DECUS U.S. CHAPTER SIGs NEWSLETTERS

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OFFICE AUTOMATION SIG ..... **OA**
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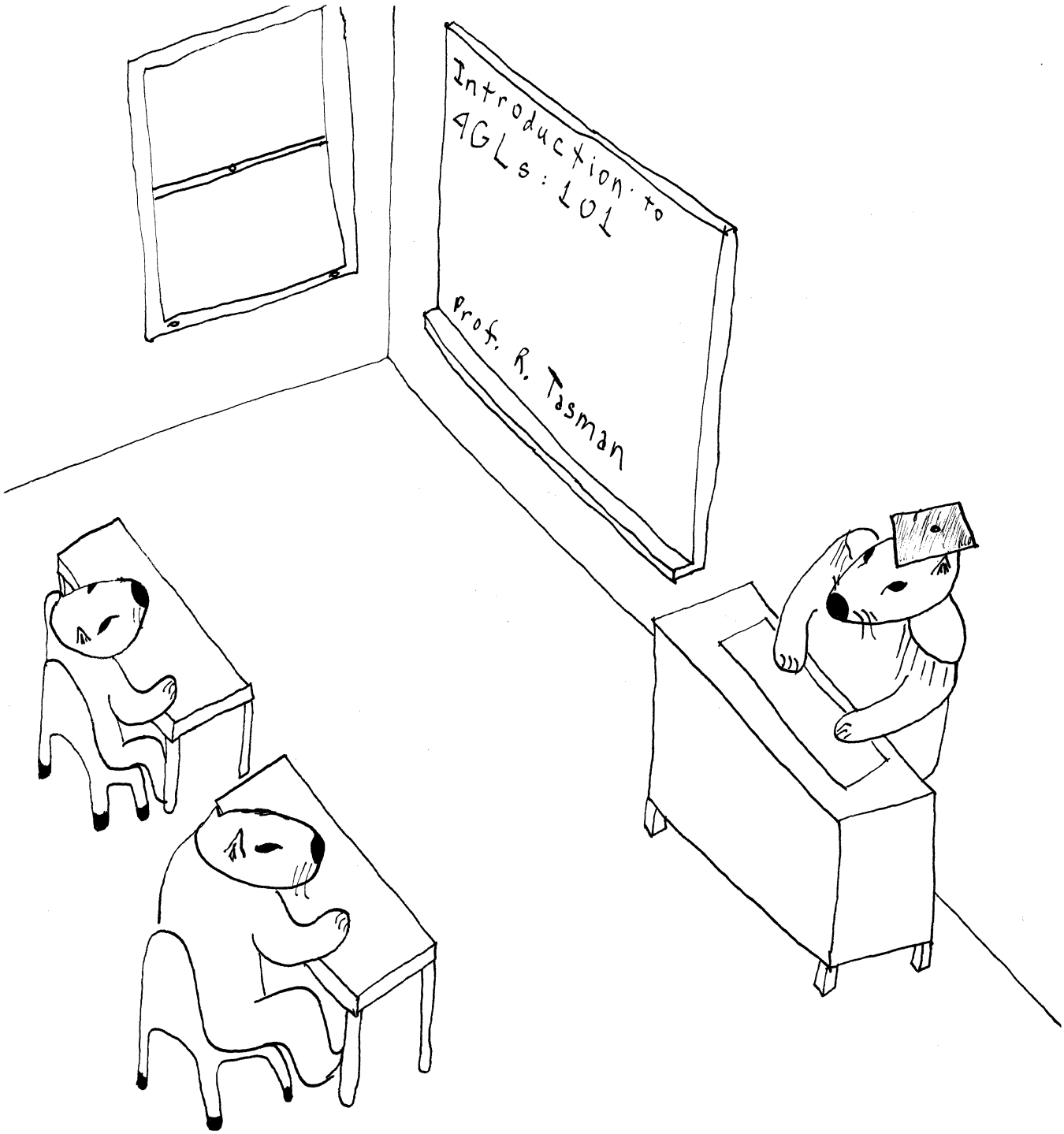
The Wombat

EXAMINER and 4GL Dispatch

"Increases the Circulation of Anyone in America" Volume 9 Number 1

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:

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Chairman's Corner

Joe H. Gallagher, Ph. D., 4GL Solutions, Overland Park, KS 66212

Summer is gone; the kids are back in school; and football is upon us. Can the DECUS Symposium in Anaheim be far away?

Actually the summer has gone very fast since I got my VMS software upgraded from Version 3.6 to Version 4.5 and finally got VAX DATATRIEVE again (hooray for Version 4.0 of VAX DATATRIEVE).

The Fall of 1987 is a time of celebration for Digital and DECUS. The VAX is 10 years old; the VAX Systems SIG is 10 years old; and DATATRIEVE is 10 years old. Just 10 years ago, DATATRIEVE-11 was released. For those of us who use and love DATATRIEVE, it has changed the way we do computing forever.

Early next month the DATATRIEVE/4GL Executive Steering Committee will be meeting in Washington, D. C. to put the final touches on the plans for a small celebration of the 10th Anniversary of DATATRIEVE at the Fall DECUS Symposium in Anaheim in December. Make plans to join the celebration and learn more about DATATRIEVE and the other exciting developments in computing.

Ask the Wombat Wizard

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

It's been a year or so since we've done any serious playing around with User Defined Functions in Datatrieve, so we'll rectify that situation this month. But first, let's explore a little about the CDD and how DTR uses it to store records.

Records in the CDD

Objects stored in the CDD are not a single monolithic structure. An object, such as a plot, a domain definition, or a record definition, may be stored in several different parts. For example, an object may have a source-text form, and one or more underlying compiled forms. The CDD provides a calling program with the ability to store sub-objects of arbitrary structure and size in the dictionary and to bind the sub-objects together into a single "object" when seen from the user's point of view using DMU.

There are a number of advantages to the concept of storing underlying data structures together with the source text that defines them. For one, the user can perform dictionary maintenance operations on the entire object and not get in trouble by, say, deleting the underlying compiled form and not deleting the source text, or vice versa. BACKUP and RESTORE operations are also atomic -they will perform the operation on the entire structure. It is also very useful that the structure of the underlying object is completely defined by the calling program and the CDD doesn't really care what form it takes - that means that programs (such as Datatrieve) can (and do) store arbitrarily large and sometimes very yucky objects in the CDD.

Datatrieve, for example, stores a PLOT definition in the CDD in two parts - the source code (which you can see with SHOW BAR, for example) and an underlying execution tree. The execution tree is created when you "compile" the plot using the DEFINE PLOT command in DTR. It is then reloaded and executed when you PLOT, but the source code is not even referenced - it's not needed.

In the case of a record definition, there are possibly three parts to the entire object. There is the source code, what you build with CDDL or DEFINE RECORD and what you see with the SHOW record-name command. There is also the record as defined by the CDD - the compiled form of the record, if you will. This record definition is accessed via an item-code interface to the CDD wherein a calling program asks the CDDSHR shareable image to provide various pieces of the record definition - the record name, the first field, the datatype for the first field, the next field, and so on. The underlying record definition is stored in a compiled form that has had all external references resolved (as in the case of COPY FROM clauses used in CDDL) and is easily accessed when a calling program asks for various items. The calling form is also the same for all programs and languages, regardless of the language used to create the record or the language of the calling program.

Starting with Version 4.0 of Datatrieve a third component of the record may be stored in the CDD if you define a record using the OPTIMIZE qualifier. DEFINE RECORD foo OPTIMIZE will cause DTR to store the Datatrieve field tree in the CDD as part of the record object. The Datatrieve field tree has much more information in it than just the datatypes, field sizes, and so forth - it is a DTR internal representation of the record. By using the OPTIMIZE qualifier, you can get performance improvements (reduced CPU time, mostly) of anywhere from 50% to 95%. The tradeoff, of course, is the disk spaced used in the CDD for storing the field tree.

There is one "gotcha" in the area of underlying data structures in the CDD, and that one belongs to the lowly DOMAIN definition. Now, a domain definition couldn't be simpler, right? After all, it's only got a few lines in even it's most glorious form, and most domain definitions have got about seven words in them. True, and for the most part, DTR just reads the text of the domain definition and grabs the filename, form name, and so forth. Except for one small, itsy-bitsy little problem:

When you type DEFINE DOMAIN foo USING bar ON FOO.DAT, Datatrieve has a little problem. What if you use the DMU BACKUP/RESTORE commands or the RENAME command to move the domain definition into a different directory? In particular, since you haven't specified a full pathspec to the record, DTR would "lose" the record since it would not get moved with the domain definition. A supposedly harmless RENAME might therefore cause a DTR application to break. Worse, if there happened to be another record named "BAR" in the new dictionary where "FOO" is found, the application might "work" but use the wrong record definition! Semi-disaster in a production environment! To get around this problem, DTR expands the record name when you put in a domain definition, and stores the expanded record pathspec in the CDD in one of these cute little underlying CDD objects. Thus, although you typed DEFINE DOMAIN foo USING bar ON FOO.DAT, DTR turns it into DEFINE DOMAIN foo USING cdd$top.users.pan.bar ON FOO.DAT. Cute, huh?

Well, that solution certainly means that you won't get a nasty record substituted for your favorite record, but it also causes some problems of it's own. Suppose you still want to move the domain definition to another dictionary node (say, you're finally moving an application from a development environment to a production environment). You do a simple DMU RENAME of the entire CDD dictionary node and guess what happens! - the record can't be found! Of course, what has happened is that the RENAME has moved the record definition but the underlying object still points to the old path specification. The same gotcha, but in reverse!

Of course, you can get around this gotcha pretty easy - all you have to do is "recompile" the domain definition. This you do by the following simple commands:

```
DTR> SET DICTIONARY {dictionary}
DTR> EXTRACT ALL DOMAINS ON DOMAINS.TMP
DTR> @DOMAINS.TMP
DTR> PURGE
DTR> FN$DCL("DELETE DOMAINS.TMP;")
```

The "@DOMAINS.TMP" command will read back the domain definitions, and when the new definition is performed the new path specification will be used as well, and all is fixed!

"So", the astute Wombat Watcher will ask, "how do I prevent this from happening in the first place?" (The Wiz has an answer, of course, or he wouldn't have written this silly scenario!) Datatrieve does not always modify the record name to include a path spec - it doesn't have to if one is already there! Now, probably the WRONG thing to do would be to put the full path specification in the domain definition: DEFINE RECORD foo USING cdd$top.users.pan.bar ON FOO.DAT would be a mistake; what a pain it would be to change a hundred domain definitions if I want to move the location of the application.

What DOES WORK very well is to use logical names in all of your application references to both CDD dictionaries and RMS directories:

```
DEFINE DOMAIN appl_name_cdd.foo USING appl_name_cdd.bar ON
       appl_name_root:[directory]FOO.DAT;
```

Datatrieve takes one look at that record name and says, "Whoa! This guy is a Wombat Wizard and definitely knows the score. Don't mess with that record name - just put the whole thing, logical name and all, into the underlying CDD object." So, you can change the logical name anytime you want (including, I point out, from inside DTR using the FN$CREATE_LOG function) and DTR will honor that logical name when looking up the record.

