGER   Callable PROSE message file
DW2:[ZZSYS]CET.TSK        122   DANGER   Callable PROSE program
DW2:[ZZSYS]PROSORT.SYS     26   DANGER   Callable sort
DW2:[ZZSYS]PROSORT.TSK     66   DANGER   Callable sort
DW2:[001002]BASIC2.ERR      6   DANGER   Basic Plus-2 run time error file
DW2:[001002]C81DBG.HLP     13   DANGER   COBOL debug help text
DW2:[001002]C81RTE.MSG     10   DANGER   COBOL run time error file
DW2:[001002]DIBOLERR.MSG    5   DANGER   DIBOL run time error file
DW2:[001002]PASERR.MSG      8   DANGER   Pascal run time error file
DW2:[001002]PROF77.MSG      7   DANGER   FORTRAN-77 run time error file
```

That's all of the base system files on the list. Excluding the files in the
DANGER category, your total disk savings at this point is about 1300 blocks.

The SYNERGY application makes copies of several files with each piece
of SYNERGY you install. Therefore, you should install all of the pieces
you want to use, then PURGE the contents of the DW1:[ZZPROVUE] directory.
This operation falls into the SAFE category. In addition, all of the electroni
release notes associated with each application will be deposited in the
directory LB0:[001002] directory. These files have a .DOC file extension. They
can be SAFEly deleted. Total potential savings: 120 disk blocks.

Finally, PRO/Comm can also be tailored:

```
        File             Size Category Purpose
DW2:[ZZCOMM]COMIN5.TSK     16   SAFE     Part of the installation process -
                                         After COMM is installed, this file is
                                         NOT used again.
DW2:[ZZFILEX]XFH.TSK       79   CAUTION  This program provides PRO to PRO file
                                         transfer.
DW2:[ZZFILEX]XFS.TSK       72   CAUTION  This program provides PRO to host file
                                         transfer.
DW2:[ZZSYS]LCP.TSK         65   CAUTION  LAT control program - Used only if you
                                         have the Ethernet option (DECNA)
DW2:[ZZSYS]XLDRV.STB        4   CAUTION  Ethernet driver symbol table - Used
                                         by DECnet with the DECNA board
DW2:[ZZSYS]XLDRV.TSK       31   CAUTION  Ethernet driver program - Used
                                         by DECnet with the DECNA board
DW2:[ZZSYS]XTDRV.STB        2   CAUTION  TMS driver symbol table - Used
                                         by the TMS board only
DW2:[ZZSYS]XTDRV.TSK       19   CAUTION  Ethernet driver program - Used
                                         by the TMS board only
DW2:[ZZCOMM]PHONEBOOK.PBK   7   CAUTION  This is the phonebook data file.
                                         It is not necessary if you don't
                                         dial your MODEM from the phonebook.
DW2:[ZZCOMM]DXFLX.TSK      63   CAUTION  DECmate to PRO file conversion
                                         support
DW2:[ZZCOMM]DXLPT.TSK      96   CAUTION  MORE DECmate to PRO file conversion
```

```
                                         support
DW2:[ZZCOMM]PROAXT.TSK     73   CAUTION  See below
DW2:[ZZCOMM]WPSQIO.MSG     29   CAUTION  See below
DW2:[ZZCOMM]WPS11.MSG      10   CAUTION  These last 3 files provide the PRO
                                         to WPS file transfer capability
DW2:[ZZCOMM]STE.TSK        42   CAUTION  The comment about this file was:
                                         "If you don't know that you are
                                         using this file, then you AREN'T.
```

For those of you that are using the toolkit, you probably know most of
the files that you can delete. Chuck did say that there are absolutely NO
PLANS to distribute software patches or source code so ZAP.TSK and SLP.TSK
can be deleted (at least as far as DEC is concerned).

Now the disclaimer: All of the information provided in this article was
obtained from the DECUS Symposia tape and notes that I took while listening
to the presentation. I have not - repeat NOT - tried these things myself.
So please use this information at your own risk.

PRO/FORTRAN I/O Versus QIO
by
Gary Rice
Newsletter Contributing Editor

PRO/FORTRAN on the DEC Professional series computers is
actually a copy of version 5.0 of FORTRAN-77 available on
the RSX based PDP-11 computer family. I have found only 2
subtle differences between the PRO version and the RSX
version. One was documented and one was not. The documented
difference involved the way that PRO/FORTRAN handles the
STOP statement. At run time PRO/FORTRAN prompts the user to
press the Resume key when a STOP statement is encountered.
RSX FORTRAN simply halts the program with a message. The
undocumented difference is also a run time difference. RSX
FORTRAN images store system run time error messages in the
image file itself. PRO/FORTRAN images do not contain system
messages. With the PRO, system messages are stored in an
external file. Other differences that I found while
researching this article had to do with RMS, but not the
compiler. I migrated several files from a PDP-11 running
RSX11M-Plus and tried to use them on the PRO. They compiled
and linked without any problem, but would not execute
without errors. The problem turned out to be the default run
time library. RSX used the FCS (File Control Services)
library for file activity, while the PRO uses RMS (Record
Management Services). RMS would not OPEN files with certain
characteristics that FCS would.

Both the RSX and PRO versions of FORTRAN-77 are nicely
enhanced versions of the FORTRAN-77 ANSI standard. There
are times, though, that using a FORTRAN READ or WRITE
statement cannot accomplish the function that you want to
achieve.

The following article describes the use of the QIO and WTQIO
system directives as referenced in the P/OS version 2.0
documentation set. It details their use in situations where
PRO/FORTRAN would be incapable of achieving the same
results.

These directives are documented in the PRO Developer's Tool
Kit P/OS System Reference Manual, but I have found the
documentation is directed at MACRO (assembly Language)
programmers. It is not very helpful if you want to write in
FORTRAN.

The difference between the QIO form and WTQIO form of the
call is a relatively small one, but can be used to your
advantage for selected applications. The QIO call tells the
system to perform an I/O operation on a particular device
but it returns control to the calling program before the I/O
operation is completed. The calling program then continues
executing other instructions concurrently with the I/O
activity. In some cases, many other program instructions
can be executed before the QIO completes. An example of

where the QIO form of the call would be useful appears later
in the article. The WTQIO form performs the same I/O
activity, except it will NOT return control to the calling
program until the I/O operation has completed (or an error
has occurred).

The manual describes the calling sequence for the QIO form
and the arguement list for both forms as follows:

        CALL QIO (fnc,lun,[efn],[pri],[isb],[prl][,ids])

fnc   I/O function code (see Appendix C)

lun   logical unit number

efn   event flag number

pri   priority; ignored, but must be present

isb   a 2-word integer array to receive final I/O status

prl   a 6-word integer array containing device-dependent
        parameters to be placed in parameter words 1 through
        6 of the DPB. Fill in this array by using the GETADR
        routine (see section 3.4.1.4)

ids   directive status

Now, to see what all that means, strip away all of the
optional arguements and examine the simplest form of the
call:

        CALL QIO (fnc,lun)

Here, with just two arguements, it appears much more
manageable. To see what this form of the call can do, let's
look at the two arguements first.

The LUN or Logical Unit Number is your way of telling the
system just what device to perform the I/O operation on. The
connection is made at LINK time. The linker program
(PAB.TSK) makes the following assumptions:

        Logical Units 1 thru 4 and 8 are assigned
        to your current disk drive.

        Logical Units 5 thru 7 are assigned to your
        terminal.

You can change these assignments made by the Linker via the
ASG option, but I will limit the contents of this article to
the defaults.

The following sequence of code illustrates the use of a QIO

that performs an I/O operation on the terminal:

```
INTEGER*2 FNC, LUN

LUN = 6
FNC = "1400

CALL QIO (FNC,LUN)
```

The answer to what operation was performed is found in Appendicies B and C of the P/OS System Reference Manual.

Consider the FNC arguement declared in the previous example. Appendix B loosely describes the I/O functions that can be performed on a terminal (section B.2) and loosely illustrates the MACRO calling sequences. Here are two excerpts:

```
IO.ATT,...                    Attach device

IO.RLB,...,<stadd,size,[,tmo]>  READ logical block
```

The IO.ATT example can be directly translated into the simplest form of the QIO call (no optional arguements necessary). The reference to IO.RLB hints at the need for additional arguements. The same assumption can be made about all I/O functions found in Appendix B. I will detail the optional arguements presently.

Continuing on to appendix C (section C.3.1), IO.ATT is mentioned again. Here, the symbolic name (IO.ATT) appears next to the OCTAL Word Equivalent value of 1400 in a table. Looking back at the code, you can see that FNC is assigned a value of "1400. The quotation mark indicates to the compiler that the value is OCTAL.

So the call attaches the terminal. Other valid QIO calls that use no optional arguements will detach the terminal or cancel an I/O request. If you examine the list of calls in the disk drive table (section B.1), you will see that there are NO disk I/O operations supported by this simple form of the QIO call.

For something more complex, consider the following section of code:

```
INTEGER*2 PRL(6), FNC, LUN, EFN
CHARACTER*26 BUFFER
C
CALL GETADR (PRL(1), BUFFER)
PRL(2) = 26
PRL(3) = 0
PRL(4) = 0
PRL(5) = 1
PRL(6) = 0
FNC = "1000
LUN = 1
```

```
EFN = 1
C
CALL WTQIO (FNC,LUN,EFN,,,PRL)
TYPE *, BUFFER(15:26)
END
```

As before, the FNC and LUN variables are present. This time, though, LUN is set to 1, thus associating the program with the default disk device (remember LUN's 1 thru 4 and 8 default to the current disk). Also, FNC is set to OCTAL 1000. This function code is a "READ LOGICAL BLOCK".

EFN or Event Flag Number is a variable used by the system to signal the program that the I/O is complete. In the WTQIO form of the call, it is not very valuable since by definition, the call will complete before the program continues. In fact, the variable is generally optional in the WTQIO form. The usefullness of this variable will become more obvious in the section describing the QIO form of the directive.

3 commas form place holders for arguements that are always optional in this form of the call.

Last in the calling sequence is the variable PRL, which is a parameter list. The parameter list is exactly the same list that is mentioned in the MACRO call referenced before. Let's look at the disk drive version:

```
IO.RLB,...,<stadd,size,,blkh,blkl>
```

Here "stadd" refers to the starting address of the buffer that will hold the information read from the disk block (or portion of the disk block). "Size" is the number of bytes to transfer into the buffer. "Blkh" stands for the High Block number. This can be used in conjunction with the "Blkl" or Low Block number to access any block on the disk. Blocks 0 thru 32767 can be accessed by assigning the number of the disk block in an assignment statement. Values that are greater than 32767 (the maximum value that "blkl" can be) can be specified by combining values in both the "blkh" and "blkl" arguements of the parameter list.

With all of those definitions and calling order in mind, look at the PRL variable in the FORTRAN code. Notice what is being done with the first element of the PRL array. The subroutine known as GETADR is being called with PRL(1) as one of the arguements. GETADR takes the address of the BUFFER variable and stores it in the PRL(1) array element. This corresponds exactly with the description of "stadd".

PRL(2) has been set to 26. The BUFFER variable is 26 characters long. "Size" is in the second position of the MACRO parameter list.

PRL(3) and PRL(4) are set to zero. PRL(5) is set to 1 which corresponds to "blkl". This call will therefore read the

block 1 of the default disk and transfer the first 26 bytes of that block to the variable BUFFER. Then if you display the 15th thru 26th character of that variable, you will see the disk label name. Trying to get the disk label cannot be done with the standard FORTRAN OPEN, READ, CLOSE sequence.

Other system information about the disk device can be accessed this way by looking at other areas of this disk block. If you want to actually use this routine, be sure that your Link Command File contains the switch "/PR:0" in the command line. Without it, the WTQIO call will fail.

That was a disk QIO. Next I will discuss a terminal QIO that uses a parameter list.

If you have ever tried to capture a keystroke to one of the many function keys on the PRO with a normal FORTRAN READ statemnt, you know that it is very frustrating. Here is a piece of code that will do it quite nicely for all of the grey function keys on the top row of the keyboard except the "Hold Screen" and "Print Screen" keys. The "Hold Screen" and "Print Screen" keys are NEVER available to High Level Language application programs.

```
        INTEGER*2 PRL(6), TABLE(8), ISB(2)
        INTEGER*2 EFN, LUN, FNC
C
        CHARACTER*5 KEYBRD
C
C
        TABLE(8) = 2
        CALL GETADR (PRL(1),KEYBRD)
        PRL(2) = 5
        CALL GETADR (PRL(4),TABLE)
        FNC = "5001
        LUN = 5
        EFN = 1
        CALL WTQIO (FNC,LUN,EFN,,ISB,PRL)
```

The function code for this QIO (FNC = "5001) translates into a "READ logical block ended by specified special terminator" call. The MACRO parameter list for the call looks like this:

        IO.RTT,...,<stadd,size,[tmo],table>

"Stadd" and "size" are that same variables as before. "Size" or PRL(2) is set to 5. The reason I selected 5 as the size of the buffer is because 5 is the number of bytes returned to the application program when one of the function keys is pressed. This may not be very clear if you read the Termianl Subsystem Manual where this is presented. I found that the CSI character mentioned in the manual actually is 2 characters when the program receives them (ESC and [ ).

"Tmo" is an optional Timeout variable that allows you to set a time limit on input keystrokes. I've chosen to set NO time limit by leaving the variable (PRL(3)) set to zero.

The "table" variable is more complex. First, the Appendix doesn't state that the arguement must be the address of the table. That is documented elsewhere in the manual. GETADR is again called to provide the table address. The table itself "contains" the character that we want the QIO to recognize as the end of the input string. You might think of this terminator character in the same way as you would when coding for the user pressing the Return Key to signal the end of input on a standard FORTRAN READ statement.

The terminator character used by the QIO call is the tilde (~) since the tilde is the last character transferred to the application when a function key on the top row of the keyboard is pressed. The characters returned by the function keys are all documented in Table 2-4 of the Terminal Subsystem Manual.

Looking at the code, though, it is not very apparent that the Table contains a tilde. The program only has one reference to the value in the table from the line of code:

        TABLE(8) = 2

That line actually DOES translate into a tilde though. Here is how its done. The TABLE array is 8 words long or 16 bytes. Each byte contains 8 bits, for a total of 128 bits in the array. In the ASCII standard character set, the tilde is the 127th character. Now, assuming that one bit is used to represent each character in the character set, all that is necessary to put the tilde in the table is turn on the 127th bit.

To turn on the 127th bit, you must first find it in the TABLE array. Lay the array out in the following way:

TABLE(1), TABLE(2), ..., TABLE(8)

Then, lay out the bits:

1, 2, 3, 4, ..., 128

Finally, using some binary arithmetic, select the value that will set the 127th bit to a 1. Looking at the last word in the TABLE array, and the second to last bit, the only way to turn that bit on is by assigning the value of 2 to the array element. Recall from your schooling that:

        0000000000000010 (Base 2) = 2 (Base 10)

Therefore, by assigning 2 to the last array element, a tilde is enetred in the table. In a similar way, it is possible to assign any of the 128 characters to the contents of the TABLE.

The remainder of this article was lost due to the erasure of
the index file on the disk with the completed text. If I can,
I will add the final two examples at a later date and
re-publish the entire article.

Notes on PRO/DECnet V 1.0

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We have been using PRO/DECnet V 1.0 to link together six PRO-350 computers
in a Local Area Network for about four months. Our three objectives in
installing the LAN were, 1) to make efficient use of disk storage for
several large data bases, 2) to minimize the effort required to make
updated data files and applications available to each computer, and 3) to
share printer resources, including an LN03 laser printer and LQP02 printer.

Our largest data base consisted of four indexed files comprising a total
storage requirement of 2500 Kbytes. Not only does this hog disk space when
installed on each machine, but frequent updates to several computers is a
cumbersome chore. Therefore, I looked forward to a LAN which would allow
remote file access and use of DCL across the network. We planned to keep
several large data files on one 33 Mbyte hard disk, which would be
constantly available on the network, and other PROs would access the
various data files as needed.

I was not concerned that commercial data base programs would be unable to
access data files on another node. The data bases are, for the most part,
accessed by in-house applications which edit, display and print data. Some
applications access several data files simultaneously in order to draw on
different kinds of data. I did have the delusion, however, that
programming in a PRO/DECnet environment would involve little more than
changes in the formation of file specifications and modification of OPEN
statements.

A number of limitations of PRO/DECnet required unforeseen modifications to
our applications. In many cases these limitations are not clearly
documented in the PRO/DECnet volume of the Tool Kit. Some of these
limitations are presented here.

1. PRO/DECnet supports RMS-11 file access by remote nodes. On a single
PRO, the number of files that can be simultaneously opened by remote nodes
is limited to five. When a remote node opens a file using RMS-11, a File
Access Listener (FAL) program is installed on the PRO where the file being
accessed is located. This FAL task performs operations on the file and
communicates with the remote task. Apparently, there are only five FAL
tasks on a single PRO. Since one FAL task is used for each file being
accessed by a remote node using RMS-11, a maximum of five files can be
opened on a single node by one or more remote nodes. For example, if
remote node A opens five files on node B, no other node could open a file
on node B. The attributes of the files being opened do not affect this
particular limitation (i.e., each sequential file uses one FAL program as
does each indexed or random file). Other nodes can still do task-to-task
communication with node B using DECnet high level language communication
calls and can communicate using the mail and phone utilities.

If a program cannot access a file because the FAL tasks on the remote node

are all busy, BASIC=PLUS-2 returns ERR = 175. This same error is returned
if the program cannot access a remote node because the access string is
incorrect or the remote computer is not on the network. BASIC-PLUS-2 will
not return the correct error message, since it does not support this error.
The error can be handled by an error handler routine.

2. Using BASIC-PLUS-2, a single task can access remote files using RMS-11,
or the task can use DECnet high level language communication calls to open
a channel on the network and establish a logical link to a remote task.
However, a single task cannot do both simultaneously. This may be because
there is a conflict between the LUN used by RMS-11 and that used by the
subroutine to open a channel on the network. At any rate, DEC engineering
did not have a solution to this problem. If your application requires
remote file access and communication with a remote task, it will have to
confine each process to separate tasks locally, and use local task-to-task
communication to coordinate the process.

3. Pool space can be a severe limitation when files are accessed by a
remote node. Considerably more pool space (five times as much in some
cases) is used when a file is accessed by another node as when the same
file is accessed locally. Listed below are typical files with pool
requirements for local access and for access by a remote node.

File Attributes	Local Access	Access by Remote
Sequential fixed; Recordsize = 1 byte	52 words	236 words
Sequential variable; recordsize, no maximum	52 words	254 words
Indexed fixed; bucketsize 1 block; 1 key	52 words	274 words
Indexed fixed; bucketsize 2 blocks; 10 keys	94 words	296 words

The amount of pool space available on a system depends partly on the
activity of background and foreground tasks and also on the number of tasks
actually installed but not active. The default start up file for the tool
kit (START.CMD in your tool kit directory) installs a number of tasks such
as editors, compilers, RMS utilities, and DCL HELP. Each task typically
uses 40 or more words of pool space. When I enter the Tool Kit using the
default start up file, I have a total of 1864 words of pool space
available. Access of five files by a remote node, plus use of print
services and/or a text editor can reduce pool space to critically low
levels.

Depletion of pool space can be a problem because the operating system often
cannot gracefully handle depletion of pool space. My system has crashed on
me or just stalled out due to depletion of pool space. At other times I
have tried to enter the Tool Kit while another node was accessing files.
Only about half of the Tool Kit tasks installed correctly. The other
INSTALL commands produced the following message:

INSTALL -- Status -   -12,   -32 Id=E0000049

This is an RMS error indicating that a file could not be accessed.

I have minimized this problem by modifying my START.CMD file for the tool kit to install only the tasks that I frequently use (e.g. EDT, compilers). This saves over 500 words of pool space. I put the installation commands for other utilities in individual command files in [1,2]. Where possible, I have included the REMOVE command in the command file to free up pool space. The following is an example of my command file for PROSE. This command file, located in [1,2]PROSE.CMD, can be run by typing @PROSE while in the Tool Kit.

```
.OPEN TI:
.DISABLE QUIET
.DATA    Install the PROSE Editor - EDIT/PROSE command
.IFNINS CET      INSTALL LB:[ZZSYS]CET
.IFNINS ...PRO   INSTALL APPL$DIR:DCLPROSE
.ENABLE QUIET
.ENABLE SUBSTITUTION
.DATA
.ASKS F1 File name to edit:
.DISABLE QUIET
EDIT /PROSE 'F1'
REMOVE CET
REMOVE ...PRO
```

DEC engineering did not have a solution to the problem of depletion of pool space. They did say that V 3.0 of P/OS and Tool Kit lets you increase pool space.

4. PRO/DECnet subroutines let you perform task-to-task communication across the network and run an installed task on another node, but it will not let you install a task on another node (as far as I know). I've gotten around this by using an application to install (with /NOREMOVE option), but not run, any tasks which I may later want to run from a remote node. This application is named in FIRSTAPPL.PTR so that the tasks are installed each time the system is booted. Thus the tasks are always ready to run, but use only pool space, no memory, until they are run.

5. Although PRO/DECnet lets you print a file residing on another node on a printer attached to your node, it will not let you send a file to a printer connected to another PRO. Since we had hoped to be able to do this in our LAN, I created an application to give us this capability. To do this, the technique described above (4) was used. Using DECnet task-to-task communication, the local task (on the computer that the user is sitting at) spawns the already installed remote task (where the printer is located). The remote task checks to make sure the printer is available and sends a message indicating the printer status back to the local node. If the printer is available, the local task sends lines of text to the remote task which in turn sends them to the printer. The remote task runs in the background and does not interfere with that user's work.

6. PRO/DECnet DCL does not allow the use of command modifiers.

7. PRO/DECnet clutters up the message board with hundreds of uninteresting (to a typical user) messages. Every time a file is accessed, three messages are written to the message board; and this is when the access was successful! Formerly I had used the message board for displaying messages concerning the status of background tasks. If such a message is one of 250 messages stating that a file had been successfully accessed, the usefulness of this technique is severely limited. PRO/DECnet uses the message board to indicate when new mail has been received, but, again, this message is likely to be buried on an active network.

8. When opening a file on a remote node using BASIC-PLUS-2, the clause { FOR OUTPUT } is ignored. In other words the following line

    OPEN node::filespec FOR OUTPUT AS FILE #1%

executes as

    OPEN node::filespec AS FILE #1%

Therefore, if the file already exists, the most recent version is opened rather than opening a new version. The clause { FOR INPUT } executes correctly, returning an ERR = 5 if the file doesn't exist.

PRO/DECnet has functioned well as long as the limitations are kept in mind. In an environment consisting solely of PROs, I would consider PRO/DECnet to be useful primarily for copying files from node to node. Heavy access of remote files using RMS-11 may not be practical in a busy network.

In an effort to keep you informed about software being shipped from various vendors, I began the following list in April, 1986.

This is the seventh edition of the PRO Software List Update. However, not all of my lists have been published, so for this printing, I have eliminated all of the asterisks that I have used in the past to mark changed information. New this month is a PRICE column. Recent changes to the DECUS commercialism policy have relaxed the rules regarding the publishing of pricing information.

This list reflects information that I received as of November 16, 1986.

DEC Software	List Price	Current/Last Revision	Source of information	Still Avail?	P/OS v3 Supported
20/20		1.0.54	User	Yes	UNK
Athena/Graph		1.0	DEC	Yes	UNK
BASIC-11/RT-11	(Replaced - See BASIC-PLUS/RT-11)				
BASIC-PLUS/RT-11	UNK	3.0	DEC	Yes	N/A
CT*OS		1.0	DEC	Yes	UNK
Design Graphix/Executive		1.0	User	Yes	Yes
Easyentry		3.0B	DEC	Yes	UNK
FORTRAN IV/RT-11		2.6	DEC	Yes	N/A
LOGO		1.4	DEC	Yes	UNK
MAIL-PLUS	N/A	1.0	DEC	No	UNK
MJA Accounts Payable		5.2	DEC	Yes	UNK
MJA Accounts Receivable		5.2	DEC	Yes	UNK
MJA General Ledger		5.2	DEC	Yes	UNK
MJA Order Entry/Inv		5.2	DEC	Yes	UNK
MJA Payroll & Personnel		5.2	DEC	Yes	UNK
NPL Information Manage		1.4	DEC	Yes	UNK
Phoenix-PRO		1.0A	DEC	Yes	UNK
P/OS (Diskette)	UNK	1.8	DEC	UNK	No
P/OS (Hard Disk)		3.1	User	Yes	N/A
PRO 2780/3780		1.2	DEC	UNK	No
PRO Appl Starter Kit		1.0	DEC	Yes	No
PRO/Associate	N/A	1.0	DEC	No	No
PRO/BASIC		1.3	User	Yes	Yes[1]
PRO/Comm (diskette)		1.7	DEC	Yes	No
PRO/Comm (hard disk)		3.0	DEC	Yes	Yes
PRO/CPM-80	UNK	1.1	DEC	UNK	UNK
PRO/Datatrieve		2.0	User	Yes	Yes
PRO/DECnet		2.0	DEC	Yes	Yes
PRO/FORTRAN-77 Debug	(Replaced - See PRO/Toolkit Symbolic Debugger)				
PRO/IVIS	UNK	3.1	DEC	Yes	UNK
PRO/Lab Subr Lib.		1.2	DEC	Yes	No
PRO/NAPLPS		1.0	DEC	UNK	UNK
PRO/Office Workstation	UNK	1.4A	DEC	UNK	UNK
PRO/PRODUCER Toolkit		1.6	DEC	Yes	No
PRO/RDT		1.0	DEC	UNK	No
PRO/Scientific Subr		1.3	DEC	UNK	No
PRO/SIGHT		1.0	User	Yes	Yes[1]
PRO/SNA	UNK	1.1	DEC	UNK	No
PRO/Smart Mailer		1.0	User	Yes[2]	UNK
PRO/Toolkit		3.1	User	Yes	Yes
PRO/Toolkit BASIC-PLUS-2		2.3	DEC	Yes	Yes
PRO/Toolkit COBOL-81		2.4	DEC	Yes	Yes
PRO/Toolkit DIBOL		1.7	DEC	Yes	Yes
PRO/Toolkit FORTRAN-77		5.0	User	Yes	Yes
PRO/Toolkit PASCAL		1.2	User	Yes	Yes
PRO/Toolkit RT Lib.		2.1	DEC	Yes	No
PRO/Toolkit Sym Debug		2.0	DEC	Yes	Yes
PRO/VENIX		2.0	DEC	Yes	N/A
PRO/Videotex		1.0	DEC	Yes	UNK
Professional CTS-300		1.0	DEC	Yes	N/A
Professional RT Lib/RT-11		1.0	DEC	Yes	N/A
PROSE PLUS		2.0	User	Yes	UNK
RS/1		12.0	DEC	Yes	UNK
RSX Host Toolkit	UNK	3.0	DEC	Yes	Yes
RT-11		5.3	DEC	Yes	N/A
Supercomp-20		1.28	User	Yes	UNK
Synergy		2.0	User	Yes	UNK
VAX Host Toolkit	UNK	3.0	DEC	Yes	Yes
WPS/Plus		1.0	DEC	Yes	Yes[1]

[1] Restrictions apply
[2] This product is available thru the DECUS "Tape" Library ONLY

3rd Party Software (alphabetically)	Vendor	List Price	Rev	Source	Avail?	P/O v3.
Fingraph	Graphic M*I*S	N/A	2.0	DEC	No	UNK
Online Disk Unfragmentor	By Hand		1.4d	User	Yes	Yes
PRO/Menu Manager	Wasatech Computer		1.0	User	Yes	No
PRO/Session Logger	By Hand		2.0	Vendor	Yes	Yes
RDM Relational Data Mgr.	Interactive Tech.		4.0L	User	Yes	Yes
TK!Solver	Software Arts	N/A	1 (2A)	User	No	UNK

If you have received a shipment of software in the last month (and you DIDN'T get it in a fire sale), please compare the documented REV level to the one I have listed. If your software is more recent (or it isn't listed at all), please let me know so I can update the list. Also, if the source of my information is listed as "DEC", I would appreciate hearing from a user, since I've found that hearing about it from DEC doesn't always mean that it is actually shipping.

I will submit a new list to the PC SIG Newsletter about the 20th of each month.

You can contact me at: P.O. Box 5536
Hacienda Heights
California   91745-0536

or by calling: (818)913-7996 and leaving a message.

PRO/**S**IGHT Graphics Contest

Sponsored by the DECUS PC SIG
(PROfessional Working Group)

Submission guidelines and rules:

1. All images must have been generated on a PROfessional 300 using a
standard PRO/SIGHT graphics program (must be editable by PRO/SIGHT).

2. Submissions may be copyrighted by author but they will be
considered available for public distribution and use at no cost (public
domain).

3. Images must be submitted on RX50 formatted diskette (as .GID file)
and should be accompanied by a slide, photograph or other hard copy
form if possible.

4. Images will be judged by members of the PC SIG Executive
Steering Committee. BRIBES WILL BE ACCEPTED IMMEDIATELY AFTER AWARDS HAVE
BEEN SENT TO WINNER. All decisions are final.

5. Certiticates will be awarded for each actegory.

6. Multiple submissions per category or categories by an individual
is permissable. INDIVIDUALS MAY RECEIVE ONLY ONE AWARD PER CATEGORY.

7. Person making submission does not have to be present to win.

8. All entries must be postmarked by 23 February 1987 and received no
later than 2 March 1987.

9. Entries are to be sent to;   Thomas R. Hintz
                            University of Florida
                            IFAS Computer Network
                            Building 120
                            Gainesville, FL 32611

10. Specify the category desired for each entry. Only one category per
item submitted.

11. Person submitting an image must be the original author and owner of
the image.

12. The PC SIG does not take responsibility for Diskette(s) and/or files
that are damaged or lost in shipping.   Please pack them with
sufficient protective material and provide adequate postage.

13. Each diskette containing an entry must be labeled with author's
complete name and address.

14. Special category (Experimental) entries must meet all the above rules
and guidelines except #1.   Submitter must provide a brief description of
the method used to create the image. Images must be loadable from
PRO/SIGHT.

Categories:

EMPLOYEE OF	(non-DEC)	(DEC)
B&W still images	1	7
B&W action images	2	8
Color still images	3	9
Color action images	4	10
Multiple picture (PRO/SIGHT script)	5	11
EXPERIMENTAL	6	12
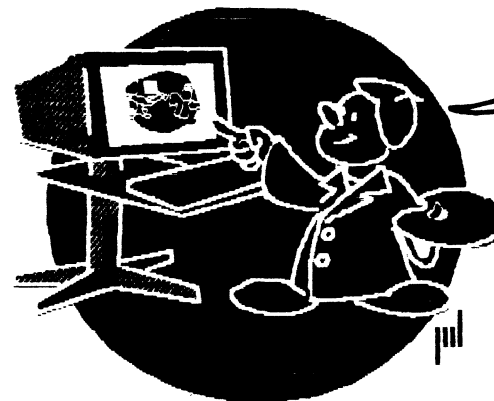
From the Rainbow Chair
By LYNN JARRETT

Here we are in a new year and what will it bring? Plenty,
I believe. I always like to keep a positive attitude and
hope that you feel the same.

I've gotten more response from the last Wish List that was
published here than ever before. Rainbow users are finally
finding the way to my mail box. What that tells me is that
there is plenty of interest left in the Rainbow community,
and we want to assist each other in every way possible.

At DECUS San Francisco it was very interesting to find that
Lotus is still working on the update. No date for the
Rainbow release has been announced--not even a hint. An
interesting session was given, though, by a representative
of Lotus, and we were briefed on what we'd possibly see
with an update on the Rainbow.

Following are are some comments I've received from users
who've returned the Wish List Ballot and I'd like to share
them here:

From Larry DeMoss, Morgan Hill, Ca.: "If DEC is not going
to continue development of software and hardware, then at
least they could support and/or assist third parties and
owners of Rainbows to do their own development."

From William Gartrell, Denver, Colo.: "How do I get in
touch with a local Rainbow Users Group?"

From Herbert Gareau, Arverne, N.Y.: "DEC, above all,
remember, PC stands for personal computer, so free us from
VAX concepts and pricing..."

From Carl Zimmerman, St. Louis, Mo.: "DEC engineers have
had more than 2 years a way to split the video signal to
put text on the monochrome display and graphics on a color
monitor simultaneously, using a kluge board no bigger than
a matchbox. This was demonstrated at the Spring DECUS in
St. Louis a couple of years ago. Why not support it and
sell it?"

From Philip Rice, Halsey, Oregon: "Things I miss most on
the Rainbow which are on a Compaq are (1) Clock, (2) Print
Screen key working. Plan to purchase third party products
to correct these. Otherwise, Rainbow is a VERY nice PC."

Well, I've run out of space here and hope to hear from even
more of you very soon.

Lynn Jarrett

Rainbow Wish List

Dear Readers:

Since DEC addressed the Rainbow Wish List officially at DECUS
San Francisco, they also told me that it was the last time
they'd address the wish list since the Rainbow is now a mature
product. I don't buy that, and I hope you don't either. I'll
continue to print the wish list here in each issue so that third
party vendors will get a chance to see what the users really
want, and I think it'd behoove Digital to listen to us as well.

You'll see that the Lotus update is right at the top of the list
again and rightfully so. We were promised the update by DEC and
Lotus also announced it for the Rainbow in their May issue of
Users Forum. Nothing has happened yet, and I'm beginning to
wonder if it will. I'm still working on the issue, though, so
be patient.

Several third party vendors have given us a lot of good hardware
add ons and some great Rainbow software. I'm sure there are
several more out there continuing development of additions for
you users. I am asking that you submit to me your Rainbow Wish
List ballot, published in the Questionaire section here, and
let's keep in mind that we should continually request our wishes
as we see fit and hope that DEC and third parties will soon
address some of these issues.

I could go on for pages and discuss some of the past and present
issues on this new list. Mainly, though, DEC will be addressing
some of the issues with the Network Integration kit that you all
know about by know, but those issues still remain on the list
and will until the kit comes out. Of course, the kit, though,
will not take care of the single users' needs in this area, and
this is where the third parties come in.

Thanks for your participation.

RAINBOW WISH LIST

1. Lotus Release 2.01.

2. MS-DOS 3.1.

3. Larger memory upgrades and removable hard disks at
   reasonable prices.

4. Larger than 20MB hard disks and controllers.

5. Nationwide TRUMP upgrades--update from a 100A to 100B.

6. Printer drivers for LN03 and more non-DEC printers on all
   DOS software.

7. A second COMM port that doesn't require you to disconnect the hard disk controller to put it in.

8. Come up with an ANSI.SYS device driver like that of IBM that would give people the ability to redefine the function keys. This could allow users the use of extended sequence for color or monochrome shading that DEC could add as well as give the users the ability to run many IBM programs on their Rainbows.

9. MS-DOS installable graphics driver similar to GSX-86.

10. Rainbow versions of RBase 5000, Framework, Thinktank, and Borland's Sidekick.

11. A new ROM upgrade for the Rainbow that would include support for an IBM PC compatible character set. (This would allow Rainbow users to easily run all the programs that take advantage of all the IBM PC graphic characters.)

12. More software packages overall--for business and personal use.

13. Concurrent MS-DOS.

14. Better basic documentation with purchase of each unit, i.e. BIOS, firmware listing and schematics.

15. Software spooler.

16. Hardware Reset and Halt Keys.

17. Terminal mode to support the additional keys of the LK201 keyboard.

18. Larger print buffers built into printers.

19. Hardware Reset and Halt keys.

20. Concurrent MS-DOS.

21. Remove copy protection from DCS and DDS software.

22. Coordination between local DEC Field Service offices and Atlanta Hotline Support Center.

23. ASSIGN command.

24. Cheaper maintenance prices.

25. Rainbow Draw and Paint.

26. VT220 and VT240 emulation software.

27. Lap-top or portable Rainbow.

28. Rainbow LAN without the need for a VAX.

29. Field Service support for third-party wares such as the disk controller and formatter as well as for the clock boards that are on the market.

30. Full featured GW-Basic compiler.

31. "Open" Winchester utility that allows users to specify disk geometry to take advantage of great third-party disk prices.

32. Direct Ethernet access for the Rainbow; i.e., a board that plugs into the Rainbow that doesn't preclude the use of a hard disk.

33. Liberal trade-in allowance on Rainbow to VAXmate.

34. Ability to read and write to RX33 diskette drive upgrade kit.

35. Monitor connections for CAD products.

36. DEC support for third party vendors wanting to develop and market hardware and software for Rainbows.

The ballot can be found in the Questionaire section of this copy of the SIG Newsletters.

Lynn Jarrett

Information on Rainbow Futures as announced by DEC at the Fall
1986 DECUS meeting Oct 6-10, 1986

Michael Bowers
University of California
Davis, CA 95616

DEC made it very clear at Fall DECUS that the Rainbow is a
mature product. This usually means that no major enhancements will
be made, but functional improvements may continue for some time.
Support for the hardware and software will continue for the
foreseeable future. The Rainbow will continue to be manufactured to
meet demand. New software available now or in the near future
includes DBase III v1.1 (now available, upgrade alsoavailable),
Lotus 123 v2.x (date not announced by Lotus yet, but probably this
fall or early next year), and a maintenance release of the Rainbow
Office Workstation (I'm not sure if this is out yet, or will be
shortly). No other software or new versions of existing software
for the Rainbow are being sought by DEC; most of their efforts in
this area are going to support the VAXmate.

The only new "intended" hardware (not announced, but it is under
development and will be marketed) is the PCSA network integration
kit for the Rainbow. PCSA (Personal Computer Systems Architecture)
is DEC's extension of Digital's Architecture that merges the VMS
and MS-DOS Environments. It is now available for the VAXmate, and
will also be available for the Rainbow and for IBM PC and AT
machines. The networking software will run under MS-Windows and is
an MS-Networks (Microsoft's network) implementation on top of
DECnet. It will allow file access from both MS-DOS and VMS, direct
sharing of server-based (= VAX) PC files, applications and VMS-
based devices with network transparency to users.

The PCSA kit for the Rainbow (and other PCs) will include the
following:

· Ethernet board, with thin-wire Ethernet connectors

· A DECmouse

· For non-DEC PCs, an LK250 keyboard

· Software: MS-DOS 3.1
              MS-Networks implementation
              MS-Windows
              VT100/220 (240?) Terminal Emulator
              Installation/Configuration Aid

So much for the literature from DEC. What does this mean for
the Rainbow? The Ethernet board itself will be installed under the
hard disk controller and memory expansion boards. These boards
will plug into the E-Net board which plugs into the system board.
A separate cable will lead to the removable panel in the back (just
below and to the left of the power cord) which will be replaced by

the E-Net connector and the mouse connection. This DEC mouse,
which on the VAXmate only works with DEC layered products, not
standard MS-Windows applications (it uses its own driver), is a
"cute", round three button mouse which won an industrial design
award for DEC. It can be configured on the VAXmate for either left
or right-handed use and is a typically well-engineered, non-
industry standard DEC product (sound familiar, Rainbow owners?).

The date for the Rainbow PCSA kit is "first half of 1987". Near
the end of the week, a few DEC people indicated that it may slip
towards fall 1987. My guess is that it is nearly a year away, and
probably the IBM version will be out sometime sooner. MS-DOS 3.1
for the Rainbow will probably be ready sooner, and should be
released separately. The E-Net board will NOT work in 100A
machines!! This is due to power supply problems (most E-Net boards
are power hogs) and space problems with the Rainbow 100A memory
adapter - it just won't fit. This upset several large sites
including a college with 1500 A's. DEC took a suggestion from the
audience to provide a TRUMP type upgrade or a separate kit with a
larger power supply and a B system board with the PCSA kit for
these types of users and indicated they would look into it. There
was also considerable audience support for "bundling" the pieces of
the PCSA kit and selling them separately; for example MS-Windows.

I'm not sure who would buy the separate MS-Windows, even if the
price is right. MS-Windows runs very poorly on 8088 type machines.
I presume that you would also need a graphics board; adding that
capability to the E-Net board would be very space consuming. The
advantage of course, is the ability to run "standard industry" type
applications directly on the Rainbow (ie, IBM software) since the
Windows drivers handle the screen/graphics and keyboard. And there
is also the problem of DEC's pricing - I am interested in seeing
what the final cost of the PCSA kit will be. There was a note in
one of the DEC oriented magazines recently that you could buy both
a Japanese-clone car and a PC-clone computer from the same Korean
company for the price of a VAXmate!

Other items that came forth at the meetings:

· No RX-33 support for the Rainbow.

RX-33 is the floppy drive on the VAXmate which is a AT style 1.2 Mb
drive which will also (at least) read 360 Kb DSDD and RX-50
(Rainbow) disks.

· The TRUMP program is dead. It was illegal within DEC.

The TRUMP program was run by Field Service, primarily to obtain A
type system boards for spares. You could swap your A board plus
$250 to $450 for a B board. DEC stated that at the rate it was
going they would run out of B boards for Field Service spares and
have all the A boards with no one needing a spare.

RSX

MULTI-TASKER

DECUS

Table of Contents

Food for Thought

"As a living thing man may be coerced, i.e. his body or anything else may be brought under the power of others; but the free will cannot be coerced at all, except in so far as it fails to withdraw itself out of the external object in which it is held fast, or rather out of the idea of that object. Only the will which allows itself to be coerced can in any way be coerced."

- Georg Hegel
The Philosophy of Right

The Editor's Corner

Bruce R. Mitchell

At long last, gentle readers ... the results from the puzzle contest are to be found in this issue.

Greetings once again, folks, from Byron, Minnesota, the Rutabaga Capitol of the World. It's so cold here, as I write, that even the little LEDs on the front of the 11/60 are turning blue. And it's really hard to get the ice cubes to go down the drain after taking a shower.

As this issue goes to press, in late November, there is a great furor in progress over Digital's new policy on software licensing. Nobody seems to be quite sure what is going on. We may hope to see some sort of order emerge from this madness. As things stand right now, though, it appears to be the entire user community - including DECUS - against DEC.

In this issue, we have a neat little patch for those of you who own 11/84s and would like rotating console lights. An

article on a message system will be of use to those users without DECnet and the SIG tape MAIL package. To round out the issue, there is the report on the Spring 1986 (yes that's right) Woods meeting and copies of the handouts on disk caching from the Fall 1986 Symposium. from the Symposium session on ACDs.

Oh, yes. And an index to all the articles in the Multi-Tasker for 1986. I almost forgot that.

Again, the editor thanks each and every respondent to the continuing call for more articles. Keep them coming; I've got a little something for all submittors. Sometimes it may even be useful. And - oh yes, if you don't want to write an article, at least drop a line telling what kind of articles you'd like to see in the Multi-Tasker.

And, once again, ladies and gentlemen, we pour the water into the acid. Justin, take it away.

----- Licensing to Kill -----

Attendees at the Fall DECUS in San Francisco who attended the notorious session on Digital's new software licensing policy were privileged to see Digital do one of the quickest policy about-faces in recent history.

As announced at that session, all CPU licenses would die with the sale of the host CPU. No upgrade credit. No transfers. Not even when the CPU was traded in on a bigger CPU within the same organization. Imagine the potential cost to a company upgrading from an 8650 to an 8800!

As howls of outrage from the user community reportedly caused cancellation of megabucks of orders, DEC wasted no time in disowning its new policy in regard to CPU upgrades. No, that wasn't what was meant; no, not at all, and we're sorry you got that impression, dear users.

It's interesting, however, that DEC seems to be sticking with its intent to make licenses die when a CPU is sold outside an organization. And, in the opinion of this writer, this is only slightly less offensive than abolition of credit for software licensing when a CPU is upgraded.

Consider an extreme case. A company buys a MicroVaxII, licenses it, uses it for a year, outgrows it, and sells it. Another company buys it, licenses it, uses it for a year, outgrows it, and sells it. This could conceivably happen five or more times over the useful lifetime of that CPU.

That CPU could sell six VMS licenses. It's unreasonable to charge full boat for the license after the first one. And, even

so, it's unreasonable for Digital to transfer that VMS license without charge - which is what they have done to date, as a courtesy to users.

It would be reasonable for Digital to charge a license transfer fee for software licenses. Ten to twenty percent of the license cost is a fair amount; it covers Digital's overhead in transferring the license, and reminds the purchaser that software is a commodity, not a right ...

... whereas, the current policy is licensing to kill. Kill the used machine market, that is.

Hmmm ... might that have been Digital's intent all along?

Yr obd't servant,
Justin L. Hewser

(And, just as we go to press, the November 24th issue of Digital Review reports Ken Olsen holding the opinion that "... we don't charge enough for software.")

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

Please submit machine readable media when possible. RX01, RX02, RX50, or 9 channel magtape at 800 or 1600 BPI are best. Any RSX volume format is acceptable except ROLLIN or PRESRV. ANSI, BRU and DOS FLX formats are well-liked by the Editor's tape drive.

Submissions which aren't machine readable take longer to get into print. The editor is lazy and types mass quantities only once a month when progress reports are due.

If you preformat a submission in RUNOFF format, please set page size 58,80; left margin 10; right margin 75; and, when changing margins, use incremental changes rather than absolute. The editor blesses you for the consideration.

Send all submissions to:

Bruce R. Mitchell
Machine Intelligence and Industrial Magic
PO Box 816
Byron, MN   55920

----- And That's The Way Things Are -----

... this month in Pool Lowbegone, where the programmers' drink is strong, the Ziglet is good-looking, and the Files-11 ACP LRU count is above average.

Idle Loop Lights for PDP-11/84s

Donald Arrowsmith
MS20, Naval Air Propulsion Center
Box 7176
Trenton, NJ   08628

Most of us who have used machines such as the 11/45 and 11/70, with the full display front panels, are comforted by the rotating light pattern when RSX is running. Just seeing the repetitive pattern appear is an indication that RSX is alive and well and living inside the box.

DEC unfortunately gave up the full switch register front panels some time ago, but somewhat the same effect _can_ be achieved on an 11/84 with a little (very little) effort.

A SYSGEN is required since Executive modifications are necessary. For RSX-11M, edit the RSXMC.MAC generated by SYSgen to include the line "P$$P45=0". Then apply the following SLP patch file to RSX-11M V4.2 executive module [11,10]SYSXT.MAC. The patch causes the diagnostic register to increment once every 30 passes through the idle routine. This happens twice per second on a 60Hz machine with no activity.

```
-794,798*
        MOV     #30., $IDLCT      ; Reset the count
        DEC     (R1)              ; Actually increments the lights
        MOV     (R1), @#177524    ; Put it into the diagnostic LEDs
45$:
```

Donald didn't supply a patch for M-Plus, but if you feel bold, the following patch may work. --- The Editor

For M-Plus, P$$P45 is statically defined. No patches to RSXMC.MAC are necessary. Patch [11,10]SYSXT.MAC as follows before doing SYSgen. Note that this hasn't been tested!

```
IDLE:   CACHE$  RESTOR          ;RESTORE CACHE TO NON-BYPASS
        MOV     (R1)+,(R1)      ;RESTORE IDLE PATTERN
        DECB    $IDLCT          ;TIME TO MOVE PATTERN?
        BGE     45$             ;IF GE NO
        MOV     #30., $IDLCT    ; Reset the count
        DEC     (R1)            ; Actually increments the lights
        MOV     (R1), @#177524  ; Put it into the diagnostic LEDs
45$:    MOV     (R1), R0        ;PUT IT WHERE IT CAN BE SEEN
        MOV     R0,-(R1)        ;SAVE IT FOR NEXT TIME
        WAIT
```

An RSX Message System

James M. Rengel
University of Kansas Medical Center
M.R.R.C., Bldg. 37, Rm. 24
39th St. & Rainbow Blvd.
Kansas City, KS   66103

1.0 Description

MESSAGE allows an individual to create and send messages to another user on the same computer. The messages are displayed when the receiver logs on to the computer.

Messages are sent by entering "MES" on a terminal. The command is intercepted by DECUS CCL and runs the Indirect Command File MESSAGE.CMD located in a UFD dedicated to the MESSAGE system. A prompt is displayed requesting either the last name of the individual to receive the message, "ESCAPE" key for a list of names, or "CONTROL Z" to exit.

If a last name is input, MESSAGE.CMD scans an ACCOUNT.DAT file located in the MESSAGE "home" UFD. ACCOUNT.DAT contains all names and corresponding UICs of individuals with accounts on the system. When the name is found, the first and last names are displayed with a query asking if this name is correct. This allows for identical last names to exist in the ACCOUNT.DAT file.

If the first occurrence of a duplicate last name was not the correct individual, MESSAGE.CMD continues scanning for the next occurrence. If the last name is not found, the prompt is again displayed at which point either another last name may be entered or other option may be selected.

If the "ESCAPE" key is pressed, a list of the first and last names in the ACCOUNT.DAT file is displayed. If "CONTROL Z" is entered the command file exits.

If the correct name is found, MESSAGE prompts for input line by line. Line width is limited to 72 columns and is terminated by a "RETURN". Messages can be any length.

Editing of a message during input is limited to the current line, using only the "DELETE" key. Editing of a previous line is not possible. Accidental use of editing commands and keystrokes appropriate to EDI, TECO, KED or EDT generally cause havoc with the message being created.

First and last name of sender, first and last name of

receiver, date, and time are automatically included in each message as a header. If a message is sent from a UIC which does not exist in the ACCOUNT.DAT file, the sender is shown in the message header as from "THE UNKNOWN". This label is easily modified.

Blank lines within a message are created by entering a space or tab on that line. MESSAGE input is terminated by entering a "RETURN" twice in succession.

A "UIC".MES file containing messages is created for each receiver/UIC. All subsequent messages sent to the same receiver are appended to the first message, each with a new header. In other words, files are created only when messages are sent, and then only one file per receiver.

When the receiver logs on to the system, a LOGIN.CMD file located in the receiver's UFD initiates READMES.CMD located in the MESSAGE home UFD. READMES.CMD transforms the receiver's UIC into "UIC".MES and tests the MESSAGE UFD for the presence of a file matching "UIC".MES.

If the "UIC".MES file does not exist, for example no message waiting, READMES.CMD exits. If the "UIC".MES file does exist, the file is displayed on the terminal. After displaying the message, the receiver is queried for one of the following options:
"D"elete, "S"ave, "R"edisplay, or "P"rint message on LP:?

If a message extends past 24 lines, the first portion of the message is scrolled off the screen; these options enable the receiver to redisplay or to obtain a hardcopy of the message. In addition, the receiver may save the message to again be displayed when logging on. This option may be useful as a reminder or tickler since it is possible to send messages to yourself.

2.0 Compatibility

The MESSAGE system is written with RSX11M V3.2 INDirect language on a PDP-11/34. It has also been installed and tested on a PDP-11/73 running M-Plus V2.1. The MESSAGE system can be easily tailored to meet specific needs and should run on any computer with RSX11M.

In addition to using INDirect, DECUS CCL is utilized to enable a user to access the MESSAGE system by simply entering "MES". Other command line interpreters may be used in place of DECUS CCL to perform this same function.

3.0 Installation

Throughout the MESSAGE system, ME0: is used as a pseudodevice name in place of a physical disk device name, and [100,001] is used as the MESSAGE UFD. These designations can be changed to meet system specific requirements. The MESSAGE home UFD can be located on any disk and functions without problem across disk boundaries.

Use the following command to assign the pseudo disk device name ME0: to the physical disk device name ddn: on which the MESSAGE system will reside:

ASN ddn:=ME0:/GBL

This command should be added to either the STARTUP.CMD file or to the system command file used when saving the system.

Set up a UFD to contain MESSAGE.CMD, READMES.CMD, ACCOUNT.DAT, and "UIC".MES files with the following command:

UFD ME0:[100,001]/PRO=[RWED,RWED,RWED,RWED]

Note that this UFD has all privileges set in order to permit all privileged and non-privileged users to have Read, Write, Extend, and Delete (WORLD:RWED) access in the UFD. Choose a UFD group number which previously has not been issued. This maintains the Write, Extend, and Delete protection (WORLD:R) of these three files, unless the default protection settings (WORLD:R) of the disk were changed during disk initialization.

It is necessary for the "UIC".MES files to be unprotected for the MESSAGE system to work. A "UIC".MES file has all privileges set (WORLD:RWED) by the MESSAGE.CMD file the first time the file is opened.

Copy MESSAGE.CMD and READMES.CMD to the MESSAGE UFD. Using an editor, create an ACCOUNT.DAT file in this UFD. This file contains the names and corresponding UICs of all individuals participating in the MESSAGE system. Total length of first and last name, including a separation space, should not exceed 26 characters, and there should be no spaces or tabs trailing any of the entries.

There is no limit to the number of individuals that can reside in the file, however, there is a noticable time delay while MESSAGE.CMD is searching for a name when ACCOUNT.DAT contains forty individuals. If entries are in alphabetical order, the names will be displayed in alphabetical order when the "ESCAPE" option is chosen.

Entries must start with line one, column one of the file.

Following is an example of the ACCOUNT.DAT file structure.

```
[1,2]                   Standard UIC format with no leading zeroes.
SYSTEM                  First name of user, upper case only.
MANAGER                 Last name of user, upper case only.
[101,101]               Next user
LON
AMICK
[301,34]                Next user
JAMES
RENGEL                  Last entry must have no trailing blank lines.
```

In a privileged UFD, create a LOGIN.CMD file containing the following command:

@MEO:[100,001]READMES.CMD

Copy LOGIN.CMD to all UFDs to be apart of the MESSAGE system with the following command:

PIP ddn:[grp,mem]=LOGIN.CMD

This file will have a privileged status and cannot be deleted from non-privileged UFDs.

If necessary to prevent the LOGIN.CMD file from being superseded, the file can be renamed with a version number of 77777. The 77777 version number will prevent creation of a LOGIN.CMD file with a higher version number.

If a LOGIN.CMD file already exists in a UFD, this command can be incorporated into the existing file. Some of this may not be necessary, but for the message system to be effective, all users on a computer system must participate.

MESSAGE may be initiated through DECUS CCL or through another command line interpreter. If using DECUS CCL, modify the SYSCCL.CCL file with the following command sequence:

$3700MESSAGE
*@MEO:[100,001]MESSAGE.CMD %$

4.0 Summary

The MESSAGE system is neither VMS ALL-IN-ONE Electronic Mail nor is it DECmail-11, however, it is effective, simple, and free. There is a certain amount of overhead associated with it for the system manager and for the users. The ACCOUNT.DAT file requires

updating when individuals come and go, and all participating UFDs require the LOGIN.CMD file.

I would appreciate receiving comments and modifications. If you have a problem with the MESSAGE system, please contact me by mail at the address above with a detailed description of the problem and a phone number.

```
.;      Command file - MESSAGE.CMD
.;      Enables display of ACCOUNT.DAT and creation of "UIC".MES
.;      file in the MESSAGE UFD for a user in file ACCOUNT.DAT.
.;
        .ENABLE GLOBAL
        .ENABLE SUBSTITUTION
        .ENABLE ESCAPE
        .DISABLE LOWERCASE
.101:
; Enter one of the following:
;       Last name of individual to receive message.
;       "ESCAPE" key for list of names.
;       "CONTROL Z" to exit.
        .ASKS NAME
        .IFT <ESCAPE> .SETS NAME ""
        .IFT <ESCAPE> .GOSUB NAMLST
        .IF NAME EQ "" .GOTO 101
        .OPENR #0 MEO:[100,001]ACCOUNT.DAT
        .SETS TONAME ""
        .SETS FRNAME ""
        .SETF CORNAM
.102:
        .SETS $UIC ""
        .SETS FSTNAM ""
        .SETS LSTNAM ""
        .READ #0 $UIC
        .READ #0 FSTNAM
        .READ #0 LSTNAM
.; If <LOGUIC> not available, change following <LOGUIC> to <UIC>.
        .IF <UIC> EQ $UIC .SETS FRNAME FSTNAM+" "+LSTNAM
        .IFT CORNAM .GOTO 103
        .IF NAME EQ LSTNAM .GOSUB FILNAM
        .IF NAME EQ LSTNAM .SETS TONAME FSTNAM+" "+LSTNAM
        .IF NAME EQ LSTNAM .ASK CORNAM Is 'TONAME' correct name
.103:
        .IFF <EOF> .GOTO 102
        .CLOSE #0
        .IFF CORNAM .GOTO 101
        .IF FRNAME EQ "" .SETS FRNAME "THE UNKNOWN"
.; The following line contains 26 blanks between double quotes
        .SETS SPACE "                          "
        .TEST TONAME
```

```
        .SETS SPACE1 SPACE[1:32-<STRLEN>]
        .TEST FRNAME
        .SETS SPACE2 SPACE[1:32-<STRLEN>]
        .ENABLE LOWERCASE
        .SETT PROTEC
        .TESTFILE MEO:[100,001]'$FILNM'.MES
        .IF <FILERR> EQ 1. .SETF PROTEC
        .OPENA #1 MEO:[100,001]'$FILNM'.MES
.; The following line contains a space and two "CONTROL G" codes
        .DATA #1
        .DATA #1 To:     'TONAME'
        .DATA #1 From: 'FRNAME'
        .DATA #1 At:     '<DATE>'  '<TIME>'
; Editing is limited to the current line using the "DELETE" key.
; To, from, date and time are included in message automatically.
; To end text input, press "RETURN" key twice.
.104:
        .ASKS LINE
        .IFT <ESCAPE> .GOTO 104
        .DATA #1 'LINE'
        .IF LINE NE "" .GOTO 104
        .CLOSE #1
        .IFF PROTEC .GOTO 105
        .ENABLE QUIET
        PIP MEO:[100,001]'$FILNM'.MES/PR/WO:RWED
        .DISABLE QUIET
.105:
; Message sent.
        .EXIT
.;
.; Subroutine FILNAM
.; Converts UIC as read from ACCOUNT.DAT associated with the name
.; of the addressee from [#,#] to a six digit number with a .MES
.; extension as in ######.MES.  This is the name of the file to
.; contain messages for that individual.
.;
        .BEGIN
.FILNAM:
        .TEST $UIC
        .SETN STRLEN <STRLEN>
        .SETN COUNT 0
        .SETS $FILNM ""
.201:
        .DEC STRLEN
        .INC COUNT
        .SETS UICCHR $UIC['STRLEN':'STRLEN']
        .IF UICCHR EQ "," .GOTO 202
        .IF UICCHR LT "0" .OR .IF UICCHR GT "7" .GOTO 201
        .SETS $FILNM UICCHR+$FILNM
        .GOTO 201
.202:
        .IF COUNT GE 4 .GOTO 203
        .SETS $FILNM "0"+$FILNM
```

```
        .INC COUNT
        .GOTO 202
.203:
        .DEC STRLEN
        .INC COUNT
        .SETS UICCHR $UIC['STRLEN':'STRLEN']
        .IF UICCHR EQ "[" .GOTO 204
        .IF UICCHR LT "0" .OR .IF UICCHR GT "7" .GOTO 203
        .SETS $FILNM UICCHR+$FILNM
        .GOTO 203
.204:
        .IF COUNT GE 10 .GOTO 205
        .SETS $FILNM "0"+$FILNM
        .INC COUNT
        .GOTO 204
.205:
        .RETURN
        .END
.;
.; Subroutine NAMLST
.; Displays on terminal first and last names of users in the
.; ACCOUNT.DAT file.
.;
        .BEGIN
.NAMLST:
        .OPENR #0 MEO:[100,001]ACCOUNT.DAT
;
.301:
        .SETS UIC ""
        .SETS FSTNAM ""
        .SETS LSTNAM ""
        .READ #0 UIC
        .READ #0 FSTNAM
        .READ #0 LSTNAM
        .SETS TONAME FSTNAM+" "+LSTNAM
;       'TONAME'
        .IFF <EOF> .GOTO 301
        .CLOSE #0
        .RETURN
        .END




.; Command file - READMES.CMD
.; Converts either current UIC or login UIC from [#,#] to a six
.; digit filename with .MES extension (######.MES).  The MESSAGE
.; UFD is tested for a file corresponding to this filename.  If
.; it exists, the file is displayed on the terminal after which
.; it may be deleted, saved, redisplayed, or printed.
.;
; Please wait for <EOF>.
        .ENABLE QUIET
```

```
        .ENABLE SUBSTITUTION
        .DISABLE LOWERCASE
.; If <LOGUIC> not available, change following <LOGUIC> to <UIC>.
        .SETS $UIC <UIC>
        .TEST $UIC
        .SETN STRLEN <STRLEN>
        .SETN COUNT 0
.201:
        .DEC STRLEN
        .INC COUNT
        .SETS UICCHR $UIC['STRLEN':'STRLEN']
        .IF UICCHR EQ "," .GOTO 202
        .IF UICCHR LT "0" .AND .IF UICCHR GT "7" .GOTO 201
        .SETS $FILNM UICCHR+$FILNM
        .GOTO 201
.202:
        .IF COUNT GE 4 .GOTO 203
        .SETS $FILNM "0"+$FILNM
        .INC COUNT
        .GOTO 202
.203:
        .DEC STRLEN
        .INC COUNT
        .SETS UICCHR $UIC['STRLEN':'STRLEN']
        .IF UICCHR EQ "[" .GOTO 204
        .IF UICCHR LT "0" .AND .IF UICCHR GT "7" .GOTO 203
        .SETS $FILNM UICCHR+$FILNM
        .GOTO 203
.204:
        .IF COUNT GE 10 .GOTO 205
        .SETS $FILNM "0"+$FILNM
        .INC COUNT
        .GOTO 204
.205:
        .TESTFILE ME0:[100,001]'$FILNM'.MES
        .IF <FILERR> NE 1. .EXIT
.206:
        PIP TI:=ME0:[100,001]'$FILNM'.MES
.207:
        .ASKS DSR "D"elete, "S"ave, "R"edisplay or "P"rint on LP:
        .IF DSR EQ "D" PIP ME0:[100,001]'$FILNM'.MES;*/DE/NM
        .IF DSR EQ "D" .EXIT
        .IF DSR EQ "S" .EXIT
        .IF DSR EQ "R" .GOTO 206
        .IF DSR EQ "P" PIP ME0:[100,001]'$FILNM'.MES/SP
        .GOTO 207
```

Solution to the RSX Brain Teaser

In the October issue of the Multi-Tasker, we ran a puzzle. The object was to find as many RSX-related words as possible hidden in the puzzle. A copy of the puzzle, with row and column identifiers added, appears below:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
L	E	S	S	M	I	L	C	D	E	F	L	Y	E	A	P	1
E	P	E	V	I	T	U	C	E	X	E	O	D	C	R	L	2
X	A	V	M	S	O	S	R	E	S	U	L	P	M	S	A	3
A	T	L	S	I	H	B	R	O	R	E	J	E	A	D	Q	4
V	G	M	U	L	T	I	T	A	S	K	I	N	G	R	E	5
L	I	K	R	A	M	L	D	A	L	E	M	E	I	A	S	6
I	S	S	U	C	E	D	A	E	D	P	D	P	C	Z	T	7
S	L	I	N	D	A	O	L	E	B	R	H	O	X	I	M	8
T	U	S	E	V	I	T	C	E	R	I	D	D	S	W	R	9
S	N	B	E	Q	R	U	Z	R	T	N	A	I	R	B	T	10
R	S	U	M	S	S	E	M	G	I	B	N	C	D	E	C	11

A variety of solutions began coming in about mid-October. As I write this article, in November, a pile of solutions sits on my desk. Every one of them has a different subset of the words, and not one of them has every word (although one of the DEC implementers, who shall remain nameless, offered me a large list of improbable words with the guarantee that "they'd appear in Update E").

It is pretty clear that it's unfair to put the general SIG membership up against the implementers and "senior" RSX SIG members, so I split up the awards into four categories as below.

o Best attempt by a senior RSX SIG member
o Best attempt by an RSX implementation team member
o Best attempt by a SIG member-at-large
o Runner-up, SIG member-at-large

In the category, "Best attempt by a senior RSX SIG member",

the winner is: The Editor. There <u>were</u> no other entries in this category. (Buncha leakers!)

In the category, "Best attempt by an RSX implementation tem member", the winner is: Nobody. Digital turned chicken and leaked out. Prize awarded as SIG second runner-up.

In the category, "Best attempt by a SIG member-at-large", the winner is: Bob Whitefield, of Mountain Valley Trucking. Bob came in far and away the best, with 86 valid words.

In the category, "Runner-up, SIG member-at-large", the winner is: Barton Bruce, of Cambridge Computer Associates. Barton's computer-assisted entry did contain all the words, but some weren't circled as words. Barton found a total of 57 valid words.

In the category, "Second runner-up, SIG member-at-large", the winner is: H. W. Garden, of Union Camp. This entry ran a close third, with 55 valid words.

All the winners receive limited edition, signed prints of the artwork for the Fall 1986 RSX SIG button, as well as keychain lights to help them find their way about the computer room after marathon late-night word hunting sessions.

The most complete solution is presented below, for your edification and amusement. There are a total of 123 words. Words are pointed out by row and column number, with the running direction following as a compass direction.

ACD	E6	S	Ancillary Control Driver
ACP	O1	SW	Ancillary Control Processor
ADD	F8	NE	Assembly mnemonic
AI	F8	S	Artificial Intelligence
ALT	H7	NW	MCR command
ALU	B3	SE	Arithmetic Logic Unit
ANT	L10	W	DECnet unsupported utility
ASL	N4	NE	Assembly mnemonic
AT	A4	E	System utility
ATL	A4	E	MCR command
BAD	K11	NE	System utility
BEL	J8	W	ASCII code
BEQ	C10	E	Assembly mnemonic
BHI	G4	W	Assembly mnemonic
BHIS	G4	W	Assembly mnemonic
BI	G4	S	Yet another bus
Big mess	K11	W	Also known as BRU
BR	O10	W	Assembly mnemonic
Brian	O10	W	Brian McCarthy, RSX group
BRO	G4	E	System utility
Bus	C10	NW	Unibus, Q-bus, PMI, Cachebus

CAE	N7	NE	Computer Aided Engineering
CAI	M11	NW	Computer Aided Instruction
CEX	H2	E	DECnet Communications Exec
CLI	H1	W	Command Line Interpreter
Cuss	E7	W	Required activity for wizards
Dale	H6	E	Dale Donchin, RSX group
Dan	L9	S	Dan Eisner, SIG chair
Dave	G7	SW	Dave Cutler, **> Our Founder <**
DCL	J1	W	Disgusting Command Language
DCS	I1	SW	DECUS Communication System
DEC	N11	E	Donchin's Equipment Cabinet
DECUS	G7	W	That's us
DEL	E8	NW	ASCII code
DES	L7	NW	Data Encryption Standard
DIC	M9	S	Directive Identification Code
DIR	L9	W	DCL command
Directives	L9	W	They make tasks work
DLE	M2	SW	ASCII code
DOS	L7	SE	A predecessor of RSX
Dot	G7	S	Macro-11's location pointer
DSR	O4	N	Dynamic Storage Region
DSW	M9	E	Directive Status Word
DTR	H6	N	Datatrieve
ECL	I3	NW	Emitter Coupled Logic
ED	J1	W	Ed Cetron, wizard
EDP	I7	E	Electronic Data Processing
EIA	M6	E	They wrote RS-232C
EIS	D9	NW	Extended Instruction Set
EMT	F7	N	Assembly mnemonic
Executive	K2	W	The guinea pig
GRE	N5	E	DECUS utility task
Hit	L8	SW	When it's in cache
HSC	F4	NE	Hot **** / Host Storage Controller
IAS	N6	E	RSX's sister
IND	J11	NE	System utility
IS.SUC	A7	E	Directive status return
Jim	L4	S	Jim McGlinchey, wizard
LARS	J6	NW	What Field Circus fills out
LCD	G1	E	Liquid Crystal Display
LED	G6	SW	Light Emitting Diode
LIB	G6	N	SYS-, RES-, SUP-, etc.
Linda	B8	E	The "ziglet", RSX group
Lists	A6	S	RSX is nothing if not ...
Load	H8	W	System utility task
LSI	A6	SE	The "little" PDP-11s
LUsers	L3	W	They sure are
LUNs	B8	S	Logical Unit Numbers
MAG	N3	S	System utility
Magic	N3	S	What wizards practice
MARK	F6	W	"The Instruction for the Ages"
MIS	E1	S	Management (dis)Information System
M-Plus	N3	W	The flagship
MSSE	D11	E	Micro Systems Software Engineering

MUL	C5	E	Assembly mnemonic
Multitasking	C5	E	Makes RSX better than RT
NUL	B10	N	ASCII code
OA	G8	W	Office Automation
OCR	G8	SE	Optical Character Recognition
ODL	G8	N	Overlay Descriptor Language
Open	M8	N	MCR command
OR	I4	NW	Logic operation
PAR	M3	SE	MCR command
PAT	B2	S	System utility
PBEZ	K7	SW	Executive global
PDP	K7	E	Programmed Data Processor
PDP dead	M7	W	LUser describing hardware problem
PIRQ	M7	NE	Program Interrupt ReQuest
PLA	P1	S	Programmable Logic Array
PRI	K7	S	System utility
QIO	E10	NE	Executive directive
Ralph	H4	SE	Ralph Stamerjohn, wizard
RAM	D6	E	Random Access Memory
Realtime	J9	NW	What RSX is all about
RIM	H4	SW	The paper tape loader
RMT	P9	N	DECnet utility
ROR	H4	E	Assembly mnemonic
RSTS	A11	N	Really Slow Time Sharing
RSUM	A11	E	Executive directive
RSX	J4	N	Resource Sharing eXecutive
RT	P9	S	Cute little operating system
RTI	J9	S	Assembly mnemonic
RUN	D6	S	MCR command
SBC	N9	SE	Assembly mnemonic
SEC	J3	NW	Assembly mnemonic
SIG	B7	N	Special Interest Group
SIG tape	B7	N	What we make at symposia
SOS	E3	E	System utility
SRD	N9	S	DECUS utility
SRT	E11	NE	Sort-11, layered product
SSM	F11	W	MCR command
SST	D4	NE	Synchronous System Trap
SUB	A8	SE	System utility
SWR	N9	E	SWitch Register
Tape	B4	N	As in SIG tape, but why not?
TAS	H5	E	MCR command
Task	H5	E	What the Executive schedules
TIM	F5	NW	MCR command
UNS	B9	S	MCR command
Users	K3	W	One step above LUsers
VAX	C3	W	Barf
VMS	C3	E	Ditto
Wizards	O9	N	What keeps Brian honest

And, in addition (in 5 separate locations), words comprising the magic incantation, which nobody located - even though it was pointed out in The Editor's Corner!

Spring 1986 "Woods" Meeting Report

The RSX SIG Executive Committee held a "Woods" meeting 8 and 9 March of 1986. The Executive Committee is a subgroup of the Steering Committee which makes official decisions regarding SIG policies, procedures and future directions. "Woods" meetings are held once a year to discuss these items.

This report is now considerably late and out of date. This is partially due to complete replacement of the Executive Committee in the last election. The Committee has been straightening things out ever since. It is also due to the Editor's reluctance to type in large articles by hand.

We do believe that it is part of our job to improve communications with you, the membership at large, and to make information available to you regarding the "internals" of the RSX SIG. Herewith follows the report.

Saturday, 8 March 1986

Dan Eisner (new SIG Chair) presented a brief summary of items discussed at the SIG Council meeting. This summary included the following items:

1. Membership in DECUS (active vs. inactive) remains undefined

2. How to run a SIG

3. ANSI standards committee

4. NLO / SIG Council communications issues

5. Business applications SIG

6. SIG suites at symposia

7. PSS honoraria

8. APL SIG merger with L&T SIG

9. DCS hints and kinks

10. Store items

A discussion of the RSX SIG's interface with Digital, and the position of the PDP-11 and RSX as products, followed. Working with Digital authorized distributors to increase public awareness of the SIG was suggested.

There is a DECUS notice sent out with the Micro/RSX kit; this type of SIG "advertising" should be continued. Placing DECUS information in documentation sets was also suggested. It was pointed out, however, that any change in a distribution kit is expensive to Digital.

Ideas for promoting the SIG were brainstormed. Al Bennett will write an article for DECUScope. The Multi-Tasker masthead boilerplate will be rechecked and firmed up. Distribution of the extra microfiche listings to DEC Software Specialists was suggested.

The small and children size T-shirts will be offered as enticements to Multi-Tasker authors. (*I haven't got them yet. -- The Editor*)

General issues concerning the revision of SIG operating procedures were discussed, including:

1. What constitutes "membership"

2. How many offices are necessary

3. Mailing lists

Since SIG membership is presently defined by checking a box on the DECUS application form, mailing lists are volatile, often out of date, and one person can hold multiple SIG memberships. The definition of "membership" for voting is thus a source of problems, particularly for the larger SIGs. Mailing and checking thousands of ballots is a major expense.

Sharon Johnson was appointed as Working Group Chair. It was decided that the active status of a working group will be determined by whether they maintain contact with the Working Group Chair and periodically report on their activities. Present working groups and their coordinators are as follows:

Multiprocessing	Martin Furuhjelm
Real Time	Beverly Kasper
SRD	Bob Turkelson
Tape Copy	Glenn Everhart
Other Media Copy	Bob Uleski
Menu	Ed Cetron and Mark Hartigan

Dan Eisner reported budget changes. RSX SIG administration and PSS are in reasonably good shape. The SIG lost major money on T-shirts and wrote off $3,500. The SIG suite budget for Symposia will be reduced greatly next year. At present, we are $9,600 ahead.

A long discussion of budgets, refreshments and hardware for the Dallas Symposium SIG suite followed. We will have hardware running RSX in the suite at Dallas.

Burt Janz reported on session notes. The first letters are out, and second letters will follow on 10-Mar.

There was a discussion of store items and some brainstorming of possible items. Al Bennett will check on what happened to the shipping box idea and try to get that item back on track. A discussion of T-shirts and dragon styles follows. Burt Janz will work on getting us a better looking dragon logo.

Pre-Symposium Seminar (PSS) ideas were discussed. These were divided between "old favorites" and new concepts. The PSSs given by the RSX developers have been well received. An I/O drivers session was suggested for San Francisco. Alan Frisbie was named as a possible presenter for a PSS on writing privileged tasks.

Dominic DiNollo resigned as editor of The Multi-Tasker as of June. Both Ed Cetron and Bruce Mitchell expressed interest in the position. It was decided that Bruce Mitchell will assume the position.

A discussion of "mentors" and the need to groom new leadership for the SIG followed. It was generally agreed that an image of the SIG as a group of highly technical "hackers" is detrimental.

Sunday, 9 March 1986

It was agreed that Gary Maxwell will be the third appointed member of the Executive Committee. The committee then broke into two groups; one to draft revisions to the SIG By-Laws, and the other to work on SIG organization.

After re-convening, it was decided that Dom DiNollo will draft the proposed revised by-laws and distribute them to the rest of the committee via DCS. The future by-laws amendments will be publicized at Dallas.

The NLO, its activities and services to LUGs was discussed. Further research on the NLO and its services are needed. Dan Eisner will get a copy of the NLO charter for our information. Communication between the NLO and LUGs remains a matter in which

we are greatly concerned.

The issue of creating SIG electronic bulletin board system were discussed. Hardware, storage, maintenance, software and security were topics of discussion. It was generally agreed that an inward WATS line is expensive and tends to encourage frivolous use.

It was also agreed that a moderated BBS format is probably best, so that material can be monitored to keep illegal and frivolous items out. If we are to receive any DECUS funding, we will need a project plan to apply for funding. Ed Cetron will set up a bulletin board task force, if necessary, after further investigation.

The Steering Committee will meet Saturday afternoon, around noon, at Dallas. At that meeting, a firm schedule will be set for the rest of the week. The goal of the opening session should be to provide information for the first-timer and novice. Session RX029 will be cancelled.

The subcommittee on SIG organization presented their results. Al Bennett will develop a finished version of the chart and list of people and their positions. (*DCS hints and kinks discussion followed, of interest only to DCS users.*)

For SIG re-licensing, we need reports on working group meetings and operating procedures. Ed Cetron will define and assign job requirements, and identify open jobs so that people can be assigned for them.

Brian McCarthy of the DEC RSX implementation group presented an overview of the future of the PDP-11 and of RSX within DEC.

The SIG image as related to recruiting session speakers was discussed. The perceived attitude of experienced SIG members when presenting intermediate level sessions may have discouraged inexperienced users at Anaheim. The SIG needs to avoid the image of a cadre of hackers trying to top each other's technical exploits. Some of the most popular past sessions have not been aimed at an advanced audience. The following conclusions were reached:

1. A stronger "mentor" system for volunteers is needed.

2. It is important to reach out and contact volunteers.

3. Be aware of the hacker mentality.

4. Use the opening reception to mix with new people and welcome them.

Bruce Mitchell will develop a position statement on the NLO. We need research on the percentage of the NLO budget actually reaching the LUGs and what services LUGs are receiving from the NLO. Dan Eisner will check on the subject of SIG representatives to the NLO - there do not seem to be any. How tape distribution relates to the NLO is unclear. The NLO issue is an open action item for the Dallas Steering Committee meeting.

The meeting adjourned.

1986 Multi-Tasker Index

This is an index to articles published in the 1986 volume of the Multi-Tasker. Technical articles and editorials are called out alphabetically by name.

Data Caching

Eric Postpischil
Digital Equipment Corporation
Nashua, NH

The following article is a collection of handouts used during the session on disk caching in RSX-11M-Plus at the Fall symposium in San Francisco. While no supporting text is available, the material is of such interest that the Multi-Tasker is presenting it as it stands. In some areas these figures may be difficult to read; this is because they are second generation copies of the handouts and not reproduced from the originals.
--- The Editor

DATA CACHING

Eric Postpischil

Digital Equipment Corporation

Nashua, New Hampshire

DATA CACHING

o Data caching is the process
  of keeping some disk
  data in memory in the
  hope that it can be
  reused without the need
  for rereading it from
  disk.

USING DATA CACHING

o Once started, data caching is
  is automatic. The Data
  Caching Manager, or cacher,
  intercepts all I/O requests
  to drivers.

o No changes to applications
  are necessary.

o Data caching may be used
  on any mounted disk.

CACHING DURING READS

o During read operations, the
   cacher looks for the
   requested data in the
   cache. If it is found,
   the request is satisfied
   by copying data from the
   cache to the buffer.

o If the data is not in the
   cache, but the read request
   meets the specifications
   for data that may be
   cached, the data is read
   into the cache and then
   copied to the buffer.

o If the read request cannot
   be cached, the operation
   is passed to the driver
   to be executed as a normal
   request.

CACHING DURING WRITES

o All data in write
   operations is written
   to disk.

o If the disk blocks being
   changed are in the
   cache, the new data is
   also copied to the
   cache.

ADJUSTING DATA CACHING

o The cacher divides I/O
  operations into four
  categories, directory,
  overlay, data, and
  logical operations.

o Each category can be
  turned on or off
  independently.

o A maximum number of
  blocks, up to 15,
  to accept in an
  operation to be
  cached can be
  specified for each
  category.

TYPES OF OPERATIONS

o Operations issued by an
  ACP for the purpose of
  finding files are
  treated as directory
  operations.

o IO.LDO and IO.LOV
  operations are
  overlay loads.

o Virtual operations
  and non-directory
  operations issued by
  an ACP are data
  operations.

o IO.RLB and IO.WLB
  operations not
  issued by an ACP
  are logical operations.

READ AHEAD

o When a virtual read is
  issued for part of an
  extent and read ahead
  is enabled, the cacher
  will read the rest of
  the extent or the
  maximum number of
  blocks specified for
  read ahead.

SYNTAX

o DCL
   MOUNT
   SET DEVICE

o MCR
   MOUNT

/[NO]CACHE[:(option,option,....)]

  /NOCACHE
     Deactivates caching.
  /CACHE
     Activates caching.

Options

  · CREATE[:[region][:[main_partition][:[size]]]]
       Creates a region to be used for caching.
    REGION:name
       Uses an already existing region.

    [NO]DIRECTORY[:extent_size]
    [NO]LOGICAL[:extent_size]
    [NO]OVERLAY[:extent_size]
    [NO]READ_AHEAD[:extent_size]
    [NO]VIRTUAL[:extent_size]
       Enables or disables caching in each category
       and specifies the maximum number of blocks
       to be cached in one operation.

TUNING SUGGESTIONS

o Directory operations
  Try extent size of three.

o Overlay loads
  Use large extent size if
  memory is available and
  there are tasks using
  overlays repeatedly.

o Data operations
  Data operations are common,
  so enable this category
  and use large extent
  size when feasible.

o Logical operations
  Logical operations are
  more unusual. Do not
  enable this category
  except for appropriate
  applications.

o Read ahead
  If sequential files
  are being accessed
  sequentially, enable
  this category.

THE
mini·tasker

DECUS
RT-11 SIG NEWSLETTER
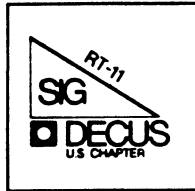
Copyright's

We DO solicit signed articles for insertion in the Mini-Tasker, on or about bugs, features, nifty things, etc., all about the RT-11 operating system and its environment. Write it up, send it to me (with a note to rewrite if you wish) and I will try and get it in an upcoming issue of the Mini-Tasker.

- -

Trivia

With thanks to Diana Miller, RT-11 Product Manager, Digital put together an interesting game on PDP-11 trivia. Following are some interesting RT-11 (and PDP-11) facts of life.

1. What was the first communications software offered?
2. What was a VT103?
3. Why was the LSI SIG formed?
4. What is Digital's first streaming tape drive?
5. What were the first application packages developed in 1971 around the PDP-11?
6. What was the name of the 50,000th computer DEC shipped?
7. With what device is "Obverse complement" associated?

- -

DECUS - Europe

We always encourge members of the RT-11 community to attend symposia of other DECUS chapters. Nick Bourgeois of the RT-11 SIG steering committee recently attended the DECUS - Europe symposia, and I asked Nick how it was. Nick responded:

Bill

Europe was just great. The part I liked best was at the Wednesday Night "Social Event" when 2,000 or more people clapped for our 25th wedding anniversary. The Thursday sessions were rather uneventful. I fielded the TSX-Plus questions at the RT-11 Multi-user BOF. Even REMOTE-11 was mentioned there -- what was said was not printable.

Nick

A Bug/Feature in V5.4 LD Handler

(We are indebted to John M. Crowell of Crow*ell, Ltd. (but not very) for the following note.)

A bug/feature showed up in the RT-11 V5.4's LD handler. If you nest logical disks "properly" with higher numbered devices within lower numbered ones (e.g. MOUNT LD3 LD1:AWF00.DSK), you'll get a warning:

    LD-W-Invalid nesting

which is, of course, intolerable. To fix this in the distributed handlers, the following command file (I call it LDPACH.COM) can be used:

```
R SIPP
BIN:LD.SYS/A
0
3576
3010
Y
BIN:LDX.SYS/A
0
3552
3010
Y
C
```

I don't really believe in .SLP files, in as much as they work on line numbers, and I'm always changing stuff. So to patch LD.MAC, just find the following pattern and change it.

Old source:			Change to:		
CmpB	(SP)+,R0		CmpB	(SP)+,R0	
Blt	66$		Bgt	66$	<-------
Beq	63$		Beq	63$	

Jack Crowell

- - - - - - - -

In addition, the following note was received from Nick Bourgeois.

"I agree with you, John, about SLP. I don't even carry the dumb thing on my system -- I've even been tempted at times to delete it from my distribution kit. Lets start a club to eliminate SLP, at least until its command files can and are annotated."

Nick

And finally, the following note from the RT-11 Development Team.

"The LD problem has been noted and is being fixed in UPDATE 01/87, which when applied to RT-11 V5.4 changes it to RT-11 V5.4A."

- -

Fall 1986

San Francisco Symposia Tape

On-Line Distribution

by

Tom Shinal

RT-11 Tape Copy Distribution

The distribution of the Fall 1986 RT-11 Symposia tape is now available from the NLO (National LUG (Local User Group) Organization). All LUG's who desire the tape are to contact the NLO to make arrangements to receive it.

There are many individuals who do not have access to a magnetic tape drive, and cannot take advantage of all the useful programs available. To accomodate these individuals, a new voluntary program has been initiated by the RT-11 SIG which will make the tape index and the save images available "on-line". The following site has service as indicated:

    Site: GENERAL SCIENTIFIC CORPORATION
    Service: Binaries and index
    Protocol: KERMIT and VTCOM/TRANSF
    Phone: 301-340-2776
    Time zone: Eastern
    Hours: 6:00 p.m. to 8:00 a.m.
    Data rate: 1200 bps
    Log-on: DECUS
    Pass-word: GUEST

CAVEAT -- CAVEAT

This service is on a volunteer basis, and the system resources are also on a donated basis. Please don't abuse them, else we loose them...

Also, please note carefully the indicated times of availability. Calls outside of these times will be rudely disconnected and you will have willingly contributed to the pension and profit-sharing plan of your local telephone company.

- -

Cheers and Jeers

RT-3

Cheers to DEC for the following Mag Tape features:

    To: Bill Leroy
    From: Nick Bourgeois
    Subject: RT-11 Mag Tape features

Here is some information for your "CHEERS" section of the Big One. I discovered it while experimenting with a proposed new format for the RT-11 SIG Symposium tapes.

1. RT-11's DIR program can produce a directory of magnetic tapes with either 80-byte (ANSI) label records or 512-byte (RT-11) label records, regardless of the data blocking factor. I tested factors of from 1 (512 bytes per tape data record) to 32 (16,384 bytes per record).

2. RT-11's PIP program can copy files from magnetic tape with either ANSI or RT-11 label records, as long as the data records are blocked at 512 bytes.

3. Tapes may contain a mixture of files with ANSI and RT-11 label records and data records at different blocking factors as long as items 1 and 2 above remain true.

This means that RSTS, RSX, and VMS ANSI tapes blocked at 512 bytes should be readable by RT-11 (and TSX-PLUS).

Note to the RT-11 developers: -- These undocumentated features are just great. Please do not break them.

    Nick

- -

Exception to the answer of a Trivia question

    To: Bill Leroy
    From: Nick Bourgeois
    Subject: Exception to the answer of a Trivia question

I take exception to the answer to the Trivia question No. 2 in the November 1986 issue of the Big One. Your answer is true only if you consider mag tape hardware offered by DEC. (Editors note: You betcha !). I was using tape drives from Cipher, Kennedy, and Pertec, with controllers from Dilog and Emulex, long before DEC saw fit to offer mag tape of any kind for the Q-bus. Some of these combinations emulated the TM11 and some the TS11. In all cases, they used existing handlers available for use on UNIBUS machines. In fact, the TSV05 offered by DEC was made by Cipher and used a DEC designed controller.

- -

TK-50 Support

RT-4

Dear RT-11 SIG:

I understand that in order to use the TK-50 under RT-11 V5.4, the controller must be at certain hardware and firmware revision levels. Do you know what each is? Would you tell?

Jack Peterson

- - - - - - - -

Dear Jack:

The TK50 controller must be at least "firmware level 4 and hardware level 6". The hardware level seems to correspond to the REV value. I have a TQK50 that shows as firmware 3/hardware 5, and it is REV E1. I am pretty sure that "hardware level 6" means REV F.

The V5.4 distribution contains a program named MSCPCK.SAV that checks your TQK50 and tells you its firmware/hardware level. It also tells you if the controller will work with RT-11. If you auto-install RT-11, MSCPCK.SAV is copied to the system device, and is run by STARTx.COM when you boot the installed system.

Bill Walker

- - - - - - - -

Hello all,

Bill Walker is correct on the minimum rev level -- Firmware level 4, Hardware level 6 or F1. There have been additional changes to the hardware and current controllers are at level 7, which brings it to H?.

Regards, Diana

- -

Recognizing RT-11 Files

Dear RT-11 SIG:

Is the character string "DECRT11A" always in block 1, byte 720 (octal)?

Carl Lowenstein

- - - - - - - -

Dear Carl:

I spoke with Jim Metsch and he stated that info in block 1 may change, there is just no way of predicting. The best way to look at the disk type is the way that .STRUCTURE (of IND) does. This will permit you to determine disk structures of RT-11 and other DEC O/S.

In block 0, byte 3 is either a 1 (system disk) or a 0 (data disk).

In block 0, byte 2 is the offset to the identification area. Take the OCTAL number found in this byte, multiply it by 2, and add 2 ((OFFSET * 2) + 2), and then use this computed value as the next byte to look into. The octal number contained in this byte is defined on page 5-69 of the System User's Guide. RT-11 is 020.

*** A WARNING ***

RT-11 always follows this internal standard. VMS, RSX, and P/OS sometimes do not on data disk types. We are pretty sure they follow this for system disks.

Good luck, Diana

- -

11/73 (J-11) Floating Point Chip

Dear RT-11 SIG:

I have a problem with the 11/73 (J-11) Floating Point Chip.

Carl

- - - - - - - -

Dear Carl:

You should call your local DEC "sales" office and ask them to give you a copy of BOTH customer advice letters contained in the August 25, 1986 issue of the "Sales Update", pages 13-16 inclusive.

Since the instructions to the local sales office were in the form of a "FPJ11 Alert" with "immediate action needed", MAYBE you can get some help from them on this one.

Mike

- -

Trivia - Answers

1. COMTEX-11.
2. VT100 with 4 x 4 backplane and optional TU58.
3. To address needs of RT and RSX users on Q-bus 11's.
4. DECtape.
5. DECcomm-11 for communications; LAB-11 for the laboratory; and IDACS-11 for industrial.
6. PDP-11/50.
7. DECtape.

- -

And finally, I am always looking for something to print.

Please send your submissions to The Mini-Tasker (on RX-01, RX-50, or pieces of paper) to me at:

Bill Leroy   Bill Leroy
The Software House, Inc.   The Software House, Inc.
P. O. Box 52661   (OR)   2964 Peachtree Road, NW #300
Atlanta, GA 30355-0661   Atlanta, GA 30305-2120

                    404/231-1484 or DCS (LEROY)

****

                    DECUS Symposium RT-11 SIG Tape

                            Fall, 1986
                         San Francisco, CA

                        Annotated Directory

****

                            IMPORTANT

Read the file README.1ST, which contains SIG Tape copy
instructions and new information for everyone.

NOTE! We are interested in maintaining the quality of the
submissions to the RT SIG tape. Therefore, we welcome feedback
regarding your use of these files, any bugs you find, and any bug
fixes or improvements you devise. Please send any correspondence
regarding the tape to:

        John Crowell
        Crow4ell Ltd.*   * (But not very)
        145 Andanada
        Los Alamos, NM 87544
        (505) 662-3893

        DCS - CROWELL

****

                            RT-7

VIRTUL - Subdevice retriever for RSTS.

E.F.Beadel, Jr., Manager
CAUSE Instructional Computer Center
SUNY at Oswego
Oswego, NY 13126
(315) 341-3055

     This program allows RSTS/E users to break down the subdevice
files from this tape after they have been copied to disk. It has
been modified by David Smith, Galileo Computer Center, to remove
a few bugs and to be able to read multi-segment directories. See
README.1ST for details.

VIRTUL.BAS   1 File,   43 Blocks
****

              FALL, 1986, RT SIG TAPE DIRECTORY

DIRTWO - Annotated tape directories, part 2.

R. W. Barnard
Sandia National Laboratories
Minicomputer Software Division 7523
P. O. Box 5800
Albuquerque, NM 87185
(505) 844-5115

     DIRTWO contains annotated directories of the DECUS Symposia
RT-11 tapes from the Fall of 1981 through the Spring of 1986.

DIRTWO.DSK 10 Files, 483 Blocks
****
HP41C - HP41C Calculator Emulator.

Harold Z. Bencowitz
P. O. Box 7450
Beaumont, Texas 77701
(409) 835-3770

     HP41C is a program to emulate the Hewlett-Packard 41C series
of hand-held programmable calculators. It requires a VT100 or
VT200 series terminal. The major design goal was to make the
user interface identical to the actual calculator for those
features supported. Most keyboard functions have been
implemented. To operate the "calculator" follow directions in
the HP41C owners handbook.

HP41C1.DSK   3 Files, 100 Blocks
HP41C2.DSK   6 Files, 429 Blocks
****

                            RT-8

RTFIND - Subdevice File Utility Programs.

D. N. Tanner
Sandia National Laboratories
P. O. Box 969
Livermore, CA 94550
(415) 422-2314

    FIND is a device and sub-device file search utility. The
program will search devices and .DSK files for a file or files.
The device name, file name, file size and date are displayed. If
the file is in a sub-device file that name is also included.
Wild cards are allowed in the file name and file type.

    SDIR will display the directory of any subdevice file
without MOUNTing the file as a logical device. At the end of the
file listing, the total number of files, blocks used, free blocks
and the largest free area is displayed. These are revised
versions replacing versions on the Spring, 1985, DECUS RT-11 SIG
Tape.

RTFIND.DSK   22 Files, 150 Blocks
****

            FALL, 1986, RT SIG TAPE DIRECTORY

DIRUTL - Directory and Other Utilities.

Glenn A. Bever
NASA Ames/Dryden Flight Research Facility
Code OFA
P.O. Box 273
Edwards, CA 93523
(805) 258-3747

    These are useful utility programs and files:

SDIR searches an RT-11 volume and it's subdevices for specified
filenames; it now includes exclusion qualifiers (/N) and lists
TSX+ file creation times. PRH prints date/time stamped a header
at the top of a printout. Others are used with TEKTRONIX
development systems and PROLOG prom programmers. Also included
are some control files that compare directories, print
directories, backup and restore directories in a format
compatible with SDIR. Most of these utilities have been updated
since the Fall, 1985, RT-11 SIG tape.

DIRUT1.DSK   39 Files, 309 Blocks
DIRUT2.DSK   19 Files, 242 Blocks
****

TSXUTL - Utilities for TSX+ and RT.

Mike Marak, David Gaudine, Dr. S. J. Kubina
EMC Lab, Room CC-109
Loyola Campus
Concordia University
7141 Sherbrooke St. W.
Montreal, Que. H4B 1R6
·Canada
(514) 848-3118

    This is a collection of programs for manipulating a TSX+
system. Included are utilities for remotely sending a ^C, ^S, or
^Q to a time-sharing line, changing the name of a time-sharing
line, and using a magtape as an on-line backup.

TSXUTL.DSK   14 Files, 203 Blocks
****
SYDATE - System Date and Cache Handler.

Jim Crapuchettes
Omnex Corporation
2483 Old Middlefield Way
Mountain View, CA 94043
(415) 966-8400

    The SY (SYstem option) handler is an RT-11 pseudo-handler
that can disable the cache on either an 11/70 or an 11/34. It
can also be used to "remember" the date on a system that is
frequently rebooted. It also has the option SET [NO]FORCE, to
not modify a system date if it has already been set.

SYDATE.DSK   6 Files,   36 Blocks
****

            FALL, 1986, RT SIG TAPE DIRECTORY

KERMIT - File transfer protocol for PDP-11's.

Brian Nelson
Computer Services, University of Toledo
2801 West Bancroft
Toledo, OH 43606
(419) 537-2841

    This is release 2.44 of Kermit-11. Major changes from
previous versions include long packet support, BREAK and DTR
control for RT, a DIAL command, and other small fix-ups. It runs
on all PDP-11 operating systems. For RT-11, you must have
multiterminal support if you are using version 4.0. For RT
version 5.1 and later, multiterminal support is not needed if you
use the XL or XC handler. For TSX+, you must use the CL facility
for outgoing lines. See the files K11AAA.AAA, and K11INS.DOC for
more information. Edit history is given in the file K11CMD.MAC.

The distribution has been subdivided roughly by operating system. The subdevice files KERDC*.DSK contain documentation and the files KERCM*.DSK contain files common to all operating systems. The other subdevices are operating-system specific. Please note that the allocation of specific files to the operating system-specific subdevices was done without a great deal of research - If you can't find a file, try another subdevice!

```
KERDC1.DSK   9 Files, 355 Blocks   (Documentation Files)
KERDC2.DSK   5 Files, 428 Blocks   (Documentation Files)
KERCM1.DSK  12 Files, 486 Blocks   (Common Files)
KERCM2.DSK   6 Files, 486 Blocks   (Common Files)
KERCM3.DSK  17 Files, 222 Blocks   (Common Files)
KERRT1.DSK  18 Files, 380 Blocks   (RT Files)
KERRT2.DSK   2 Files, 390 Blocks   (RT Files)
KERST1.DSK  16 Files, 362 Blocks   (RSTS Files)
KERST2.DSK   2 Files, 314 Blocks   (RSTS Files)
K11NRS.TSK   1 File,  383 Blocks   (RSTS File)
KERSX1.DSK  10 Files, 433 Blocks   (RSX Files)
KERSX2.DSK  11 Files, 301 Blocks   (RSX Files)
K11RSX.TSK   1 File,  313 Blocks   (RSX File)
K11POS.TSK   1 File,  234 Blocks   (POS File)
```
****

FOROTS - FORTRAN-IV Object Time System Documentation.

Resubmitted (1986) by:
John M. Crowell
Crow4ell, Ltd.*   * (But not very)
145 Andanada
Los Alamos, NM 87544

This very useful document dates from the last DECUS Symposium in San Diego. It is being resubmitted to this RT-11 SIG tape because there is a whole new generation of RT-11/FORTRAN users that will find it valuable.

FOROTS.DSK 2 Files, 448 Blocks
****

FALL, 1986, RT SIG TAPE DIRECTORY

F77KIT - FORTRAN-77/RT V5.0 Update Kit.
VIRDSK - Virtual-to-Disk Mechanism.
DOHAND - Diagnostic Overlay Handler.
MTOPEN - FORTRAN-77 Support for Mag tape.

Robert Walraven
Multiware, Inc.
139 G Street, Suite 161
.Davis, CA 95616
(916) 756-3291

These are three utility submissions to aid the development of user programs. They are repeated from the Fall, 1985, SIG tape.

F77KIT - Upgrade kit for FORTRAN-77/RT, Release 1 (Version 5.0). Makes anything associated with virtual work better, and fixes a few bugs, including two for unformatted reads. NOTE: this does not contain many of the modifications for release 2 of FORTRAN-77/RT.

VIRDSK - Module to force VIRTUAL arrays to a disk file rather than extended memory.

DOHAND - A diagnostic overlay handler that gives an error report if you try to destroy the return path in an overlayed program.

MTOPEN - Replacement module for F77OTS Release 1 to provide support for MAGTAPE sequence numbers.

```
F77KIT.DSK   8 Files,  28 Blocks
VIRDSK.DSK   4 Files,  32 Blocks
DOHAND.DSK  16 Files,  80 Blocks
MTOPEN.DSK   2 Files,   5 Blocks
```
****

FALL, 1986, RT SIG TAPE DIRECTORY

BIBLE - Bible and Text Search Routines.

Dean Lampman
#5 Hickorywood Drive
Loveland, Ohio 45140
(513) 683-4871

A copy of the King James Bible in ASCII text, and a BASIC program to print chapter and verse or to search for every occurrence of a string.

```
BOOK**.BIB  66 Files 8651 Blocks
BIBLEB.DSK  12 Files, 197 Blocks
```
****

UCLPLS - User Command Language (UCL) Program.

William K. Walker
Monsanto Research Corp.
P. O. Box 32 OS-123
Miamisburg, OH 45342
(513) 865-3557

.   UCL+ is upward-compatible with the UCL distributed with
RT-11, Version 5.1B and later. The version submitted to this tape
is V07.55, an update from all previous versions. UCL+ contains a
number of extensions, including chaining to additional UCL's,
"run-by-name", path definition, display of command expansions,
etc. Symbols are defined by entering a "symbol definition
string" in the format: symbol == definition. The DISPLAY
command can be used to output ASCII strings to the console or
printer (handy for sneaky escape sequences). New with this
version is the ability to supply default values for parameters
and an easier way to enter nonprintable ASCII characters.

     UCL+ supports many new features of RT-11 and TSX+. It can
be used with TSX+ as a "User Command Interpreter" (UCI). It
minimizes disk access to improve efficiency; included on this
distribution is a "memory-resident" UCL.

UCLPL1.DSK   7 Files, 394 Blocks
UCLPL2.DSK   14 Files, 300 Blocks
****

INDFIL - IND Control Files for Manipulating Subdevices.

R. W. Barnard
Sandia National Laboratories
Minicomputer Software Division 7523
P. O. Box 5800
Albuquerque, NM 87185
(505) 844-5115

     The following are IND control files for manipulating RT-11
subdevices and doing backups of RT-11 volumes.

DOWN, UP, HOME, and OVER can be used to conveniently move among
subdevices. Using these facilities, you can have the equivalent
of subdirectories on a VAX. DOWN will mount a subdevice file
using the Logical Disk handler and assign either the default or a
user-selected logical name to that device. If the device is not
specified, DOWN will search through a predetermined list of
devices to look for the file. UP moves "up" one level of
subdevice nesting, while HOME returns to the top level (no
subdevices attached).

NEWLD can be used to easily create a new file to be used as a
subdevice. NEWLD accepts the parameters file name, size, logical
name, number of directory segments, and whether the file is to be
"net" or "gross" size. Defaults can be used for many of the
parameters. File sizes can be specified in either of two ways -
as a numerical value or as a disk type (RX01, RX02, RX50, RL01,
etc).

INCBUP does incremental backups (i.e., backs up only files
created since the previous backup) and catalogs the directories
of the backed-up files for rapid retrieval. Backups can be done
from any size or type of disk (including LD's) to any other disk.
The backup target device can be a subdevice file on a larger
disk, thereby permitting several "backup sets" to be on one
physical disk. The volumes on which the backed-up files are
copied are identified by a unique name and extension as the
"backup set identifier". A printed directory of the backed-up
files is also made.

DSKLIB is necessary for INCBUP and is included in this
submission. It has been described on a previous tape.

INDFIL.DSK   6 Files, 72 Blocks
DSKLB1.DSK   9 Files, 205 Blocks
DSKLB2.DSK   8 Files, 311 Blocks
****

The following nine submissions were obtained from the DECUS 1986
Australia Symposium RT-11 SIG Tape (held in Melbourne, Victoria).

CVLLIB - A Library of Useful RT11 Routines [Release 4].

Dr. Chester Wilson
71 Galatea St.
Charleville 4470, Queensland
·Australia
(07) 54 1244

     CVLLIB is a general-purpose library for the RT-11 Macro,
Fortran or C programmer. Routines cover facilities such as
reading and writing decimal (up to triple precision) and octal
(up to double precision) and hexadecimal (up to double precision)
integers, money format (double or triple precision), dates and

times, filenames and Radix50 formats. Multiple-precision
arithmetic routines are included, none of which requires EIS or
FIS. Real (floating-point) routines are included, but these
require either a KEV11 or a floating-point hardware unit (FPU).
CVLLIB comprises about 500 source files in Macro-11 for RT-11.
In this release CVLLIB has been split into three functional
groups: CVFLIB (Fortran interfaces), CVRLIB (real (2 word) number
routines), and CVGLIB (general segment - the routines
themselves).

```
CVLIB1.DSK  28 Files, 483 Blocks
CVLIB2.DSK   8 Files, 486 Blocks
CVLIB3.DSK   4 Files, 485 Blocks
CVLIB4.DSK   5 Files, 454 Blocks
CVLIB5.DSK   1 File,  412 Blocks
```
****

FALL, 1986, RT SIG TAPE DIRECTORY

DBSMNG - Data Base Management Package.

Ray R. Di Marco
South East Queensland Electricity Board
2 Bowen Bridge Road
Brisbane, Queensland
Australia
(07) 223-5175

     The DBSMNG package was developed from a suite of modules
used to facilitate file I/O and complex data manipulation. As
the number of modules in the package expanded, management
routines were added to combine the individual modules into
programs to perform commonly used functions - especially those
needed to create, maintain and exploit small databases. DBSMNG
is designed to support small, homogeneous databases (i.e., of
approximately 100-10000 records), and allows databases to be
quickly established and easily maintained. Included in the
package are a menu management program, a screen oriented editor,
a report writer, an online query program, an incremental backup
utility, and other utility programs. Also included are
FORTRAN/ASSEMBLER callable routines that allow user application
programs to interface with a database.

     The package runs under RT-11 or TSX+. Two example database
applications are provided - a telephone index and a filing
system.

```
DBSMNG.LST   1 File,  717 Blocks (Documentation)
DBSMN1.DSK  15 Files, 486 Blocks
DBSMN2.DSK  17 Files, 443 Blocks
DBSMN3.DSK  25 Files, 200 Blocks
```
****

HANDLR - DU Handler for Very Large Disks.

Dr. Chester Wilson
71 Galatea St.
Charleville 4470, Queensland
Australia
(07) 54 1244

Peter Miedecke
Webster Computer Corporation
Melbourne, Victoria
Australia

     This is a distribution of handlers for large (larger than
256 Mb) MSCP disks. These have been tested and work fine on
Fujitsu Eagles running TSX-Plus Version 6.01. A mapped RX03
floppy disk handler is included as well. It requires a SIGMA or
DILOG RX03 controller.

```
HANDL1.DSK  17 Files, 305 Blocks
HANDL2.DSK  17 Files, 306 Blocks
```
****

FALL, 1986, RT SIG TAPE DIRECTORY

HVPLOT - Plotting Library for HP-GL Plotters.

Dr. R. N. Caffin and S. L. Hewett
CSIRO Div. of Textile Physics
338 Blaxland Rd.
RYDE 2112, N S W
Australia

     This library provides a user who has a REGIS graphics
terminal and/or an HP-GL plotter with a single Fortran-compatible
graphics package. Suitable plotters include the HP7470A,
HP7475A, HP7550, HP7580B, HP7585B and the DEC LVP16. The HVPLOT
package allows the user to employ the same calls for the two
devices for most of the common operations such as setting up
scale factors, drawing lines and labelling. The choice of which
device is to be used may be made at runtime.

```
HVPLOT.DSK  16 Files, 250 Blocks
```
****

PLOT77 - HVPLOT for Fortran 77.

Dr. R. N. Caffin
CSIRO Div. of Textile Physics
338 Blaxland Rd.
RYDE 2112, N S W
Australia

        This is an updated version of the older HVPLOT for Fortran
IV/RT. It is designed for Fortran 77 and should run under TSX+,
RSX and VMS.

PLOT77.DSK 13 Files, 68 Blocks
****

PLTLIB - Extensions to the HVPLOT Package.

Dr. R. N. Caffin and Stanley Wong
CSIRO Div. of Textile Physics
338 Blaxland Rd.
RYDE 2112, N S W
Australia

        This is a library of extensions to the HVPLOT package which
are useful for drawing scatter graphs.

PLTLIB.DSK   6 Files, 81 Blocks
****

MATRIX - Matrix Manipulation Routines.

Dr. R. N. Caffin
CSIRO Div. of Textile Physics
338 Blaxland Rd.
RYDE 2112, N S W
Australia

        These are two matrix-handling libraries: MATRIX for REAL*4
variables and CMTRIX for COMPLEX*8 variables. In addition to a
fairly complete package of matrix handling routines, this
includes a generalised inverse routine (GINV). This can take a
matrix equation such as A.x=y and invert it, yielding a solution

for x. If the matrix is overdetermined, (m>n), we have the
common experimental situation of having more readings than
variables. The normal procedure in this situation is to obtain a
least-squares solution. The GINV routine will take the equation
and return the least squares solution in this case.

MATRIX.DSK 13 Files, 130 Blocks
****

MSCUTL - Miscellaneous Utilities.

"ARL" (Some organization in the
Sovereign Commonwealth of Australia)

        This is a collection of utilities:
MORE is like the MSDOS command; it allows display of a single
file by VDU page.

PX and CX are programs to execute commands.

CTTY is a console changer.

WHO identifies jobs as being RT, STAR, SHARE, TSX, RSX, UNIX,
RSTS, etc. Used by MAIL and ARCHIV.

CHECK is an IND routine to check if disk drive ready to write.

LINE is a demo of using KED to edit line drawings.

BYENET forces the Webster MUX to release SHARE lines.

TROFF, PREFIX, IDENT are part of a system to use RUNOFF with a
VT100, printer and LN03. It is not quite finished but in
constant use.

MAIL is a mail system for RT, SHARE, etc.

ARCHIV is an archiving system - preliminary version.

MSCUTL.DSK 67 Files, 366 Blocks
****

UCLCVL - Superset UCL and Other Utilities.

Dr. Chester Wilson
71 Galatea St.
Charleville 4470, Queensland
Australia
(07) 54 1244

Three more utilities by Chester Wilson:

UCLCVL is a superset of the RT-11 UCL utility; it allows symbol
definition by means of "macros". The user can establish logical
tests in the run-time execution of the symbols. Runs under both
RT-11 and TSX-Plus.

GETDAT gets system date and time from terminal. Works under
TSX-Plus and is very user friendly.

WAIT delays program execution for specified period. Useful for
scheduling a TSX-Plus detached job to run at a given time.

```
UCLCV1.DSK    7 Files, 290 Blocks
UCLCV2.DSK    6 Files, 415 Blocks
*******************************************************************
```

FALL, 1986, RT SIG TAPE DIRECTORY

The Fall, 1986, RT SIG tape contains 120 Files, 24644 Blocks.

It was prepared by:

R. W. Barnard
Sandia National Laboratories
Division 7523
P. O. Box 5800
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DCS - BARNARD

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For more information on Electronic Distribution of the tape,
please see the May, 1986, issue of the DECUS US Chapter SIGs
Newsletter, in the RT-11 SIG section.

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Cross-Reference Index

NEWSLETTER OF THE VAX SYSTEMS SIG

Pageswapper

Our Mascot

Forms at the End

VAX

To register for on-line submission to the Pageswapper dial:

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Larry Kilgallen, PAGESWAPPER Editor
Box 81, MIT Station
Cambridge, MA 02139-0901
USA

Preference is given to material submitted as machine-readable text (best is Runoff source). Line length should not exceed 64 characters and the number of text lines per page should not exceed 48 (these limits are particularly important for sample commands, etc. where simple text justification will not produce a meaningful result).

Please do not submit program source, as that is better distributed on the VAX SIG tape.

Please do not submit "slides" from DECUS Symposia presentations (or other meetings) as 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 to get the content across to a wider audience than is able to attend.

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DECUS U.S. Chapter
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249 Northboro Road (BP02)
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USA

Only if discrepancies of the mailing system are reported can they be analyzed and corrected.

Editor's Workfile

Dealing through the Electronic Store -

I thought the Software Development Portfolio Licensing scheme was great (and still do -- see I/O note 547.0 and a separate article this issue), but so far it doesn't fit well with the Electronic Store. Having obtained a license one can then order -H kits (media) at will within the set of products licensed. So I ordered two from the Electronic Store. A few days later I got a letter with a form to return agreeing to DEC standard licensing terms and giving the CPU serial number. Now if I had wanted to I could have mailed an order with that information in the first place! The Electronic Store already has a few screens of boilerplate at the start of each session indicating that purchases made therein are subject to DEC terms and conditions ("abandon hope, all ye who <ENTER> here"). It did not bother to ask for a CPU serial number (and there is no place to enter one). Looking on the bright side, I suppose I should rejoice that I got such early written confirmation that my order was received.

On the other hand -

I was at a conference this week where an IBM representative described their corporate interest in computer environments "larger than a single enterprise". The external testbed for networking implementations in this direction seems to be connecting IBM with its customers. The IBM representative indicated they now offer electronic mail interconnect (I didn't get the details on who talks to whom) but so far the problems of implementing electronic order-taking have not been solved, so there is no such IBM service.

Vote by modem -

For those who have an account for Pageswapper submissions, it will be possible to cast you SIR ballot via that mechanism. Type HELP SIR for more information.

INPUT/OUTPUT

A SIG Information Interchange

A form for INPUT/OUTPUT submissions is available at the back of the issue.

To register for on-line submission to the Pageswapper dial:

(617) 262-6830

(in the United States) using a 1200 baud modem and log in with the username PAGESWAPPER.


```
=====================================================================
Note 481.1    YACC, LEX and LINT for MicroVAX I under VMS    1 of 1
"KATHY HORNBACH"                       11 lines    5-NOV-1986 19:31
         -< Try DEC/SHell or Software Tools User's Group >-
---------------------------------------------------------------------
```

You can get YACC and Lex as part of DEC/Shell, if you are willing to pay for it.

The Software Tools User's group (a non-profit user's group) has a number of UNIX-like utilities, including YACC and LEX on the latest tape, I think. Be warned that these are recoded versions in RATFOR with no guarantees. The STUG tools have been on several of the VAX tapes in the past.

KATHY HORNBACH
DIGITAL EQUIPMENT CORP
110 SPIT BROOK RD ZK02-2/R55
NASHUA, NH 03062

```
=====================================================================
Note 530.7         Remote Print Symbiont wanted          7 of 8
"Frank J. Nagy"                     47 lines  15-NOV-1986 12:38
           -< Remote printing: Now and Futures? >-
---------------------------------------------------------------------
```

Having non-copious amounts of free time, I implemented my solution using a pair of command procedures. The first (local node) takes a command line consisting of 2 arguments. The 2nd argument is the same as the argument of a normal PRINT command. The 1st argument is "node::queue" to specify the remote note and print queue destination. The 2nd procedure sits in my login area on the remote node (yes, it needs proxy logins but could be placed in SYS$SYSTEM. Nice thing about proxy logins is the print job comes out on your own username). The 1st procedure invokes the 2nd with DECnet task-to-task communications and passes the relevant information across the link. And then it disconnects and exits back to DCL. The 2nd procedure, now running independently, copies the files to the remote node and PRINTs them (that trick makes it work just that smidgen faster...).

This seems to work fine as an interim solution. I think I remember placing these procedures in my FERMILAB submission to the Fall '86 VAX SIG tape. Check for them there.

The ultimate solution is to write two programs: one is a "server symbiont" attached to a "print" queue on the source VAX which then talks to a "queue server" task (using DECnet) on the destination VAX (to which the destination printer or print queue is connected). The pair of programs pass the file contents and the PRINT qualifiers (as passed to the symbiont) across DECnet from source to destination VAX. The "queue" server then uses $SNDJBC to submit the print job into an actual print queue. Some of the problems that would need to be addressed:

1. Can you print jobs under usernames which do not exist on the destination system?

2. How to map "print" queues on the source VAX to those on the destination VAX(s)? Logical names? A formalism for the "print" queue names?

3. How to map FORMS and CHARACTERISTICS between the two
    disparate systems. Especially when they are under the
    control of different (non-cooperating) system
    management!

Maybe some of this is solved. The Remote System Manager product
from Digital has something to support print queue access from
remote systems. Anyone have experience with this product and
can say more?

Frank J. Nagy
Fermilab
PO Box 500 MS/220
Batavia, IL 60510
(312)840-4935

===
Note 530.8   Remote Print Symbiont wanted   8 of 8
"Jamie Hanrahan"   16 lines 17-NOV-1986 17:40
                 -< I found something >-

I'm using a similar pair of command procedures. Not to be
pedantic about it, but my original heading said "remote print
symbiont wanted", and that's what I meant.

It turns out that the following firm has something that sounds
as if it's just what I'm looking for:

        Magic One
        Attn: Lee Leahy
        1971 Mt. Pleasant Road
        San Jose, CA 95148
        (408) 238-0861

We can't discuss prices, but I think I can say that the price is
"very reasonable". After we get it I'll post something here to
let everyone know how well it works.

Jamie Hanrahan
Simpact Associates
9210 Sky Park Court
San Diego, CA 92123
619-565-1865

===
Note 542.3 Diagnostics on the system disk of the u-VAX   3 of 3
"Bruce Bowler"   4 lines 31-OCT-1986 16:11
                 -< No such luck >-

I just attempted doing what I suggested in 542.2 and couldn't
get it to work. It would hang after it displayed 2.. and I
would get messages from DECnet on other nodes in the network. I
think it probably has to do with the fact that the diagnostics
are written in VAXeln.

Bruce Bowler
General Electric
1 River Road
Bldg 2 Room 609
Schenectady, NY   12345

===
Note 545.0   Problem with Job Queue Manager   1 reply
"Jack Patteeuw"   33 lines   7-NOV-1986 17:45

I have had a somewhat random recurring problem with my System
Job Queue Manager ever since version 4.0 and I'd like to know if
anyone else has seen this problem and/or has a solution.

We have a large (> 30) number of "logical" queues on our system
to which user submit their print requests. A detached process
"wakes up" every couple of minutes or so, and examines all the
queues to see if there are any new requests. If so, this
process allocates a terminal port, places a call on our local
area network to that printer, deallocates the port, starts a
queue on that physical terminal port and assigns the logical
queue to that physical queue. The code is solid (was written by
a DEC Specialist and reviewed by several others).

My problem is the System Job Queue Manager **DIES** with the
following two error reported out thru OPCOM:

%JBC-F-READERR - Error reading SYS$SYSROOT:[SYSEXE]JBCSYSQUE.DAT

%RMS-E-KEY - Invalid record number key or key value

The JBCSYSQUE.DAT file is corrupt and the queue manager must be restarted with a new file.

I am presently running a patched version (believe it to be the 4.5 version) of the job controller.

The problem seems to occur in random spurts. It must have died a dozen times this week, but it was weeks and weeks since the last time.

DEC is really dragging their feet on this, as the original SPR is well over a year old! Does anyone else have a suggestion ?

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI   48150
313-323-8643

```
====================================================================
Note 545.1          Problem with Job Queue Manager          1 of 1
"Larry Kilgallen"              21 lines   7-NOV-1986 20:05
                    -< I Suspect Logical Queues >-
--------------------------------------------------------------------
```

Many of the purposes for which people used logical queues are now served by generic queues. Based on my experience a small proportion of sites use logical queues, so those parts of job controller code do not get the pounding that other parts do.

If you wanted to cut your losses, you might consider switching your entire mechanism to use a single executor queue (proven technology) with a different characteristics bit for each target printer. If your output is really done via print requests, then DCL symbols can cause various users to issue those print requests with different characteristics bits. Then your detached process after placing the phone call can merely alter the characteristics of the queue to enable the proper subset of output jobs to flow forth (I have had lots of experience with setting queue characteristics and never experienced a failure).

The downside of my alternative mechanism is that the queue scan cannot be readily done from DCL -- or maybe that is an upside.

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA   02139-0901

```
====================================================================
Note 546.0          Print file swith long records          No replies
"Jack Patteeuw"                18 lines   7-NOV-1986 17:57
--------------------------------------------------------------------
```

If you have ever tried to "PRINT" a file with very long record (ie. 512 .. 1024 ...<65536) to a printer (or more likely a plotter) hooked up to a terminal port you may have had the same problem I had.

Even though I DEFINEd a FORM with /NOWRAP and /NOTRUNCATE and set the terminal port to /NOWRAP, it seemed that the longest record I could send out was limited to the WIDTH of that terminal port (which can be a maximum of 511).

Well it turns out that the terminal driver interprets /NOWRAP/HARDCOPY as a "TRUNCATE" (!!!) while it says /NOWRAP/SCOPE is interpreted as a "NOTRUNCATE".

Remember this if you are planning to run applications that are ported over (especially from UNIX (ugh!)) that create "plot" files. Some applications don't ever put out an "end-of-record" because they don't want to get a <CR><LF> in the middle of their data (I guess they never heard of Record Attributes : None).

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI   48150
313-323-8643

```
=====================================================================
Note 547.0   Software Development Portfolio Licenses   No replies
"Larry Kilgallen"                   66 lines    9-NOV-1986 16:58
---------------------------------------------------------------------
```

In case you haven't heard, DEC has announced five new software
licensing options for MicroVAX II and VAXstation II owners. The
basic idea is a blanket software license covering a number of
different products (much larger than VAXset or VNXset) with one
initial payment and then subsequent monthly payments. That is
just for the license -- it does not include media, documentation
or service (SPR answers). The idea is that one can purchase the
appropriate kits according to current needs while maintaining a
blanket license for a much larger set of licenses. Although we
don't discuss prices directly in the Pageswapper, suffice it to
say that there would have been no point in DEC making the offer
if it did not provide a price advantage at least to certain DEC
customers. My own view is that this is a VERY SIGNIFICANT move
by DEC, and hopefully by the time this I/O makes it into print
(January issue) there will also be an article to discuss some of
the possible ramifications. Meantime, the following list will
give details on the offerings. The -1P items are for the
initial charge you pay, and the -JP items are for the continuing
monthly charge. You need both a -1P and a -JP to play the game.

%%

Base Program Development Portfolio License

MicroVAX II -- QZZDA-1P and QZZDA-JP
VAXstation II -- Q4ZDA-1P and Q4ZDA-JP

VAX APL	VAX Datatrieve	VAX PL/I
VAX ACMS	VAX DBMS	VAX Rdb/VMS
VAX Baseview	VAX FMS	VAX RPG II
VAX BASIC	VAX FORTRAN	VAX RSM
VAX Bliss	VAX GKS	VAX SCAN
VAX C	VAX Language-Sensitive Editor	
VAX CDD	VAX DEC/MMS	VAX Source Code Analyzer
VAXELN Toolkit	VAX Notes	VAX Teamdata
VAX DEC/CMS	VAX Pascal	VAX DEC/Test Manager
VAX COBOL	Vax Performance/Coverage Analyzer	VAX TDMS

%%

Extended Program Development Portfolio License

MicroVAX II -- QZZDB-1P and QZZDB-JP
VAXstation II -- Q4ZDB-1P and Q4ZDA-JP

         All the above, plus -

VAX Ada	VAX LISP	VAX Rally
VAXELN Ada	VAX OPS-5	VIDA
VAX COBOL Generator		

%%

Run Time Option Program Development Portfolio License

MicroVAX II -- QZZDC-1P and QZZDC-JP
(Run Time Option not offered for VAXstation)

         Only the following -

VAX ACMS RTO	VAX FMS	VAX Teamdata/Rally RTO
VAX CDD	VAX GKS	VAX TDMS
VAX Datatrieve	VAX Notes	VIDA
VAX DBMS RTO	VAX RDB/VMS RTO	

%%

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA 02139-0901