Some Fun with Functions

In no particular order, I present a few fun items you can use to impress your friends!

Many production applications require that a file be produced on a regular basis, perhaps each day. The file might be a data file or a report output file. It is often useful to uniquely name the file instead of creating multiple versions, possibly using the date it was generated in the filename. Consider an application with a unique facility name of APPL (the mnemonic used in the beginning of all logical names in the applciation). I have found the following approach to work well:

```
FN$CREATE_LOG("APPL_DAILY_REPORT_FILE", -
       "APPL_DAILY_REPORT."|FORMAT "TODAY" USING YYMMMDD)

REPORT my-domain ON APPL_DAILY_REPORT_FILE
       some report statements
END_REPORT
```

You can of course use the same technique with data files for domains:

```
DEFINE DOMAIN my-domain ON APPL_DAILY_DATA_FILE;

PROCEDURE PICK_A_DAY__ANY_DAY
!
DECLARE REPORT_DATE USAGE DATE.
DECLARE DATE_STRING COMPUTED BY FORMAT REPORT_DATE USING YYMMMDD.
REPORT_DATE = *."the report date"
!
FN$CREATE_LOG("APPL_DAILY_DATA_FILE",-
       "APPL_DISK:[DATA]DAILY_DATA."|REPORT_DATE|".DAT")
FN$CREATE_LOG("APPL_DAILY_REPORT_FILE", -
       "APPL_DAILY_REPORT."|REPORT_DATE)
!
REPORT my_domain ON APPL_DAILY_REPORT_FILE
       report-statements
END_REPORT
.
.
.
```

Now, I'm not suggesting that it is very often a good idea to keep separate data files for each day, but the idea is sometimes very useful and it does become convenient for longer time periods such as months, fiscal years, and so forth.

I happen to be a bit impatient - I just hate waiting around for my procedure to output, especially if I don't know how it's doing. Here's a cute trick with functions you can use to periodically output a "status line" to your terminal, even if your report is not displaying on the terminal but is being written to a file. The status line tells you about the progress you are making in your report.

```
DTR> declare once-in-a-while computed by choice
CON>   fn$mod(running count, 10) eq 0 then fn$show_timer
CON>   else ""
CON> end_choice.
DTR> begin
CON>   fn$init_timer
CON>   report on nl:
RW>           print name, once-in-a-while
RW>    end-report
CON> end
 ELAPSED:     0 00:00:07.86  CPU: 0:00:00.03  BUFIO: 1  DIRIO: 0  FAULTS: 9
 ELAPSED:     0 00:00:13.09  CPU: 0:00:00.05  BUFIO: 3  DIRIO: 0  FAULTS: 9
 ELAPSED:     0 00:00:17.67  CPU: 0:00:00.11  BUFIO: 7  DIRIO: 0  FAULTS: 9
 ELAPSED:     0 00:00:20.30  CPU: 0:00:00.14  BUFIO: 9  DIRIO: 0  FAULTS: 9
 .
 .
 .
```

The "status line" is the output from the FN$SHOW_TIMER function, and it is invoked every 10 records processed (in this case). Because the FN$SHOW_TIMER function always outputs to your terminal (not to the report output file), you will get the output even if you elect to put the report out on another file. Note that you could make the frequency of the status report be a prompted value, like this:

```
FN$MOD(RUNNING COUNT, **."frequency of status lines")
```

You could also print this item "AT BOTTOM OF" something, for example at the bottom of each department.

The energetic reader might want to write a function just for this purpose. It might be called FN$REPORT_STATUS(string, frequency) and could put a message on the terminal using the $BRKTHRU system service. That way you would get a message no matter where you were logged in, even if the report is running in BATCH mode!

-

Occasionally, I get a request from a new DTR user that goes something like this: "Is there any way to get Datatrieve to output to the line printer?" I say, "Of course. Did you do what it says in the documentation?" The response is "I read what it says, and it said I should find out the name of my printer and just use the ON printer-name statement. My system manager says my printer is called LPA0:, and I tried that, but I always get a message about the device is already allocated. What's going on?"

What's going on is this: If properly set up, a printer is spooled before the print queue is started. By "spooling" the printer (or terminal, if the printer is connected to a terminal line, as most are these days), output directed to the printer is first copied to an intermediate file (the spool file, usually located on the system disk). If the device is spooled, then output is queued up in order, even if the output does not come from the print queue. If the device is NOT spooled, the queue manager grabs the printer for it's own and won't let you send output directly to the printer.

If the device is not spooled, chalk it up to "System Manager Error" and show your system manager this article and tell him to fix it. You can easily tell if the device is spooled using the following method:

- From DCL, use $ SHOW QUEUE/DEVICE and pick out the print queue you want to be able to print to from Datatrieve.

```
$ SHOW QUEUE/DEVICE
   Terminal queue PRINTER_ALTA, on TXA2:, mounted form DEFAULT
```

- The output from the SHOW QUEUE command will indicate a device, after the ON clause. Use that device name in a SHOW DEVICE command to find out if the device is spooled.

```
$ SHOW DEVICE TXA2

  Device                  Device           Error
   Name                   Status           Count
  TXA2:                   Online spooled       0
                          alloc
```

  If the device output by the SHOW QUEUE command indicates a node name, you must log into that node before you can execute the SHOW DEVICE command to get the spooling information.

- If the device shows as spooled, you will be able to use the device name in the ON clause of a Datatrieve statement. You can verify this fact from DCL with a simple COPY statement. If the COPY works, then you can be sure that the Datatrieve ON clauses will work also. If the COPY fails, then don't bother to try DTR - it uses the same file access methods as COPY.

```
$ COPY SYS$LOGIN:LOGIN.COM TXA2:
```

Hopefully, your system manager will give you a logical name to use instead of the device name for the printer. That logical name should always stay the same, even if the system manager has to move the printer to another physical device. In my operations, I use logical names that are based on the print queue name, and my print queues start with the name "PRINTER_". Thus, the queue PRINTER_ALTA also has an associated logical name called PRINTER_ALTA_DEVICE that is the full device name of the physical device used for that printer. The logical name has a node name in it as well (if it's on a remote node) so this method even works across DECnet.

By the way, you can also use the device name in the OPEN command and ON statement. For example:

```
DTR> OPEN PRINTER_ALTA_DEVICE:MY_SESSION.LOG

or

DTR> ON PRINTER_ALTA_DEVICE:CHECK_THIS_REPORT.LIS
DTR> REPORT ON SOME_FILE.LIS
       etc.
```

That's wonderful, Oh Great Wizard, but what does it have to do with User Defined Functions? Many sites (and users) define the "default" printer for a user by defining the logical name SYS$PRINT. This logical name is essentially the queuename used in the PRINT/QUEUE=queuename command. By making this logical name assignment at login, the user's PRINT commands, and DIR/PRINT, and MAIL> PRINT and everything else all end up at the "correct" printer. Everything, that is, EXCEPT for Datatrieve output. So, you say, just use the PRINT {stuff} ON SYS$PRINT and REPORT ON SYS$PRINT and everything will be just fine, right?

Wrong-O. The translation for SYS$PRINT is a queue name, not a device name. You can't $ COPY to a queue, just to a device - you can only PRINT to a queue. And since you can't COPY to a queue, you can't use the DTR ON clauses with a queue name, either. The following statement just won't work as you probably expect:

```
DTR> PRINT "FOO" ON SYS$PRINT:
```

But, what if you had a function that took a queue name and returned a device name? Let's call it FN$DEVICE_FROM_QUEUE for example. Then you could do all sorts of stuff:

```
FN$CREATE_LOG("APPL_REPORT_OUTPUT",FN$DEVICE_FROM_QUEUE("SYS$PRINT"))
REPORT ON APPL_REPORT_OUTPUT:REPORT.LIS
...

ON APPL_REPORT_OUTPUT:CHECK_THIS_REPORT.LIS
REPORT my-domain ON REPORT.LIS
...
PRINT "Your report is now available for checking on your favorite printer!"
...
```

How to write FN$DEVICE_FROM_QUEUE? Use the $GETQUIW system service to get the queue device name from the queue manager. It's a program about a page in length, and you can write it in your favorite (non-DTR) programming language. Try it! If you write one and you like it, send it to the Wombat Wizard. The most creative solution will win an hour's free consulting by the Wiz.

Good luck!

Developing Applications in DATATRIEVE: Names and Address

Joe H. Gallagher, Ph. D., 4GL Solutions, Overland Park, KS

In our business activities, we keep track of things and people. If we are in a Human Resources Department, then "people" are our principle business. Even if we are in manufacturing, we are interested in the people who will buy the things that we make. It is, therefore, very likely that there are names and addresses of people in almost every DATATRIEVE application.

New users of DATATRIEVE and even experienced Data Processing professionals often use only the strict data storage and retrieval capabilities in building their application and overlook the processing and re-formatting capabilities of DATATRIEVE that makes the output of their application appear as though it were created by a human.

Consider the following fragment of a record definition:

```
   . . .

03 ID . . .   .              ! primary key (no dups)
03 NAME.
   05 LAST_NAME PIC X(20).   ! secondary key (dups)
```

```
   05 FIRST_NAME PIC X(10).
   05 MINIT PIC X(1).
   05 SENIORITY_CODE PIC 9(1)
      VALID IF SENIORITY_CODE IN SENIORITY_TABLE.
   05 SENIORITY COMPUTED BY CHOICE OF
      SENIORITY_CODE EQUAL 0 THEN ""
      ELSE ", "|SENIORITY_CODE VIA SENIORITY_TABLE
      END_CHOICE.
   05 TITLE_OF_ADDRESS_CODE PIC 9(1)
      VALID IF TITLE_OF_ADDRESS_CODE IN TITLE_OF_ADDRESS_TABLE.
   05 TITLE_OF_ADDRESS COMPUTED BY TITLE_OF_ADDRESS_CODE VIA
      TITLE_OF_ADDRESS_TABLE.
   05 LENGTH_OF_TITLE_OF_ADDRESS COMPUTED BY
      FN$STR_LOC(TITLE_OF_ADDRESS," ") - 1
      QUERY_NAME IS LOTOA.
   05 PRINT_MINIT COMPUTED BY CHOICE OF
      MINIT NOT EQUAL " " THEN MINIT|". "
      ELSE ""
      END_CHOICE.
   05 PRINT_NAME COMPUTED BY CHOICE OF
      LOTOA EQ 0 THEN FIRST_NAME|||PRINT_MINIT|LAST_NAME||SENIORITY
      ELSE TITLE_OF_ADDRESS|||FIRST_NAME|||PRINT_MINIT|LAST_NAME||SENIORITY
      END_CHOICE
      EDIT_STRING IS X(33).
03 COMPANY_NAME PIC X(30).
03 ADDRESS.
   05 ADDRESS1 PIC X(30).
   05 ADDRESS2 PIC X(30).
   05 CITY PIC X(22).
   05 STATE_CODE PIC X(2)
      VALID IF STATE_CODE IN STATE_CODE_TABLE.
   05 ZIP PIC X(9)
      VALID IF ZIP NOT CONTAINING "-".
   05 PRINT_ZIP COMPUTED BY CHOICE OF
      FN$STR_LOC(ZIP," ") EQUAL 1 THEN ""                      !missing
      FN$STR_LOC(ZIP," ") EQUAL 6 THEN FORMAT ZIP USING X(5) !US 5 digit
      FN$STR_LOC(ZIP," ") EQUAL 4 THEN FORMAT ZIP USING X(7) !Canadian
      FN$STR_LOC(ZIP," ") EQUAL 7 THEN FORMAT ZIP USING X(3)BX(3)!Canadian
      ELSE FORMAT ZIP USING X(5)"-"X(4)                        !US 9 digit
      END_CHOICE.
   05 CITY_STATE_ZIP COMPUTED BY CITY||","||| -
       STATE_CODE VIA STATE_CODE_TABLE|||PRINT_ZIP .

   . . .
```