```
=====================================================================
Note 548.0             Disc Corruption Problem          1 reply
"Offline Submission"                43 lines   10-NOV-1986 19:55
---------------------------------------------------------------------
```

Some 5 times since June, we have experienced a serious disc
corruption problem on our clustered 8600. First one or two
files have "unsupported file structure" and this gradually
spreads to more and more files on the disc. It turns out that
some file extents are not properly marked as being used and/or
parts of the bit map have been zeroed! The problem is very
contagious. It is not always the same disc which gets
clobbered.

We also have a stand-alone single-disc 780 which has seen the same problem once or twice. Once per week, we stop this 780 and mount its disc on our cluster HSC for backup.

We see two possible causes -

   a) hardware - the corrupted discs share the same HSC.

   b) VMS. We are running 4.3. DEC applied a patch to RMS but we got hit again. Now they claim that the ACP cache parameters in SYSGEN should not be altered from the defaults. We did not change them; AUTOGEN did. The first cases happened shortly after system crashes and we suspected a lost cache problem. The RMS patch was supposed to fix a problem where a process gets aborted by a crash or a STOP/ID. However, the last occurrence was after the installation of the patch and seemingly unrelated to a crash.

Has anyone else seen or heard of such an error? Is there anyone else out there with a large heavily loaded cluster system and non-default ACP parameters?

Alan Silverman, CERN, Geneva
DD Div, CERN,
1211 Geneva 23,
Switzerland

Electronic mail to: alan@vxcrna.cern   (EAN)
                        vxcrna::alan   (HEP DECnet)
                        ...!mcvax!cernvax!ags   (UUCP)
                        alan@cern.vxcrna   (CBS)

Date: November 3, 1986

===
Note 548.1   Disc Corruption Problem   1 of 1
"C J "Buck" Trayser"   6 lines 14-NOV-1986 17:14
                -< Patch for STOP/ID isn't any help >-

Only a comment...The patch for the 'Stop/ID=...' problem should not make a difference. It was only intended to keep the system from hanging when there are globally buffered files that have lock problems, not corruption problems.

C J Trayser
360 Interstate North Parkway
Suite 600 - MS: 6/B4
Atlanta, Georgia 30339

===
Note 549.0   VAX 785 Memory Requirements   2 replies
"Offline Submission"   13 lines 12-NOV-1986 20:14

Based on real-life experience, can anybody give me a ball park figure on how much memory a VAX 785 should have to support 30 logged-on users, various workloads (editing to heavy number crunching)?

Beverly B. Bauer
Ethyl Corporation
Post Office Box 14799
Baton Rouge, LA 70810

Telephone: 504-768-5928

November 7, 1986

==
Note 549.1   VAX 785 Memory Requirements   1 of 2
"Jack Patteeuw"   12 lines 13-NOV-1986 17:53
            -< I'll take a shot at it ... >-

Wow, what a tough question ! As all experienced VMSers know it
"all depends on your workload" ! I have a 780 where we run
between 24 and 32 simultaneous users, with lots of editing, a
little All-In-1 and some heavy crunching. We have 16 MBytes and
don't seem to page too heavily.

For you, I would not recommend anything less than 16 MBytes and
you may be better off with 32 ! (I know that's a wide margin,
but with such little input.)

Just remember the old saying "The fastest way to tune a VAX is
to add more memory."

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI   48150
313-323-8643

==
Note 549.2   VAX 785 Memory Requirements   2 of 2
"Frank J. Nagy"   20 lines 15-NOV-1986 12:20
            -< Rule of thumb for VAX memory needs >-

Based on my experience with a dual-785 VAXCluster supporting
software development, word processing, accelerator design
calculations, microprocessor software development, and a few
other things in the hodge-podge, I found that 12 MB was adequate
to support a 30 user load (30 users was about the limit the
system could support before the response time deteriorated very
badly). In this VAXCluster, VMS used about 1.5 MB of physical
memory.   The memory was in good balance with the user load and
resulted in minimal paging and almost no swapping. A good rule
of thumb for memory capacity seems to be:

1. Figure on VMS using 12-15% of the physical memory (use
    15% if on a VAXCluster)

2. Figure on each interactive user and batch job needing a
    working set of about 400KB (800 pages) on the average
    (averages over large compiles and batch jobs vs people
    editing).

Frank J. Nagy
Fermilab
PO Box 500 MS/220
Batavia, IL   60510
(312)840-4935

==
Note 550.0   DECnet into a Mux   No replies
"Jack Patteeuw"   5 lines 13-NOV-1986 17:56

Does anyone have any experience running DECnet (via a DMR11)
into a Codex Multiplexor (6005 to be specific).

I'd like to hear about any problems you had and what parameters
you used to set up your mux.

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI   48150
313-323-8643

```
=================================================================
Note 551.0              Data Scopes              2 replies
"Jack Patteeuw"                  3 lines  13-NOV-1986 17:58
-----------------------------------------------------------------
```

Does anyone have any comments on Data Scopes/Protocol Analyzers.
We are looking at a HP 4951C. Does anyone have any good/bad
comments about this model ?

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI   48150
313-323-8643

```
=================================================================
Note 551.1              Data Scopes                 1 of 2
"Larry Kilgallen"               19 lines  14-NOV-1986 22:30
             -< An HP 4951A may be similar >-
-----------------------------------------------------------------
```

I have one site where we use an HP 4951A (as distinguished from
C) with good results for our purposes. It is used mainly for
asynchronous traffic, so few of the more complicated operations
of which it might be capable are exercised. On some occasions
it erases its recording of the last session when we push a
button which we did not think would have that effect, but it has
not been sufficiently annoying for us to do anything drastic
like look for the manual. The protocols we look at are all
private ones, so no automatic recognition (if, indeed, the beast
is capable of such) is used either.

The one aspect of the device which I can say has been rigorously
tested is ruggedness. It belongs to the company, and is not
designated as being cared for by anyone in particular. It is
stored wherever someone last used it, which may very well be on
the floor. I can't say for sure that it has been dropped, but
then again I can't say for sure that it has not.

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA   02139-0901

```
=================================================================
Note 551.2              Data Scopes                 2 of 2
"Dave Close"                    15 lines  24-NOV-1986 14:29
            -< Some minor concerns >-
-----------------------------------------------------------------
```

We also have an HP-4951A and find it quite satisfactory. The
one aspect which I find annoying is its clumsiness in operation.
The interface cable runs through the cover which acts as a
break-out box and converts between RS232 and RS449. Thus you
have two boxes on your work surface, one heavy cable between
them, and one or two ribbon cables to your device under test.
The heavy cable does not fit well to the cover so requires
tightening the screws which, in turn, makes replacement of the
cover and portability difficult. I also can never get all the
cables back into the pouch in which they were originally packed
so there is the possibility of losing some of them.

I have used other models, though none of recent vintage. The
Datascope series seemed in the past to be more convenient to use
and not subject to the problems outlined above.

Dave Close
Anadex/Printronix
1080 Avenida Acaso
Camarillo, CA 93010
805/987-9660

```
=================================================================
Note 552.0 How to Disable Control-Y Function of SET HOST No repl
"Offline Submission"            14 lines  20-NOV-1986 22:02
-----------------------------------------------------------------
```

A captive account, established from UIC by SET HOST, that uses
control Y (or turns it off) for control purposes, loses it to
SET HOST; 2 in rapid succession will (with "Yes" answer) halt
the remote session returning control to UIC. Is there any easy
way around this?

Paul Peterson
Woodward Governor Company
Post Office Box 7001
Rockford, IL 61125-7001

Telephone: 815-877-7441 ext 420

November 13, 1986

===
Note 553.0 Capturing RMS Information from Other Processes No rep
"Offline Submission"   16 lines   20-NOV-1986 22:03

I have written a user-written system service, set up like
"$GETJPI", etc, to retrieve RMS information from open files from
other processes: Specifically, from data structures IFB, IRB,
FWA such as for indexed files what is the current key pointer,
or how many blocks a work file is currently using, or how many
more blocks to go before my file is transferred across the
network.

Rick Orr (Home)
201 Alsab Circle
Virginia Beach, VA   23462

Telephone: (804) 622-0440 (office)

November 7, 1986

===
Note 554.0   Fax/Vax interface   No replies
"Dave Close"   14 lines   24-NOV-1986 14:41

I have acquired an RS232 interface for a Xerox 295 telecopier
(fax) machine. The manuals describe how the fax can scan a
page, convert it to a Hoffman code, and transmit to the serial
link. This is exactly the same format in which the scanned
information is sent to a remote fax using the built-in modem.
(The 295 is a "Group III" fax machine which means it can send
digitally, not analog like the older machines.) It is also
capable of receiving a similar data stream from the serial link
and printing the derived document.

I need to develop a VAX program to convert from the Hoffman code
to a "normal" bit-image graphics file and vice versa. Has
anyone got such a program available? Are there any other
available programs for interfacing a fax machine? (Xerox has a
program for their PC but not for anything else.)

Dave Close
Anadex/Printronix
1080 Avenida Acaso

Camarillo, CA 93010
805/987-9660

===
Note 555.0   VMS V4.4/DBMS V3.1/System crashing   No replies
"Larry Kilgallen"   7 lines   24-NOV-1986 19:49

DEC has issued notice of a system-crashing problem in VMS V4.4
which manifests itself when DBMS V3.1 is used to restore
incremental backups (DBO/RESTORE/INCREMENTAL) to an RA-series
disk drive. They indicate the problem is fixed in VMS V4.5
(which is now arriving, at least in Boston). For full details,
get a copy of the letter which was addressed to all DBMS sites.

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA   02139-0901

*

*

XDELTA/DELTA Command Strings

B.C. Leahy
Internals Working Group
September 1986

Getting command strings to execute in XDELTA/DELTA has always been somewhat of a mystery to me, until recently. For those of you who have had the opportunity to work with either XDELTA/DELTA you know that most of the commands consist one or two characters, and display contents of memory locations. With the use of the ;E command, and the complex breakpoint option on the ;B command you string together several of the commands to form a command string that prints out English text, displays multiple memory locations, and/or acts as a tracer.

To use the ;E commands and ;B commands I first recommend reading the manuals. Information can be found in either the "Guide to Writing Device Drivers", or depending on what revision of manuals you have, the "Utilities Manual", or the "System Programmers Manual". Next you will need a fact that is not in the manuals, but is in the fiche. This fact has to do with the syntax of the ;E command. The ;E command is used to execute command strings that have been stored in a memory location. How those commands are stored is what is important. In order to get the ;E option to work, you must store a carriage return before storing the first command that you want to execute. For example, suppose you want to store the command to display the contents of R0 in memory location 7ffe1600. The syntax for the ;E command is:

```
7ffe1600/00000000 '<CR>R0/'
./00000000
```

Note, <CR> stands for carriage return. The location 7ffe1600 was chosen because it contains all zeros, the name of this location is CTL$A_COMMON. The stored command must be followed by a zero byte as specified in the manual, (See VMS Device Driver Manual chapter 15, or Manual on XDELTA/DELTA). Once the command has been stored in the memory location, you can execute the commands stored in that location by typing the address followed by ;E. For example:

```
7ffe1600;E
```

The above example is very simplistic in its content but it shows a necessary fact and provides the foundation for further development. Command strings can be written so that they print out the necessary information and continue executing, just by tacking on the ;p command. For example, the command below will print out R0 followed by R1, R2, and then continue execution from that point on.

```
7ffe1600/00000000 '<CR>R0/<LF><LF>;P'
```

Each linefeed command, denoted by <LF>, prints out the contents of the next location, in this case R1 followed by R2. By putting this command string in a complex breakpoint, the user has the ability to view the contents of memory locations and registers every time the code reaches this breakpoint. The syntax for the complex breakpoint command is:

```
breakpoint loc,breakpoint #,memory loc, string address;b
```

An example:
```
234,2,r0,7ffe1600;b
```

Although the above examples are useful to display memory contents, they lack the textual information provided by the English language. English text can be built into these examples by making some parsing strings. The XDELTA/DELTA commands typically used for parsing strings are: ", [L, [W, ., +, Q. These commands control the setting of various modes and incrementing, or decrementing of current memory location.

Below is an example of parsing a simple string.

```
        CR = ^015                 ; CARRIAGE RETURN
        LF = ^012                 ; LINEFEED

CRLF:   .BYTE   CR,LF             ; OUTPUT CR,LF
STRING: .ASCII  ^HI^              ;SIMPLE TEXT

PARSER: .BYTE   CR                ; MUST CLOSE LOCATION BEFORE
        .ASCII  ^Q-4[L"^          ; COMMAND STRING OUTPUT A CR,LF,
                                  ; THEN THE TEXT. Set Q to Parser
```

```
                        ; address, subtract 4 to obtain
                        ; the address of CRLF.  Set
                        ; output to longword mode, and
                        ; display in ASCII a carriage
                        ; return, linefeed, and HI
        .BYTE   0       ; Terminate string with 0 byte

        .TITLE SIMPLE
        .ENTRY SIMPLE, ^M<>

        CLRL    R6          ; DO ONLY ONE COMMAND SO THAT
                            ; THE DEBUGGER STOPS
        RET
        .END SIMPLE
```

This program will print out the word HI when the address of the
parser string is typed in followed by a ;E. The parser string
starts at address 204 for this program. How the parser works is
as follows: first a carriage return is issued to close out the
location. Then the Q defines the current address. Four is
subtracted from the current address to set the location to CRLF.
Next the output mode is set to longword, and the double quote
command is used to output ASCII. The ASCII longword output
consists of a carriage return, linefeed, and the two letters HI.
Try it out.

Note, that in order to use XDELTA/DELTA, the user must have
either booted the system with XDELTA, or used a logical variable
name assignment for DELTA. Below is an example of the program
SIMPLE run with DELTA.

```
        $ DEFINE LIB$DEBUG SYS$LIBRARY:DELTA
        $ MACRO/DEBUG/LIST SIMPLE
        $ LINK/DEBUG SIMPLE
        $ RUN/DEBUG SIMPLE
        DELTA Version X2.2

        0000020D/CLRL    R6        204;E
        00000204
        HI
```

Again, the example above is rather simple. Below is an example
of more complexity. Notice in the STRING that all of the words
appear run together. When the words are output they will not be
run together because XDELTA/DELTA inserts a space between the
output commands. This fact created a problem for outputting
words longer than four letter. To overcome this problem a back
space was inserted in the ascii text string.

```
        CR = ^015
        LF = ^012
        BS = ^010

        .BYTE CR,LF            ; carriage return, line feed
STRING: .ASCII ^ Hi,MynameisBarb^<BS>^ara ^
                            ; ascii string to be printed

PARSER: .BYTE CR              ; carriage return to close loc
trial:  .ASCII ^Q-17[W".+2[L".+4[W".+2[L".+4[W".+2[L".+4"^

        .BYTE 0                ; terminate with a zero

        .entry barb,^m<>

        clrl r6        ;dummy command in order to get into debugger

        ret

        .end barb
```

Software Development Portfolio Licensing

by
Larry Kilgallen
and
Marian Kowalski

The Portfolio Licensing plan recently announced by DEC for MicroVAX and VAXstations running VMS (see I/O note 547.0 in this issue) has the potential of being the most significant DEC announcement since the MicroVAX II. Of course there have been large processors and the BI bus in the interim, and simultaneously with the introduction of Portfolio Licensing was the official introduction of Local Area VAXclusters which had been demonstrated at the Dallas and San Francisco US DECUS Symposia. So with all those other announcements, what makes Portfolio Licensing significant?

Reduced to a minimal description, Portfolio Licensing is a price break. In one sense it might be considered as a response to competitive pressures from Sun workstations -- putting all DEC's accumulated software development into the low-end marketing battleground. That may, in fact, have been all that was under consideration in DEC's decision to offer Portfolio Licensing. The effects, however, are likely to be more wide-ranging.

Another analysis of DEC's motivation might be the common marketing practice of looking for packaging which will cause the customers to spend money they would not otherwise have spent. Assuming you have a MicroVAX with some existing software, would you buy a combination license for many other products if it cost a million dollars a month? Probably not. How about if it cost one dollar a month? Probably so. As George Bernard Shaw indicated, we have now decided your inclinations and all that is left is to agree on a price. So DEC marketeers have arrived at a set of prices which they feel will produce more revenue than depending on the previous pricing structure (remember that some paid-up licenses for MicroVAX software will now not be bought because customers have opted for Portfolio Licensing).

The software products in question already existed, so what is the cost to DEC of offering Portfolio Licensing? Well, one cost which is NOT there is software support. If a customer wants software maintenance service (including automatic updates and the possibility of getting SPR responses), an additional charge (at the going rate) is involved.

So DEC is getting a good deal (presuming the marketing folks did a proper job of making the tradeoff between revenues gained and revenues lost) on the software sales. A single license transaction is more economical than multiple transactions for DEC to establish, and monthly payments instead of paid-up licenses form a sort of annuity. DEC is also getting a good deal with respect to hardware sales since it will make MicroVAXes more competitive with similarly sized computers from other manufacturers.

Some customers may buy Portfolio Licenses for reasons other than external economics -- in some cases it is much less painful to pay a monthly fee from the start than to go back to management for new approvals every few months. It is not yet known how many customers will decide that for them Portfolio Licensing is a good deal. Look for hands raised in the VAX Systems SIG Roadmap session at the Spring US DECUS Symposium in Nashville. But the customer who chooses Portfolio Licensing is getting a good deal by definition, since if it was not a good deal they would opt for paid-up licenses on a smaller number of products.

The very existence of Portfolio Licensing is actually a good deal for everyone who uses VMS, even if only on a single 780 (not eligible for the license) they have had for 7 years. The availability of Portfolio Licensing finally makes it economically feasible for organizations other than DEC to utilize fully the VMS capability for writing multi-lingual programs.

For the "language" products available through Portfolio Licensing, the results can be run on any VMS machine, even one not licensed for that language. For databases and screen management packages, there are run-time only licenses available for target machines, be they MicroVAX or 8650. The products which are software engineering tools are not of interest to end users, although it is nice to know your developer used them.

The result could (should?) be an extreme widening of the development of software for VMS systems. The VMS community is perhaps too wide for something as chummy as the Apple developers organization, or perhaps DECUS fills that role. We also have in the vehicle of DECUS tapecopy distribution what is the moral successor to the PDP-1 paper tapes which were held in a common drawer for the next person to improve upon. There will likely be a great increase forthcoming in the sophistication of not

only what you can buy from a vendor but what is distributed free.

To draw a parallel, consider the success of the DEC Rainbow contrasted with that of the IBM PC. The IBM label may count for something with certain customers, but the ever-growing market for IBM-compatible PCs (clones) marks a large segment of the market as not being bedazzled by brands. Have you ever heard of a Rainbow clone? The difference is the availability and diversity of software for the IBM PC. In the formative years of the PC market, IBM invited third-party software developers to the newly created DOS environment. For those who leapt to meet the published IBM standards there was always the brass ring -- the chance for a joint marketing agreement with IBM.

VMS has been around even longer than IBM's PC-DOS, but development has been concentrated in places where six-digit price tags for a computer were acceptable. Even in those situations, management acquiescence was often not forthcoming for purchases of big ticket add-on software packages as DEC gradually made them available. Now, with Portfolio Licensing, there is a chance that even a small shop can make use of the powerful development tools DEC has produced over the years, to produce lower-priced software for in-house or product purposes. There will not be so many VMS-based developers as there are for the IBM PC, but there may be a lot more than exist now.

Life is not a bed of roses. Multi-lingual programs require a common calling standard, and what VMS provides is flawed by incomplete language implementations. Pascal will not accept variable string input parameters in any form but VARYING OF CHAR, which is a data type precious few DEC languages are capable of generating. The number of software products which support packed decimal strings (a VAX datatype from the beginning) is pathetically few. Add to that the concern that an organization doing software development must have about committing to multi-lingual maintenance. But on balance, many developers will take advantage of the new opportunity, and those who succeed will produce software which gives all VAX users (even those restricted to a budget of four reels of tape per year for the Symposium tape copy results) a wider variety of better software to use in meeting their needs.

VAX/VMS Security

Second in a series ← October, 1986

by

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Last Time

Larry (Kilgallen) points out that the list of devices that I included last time is a bit dated. The reason that I included it is that it is the only concise listing of available products and vendors that I have found recently. Use it as a starting place; it certainly is not an exhaustive treatment of available equipment.

Larry also points out that some people think that system security means putting one of these devices on as a front end to dial-up lines and forgetting everything else. I hope that you don't take this naive and simple-minded approach to your system's security! In future editions of this column, I will "take the system security problem apart" and do a "soup to nuts" walk through of it all, perhaps with an eye to providing some guidance in securing your VAX/VMS system(s).

This Time

For my Pageswapper VAX/VMS security submission this time, I have dug up one of the interesting security-related Symposium sessions from the past Fall 1986 Symposium in San Francisco. You don't have to put up with my poor runoffing this time!

Mark Lacharite and Edward Suffern from Digital's Government Systems Group teamed up to prepare an excellent paper on how VAX/VMS was tested by the National Computer Security Center in order to certify it as a class C2 operating system. The paper was presented by Mark at the Symposium, and I thought that you might like adding a little depth to your understanding of the Department of Defense Trusted Computer Systems that we talked about briefly last time. Thanks for allowing us to publish your paper, Mark.

Incidentally, in case you missed it, there is an article by Harry T. Larson about the DoD's Trusted Computer System Evaluation Criteria in the October issue of Hardcopy magazine (Volume 6, Number 10).

If you have comments or suggestions about what this VAX/VMS security column should have in it or have a question that you would like addressed in print, please forward it to the above address. See you next time!

Security Testing VAX/VMS

by
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and
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NOTE

This article is based on a session presented at the Fall 1986 DECUS US Symposium in San Francisco.

Good morning and welcome to the Security Testing of VAX/VMS session. My name is Mark Lacharite and I manage the Product and Application Specialists within the Government Systems Group of Digital Equipment Corporation in Merrimack, New Hampshire. Ed Suffern, the developer of the Security Tests Suite which I will be describing today, is a member of my group and was unable to be with us today.

The purpose of this session today is to describe the rationale and methodology that was used to test the security features that were added to VAX/VMS V4.3. On August 28, 1985, Digital Equipment Corporation requested that the National Computer Security Center (NCSC) conduct a formal evaluation of the VAX/VMS Operating System. On August 1, 1986, the NCSC approved VAX/VMS V4.3 as meeting the criteria for a "C2" level of security. In order to apply for and receive an evaluation from the NCSC, it is required that the vendor demonstrate that the necessary security features for that particular security level have been successfully tested. These tests from here on, will be known as the VMS Security Evaluation Test Suite.

Before describing the features and the testing that was done, I would like to explain briefly the role of the NCSC and the criteria by which VAX/VMS was evaluated.

Early in the 1970's, the Department of Defense was directed to develop technical hardware/software security criteria and associated technical evaluation methodologies in support of a system security policy. As a result of these efforts, with assistance from the MITRE Corporation, the Air Force, the NBS, and several members of industry, a document was produced. The document was the "Department of Defense Trusted Computer System Evaluation Criteria", commonly referred to as the "Orange Book" because of its cover. The Orange Book defines the criteria for evaluating Trusted Computer Systems. It mandates various levels of functionality which must be present in an operating system, certain aspects of the hardware/software interface architecture (e.g., the operating system must maintain a domain -- independent from applications, KERNEL vs USER modes), basic documentation and testing. In January 1981, the National Computer Security Center was formed to expand the work developed by these earlier DOD efforts. It is the NCSC's goal to encourage widespread availability of Trusted Computer Systems; that is, to evolve systems which allow the storage of highly sensitive information on a system where some of the users are not authorized to see data of that sensitivity. One of the major functions of the NCSC is to assist computer vendors in developing secure operating systems and to evaluate those systems once they are developed.

The ultimate goal of the vendor is to have the product added to the "Evaluated Products List". A list of products that have been subjected to formal product evaluation and their assigned ratings.

Now let us begin by looking at the NCSC's criteria which VMS was evaluated against to receive its "C2" rating.

Divisions of Criteria

There are four divisions which define various levels of trust which can be granted to an operating system. These divisions are ordered in a hierarchical manner with the highest division, A, providing the most comprehensive security. As systems evolve

from D to A divisions, they become subject to increased functionality and testing requirements. Each Division is divided into classes which are also ordered hierarchically.

"Assurance of correct and complete design and implementation for these systems is gained mostly through testing of the security-relevant portions of the system. The security-relevant portions of a system are referred to in the document as the TRUSTED COMPUTING BASE or TCB."

> Division A - Verified Protection
>
> > A1 - Verified Design, highest defined to date
>
> Division B - Mandatory Protection (user authorization)
>
> > B3 - Security Domains
> >
> > B2 - Structured Protection
> >
> > B1 - Labeled Security Protection
>
> Division C - Discretionary Protection (need to know)
>
> > C2 - Controlled Access Protection (VMS V4.3)
> > (grant/deny access to named users)
> >
> > C1 - Discretionary Security Protection (VMS V3)
> > (restrict access by groups, i.e., SOGW)
>
> Division D - Minimal Protection (Do not meet higher class)

For those of you who would like additional information pertaining to security, the NCSC provides two additional documents (known as the YELLOW BOOKS). They provide guidance on the use of evaluated systems within a DOD environment. For example, C2 systems are the minimum level recommended for use in a "system high" environment where all users possess clearances equal to or higher than the data stored on the system. The B and A division systems are recommended when some users are not authorized to have access to some data on the system. The

specific class depends upon the sensitivity of the data versus the trustworthiness of the user(s).

C2 Criteria

C2 CRITERIA

SECURITY POLICY

o Discretionary Access Control

o Object Reuse

ACCOUNTABILITY

o Identification and Authentication

AUDIT

ASSURANCE

o Operational Assurance

    System Architecture

    System Integrity

o Life-Cycle Assurance

    Security Testing

DOCUMENTATION

For our discussions, we will concentrate on the C2 level Criteria, since that is what VMS has obtained. There are other sessions addressing mandatory controls and labels which are the main difference between Division C and Division B. The differences between Divisions A and B are primarily a matter of verification and testing involved in the evaluation process.

Systems in the C2 class enforce a more finely grained discretionary access control than C1 systems, making users individually accountable for their actions through login procedures, auditing of security-related events, and resource isolation. The C2 criteria have five major requirements as noted above. The first requirement is the establishment of the security policy.

The TCB requires an explicit and well-defined policy which is enforced by the system. At the C2 level this policy states that the system will have Discretionary Access Control which implies that data is protected on a need-to-know basis and that the system ensures that users cannot gain access to data as system objects are reused.

Within Discretionary Access Controls, the TCB defines and controls access between named users and named objects (e.g., files and programs). The access controls shall be capable of granting or denying access to the granularity of a single user. Access permission is granted only by authorized users.

Within VMS the OBJECTS involved are FILES, DIRECTORIES, DEVICES, GLOBAL SECTIONS, and LOGICAL NAME TABLES. VMS SUBJECTS are SYSTEM, OWNER, GROUP, WORLD and PRIVILEGED. There are five ACCESS TYPES, which are READ, WRITE, EXECUTE, DELETE and CONTROL. And finally, the VMS IDENTIFIERS of types SYSTEM, GENERAL, and UIC make the components of discretionary access control.

The second sub-requirement of the Security Policy deals with Object Reuse. All authorizations to information contained within objects must be revoked prior to initial assignment, allocation or reallocation to a subject. No information produced by a subject is to be available to any other subject that obtains access to an object that has been released back to the system.

Examples within VMS include HIGHWATER MARKING, ERASE ON DELETE and DELETE/ERASE.

Access to the TCB and/or data on the TCB must be mediated. The TCB must be able to record occurrences of security≠related events.

Mediation occurs within the identification and authentication sub≠requirements. Users shall identify themselves to the TCB before beginning any other actions that the TCB is expected to mediate. The TCB shall use a protected mechanism to authenticate the user's identity. The TCB shall enforce individual accountability and associate the user's identity to all auditable actions taken by that individual.

VMS uses AUTHORIZED PRIVILEGES, IDENTIFIERS, LOGIN RESTRICTIONS and PASSWORDS to mediate access.

The TCB shall be able to create, maintain, and protect from modification or unauthorized access or destruction an audit trail of accesses to the objects it protects.

This includes auditing of requirements within IDENTIFICATION AND AUTHENTICATION such as LOGIN, LOGFAILURE, LOGOUT, BREAKIN, the introduction of objects to user space (e.g., file access), deletion of objects and operator/administrator actions (opcom).

Within the assurance requirement, it is required to establish a well≠defined system architecture. The TCB shall maintain a domain for its own execution that protects it from external interference or tampering. The TCB shall isolate the resources to be protected so that they are subject to the access control and auditing requirements. This function was performed by MITRE Corporation.

The TCB is HARDWARE DEPENDENT (DEC≠STD≠032) NCSC basic requirement was that it meet the VAX architecture standard without changing the standard.

Hardware and/or software features shall be provided that can be used to periodically validate the correct operation of the on≠site hardware and firmware elements of the TCB. This was accomplished with VAX BOOT DIAGNOSTICS.

The security mechanisms shall be tested and found to work as claimed in the system documentation. Testing shall also include a search for obvious flaws that would allow violation of resource isolation, or that would permit unauthorized access to the audit or authentication data. The NCSC team tested for obvious flaws and the Government Systems team provided the formal testing which I will shortly describe.

The last requirement was for documentation. The criteria require the specific information describing the security features be provided with each system. The specific manuals and their content will be described in later slides.

Testing VMS Against C2 Criteria

Objectives

Functionality

Repeatable

Self≠Validating

Table-Driven

The primary purpose of the testing was to demonstrate that the functionality incorporated into VMS satisfied the criteria of the Orange Book. It was also to show that there were "... no obvious ways for an unauthorized users to bypass or otherwise defeat the security protection mechanisms...". In other words, the test suite demonstrated the security≠related functions in a manner which showed that access to an object is granted when authorized and access is denied when unauthorized. This latter case is what vastly increased the scope of the overall test effort.

The overall design of the tests had to be such that if an anomaly was encountered, a repeat of the test could recreate the anomaly. For this reason command procedures and a few programs were created to ensure that the exact test environment and sequence of events were repeatable. With the exception of a few tests which absolutely required manual interaction all tests

consisted of logging into the system and executing a command
procedure. Examples of tests which required special interaction
are with dialup lines, the password generator and the secure
server.

It was determined that the tests should be self-validating on
the completion of each execution since there was an excessive
amount of data output to be verified. A typical test could
produce approximately 350 blocks of output consisting of the
expected system error messages and/or the lack of messages. For
this reason the tests were designed to compare the output from a
previous evaluated test and the output of the current run. In
this way we have a quick and easy tool to show any changes
between runs.

It was obvious from the beginning that while the test effort was
a one-time event to obtain the initial C2 rating, it would be
necessary to define a test approach which could migrate from
version to version to maintain the rating on subsequent versions
and to adapt the tests easily as new security features were
incorporated. An additional consideration was to allow them to
evolve as a basis for higher level evaluations when we believe
that VMS complies with the criteria in Divisions B or A.

The entire Security Test Suite provides approximately 90 hours
of intensive testing of the security-related features of VMS.

Discretionary Access Control Testing

These tests are designed to demonstrate the ability of named
users to access named objects within VMS that satisfy the
criteria defined. VMS has defined five classes of object which
require discretionary access controls. These classes are files,
directories, logical name tables, global sections and devices.
For each class of object the tests used a set of standard users
possessing various combinations of UICs, system identifiers,
general identifiers and privileges. Each of these users then
attempted at least one READ, WRITE, EXECUTE, DELETE and CONTROL
action against every object defined for testing that class, as
applicable for the object class.

For each class of object, a common set of test objects was
established for each user process to attempt access. A
comprehensive set of discretionary controls was applied to the
set of objects using the standard System-Owner-Group-World
(SOGW) protection mask alone and using access control lists
(ACLs). The objects were designed to show that the system
recognized and properly processed the access types of READ,
WRITE, EXECUTE, DELETE and CONTROL when used individually and in
combination. Further, the objects were designed to show that
the access types functioned correctly for each of the SOGW
fields in the protection mask and in conjunction with access
control entries (ACEs) within ACLs.

Testing of the SOGW protection was rather straightforward in
that there is one protection mask defined for any object and
SOGW relationships are clearly defined for each object.
However, the testing of ACEs with an ACL was a bit more complex
since there can be multiple ACEs with an ACL and within an
individual ACE complex identifier relationships can be defined.

The discretionary access controls tests were organized on the
subject-object relationship as follows:

  o File Access Controls (FAC)

  o Directory Access Controls (DAC)

  o Device Access Controls (DEV)

  o Logical Name Table Access Controls (LOG)

  o Global Section Access Controls (GBL)

The file access controls tests are perhaps the most important of
all the tests since files are the primary mechanism for the
storage and safeguarding of data in the VMS environment.
Extensive testing was performed with 10 subject processes
attempting access to each of 145 files which were owned by one
of the subjects. All file accesses and failures were found to
occur as predicted by the VMS documentation.

The directory access controls tests verified the hierarchical
mechanism used to catalog files within the system. Directories
have a dual nature in that they are actually files and can be
referred to as such while at the same time the file system
allows them to be used as a pointer to a file or another

directory which is cataloged under the directory. The tests demonstrated this dual nature of the directory files by including references to the directories both as directories and as files.

The same 10 subjects used for testing the file access controls were used to attempt access to 80 directories. It was found that the system allowed and denied access to the directories as predicted by the VMS documentation.

The device access controls tests were conducted on the terminal devices connected to the test processor. Since there were only 16 terminal ports configured, the tests were restricted to using those ports. A comprehensive set of access controls were designed to demonstrate all relevant aspects of the discretionary access controls as they related to devices.

A set of eight subject processes were used to attempt access to each of the 16 terminal ports. The tests demonstrated that access was granted/denied in accordance with the documentation.

To test the access controls on logical name tables, a set of 104 logical name tables were defined for access by 10 subjects. Logical name tables are unique in that they are memory resident structures which protect equivalence names. They are a fundamental construct upon which the execution of the entire VMS operating system depends.

The operation of the logical name tables was found to be consistent with the documentation provided. However, the following problem was noted:

- Under VMS V4.2, the version we started with, there was a major bug with logical name tables in that they were initialized with CONTROL access granted to users having group or world access. This meant that unprivileged users could gain full control of the system logical name tables and through that gain total control of the system. This problem was corrected in V4.3 and is the primary reason that the evaluation was migrated to VMS V4.3.

- Under VMS V4.3 the access controls functioned correctly and only users with system privileges are allowed to modify the contents of the system logical name tables.

Global Sections are also memory resident structures which protect shareable data. For the purposes of the evaluation, the file-backed global sections were tested since they present the greatest concern that an individual can gain unauthorized access to data. File-backed global sections are objects in memory that a user can map to and gain access to a file which is already opened on a global basis. These tests demonstrate the access controls associated with both system global sections and group global sections. To add complexity to this test and to demonstrate that the sections derive their ownership, protection and ACL from the file that backs the section, all sections were created by a process with a different UIC from that of the owner of the file which backs the sections.

Ten subject processes attempted access against 103 group and 103 system global sections. The access controls were found to function as documented and ownership of the section was with the owner of the file and not the creator of the section.

The objective of the object reuse test is to demonstrate that storage objects contain no residual data when they are allocated to a subject. The tests addressed the reuse of disk storage space since that is the primary storage object.

This tests called disk protection controls (DPC) demonstrates the VMS features of:

- User-specified erase on delete

- Volume erase on delete

- Volume high water marking (erase on allocate)

There are four different tests within the group. This test was run in such a manner that an entire disk was filled with a non-zero pattern of data. The first test pass verified that if the object reuse features were disabled, the subject could successfully access old data. The other three tests proved that when the object reuse features were enabled, all data was deleted and the subject could not gain access to the data.

All features functioned as documented with no problems encountered.

Identification and Authentication Testing

These tests were designed to demonstrate that the criteria for user identification and authentication were satisfied by VMS. In many instances VMS exceeded the criteria by including additional functionality which was also demonstrated. There are two separate tests which demonstrate this.

The Login Controls (LIC) tests demonstrate the success and failure of user access attempts to the system. They verify that only those attempts where the user is properly identified to the system by means of a unique username and valid password succeed.

The Process Rights Identifiers (PRI) test demonstrates the use of the AUTHORIZE utility. This utility maintains the system authorization databases used to create and modify user accounts on the system and to maintain a set of rights identifiers which are acquired by users when they gain access to the system.

The login controls tests verified the VMS functions for:

- Successful login

- Unsuccessful login

- Secondary passwords

- User password protection

- User account restrictions

- System password verification

- Breakin prevention and detection

- Evasive action on breakin detection

- Secure server

- Intrusion data base

- Assignment of identifiers to the process rights list

This was accomplished by an exhaustive set of tests which demonstrated these functions from a broad array of sources to include local terminals, dialup terminals, remote terminals, etc. All functions were successfully tested and found to work as documented under VMS V4.3

Under V4.2 a problem was encountered with the system password. An unprivileged, and therefore unauthorized, user could modify the system password with the SET PASSWORD/SYSTEM command. This problem was corrected in V4.3 and the tests properly detected the change in system behavior.

The process rights identifiers test demonstrates the use of the AUTHORIZE utility to maintain the protected system database used by the login controls to grant or deny user access to the system. It demonstrated:

- Database creation

- Automatic creation of system identifiers

- Addition of users and UIC identifiers

- Modification of user accounts

- Addition of identifiers (general and UIC)

- Granting of identifiers (rights) to users

- Revoking of identifiers from users

- Removing users from the system

This utility functioned as documented and no problems were detected. It should be noted that AUTHORIZE is used throughout the other tests to maintain and control the test environment.

Audit Testing

The audit function is designed to keep a record of specific events relating to the use of the identification and authentication mechanism by subjects and the introduction of objects to a subject's address space. Evaluation Criteria require that the audit trail be protected from modification by unauthorized users and/or destruction. This aspect of the audit function was demonstrated by the file access controls test since the audit trail is maintained in a standard VMS file.

Within VMS, the auditing occurs for:

ACL ⊣ a user meeting the criteria of an ALARM ACE when attempting access to an object.

MOUNT – for use of the mount command used to introduce disk or magnetic tape volumes to the system.

AUTHORIZATION ⸗ for modifications to the user authorization database by use of the AUTHORIZE utility and SET PASSWORD commands.

INSTALL ⊦ for INSTALL utility to introduce images as known file entries to the system. This monitors the introduction of privileged images to the system.

AUDIT ⸗ for modification of the system audit controls by use of the SET AUDIT command.

BREAKIN - for detection of any breakin attempts on the system. This may occur from the following types of source: DIALUP, LOCAL, REMOTE, NETWORK and DETACHED processes.

LOGIN ⊣ for successful login events from the following types of source or process: BATCH, DIALUP, LOCAL, REMOTE, NETWORK, SUBPROCESS and DETACHED processes.

LOGFAILURE ⊣ for failures of attempted logins.

LOGOUT ⸗ for logout of a subject.

FILE_ACCESS ⸗ for Auditing of the success and/or failure of subject access to file objects. This audits file access attempts requesting READ, WRITE, EXECUTE, DELETE and/or CONTROL access to files which result in SUCCESS or FAILURE. It also audits the successful access to files when access is gained via the use of SYSPRV, BYPASS, GRPPRV or READALL privilege.

Each audit trail entry records: date and time of the event, user causing the event, type of event, and success or failure of the event. For identification/authorization events, the origin of the request is included (nodename::username and/or terminal device ID).

Once all auditable events are created, the test uses the audit data reduction facility, SECAUDIT, to extract the audit information.

All auditable events were shown to result in the proper entry in the audit trail. All audit entries were complete and contained the information dictated by the evaluation criteria. There were no problems detected with the audit function.

DOCUMENTATION

o SECURITY FEATURES USER GUIDE

Guide to VAX/VMS System Security

o   TRUSTED FACILITY MANUAL

Guide to VAX/VMS System Security

o   TEST DOCUMENTATION

Test Plan/Procedures and Test Report

o   DESIGN DOCUMENTATION

VMS Documentation Set/Hardware Print Sets

The Orange Book specifies four separate documents that   must   be
prepared.   Three of the documents are provided to the end user,
while the Test Plan and Test Report are provided   only   to NCSC
for evaluation purposes.

CONCLUSIONS

The functional testing of the VMS operating system demonstrated
that the operating system fully meets and frequently exceeds the
requirements set forth by the Evaluation   Criteria.   Two flaws
detected in VMS V4.2 were fully corrected in V4.3. The first
was a problem with SYSTEM PASSWORD, which was   not required   in
the C2 Criteria.   The second dealt with LOGICAL NAME TABLE -
CONTROL   ACCESS.   In V4.2 the logical   name   tables   were
initialized such that all users had CONTROL access to all tables
by default. This was changed in V4.3.

Within the V4.3 tests   one additional   problem was described
relating to the AUDIT TRAIL. Specifically Audit Trail entries
were dropped if the system disk became full. This   problem was
resolved with a routine   that would broadcast a "disk nearing
capacity" message when the disk is 99% full. this procedure is
published in the September Systems Dispatch as article 95.5.8.

The change in test baseline from V4.2 to V4.3 was useful in that
it validated the entire set of functional tests and proved the
feasibility of using the test for each new release.

The command procedure approach provided a good method to
demonstrate the security⁺related features in a manner which can
easily adjust and change as the system evolves.   It also
provides a method whereby a very easy minor change to one
procedure results in a major change to the   total   test
environment.

The use of DCL for all aspects of the test, however, is
inefficient.   DCL is not an efficient substitute for programs.
Extensive iterative operations which can be programmed should be
done in that fashion. For our follow-on testing we will adapt
the data base initialization procedures to make more use of
programs, e.g.   BACKUP to initialize the data base in lieu of
DCL and a modified DIFFERENCES to do post test validation. (The
main   problem   was   that   there   were excessive character
manipulation routines in the procedures to account for legal
differences between the expected and actual output.

As VMS evolves, it is our intent to increase   the   detail and
scope of the testing to be more comprehensive.

SUMMARY

The Security Test Suite completed successfully and the NCSC
evaluated VMS V4.3 as meeting C2 criteria. Since the security
features have been placed permanently within the VMS code, all
subsequent releases will provide C2 features. However, this
does not guarantee that all future releases will be included on
the EPL. Therefore, we are currently working with the Security
Center to establish a methodology that would insure continued
"C2" ratings for future VMS releases.

We have a commitment to providing future secure systems. Additional security features are planned and probably will be offered prior to applying for formal higher security ratings.

FUTURE SECURITY POSSIBILITIES

Although MicroVMS contains all of the features of VMS, it was not included in the evaluation and this not included in the rating. The criteria require that security documentation be provided with the system. The MicroVMS documentation set does not include the Guide to VAX/VMS System Security. Additionally there needs to be a resolution to the Audit Trail situation, since the audit entries generated require large amounts of storage and the MicroVAX offers limited storage in various configurations.

We are not sure at this time what the issues are related to providing security in the cluster. This will require further investigation of such issues as whether all cluster options or whether limited configurations could be supported. And finally, how do the criteria cover such configurations?

As mentioned earlier, we are currently working with the Security Center to establish a methodology for continuing to have future VMS releases evaluated and added to the EPL.

To date there are no published standards/criteria regarding Network Security. Digital is participating in the standards definition effort being conducted by the Security Center.

Mandatory Access Controls are being addressed by Software Services. That is, Software Services is providing a VAX/VMS Security Enhancements Service. The service will provide a subset of the "B1" functionality.

ABORT!! ABORT!! I Said "ABORT"

Edward A. Heinrich
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Ah documentation, I love it - especially when the software functions the same way as the published specification. Unfortunately, sometimes it just doesn't work that way. Take DECnet/VAX (please): from reading the documentation you get the idea that when the remote process terminates abnormally, that is without issuing a $DASSGN system service call, you would receive a SS$_LINKABORT error and a MSG$_ABORT message in the associated mailbox. Nice idea, but there is a problem in the way VMS does image rundown that results in your program receiving a SS$_LINKDISCON and MSG$_DISCON in the mailbox message instead. In order to receive the ABORT status, the remote process must issue a QIO to the network channel with a function code of IO$_DEACCESS!IO$M_ABORT. When VMS does image rundown, in module SYSRUNDWN, it simply loops through the list of assigned channels and deassigns them. The result of this deassign is that the DECnet software returns LINKDISCON status instead of the desired LINKABORT status. This is erroneous and, in fact, totally useless, in applications that would like to attempt to recover from abnormal link terminations.

Luckily, there is a solution to this problem that is simple to implement. By writing your own image rundown routine, you can loop through the list of assigned channels before VMS does and issue a QIO with the necessary IO$_DEACCESS!IO$M_ABORT function to all the DECnet channels. This will allow your process to receive the correct status when a remote process terminates. In the P1 region is a cell, CTL$GL_USRUNDWN, that is used to contain the address of a process-specific rundown routine. There is also a system-wide cell, EXE$GL_USRUNDWN, that can be stuffed with the address of a routine that is invoked by each and every image that is run on the system. By using a user-written system service we can stuff the address of our process-specific rundown routine into CTL$GL_USRUNDWN. When the VMS image rundown routine, SYS$RUNDWN, is invoked it will JSB to our rundown code. In our code we search the known channel list and check if the channel is to a network device. If it is a network device, we cancel any outstanding I/O and issue the QIO to signal an ABORT.

If you do not already have any user written system services, you
can use the one provided in SYS$EXAMPLES, USSDISP.MAR. Assuming
you are using the USSDISP file, do the following:

1. Below the ";   Equated Symbols" line add

```
    $CCBDEF                              ; Define Channel Control
    $DEVDEF                              ; Define Device types
    $IODEF                         ; Define I/O function co
    $UCBDEF                              ; Define Unit Control Bl
```

2. Replace the code between the USER_RUNDOWN:: label and
    the .PAGE with the following:

```
    ;    ************************************************************
    ;
    ;       USER_RUNDOWN - User Written Image Rundown routine
    ;
    ;       Address is stored in CTL$GL_USRUNDWN and invoked
    ;       by VMS routine SYS$RUNDWN.  This routine will
    ;       correctly issue a $QIO with the I/O function code of
    ;       IO$_DEACCESS!IO$M_ABORT for each and every channel
    ;       assigned to DECnet.  This code is provided free of
    ;       charge to the DECUS community.
    ;
    ;       Look for DECnet channels and, if found, clean up for
    ;       them ever so  nicely.  Note that the following code can
    ;       be deleted someday when DEC does this for us in
    ;       SYSRUNDWN.
    ;
    USER_RUNDOWN::
            PUSHL   R1                      ; Preserve all work regi
            PUSHL   R2                      ; To prevent future prob
            PUSHL   R5                      ; Inside of SYS$RUNDWN
            MOVZWL  @#CTL$GW_CHINDX, R5     ; Get maximum channel in
            BEQL    2100$                   ; No channels assigned,
            MNEGL   R5, R5                  ; Convert to negative of

    1000$:  MOVL    G^CTL$GL_CCBBASE, R2    ; Get CCB base address f
            MOVAB   (R2)[R5], R1            ; Get CCB address for th
            MOVL    CCB$L_WIND(R1), R0      ; Do we have a XWB?
            BEQL    2000$                   ; No then can't be DECne
            MOVL    CCB$L_UCB(R1), R0       ; Grab UCB address from
            BBC     #DEV$V_NET, UCB$L_DEVCHAR(R0), 2000$
                                            ; Check for DECnet type
            MNEGL   R5, *(SP)               ; Channel number onto st
```

```
            CALLS   #1, G^SYS$CANCEL        ; Cancel outstanding I/O
            MNEGL   R5, R0                  ; Convert offset back to
            $QIO_S  chan    = R0, -         ; Channel number
                    func    = #<IO$_DEACCESS!IO$M_ABORT>
                                            ; Finally the point of t
    ;
    ;       Note that we do not deassign the channel since
    ;       SYS$RUNDWN will do that for us.
    ;
    2000$:  ADDL2   #CCB$C_LENGTH, R5       ; Point at next channel
            BLSS    1000$                   ; Process next channel

    2100$:  POPL    R5                      ; Restore those register
            POPL    R2                      ; We saved on our way in
            POPL    R1
            RSB                             ; Do the bird
    ;
    ;       End of code to issue ABORT on DECnet channels
    ;
    ;    ************************************************************
```

3. Link any programs that use DECnet against the system
    service.   See documentation in USSDISP.MAR for details
    on linking the system service.

Note that the above code is called in KERNEL mode, hence any
mistakes you make in it will very quickly test out the VMS crash
code. In light of this, I advise you to test this after hours.
If you desire to make this a system-wide user-defined rundown
routine, you can write some code to allocate a chunk of
non-paged pool (ocean???), copy the above code to this non-paged
memory, and stuff the address of the pool into the
EXE$GL_USRUNDWN cell.

Spring 1987 US System Improvement Requests

```
*** VOTE *** VOTE *** VOTE *** VOTE *** VOTE *** VOTE ***
*** VOTE *** VOTE *** VOTE *** VOTE *** VOTE *** VOTE ***
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```

Mark Oakley

HOLD IT! DON'T PUT THIS OFF! THE DEADLINE IS MARCH 20. You
have an opinion about what is right or wrong with VAX. Here is
your chance to influence the directions of future DEC
development. The VAX Systems SIG System Improvement Request
(SIR) program is an important method for the VAX user community
to provide input to Digital. Your opinion is important, and
every ballot adds to the influence of the SIR program.
Participation has increased the past two ballots, and we need to
maintain this trend. Over 500 votes were cast for the Fall 1986
ballot, which was one of our largest turnouts. Still, there is
room for improvement. Pageswapper circulation exceeds 9000
issues, and probably each issue is read by several members.

On the following pages, you will find the current collection of
System Improvement Requests. Please take the time to review
these SIR's and assess their effect on your use of VAX's. Then
indicate your preferences as described below. **THE SIR BALLOT
FORM APPEARS IN THE "QUESTIONNAIRE" SECTION OF THIS NEWSLETTER.**
Also, please fill out the questionnaire portion of the ballot.
This information is important to DEC, as it points out which
requests are important to a particular segment of the VAX
community.

The returns from this ballot will be totalled, and Digital will
provide a formal response to the 10 items which receive the most
votes. The results and DEC's responses will be given at the VAX
SYSTEM SIG SYSTEM IMPROVEMENT REQUESTS session of the Spring
1987 DECUS Symposium in Nashville.

Instructions For Voting

The ballot form contains two sections, a "support" section and
an "oppose" section. To indicate your support for an SIR, enter
its number in the "support" section of the ballot. You may list
from zero to fifteen SIR's in this section. To indicate your

opposition to an SIR you consider detrimental, enter its number
in the "oppose" section. You may list from zero to five SIR's
in this section.

Please return your ballot **IMMEDIATELY.** The tight schedule
before the Nashville Symposium makes this ballot difficult to
do. To allow time for DEC to respond, **BALLOTS RECEIVED AFTER
MARCH 20 CANNOT BE COUNTED.**

Any ballot not specifying a DECUS membership number will not be
counted. Only one ballot per member will be accepted.

Clusters

SIR: S87⚬1

Abstract: Provide additional VAXcluster management tools.

Description: Digital stresses that a VAXcluster should be
    managed as a single domain. To do this, more cluster-wide
    system management tools need to be implemented.   For
    example, SHOW, SET, ACCOUNTING, etc. should be enhanced to
    work across the entire cluster (as in MONITOR CLUSTER).
    Perhaps a DCL TELL command (similar to the DECnet NCP TELL
    command) should be implemented.

SIR: S87⚬2

Abstract: Improve support for VAXclusters with a   shared
    SYSUAF.DAT but with heterogeneous user groups.

Description:

    1. Allow different passwords for SYSTEM on each node in
        the VAXcluster. For example:

        UAF> modify system /password=abcxyz /node:mynode

    2. Expand access restrictions to allow/disallow   user
        access to specific nodes. For example:

        UAF> modify smith /[no]access:(node:mynode[,...])

        These features would enhance system security and allow
        system managers greater flexibility in load⚬balancing a
        cluster.

SIR: S87⚬3

Abstract: Allow SWAPping of processes between nodes in a
    VAXcluster.

Description: Using the virtual terminal facility, a user can
    disconnect from a process and later connect to it.   In a
    truly distributed VAXcluster, with LAT servers placing the
    user on the least loaded system, only by chance will users
    be placed on the same node as their disconnected processes.

Allowing the complete outswapping of a process on the
original node and inswapping at another node would solve
this problem, as well as allow for better load balancing of
the cluster.

Commercial

SIR: S87⚬4

Abstract: Allow   Datatrieve   to   accept   abbreviated
    commands.

Description: Datatrieve is a powerful tool which can be
    difficult to use because it cannot process abbreviated
    commands, i.e. "SHOW DICTIONARY", instead of "SH DICT".
    The synonym feature is inadequate because it requires
    preⴰcognition or considerable work to build the synonyms.

SIR: S87⚬5

Abstract: Provide for dependency networks of print and batch
    jobs.

Description: Large production shops often have the need to
    ⚬pecify the interdependencies of related batch and print
    jobs. For example Job A must run first, then jobs B and C
    ⚬an start; D follows B; E follows D and C; F and G follow E
    ⚬s shown in the example below.

    ⚬he network relationships should be established at the time
    ⚬he jobs are submitted, not after they start executing.   In
    ⚬any cases process slots cannot be afforded just to
    synchronize.   Jobs should be independent of the network
    ⚬pecification and the queues to which they are submitted.

    An example job dependency network diagram follows:

```
        /⚬⚬> B ⚬⚬> D ⚬\        /⚬⚬> G
    A⚬>                   ⚬> E ⚬>
        \⚬⚬⚬⚬⚬⚬⚬⚬> C ⚬/        \⚬⚬> F
```
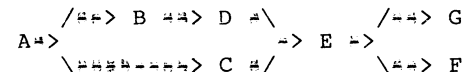
SIR: S87-6

Abstract: Increase the completeness, accuracy, and level of
detail in VMS accounting records.

Description: Examples include the following:

1. Stock name for print jobs

2. Physical device name(s) for Virtual and LAT terminal
sessions

3. QIO counts, by device, for each ALLOCATED device and
each SHARED device.

4. Report the terminal maximum speed (larger of TRANSMIT
and RECEIVE)

5. Record the number of logical and physical mounts for
each tape and disk drive (if any)

6. Record the name of the queue a job was submitted to as
well as the device or specific queue it executed on.

7. Record queue name for subprocesses created by batch
jobs.

SIR: S87-7

Abstract: Provide improved support for terminal auxiliary
printer ports so that printer output can be interleaved
with screen and keyboard I/O.

Description: This facility must provide configurability of:

1. Device-independent I/O at driver characteristic level

2. Same level of support as a "normal" printer

3. Terminal driver should know how to "turn on" the
printer, and should be able to interleave I/O

4. The sphere of influence of this capability is "process
local" as opposed to system wide

SIR: S87-8

Abstract: SHOW QUEUE/BRIEF should display the currently mounted
form and a list of forms required by pending jobs.

Description: It would be helpful for operators and users to
have current and pending forms displayed by the /BRIEF
qualifier. Currently only the "pending" status is
displayed. This makes it necessary for operators to wade
through the output of /FULL in order to find out what forms
are being waited on.

SIR: S87-9

Abstract: VMS Mount services should include "For READ" or "For
WRITE" or "WITH RING" or "WITHOUT RING" in messages to the
operator when requesting a tape be mounted.

Description: MOUNT/NOWRITE should generate a request for
"WITHOUT RING" or "For READ ONLY" and MOUNT/WRITE the
opposite so that operators can quickly determine if a ring
is needed.

SIR: S87-10

Abstract: Provide a fast file scan.

Description: The CONVERT utility can scan through an RMS ISAM
file at lightning speed. It would be helpful in many
instances to have a utility with a callable interface that
would provide a high speed scan capability. This
capability would be satisfactory with a random record order
as long as it's fast.

To avoid locking at the record level, the scan could be
granted exclusive access to the whole file. This scan
capability would be useful for building sub-datafiles from
large ones (for Datatrieve) and for standard financial
batch jobs such as bill/report generation.

SIR: S87-11

Abstract: A spooled device and utilities that support spooling should provide a capability for specifying a form name.

Description: In many cases use of the DEFAULT form on a print queue is not desirable in cases where no form can be specified. Any utility that allows printing through a QUEUE specification should support a FORMNAME specification. Similarly, SET DEVICE/SPOOLED should permit the specification of a FORMNAME to use with spooling.

SIR: S87-12

Abstract: All references to forms in displays of any kind should show the form name in preference to the number.

Description: There is very little use for the form number to the system manager or user once the names have been defined. All displays relating to forms - SHOW QUEUE and SHOW/FORM - should display the name only unless /FULL is specified. It should not be necessary to see or to know the form number except when deleting one. Also commands related to forms definition and management should be consistent. DEFINE/FORM and SHOW/FORM rather than SHOW QUEUE/FORM. All of these requirements apply equally to queue characteristics as well as forms.

SIR: S87-13

Abstract: Expand the number of form names beyond 127.

Description: In some environments there are a variety of different small printers on the same cluster. Because of the many variations in font, pitch, etc. it is easy to get up to a large number of forms in a hurry.

This is especially important in an environment where there are many printers with different forms, that are "fed" by a generic print queue.

SIR: S87-14

Abstract: Provide a capability to set operator notification on selected print queues.

Description: A facility that looked something like:

INITIALIZE/QUEUE/NOTIFY queuename

would cause each job completion to log a message to PRINTER operator consoles as well as OPERATOR.LOG via the OPCOM facility.

This facility would be useful for security reasons and to help locate "lost" listings.

SIR: S87-15

Abstract: Provide a callable interface to the operator messaging services that permits query calls to OPCOM or its replacement.

Description: The current OPCOM interfaces are inadequate for a commercial environment with lots of tape mounts and other requests coming up on cluster consoles. In order to improve on what exists, it would be helpful to have a mechanism to ask OPCOM for outstanding requests of a particular or a subset of operator classes. This would lend to the building of an interactive request management tool which would run on a video or hardcopy terminal. Pending forms should generate requests to PRINTER operators so that this mechanism will cover 99% of the requests an operator needs to handle. Any functionality that crosses the boundaries of SYS$SNDJBC and SYS$SNDOPR should be consistent between them. If this is not possible due to compatability problems, invent a new call that will complement and/or eventually replace these.

SIR: S87-16

Abstract: Enhance the ALLOCATE command to allow requests to be queued.

Description: Enhance the ALLOCATE command to enable a user to optionally queue the allocation request when all qualifying devices are busy. Device allocation should be handled by a queue manager similar to the VMS V4.0 print queue manager, and the allocation request queues should be made cluster wide to support cluster-visible devices.

User functions should include the ability to specify characteristics required of a generic device, the automatic notification of allocation, the ability to delete an allocation request, the ability to examine the allocation request queue, and the ability to do other interactive processing while waiting for an allocation request to be granted.

Operator functions should include the ability to mark failing devices as unavailable and the ability to force a deallocate. Manager functions should include the ability to define device characteristics and specify physical devices as possessing those characteristics.

Device allocation and deallocation should place records in the accounting file so that charge back accounting can be done for allocated devices.

A mechanism for avoiding deadlocks when multiple devices are allocated should be provided.

Examples:

```
$ ALLOCATE/QUEUED/WAIT TAPE$CLASS:-
  /CHARACTERISTICS=(DENSITY:6250) LOGICAL_TAPE
```

(Queue an allocation request for a tape drive with 6250 bpi capability and wait until the allocation has completed.)

```
$ ALLOCATE/QUEUED/NOWAIT/NOTIFY DISK$CLASS:-
  /CHARACTERISTICS=(RA60) MY_DISK_PACK
```

(Queue an allocation request for an RA60 disk drive and return control to my terminal. Notify me when the allocation has completed.)

```
$ ALLOCATE/NOQUEUED TERMINAL$CLASS:-
  /CHAR=(AUTODIAL,BAUD:1200 DIAL_OUT_MODEM
```

(Allocate a terminal device with a 1200 baud autodial modem but don't queue the request. Give an error if all such devices are allocated.)

SIR: S87-17

Abstract: VMS should implement tape automatic volume recognition and provide the security normally associated with volume labeling.

Description: VMS should provide a complete implementation of automatic volume recognition (AVR) for tapes that may be enabled/disabled by the operator on a per drive basis. This means that (with AVR enabled) when a tape is mounted, the system checks possible labels and honors mount requests without operator intervention, if possible. If a job needs 4 tapes, the operator can mount them all if enough drives are available and then forget about them until somebody else needs the tape drives. It should also be possible for a user to request a tape mount based solely on the tape's label and density. The user should not be required to know what physical devices implement a particular tape density on a particular system. VMS should also support a "visual id" or "slot number" which is displayed in all operator messages related to the mount.

It should be possible to operate a VMS system in a mode where all tapes are under system/operator control. This means that they are pre-initialized and users are not allowed to change the labeling on the tape without special privilege. The BACKUP utility must also conform to such labeling restrictions, thereby insuring that the BACKUP data is written onto the proper reels. VMS should require explicit operator intervention for unlabeled tapes. It is not acceptable that an unlabeled tape which happens to be on a drive be automatically assigned.

SIR: S87-18

Abstract: Provide a BACKUP/OPERATOR capability.

Description: Currently, when the BACKUP command is run interactively, request for additional tape volumes are directed to the interactive terminal. In a large systems environment, users are typically not encouraged to enter the machine room. All tape requests are handled by system operators. It should be possible to specify that all BACKUP tape requests be directed to the system operator.

SIR: S87-19

Abstract: All utilities should use a standard format for
    printable output.

Description: Printable output generated by VAX utilities and
    compilers comes in a great variety of record formats and
    carriage control conventions.   A particularly awkward
    convention is the use of embedded ASCII control characters
    to generate multiple print lines from a single record.
    There appears to be no standard for this or any other
    mechanism. As a result it is very difficult to print
    "printable" output on non-DEC printers or transmit it
    through heterogeneous networks. Digital should document a
    standard record format and carriage control convention and
    modify all facilities to conform to this convention. As an
    alternative,   Digital   should provide a utility which
    converts all currently used formats into a standard format.
    It seems that this functionality currently exists, but it
    is distributed between the print symbiont, device driver,
    and "DEC standard" printers.

SIR: S87-20

Abstract: Provide a file "date last read" separate from
    "expiration date".

Description: VMS provides the ability to maintain a pseudo
    "date of last access" for files by using a volume wide file
    retention period to update an expiration date.   It would be
    desirable to have the ability to maintain the date a file
    was last read, as well as maintain an explicit expiration
    date for a file. Knowing for certain the date and time a
    file was last read can be an important security tool.   The
    date the file was last read should be separate from the
    date the file was last created and the date the file was
    last modified.

SIR: S87-21

Abstract: Provide support for simple project accounting.

Description: The Spring 1985 VAX SIR Ballot contained a request
    for project accounting in VMS. Digital's response was "We
    also feel that project accounting is very important...We
    feel that this is a reasonably complex area and, as such,
    some of the enhancements that we intend to make in this

area will appear over time."

Project accounting is something that is desperately needed
at large sites. In its simplest form, project accounting
should provide a SET PROJECT command that would write a
process accounting record, and start recording a new record
with a new account string specified by the user. The
account string should be verified before these actions take
place. The system manager should be allowed to set up a
file which specifies which UIC's are permitted to use
individual account strings.

Many sites have immediate government or internal security
requirements for "one username per user" level of
accountability. DEC should provide this form of project
accounting until their full-blown system is available.

DCL and Utilities

SIR: S87-22

Abstract: Allow $SET HOST/DTE to work from within a command
    procedure.

Description: Permit a command procedure to allocate a terminal
    port, issue a $SET HOST/DTE to the port and begin sending
    input to the allocated port via DCL write commands.   One
    can simulate problems and input streams generated by remote
    DECNET terminals. This facility would be very useful in
    debugging LAN management problems.

SIR: S87-23

Abstract: Provide a time out mechanism for $REQUEST/REPLY.

Description: Frequently an operator will be unavailable, and
    fail to disable events to OPCOM with a $REPLY/DISABLE.
    This leads to a situation where a $REQUEST/REPLY becomes an
    indefinite stall on a process. Some limit on the number of
    times OPCOM will try to complete the request, either in the
    form of a limit value on the number of tries or a time out
    value, would be very useful in allowing processes to take
    an alternate path and continue running when an operator
    became unavailable.

SIR: S87-24

Abstract: An image should be installable as a memory resident
    routine.

Description: With the significant reduction in memory costs and
    the general increase in the size of memory configurations,
    this feature that is available on various the PC system
    would be very useful in VMS.   Response time on image
    activation could be significantly improved if a process
    were   installable   as MEMORY RESIDENT.   This type of
    installation would be site-dependent and should be easily
    removable as well if memory needs change unexpectedly.

SIR: S87-25

Abstract: Provide a LEXICAL FUNCTION to return the length of
    the longest record in a file.

Description: A DCL LEXICAL FUNCTION to provide the longest
    record length written in a file would facilitate setting a
    terminal to either 80 column or 132 column width when
    displaying or editing the file. This can currently be done
    by doing an $ANALYZE/RMS of the file to a work file and
    parsing the output, which is very cumbersome.

SIR: S87-26

Abstract: Allow command line editing to work on the entire
    command.

Description: Currently, command line editing is limited to the
    last line displayed on the scope. Frequently, errors are
    found in the command prior to the last displayable line,
    especially on long commands. This can be worked around in
    some cases by setting the line length to 132 or deleting
    characters until the error is reached. Both of these work
    ??-arounds are cumbersome and inelegant.   Some change is
    needed to the command line editor to allow the full command
    to be edited. One possibility would be to provide a mode
    to return to the beginning of the command and step forward
    a line at a time through the command.

SIR: S87-27

Abstract: Provide remote printing of a LOCAL file.

Description: Given the power of DECNET it should be possible to
    provide the queue manager on a remote node with a print
    command that contained a node name in the file
    specification.   The print symbiont would then utilize the
    File Access Listener on the source node to read the file in
    and send it across the network. For example, a user on
    node IBIS:: would issue the following command:

    $PRINT/NODE=HAWK/QUEUE=CP01 IBIS::COLOR_TEST.LIS

    This would result in a print entry placed in the queue on
    node HAWK that pointed to COLOR_TEST.LIS on node IBIS.
    Once the linkage is provided for the queue manger to
    communicate over DECNET many other possibilities quickly
    become easy. For example:

    $PRINT/NODE=HAWK/QUEUE=CP01 JAY::CARTOON.TEST

SIR: S87-28

Abstract: Provide a mechanism to require a $SET PASSWORD to be
    automatically invoked on expiration of a users password.

Description: Sites that enforce password expiration and have
    users locked into captive command procedures to invoke
    applications such as ALL-IN-1 have a problem when the
    screen is cleared automatically and the user misses the
    critical message that the last login permitted has just
    been made!   This results in very frustrated users and
    system managers. A simple fix to this and many other
    instances would be a /DEMAND_NEW switch in the authorize
    file. This switch, if set yes, would force a $SET PASSWORD
    to take place during login in lieu of the warning message
    that the last login had been used.

SIR: S87-29

Abstract: Mail should be installable with privilege.

Description: Since VMS version 4.0, MAIL, if installed with
privilege, has disabled its amplified privileges. This is
a restriction on the way a system manager can run his site.
This behavior should be removed since a system manager must
decide to install MAIL with privilege in the first place.

SIR: S87-30

Abstract: Additional TOPS compatibility features needed.

Description: The DELETE mechanism should be changed to provide
an error cushion similar to the TOPS behavior. In TOPS, a
DELETE is not immediate but is deferred until an EXPUNGE is
performed by the user, operator, or automatically by the
file system. Given this time cushion a user who has
accidentally deleted a critical file frequently has (BUT
NOT GUARANTEED) the opportunity to UNDELETE the critical
file.

SIR: S87-31

Abstract: Modify the /LOG behavior to provide a more selective
message display mechanism.

Description: Frequently wildcarded DCL commands such as BACKUP
when used with a /LOG qualifier produce voluminous piles of
output. In many cases the /LOG is used only to monitor the
completeness of the processing for determining when the job
will complete. In these cases the ability to restrict the
frequency of log entries would be very beneficial. A
possible syntax would be:

$BACKUP/LOG=(PRINT_EVERY:10) DRA0:[PC...].

SIR: S87-32

Abstract: Provide a mechanism to ignore ZERO LENGTH FILES.

Description: Files that are created with a zero length and
become the highest numbered version frequently result in
the destruction of the last "REAL" version of the file.
This happens in at least two cases:

1. When a low version limit such as 3 is enforced to keep
disks from getting cluttered.

2. When a $PURGE/KEEP=1 is performed to recover disk
space.

In the above cases the ZERO LENGTH file is preserved and
the older, lower-numbered version is lost. Some mechanism
is needed either to prevent the creation of ZERO LENGTH
FILES (unless specifically requested) or to exclude them
from being counted as real files when a version limit or
purge is applied.

SIR: S87-33

Abstract: MAIL should provide a full name and address
indication.

Description: Frequently USERS are given short cryptic user
names for accounting purposes. This makes it very
difficult to identify who really is receiving the mail sent
to user ACC007. A solution to this would be to implement
an ADDRESSEE and ADDRESS entry in the mail control file to
the SET FORWARD option. If these entries were filled in by
a user, a person sending mail could have this information
displayed by typing $MAIL/ADDRESSED. Once the user names
to receive mail were entered, the MAIL utility would print
out the address information before asking for the subject.

SIR: S87-34

Abstract: DCL open files should provide full names if
translated.

Description: Any file opened by DCL including SYS$INPUT, should
be translatable to the full file specification. This
allows a command procedure to $CLOSE the file and later
$OPEN the same version. By translating SYS$INPUT a command
procedure that has failed for some reason (such as the
needed tape drive is busy or down) could easily resubmit
itself. This would eliminate the need to include inside
the command procedure its own full file specification.

SIR: S87-35

Abstract: All DCL lexical functions should provide better file
    system information on open files.

Description: It would be very helpful if the $SHOW DEVICE/FILES
    command   could   be   extended   to provide information on the
    size of the file and the block number in the file used by
    the last i/o operation to the file. Also, a qualifier such
    as /FOR=USER or /FOR=PID (process id) to restrict the
    display to a particular process would be of assistance in
    monitoring how close to completion a particular batch job
    is.

SIR: S87-36

Abstract: Provide a LEXICAL function to check a process for an
    identifier.

Description: A lexical function to allow testing if a process
    held a certain identifier would facilitate writing command
    procedures that need to validate this information before
    allowing a process to continue. A possible use would be to
    control access to third party products that are billed by
    usage.

SIR: S87-37

Abstract: Extend logical name table directories.

Description: Provide for logical names LNM$JOB_DIRECTORY and
    LNM$GROUP_DIRECTORY to supplement the existing process and
    system directories.

SIR: S87-38

Abstract: Enhance mailbox logical names.

Description: Allow for the specification of a logical name
    table in the creation of a mailbox and assigning its
    channel. The logical LNM$TEMPORARY is not sufficient due
    to its required location.

SIR: S87-39

Abstract: Establish privileged DCL lexical functions.

Description: Currently where SHOW is installed with world
    privilege   users   can   obtain information about other
    processes by doing a $SHOW <whatever> to a file and reading
    it back.   Short of freely passing out world privilege no
    easy way exists currently to do this with GETJPI's.   One
    possible fix would be to allow the DCL lexical function
    GETJPI to be installed with world privilege.

VMS Internals

SIR: S87-40

Abstract: There should be a system service to flush out all
    accounting statistics for a process.

Description: Until full VMS project accounting arrives, it
    would be helpful to have a system service that writes out a
    process's complete accounting statistics, zeroes   all
    counters,   resets process commencement time,   etc.
    Currently, the only way to achieve this is to log out and
    log back in.

SIR: S87-41

Abstract: Provide full LAT-ll software support for PDP-ll's.

Description: Full LAT-11 software support for PDP-11's was
    promised two years ago. It should now be implemented.

SIR: S87-42

Abstract: Provide a run-Time Library routine to purge files.

Description: The VMS Run-time library has a routine
    (LIB$DELETE_FILE) to delete one or more files, but not one
    to purge them. It would be useful to have such a routine.

SIR: S87-43

Abstract: Provide a driver to allow 2-way inter-process
    communication.

Description: There needs to be a driver that would allow
    processes to communicate. The DEC/SHELL people have
    developed PIPEDRIVER.EXE that performs UNIX piping. Mail
    boxes are too unrealistic, because there is no easy way to
    detect a break. If 2-way is not feasible, 1-way
    communication would be acceptable.

SIR: S87-44

Abstract: Digital needs to provide various documentation about
    internals and data structures.

Description: Examples of documents that would be very useful
    include:

    1. RMS Internals

    2. Cluster Internals

    3. DEC's Data Structure Philosophy.

SIR: S87-45

Abstract: Provide non-HSC volume shadowing.

Description: Many smaller sites do not or can not acquire
    HSC's, but would benefit from volume shadowing. Volume
    shadowing needs to be included in VMS for those non-HSC
    sites.

SIR: S87-46

Abstract: Preallocate directory files.

Description: Directories with several hundred files get large.
    It would be nice if we could preallocate directories.

SIR: S87-47

Abstract: Provide a tape librarian/archive system with a
    virtual file system.

Description: The problem with maintaining and supporting tapes,
    disks, etc., is an ever-growing one and could be solved
    through the use of a virtual file system that is not
    necessarily a radical departure from the present file
    structure. The virtual file system would employ a
    "resident" bit in the index file header for the file.
    Resident files would be interpreted in the standard manner.
    Non-resident file index headers could be displayed with
    directory/off_line or some other similar command. When the
    "resident" bit is reset the file entry in the index file
    could be interpreted differently and specify user offline
    tape volume labels, save sets etc. Preferably the virtual
    file system would employ a rooted system.

SIR: S87-48

Abstract: A method to determine how much time the disk arm is
    sitting on each cylinder is needed. This permits the
    correction and detection of poorly organized volumes.

Description: A well-structured disk cannot prevent the disk arm
    from bouncing endlessly between 2 or more application
    files. No tool currently exists in VMS to detect this
    condition. Dramatic throughput and response time gains
    could be achieved if we knew what percent of time the disk
    arm spent sitting on files on a volume, i.e., a graph of
    arm-position vs time on a sampled basis could provide a
    tool to tell us this. The cylinder position could then be
    mapped to filenames via INDEXF.SYS. Very little change
    would be required to collect this data, as the drivers know
    where they are positioning the heads. Various other
    computer vendors provide such volume monitoring tools. Big
    gains could be made by knowing which files to move off a
    volume.

SIR: S87-49

Abstract: A method is needed to determine the source (node and
    port) of interactive sessions using LAT terminals.

Description: Interactive network terminal sessions provide a means (the SYS$REMOTE_XXX logical names) of determining the source of the connection (node and remote username). This is very useful in captive accounts and similar applications. A corresponding method of identifying LAT sources is badly needed. Perhaps a logical name like SYS$REMOTE_TYPE could be "CTERM" or "LAT" to identify the type of remote terminal protocol, the SYS$REMOTE_NODE logical name could give the LAT server nodename and SYS$REMOTE_PORT the port on that LAT server.

SIR: S87-50

Abstract: Alter GETJPI to refrain from causing inswaps.

Description: When a system starts outswapping inactive processes, GETJPI and other utilities become very dangerous to use and can slow down an otherwise well-running system. There need to be checks to determine whether particular processes are outswapped, before attempting to collect information about them.

SIR: S87-51

Abstract: Ability to stop a running process and store all data to disk so that it could be restarted after a system boot.

Description: The following capabilities need to be in VMS:

1. A VMS command to suspend and outswap a process and store any related information (such as open files)

2. A VMS command to restart the process, reopening files etc.

3. A startup procedure to restart outstanding processes on reboot.

Languages, Tools, and Editors

SIR: S87-52

Abstract: Enhance the symbolic debugger to providetraceback information on COBOL PERFORM statements.

Description: Currently, the symbolic debugger provides traceback information about CALL statements but not PERFORM statements in COBOL programs. Traceback information about PERFORM statements would be very useful for debugging programs. This traceback information should also be provided when a COBOL program aborts.

SIR: S87-53

Abstract: Provide REWIND and BACKSPACE capability for any file opened for sequential or append access in a Fortran program.

Description: Currently, REWIND and BACKSPACE functions are only available for files that have a sequential organization and have been opened for sequential or append access. It would be very convenient if REWIND and BACKSPACE could be used with files of any organization. Current work-arounds are slow and very clumsy.

SIR: S87-54

Abstract: Provide line number support for VAX Macro that can be used by the symbolic debugger, PCA, LSE, and other utilities.

Description: The usefulness of various utilities is limited because VAX Macro does not provide line number support. PCA (Performance Coverage Analyzer) is severely limited because program locations must be specified as virtual addresses. Thus, coverage and other code-related measurements are not useful.

Debugging would be made easier if line numbers could be specified instead of cryptic-looking addresses.

SIR: S87-55

Abstract: TPU should not journal requests for on-line help.

Description: Considerable time is wasted during recovery of a TPU editing session, if journalled help requests are displayed.

SIR: S87-56

Abstract: TPU should display all special characters.

Description: Most special characters are not appropriately displayed by TPU. It is useful and sometimes necessary to know what characters are actually in a file. TPU should be modified to display special characters.

Security

SIR: S87-57

Abstract: Support ACL's on print and batch queues.

Description: ACL's are needed to control the usage of print devices, print queues, and batch queues. The UIC-based protections are now available on queues, but ACL's are not, so the system manager does not have sufficient granularity in granting access to the system queues and print devices. There are some system managers who would like to set up batch or print queues that could only be accessed by users holding a particular identifier. ACL's can be placed on physical devices, but they only control the ability of users to allocate the devices and do not control their ability to use shared devices such as printers.

SIR: S87-58

Abstract: Better control over DECnet remote file access.

Description: The RMS file protection defines WORLD access to include all those outside the owner's group. It would be useful to define several classes of users as follows:

1. All WORLD users on the local node.

2. All users local to this VAXcluster.

3. All users on nodes within this DECnet area.

LOGINOUT currently gives a process the Identifier "NETWORK" if that process is being created in response to a network request. It would be useful to have greater granularity of access control for network processes by having additional identifiers created based on the node, cluster, and area from which the access is being attempted. This capability might possibly be achieved by having the File Access Listener, LOGINOUT, or some other privileged image set up the additional process Identifiers.

SIR: S87-59

Abstract: Support secondary passwords in DECnet access control strings.

Description: VMS V4 allows user accounts to have two passwords. However, DECnet does not allow the secondary passwords to be used in access control strings. The only way such accounts can be used through DECnet is via proxy logins.

SIR: S87-60

Abstract: Enhance COPY to copy ACL's.

Description: The COPY utility does not currently handle ACL's. It should be enhanced to propagate any ACL's from the source file to the destination file. However, there may be many times when a user is copying another user's file in order to modify it for his/her own purpose. It is likely that in such cases the user would not want to propagate ACL's from the original file. Therefore, this capability should be available via an additional qualifier to COPY, e.g., /PROPAGATE.

SIR: S87-61

Abstract: Allow different system password for each terminal.

Description: VMS V4 currently supports a single system password that must be entered before VMS identifies itself. There are times when the system manager would like to set up different system passwords for several different classes of terminals. VMS should support a different system password for each terminal, perhaps via a command of the form SET TERM/SYSPWD=xxxxxx, so that the system manager will have maximum flexibility in setting up many classes of terminals with each having a different system password.

SIR: S87⊣62

Abstract: A mechanism is needed that allows one user to grant other users access to a file only via a user⊣defined image.

Description: Non⊣privileged users sometimes need to give other non⊣privileged users controlled access to data files through a program. Through this facility, any user would be able to control who could access his data files and what kind of access they may have. In order to allow another user to add a record to a file in the current system, that user must be given WRITE access to that file, which means he could alter existing data or delete records from the file.