ID is the primary (unique) key, such as employee number, patient number, or social security number. MINIT is the person's middle initial; it may be left blank. The SENIORITY_CODE is translated into the individuals seniority by the table SENIORITY_TABLE which looks like

```
DEFINE TABLE SENIORITY_TABLE USING
0:"",
1:"Jr.",
2:"Sr.",
3:"III",
4:"IV"
END-TABLE;
```

The TITLE_OF_ADDRESS_CODE is translated into the TITLE_OF_ADDRESS by the table TITLE_OF_ADDRESS_TABLE which looks like

```
DEFINE TABLE TITLE_OF_ADDRESS_TABLE USING
 0:"",
 1:"Mr."
 2:"Mrs."
 3:"Miss"
 4:"Ms."
 5:"Dr."
END-TABLE;
```

Other entries could be added to the TITLE_OF_ADDRESS_TABLE to accommodate religious leader titles, public officials, etc.

Since the title of address appears at the beginning of a full name and one has to manage the situation where there is no title of address, it is necessary to determine the length of the string which is the title of address. When the title of address is a null string (has zero length), special care must be exercised to avoid a single space in front of the first name when the null title of address is concatenated with the first name with the "|||" concatenation operator which leaves one space between the strings. The computed field LENGTH_OF_TITLE_OF_ADDRESS is the length of the title of address field; it is tested in the COMPUTED BY CHOICE OF in the field PRINT_NAME.

A missing middle initial also presents a problem. One does not want a missing middle initial to appear as " .". The COMPUTE field PRINT_MINIT properly handles the case.

The last field in the NAME group is PRINT_NAME; it is the final product of our intermediate COMPUTED BY fields. PRINT_NAME accommodates all the possibilities of missing values (including middle initial). PRINT_NAME can produce

```
Dr. Joe H. Gallagher
Mr. Joe Gallagher, Jr.
Joe H. Gallagher, Sr.
```

each with exactly the right number of spaces between the parts of the name.

Most of the address fields are must more straight forward. Only the STATE_CODE and the ZIP provide some creativity for DATATRIEVE. The fifty states and U. S. Territories all have standard two letter abbreviations. It turns out that this two letter code can be extended to many foreign countries. The provinces of Canada, the states of Australia, Japan, etc. can be accommodated in such a table. The table might look like

```
DEFINE TABLE STATE_CODE_TABLE USING
 . . .
 MO:"Missouri",
 MS:"Mississippi",
 MT:"Manatoba, CANADA",
 NA:"New South Wales, AUSTRALIA",
 NB:"New Brunswick, CANADA",
 NC:"North Carolina",
 ND:"North Dakota",
 NE:"Nebraska",
 NF:"Newfoundland, CANADA",
 NH:"New Hampshire",
 NJ:"New Jersey",
 NM:"New Mexico",
 NS:"Nova Scotia, CANADA",
 NV:"Nevada",
```

```
    NW:"Northwest Territories, CANADA",
    NY:"New York",
    . . .
    END-TABLE;
```

The zip code also present a challenge. US Zip Codes are 5 or 9 digits in length: Canadian zip codes are 6 or 7 characters in length depending upon whether a space is put in the middle: and European mail codes are even more complicated. The COMPUTED BY field PRINT_ZIP tries to change the format of the zip code based on the length of the zip code.

The last field in the record definition fragment, CITY_STATE_ZIP concatenates the three fields together to form a printable line.

The real benefit of all this extra effort and complexity in the record definition pays off when we want to do a simple application like printing mailing labels. All the complex formatting is done! There is also almost no performance disadvantage to having a complex record definition with lots of COMPUTED BY fields. These extra fields cost you time when the record definition is inserted into the dictionary and when the domain is READY'ed (but this is much less now with the OPTIMIZE clause). And these extra COMPUTED BY fields are not computed until they are used.

DATATRIEVE code to print labels would then look like:

```
!READY your-domain

DECLARE LINE4 PIC X(40).     ! this is a print buffer - line 4
DECLARE LINE5 PIC X(40).     ! this is a print buffer - line 5

FOR your-domain BEGIN
    LINE4 = " "
    LINE5 = " "
    IF (ADDRESS2 = " ") THEN BEGIN
        LINE4 = CITY_STATE_ZIP
        END ELSE BEGIN
        LINE4 = ADDRESS2
        LINE5 = CITY_STATE_ZIP
        END
    PRINT PRINT_NAME(-)
    PRINT COMPANY(-)
    PRINT ADDRESS1(-)
    PRINT LINE4(-)
    PRINT LINE5(-)
    PRINT " " ! This is a blank line to skip to the next label
    END
```

The only thing unusual in the code (which can easily be incorporated into a procedure) is the test for a blank (missing) second address line, ADDRESS2, and the movement of the city, state, and zip up on line 4 to handle either a four line or a five line address. This looks like

```
Dr. Joe H. Gallagher          or   Dr. Joe H. Gallagher
4GL Solutions                      4GL Solutions
10308 Metcalf, Suite 109           10308 Metcalf
Overland Park, Kansas 66212        Suite 109
                                   Overland Park, Kansas 66212
```

depending on whether "Suite 109" is at the end of ADDRESS1 and ADDRESS2 is blank, or is in ADDRESS2.

I hope the ideas present here will help you make more complex and functional record definitions with simpler procedures and REPORT commands. You should make use of the full capabilities of DATATRIEVE to format data and information not just store and retrieve it.

This is the first in a series of articles for novice and intermediate DATATRIEVE users on application development.

About the author:

Dr. Joe H. Gallagher is the Nuclear Medicine Physicist and Radiation Safety Officer at Research Medical Center in Kansas City, Missouri. He also runs a software development and consulting company. Joe is the current Chairman of the the DTR/4GL SIG of DECUS.

Using SIXEL with a VT125 Terminal

B.Z. Lederman, I.T.T. World Communications, New York, NY 10004

Problem: The program SIXEL doesn't work with a VT125 terminal.

Don's program (see Wombat Examiner, May 1986) sends the sequence S(H(P[50,0])) to tell the terminal to send out the hardcopy. As far as I can tell from the programming card, this should also work for the VT125 but it doesn't. The command S(H) does work: making this change to Don's program makes it work on a VT125.

The /LOCAL qualifier works, but all three graph types (COMPRESSED, EXPANDED, and ROTATED) all yield exactly the same standard size non-rotated graph. I haven't yet figured out if these commands would work on a VT125 or not (I suspect that the VT125 does not do this.) Also, most programs (including Datatrieve and SIXEL) don't clear the screen when they are done, and since the VT125 has two planes, the graph doesn't scroll off the screen when you are done with it. Otherwise, things are working as they should.

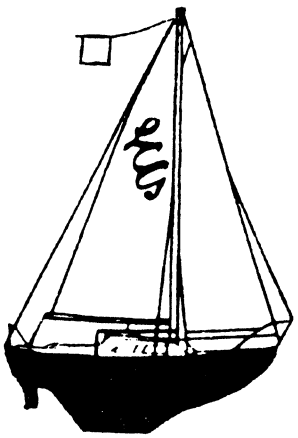
Have you made your reseverations for the Fall 1987 DECUS Symposium yet?

DECUS

LARGE SYSTEMS SIG DECUS U.S. CHAPTER

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY

LS



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:

ARPAnet/CSnet: ctp@sally.utexas.edu
UUCP: ctp@ut-sally.uucp ({harvard,ihnp4,seismo}!ut-sally!ctp)
BITNET: CTP@UTADNX
CIS: 75226,3135

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

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Chairperson's Article

Leslie Maltz, Stevens Institute of Technology, Hoboken, New Jersey

Some of you may wonder if being active in DECUS means running around at the national symposia twice a year. That certainly is part of it. However, each of us on the SIG's steering committee is involved in a variety of activities throughout the year. Some of these activities are related to the DECUS-wide committees where we represent our SIG (you). These include the Library, Communications, Symposium, and Seminars Committees. Each of these groups are responsible for the production of certain DECUS services and products. In addition to the committee responsibilities, the SIG steering committee meets to discuss planning and organizational issues. I will try to describe both types for you in light of such a meeting that was held July 24th and 25th.

The SIG leadership met with representatives from a variety of areas within Digital to be briefed on the status of certain development and marketing efforts. Under non-disclosure we were told about these projects so that we might have adequate time to do proper planning in order to be responsive to the user community's interest in these potential products. With the considerable lead time required to plan symposium sessions, seminars, and newsletter articles, such information is essential for our product planning to succeed. Of course, we also commented on the probable interests and concerns of the user community based on the information presented to us. While we never know the extent of the impact of such comments, it would seem preferable to make the concerns known before development is completed.

The organizational issues are quite interesting also. We discussed our concerns on many technical issues such as those addressed in the white papers produced by the SIG. Currently, these papers include topics such as accounting, resource management, and future processors. Most of these paper have been published in this section of the combined SIG Newsletters. Also during the meeting, reports were presented by the representatives from the SIG to other committees. Even though December (the Fall Symposium) is months away (particularly from the date of the July meeting), we talked about logistical and operational issues related to the symposium, the sessions, and the pre-symposium seminars.

As a result of the July meeting, we have identified areas of growing concern to Large Systems sites. We have also identified individuals to spearhead efforts in these areas. The areas range from supercomputing to corporate computing issues, and from support issues to wishlist balloting. We will try to keep you informed of our progress in all the areas that are related to Large Systems. A list of the individuals and their areas of responsibility is below. Feel free to contact any of us to share your concerns.

Now that you have some idea of what we do between national symposia, aren't you anxious to join us? We could use a few more volunteers to round out the group. No prior experience is necessary; just energy and interest!

Here is a list of the Steering Committee as it is currently organized. A more detailed list, including addresses and phone numbers, may be found at the back of the combined newsletters.

SIG Chair	Leslie Maltz
Vice-Chair	Ralph Bradshaw
Symposium Rep.	Betsy Ramsey
Library Rep.	Jack Stevens
Communications Rep.	Clyde Poole
Seminars Rep.	Bob McQueen
Supercomputing	Berkley Shands
Corporate Issues	Ralph Bradshaw
SIG Marketing	Steve Attaya
SIR/Menu Ballot	Jack Stevens
Distrubuted Systems	Don Kassebaum
36 Bit Systems	Clive Dawson

Ask Dr. TOPS

Dear Dr. Tops,

After having seen the rise of the hydra known as VMS V4.X from the ashes of VMS V3.X, I worry about the VMS V5.X transition. Could you illuminate what might happen on the "Next Major Release" of VMS?