At present, this requires the system manager to install the program with privilege, which is both an administrative nuisance and a security problem, since the privileged image would also have access to other system data files as well as the intended files. This mechanism should be under user control, i.e., the user should be able to determine which images could access a file. For example, the UIC of the image and data file could be required to match before access would be permitted. This could be accomplished by an option on the compiler or linker when the image was being created. It could also be implemented by allowing the system manager to install an image with a particular identifier. Then the user could set up the access control list for that file to permit access by that Identifier. This would be less flexible but would permit a user to allow access from images other than his own, e.g., a data base manager. This capability could also be provided by file passwords, since the passwords could be imbedded in the programs that were intended to have access to the files; however, file passwords would be difficult to administer and prone to disclosure.

SIR: S87⊣63

Abstract: Implement mandatory security controls in VMS.

Description: Many VAX systems are being operated by government agencies or contractors and either are processing or need to process classified data. Mandatory security controls are needed in VMS to support such classified processing. An operating system that could be evaluated by the National Computer Security Center at the B1 level or higher would encourage the use of more VAXes for classified processing and make system management much easier for those already doing classified processing on existing systems. The system manager should be able to specify a security level for each user account using the AUTHORIZE utility. When a file is created, it should be given the security level of the creating process, and any subsequent access to the file should be controlled in accordance with the mandatory security policies. If a file is edited or copied, it should retain its classification. A utility should be provided to allow a person with a special (SECURITY) privilege to change the classification of a file.

SIR: S87⊣64

Abstract: End⊣to⊣end encryption of logical connections within DECnet⊣VAX.

Description: The assumption made by DECnet that all nodes and communications paths are trustworthy is not viable in many environments. End⊣to⊣end encryption of the data portion of network packets is required in these environments to assure that eavesdropping is fruitless both in Local Area Networks (broadcast) and Wide Area Networks (multi⊣hop). This encryption should be implemented so as to be transparent to the application programmer and user, i.e., the mechanism should be located in the NSP (or OSI session) layer. New encryption keys should be generated for each logical connection between cooperating, encryption⊣capable processors. (Some nodes will not be capable of encryption and should be allowed to participate in the network without performing encryption.) Intermediate nodes should not be required to participate in, or be knowledgeable of, the key distribution/management or the encryption process. The DES algorithm should be utilized in the near term but should be readily replaced as NBS standards change. Provisions should be made for encryption hardware to boost performance

where necessary.

SIR: S87⋈65

Abstract: Security alarm messages to a file.

Description: Add an option to the Access Control Entries
    (ACE's) that specifies a file into which security alarms
    for that file/directory are written. This would allow a
    user to review security alarms for his own files, rather
    than depending on the system manager to perform the
    auditing. Of course, security alarms requested by the
    system manager via the SET AUDIT command should be written
    to the system-wide security log.

SIR: S87⋈66

Abstract: Support DECnet proxy access for SET HOST command

Description: When a user logs into a remote host via the SET
    HOST command and a DECnet proxy exists in the NETUAF on
    that host, the user should have the option of being
    automatically logged into that proxy account. This would
    be extremely helpful to less advanced users who switch
    frequently between systems. It would also reduce the
    chances of disclosing user passwords, since they would not
    be transmitted across the network if the proxy were used.
    A /PROXY qualifier could be added to the SET HOST command
    to allow the user to request proxy access.

SIR: S87⋈67

Abstract: Provide lexical function for getting RIGHTSLIST
    information

Description: An F$RIGHTS lexical function should be provided to
    return the list of identifiers held by a user (similar to
    SYS$FIND_HELD). Also, an F$ACCESS should be provided to
    return a boolean logical value indicating whether access to
    an object is allowed given an input rights list.

SIR: S87⋈68

Abstract: Allow users with GRPPRV to set passwords for group
    members

Description: In a university environment, faculty members can
    be given GRPPRV privilege to aid in the management of
    student accounts. There should be some means by which the
    faculty member could modify the password of a student since
    the students will sometimes have the LOCKPWD flag set in
    the SYSUAF. For example, the command SET PASSWORD
    /USER=xxxxxx could be implemented. VMS would allow the
    password to be changed if the user possessed GRPPRV
    privilege and was in the same group as the specified user.

SIR: S87⋈69

Abstract: Allow a general identifier to be the owner of a
    process.

Description: It should be possible to make a general identifier
    the owner of a process (in place of a UIC), so that:

    1. Owner access will be granted via the protection mask to
        objects owned by that identifier

    2. RMS scratch files will be owned by that identifier and
        charged against its disk quota.

System Management

SIR: S87⋈70

Abstract: Provide the ability to limit the number of disks that
    are displayed when using the MONITOR utility.

Description: The display that is produced by "MONITOR DISK"
    includes all of the disks that can be "seen" by the local
    cpu. This display can be quite long if the local cpu is a
    member of a cluster with a large disk farm. Frequently,
    only a few disks need to be monitored. The MONITOR utility
    should be modified to that particular disks can be included
    and/or omitted.

SIR: S87-71

Abstract: Support BACKUP over DECnet.

Description: It would be very useful if files could be backed
     up to a tape drive that was on another node in the network.
     The implementation should be concise and not require the
     creation of DCL procedures, network objects, etc.

SIR: S87-72

Abstract: Digital should provide a "help line" for customers
     that lack Basic Software Service, and have problems with
     product installations.

Description: Occasionally, there are bugs in products (e.g.
     VMS) that affect the installation of that product. For
     sites that do not purchase Basic Software Service, and can
     not contact the Digital Telephone Support Center, there
     needs to be a way for those sites to report software bugs
     and have them corrected.

SIR: S87-73

Abstract: Enhance BACKUP to provide additional attributes for
     output files.

Description: BACKUP should provide the same qualifiers that are
     available on the SET FILE command (e.g. /PROTECTION, /ACL,
     etc.). Such qualifiers would facilitate the restoration of
     files.

SIR: S87-74

Abstract: Provide the capability to warn users when a printer
     is not ready.

Description: Currently, messages about a printer not being
     available, are sent only to the operators console. Because
     operator coverage may not be available on small systems,
     users are unaware of line printer problems. VMS should be
     able to warn those users who have jobs in print queues when
     there are problems with line printers.

SIR: S87-75

Abstract: Provide the capability for all languages and commands
     to understand VMS 4.X queue names.

Description: Currently, programming languages, Datatrieve, and
     COPY can direct output to printers, but must use the
     "node::ddcu" format. VMS 4.X queue names can not be used
     because they are not understood. There is a need for all
     facilities to standardize on queue names.

SIR: S87-76

Abstract: Provide accounting information about terminal
     servers.

Description: Currently, accounting information does not capture
     the port number and terminal server name for interactive
     session that login via LAT's. Port number and terminal
     server name information is extremely useful for
     trouble-shooting and determining terminal usage.

SIR: S87-77

Abstract: Enhance AUTHORIZE to report on individual fields in
     UAF records.

Description: Currently, AUTHORIZE provides only "brief" or
     "full" reports. It would be quite useful if fields could
     be included and/or omitted. For example:

     UAF> SHOW USER/PRIVILEGE

     would display just the privileges for the account "USER".

SIR: S87-78

Abstract: Provide the ability to submit batch jobs from the
     site-specific shutdown procedure (SYS$MANAGER:SHUTDWN.COM).

Description: Currently, during system shutdown, the Queue
     Manager is shutdown before the site-specific shutdown
     procedure is invoked. It would be useful if batch jobs
     could be submitted by the site-specific shutdown procedure.
     These batch jobs could gracefully terminate detached
     processes, de-install images, etc.

SIR: S87-79

Abstract: Enhance VMS Stand-alone Backup to boot from a tape
    drive.

Description: It would be very convenient for systems with TU58
    console devices if Stand-alone Backup could be booted from
    a tape. It is important that all tape drives on the system
    can be used together to backup a multivolume save set.

SIR: S87-80

Abstract: Provide Stand-alone Backup with some limited command
    procedure capability.

Description: In a cluster with a large disk farm,   the
    qualifiers and parameters on the Stand-alone BACKUP command
    can become quite lengthy. It is more likely that typing
    mistakes   will   occur.   It would be very useful if
    Stand-alone Backup could perform some limited command
    procedure   execution.   Parameter   substitution,
    process-permanent file READ's and WRITE's, and GOTO's would
    be most useful.

SIR: S87-81

Abstract: Enhance the System Dump Analyzer (SDA) to run with
    fewer privileges.

Description: It would be useful for non-privileged users if
    they could run SDA to examine various data structures that
    belong to them (locks, channels, etc.). Currently, change
    mode to kernel privilege is required just to start SDA.

SIR: S87-82

Abstract: Provide a "fast" delete for directory structures.

Description: It would be useful if directory structures, and
    the files in those directories, could be deleted quickly.
    Various command procedures can be written to perform this
    function, but they execute slowly.

SIR: S87-83

Abstract: Provide the ability to print "headers" and "footers"
    on each page of printed output.

Description: It would be useful if "headers" and "footers"
    could be specified via the PRINT command, to be printed at
    the top and bottom of each page of printed output.
    Currently, there is only limited capability to print
    "headers".

Fall 1986 SIR Ballot Results

Mark Oakley
SIR Coordinator

A total of 501 ballots were counted in the latest SIR BALLOT. It is encouraging to note that this represents a 40% increase over Spring participation. However, the VAX SIG membership could do better. The Pageswapper circulation exceeds 9000, and each issue is probably read by at least several members. I am hopeful that participation will continue to build, and will look for ways to encourage you to vote.

The SIR ballot is the only on⁼going program by which the SIG provides input to Digital. Top 10 (and other) SIR's continue to be incorporated into VMS. Digital has repeatedly encouraged the use of this channel of communication.

The summary of this voting appears below. Digital's response to the top 10 requests overall was presented at the Fall 1986 DECUS Symposium in San Francisco, by Trevor Kempsel.

Interpreting the SIR Ballot Results

The results of the System Improvement Request ballot are shown on the following pages. All of the reports have the same one page format. Following the report title is the number of ballots counted for that report. The number shown on the "All Users" report is the total number of ballots which were returned. The ballots on the "11/780 Users" report is the number of ballots which checked the "11/780" blank on the ballot questionnaire, and so on.

The SIR's are listed on the page in order of points received, from highest to lowest. The entry for each SIR begins with the SIR number (from the ballot), a brief description, and the total number of votes (positive and negative) received by that SIR.

The data is summarized in two different ways. First, there are a series of reports broken down by user category. The user categories are defined by the questionnaire portion of the SIR ballot. A ballot was counted in each user category which was checked off, for example "11/780 user". Finally, there are a series of reports ranking the SIR's within SIR category. The SIR categories are those shown on the ballot, for example "DCL and Utilities" and "Commercial". The reports by SIR category use the data from all ballots received.

TOP 35 SIR's AS RANKED BY ALL USERS

Total ballots in this category: 501

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	191
62	Tool to measure disk fragmentation	187
48	Various MAIL enhancements	166
35	Provide DCL debugging facilities	154
112	Provide "linking" of terminals	137
9	Provide recall command buffer flushing	125
40	TYPE to access a file opened for write	124
119	Display image names for SHOW utilities	116
69	Support ACL's on batch and print queues	114
98	Enhance SHUTDOWN.COM	109
56	Enhance VMS accounting records.	103
116	Provide project accounting	101
108	Provide "in-line" help in VMS	101
100	Enhance BACKUP logging	98
111	"Date last read" field for files	91
103	Provide queueing for ALLOCATE command	88
101	Enhance Standalone BACKUP	87
110	Implement UNDELETE command	87
109	Provide filename completion	86
106	Support TCP/IP on VMS	86
33	Provide more line editing capabilities	84
46	Document MAIL interface protocol	84
34	/NOCARRIAGE_CONTROL to DCL WRITE command	81
31	Compute-elapsed-time lexical function	81
28	Better support for CLI table editting	76
20	Allow for a SYSGEN DISCONNECT command	74
77	Provide "date" data type in languages	74
39	Enhance SHOW PROCESS for large images	72
55	Dependency networks for batch and print	70
104	Automatic tape volume recognition	68
47	Support non-printable MAIL attachments	66
8	Improve SET TERMINAL for cloned device	65
41	DIRECTORY should list the oldest vers.	65
42	Enhance RENAME and COPY wildcards	65
118	Checkpoint accounting records	65

TOP 35 SIR's AS RANKED BY VAX 8800 USERS

Total ballots in this category: 13

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	6
69	Support ACL's on batch and print queues	6
34	/NOCARRIAGE_CONTROL to DCL WRITE command	5
48	Various MAIL enhancements	5
9	Provide recall command buffer flushing	4
60	MOUNT service for reading/writing	4
40	TYPE to access a file opened for write	4
46	Document MAIL interface protocol	4
105	Provide BACKUP/OPERATOR capability	4
119	Display image names for SHOW utilities	4
2	Expand scope of file-spec wildcards	3
47	Support non-printable MAIL attachments	3
15	Flag batch subprocesses as batch jobs	3
56	Enhance VMS accounting records.	3
20	Allow for a SYSGEN DISCONNECT command	3
28	Better support for CLI table editing	3
3	Search list support for file creation	3
72	Enhance COPY to copy ACL's	3
89	Enhance TPU updating of screen	3
90	Provide more useful TPU primitives	3
98	Enhance SHUTDOWN.COM	3
37	Better access in DCL for oper response	3
118	Checkpoint accounting records	3
7	Reconnect ability for SET HOST sessions	3
41	DIRECTORY should list the oldest vers.	2
68	Enhance SORT for variable-length recs.	2
43	Enhance removal of aliased file names	2
70	Control for DECnet remote file access	2
31	Compute-elapsed-time lexical function	2
74	DECnet "end-to-end DES encryption"	2
86	"High-priority" process SPM reporting	2
6	Signalling disconnected processes	2
35	Provide DCL debugging facilities	2
91	Source for example programs/procedures	2
93	Active process accounting	2

TOP 35 SIR's AS RANKED BY VAX 8600/8650 USERS

Total ballots in this category: 165

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	64
9	Provide recall command buffer flushing	53
62	Tool to measure disk fragmentation	53
56	Enhance VMS accounting records.	50
48	Various MAIL enhancements	50
69	Support ACL's on batch and print queues	49
35	Provide DCL debugging facilities	48
108	Provide "in-line" help in VMS	42
111	"Date last read" field for files	42
116	Provide project accounting	42
109	Provide filename completion	39
119	Display image names for SHOW utilities	39
98	Enhance SHUTDOWN.COM	36
103	Provide queueing for ALLOCATE command	33
8	Improve SET TERMINAL for cloned device	33
104	Automatic tape volume recognition	32
40	TYPE to access a file opened for write	31
46	Document MAIL interface protocol	31
118	Checkpoint accounting records	30
100	Enhance BACKUP logging	30
72	Enhance COPY to copy ACL's	29
34	/NOCARRIAGE_CONTROL to DCL WRITE command	29
112	Provide "linking" of terminals	29
31	Compute-elapsed-time lexical function	28
43	Enhance removal of aliased file names	27
20	Allow for a SYSGEN DISCONNECT command	27
74	DECnet "end-to-end DES encryption"	25
15	Flag batch subprocesses as batch jobs	25
110	Implement UNDELETE command	24
30	Expand F$FILE_ATTRIBUTES capability	24
106	Support TCP/IP on VMS	24
33	Provide more line editing capabilities	23
7	Reconnect ability for SET HOST sessions	23
42	Enhance RENAME and COPY wildcards	23
75	Provide prompting for DECnet passwords	22

TOP 35 SIR's AS RANKED BY VAX 8500 USERS

Total ballots in this category: 9

SIR Nr.	SIR Description	Total Votes
48	Various MAIL enhancements	6
35	Provide DCL debugging facilities	5
69	Support ACL's on batch and print queues	5
9	Provide recall command buffer flushing	4
72	Enhance COPY to copy ACL's	4
106	Support TCP/IP on VMS	4
62	Tool to measure disk fragmentation	3
4	Remapping of VT200 BS, ESC, and LF keys	3
3	Search list support for file creation	3
103	Provide queueing for ALLOCATE command	3
52	Capability to partially copy a file	3
108	Provide "in-line" help in VMS	3
110	Implement UNDELETE command	3
117	Record account string in files	3
40	TYPE to access a file opened for write	2
46	Document MAIL interface protocol	2
74	DECnet "end-to-end DES encryption"	2
75	Provide prompting for DECnet passwords	2
101	Enhance Standalone BACKUP	2
32	LIB$FIND_IMAGE_SYMBOL lexical function	2
33	Provide more line editing capabilities	2
56	Enhance VMS accounting records.	2
19	Force password change at login time	2
112	Provide "linking" of terminals	2
65	Show form names in preference to number	2
5	Improve autobaud terminal support	1
67	Operator notification on selected queue	1
68	Enhance SORT for variable-length recs.	1
6	Signalling disconnected processes	1
47	Support non-printable MAIL attachments	1
2	Expand scope of filespec wildcards	1
50	Improve performance of HELP libraries	1
78	Provide graphics in DSR	1
79	Enhance DSR to provide special features	1
86	"High-priority" process SPM reporting	1

TOP 35 SIR's AS RANKED BY VAX 8300/8200 USERS

Total ballots in this category: 26

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	15
62	Tool to measure disk fragmentation	12
100	Enhance BACKUP logging	11
48	Various MAIL enhancements	10
9	Provide recall command buffer flushing	9
98	Enhance SHUTDOWN.COM	8
24	750 clusters boot completely from disk	8
30	Expand F$FILE_ATTRIBUTES capability	7
35	Provide DCL debugging facilities	7
8	Improve SET TERMINAL for cloned device	7
112	Provide "linking" of terminals	7
119	Display image names for SHOW utilities	7
31	Compute-elapsed-time lexical function	6
101	Enhance Standalone BACKUP	6
37	Better access in DCL for oper response	6
41	DIRECTORY should list the oldest vers.	6
69	Support ACL's on batch and print queues	5
103	Provide queueing for ALLOCATE command	5
55	Dependency networks for batch and print	5
18	Simutaneous installs on VMSINSTAL	5
32	LIB$FIND_IMAGE_SYMBOL lexical function	4
52	Capability to partially copy a file	4
33	Provide more line editing capabilities	4
60	MOUNT service for reading/writing	4
34	/NOCARRIAGE_CONTROL to DCL WRITE command	4
5	Improve autobaud terminal support	4
70	Control for DECnet remote file access	4
72	Enhance COPY to copy ACL's	4
74	DECnet "end-to-end DES encryption"	4
75	Provide prompting for DECnet passwords	4
77	Provide "date" data type in languages	4
36	Provide wildcards on OPEN statement	4
6	Signalling disconnected processes	4
40	TYPE to access a file opened for write	4
20	Allow for a SYSGEN DISCONNECT command	4

TOP 35 SIR's AS RANKED BY MicroVAX USERS

Total ballots in this category: 261

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	107
62	Tool to measure disk fragmentation	96
48	Various MAIL enhancements	90
35	Provide DCL debugging facilities	77
9	Provide recall command buffer flushing	71
112	Provide "linking" of terminals	67
69	Support ACL's on batch and print queues	65
56	Enhance VMS accounting records.	65
103	Provide queueing for ALLOCATE command	56
106	Support TCP/IP on VMS	56
111	"Date last read" field for files	56
40	TYPE to access a file opened for write	56
46	Document MAIL interface protocol	55
116	Provide project accounting	55
119	Display image names for SHOW utilities	50
33	Provide more line editting capabilities	48
98	Enhance SHUTDOWN.COM	47
34	/NOCARRIAGE_CONTROL to DCL WRITE command	46
8	Improve SET TERMINAL for cloned device	45
100	Enhance BACKUP logging	45
28	Better support for CLI table editing	44
55	Dependency networks for batch and print	43
109	Provide filename completion	43
101	Enhance Standalone BACKUP	42
20	Allow for a SYSGEN DISCONNECT command	42
108	Provide "in-line" help in VMS	41
90	Provide more useful TPU primitives	41
31	Compute-elapsed-time lexical function	40
47	Support non-printable MAIL attachments	39
74	DECnet "end-to-end DES encryption"	39
77	Provide "date" data type in languages	37
104	Automatic tape volume recognition	36
42	Enhance RENAME and COPY wildcards	36
118	Checkpoint accounting records	35
15	Flag batch subprocesses as batch jobs	35

TOP 35 SIR's AS RANKED BY 11/780, 11/782 and 11/785 USER

Total ballots in this category: 330

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	127
48	Various MAIL enhancements	110
62	Tool to measure disk fragmentation	109
69	Support ACL's on batch and print queues	91
35	Provide DCL debugging facilities	89
56	Enhance VMS accounting records.	85
9	Provide recall command buffer flushing	83
40	TYPE to access a file opened for write	81
112	Provide "linking" of terminals	80
111	"Date last read" field for files	75
98	Enhance SHUTDOWN.COM	73
46	Document MAIL interface protocol	71
106	Support TCP/IP on VMS	70
116	Provide project accounting	69
103	Provide queueing for ALLOCATE command	68
33	Provide more line editting capabilities	60
119	Display image names for SHOW utilities	60
39	Enhance SHOW PROCESS for large images	58
108	Provide "in-line" help in VMS	58
104	Automatic tape volume recognition	57
109	Provide filename completion	57
31	Compute-elapsed-time lexical function	55
77	Provide "date" data type in languages	54
55	Dependency networks for batch and print	53
20	Allow for a SYSGEN DISCONNECT command	52
28	Better support for CLI table editting	52
100	Enhance BACKUP logging	51
34	/NOCARRIAGE_CONTROL to DCL WRITE command	50
8	Improve SET TERMINAL for cloned device	50
101	Enhance Standalone BACKUP	49
47	Support non-printable MAIL attachments	49
118	Checkpoint accounting records	47
107	Standardize utility output formats	46
15	Flag batch subprocesses as batch jobs	46
90	Provide more useful TPU primitives	45

TOP 35 SIR's AS RANKED BY 11/750 USERS

Total ballots in this category: 314

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	134
48	Various MAIL enhancements	115
35	Provide DCL debugging facilities	112
19	Force password change at login time	106
112	Provide "linking" of terminals	93
40	TYPE to access a file opened for write	84
9	Provide recall command buffer flushing	80
119	Display image names for SHOW utilities	73
24	750 clusters boot completely from disk	66
98	Enhance SHUTDOWN.COM	66
116	Provide project accounting	63
100	Enhance BACKUP logging	62
33	Provide more line editting capabilities	60
56	Enhance VMS accounting records.	60
101	Enhance Standalone BACKUP	59
31	Compute-elapsed-time lexical function	57
34	/NOCARRIAGE_CONTROL to DCL WRITE command	56
69	Support ACL's on batch and print queues	56
108	Provide "in-line" help in VMS	53
106	Support TCP/IP on VMS	53
55	Dependency networks for batch and print	52
46	Document MAIL interface protocol	52
103	Provide queueing for ALLOCATE command	51
110	Implement UNDELETE command	50
77	Provide "date" data type in languages	49
109	Provide filename completion	49
28	Better support for CLI table editting	49
47	Support non-printable MAIL attachments	47
39	Enhance SHOW PROCESS for large images	46
111	"Date last read" field for files	45
107	Standardize utility output formats	43
20	Allow for a SYSGEN DISCONNECT command	43
8	Improve SET TERMINAL for cloned device	41
74	DECnet "end-to-end DES encryption"	39
42	Enhance RENAME and COPY wildcards	39

TOP 35 SIR's AS RANKED BY 11/730 and 11/725 USERS

Total ballots in this category: 106

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	47
35	Provide DCL debugging facilities	42
9	Provide recall command buffer flushing	38
48	Various MAIL enhancements	34
19	Force password change at login time	34
98	Enhance SHUTDOWN.COM	31
112	Provide "linking" of terminals	30
116	Provide project accounting	28
119	Display image names for SHOW utilities	28
31	Compute-elapsed-time lexical function	27
110	Implement UNDELETE command	25
34	/NOCARRIAGE_CONTROL to DCL WRITE command	24
69	Support ACL's on batch and print queues	23
56	Enhance VMS accounting records.	23
40	TYPE to access a file opened for write	22
100	Enhance BACKUP logging	21
111	"Date last read" field for files	20
103	Provide queueing for ALLOCATE command	20
109	Provide filename completion	20
39	Enhance SHOW PROCESS for large images	20
30	Expand F$FILE_ATTRIBUTES capability	19
77	Provide "date" data type in languages	17
8	Improve SET TERMINAL for cloned device	17
108	Provide "in-line" help in VMS	17
43	Enhance removal of aliased file names	16
20	Allow for a SYSGEN DISCONNECT command	16
46	Document MAIL interface protocol	15
101	Enhance Standalone BACKUP	15
32	LIB$FIND_IMAGE_SYMBOL lexical function	15
53	Enhance DUMP utility	15
28	Better support for CLI table editing	15
33	Provide more line editing capabilities	14
15	Flag batch subprocesses as batch jobs	14
23	Allow 2 digit year spec	14
81	File protection on OPEN statement	13

TOP 35 SIR's AS RANKED BY BUSINESS EDP USERS

Total ballots in this category: 153

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	61
112	Provide "linking" of terminals	60
19	Force password change at login time	50
35	Provide DCL debugging facilities	50
40	TYPE to access a file opened for write	45
119	Display image names for SHOW utilities	44
56	Enhance VMS accounting records.	43
55	Dependency networks for batch and print	42
98	Enhance SHUTDOWN.COM	42
9	Provide recall command buffer flushing	38
108	Provide "in-line" help in VMS	37
48	Various MAIL enhancements	36
77	Provide "date" data type in languages	34
111	"Date last read" field for files	34
104	Automatic tape volume recognition	32
110	Implement UNDELETE command	29
109	Provide filename completion	29
24	750 clusters boot completely from disk	28
47	Support non-printable MAIL attachments	27
31	Compute-elapsed-time lexical function	27
103	Provide queueing for ALLOCATE command	26
101	Enhance Standalone BACKUP	26
107	Standardize utility output formats	26
91	Source for example programs/procedures	25
23	Allow 2 digit year spec	24
116	Provide project accounting	24
34	/NOCARRIAGE_CONTROL to DCL WRITE command	24
69	Support ACL's on batch and print queues	23
46	Document MAIL interface protocol	23
42	Enhance RENAME and COPY wildcards	23
100	Enhance BACKUP logging	22
7	Reconnect ability for SET HOST sessions	21
28	Better support for CLI table editing	20
58	Form information for SHOW QUEUE/BRIEF	19
37	Better access in DCL for oper response	19

TOP 35 SIR's AS RANKED BY SOFTWARE DEVELOPERS

Total ballots in this category: 348

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	134
19	Force password change at login time	124
48	Various MAIL enhancements	123
35	Provide DCL debugging facilities	104
9	Provide recall command buffer flushing	101
112	Provide "linking" of terminals	92
40	TYPE to access a file opened for write	88
98	Enhance SHUTDOWN.COM	81
119	Display image names for SHOW utilities	80
69	Support ACL's on batch and print queues	72
116	Provide project accounting	68
100	Enhance BACKUP logging	68
101	Enhance Standalone BACKUP	65
28	Better support for CLI table editting	65
33	Provide more line editting capabilities	64
108	Provide "in≑line" help in VMS	63
77	Provide "date" data type in languages	62
46	Document MAIL interface protocol	62
20	Allow for a SYSGEN DISCONNECT command	61
34	/NOCARRIAGE_CONTROL to DCL WRITE command	61
111	"Date last read" field for files	60
56	Enhance VMS accounting records.	60
31	Compute≑elapsed≑time lexical function	60
110	Implement UNDELETE command	60
47	Support non≑printable MAIL attachments	57
103	Provide queueing for ALLOCATE command	53
106	Support TCP/IP on VMS	53
107	Standardize utility output formats	53
39	Enhance SHOW PROCESS for large images	53
109	Provide filename completion	53
8	Improve SET TERMINAL for cloned device	52
41	DIRECTORY should list the oldest vers.	52
90	Provide more useful TPU primitives	49
42	Enhance RENAME and COPY wildcards	47
24	750 clusters boot completely from disk	46

TOP 35 SIR's AS RANKED BY EDUCATIONAL USERS

Total ballots in this category: 92

SIR Nr.	SIR Description	Total Votes
69	Support ACL's on batch and print queues	42
19	Force password change at login time	41
48	Various MAIL enhancements	38
106	Support TCP/IP on VMS	35
56	Enhance VMS accounting records.	31
103	Provide queueing for ALLOCATE command	29
62	Tool to measure disk fragmentation	29
116	Provide project accounting	28
111	"Date last read" field for files	24
118	Checkpoint accounting records	24
46	Document MAIL interface protocol	21
35	Provide DCL debugging facilities	19
100	Enhance BACKUP logging	19
40	TYPE to access a file opened for write	19
104	Automatic tape volume recognition	19
108	Provide "in≑line" help in VMS	18
115	Increase account length strings	18
119	Display image names for SHOW utilities	18
9	Provide recall command buffer flushing	17
55	Dependency networks for batch and print	16
28	Better support for CLI table editting	16
90	Provide more useful TPU primitives	15
113	COMPILE, LOAD, and EXECUTE commands	15
70	Control for DECnet remote file access	15
60	MOUNT service for reading/writing	14
22	Expand usernames character set	14
3	Full EDT support on TPU≑EDT interface	14
75	Provide prompting for DECnet passwords	13
109	Provide filename completion	13
105	Provide BACKUP/OPERATOR capability	13
98	Enhance SHUTDOWN.COM	13
112	Provide "linking" of terminals	12
8	Improve SET TERMINAL for cloned device	12
31	Compute≑elapsed≑time lexical function	12
72	Enhance COPY to copy ACL's	11

50 SIR's AS RANKED BY COMPUTER SCI. RESEARCHERS

Total ballots in this category: 38

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	22
48	Various MAIL enhancements	20
69	Support ACL's on batch and print queues	18
9	Provide recall command buffer flushing	15
100	Enhance BACKUP logging	14
74	DECnet "end-to-end DES encryption"	13
116	Provide project accounting	13
106	Support TCP/IP on VMS	12
46	Document MAIL interface protocol	12
62	Tool to measure disk fragmentation	11
35	Provide DCL debugging facilities	11
108	Provide "in-line" help in VMS	11
56	Enhance VMS accounting records.	11
72	Enhance COPY to copy ACL's	9
40	TYPE to access a file opened for write	9
5	Improve autobaud terminal support	9
39	Enhance SHOW PROCESS for large images	8
90	Provide more useful TPU primitives	8
111	"Date last read" field for files	8
31	Compute-elapsed-time lexical function	8
118	Checkpoint accounting records	8
112	Provide "linking" of terminals	7
103	Provide queueing for ALLOCATE command	7
117	Record account string in files	7
98	Enhance SHUTDOWN.COM	7
115	Increase account length strings	6
110	Implement UNDELETE command	6
28	Better support for CLI table editing	6
88	Full EDT support on TPU-EDT interface	6
22	Expand usernames character set	5
15	Flag batch subprocesses as batch jobs	5
75	Provide prompting for DECnet passwords	5
104	Automatic tape volume recognition	5
30	Expand F$FILE_ATTRIBUTES capability	5
20	Allow for a SYSGEN DISCONNECT command	5

TOP 35 SIR's AS RANKED BY DATA ACQ./CTRL USERS

Total ballots in this category: 106

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	46
19	Force password change at login time	44
9	Provide recall command buffer flushing	31
48	Various MAIL enhancements	27
8	Improve SET TERMINAL for cloned device	25
40	TYPE to access a file opened for write	25
119	Display image names for SHOW utilities	24
31	Compute-elapsed-time lexical function	23
35	Provide DCL debugging facilities	23
34	/NOCARRIAGE_CONTROL to DCL WRITE command	22
101	Enhance Standalone BACKUP	21
24	750 clusters boot completely from disk	21
100	Enhance BACKUP logging	19
46	Document MAIL interface protocol	19
98	Enhance SHUTDOWN.COM	19
69	Support ACL's on batch and print queues	18
77	Provide "date" data type in languages	18
112	Provide "linking" of terminals	18
41	DIRECTORY should list the oldest vers.	18
7	Reconnect ability for SET HOST sessions	17
56	Enhance VMS accounting records.	17
108	Provide "in-line" help in VMS	17
90	Provide more useful TPU primitives	17
47	Support non-printable MAIL attachments	17
103	Provide queueing for ALLOCATE command	16
28	Better support for CLI table editing	16
106	Support TCP/IP on VMS	15
81	File protection on OPEN statement	15
17	Provide a LIB$PUT_ERROR	14
109	Provide filename completion	14
4	Remapping of VT200 BS, ESC, and LF keys	14
20	Allow for a SYSGEN DISCONNECT command	14
33	Provide more line editing capabilities	13
74	DECnet "end-to-end DES encryption"	13
95	More information on installing images	13

TOP 35 SIR's AS RANKED BY CAD/CAM USERS

Total ballots in this category: 123

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	47
62	Tool to measure disk fragmentation	44
48	Various MAIL enhancements	43
9	Provide recall command buffer flushing	41
35	Provide DCL debugging facilities	39
56	Enhance VMS accounting records.	33
40	TYPE to access a file opened for write	33
111	"Date last read" field for files	32
112	Provide "linking" of terminals	31
69	Support ACL's on batch and print queues	30
28	Better support for CLI table editing	29
103	Provide queueing for ALLOCATE command	28
33	Provide more line editting capabilities	27
46	Document MAIL interface protocol	27
98	Enhance SHUTDOWN.COM	27
119	Display image names for SHOW utilities	26
47	Support non-printable MAIL attachments	25
74	DECnet "end-to-end DES encryption"	24
106	Support TCP/IP on VMS	24
108	Provide "in-line" help in VMS	24
77	Provide "date" data type in languages	23
15	Flag batch subprocesses as batch jobs	23
116	Provide project accounting	22
117	Record account string in files	22
109	Provide filename completion	22
39	Enhance SHOW PROCESS for large images	21
91	Source for example programs/procedures	21
31	Compute-elapsed-time lexical function	20
55	Dependency networks for batch and print	20
42	Enhance RENAME and COPY wildcards	20
8	Improve SET TERMINAL for cloned device	19
105	Provide BACKUP/OPERATOR capability	18
20	Allow for a SYSGEN DISCONNECT command	18
34	/NOCARRIAGE_CONTROL to DCL WRITE command	18
72	Enhance COPY to copy ACL's	17

TOP 35 SIR's AS RANKED BY SERVICE BUREAU OPERATORS

Total ballots in this category: 24

SIR Nr.	SIR Description	Total Votes
56	Enhance VMS accounting records.	10
20	Allow for a SYSGEN DISCONNECT command	7
34	/NOCARRIAGE_CONTROL to DCL WRITE command	7
9	Provide recall command buffer flushing	7
69	Support ACL's on batch and print queues	7
98	Enhance SHUTDOWN.COM	7
41	DIRECTORY should list the oldest vers.	6
7	Reconnect ability for SET HOST sessions	6
62	Tool to measure disk fragmentation	6
3	Search list support for file creation	6
40	TYPE to access a file opened for write	6
111	"Date last read" field for files	6
8	Improve SET TERMINAL for cloned device	5
28	Better support for CLI table editing	5
90	Provide more useful TPU primitives	5
46	Document MAIL interface protocol	5
100	Enhance BACKUP logging	5
19	Force password change at login time	5
119	Display image names for SHOW utilities	5
52	Capability to partially copy a file	4
11	"Trimmed string" directive to FAO	4
31	Compute-elapsed-time lexical function	4
101	Enhance Standalone BACKUP	4
102	Provide a callable interface to OPCOM	4
103	Provide queueing for ALLOCATE command	4
104	Automatic tape volume recognition	4
105	Provide BACKUP/OPERATOR capability	4
108	Provide "in-line" help in VMS	4
17	Provide a LIB$PUT_ERROR	4
116	Provide project accounting	4
87	Provide SOS interface for TPU	4
81	File protection on OPEN statement	3
1	Allow asynch RMS OPEN request	3
88	Full EDT support on TPU-EDT interface	3
89	Enhance TPU updating of screen	3

TOP 35 SIR's AS RANKED BY HARDWARE DEVELOPERS

Total ballots in this category: 62

SIR Nr.	SIR Description	Total Votes
9	Provide recall command buffer flushing	26
19	Force password change at login time	25
35	Provide DCL debugging facilities	22
48	Various MAIL enhancements	21
62	Tool to measure disk fragmentation	21
33	Provide more line editting capabilities	17
40	TYPE to access a file opened for write	17
69	Support ACL's on batch and print queues	17
34	/NOCARRIAGE_CONTROL to DCL WRITE command	16
32	LIB$FIND_IMAGE_SYMBOL lexical function	16
98	Enhance SHUTDOWN.COM	16
116	Provide project accounting	15
74	DECnet "end-to-end DES encryption"	14
119	Display image names for SHOW utilities	14
39	Enhance SHOW PROCESS for large images	13
101	Enhance Standalone BACKUP	13
110	Implement UNDELETE command	13
20	Allow for a SYSGEN DISCONNECT command	13
31	Compute-elapsed-time lexical function	13
103	Provide queueing for ALLOCATE command	12
112	Provide "linking" of terminals	12
56	Enhance VMS accounting records.	11
106	Support TCP/IP on VMS	11
46	Document MAIL interface protocol	11
109	Provide filename completion	10
100	Enhance BACKUP logging	10
72	Enhance COPY to copy ACL's	10
8	Improve SET TERMINAL for cloned device	10
17	Provide a LIB$PUT_ERROR	10
107	Standardize utility output formats	9
53	Enhance DUMP utility	9
47	Support non-printable MAIL attachments	9
30	Expand F$FILE_ATTRIBUTES capability	9
75	Provide prompting for DECnet passwords	9
118	Checkpoint accounting records	9

TOP 35 SIR's AS RANKED BY SCIENTIFIC/ENGINEERING USERS

Total ballots in this category: 322

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	131
48	Various MAIL enhancements	123
62	Tool to measure disk fragmentation	120
35	Provide DCL debugging facilities	96
9	Provide recall command buffer flushing	86
112	Provide "linking" of terminals	84
69	Support ACL's on batch and print queues	81
116	Provide project accounting	77
40	TYPE to access a file opened for write	70
106	Support TCP/IP on VMS	69
103	Provide queueing for ALLOCATE command	68
56	Enhance VMS accounting records.	66
28	Better support for CLI table editing	61
111	"Date last read" field for files	61
108	Provide "in-line" help in VMS	60
98	Enhance SHUTDOWN.COM	60
110	Implement UNDELETE command	57
20	Allow for a SYSGEN DISCONNECT command	56
119	Display image names for SHOW utilities	56
100	Enhance BACKUP logging	55
39	Enhance SHOW PROCESS for large images	53
33	Provide more line editting capabilities	53
47	Support non-printable MAIL attachments	52
31	Compute-elapsed-time lexical function	51
101	Enhance Standalone BACKUP	51
109	Provide filename completion	51
46	Document MAIL interface protocol	51
77	Provide "date" data type in languages	50
8	Improve SET TERMINAL for cloned device	46
34	/NOCARRIAGE_CONTROL to DCL WRITE command	45
107	Standardize utility output formats	43
55	Dependency networks for batch and print	43
90	Provide more useful TPU primitives	42
74	DECnet "end-to-end DES encryption"	42
118	Checkpoint accounting records	40

TOP 35 SIR's AS RANKED BY OFFICE AUTOMATION USERS

Total ballots in this category: 175

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	79
48	Various MAIL enhancements	67
62	Tool to measure disk fragmentation	67
35	Provide DCL debugging facilities	60
9	Provide recall command buffer flushing	54
56	Enhance VMS accounting records.	48
69	Support ACL's on batch and print queues	47
40	TYPE to access a file opened for write	44
98	Enhance SHUTDOWN.COM	42
47	Support non-printable MAIL attachments	41
112	Provide "linking" of terminals	41
111	"Date last read" field for files	40
77	Provide "date" data type in languages	39
108	Provide "in-line" help in VMS	38
106	Support TCP/IP on VMS	33
33	Provide more line editing capabilities	33
119	Display image names for SHOW utilities	33
116	Provide project accounting	32
28	Better support for CLI table editing	32
103	Provide queueing for ALLOCATE command	31
109	Provide filename completion	31
101	Enhance Standalone BACKUP	31
72	Enhance COPY to copy ACL's	29
74	DECnet "end-to-end DES encryption"	28
46	Document MAIL interface protocol	28
55	Dependency networks for batch and print	28
31	Compute-elapsed-time lexical function	27
107	Standardize utility output formats	27
8	Improve SET TERMINAL for cloned device	26
30	Expand F$FILE_ATTRIBUTES capability	25
23	Allow 2 digit year spec	25
34	/NOCARRIAGE_CONTROL to DCL WRITE command	24
110	Implement UNDELETE command	24
57	Terminal-auxuliary-printer-port support	24
42	Enhance RENAME and COPY wildcards	24