Signed, A. Lert

Dear Espresso Drinker,

While VMS V5.0 is not yet a product, doesn't have an order number, lacks multiple heads and looks more like the Cyclops, I am not at liberty to reveal any details of the new O/S. However, I can safely reveal a general plan for coping with yet another release of VMS. There will be a series of articles dealing with the many aspects of converting to a new major revision of VMS. These will be (in no particular order) and not limited to:

1) Getting set for the major upgrade

   a) Backing up your system

   b) Test flying the O/S before you buy

   c) Is it right for YOU

2) Obtaining the required 3rd party drivers/packages

   a) The EXEC changed. Your drivers will not work.

   b) The RTLs probably changed too.

   c) Do you have a license for that thing?

3) Obtaining needed hardware

a) Bought any new cabinets lately?

b) Engineering studies on floor loading

c) Had your glasses checked and cleaned?

4) SMP vs ASMP

a) What loads are right for my system?

b) Who is the master?

c) But I'm not an 8800!

5) User interface

a) Why your command file doesn't work

b) How to make it work again

c) How did you spell your name?

d) How big is that field NOW?

6) Operator Interface

a) Who reads tape labels?

b) Security on the system

c) What is REPLY?

/signed/ Dr. Tops

ps: Report cards are in.

Actuarial Methods:	Withdrawn
Civil Rights:	B+
Diplomacy:	B
Social Studies:	A

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. By convention, lines beginning with ">" are extracts from previous mail messages that are included for clarity.

Date: Sun 22 Mar 87 23:36:38-PST
From: Mark Crispin <MRC%PANDA@SUMEX-AIM.Stanford.EDU>
Subject: %Error reading HOME block on device
Postal-Address: 1802 Hackett Ave.; Mountain View, CA 94043-4431
Phone: +1 (415) 968-1052

If you get the subject message ever time you spin up a disk drive in the new monitor you've just built, it may be because the CHBHB1/CHBHB2 vector (200 words in all) is split across a page boundary. I don't know if this happens on KL's, but on 2020's this seems to provoke the RH11 into getting a channel NXM. A possible fix is to move CHBHB1 and CHBHB2's definitions in STG.MAC to after the definition of CST5.

Date: Tue 24 Mar 87 10:19:38-PST
From: David L. Edwards <DLE@SRI-STRIPE.ARPA>
Subject: AMAR-20 version 4.3 available

AMAR-20 has been revised for version 6.1 and is now available via anonymous FTP from KL.SRI.COM (aka SRI-KL.ARPA).

PS:<AMAR.DIST> contains all of the files/programs required for AMAR. There are 40 files totalling 1663 pages.

PS:<AMAR.DOC> contains all documentation for AMAR. (69 files/747 pages)

PS:<AMAR.FILES> contains sources, binaries etc. These are not required to be able to use AMAR. (135 files/3209 pages)

Many files in <AMAR.DIST> are duplicated in <AMAR.FILES> but I decided not to remove them so as to match the distribution tape.

Additionally, I have created an AMAR-USERS mailing address to share problems and improvements. If you are interested in being placed on the mailing list, send a request to AMAR-USERS-REQUEST@KL.SRI.COM.

For those who are unaware of what AMAR is, I quote the description from the recent DECUS product revision announcement...

"AMAR-20 is a unique performance tool that was formerly a Digital Equipment Corporation product. AMAR-20 maintains two very distinct data bases; one records operating system performance metrics; the other characterizes the timesharing workload. AMAR-20 retains data at user specified granularity which allows for easy analysis and problem identification."

AMAR-20 is also available via DECUS (617)480-3418.

-dle

Date: Wed 1 Apr 87 01:44:08-PST
From: Mark Lottor <MKL@SRI-NIC.ARPA>
Subject: Tops-20 NFS

This is an announcement of an implementation of SUN NFS for Tops-20. It is called NFS-20, of course, and the name refers to the whole collection of programs and libraries.

The first release, NFS-20 1.0, is a server only. It is a BETA TEST version and it works fairly well. Expect an updated release in a few months.

Included with the NFS server are a UDP library, XDR conversion routines, RPC client and server routines, an RPC port mapper, an NFS mount server, an RPCInfo program, and debugging tools.

If you want to use a SUN as a client, it will need release 3.0 or better. It has not yet been tested with anything but a SUN client.

To get it all, just retrieve everything on SRI-NIC.ARPA in directory PS:<MKL.NFS>. Yes, it's all written in MIDAS. For more info and details read the file NFS.DOC. Also send me a note so I can add you to a bug report/announcement mailing list.

I'm interested in comments, suggestions, and bug reports. Nice comments are especially welcome.

Mark

Date: Thu 2 Apr 87 14:49:10-AST
From: Perry M. Sisk <SISK@DREA-XX.ARPA>
Subject: C COMPILER FOR TOPS20

I am in search of a C language compiler for our DEC20. We are currently running TOPS20 V5.4 but will soon go to V6.1. Does anyone know of such a compiler? Any information on contacts, costs, problems, considerations etc. would be helpful.

Date: Thu 2 Apr 87 12:25:52-PST
From: Ken Harrenstien <KLH@SRI-NIC.ARPA>
Subject: Re: C COMPILER FOR TOPS20

Yes – in fact, there are several. At SRI-NIC we actively maintain and develop the C compiler known as "KCC", which includes a complete portable library. For more information on the compiler, you can use anonymous FTP to retrieve the file "C:CC.DOC" from SRI-NIC.ARPA; for details on installation, get the file "KCCDIST:INSTAL.DOC". There is a mailing list which you can join by sending a message to INFO-KCC-REQUEST@SRI-NIC.ARPA.

KCC completely implements C as per Harbison & Steele's "C: A Reference Manual", which is a superset of K&R. Chars are normally 9 bits, 4 per word. We prefer to distribute it over the net.

There is also "NMIT C" from New Mexico Tech, which was derived from a much earlier version of KCC. This implements V7 K&R C. Chars are 7 bits, 5 per word. Distribution charge is $100 for a tape, I believe.

Then there is PCC-20 from Utah. Chars are 36 bits, 1 per word. I think a UNIX license is required, which is prohibitive unless you are an educational institution.

Finally, I have heard of a product called "Sargasso C" which is licensed and sold like regular software. I don't know what the price is, or where it comes from.

Other people may be able to elaborate on the alternatives – obviously I am biased. We use KCC for most of our applications programming at the NIC, and will be upgrading it to the ANSI draft standard level (if that will just hold still!)

Date: Fri 17 Apr 87 13:26:44-EST
From: Ittai Hershman <NYU.ITTAI@CU20B.COLUMBIA.EDU>
Subject: Sharing HSC between VAXen and a DEC-20

We are in the process of ordering an 8700, with an HSC70. I would like to get rid of all (sans one for the FE) our RP06's and RP07's and have the one HSC control disks (RA60's and RA81's) for both the 2060 and the 8700.

I remember DEC saying it should work, and that in fact they had run such a configuration. My question is: has anyone done this?

(I understand the limitations and configuration issues, I simply want to know if anyone has tried to do this with 6.1 and what their experiences were...).
Thanx,
-Ittai

Date: Fri 17 Apr 87 14:53:52-EST
From: Ken Rossman <sy.Ken@CU20B.COLUMBIA.EDU>
Subject: Re: Sharing HSC between VAXen and a DEC-20

We were told we couldn't do this (but then, the way things are now in 20-land at DEC, who knows anymore).

I thought there was a rule that within a given CFS cluster, all disks had to be formatted the same. This obviously can't be the case here.

I'm not real clear on this whole protocol, but I would think that the VAX and 20 would have to be able to exchange CI (e.g. voting) packets for all known disks, and since half would be owned by the VAX and half by the 20, not all disks are known to all systems. I would think there would have to be some kind of broadcast packet on the CI requesting some voting on a certain disk, and if the other system(s) in the cluster have no knowledge of this disk (or really, files on that disk), they wouldn't be able to answer the poll. But, like I said, I'm not real clear yet as to the actual protocols used on the CI bus (and it really is logically a broadcast bus, not a star, as the physical configuration would suggest). /Ken

---

Date: Wed 22 Apr 87 18:13:07-MST
From: "Nelson H.F. Beebe" <Beebe@SCIENCE.UTAH.EDU>
Subject: Multi-O/S Unix-like MAKE now available
X-US-Mail: "Center for Scientific Computation, South Physics, University of Utah, Salt Lake City, UT 84112"
X-Telephone: (801) 581-5254

A public-domain implementation of the Unix MAKE utility is now available for Internet ANONYMOUS FTP from SCIENCE.UTAH.EDU in the directory APS:<TEX.PUB.MAKE>, plus SYS:MAKE.EXE. Start by getting the file 00README.TXT in the ANONYMOUS login directory; it gives an overview of our system and tells how to find your way around.

This version supports 6 operating systems (TOPS-20, VAX VMS, IBM PC DOS, OS9, EON, and UNIX), and is intended to conform to Unix Version 7 MAKE as documented by S.I. Feldman in the Unix Programmer's Manual. Naturally, there are Makefiles for each of these systems too.

This MAKE additionally contains support (for VMS only) for library files. It is my intention after a suitable public review period to add features of newer proprietary Unix MAKE's.

I view this as an extremely important utility, and will make every effort to respond to comments and provide bug fixes. The file 00REVHST.TXT contains a revision history, as well as a

to-do list.

The TOPS-20 implementation uses SRI's KCC compiler, with a special version of system() which provides a superset of MIC commands for terminal input control. TOPS-20 sites who wish to do local compilation should additionally take the files monsym.h and jsys.h located in PS:<SUBSYS.KCC.LOCAL>. These are COMPLETE monsym and jsys files, and need SYS:KCCX.EXE to compile (a version of KCC loaded with extended addressing to get large symbol tables). Note that KCC is called that here, not CC as it is at many other sites, since I have already made a PCC-20 interface called CC.

Date: Mon 4 May 87 16:24:53-EDT
From: Betsy Ramsey <EWR@XX.LCS.MIT.EDU>
Subject: DECUS Autopatch Survey
Organization: American Mathematical Society

At DECUS, DEC handed out a survey on the Autopatch process. Buzz Hamilton of Digital attended the symposium to talk to people about Autopatch. I am reproducing the survey here so that you can respond to Buzz if you wish. His Arpanet address is

BHAMILTON%GIDNEY.DEC@DECWRL.DEC.COM

The survey follows.

The Large Systems Business Unit ("LCG") is currently evaluating changes to the Autopatch procedures. Please help us by answering the following questions:

1. Are you primarily a TOPS-10 or TOPS-20 site? KS or KL?
2. Do you use the Autopatch tape at your site? If not, why not?
3. Do you modify or "shortcut" the documented Autopatch procedures? If so, in what way?
4. Do you test the Autopatched products before making them available for default general use? If so, for how long?
5. How often would you like to see the updates arrive? What are the shortest and longest acceptable periods?
6. Currently, Autopatch builds from patched sources or REL files. Would you be in favor of eliminating the product build procedures and having it look more like a standard distribution? (EXE, REL and source files would be delivered. Builds would be done by customers.)
7. What new functionality or tools would you like to see? (E.g., MAKE, LBR, VERIFY, SCCS, SLP, REDIT)
8. Would a VMSINSTAL-like update procedure be desirable?
9. Have you ever had to use the RESTORE command in PEP?

If you are willing to be contacted for further discussion, please provide your name and phone number.

OFFICE AUTOMATION

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FROM THE EDITOR...

I hope that each of you had the opportunity last month to review the new System Improvement Requests (SIR's) and vote for the items you felt were the most important! If not, you still have time. Review last month's issue and use the ballot provided in the tear-out section in the back. This month we have another time (and disk) saving feature article by Terry Lowery at E. Systems, this one is on purging old Electronic Mail messages. We also have some feedback and ideas on Bart Ledermans article about sharing WPS-Plus/ VMS document databases...and some more specific technical information about WPS-Plus File Sharing techniques.

You may have noticed that with our new format (DecPage) of the OA section, articles often appear one right after another on the same page. We are putting solid lines above and below each new article title to help you identify the beginning of a new article. I have also thought about including some type of an 'end of article mark'...what do you think?

For those of you who are new subscribers, let me quickly review the format of the OA section of the newsletter. Any and all articles pertaining to Office Automation are welcome! You do not need to be a 'professional' writer or OA wizard, most of us do things every day which would be new and useful information to other readers. In addition to informational articles, you are free to write in with a question or problem you have and ask other readers to contact you if they have some answers.

To submit an article, please send it in legible hard copy or on a disk which can be read by a Professional 380 running WPS-Plus (please include your name and phone number in case I need to contact you). It normally takes 2 - 3 months before you will see your article in print (we work two months out with the publication).

That's all there is to it.

There are several benefits to submitting articles:

1. Seeing your material published in a national newsletter.
2. Having your manager(s) see a copy of your article in national newsletter.
3. Hearing from other users who are doing similar types of work or have an interest in learning more about the topic of your article.
4. Sharing your knowledge with other users.

For those of you who have been contributing faithfully, THANK YOU! You make our newsletter informative, exciting and interesting reading each month - keep up the good work.

Regards,

Therese LeBlanc

OA Newsletter Editor
275 London Place
Wheeling, IL 60090
(312) 459-1784

ELECTRONIC MESSAGING MAIL PURGE

Terry A. Lowery, E-Systems, Inc., Greenville, Texas 75401, (214) 457-5146

Here at E-Systems we seemed to be having some problems with users not deleting their READ and OUTBOX files for a period of about two years. Obviously enormous amounts of disk space were used in the OA$SHARE directories. We found a solution by developing script files to purge these files through a batch job in the evening.

I created a form (SMSCH1) to collect the purge date, batch time, and batch date for submission when there were no ALL-IN-1 users. The command file, in turn, invoked ALL-IN-1 and runs the script files. The script files loop through each user's file cabinet searching for the READ and OUTBOX folder with a date less than the purge date on form SMSCH1. The files are then deleted and placed in each User's WASTEBASKET.

We submit the purge job on the last Friday of every month to delete READ and OUTBOX files which are older than six months. Then we run JANITOR the first Friday of the following month. This allows the user a chance to retrieve any special READ or OUTBOX document(S) which they may want to refile in their file cabinets.

By implementing this purge function, last month we reclaimed a considerable amount of disk space (57,000 blocks).

Here is the form description for SMSCH1, the command file and two script files which are used. This has been a very useful tool to us and, hopefully, will be to others at DECUS.

Form: SMSCH1

- - - -

```
      BACKGROUND=CURRENT
      ;

   TEXT (8,10) 'Schedule Information for:'
      BOLD
      ;
   TEXT (8,36) 'Read and Outbox Purge'
      BOLD
      ;
   TEXT (11,10) 'Purge Files Before:'
      ;
   TEXT (13,10) 'Begin task at Time:'
      ;
   TEXT (15,26) 'Date:'
      ;
   TEXT (18,10) 'Warning:  The Purge must be scheduled for a time when no
      user'&s'
      ;
   TEXT (19,19) 'are running ALL-IN-1'
      ;
   ;;.TYPE;;

   ARG/OVERLAY/hard=' Select Janitor run time'/post='ifexit\command smcvtime\get
   #pass = profil.paswrd[oa$user]
   \get oa$dcl="submit/USER=A1V2/after=" #sm_bdate ":" #sm_btime "/param=
   (" $sm_reorg ","""" #pass """"
   ")/noprint/notify oa$lib:smjanitor"'

   ;;BATCH DATE;;

   /get_save=oa$date_full/valid=cal$set_date:"batch_date"/put_save=
   #sm_bdate/hard='date of run time'

   ;;BATCH TIME;;

   /get_save=oa$time/valid=cal$time_check:"batch time"/put_save=#sm_btime
   /hard='time of run time'

   ;;REORG;;

   /get_save=$sm_reorg/put_save=$sm_reorg/hard=' Reorganize all data files?'
   /Valid=OA$YN"
```

- - - -

```
$  EXIT
$  NOERROR:
$  DEFINE/JOB/NOLOG OA$IMAGE OA$LIB:A1.EXE
$  CLEAN = P1
$  WRITE SYS$OUTPUT "''CLEAN'"
$  ALLIN1/NOINIT/USERNAME=MANAGER
OA$INI INIT
CAB OPEN
DO SMPURGE
CAB CLOSE
EX
$!
$  PURGE/KEEP=3 SMPURGE.LOG
$!
$!          END OF SMPURGE.COM
$!
$!
```

- - - -

```
       .EXIT

!          END OF SMPURGE.SCP
!
```

- - - -

$ DEFINE OAUSER [directory]file.typ

in the user's LOGIN.COM. This DEFINE command must appear after the WPS-Plus login has been invoked.

At Williams our users are located several levels down in the directory tree and are split up by offices (eg. [ADMIN.REGISTRAR.STAFF.JONES] or [ADMIN.FINAID.STAFF.JOHNSON]). The users ran into multiple problems using WPS-Plus once the WPS-Plus subdirectories were created. Most of these problems were related to filenames (including node, device and full path name) being longer than 72 characters. An example WPS-Plus file is

ZEPPO::SYS$USER2[ADMIN.FINAID.STAFF.JOHNSON.WPSPLUS.DOC1]ZRDSBFIEC.WPL.
WPS-Plus uses 26 of the 72 characters and the node and device names together use 17. This leaves only 29 characters for the user's directory.

We had two choices: (1) Revise our entire directory structure and move all users or (2) Figure out how to locate the users' WPS-Plus directories in other locations higher in the tree. On each disk we set up a top level [WPS] directory and a subdirectory for each user on that disk (eg. [WPS.JONES] or [WPS.JOHNSON]). The WPLNEWUSR procedure prompts for the user's SYS$LOGIN. Respond with the new directory (eg. [WPS.JONES]) and the WPS-Plus directory will be created below it ([WPS.JONES.WPSPLUS]). To move users already using WPS, use the BACKUP command to move the WPS-Plus tree to the new location.

All our users go through the WPS-Plus login by having it invoked in their LOGIN.COMs. The $ DEFINE OAUSER command mentioned above is located after the @WPSLOGIN. From then on WPS-Plus treats the new location as the WPS-Plus directory.

WPS-PLUS/VMS FILE SHARING TECHNIQUE

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Some time back, Geoffrey Bock from DEC provided us with information on a technique for sharing documents under standalone WPS-PLUS/VMS. His original material is being included on the OA SIG tape that will be circulating soon. In the interests of making this information available in the most timely way possible for those who need it, I have edited Geoff's material into this article.

If you are familiar with customizing ALL-IN-1 and you study this material carefully I think you will be able to see other possibilities for customizing standalone WPS-PLUS/VMS too.

OVERVIEW

This note "announces" the availability of the WPS-PLUS/VMS file sharing technique. This technique allows a user to create and then edit a document by reference to an external WPL file outside the [username.WPSPLUS.DOCn] directory tree. The originating user can specify any VMS file name in his/her VMS directory tree — the file must have a .WPL extension.

Other users on the same node can then 'share' the document by beginning to create a new document and then setting an external reference for it that designates the previously created file. VMS-level file protections must be set correctly on the shared document file of course.

USER INSTRUCTIONS

I. The Context

The WPS-PLUS/VMS file sharing technique enables two or more users on a single VMS system to share documents among themselves, utilizing the full functionality of the underlying VMS file system. Each user creates a reference to a specific VMS file in his/her file cabinet. The document is then 'shared': changes

made by one person are immediately reflected in the document and directly accessible to others. File interlocking is supported, so two people cannot try to edit the same document simultaneously.

There are two limitations:

1. This technique will NOT work when WPS-PLUS is installed as a part of ALL-IN-1.
2. All users sharing the document MUST reside on the same Node. Network access does not work.

This procedure utilizes WPS-PLUS/VMS V2.0 with the script modifications for document sharing implemented.

II. Originating a Sharable Document

The user originating a sharable document must define the VMS file specification when initially creating the document. Other users can then share the document by also referencing the identical VMS file specification.

The user originating a sharable document does the following:

1. From a WPS-PLUS/VMS Menu within his/her own account, press **C [RETURN]**. This selects the Create Document function.
2. At the Create Document form, enter the Folder Name and Title as a user normally would do when creating a WPS-PLUS document.
3. Press **[GOLD] A.**

   >> NOTE: This is the critical link to implement file sharing <<
4. The form "Associate External File" then appears.
5. Enter the VMS file specification for the document and press **[RETURN]**. The standard VMS file syntax applies:

   [username.subdirectory]filename.WPL

   The file must have the .WPL file-extension, to indicate that it is a WPS-PLUS document.
6. Returning to the Create Document form, press **[RETURN]** again.

   The user now enters text as in any other WPS-PLUS session. However, the file will be stored as the Associated VMS External File.

III. Accessing a Shared Document

All users seeking to share the previously created 'sharable' document must know the VMS file specification of the originating user. Also, all users must have VMS-level read and write protection to the 'sharable' document.

A user seeking to access a previously created 'sharable' document does the following:

1. From his/her own WPS-PLUS account, press **C [RETURN].**
2. At the create document form, enter the folder name and title, as user would normally do when creating a WPS-PLUS document.
3. Press **[GOLD] A.**
4. The form "Associate External File" then appears.
5. Enter the PREVIOUSLY created VMS file specification for the document, provided by the originating user, and press **[RETURN].**

   Again the standard VMS file syntax applies:

[username.subdirectory]filename.WPL

The file must have the .WPL file-extension, to indicate that it is a WPS-PLUS document.

>> NOTE: This is the critical step to connect to a previously created file. <<

6. Returning to the Create Document form, press **[RETURN]** again.

   The user can now edit the text of the associated VMS External File, just as if he/she had created and then edited any other document in their file cabinet. All changes to the document will now be stored as the Associated VMS External File.

IV. Helpful Hints to Make File Sharing Easier

1. A Reminder for the Associated VMS File Specification.

   After creating the document and entering the Associated VMS File specification, the user will return to the CREATING DOCUMENT form.

   In the KEYWORD field, enter the Associated VMS File Specification. Then the user will always have a reminder of the VMS file associated with a specific document.