TOP 35 SIR's AS RANKED BY TELECOMMUNICATIONS USERS

Total ballots in this category: 113

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	42
62	Tool to measure disk fragmentation	41
48	Various MAIL enhancements	38
35	Provide DCL debugging facilities	33
110	Implement UNDELETE command	32
112	Provide "linking" of terminals	31
9	Provide recall command buffer flushing	30
109	Provide filename completion	30
56	Enhance VMS accounting records.	27
46	Document MAIL interface protocol	27
69	Support ACL's on batch and print queues	27
116	Provide project accounting	25
40	TYPE to access a file opened for write	24
33	Provide more line editing capabilities	23
98	Enhance SHUTDOWN.COM	23
108	Provide "in-line" help in VMS	22
42	Enhance RENAME and COPY wildcards	21
15	Flag batch subprocesses as batch jobs	20
34	/NOCARRIAGE_CONTROL to DCL WRITE command	20
41	DIRECTORY should list the oldest vers.	19
8	Improve SET TERMINAL for cloned device	19
101	Enhance Standalone BACKUP	19
7	Reconnect ability for SET HOST sessions	19
119	Display image names for SHOW utilities	19
111	"Date last read" field for files	18
55	Dependency networks for batch and print	18
20	Allow for a SYSGEN DISCONNECT command	18
31	Compute-elapsed-time lexical function	18
47	Support non-printable MAIL attachments	17
5	Improve autobaud terminal support	17
39	Enhance SHOW PROCESS for large images	17
77	Provide "date" data type in languages	16
106	Support TCP/IP on VMS	16
17	Provide a LIB$PUT_ERROR	16
24	750 clusters boot completely from disk	15

SIR's IN THE CATEGORY "VMS INTERNALS" AS RANKED BY ALL USE

SIR's IN THE CATEGORY "DCL AND UTILITIES" AS RANKED BY ALL

SIR Nr.	SIR Description	Total Votes
19	Force password change at login time	191
9	Provide recall command buffer flushing	125
20	Allow for a SYSGEN DISCONNECT command	74
8	Improve SET TERMINAL for cloned device	65
24	750 clusters boot completely from disk	65
23	Allow 2 digit year spec	57
15	Flag batch subprocesses as batch jobs	56
2	Expand scope of file-spec wildcards	47
7	Reconnect ability for SET HOST sessions	46
17	Provide a LIB$PUT_ERROR	46
5	Improve autobaud terminal support	45
4	Remapping of VT200 BS, ESC, and LF keys	38
22	Expand usernames character set	38
3	Search list support for file creation	32
16	Process-specific VMS scheduling quantum	32
6	Signalling disconnected processes	31
11	"Trimmed string" directive to FAO	30
26	Simultaneous access to SMG pasteboard	29
14	Callable interface to traceback facility	26
27	Asynch SMG terminal input from subproc	22
18	Simutaneous installs on VMSINSTAL	21
10	More formatting directives to FAO	20
1	Allow asynch RMS OPEN request	19
21	Provide for write-only logical names	16
25	Repeat specifiers in $SMG definitions	9
12	Add foreign language support to VMS	-1
13	Support RL01 disk drives	-15

SIR Nr.	SIR Description	Total Votes
48	Various MAIL enhancements	166
35	Provide DCL debugging facilities	154
40	TYPE to access a file opened for write	124
33	Provide more line editting capabilities	84
46	Document MAIL interface protocol	84
34	/NOCARRIAGE_CONTROL to DCL WRITE command	81
31	Compute-elapsed-time lexical function	81
28	Better support for CLI table editting	76
39	Enhance SHOW PROCESS for large images	72
47	Support non-printable MAIL attachments	66
41	DIRECTORY should list the oldest vers.	65
42	Enhance RENAME and COPY wildcards	65
43	Enhance removal of aliased file names	52
52	Capability to partially copy a file	51
30	Expand F$FILE_ATTRIBUTES capability	47
32	LIB$FIND_IMAGE_SYMBOL lexical function	44
53	Enhance DUMP utility	42
37	Better access in DCL for oper response	39
49	Support indirect entries for help lib.	37
50	Improve performance of HELP libraries	35
45	VMS text libraries file system access	28
51	Enhance RT11 support in EXCHANGE	27
36	Provide wildcards on OPEN statement	25
29	Add new types to CDU	18
54	Enhance PRINT support in MAIL	14
44	DCL VT2xx shifted key support	13
38	Set file creation/modification dates	-53

SIR's IN THE CATEGORY "Commercial" AS RANKED BY ALL USERS

SIR's IN THE CATEGORY "LANGUAGES AND TOOLS" AS RANKED BY A

SIR Nr.	SIR Description	Total Votes
62	Tool to measure disk fragmentation	187
69	Support ACL's on batch and print queues	114
56	Enhance VMS accounting records.	103
55	Dependency networks for batch and print	70
74	DECnet "end-to-end DES encryption"	53
72	Enhance COPY to copy ACL's	50
75	Provide prompting for DECnet passwords	46
57	Terminal-auxuliary-printer-port support	42
58	Form information for SHOW QUEUE/BRIEF	39
60	MOUNT service for reading/writing	34
67	Operator notification on selected queue	33
68	Enhance SORT for variable-length recs.	25
70	Control for DECnet remote file access	24
59	Provide more flag page formatting	19
73	System password for each terminal	19
64	Enhance spooling to provide form names	17
65	Show form names in preference to number	16
63	Provide a fast file scan	11
71	DECnst secondary password support	6
61	Optional secondary RMS ISAM keys	3
66	Expand form numbers beyond 127	0

SIR Nr.	SIR Description	Total Votes
77	Provide "date" data type in languages	74
90	Provide more useful TPU primitives	60
91	Source for example programs/procedures	52
81	File protection on OPEN statement	49
88	Full EDT support on TPU-EDT interface	47
89	Enhance TPU updating of screen	41
79	Enhance DSR to provide special features	36
85	Enhance MARCO-32 listings for addresses	27
80	Enhance DSR for highlighting	25
78	Provide graphics in DSR	19
84	FORTRAN with "read with prompt" I/O	18
86	"High-priority" process SPM reporting	14
76	Compatible CMS/MMS for VMS/Ultrix	5
82	Intrinsic function in FORTRAN DATA	-1
92	UNIX-style argument passing under VMS	-4
83	Default /SHOW to "NOMAP"	-6
87	Provide SOS interface for TPU	-8

SIR's IN THE CATEGORY "SYSTEM MANAGEMENT" AS RANKED BY ALL

SIR Nr.	SIR Description	Total Votes
98	Enhance SHUTDOWN.COM	109
100	Enhance BACKUP logging	98
101	Enhance Standalone BACKUP	87
95	More information on installing images	51
96	Provide a tool to dump UAF	40
97	EET LOGINS to permit UIC specification	34
99	Authorize and Diskquota user "classes"	26
93	Active process accounting	14
94	Enhance printer "fallback" mode	3

SIR's IN THE CATEGORY "LARGE SYSTEMS" AS RANKED BY ALL USE

SIR Nr.	SIR Description	Total Votes
112	Provide "linking" of terminals	137
119	Display image names for SHOW utilities	116
116	Provide project accounting	101
108	Provide "in-line" help in VMS	101
111	"Date last read" field for files	91
103	Provide queueing for ALLOCATE command	88
110	Implement UNDELETE command	87
109	Provide filename completion	86
106	Support TCP/IP on VMS	86
104	Automatic tape volume recognition	68
118	Checkpoint accounting records	65
107	Standardize utility output formats	63
105	Provide BACKUP/OPERATOR capability	50
115	Increase account length strings	40
113	COMPILE, LOAD, and EXECUTE commands	35
117	Record account string in files	34
102	Provide a callable interface to OPCOM	21
114	"Unbundle" CAPTIVE login flag	16

European VAX SIG System Improvement Requests

Number of forms sent out = 10560
Number of forms returned = 1106
(Number of forms returned late - 163)

The voting procedure was as follows: voting forms had 5 boxes and voters were asked to select their top 5 items. First choices were awarded 5 points, second choices 4 points and so on.

Here are the top 5 items with the response from Digital as presented at the 1986 Hamburg symposium.

86/4 Utilities to analyze and repair disk fragmentation without an INITIALIZE.
This scored 1508 points, was voted for by 414 people and scored 172 first choices.

It is accepted that this would be slow, but submitted to a batch queue to run overnight it would perform a useful function.

Why is there not a VMS command or Utility to remove disk fragmentation by "packing" the disk volume. It would take time, but it could be submitted to the batch queue and run overnight.

DIRECTORY/FRAGMENT and ANALYZE/FRAGMENT would display all the fragmented files on a volume. And so you would be able to repair it and you could manually relocate files.

Fragmented systems are slow!
RESPONSE ##
The VAX/VMS operating system was designed to run with a very minimal requirement for contiguous file space. Thus, unlike some other operating systems where disk fragmentation could have deadly effects, a VAX/VMS system can run quite well even with disks which happen to be very fragmented. Nevertheless, it is recognised that periodic reorganisation of the on-disk structure is a good system management policy. The BACKUP utility can be used to save and then restore all the files on a volume, with the result of removing disk fragmentation.

Digital do not currently provide any utility to "pack" or "compress" disk volumes, but do recognise the desirability of such a utility. This problem merits further investigation.

Please note that "packing" a disk volume has to be done very carefully. Digital do not recommend that this be ever performed on volumes that are logically mounted. Even in the case of a utility that has exclusive access to a volume, extreme care must be taken, so that if for any reason the packing operation were to be interrupted, the disk volume would not be left in a corrupted state.

Although there is no utility supplied with the VAX/VMS operating system to analyse disk fragmentation, the VAX SPM product does include tools to do this kind of analysis.

86/42 VMS BACKUP requires speeding up.
This scored 1461 points, was voted for by 400 people and scored 152 first choices.

A full RA81 Image backup to 6250 tapes takes about 1 hour 20 minutes on an otherwise idle 8600. Since there are other products on the market which appear to be able to perform the same job in about a quarter of the time, isn't it about time that VMS backup was improved?

If not a drastic improvement in the speed and CPU resource requirements of BACKUP then at least a published explanation of why BACKUP is such a resource hog that one cannot consider running it at any time during the day.
RESPONSE ##
There are products "on the market" that claim and appear to run faster than the VAX/VMS BACKUP utility. What these claims do not mention is that BACKUP has options to use larger block sizes than the default size, and to bypass CRC checks and XOR block calculation. When used in such a way, BACKUP's performance is competitive with other products, and even superior to some of them. However, Digital do not recommend bypassing the data integrity checks built into BACKUP's default mode of operation. We are working on improving BACKUP performance in the future.

Also, please note the following points:

1. Other vendors cannot keep pace with VAX/VMS changes and new products as well as BACKUP can.

2. Other products recommend that you do not use the BACKUP replacement on tape drives on which there is not a correctly implemented read⊣after⊣write function. Only the TU8x⊣series drives (of the DEC drives) have this feature.

3. Lack of CRC means that there is no way to detect whether data put on the tape are the same as the data read back.

4. Lack of XOR redundancy blocks prevents the correction of any errors on the input tape.

5. Tapes are typically stored for long periods before they are read. Magnetic oxide deteriorates more over time than with usage. The most likely time for decay, therefore, is whilst the tape is sitting on the rack.

⊣⊣⊣
86/19 Be able to checkpoint running jobs
This scored 1376 points, was voted for by 405 people and scored 130 first choices.

It would be useful to be able to checkpoint long running jobs before a machine shutdown, and then restart them afterwards.

A suggested mechanism is:

          $ SAVE/PROCESS/ID=nnnnnn/FILE=...

which would save the entire process context, including all registers, open files, accounting info., etc into a file to allow it to be continued using, say:

          $ RESTORE/PROCESS/FILE=...

There are frequent occasions when a machine needs to be shut down (e.g. Performing Upgrades, Hardware Maintenance, Stand⊣alone Backups etc.). This can leave operators or system managers with the decision whether or not to stop jobs which may have already used several hours of CPU time. Obviously there may have to be restrictions about under what circumstances these jobs can be restarted, for example, having them only restartable at reboot, when a particular SYSGEN parameter is set.

RESPONSE ⊣⊣
Checkpointing a running job is very hard to do. It is especially hard to do in the general case. The entire process context consists of more than just the memory and register contents. As recognised in the S.I.R., open files, accounting information, etc. have to be saved, and subsequently restored. It is the "et cetera" that is hard to do, maybe close to impossible in a cluster and network environment.

The problem would be more feasible to solve if the application to be saved and later restored were designed to co⊣operate by arriving at certain checkpoints where the state of the process context were more easily saved and reproducible at will. For example, if files were closed and their contents saved, or restorable to that point in some way, then checkpointing would be more feasible.

Digital have investigated this problem in the past. There was a previous attempt at a solution. This was rejected because it did not really solve the problem that customers wanted solved. Further investigation of the customers' requirements and possible implementations is still needed.
⊣⊣⊣
86/54 Time out idle terminals
This scored 871 points, was voted for by 276 people and scored 63 first choices.

Timing out of idle terminals would be useful from a security point of view and stop the hogging of scarce resources by antisocial users.

There could be a number of associated SYSGEN parameters:

     TTY_TMOWARNING would be the number of minutes a terminal is Idle before warning it that it will be logged out.

     TTY_TMOWARNING2 etc. for second or subsequent warnings.

     TTY_TMOLOGOFF would be the number of minutes a terminal is Idle before being logged off, or better, disconnected.

     TTY_TMOCRITERIA a bit significant longword (c.f. TTY_DEFCHAR) to select timeout criteria to be used eg. No CPU time used, no BIO, no active processes etc.

Alternatively, the last bit of information could be held in the UAF, to allow individual exemptions from timeout.

Our own personal choice is to consider a terminal as idle which has not had any I/O take place to it, regardless of the amount of other work it may be doing. This is because any process which does no terminal I/O over such a period ought to be a Batch job anyway.
RESPONSE **

The specific criteria by which sites choose to logout unused terminals vary greatly from site to site. Since this variation is almost impossible to accommodate in a single utility, and since writing a site-specific procedure to perform forced logouts on unused terminals is very easy to do (for example, using DCL lexical function F$GETJPI and the STOP command in DCL), we do not feel it appropriate or necessary to distribute such a feature as part of the VAX/VMS utilities.

Note also that certain criteria of inactivity, for example, no terminal activity in a given time, are not always good indicators. In general, even complex metrics that could be devised for this determination would not be always correct. There is therefore a potential for stopping processes that should not be stopped. Rather than trying to devise a general utility that could not be completely general, it would be better for the needs local to a system to be met in a way appropriate to that system.

86/20 Add a /NODE qualifier to PRINT and SUBMIT
This scored 841 points, was voted for by 255 people and scored 60 first choices.

This would allow the printing and submission of jobs onto nodes other than the executing one.

For example:

    $ PRINT myfile /NODE=VAXB:: /QUE=LN03 /JOB_COUNT=10

would allow local file MYFILE.LIS to be printed on remote queue VAXB::LN03. The converse would be:

    $ PRINT vaxc::myfile/QUE=LN03/JOB_COUNT=10

to print a remote file locally.

The current PRINT/REMOTE is very poor in this respect, as you cannot specify parameters such as queue name on it. The ideal would be a command which transfers the file via DECnet, and sends it to the printer with the given parameters, forcing /DELETE. An alternative acceptable solution would be to allow all parameters with /REMOTE, so that at least you could COPY and then PRINT/REMOTE.
RESPONSE **

Although we agree that the ability to transfer and queue a file to/from a remote DECnet system via one PRINT command using all available qualifiers would be useful, we currently do not plan on implementing this feature. However, we are investigating a printing system model to address distributed printing issues in the future.

Note also that the Resource System Manager product (recently announced) does have a capability that can do what is requested.

Results sorted by Points

Number	Points	First Choices	Votes
4	1508	172	414
42	1461	152	400
19	1376	130	405
54	871	63	276
20	841	60	255
36	669	43	221
46	646	33	216
16	587	21	223
12	546	33	186
62	541	42	183
27	501	26	178
34	449	20	153
10	413	17	156
14	408	22	150
52	406	19	136
40	378	17	146
3	350	19	134
26	316	19	103
6	251	17	82
18	246	6	98
41	224	11	76
33	222	12	80
56	203	8	77
28	193	8	56
39	187	14	60
17	171	6	67
37	169	5	55
49	156	5	50
57	149	6	61
25	135	4	55
23	129	7	48
29	129	7	43
7	123	7	47
64	114	4	48
43	105	6	34

Number	Points	First Choices	Votes
48	104	3	45
8	103	8	30
58	102	9	33
53	91	3	32
11	87	3	35
51	68	6	30
45	60	5	18
15	55	3	20
63	53	3	19
61	52	-	24
22	52	1	22
50	51	2	21
5	51	2	21
9	51	5	16
31	44	2	13
44	40	1	15
13	36	3	10
30	33	1	14
47	30	-	12
1	30	-	14
55	29	3	9
38	24	-	10
35	19	-	12
60	18	1	9
59	11	-	5
2	8	1	3
21	8	-	4
24	6	-	2
32	-	-	-

Results sorted by First Choices

Number	Points	First Choices	Votes
4	1508	172	414
42	1461	152	400
19	1376	130	405
54	871	63	276
20	841	60	255
36	669	43	221
62	541	42	183
12	546	33	186
46	646	33	216
27	501	26	178
14	408	22	150
16	587	21	223
34	449	20	153
52	406	19	136
26	316	19	103
3	350	19	134
6	251	17	82
10	413	17	156
40	378	17	146
39	187	14	60
33	222	12	80
41	224	11	76
58	102	9	33
56	203	8	77
28	193	8	56
8	103	8	30
29	129	7	43
7	123	7	47
23	129	7	48
43	105	6	34
57	149	6	61
18	246	6	98
51	68	6	30
17	171	6	67
49	156	5	50

Number	Points	First Choices	Votes
45	60	5	18
37	169	5	55
9	51	5	16
25	135	4	55
64	114	4	48
48	104	3	45
15	55	3	20
11	87	3	35
63	53	3	19
55	29	3	9
13	36	3	10
53	91	3	32
31	44	2	13
50	51	2	21
5	51	2	21
60	18	1	9
2	8	1	3
30	33	1	14
22	52	1	22
44	40	1	15
59	11	-	5
32	-	-	-
38	24	-	10
47	30	-	12
61	52	-	24
35	19	-	12
24	6	-	2
21	8	-	4
1	30	-	14

Results sorted by the number of votes for each

Number	Points	First Choices	No. of Votes
4	1508	172	414
19	1376	130	405
42	1461	152	400
54	871	63	276
20	841	60	255
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36	669	43	221
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12	546	33	186
62	541	42	183
27	501	26	178
10	413	17	156
34	449	20	153
14	408	22	150
40	378	17	146
52	406	19	136
3	350	19	134
26	316	19	103
18	246	6	98
6	251	17	82
33	222	12	80
56	203	8	77
41	224	11	76
17	171	6	67
57	149	6	61
39	187	14	60
28	193	8	56
37	169	5	55
25	135	4	55
49	156	5	50
64	114	4	48
23	129	7	48
7	123	7	47
48	104	3	45
29	129	7	43

Number	Points	First Choices	No. of Votes
11	87	3	35
43	105	6	34
58	102	9	33
53	91	3	32
51	68	6	30
8	103	8	30
61	52	-	24
22	52	1	22
50	51	2	21
5	51	2	21
15	55	3	20
63	53	3	19
45	60	5	18
9	51	5	16
44	40	1	15
1	30	-	14
30	33	1	14
31	44	2	13
47	30	-	12
35	19	-	12
38	24	-	10
13	36	3	10
55	29	3	9
60	18	1	9
59	11	-	5
21	8	-	4
2	8	1	3
24	6	-	2
32	-	-	-

Text of all SIRs

86/1 File expiry dates should be propagated to new versions of the same file.

This means that an explicit

$ SET FILE/EXPIRATION=...

will not get lost across versions of a file.

86/2 An ACE to specify maximum and minimum values for the file expiry date.

This could then be put on a directory file in the same way as the DEFAULT PROTECTION ACE allowing different default retention schemes for different directories.

86/3 The ability to write the DCL saved commands to a file, and then later be able to recall them.

This could be implemented as:

$ SAVE[/ALL]/OUTPUT=listing_file [Number-of-Commands]

and have a counterpart command:

$ RECALL/FROM=[file_spec]

to allow data to be retrieved and placed back in the VMS saved command area. An alternative might be /OUTPUT and /INPUT qualifiers to the RECALL command. This would allow users to save their DCL command context across logout/login.

86/4 Utilities to analyze and repair fragmentation on a disk without initializing it.

It is accepted that this would be slow, but submitted to a batch queue to run overnight would perform a useful function.

86/5 BACKUP should report, at the end of each run, the statistics on how many tapes were used for each backup it performs even if logging is disabled.

86/6 INSTALL should have a qualifier which allows an image to be installed with a base priority higher than the default.

e.g.

INSTALL> ADD TOTO.EXE/PRIO=5

would cause the image TOTO to always be executed at a base priority of 5 regardless of the processes default base priority.

86/7 The ability to get the date and day in languages other than English.

This would either require the names of the months and days of the week be accessible in all major languages or some locally definable table to be set up by the site with the names of the months and days to be used. These could then be used by system services $ASCTIM and $BINTIM for date and time translations.

86/8 *DATATRIEVE* The ability to examine the last lines of a collection.

e.g.:

FIND LAST 16 AA IN CURRENT

86/9 *COBOL* Partial Text replacement in the COPY clause.

e.g.

COPY TOTO.LIB REPLACING ALL "TOTO_" by "TITI_"

would replace all items containing the string "TOTO_" with items containing the string "TITI_".

86/10 SHOW QUEUE should display the page number of the page
currently being printed on printer/terminal queues.

86/11 A process ought to be able to declare itself as a first
choice candidate for being outswapped.

This could be implemented as a system service, so that
a process that knew that it was likely to be idle for
some considerable time could call this to set a bit
in, say, the PCB to say that it wished to be
outswapped, if any trimming etc. was required.

86/12 A new flag in the UAF, which if set, will cause the
creation of a log file of all the DCL commands
executed during an interactive session.

This will mean that it will no longer be necessary to
do a SET HOST/LOG in order to get this information,
which is a very expensive method of accessing,
involving a lot of DECNET code being executed. This
could be used either by the user, or as a security
feature by the system manager. It could
alternatively, if the bit is not set in the UAF, be
enabled and disabled by a SET command.

86/13 A DCL command is required to improve system reliability.

$ REMOVE BUGS

This command would invoke the Internal Bugs Monitor
(IBM) and would have the syntax:

```
                          { /FACILITY=facility_name
       $ REMOVE BUGS      { /ALL
                          { /RANDOM
```

The Internal Bugs Monitor should also have callable
entry points such as: IBM$REMOVE_FACILITY_BUGS and
IBM$REMOVE_ALL_BUGS. (The inspiration for this SIR
comes from J.Y. COLLOT of DECUS France, to whom
thanks are overdue!)

86/14 It would be useful to have a GROUP$LOGIN procedure
executed after SYS$SYLOGIN and before the users own
login procedure.

GROUP$LOGIN would be defined in the GROUP logical name
table, and allow forced execution of a group-wide
command procedure at every login, in the same way as
execution of SYS$SYLOGIN is forced.

86/15 Have an additional ACCESS keyword in an ACE which grants
ownership rights.

The CONTROL ACCESS keyword in an ACE does not grant
ownership of a file to the specified user.

(IDENTIFIER=<User>,ACCESS=OWNER)

on a directory, should allow user <User> to create
files in that directory which are owned by the parent
rather than by the creator.

86/16 BACKUP ought to stop processing a partial restore when all
files have been restored.

When using BACKUP to restore with the /SELECT
qualifier, because of the ordering of files on the
tape(s), it is obvious, when using /LOG, when all the
possible required files have been restored. BACKUP
ought to stop the search for files itself at this
point, rather than continuing to search the rest of
the save-set.

86/17 A BACKUP/LIST/BRIEF to list only the header information,
first file and last file on each tape in a save set.

In a large multi-volume save-set a great deal of paper
(or listing file) needs to be created just to find out
on which tape on a multi-volume save set a particular
file resides. A /BRIEF option on the listing, when
creating the save set, would save a lot of paper or
disk space.

86/18 It would be nice to be able to find out easily, where
BACKUP is in the file structure, without having to use
/LOG.

Some mechanism analogous to <CTRL-T> would be very
useful to inquire of an online BACKUP which file it is
currently backing up. This could be extended, for
Batch jobs, to include this information on the request
for a second or subsequent output volume. This
information could take the form of the filename or
distance into the index file for /IMAGE backups, and
percentage of blocks processed for /PHYSICAL backups.
This can be very useful for knowing how far through a
BACKUP is, particularly when it is taking a very long
time.

86/19 It would be useful to be able to checkpoint long running
jobs before a machine shutdown, and then restart them
afterwards.

A suggested mechanism is:

        $ SAVE/PROCESS/ID=nnnnnn/FILE=...

which would save the entire process context, including
all registers, open files, accounting info. etc.
into a file to allow it to be continued using, say:

        $ RESTORE/PROCESS/FILE=...

86/20 Add a /NODE qualifier to PRINT and SUBMIT to allow the
printing and submission of jobs onto nodes other than
the executing one.

For example:

        $ PRINT myfile/NODE=VAXB::/QUEUE=LN03/JOB_COUNT=10

would allow local file MYFILE.LIS to be printed on
remote queue VAXB::LN03. The converse would be:

        $ PRINT vaxc::myfile/QUEUE=LN03/JOB_COUNT=10

to print a remote file locally.

86/21 Access Control identifiers corresponding to all UAF
privileges.

This would allow entries like:

        (ID=CHEM_DEPT+GRPPRV,ACCESS=READ+EXECUTE)

to allow selective access to objects dependent on the
users privileges as well as their allegiance.

86/22 Wildcarding of folder names within MAIL.

It would be nice to be able to, say, select all old
messages, whichever folder they happen to be in, by
issuing the command:

        MAIL> DIRECTORY */BEFORE=1⧖JAN

or to be able to issue a:

        MAIL> SELECT *

to then include all folders for subsequent operations.

86/23 If a printer controlled by the print symbiont is an ANSI
printing terminal, then the print symbiont ought to
check whether or not it is on line at the start of
each job by sending the ANSI device attributes
request.

86/24 Print job separation options should be enhanced so that
what is produced is the logical 'OR' of the attributes
set on the generic queue and the execution queue.

Suppose two generic queues SYS$PRINT and SECURE_PRINT
both feed into LCA0. SYS$PRINT has no attributes,
LCA0 has /SEPARATOR=FLAG, SECURE_PRINT has
/SEPARATOR=(FLAG,TRAILER) then jobs printed via
SYS$PRINT get just job flag page, and jobs submitted
via SECURE_PRINT get a trailer also.

86/25 Enhance the RECALL command to allow a string to be specified which is embedded in the command being sought, not just a leading substring of the command.

    For example, one could use:

        $ RECALL "FRED.FOR"

    to recall the command:

        $ EDIT/TPU/SECTION=SYS$LIBRARY:EDTSECINI FRED.FOR

86/26 The ability to guarantee a certain percentage of CPU time to different categories of jobs, and restrict the number of jobs a user may have simultaneously in the queueing system.

    In order to provide a proper predictable batch service, it is necessary to be able to guarantee a minimum percentage of available CPU time to different classes of job. Similarly, to stop particular users swamping the system, it ought to be possible to restrict users both on a per queue basis and overall.

86/27 Password expiry should force the user to change the password there and then by invoking SET PASSWORD.

    On a system where password expiry is in force, users often forget to change their passwords when it expires. The login processor should prompt the user at login time when this occurs, forcing them to change their password(s) at once.

86/28 User definable forms and default forms on a per queue basis for PRINT.

    Users ought to be able to define their own local forms with different margins or set-up modules from standard. For the same reason, it should be possible to set up different default forms for different queues, if these queues are driving different types of devices.

86/29 $ SET COMMAND/EXTRACT=<Command_name>

This would provide a standard way of altering default parameter or qualifier values for standard VMS commands and for adding, say, extra functionality to the SET command.

86/30 The ability to have execution queues which can only be fed from generic queues.

    If, in a cluster, you want to run two machines in identical fashion, then from the point of view of queue control, the following might be ideal:

    $ INITIALIZE/QUEUE/BATCH/GENERIC=(NODE_1,NODE_2) SYS$BATCH
    $ INITIALIZE/QUEUE/BATCH/NOSUBMIT/ON=NODE1:: NODE_1
    $ INITIALIZE/QUEUE/BATCH/NOSUBMIT/ON=NODE2:: NODE_2

86/31 The ability to control whether or not an image is activated with the debugger for an image activated via a DCL command.

    When developing a program which is activated by a DCL command, it would be very useful to be able to indicate whether or not the debugger is to be activated for a particular activation of the image, perhaps via some sort of keyword inside the CDU definition of the command.

86/32 *COBGEN* COBGEN ought to allow more than one item in a linkage section in a generated subprogram. This is required for writing large, complex systems using ACMS.

86/33 A SYSGEN command REMOVE, which removes a secondary page or swap file from being used by any new processes.

    This would allow a disk to be prepared for being dismounted, by allowing the secondary page or swap files to be closed once any existing processes using

it had completed. This allows disks containing such files to be removed from the system (e.g. for maintenance) for short periods, without closing down the system.

86/34 Programs ought to be able to write a short status line which can be read by SHOW PROCESS, MONITOR or even <CTRL⁎T>.

Programs, particularly long⁎running programs ought to be able to place, say in the PCB or process header, a short status message indicating their current status. Compilers could enter "Compiling <sub program>", BACKUP could enter "Backing⁎up <filename>", and user written programs similar such useful information.

86/35 Ability to run ANALYZE/MEDIA on MSCP served disks.

Although the creation and maintenance of a bad block file is irrelevant to these devices, the disk exercising is a useful function, as it allows bad block replacement to take place before real data is placed on the device.

86/36 Option to allow a process to suspend if it hits device full or disk quota exceeded.

It ought to be possible, using, say, a DCL SET command to allow processes which hit these limits to be suspended rather than crashing. This could be combined with an operator request, which would allow operators to be informed who is responsible for the problem, and to perhaps free up the situation, so that the job can continue.

86/37 The ability for a job which knows its disk space requirements to pre⁎allocate that space on a disk to avoid running out.

If a job knows it is going to use 10000 blocks during its run, then it ought to be possible to issue a:

$ ALLOCATE DISK$SCRATCH:/BLOCKS=10000[/CONTIGUOUS]

command to allocate this space to the job. Any requests for a scratch file would then be taken from this allocation and would be returned to the system at job termination.

86/38 There should be a single 'low⁎level' description of a filename.

If CAD_ROOT is defined as 1DUA0:[CAD.]/TRAN=(CONC,TERM) then the image CAD_ROOT:[SPICE]SPICE can also be accessed as 1DUA0:[CAD.SPICE]SPICE and HSC000$DUA0:[CAD.SPICE]SPICE. GETJPI returns different names depending on how an image was initiated, and this can cause INSTALL to not recognise the file as a known image.

86/39 A key sequence (e.g. <CTRL⁎N>) which would allow DCL to expand an abbreviated filename, as in TOPS⁎20.

If the command: FOR pro<CTRL⁎N> were typed, and the only '.FOR' file in the default directory were PROGRAM_FOR_TESTING_DCL.FOR then DCL would expand the filename for you, as if you had typed it in full. This could be true of any part of a filespec, as soon as it had become unique.

86/40 A SEND/ACKNOWLEDGE command within mail.

MAIL> SEND/ACKNOWLEDGE

would cause a response mail message to be generated the first time a message sent with this qualifier was read by the recipient.

86/41 More simple access to system services with complex data structures.

Quite a lot of system services require quite complex data structures to be set up before they can be used. This makes them very complex to use, particularly from

some high level languages. There ought to be a simple way of using such services, either by modifying the way they work or by adding run-time library routines on top of them, to simplify the interface.

86/42 VMS BACKUP requires speeding up.

A full RA81 Image backup to 6250 tapes takes about 1 hour 20 minutes on an otherwise idle 8600. Since there are other products on the market which appear to be able to perform the same job in about a quarter of the time, isn't it about time that VMS backup was improved?

86/43 Command to log opens and closes of files by user or system programs.

Could be used by user to help debug programs, or by the system manager as a level below security alarms.

86/44 Mag. tape ACP should be template driven so that translation tables could be loaded for the automatic translation of foreign tape formats and character sets.

86/45 *HIGH LEVEL LANGUAGES* An extension to all high level languages to provide the MACRO expansion facilities provided by MACRO and C.

This allows the inline expansion of small and frequently used pieces of code in order to avoid procedure call overheads.

86/46 Delete should, by default, not actually delete a file, but instead mark it for later deletion.

This would allow a user to 'undelete' a file accidentally deleted. The file could be actually deleted either by an explicit command from the owner or system manager, on logout or after the next backup.

86/47 * THIS SIR HAS BEEN WITHDRAWN AS THE REQUESTED FACILITY HAS BEEN INCORPORATED INTO LATplus/VMS V1.0 *

86/48 The DCL WAIT command should accept absolute or combination times in addition to delta time.

If you want to wait until, say 3:00, then it is necessary to calculate the delta time required to wait. WAIT ought to accept absolute and combination times and act as a 'wait until' given time.

86/49 The ability to view or edit the contents of a mailbox.

Mailboxes are a useful communications tool, but when debugging applications which use mailboxes to communicate, it is sometimes necessary to examine or alter the contents of a mailbox invisibly to the application. Tools to do this would aid program development.

86/50 Now that DCL has been cleaned up to include a 'common' set of selection qualifiers (e.g. date/time, modified/created/expired) it would be nice to have this code available for use by applications (e.g. as run-time library routines)

86/51 It should be possible to forward mail AND retain it in the original destination account.

This could be implemented in two different ways (or in both at once).

    1)   MAIL> SET FORWARD/COPY

which would copy the mail to the forwarding address, whilst keeping the message in the forwarders account also.

    2)   MAIL> SET FORWARD/NOTIFY

which would only send a notification message to the

forwarding address, leaving the only copy of the
message in the forwarders account.

86/52 BACKUP should provide more control over tape labels and
label checking for second and subsequent tapes in a
BACKUP saveset.

At present, since backup neither says what label the
tape to be mounted should have, nor does it check this
when the tape is mounted, it is quite possible for the
wrong tape to be accidentally mounted during a backup
operation, and then find that it has been overwritten.

86/53 Provide two new SYSGEN parameters for default timeout of
terminal reads.

TTY_DEFTIMEOUT would apply to all terminal reads which
do not themselves specify a timeout. [Default = 0
(none)]
TTY_CLITIMEOUT would apply to all CLI terminal reads
which do not explicitly give a timeout. [Default = 0
(none)] This would be good for terminal security and
easy to implement.

86/54 Timing out of idle terminals would be useful from a
security point of view and stop the hogging of scarce
resources by antisocial users.

There could be a number of associated SYSGEN
parameters:

TTY_TMOWARNING would be the number of minutes a
terminal is idle before warning it that it will be
logged out.

TTY_TMOWARNING2 etc. for second or subsequent
warnings.

TTY_TMOLOGOFF would be the number of minutes a
terminal is idle before being logged off, or
better, disconnected.

TTY_TMOCRITERIA a bit significant longword (c.f.
TTY_DEFCHAR) to select timeout criteria to be used
e.g. No CPU time used, no BIO, no active
processes etc. Alternatively, the last bit of
information could be held in the UAF, to allow
individual exemptions from timeout.

86/55 The SPAWN command in TPU should return the PID of the
spawned process.

This is useful because it would then be possible to
pick this up and use the information later to attach
to this process in the future.

86/56 The ability for a 'group manager' to allocate diskquota
between members of a group.

This would allow a system manager to give a group
manager a total allocation to 'play with' and the
group manager would be able to make decisions about
how this quota was to be split and make the necessary
day to day maintenance changes in quota allocations.

86/57 Introduce the concept of an 'antipassword'.

If anyone attempting to log into a username tries to
use a password on the 'antipassword' list, then this
would immediately set the terminal into 'INTRUDER'
state and take appropriate action. This would be very
useful for detecting hackers, as there could be
system-wide and user-specific lists which included all
the 'common' passwords.

86/58 *PASCAL* STARLET.PAS/STARLET.PEN should be 'chopped up',
and extra environment files provided.

If the existing file were spilt up into smaller
environments like the FORTRAN $SSDEF and $JPIDEF etc.,
then it would be possible also, to provide more
(perhaps optional) such environments, such as
definitions of the run⁻time library routines or screen
management routines.

86/59 An extra option on SYS$GETJPI to allow a process to read
another processes rights list.

This allows the creation of user defined privileges
which can be checked and used by processes not running
in the context of the users process, but acting as an
agent for that user (e.g. DECnet or MAIL).

86/60 The lock manager should allow 'exclusive' locks which can
be held by a fixed number of processes other than just
1.

The lock manager is the nearest thing that VMS has to
classical semaphores. In order to implement some
types of interlock, it may be necessary to have a
resource which can be held by a number of processes,
but which has a numerical limit to the number which
can simultaneously hold it. Thus, say, up to five
processes could hold a particular lock but no more.
This maximum number could be changed dynamically by
controlling processes.

86/61 It ought to be possible to get the tree of subtopics from
HELP at levels other than the top level.

e.g.

$ HELP SET...

allows you to list all the information on SET and all
its subtopics (SET TERMINAL, SET HOST etc.); it ought
to be possible to use the same syntax at lower levels
to get just parts of the tree. e.g.:

$ HELP SET TERMINAL...

rather than having to get either all the information
on SET or go into SET TERMINAL and then typing *.

86/62 The concept of a 'project' to which a user may charge
resources (CPU time, disk storage etc.).

This would have an associated DCL command:

$ SET PROJECT

which would allow a user to change projects without
having to change username or filebase. This allows a
user to charge resources to different projects without
having to have multiple usernames.

86/63 TPU requires a built⁻in to provide line⁻wrapping for a
window.

It is possible, but VERY messy, at the moment to make
TPU line⁻wrap in the same way as EDT did with SET
NOTRUNCATE. It would be much better and more
efficient if it were possible to give a window, or
buffer the attribute WRAP to allow this effect.

86/64 Enhance <CTRL⁻T> for processes in I/O wait.

If a process is in I/O wait at the time that <CTRL⁻T>
is typed then the information printed should also
include information about the file which is being
waited on, such as name, block number currently being
accessed and function being waited for. This is a
facility which currently exists in TOPS⁻10.