2. Tracking Changes and Modifications in a Work Group.

   If two or more people are editing the same document, they may want to keep abreast of the modified text. Instead of deleting text by removing it from the draft, utilize the WPS-PLUS Redline function.

   Enable Redlining from the WPS-PLUS Editor Menu. All deleted text will be marked by the reverse video attribute on the screen — and the strike-through character at print time. All inserted text will be marked by the selected Redline attribute character — bold, underline, all caps or double underscore.

   To clean up all Redlined text marked for deletion:

- Press **[SEL]**
- Move the cursor through the region of text to be cleaned up (just like a normal CUT operation)
- Press **CTRL/N**

WPS-PLUS will then remove all text marked with the reverse video attribute.

SETUP INSTRUCTIONS

Here are the instructions for setting up and installing this feature. After you do this, in order to make it available, each user has to log out of WPS-PLUS and then get back into it again.

Put copies of the following three files into the area you're going to work in.

DOCCREATE.SCP
DOCDSC.FLG
WPEXTREF.FLG

Then, FMS/TRANS DOCDSC.FLG (this will create DOCDSC.FRM)
Then, FMS/TRANS WPEXTREF.FLG (this will create WPEXTREF.FRM)

Then, COPY WPSPLUS$SYSTEM:OAFORM.FLB to your area.

Then, FMS/LIB/REP OAFORM.FLB DOCDSC,WPEXTREF

Then, COPY OAFORM.FLB WPSPLUS$SYSTEM

Then, COPY DOCCREATE.SCP to disk$:[wpsplus.do] (If you do a show logical WPSPLUS$SYSTEM you'll see something like arkd$:[wpsplus.lib], you want to copy DOCCREATE.SCP to arkd:[wpsplus.do] — follow?)

Set your privileges, and get into WPS-PLUS. If you do not have BOTH ALL-IN-1 and WPS-PLUS running on your system, most likely your .TXL file and form library have been installed. The following two steps (which de-install these two files) are necessary in order to see the changes if in fact this is true. (If you are unsure as to whether they are installed or not, do these two steps anyway, as they will not do any harm if the files are not installed.)

From there type

<OA$FBT_REMOVE_LIBRARY OALIB:OAFORM.FLB

Then type

<OA$TXL_REMOVE

Then type

<OA$FBT_WRITE_LIBRARY OALIB:OAFORM.FLB

This will take a few minutes.

Then type

<OA$TXL_COMPILE

You'll see a bunch of things go by, and then it will say something like OA$SCP empty or something..anyway, when it is done flashing by, key control W and exit WPS-PLUS. Document sharing should then work.

THE REQUIRED FILES

Two of the required files, DOCCREATE.SCP and DOCDSC.FLG are simple modifications of material provided as part of your WPS-PLUS system. Because I did not have the complete files from the SIG tape I just edited the changes into the distributed version of the first file. These changes add a GOLD-A option to the the Create Document function. This option calls up the new Associate External File form.

For the second file I first extracted the form definition from OAFORM.FLB and then generated the FLG file from it using FMS. Then I again edited in the required changes. These add the new function to the form definition.

WPEXTREF.FLG is the definition file for the new form you are adding. It contains the display and processing instructions required to actually implement the process of entering the associated external file reference in your file cabinet entry for the document.

Here are the complete files. If you can, use the machine readable versions off the SIG tape. Otherwise, you can type them in complete or edit them into >>**COPIES**<< of the existing files as I did.

```
! File DOCCREATE.SCP

! Script to create a document for any subsystem, puts new document in @#CURDOC
!   see comments at end

!   GET #PREVIOUS_DOC=@#CURDOC
    GET #STATUS=#SETDOC=""
    .IF #CREATE_FOLDER NES "" THEN GET #FOLDER=#CREATE_FOLDER -
         ELSE GET #FOLDER=@#CURDOC:30
    FORM DOCDSC

.LABEL TOP
    .IF OA$FORM_DISPOSE NE 2 THEN .GOTO EXIT_PROCEDURE
    .IF #SETFOLDER EQS "" AND #SETTITLE EQS "" AND #SETDOCNUM EQS "" -
         THEN .GOTO GOT_DOC
```

```
    CAB SELECT #SETFOLDER,#SETDOCNUM,#SETTITLE,#SETDOC
    .IF OA$STATUS == 1 THEN .GOTO GOT_DOC
    FORM DOCDSC/BEGIN=SETFOLDER/PRE="DISPLAY Can't find that template document"
    .GOTO TOP

.LABEL GOT_DOC
    DISPLAY Creating new document . . .\FORCE

! if there is a default file extension or DSAB in the HANDLING file, use it
    GET #DSAB="WPSPLUS"
    .IF #DSAB EQS "" THEN GET #DSAB=FORMAT.DSAB[#FORMAT]\-
         GET #DEFAULT_FILE=FORMAT.DEFAULT_FILE[#FORMAT]
    .IF #DEFAULT_FILE EQS "" THEN -
         GET #DEFAULT_FILE=OA$TEXT_DSAB.EXTENSION[#DSAB]

    .IF #DSAB EQS "" THEN GET #DSAB=OA$DEFAULT_DSAB

.LABEL DSAB_OK

    .IF #FILE_NAME EQS "" THEN .GOTO CREATE_IT
    GET #DEFAULT_FILE=#FILE_NAME

.LABEL CREATE_IT

    CAB CREATE #FOLDER,#DEFAULT_FILE,@#CURDOC
    .IF OA$STATUS NE 1 THEN .GOTO ERROR_CREATE
    GET #FILENAME=OA$CURDOC_FILENAME
    CAB BEGIN
    CAB ADD_ATTR ,"TITLE",#TITLE
    CAB ADD_ATTR ,"KEYWORDS",#KEYWORDS
    CAB ADD_ATTR ,"TYPE","DOCUMENT"
    CAB ADD_ATTR ,"FORMAT",#FORMAT
    CAB ADD_ATTR ,"AUTHOR",#AUTHOR
    CAB ADD_ATTR ,"DSAB",#DSAB
    CAB END

! see if there is a template document to merge
    .IF #SETDOC NES "" THEN -
         DISPLAY Merging template document . . .\FORCE-
         \GET OA$FUNCTION="MERGE " CAB$:DOCUMENT.FILENAME[#SETDOC] "," -
             OA$CURDOC_FILENAME

! see if there is a template filename to merge from the HANDLING file
    GET #TEMPFILE=FORMAT.TEMPLATEDOC[OA$CURDOC_FORMAT]
    .IF #TEMPFILE NES "" THEN -
         DISPLAY Merging special handling template document . . .\FORCE-
         \GET OA$FUNCTION="MERGE " #TEMPFILE "," OA$CURDOC_FILENAME

.LABEL NOW_EDIT

    .IF #P1 EQS "NOEDIT" THEN .GOTO EXIT_PROCEDURE

    GET #EDITFUNC=""
    .IF #EDITFUNC == "N/A" THEN .GOTO NO_EDITING
    .IF #EDITFUNC == "" THEN GET #EDITFUNC="EDIT OA$CURDOC_FILENAME"
    .IF #EDITFUNC = "EDIT" THEN .GOTO EDIT_FUNCTION
```

```
    GET OA$FUNCTION=#EDITFUNC
!   .IF OA$FORM_DISPOSE EQ 0 THEN .GOTO GOLD_K_EXIT
    .GOTO EXIT_PROCEDURE

.LABEL EDIT_FUNCTION
    GET #PURGE=FORMAT.PURGE[OA$CURDOC_FORMAT]
    GET #EDITINI=FORMAT.EDITINI[OA$CURDOC_FORMAT]
    GET #EDITOR="WPSPLUS"

    GET OA$FUNCTION=#EDITFUNC ',"' #EDITINI '","' #PURGE '","' #EDITOR '"'
!   .IF OA$FORM_DISPOSE EQ 0 THEN .GOTO GOLD_K_EXIT
    .GOTO EXIT_PROCEDURE

.LABEL NO_EDITING
    DISPLAY This document may not be edited
    .GOTO EXIT_PROCEDURE


!  Error messages ...

.LABEL ERROR_CREATE
    DISPLAY Document could not be created
    GET #STATUS="0"
    .EXIT

!.LABEL GOLD_K_EXIT
!   .IF #get_or_write_doc EQS "" THEN .GOTO NOT_GET_OR_WRITE
!   GET @#CURDOC=#GET_OR_WRITE_DOC
!   CAB CURRENT @#CURDOC
!.LABEL NOT_GET_OR_WRITE
!   CAB DELETE_DOCUMENT
!   GET @#CURDOC=#PREVIOUS_DOC
!   .IF #PREVIOUS_DOC EQS "" THEN .GOTO EXIT_PROCEDURE
!   CAB CURRENT #PREVIOUS_DOC

.LABEL EXIT_PROCEDURE
    GET #FILE_NAME=#DEFAULT_FILE=""
    GET #CREATE_DSAB=#CREATE_TITLE=#P1=#CREATE_FOLDER=""
    .EXIT
!
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```

```
!
!   Symbols to be used in calling this script:

!   #P1       if 'NOEDIT' does not enter editor
!   #CREATE_TITLE  specifies the title for the created document
!   #CREATE_DSAB   specifies the DSAB for the new created document
!   #CREATE_FOLDER  specifies the folder for the new created document
!   #CURDOC        specifies the symbol to contain the created document

!   Output symbol

!   @#CURDOC  specifies the key (folder/number) of the created
!                document.

! DOCCREATE.FLG

!          FMS Form Description Application Aid
!                     Version V2.3

FORM NAME='DOCDSC'
    AREA_TO_CLEAR=9:23
    WIDTH=80
    BACKGROUND=CURRENT
    ;


TEXT (12,1) 23' '&'Creating '
    BOLD
    ;
TEXT (12,59) 22' '&''
    BOLD
    ;
TEXT (15,3) 'Folder:'
    ;
TEXT (17,3) 'Title:'
    ;
TEXT (19,3) 'Keywords:'
    ;
TEXT (22,18) 'Enter information and press'
    ;
TEXT (22,46) 'RETURN'
    BOLD
    ;
TEXT (22,52) '.'
    ;

ATTRIBUTE_DEFAULTS FIELD
    CLEAR_CHARACTER=' '
    NOAUTOTAB BLANK_FILL NOBLINKING NOBOLD NOREVERSE
    NOUNDERLINE NODISPLAY_ONLY ECHO NOFIXED_DECIMAL
    LEFT_JUSTIFIED NOSUPERVISOR_ONLY NOSUPPRESS NOUPPERCASE
    ;

FIELD NAME='CREATE'  (12,33)
    PICTURE=26'X'
    DEFAULT='WPS-PLUS Document'
```

```
    DISPLAY_ONLY BOLD
    ;
FIELD NAME='FOLDER'  (15,11)
    PICTURE=30'X'
    HELP='Press GOLD H for Help'
    UPPERCASE RESPONSE_REQUIRED UNDERLINE
    ;
FIELD NAME='TITLE'  (17,10)
    PICTURE=71'X'
    HELP='Press GOLD H for Help'
    UNDERLINE
    ;
FIELD NAME='KEYWORDS'  (19,13)
    PICTURE=60'X'
    HELP='Press GOLD H for Help'
    UPPERCASE UNDERLINE
    ;

ORDER BEGIN_WITH = 1
    NAME='CREATE'
    NAME='FOLDER'
    NAME='TITLE'
    NAME='KEYWORDS'
    ;

NAMED_DATA INDEX=1 NAME='.TYPE'
    DATA='ARG /OVERLAY/BEGIN=TITLE' ;
NAMED_DATA INDEX=2 NAME='TITLE'
    DATA='/PUT_SAVE=#TITLE' ;
NAMED_DATA INDEX=3 NAME='FOLDER'
    DATA='/GET_SAVE=$WPDOC:30/PUT_SAVE=#FOLDER/UNIQUE' ;
NAMED_DATA INDEX=4 NAME='FOLDER'
    DATA='/RECOG=CAB$:FOLDER.FOLDER;GET
FOLDER=OA$SEL_KEY\OA$FLD_NEXT/USE_FORM=DOCRECOG' ;
NAMED_DATA INDEX=5 NAME='KEYWORDS'
    DATA='/PUT_SAVE=#KEYWORDS' ;
NAMED_DATA INDEX=6 NAME='CREATE'
    DATA='/GET_SAVE=#CREATE' ;
NAMED_DATA INDEX=7 NAME='.GOLD A'
    DATA='FORM WPEXTREF' ;

END_OF_FORM NAME='DOCDSC' ;
! File WPEXTREF.FLG

!          FMS Form Description Application Aid
!                    Version V2.3

FORM NAME='WPEXTREF'
    AREA_TO_CLEAR=12:23
    WIDTH=80
    BACKGROUND=CURRENT
    ;


TEXT (12,1) 28' '&'Associate External File
    REVERSE
    ;
```

```
TEXT (17,2) 'VMS File Name:'
    ;
TEXT (22,13) 'Enter information and press RETURN.'
    ;

ATTRIBUTE_DEFAULTS FIELD
    CLEAR_CHARACTER=' '
NOAUTOTAB BLANK_FILL NOBLINKING NOBOLD NOREVERSE
    NOUNDERLINE NODISPLAY_ONLY ECHO NOFIXED_DECIMAL
    LEFT_JUSTIFIED NOSUPERVISOR_ONLY NOSUPPRESS NOUPPERCASE
    ;

FIELD NAME='FILE_NAME'  (17,17)
    PICTURE=62'X'
    UPPERCASE RESPONSE_REQUIRED UNDERLINE
    ;

NAMED_DATA INDEX=1 NAME='.TYPE'
    DATA='ARG /OVERLAY' ;
NAMED_DATA INDEX=2 NAME='FILE_NAME'
    DATA='/PUT_SAVE=#FILE_NAME' ;