LIBRARY
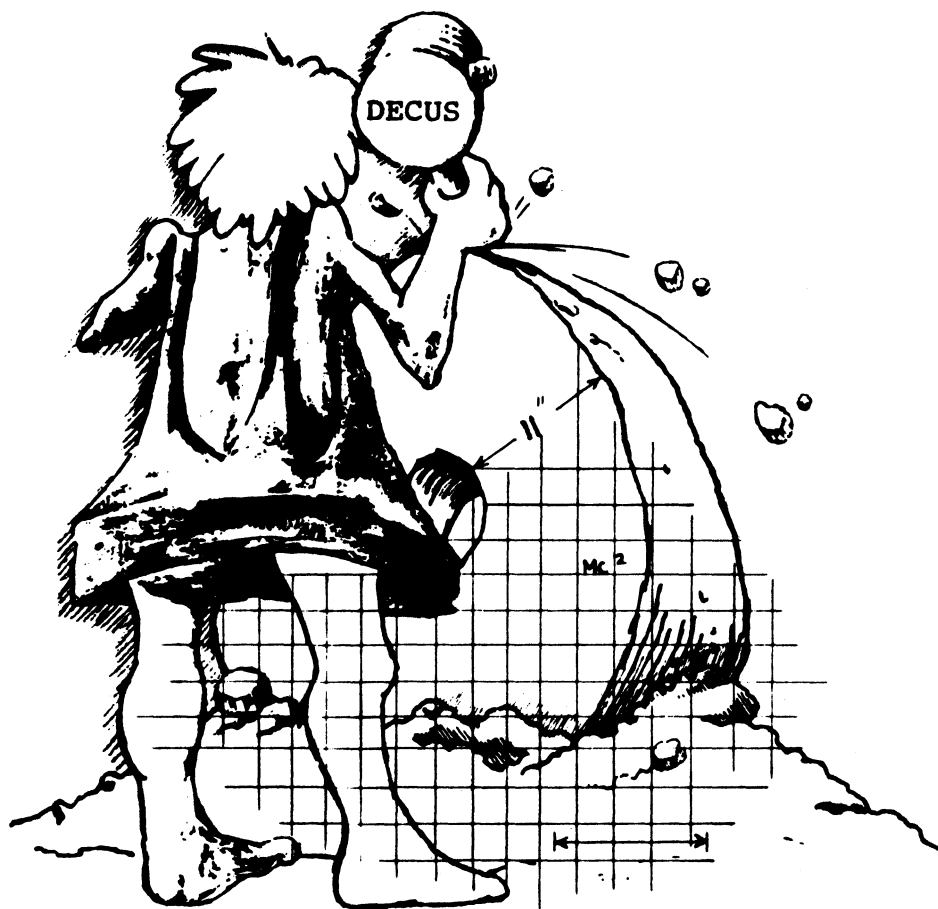
DECUS PROGRAM LIBRARY

NEW LIBRARY PROGRAMS AVAILABLE
FOR THE VAX/VMS
FAMILY OF COMPUTERS

DECUS NO: VAX-199 Title: VYLBUR (A Wylbur- like Editor for the VAX) Version: V4.0, March 1986

Submitted by: Francois Roy, Statistics Canada, Hull, Quebec, Canada JB Y527 **Operating System:** VAX/VMS V3.7 - 4. X **Source Language:** VAX-11 FORTRAN **Memory Required:** 4 MB (virtual) **Keywords:** Editors

Abstract: VYLBUR emulates most functions of the WYLBUR line editor as implemented on IBM/370 mainframes. For small files (up to 9,999 lines), VYLBUR provides an alternative to EDT when complex editing tasks are required. The power of VYLBUR resides in the broad definition of "a range of lines" and in the fact that edits may be directed to specific column positions within lines. A limited EXEC file capability is also offered to facilitate repetitive editing tasks.

Restrictions: Not all functions of "commercial" versions of WYLBUR are implemented. Max. file size = 9,999 lines x 256 characters. Requires subprocess quota for some functions.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VAX/ANSI

November 3, 1986

DECUS NO: VAX-200 Title: Multiple Choice Lesson System (MCLS) **Version:** August 1986

Author: Steven L. Bareman, Hope College, Holland, MI

Operating System: VAX/VMS V4.3 **Source Language:** VAX-11 COBOL, DCL **Memory Required:** 700,000 Bytes **Hardware Required:** VT100, VT220 or VT240 terminal. **Keywords:** Educational Applications

Abstract: The Multiple Choice Lesson System (MCLS) is a flexible system designed for administering multiple choice lessons to students. MCLS lets the instructor decide how to incorporate MCLS as part of his or her lesson plan.

MCLS can be used as a learning aid by treating its use as purely instructional, giving students the opportunity to gain further insight into the topic of study they choose. It also allows the instructor to monitor which topics have or have not been studied, thus giving a better perspective on student performance.

MCLS can also be used as a quiz system. It allows students to demonstrate their understanding of a particular topic by selecting what they believe to be the correct answers to questions in a randomly ordered lesson. The percentage of questions which were answered correctly on the first attempt is recorded by MCLS.

Release Notes are distributed with each order.

Restrictions: Operating system VMS version 4.0 or later is required.

Media (Service Charge Code): User's Manual (EA), 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: VAX-201 Title: TYPE_ PLUS Version: V1.00, August 1986

Submitted by: Kirk R. Stauffer **Operating System:** VAX/VMS V4.2 **Source Language:** C **Memory Required:** 31 KB **Hardware Required:** VT220 Terminal Keywords: Utilities- VMS **Abstract:** The TYPE_ PLUS utility allows a user to examine a file on a VT220 (or compatible) terminal, beginning at a particular line, and then scroll forward or backward through it. Scrolling can be set to smooth or jump, and the number of columns displayed can be set to 80 or 132. Lines 1 - 22 of the terminal are dedicated as a window into the file.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: VAX-202 Title: INACTIVE ACCOUNTS Version: V1.0, February 1986

Submitted by: D. P. Schumacher, TRIUMF, Vancouver, B.C., Canada V6T 2A3 **Operating System:** VAX/VMS V4.2 **Source Language:** FORTRAN 77 **Memory Required:** 3400 Bytes **Keywords:** System Accounting - VMS

Abstract: The INACTIVE ACCOUNTS program uses as input a copy of SYSUAF.DAT and a comment file which is sorted by username. The comment file is used to keep information on current accounts or historical information on old accounts.

Three types of records are written to the results file:

. Selected sysuaf records.
. Comment records without corresponding sysuaf records as a reminder to the user on the contents of the comment file.
. Merged sysuaf and corresponding comment records.

The selection of sysuaf records is based upon:

. The sysuaf record has a corresponding comment record.
. The record has the disuser flag set.
. The difference between the current date and the latest of the interactive and non- interactive login dates is greater or equal to the number of inactive days allowed before disabling or deleting an account.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VAX/ANSI

November 3, 1986

DECUS NO: VAX-205 Title: DISK_ USE Version: V1.0, Septemer 1986

Submitted by: D. P. Schumacher, TRIUMF, Vancouver, B. C., Canada V6T 2A3 **Operating System:** VAX/VMS V4.3 **Source Language:** VAX-11 FORTRAN **Memory Required:** 850 KB **Keywords:** System Accounting— VMS, Utilities—Disk— VMS

Abstract: DISK_ USE is a program which can be used to obtain a snapshot of usage on a disk which has diskquotas enabled. Information presented are the combined permanent and over- draft quotas with percentages and blocks used with percentages in two types of reports: a summary report which gives the information for each group and a detailed report which gives the information for each member of each group. The detailed report includes information from the active SYSUAF. DAT -- duplicate UICs and disabled acc ounts are flagged.

Commands for report selection are:

SUMMARY Generate a summary report DETAIL Generate a detailed report for all groups GROUP = n Generate a detailed report for group n SUM, DET Generate a summary and detailed report for all groups

Restrictions: READ access to [0,0] QUOTA.SYS and SYS- $SYSTEM: SYSUAF. DAT. Disk quotas must be enabled on the disk for which disk usage is required.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VAX/ANSI

DECUS NO: VAX-206 Title: FRAG: A Utility to Display VAX/ VMS Disk Fragmentation Version: V1.0 X, September 1986

Submitted by: Ya'akov N. Miles, TRIUMF, Vancouver, B. C., Canada V6T 2 A3 **Operating System:** VAX/VMS V4.1, 4.2, 4.3, MicroVMS **Source Language:** MACRO-32 **Memory Required:** 1000 (virtual) pages **Software Required:** VAX/VMS **Keywords:** Utilities - Disk - VMS

Abstract: FRAG is a tool which measures the degree of fragmentation on the specified VAX/VMS FILES-11 disk, and prints the result in a manner similar to that printed by the RSX-11 M utility PIP. This is done by scanning the file [0,0] BITMAP.SYS to find the largest contiguous area of free space, and then by scanning [0,0] INDEXF.SYS to find the maximum number of file headers and the number of file headers that are actually in use. The disk being investigated must be a FILES-11 structure level 2 volume.

Restrictions: Disk must have FILES-11 V2 on it. This program requires READ (only) access to [0,0] BITMAP.SYS and [0,0]- INDEXF. SYS. It is safe to install this program with SYSPRV privilege.

Media (Service Charge Code): Source Listing (BA), 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: VAX-207 Title: EDTEXT: EDT Keypad Emulator Extension Version: July 1986

Submitted by: Judith Clark, M.I.T. Lincoln Laboratory, Lexington, MA **Operating System:** VAX/VMS **Source Language:** TPU **Keywords:** Editors

Abstract: This section file is built from the VAXTPU EDT Keypad Emulator. It is a combination of modified EDT and EVE procedures along with some of my own. With this section file, full keypad definitions and window capabilities are available.

Documentation on this editor is contained in the included text files:

ABSTRACT.TXT	This file, abstract for EDTEXT EDTEXT- .TXT Brief introduction to the editor's cap- abilities
DESCRIBE.TXT	Describes the defined function keys in EDTEXT
QUICK.TXT	A quick reference table of defined function keys

Some differences between old EDT and this section file are the following:

. Two windows are available. . The keypad SECTION function has been changed to allow for smaller section jumps when two windows are on the screen. . A status line is displayed with every wind ow. . The keypad functions ADVANCE and BACKUP reset the current window's status line to display the current direction . Some GOLD key combinations have been changed.

Notes: At least version 4.2 of VAX/VMS is required.

Restrictions: Must have EDTSECINI. TPU$ SECTION or EDTSECINI. GBL if they wish to rebuild source file.

Complete sources not included.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VAX/ANSI

DECUS NO: VAX-210 Title: PORT LOCATOR Version: V1.0, September 1986

Submitted by: Joe Roundy, Norden Systems, Gaithersburg, MD **Operating System:** VAX/VMS V4.4 **Source Language:** VAX FORTRAN **Keywords:** Terminal Management

Abstract: PORT LOCATOR is a utility that uses QIO's to send an ASCII CHAR(5) to all the ports on the system. This returns the ANSWER_ BACK message from each terminal hooked up to the ports, if one is set. The program does not interrupt inter- active users if executed with the right privileges.

The program reports the ANSWER_ BACK message or a DEVICE ALLOCATED message if the port is in use, or DEVICE NOT POWERED UP, if the device is not on.

The output can be to the terminal or a file specified by the OUTPUT qualifier. It can call all ports specified in the file assigned to the logical PORTS$ INPUT or one specified port at a time.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

NEW LIBRARY PROGRAMS AVAILABLE
FOR THE
PDP-11 COMPUTER FAMILY

DECUS NO: 11-841 Title: LISPEX: Fixes and Extensions to LISP-11 Version: V02, April 1986

Submitted by: N.W.A. Marsh, University of Liverpool, Liverpool, United Kingdom L69 3BX **Operating System:** RT-11, TSX- PLUS **Source Language:** MACRO-11, LISP **Memory Required:** 64 KB **Software Required:** LISP-11 (DECUS 11-304) **Hardware Required:** Includes built LISP Interpreter which expects EIS. **Keywords:** LISP, Language Interpreters

Abstract: LISP-11 (DECUS No. 11-304, first distributed in 1977) is a large and well conceived item of software. The implementation is generally complete, logical and thorough, but there are nonetheless a number of errors, and non- standard features or omissions as compared with more recent LISP systems for small computers. LISPEX undertakes to provide fixes for a number of errors and shortcomings which have become known to the author in using LISP-11 over a period of five years in teaching and research.

Fixes and extensions to LISP-11 which are provided in LISPEX include: correction of a serious fault in function GO, provision of literal error messages, use of standard characters as short hand token for the QUOTE function and for delimiting strings, provision of functions for function-definition, SAVE/LOAD, pretty-printing and list-oriented editing. The user facilities are packaged such that the user has the option of applying each of the fixes or extensions independently, where this is logically possible.

It is assumed that the user already possesses the distribution kit for LISP-11, including the printed manual. The application of the fixes is based upon the clear and straightforward procedures described in chapter 8 of the LISP-11 manual.

Source listings are provided. In order to support a relatively rapid appraisal, LISPEX includes a fully operational version of LISP-11 incorporating all of the changes, for an LSI-11 with EIS.

Notes: Files LSPLIB.OBJ, LISP.SAV have partial sources in DECUS catalog item 11-304: LISP-11. (Original Sources of LISP-11 not included)

Assoc. Documentation: LISP-11 Write-Up (AQ), DECUS No. 11-304

Media (Service Charge Code): One RX01 Diskette (KA) Format RT-11, 600' Magnetic Tape (MA) Format RT-11

DECUS NO: 11-843 Title: TECO- Utilities Version: V1.0, June 1986

Submitted by: John Alexander Operating System: RT-11 Source Language: TECO Keywords: File Management, TECO

Abstract: The "TECO—Utilities" are DCL command lines that query the user for the required parameters to perform the operation and then call TECO to perform the tasks to operate on the specified files.

Some examples of "operations" that these may perform are:

. Number all lines of a file in any number base.
. Split a file down a column into two files.
. Concatenate two files horizontally (sideways).
. Move a set of columns to new column location for all lines.
. Create a name list of files.
. Merge a name list of files into a single file.
. Split a "Merged" file back into multiple files.
. Pad out the end of lines to a given column.
. Cut excessively long lines to a given column.
. Fix all lines (long or short) to a given column.
. Extract lines from a file.
. Shuffle two files together.
. Eliminate duplicate lines in a file.
. Combine columns of one file with columns of another file.
. Strip comments out of code.
. Create "Boilerplate" letters.
. Many more "operations".

Notes: This program is a combination and update of DECUS Program Nos. 11-688 and 11-690.

Media (Service Charge Code): User's Manual (EA), Two RX02 Diskettes (LB) Format: RT-11

November 3, 1986

DECUS NO: 11-851 Title: Extended Character Set Version: V1, July 1986

Submitted by: Dave Garland, Whittier College, Whittier, CA Operating System: RSTS/E Source Language: BASIC-PLUS Memory Required: 16 K Keywords: Plotting

Abstract: This program is designed to allow printing (in plot mode) of both standard and alternate characters. It is designed for a CENTRONIX printer but can be used on any other printer with the same plot mode codes.

You may define your own characters or you may use the characters which have already been defined. Each file allows for up to 248 characters.

Media (Service Charge Code): One RX01 Diskette (KA) Format: RT-11, 600' Magnetic Tape (MA) Format: DOS-11

DECUS NO: 11-852 Title: CHPLOT Graphics Printer Package Version: V1, August 1986

Submitted by: Messrs. Tan & Rogers, Medical Physics Dept, Christchurch Hosp., Christchurch, New Zealand Operating System: RSX-11 M V4.0 Source Language: MACRO-11, FORTRAN IV Memory Required: 64 KB Hardware Required: LA100 or other dot matrix printer with 'bit addressable' graphics capability. Keywords: Graphics, Plotting

Abstract: The CHPLOT routines emulate and replace similar routines written for the old LV-11 electrostatic printer-plotter. Points, lines, horizontal and vertical characters can be drawn, and triangular areas can be shaded in any of sixteen 'grey-scale' intensities. The present package runs on any of the popular dot-matrix printers, i.e. LA100, OKI2410 and ML84, and C. ITOH1550, and in addition may easily be modified to run on other printers with "all-bits-addressable' capability.

Media (Service Charge Code): User's Manual (EA), One RX02 Diskette (LA) Format: FILES-11, 600' Magnetic Tape (MA) Format: FILES-11

November 3, 1986

DECUS NO: 11-853 Title: HP41C Version: V1.4, September 1986

Submitted by: Harold Z. Bencowitz, Beaumont, TX Operating System: RT-11 V5.3, TSX-PLUS V6.01 Source Language: Whitesmith's C Hardware Required: VT100 or VT200 series terminal Keywords: Calculators

Abstract: HP41 C is a program to emulate the Hewlett-Packard 41 C series of hand-held programmable calculators. It requires a VT100 or VT200 series terminal. It has been tested on RT-11 V5.3 and TSX-PLUS V6.01. The major design goal was to make an exactly identical user interface for those features included. To operate the "calculator", follow directions in the HP41 C owners handbook. The keyboard mapping is given on screen when the program is run. Many features of the HP41 C are not supported, primarily program ming and functions which are only useful from programs.

Notes: Only tested on RT-11 V5.3 and TSX-PLUS V6.01. Sources of libraries are not included. Author will send them to any user requesting them.

Complete sources not included.

Media (Service Charge Code): One RX01 Diskette (KA) Format: RT-11, 600' Magnetic Tape (MA) Format: RT-11

NEW LIBRARY PROGRAMS AVAILABLE FOR THE DECSYSTEM-20 FAMILY OF COMPUTERS

DECUS NO: 20-186 Title: IMGSPL: TOPS-20 Spooler for Imagen 8/300 Printers Version: May 1986

Submitted by: William Brown, MCC, Austin, TX Operating System: TOPS-20 release 5.4 Source Language: MACRO-10 Memory Required: 20 Pages Software Required: Modifications to Galaxy and Exec are included. Hardware Required: Imagen 8/300 Laser Printer Keywords: Utilities—TOPS-20

Abstract: IMGSPL is a TOPS-20 spooler for Imagen 8/300 laser printers. Galaxy and Exec modifications (included) enable the user to queue files with the "laser-print" command and manipulate the laser print queue with the modify, information output and cancel commands.

The spooler is controlled by Quasar and Orion/OPR. Imagen printers connected to serial lines or TCP interfaces may be used.

Media (Service Charge Code): 600' Magnetic Tape (MA)

November 3, 1986

NEW LIBRARY PROGRAMS AVAILABLE FOR THE PDP-8

DECUS NO: 8-939 Title: ICE TEXT EDITOR Version: June 1986

Author: Stuart Dewar

Submitted by: Wally Kalinowski, Aerospace Corporation, Los Angeles, CA Operating System: OS/8 Source Language: PAGE8 Memory Required: 8KW Software Required: PAGE8.SV is available on DECUS Program Nos. 8-936 or 8-938. Keywords: Editors

Abstract: ICE is a general purpose text editor. It is similar to EDIT.SV, which is distriubted with OS/8, but it contains several advantages over EDIT.SV. Some features are:

. High speed file close (10-50 times faster than EDIT.SV).
. Retention of both old and new line numbers.
. Wild card search (search/replace).
. Block save and restore: Space warning.

ICE.SV is on the disk but PAGE8.SV (the assembler required to assemble the sources) is not. PAGE8.SV is available with other DECUS programs such as VISTA EDITOR or Acid Document Generator and should soon be available in source form.

Complete sources not included. Media (Service Charge Code): One RX01 Diskette (KA) Format: OS/8

November 3, 1986

REVISIONS TO LIBRARY PROGRAMS

DECUS NO: V-SP-24 Title: PortaCalc (AnalytiCalc): A 3D Spreadsheet/Database System in VMS/BACKUP Version: V21.2, September 1986

Submitted by: Glenn C. Everhart, Ph.D. Operating System: IAS, RSTS/E, RSX-11M, RSX-11M-PLUS, VAX/VMS, MS/DOS V2+, P/OS Source Language: FORTRAN IV-PLUS, FORTRAN 77, VAX-11 FORTRAN, MACRO-11, MACRO-32 Memory Required: N/A Keywords: Business Applications, Data Base Management, PortaCalc, Spreadsheet

Abstract: PortaCalc is a powerful 3-dimensional spreadsheet/database and analysis system with easy user extensibility designed to outperform most any commercial package available, running on PDP-11 systems able to support the F4 P compiler, or VAX systems, needing the VAX FORTRAN compiler to compile. Several terminals are supported, including the VT100 series, VT52, Datamedia Colorscan 10, and Elite 1500, Televideo 925, and ANSI color terminals.

The program is designed for power and to be easily portable to other systems supporting FORTRAN, with pecularities used documented, and its manual is designed to be turned into a system HELP file so that it can be read online.

A data management system is built in, permitting spreadsheets to access a potentially unlimited number of files and records or parts of records in those files for user defined functions, numbers, formulas, text or whatnot. In fact, it has many of the attributes of a language.

A powerful text integration function permits integration of word processing files with reports, permitting use of AnalytiCalc (PortaCalc) to integrate sections of reports which are edited with any editor. It also simplifies inserting text from external files flexibly over null cells of the spreadsheet.

The current release adds an "Enter-mostly" mode of operation that provides a command structure similar to commercial spreadsheets on micros (numbers, formulas, and text just get typed in, commands prefixed with /) as an option, plus various additional capabilities.

You have the ability to access HUGE spreadsheet dimensions: up to 32,000 rows and 32,000 columns can be addressed on the VAX, and up to 10,000 by 10,000 on the PDP-11.

This version of AnalytiCalc (PortaCalc) now contains a two page memory paging algorithm for the PDP-11 version. It also has a version presented here for the first time containing a DATATRIEVE-32 interface permitting exchange of data between DTR databases and AnalytiCalc spreadsheeets in both directions.

Complete source code for all versions is provided. It is assumed the F4 P or F77 compiler is available for PDP-11, or the Digital Equipment Corporation VAX FORTRAN compiler for VAX. Please note: object libraries are provided for VAX systems not owning FORTRAN, and task images for RSX systems without F77.

Release Notes are distributed with each order.

Notes: PDP-11 users see DECUS No. 11-SP-47.

Changes and Improvements: Added cell annotation. Also, distribution now contains VMS virtual disk as well as RSX virtual disk.

Media (Service Charge Code): User's Manual (EC), 2400' Magnetic Tape (PC) Format: VMS/BACKUP

November 3, 1986

DECUS NO: VAX-66 Title: NANNY (Binary) Version: V2.0, July 1986

Submitted by: Daniel Zirin, ZAR Limited, Pasadena, CA **Operating System:** MicroVms V4.1, VAX/VMS V4.1 **Source Language:** VAX-11 FORTRAN, MACRO-32 **Memory Required:** 75 KB **Keywords:** System Management— VMS, Utilities— VMS

Abstract: Nanny is a shelter from the harsh everyday duties of new VAX/VMS system managers. She can perform a variety of tasks such as seeking and destroying unwanted idle processes, forcing interactive processes running in a batch style mode to work at a lower priority than user's attempting to edit files or word process, suspend background batch jobs so the swapper isn't the one determining what process will be swapped out when memory is in high demand, remind you of an appointment with the boss by sending a wake-up call to your terminal, and even change the time every six months when daylight savings come and goes. There are many more Nanny features (such as disk monitoring for free space and errors) that can't be described in this limited space, but take it from me ... a VAX without a Nanny is like a child without a mother. Sad but true.

Notes: Sources are available at no charge by writing submitter.

Sources not included.

Media (Service Charge Code): User's Manual (EA), 600' Magnetic Tape (MA) **Format:** VMS/BACKUP, or order VAX-LIB-2

November 3, 1986

DECUS NO: VAX-126 Title: DR11-W Software Cornucopia Version: V4.0, June 1986

Author: Fermilab Computing Dept., Fermilab, Batavia, IL

Operating System: VAX/VMS V4.2, RT-11 V5.0, RSX-11 M V4.1 **Source Language:** VAX-11 FORTRAN, FOTRAN IV, DCL, FORTRAN IV-PLUS, FORTRAN 77, MACRO-11, MACRO-32 **Memory Required:** Various **Software Required:** MACRO-11, FORTRAN **Hardware Required:** DR11-W or DRV11-WA **Keywords:** Data Communications, Device Handlers, Networking, Software Collections, Utilities— VMS

Abstract: This is a collection of routines and device drivers which interface to the DR11-W and DRV11-WA high speed (300 KW/sec) communications device on the PDP-11, the VAX 11-7XX and the MicroVAX II. The routines implement no-wait, wait and completion routine I/O. Multiple messages may be awaited and error status of each message is saved until the status routine is called. The interface is standardized so that the same FORTRAN routines may be used on RT-11, VMS or RSX-11 M.

The device drivers are standard user written RT-11, RSX-11 M, and VMS device drivers which implement a sophisticated communications protocol between two computers. Multiple logical links are possible at the same time, even though the DR11-W is a half-duplex device. The drivers are capable of recovering from time-outs, and hardware problems on the other side. The collection is a complete set of implementations for RT-11, RSX-11 M, and VMS, organized by using a VMS directory tree.

Notes: Operating system VMS V4.0 or greater is required.

Changes and Improvements: MicroVAX support, DRV11-WA support, bug fixes.

Media (Service Charge Code): 2400' Magnetic Tape (PA) **Format:** VMS/BACKUP, or order VAX-LIB-4

November 3, 1986

DECUS NO: VAX-137 Title: VAXNET: A Communications Program Version: 12, July 1986

Submitted by: Robin Miller **Operating System:** VAX/VMS V4.4 **Source Language:** VAX-11 FORTRAN **Memory Required:** Virtual on VMS **Software Required:** FORTRAN compiler needed for re-compilation only. **Hardware Required:** Need asychronous ports connected to modems or directly to another system. **Keywords:** Data Communications, File Management, KERMIT

Abstract: VAXNET is a program which allows communications between two computers using an asynchronous terminal port. The computers can be connected either directly using a null modem cable or via a modem. The program features include:

. Support for any type of autodial modem.
. Phone authorizaton and/or logging of phone calls.
. Autologin and limited scripting capability.
. Virtual terminal mode.
. Remote session logging.
. File MISHing to allow transmission of any type of file.
. Ability to DUMP file to remote without using a file protocol.
. File transmission via the KERMIT, XMODEM or VAXNET protocols.
. User callback via autodial modems.

Notes: Program requires VMS V4.0 and later as it uses new features available on VMS V4.

Changes and Improvements: Generic autodial support and KERMIT protocol added. Minor fixes for VMS V4.4 also.

Restrictions: Only basic KERMIT protocol supported.

Media (Service Charge Code): User's Manual (EA), 600' Magnetic Tape (MA) **Format:** VMS/BACKUP, or order VAX-LIB-4

November 3, 1986

DECUS NO: VAX-157 Title: Clinimetric Data Management Software for Interactive Data Entry **Version:** V5.6, September 1986

Submitted by: Messrs. W. Dupont & W. Plummer, Vanderbilt University, Nashville, TN **Operating System:** VAX/VMS V4.1 **Source Language:** FORTRAN 77, MACRO-32 **Memory Required:** Any reasonable working set **Keywords:** Data Base Management

Abstract: The CLINIMETRIC Data Management System (CDMS) facilita tes interactive data entry and editing by people without previous computer skills. The user first writes a simple program that defines the data dictionaries of the data files that are to be entered. This program is then compiled to create control files that enable the package's utility programs to be customized to the user's needs.

Data may then be entered, edited and reviewed using the inter active data entry utility. Prompting messages obtained from the data dictionaries guide the user through each data form. One or more data values may be entered in free format between prompting messages. This makes data entry and editing tasks

easy to learn and perform. Entry errors can be detected and corrected immedi ately. Lists of remaining edit checks can be generated for subsequent verification and correction. Data points that are not entered are automatically assigned missing value codes. The user may alter the order of data entry to skip missing entries or change previously entered values.

An indexed file structure allows rapid and convenient access to any record in each file. Interactive inter-file edit checks can enforce consistency between files in a multi-file data base. Other features include interactive help messages, relational edit checks, date variables, record certification, and automatic case conversion. CDMS data files may be accessed as sequential files with fixed data formats. Documentation files provide the column location and format of each variable in the file and summarize the data dictionary. A utility converts existing sequential files into a CDMS system.

Changes and Improvements: Miscellaneous bug fixes

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS PROGRAM LIBRARY CHANGES:

DECUS NO: 11-SP-27, Symposium Tape from the Canadian RT-11 Library Group, Fall 1981, Banff, Version: Fall 1981, as listed in the 1986/1987 Software Catalog is no longer available.

DECUS NO: VAX-LIB-1, The VAX Library Tape 1, Version: 1986/1987, the media code for the manual as listed in the catalog as User's Manual (EC) should now read User's Manual (ED).

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>   o   Those of you that have access to DCS can send
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>
>   o   I am also on CompuServe as "Bill Walker 71066,24".

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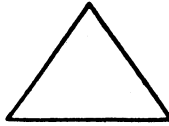Milford, CT 06460
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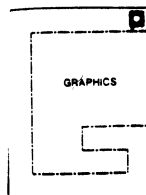
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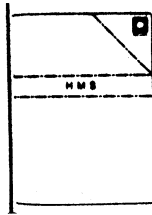Spit Brook, NH

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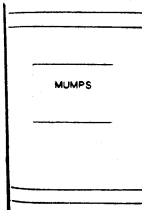
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Phone: (804) 326-1941

DATAGRAM

DATAGRAMs are short messages, comments, requests, or answers that are published in NETwords. Please fill in the sections below and send the DATAGRAM to:

Vickie Hancock
NETWords Editor
2510 Limestone Ln.
Garland, Tx. 75040

Title: _____

Message: _____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Your Name: _____
Address: _____
           _____
Telephone: _____

If this is a reply to a previous DATAGRAM, what #? ___

Signature: _____ Date: ____

Vickie Hancock
NETWords Editor
2510 Limestone Ln.
Garland, Tx. 75040

Fold Here

OFFICE AUTOMATION SIG

SYSTEM IMPROVEMENT REQUEST SUBMISSION FORM

Name _____   Address _____

Firm _____   _____

Telephone _____   _____

INSTRUCTIONS: System Improvement Requests (SIR) can be either hardware of software; please check the category addressed by this SIR. Under ABSTRACT, give a brief definition of the capability you would like. In the DESCRIPTION section, give a detailed description and examples of what you want. Be specific; don't assume that we know how other products function. Justify the usefulness of the capability and give an example of its use.

HARDWARE IMPROVEMENT   **SOFTWARE IMPROVEMENT**

DECmate _____   ALL-IN-1 _____   WPS _____

PRO-Series _____   CP/M (DECmate) _____   P/OS _____

Rainbow _____   CP/M (Rainbow) _____   MS-DOS _____

Other _____   Other _____

ABSTRACT _____

_____

_____

DESCRIPTION _____

_____

_____

_____

_____

_____

_____

_____

_____

E. Catherine Ditamore
ARA Services
Corp MIS
The ARA Tower
1101 Market Street
Philadelphia, Pa. 19107

OFFICE AUTOMATION SIG

SYSTEM IMPROVEMENT REQUEST BALLOT

DECUS Membership Number _____

INSTRUCTIONS: System Improvement Request (SIR) Ballots allow you, the user, to assist in the prioritization of the submitted SIR's before they are forwarded to Digital. The total number of points which you may allocate on this ballot may not exceed 100 points (absolute value). No more than 10 points may be given to any single SIR. Your ballot must be received by **MARCH 1** to be counted.

SIR NUMBER	POINTS
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

TOTAL   **100 POINTS**

E. Catherine Ditamore
ARA Services
Corp MIS
The ARA Tower
1101 Market Street
Philadelphia, Pa. 19107

DECmate Wish List Ballot

Use this ballot to show which items on the DECmate Wish List are most important to you. Put the number of the most important item on the list in space 1, the next most in space 2, etc.

1._____	10._____	19._____	28._____	37._____
2._____	11._____	20._____	29._____	38._____
3._____	12._____	21._____	30._____	39._____
4._____	13._____	22._____	31._____	40._____
5._____	14._____	23._____	32._____	41._____
6._____	15._____	24._____	33._____	42._____
7._____	16._____	25._____	34._____	43._____
8._____	17._____	26._____	35._____	44._____
9._____	18._____	27._____	36._____	45._____

Please add the following to the wish list:

_____

_____

_____

_____

Comments:

Name:_____

Company:_____

Address:_____

_____

_____

Work Phone:_____

Home Phone:_____

Return Ballot to:

Cheryl Johnson
DECUS DECmate Working Group
Grinnell College
P.O. Box 805
Grinnell, IA 50112-0810

Professional Wish List Ballot

Use this ballot to show which items on the Professional Wish List are most important to you. Put the number of the most important item on the list in space 1, the next most in space 2, etc.

1._____	10._____	19._____	28._____	37._____
2._____	11._____	20._____	29._____	38._____
3._____	12._____	21._____	30._____	39._____
4._____	13._____	22._____	31._____	40._____
5._____	14._____	23._____	32._____	41._____
6._____	15._____	24._____	33._____	42._____
7._____	16._____	25._____	34._____	43._____
8._____	17._____	26._____	35._____	44._____
9._____	18._____	27._____	36._____	45._____

Please add the following to the wish list:

_____

_____

_____

_____

Comments:

Name:_____

Company:_____

Address:_____

_____

_____

Work Phone:_____

Home Phone:_____

Return Ballot to:

Thomas Hintz
DECUS Professional Working Group
University of Florida
IFAS Computer Network
1022 McCarty Hall
Gainesville, FL 32611

Rainbow Wish List Ballot

Use this ballot to show which items on the Rainbow Wish List are most important to you. Put the number of the most important item on the list in space 1, the next most in space 2, etc.

1._____	10._____	19._____	28._____	37._____
2._____	11._____	20._____	29._____	38._____
3._____	12._____	21._____	30._____	39._____
4._____	13._____	22._____	31._____	40._____
5._____	14._____	23._____	32._____	41._____
6._____	15._____	24._____	33._____	42._____
7._____	16._____	25._____	34._____	
8._____	17._____	26._____	35._____	
9._____	18._____	27._____	36._____	

Please add the following to the wish list:

_____

_____

_____

_____

Comments:

Name:_____

Company:_____

Address:_____

_____

_____

Work Phone:_____

Home Phone:_____

Return Ballot to:

Lynn Jarrett
DECUS Rainbow Working Group Chairman
Union Tribune Publishing Co.
Post Office Box 191
San Diego, CA 92108

(619) 299-3131

PRO/SIGHT GRAPHICS CONTEST

SPRING 1987 DECUS

< <ENTRY FORM> >

Name _____

Address _____

_____

_____

City _____ State _____ Zip _____

Phone (_____)_____

Image/Script Title _____

Category Number _____ File Name _____

****

NOTE: If diskette(s) are to be returned to the author, please send entries with self-addressed AND stamped envelope. Provide sufficient postage and packing material. The PC SIG will not be responsible for damage to diskette or entries not returned because of insufficient postage. Returned diskette will contain some .GID files from the contest if requested, so ORIGINAL IMAGE MAY BE DELETED to provide space.

If multiple entries are submitted, xerox and fill out an entry form for each submission. Multiple entries may be sent on a single diskette.

PC POSTSCRIPT

PC Postscripts are short requests, comments and responses to be published in the *Postscript Section* of the PC SIG Newsletter. Please respond to the following:

___ Y/N This is a reply to a previous Postscript. ___ ___ Issue Mo. _____ No.

Title:_____

Message:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____

Address: _____

_____

Phone: (_____) _____-_____

Signature: _____ Date_____

DECUS PERSONAL COMPUTER SIG QUESTIONNAIRE

General:
I would like information on _____
I would like to see an article
        in the newsletter on _____
I would like to see a symposium
        session on _____

I am willing to write an article(s) on: _____
I am willing to be contacted by PC SIG members by telephone to give
assistance/advice on: _____
Phone number to call: Area Code (___) # _____ Times _____

I attend DECUS Symposiums :   ____always   ____Sometimes   ____never
I expect to attend these symposiums ____Fall 85   ___Spring 86   ____Fall 86

I use/own: ___Rainbow(s) ___PRO(s) ___DECmate(s) ___Robin ___Other_____
I use the machine(s) checked above: ___at work ___at home ___both
If a work, total number of DEC PC's at your site: _____
I also use: ___VAX ___IBM or other mainframe ___IBM/other PC
Type of use: ___business ___educational ___government ___other_____
Primary Operating System: ___MS-DOS ___CP/M ___both equally
        ___P/OS ___UNIX ___other_____

I belong to a local DEC PC Group: ___yes ___no
There is a user group in my geographic area: ___yes ___no
I would like information on starting a user group: ___yes
I use a modem: ___often ___reluctantly ___never
               ___for work ___for pleasure ___both

Here is information on he DEC PC User Group I belong to or know of:

    Name of Group _____
    Name of Contact Person _____
    Address _____
    _____
    Telephone (___)_____
    Supports ___Rainbow ___PRO ___DECmate ___Robin ___LUG ___Gold Key

Here is a DEC oriented bulletin board not on your list, or new information on a
listed board:

    Name of Board _____
    Full name of Sysop _____
    Address if known _____
    City and State _____
    Telephone Number _____
    Other Info: _____
    Supports ___Rainbow ___PRO ___DECmate ___Robin

The subjects of greatest ineres to me are:
___word processing   ___project management
___spreadsheets   ___specialized vertical software
___database   ___(type)_____
___graphics   ___Other:_____
___communications   ___Rainbow
___programming   ___PRO
___software reviews   ___DECmate
___technical articles   ___Robin

___DEC Gossip and News   ___Other:_____

If I had it to do over again, I:
___would buy another DEC Rainbow/PRO/DECmate (circle one)
___might buy another Rainbow/PRO/DECmate if it was a bargain (circle one_
___would not buy another Rainbow/PRO/DECmate (circle one)

Will you continue to subscribe at the new price of $35/year?   ___yes ___no
Feel free to enclose another page(s) with comments!
Do you feel that leaving the prices out of the newsletter:
___is appropriate
___is very annoying
___makes the articles less useful

Do you feel that Decus should revise its (anti)commercialism policy?
___yes
___no

Name_____   Return to:
Company_____   Barbara Maaskant
Address_____   Computing Resources
City/ST/ZIP_____ _   The University of Texas Health
Work Phone (___)_____   Science Center at San Antonio
Home Phone (___)_____   7703 Floyd Curl Drive
                                        San Antonio, Texas 78284

fold here,   flap under---
                                                            stamp

                              Barbara Maaskant
                              Computing Resources
                              The University of Texas Health
                                 Science Center at San Antonio
                              7703 Floyd Curl Drive
                              San Antonio, Texas 78284

                                    •

Information Resource Sign Up Sheet
Personal Computing Special Interest Group - PC SIG

Are you willing to be an information resource for other PC SIG members? Placing your name on the *Contact List* means you are willing to answer questions within the span of a brief telephone conversation. A Contact is not expected to be a consultant. *Please Register below.* Your name and phone number (including restrictions) will be posted in the PC SIG Newsletter.

First Name:_____ **Last Name:**_____

Address:_____

_____

City:_____ **State:**_____ **ZIP:**_____

Phone:(_____) _____-_____

Areas of Expertise:_____

_____

_____

_____

_____

Suggestions for Additional Services the SIG can Provide:

_____

_____

_____

Barbara A. Maaskant
UTHSCSA Computing Resources
7703 Floyd Curl Drive
San Antonio, Texas   78216

INPUT/OUTPUT Submission Form

A SIG Information Interchange

Please reprint in the next issue of the Pageswapper

If this is a reply to a previous I/O, which number? _____

Caption: _____

Message: _____

_____

_____

_____

_____

Contact:

Name _____

Address _____

_____

_____

_____

Telephone _____

Signature _____ Date _____

Mail this form to: Larry Kilgallen, PAGESWAPPER Editor
Box 81, MIT Station, Cambridge, MA 02139-0901, USA

To register for on-line submission, dial (in the United States):
(617) 262-6830 and log in with the username PAGESWAPPER.

Tear out or photocopy reverse to submit an I/O item

Larry Kilgallen, PAGESWAPPER Editor
Box 81, MIT Station
Cambridge, MA 02139-0901
USA

System Improvement Request Submission Form

Page 1 of _____

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 (use additional pages if required)

Tear out or photocopy reverse to submit an SIR

Mark D. Oakley
Battelle Columbus Division
Room 11-6-008
505 King Avenue
Columbus, Ohio 43201-2369
USA

VAX System SIG Spring 1987 SIR Ballot

DECUS membership number _____ (six digits)

Our site uses the following VAX models (check all that apply)

8700/8800 __   8600/8650 __   8500/8550 __   8300/8200 __
11/780,11/782,11/785 __   11/750 __ 11/730,11/725 __ MicroVAX __

We use VAXes in the following applications(Check all that apply)

Business EDP _____   Software Development _____
Education _____   Computer Science Research _____
Data Acquisition/Control_____   CAD/CAM _____
Service Bureau _____   Hardware Development _____
Scientific/Engineering _____   Office Automation _____
Telecommunications _____   Other _____

I support the following as the most important System Improvement
Requests. (List from zero to fifteen SIR's):

--------   --------   --------   --------   --------

--------   --------   --------   --------   --------

--------   --------   --------   --------   --------

I oppose the following SIR's as detrimental. (List from zero to
five SIR's):

--------   --------   --------   --------   --------

Mail to:

Mark D. Oakley
Battelle Columbus Division
Room 11-6-008
505 King Avenue
Columbus, OH 43201-2369
USA

To be counted, you ballot must be received by March 20.

Tear out or photocopy reverse to vote on SIRs

Mark D. Oakley
Battelle Columbus Division
Room 11-6-008
505 King Avenue
Columbus, Ohio 43201-2369
USA

STATUS CHANGE

Please notify us immediately to guarantee continuing receipt of DECUS literature. Allow up to six weeks for change to take effect.

(   ) Change of Address
(   ) Please Delete My Membership Record
      (I Do Not Wish To Remain A Member)

DECUS Membership No: _____

Name: _____

Company: _____

Address: _____

_____

State/Country: _____

Zip/Postal Code: _____

_____

etc.

Mail to: DECUS - Attn: Subscription Service
        219 Boston Post Road, BP02
        Marlboro, Massachusetts 01752-1850
                        USA