END_OF_FORM NAME='WPEXTREF' ;
```

NotesonNotes

— **Discussions on VAX Notes Volume 1, Number 8**

by M.H. Hyde and C.J. Trayser, VAX Notes Support Specialists, Digital Equipment Corp.

By the time this article is printed VAX Notes V1.2 will have been shipping for several weeks. So we felt this is a good time to update you on what's new and changed and what this can mean to current and prospective users.

V1.2 is primarily a maintenance update. It corrects a few problems, but doesn't add any new functionality for the basic kit. The big news with this release is the addition of what is called the VAX Notes "Client" or "Client-only" kit. This is a subset of Notes which does not contain the Notes server. More about the Client kit a little later.

Fixes

The maintenance portion has few changes that the average user may find. As a matter of fact, the following is the only change you will probably notice:

Command line recall while at the Notes prompt has been changed in VAX Notes V1.2 to be more consistent with DCL in two ways. If you now recall a line and modify it, the original line in the command line recall buffer is unchanged regardless of whether you enter a terminator or not.

In VAX Notes V1.1 and V1.0, if you recalled a line, modified it and then moved to another line in the recall buffer using the up-arrow or down-arrow keys, the line modifications for the original line were retained even though you did not enter a terminator.

Additionally, in VAX Notes V1.2, the current line is not placed in the command line recall buffer if it matches the previous line. In V1.1, if you recalled the previous line, did not modify it, and then entered a terminator to issue the command again, it would be placed in the recall buffer, thus resulting in consecutive

duplicate lines.

Of course there are other fixes for Notes. The following list describes some of the more interesting problems or "bugs" which have been corrected for this new version:

- A problem has been corrected which sometimes prevented a user from reading any remaining replies in the current discussion or resulted in a search ending prematurely.
- If you send a file as the mail message (ex. SEND file-spec), a subsequent SEND/LAST or FORWARD/LAST now remembers to sends the file-spec. Previously it sent an empty message.
- The PRINT command now honors the temporary qualifier-list settings in the user's profile. These settings take precedence over the permanent qualifier-list settings, but not over the qualifiers specified on the user's command line. In previous versions, just the permanent settings were applied to the command line.
- The PRINT command is now processed correctly if either /BEFORE, /KEYWORD, /SINCE, or /TITLE are specified and a print qualifier-list (either temporary or permanent) exists in the user's profile. Previously, either the error "Too many parameters..." or "Invalid note specification" resulted depending on whether you also specified a note-range.
- When a selection qualifier (/AUTHOR, /BEFORE, /KEYWORD, /SINCE, /TITLE, or /UNSEEN) has been specified on the PRINT or EXTRACT command, no note-range has been specified, and there is no current note, then all topics in the conference are now searched. Additionally, if you specify the /ALL qualifier, all replies are searched. In previous versions, the error "You did not specify a note" was returned if you had not first read a note.
- Pressing keypad minus (KP-) when a conference is not currently open or when a conference is open but a note has not yet been read now returns an appropriate error. (See the Release Notes for a list of known problems.)

Features

Earlier we mentioned a Client kit, VAX Notes V1.2 is the first version of VAX Notes which allows customers to purchase either a full server kit or a reduced functionality Client-only kit. The primary reason for this development is to provide the end-user with the VAX Notes user interface at a reduced cost. (We can't get into the details of the pricing in this article.)

Alright, you decide to get the Client-only kit, now what have you given up to get this lower priced product? The Client-only kit has limited functionality in that users cannot create or access conferences locally; they can only access remote conferences (through the VAX Notes server). If a user attempts to perform a Notes operation that is not allowed on his Client-only system, the error "Your software license does not allow this operation" is returned.

The full server kit has all of the functionality of previous versions of VAX Notes, including allowing users to create and access both local and remote conferences. NOTE: The Client kit works only if there is a server loaded and active in the network. Purchasing a standalone Client kit without a server prohibits the use of VAX Notes.

This packaging gives you a considerable amount of flexibility, especially in the case where all conferences are stored on a "host" and everyone else uses Notes to read these conferences from machine remote from the host (either in a DECnet environment or members of a cluster). Server kits and Client kits can be mixed and matched with ease.

We hope this discussion helped answer some of the more common questions with V1.2, So, until next time (when we talk about VAX Note "BOMBS")...

Happy Noting :-)

ARTIFICIAL INTELLIGENCE

(THE (LINKED LIST)

The Newsletter of the DECUS Artificial Intelligence Special Interest Group

". . . It's The Real Thing"

Vol. 3 No. 6 September 1987

AI GETS REAL AT AAAI 87

By Terry C.Shannon

SEATTLE, Wash.— Artificial intelligence and general purpose computers may seem mutually exclusive, but such was not the case at the American Association for Artificial Intelligence's AAAI '87 conference and exhibit held here in mid-July.

More than 5,000 AAAI '87 attendees had the opportunity to review the product offerings of some 90 hardware and software vendors and publishers. Significantly, mainstream computer vendors were in abundance at the conference, indicating that AI has become an accepted component of the commercial computing environment.

In addition to making two AI-related software product announcements Digital demonstrated the feasibility of AI in the financial marketplace by displaying a credit analysis system written in VAX Lisp.

Moreover, VAXstations were used as application development and delivery platforms by a variety of third-party AI software vendors, a tacit acknowledgment of the viability of AI on conventional hardware.

Software, however, was the basis of the majority of the product introductions at the annual AAAI confab.

Intellicorp, of Mountain View, CA, unveiled a delivery version of its Knowledge Engineering Environment (KEE) expert system tool. According to an Intellicorp spokesperson, the Run-Time KEE package, which will be available early next year, allows developers to deliver KEE-based applications on 80386-based PCs.

Intellicorp also debuted the KEE/C Integration Toolkit, a software package that lets programmers integrate Lisp-based KEE applications with programs written in the C language.

Rival expert system tool vendor Teknowledge, Inc., of Palo Alto, CA, announced Copernicus, a series of software packages designed to aid the development of expert systems for commercial applications. Included among the Copernicus family are AI application development and delivery tools and a facility that integrates databases with applications based on Teknowledge's S.1 expert system tool.

Teknowledge expects to begin delivering Copernicus software for VAX, Apollo and Sun computers during the fall, a company spokesman said.

Lucid, Inc., of Menlo Park, CA, announced an IBM mainframe version of Lucid Common Lisp as well as an agreement to distribute the VAX version of the Common Lisp package in Europe. Lucid's Lisp software also served as the foundation for G2, a VAX-compatible real-time expert system demonstrated by Gensym Corp. of Cambridge, MA.

Sun Microsystems disclosed a portion of its evolving AI strategy by demonstrating Franz Lisp and ParcPlace System's Smalltalk-80 object-oriented programming language on the high performance RISC-based Sun-4 workstation.

Sun also debuted its Symbolic Programming Environment (SPE), a software package that is said to deliver Lisp machine-like capabilities to the Sun-4 workstation. SPE is expected to ship during the third quarter, a Sun spokesman said.

Despite the AI inroads being made by vendors such as Digital and Sun, dedicated AI hardware vendors Texas Instruments and Symbolics Corp brought a number of presents to the AAAI '87 party.

TI implanted its new CMOS-based "Explorer" Lisp microprocessor chip in the Explorer II symbolic computer, a single-user system that the vendor claims is the world's most powerful AI workstation.

Symbolics Corp. has announced but is not yet shipping its own proprietary "Ivory" Lisp chip. But the Cambridge, MA-based vendor of dedicated AI computers unleashed a barrage of hardware and software announcements designed to further its entree into the computing mainstream.

Emphasizing its support for standards, interoperability and connectivity, Symbolics demonstrated a public domain version of X-Windows and announced its intentions to port X-Windows to Genera, the proprietary operating system for Symbolics processors.

Symbolics, which already offers a DECnet interface, rolled out Symbolics SNA 3270, a software package that lets Symbolics computers connect directly to IBM SNA-based networks. According to Symbolics, the SNA 3270 software provides full IBM 3270 terminal emulation and allow the use of distributed terminal applications on Symbolics systems.

Acknowledging the forthcoming impact of Intel's 80386 chip, Symbolics debuted its Common Lisp Operating Environment (CLOE), a software package that allows programs developed on Symbolics systems to be delivered on 80386-based PCs and workstations.

In addition, the vendor announced the Symbolics 386 Coprocessor Board, an 80386-based plug-in board for the Symbolics 3600 computer family. Designed by Phoenix Technologies, Ltd. of Norwood, MA, the coprocessor will let users run MS-DOS and UNIX applications on Symbolics hardware.
Also unveiled was Symbolics C, a C language implementation for Symbolics 3600 computers. According to the vendor, the new C package offers full support for the ANSI C draft standard and takes advantage of the Symbolics software development development.

Symbolics SNA 3270, CLOE and the 386 Coprocessor will be available by the end of the year. Symbolics C will begin shipping in early 1988, a Symbolics spokesperson said.

AI ENTERS THE MAINSTREAM

By Terry C. Shannon

SEATTLE, Wash.— What comes after "artificial intelligence?"

Ask almost anyone, and the answer is likely to be "research". From the looks of the American Association for Artificial Intelligence (AAAI) '87 conference held here in mid-July, though, the answer is changing— now buyers are coming after AI.

As the conferencegoers who crowded the Seattle Center exhibit hall discovered, the fledgling commercial AI industry has reached critical mass, as evidenced by the plethora of AI applications which were demonstrated by some 50 hardware and software vendors.

Dedicated AI hardware vendors such as Symbolics Corporation and Texas Instruments shared the exhibit hall floor with a broad cross-section of the conventional computing community, notably Digital Equipment Corporation, IBM, Unisys, Sun Microsystems and Apollo Computer.

Similarly, well-entrenched AI firms stood cheek to jowl with newcomers. For example, Lisp programming language vendors Lucid Inc. and Franz Inc. were joined by Seattle-based Artificial Intelligence Research & Systems Ltd., a fledgling AI softwware manufacturer whose VAX-compatible AIRS Common Lisp is now in beta test.

Longtime expert system toolkit makers Intellicorp, Inference, Teknowledge and Carnegie Group made room for Gensym,a Cambridge, Mass. firm that unveiled G2, a realtime expert system development software package.

Touting standards, connectivity, compatibility and productivity, each member of the assembled AI multitude had one thing in common: a keen interest in selling commercial-grade AI languages, applications and development and delivery platforms.

"The research and development aspects of AI technology are taking a breather to accommodate the integration of AI and conventional computing techniques," observed Tom Schwartz, president of Tom Schwartz Associates, an advanced computing technology consulting firm based in Mountain View, Calif.

In Schwartz' view, AI will complement, not supplant, mainstream computer applications. "New technology doesn't replace existing technology, it merely reconfigures it," he said.

The 'evolutionary, not revolutionary' AI refrain is echoed by specialized and general-purpose hardware and software vendors alike. Digital Equipment Corp. AI marketing specialist Mel Woolsey said that Digital— a leader in commercial artificial intelligence— views AI as a tool that helps users leverage their existing computing resources.

"Used in conjunction with traditional EDP applications, AI helps users preserve, integrate and distribute knowledge to gain a competitive advantage. Successful commercial AI applications feature a smooth integration of AI and conventional computing techniques."

Noting that Digital focuses on providing a well integrated computing environment, Woolsey said that AI is analogous to the glue in a model airplane. "AI may represent only a small percentage of an application, but it serves as the 'glue' that holds the application together."

While many of Digital's AI applications are for in-house use, the company's AI expertise is beginning to manifest itself in commercial settings, including the financial and insurance industries.

Symbolic Gesture

Russell Noftsker, CEO of Symbolics Corporation, cited real-world examples such as computer-aided medical diagnosis and increasingly powerful expert systems to underscore his contention that AI has a bright commercial future.

"Six or seven years ago, AI was an academic curiousity. In the long term, [AI's] remaining problems will be solved and we-will enter an era of intelligent machines," he said.

In the meantime, Noftsker's firm, the premiere vendor of dedicated symbolic processors, is attempting to broaden its customer base by developing a new multiprocessor family that merges symbolic and conventional computing capabilities.

Such hybrid computers, which will unite Symbolics' Ivory Lisp chip with microprocessors such as the Intel 80386 CPU, are expected to debut next year, Noftsker said.

What's In A Name?

Increasing commercial viability of AI products, ironically, might not add up to legitimacy for AI.

"Nothing is going to legitimize AI," said Harvey Newquist, editor of AI Trends, a newsletter that addresses the commercial aspects of artificial intelligence. "It will never be seen as producing pragmatic, viable products, for one simple reason: because every time a viable product comes out of an artificial intelligence project, the first thing that happens is that people stop referring to it as AI. So, by definition, AI will always be out there somewhere in
academia."

AI AND HARDWARE

By Becky Selke

DECUS AI SIG

I have been involved in a number of philosophical discussions related to AI applications and the computers upon which these applications are developed and executed. Diverse as these discussions have been, they have shared several themes:

- What is the purpose of a Lisp machine?
- Can AI run on general purpose computers?
- Should AI be run on general purpose computers?
- Where will the Lisp chip fit into the scheme of things?

As is the case in many discussions on AI, part of the confusion centers around how AI is defined in the first place. For our purposes, AI will encompass systems which exhibit intelligent behavior, or add a degree of intelligence to a system that was not previously present. I will not argue the bounds of what constitues intelligence; I hope the distinction is clear enough.

Several vendors, notably Symbolics, Inc. and Texas Instruments, manufacture special purpose computers which are commonly referred to as Lisp machines. The architecture of these computers is optimized for rapid and efficient Lisp code execution. Similarly, Lisp machines provide a "Lisp development environment," a sophisticated software toolkit designed to speed the process of developing Lisp programs. These environments encourage rapid prototyping and incremental
application development, techniques which are popular among AI researchers.

Related to the Lisp machines are machines such as Digital's AI VAXstation, which provides a Lisp development environment on a general purpose computer. Unlike application-specific hardware, general purpose computers are designed to perform a variety of computing tasks. Equipped with an industrial-strength Lisp compiler and complementary program development tools, such computers can perform the same functions as Lisp machines, albeit somewhat less efficiently.
So, can you "do AI" on a general purpose computer? Of course. Lisp compilers are available for a broad array of general purpose computers ranging from PCs through superminis and mainframes. The question of performance controls how much computer is required. It should be noted that as enhancements are made to Lisp compilers on general purpose machines, the gap between general purpose and Lisp specific performance narrows. Additionally, as Lisp development environments
become more common on general purpose hardware, the long term viability of Lisp-specific hardware becomes questionable, especially for application delivery.

The advent of the so-called "Lisp chip," however, may have positive ramifications for Lisp hardware vendors. Both Texas Instruments and Symbolics have announced proprietary VLSI implementations of their Lisp computers. Both Symbolics' "Ivory" and TI's "Explorer" chips are envisioned as tools that will allow the integration of intelligent systems into existing equipment much in the same manner as conventional microprocessors are used as platforms for embedded
applications such as guidance and control.

Used in conjunction with a computer such as the VAX, the Lisp chip may represent the most feasible— and economical— way to enhance general purpose hardware with symbolic processing capabilities. Moreover, Lisp chips may help extend the range of problems for which AI is considered an appropriate solution by delivering AI capabilities to domains which were previously inaccessible because of space or environmental constraints. Whether this is indeed the case remains
uncertain, but the possibilities are intriguing.

In the near term future, I believe that AI will be most viable as a tool that complements existing applications. For example, an intelligent scheduler could be integrated into a warehouse distribution management system to provide more intelligent load balancing and resource utilization. Integrating AI into existing applications requires a smaller investment in time, money and manpower than a complete re-implementation of an application, thus making an AI
solution more attractive to management.

For integration to succeed, however, the AI subsystem must be completely compatible with the existing system and the hardware upon which it is executed. Thus, systems (such as the VAX) that support Lisp as well as conventional languages, tools and transparent interprocess communications facilities have a significant advantage as AI delivery platforms. In addition, developing these hybrid systems on general purpose machines reduces the cost of exploring AI solutions.

In many cases, therefore, use of a general purpose computer for AI is preferable to the use of a Lisp machine. While the Lisp machine will likely remain the tool of choice among AI researchers and the academic community for quite some time to come, conventional hardware vendors are striving to blunt the competitive edge of the symbolic processor vendors by fortifying the AI development environments available on
traditional computers.

AI EVENTS CALENDAR

By Jim Sims

DECUS AI SIG

September 1987

Sept 15-17

2nd AIRIES Workshop
Boulder, Colorado

This workshop will serve as a forum for discussions among researchers applying AI to Environmental science problems and individuals who wish
to evaluate the applicicability of these techniques to their needs.

Dr. William Moninger
NOAA/ERL
R/E2
325 Broadway
Boulder, Colorado 80303

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

October 1987

October 5-7

Spatial Reasoning and Multi-Sensor Fusion
AAAI
Pheasant Run Resort St Charles, Ill.

Spatial Reasoning, Multiple sensor inputs, Spatial Planning, Formal Theory, Fusion of sensory inputs, Evidential Reasoning

Su-shing Chen
Dept of Computer Science
University of North Carolina
Charlotte, NC 28223

October 5-7

Workshop on Computer Architecture for Pattern Analysis and Machine Intelligence

Seattle, WA

October 5-7

Workshop on Spatial Reasoning and Multi-Sensor Fusion
St. Charles, IL

Topics to include: Reasoning about shapes from partial evidence, Fusion of photometric and range data for mobile robots, fusion of 2D, 3D, tactile, and F/T sensing for assembly robots, Evidential reasoning for verification vision, reasoning architectures for spatial data, programming paradigms for spatial reasoning, formal theories of spatial reasoning, spatial planning and problem solving.

Avi Kak
Robot Vision Lab
EE Building, Box 121
Purdue University
W. Lafayette, IN 47904

October 5-9

Aerospace and Commercial Applications of AI
Dayton, OH

Michael Johnson
The BDM Corporation
1900 Founders Drive
Kettering, Ohio 45420
(513) 259-4434

October 14-17

2nd Intl. Symposium on Methodologies for Intelligent Systems
Charlotte, NC

October 19-23

2nd Knowledge Acquisition for KBSs Workshop
Banff, Canada

Topics to include: Transfer of expertise from experts, manual knowledge acquisition methods and techniques, apprenticeship learning techniques, issues in cognition and expertise that affect the knowledge acquisition process, induction of knowledge from examples, and knowledge acquisition methodology and training.

Jeffrey Bradshaw
Advanced Technology Center
Boeing Computer Services
PO Box 24346
Seattle, WA 98124

October 28-30

AI East
Atlantic City, NJ

Tower Conference Management

November 1987

November 1-4

11th Annual Symposium on Computer Applications in Medical Care
Sheraton Washington Hotel. Washington. D.C.

SCAMA - Office of Continuing Medical Education
The George Washington University Medical Center
2300 K Street. NW
Washington. D.C. 20037 (202) 994-8928

Novermber 1-6

Advances in Intelligent Robotics
Hyatt Regency Cambridge. Cambridge. MA

Conferences on Optics. Illumination. and Image sensing for machine vision; Intelligent Robots and Computer Vision: Space Station Automation. Automated Inspection and High Speed Vision Architectures; and Mobile Robots.

SPIE Technical Program Committee/ Robotics '87
P.O. Box 10
Bellingham. WA 98227
(206) 676-3290 Telex 46-7053

November 2-3

NAREST/ADP 87
Washington. D.C.

Naval Regional Data Automation Center. Oak Ridge National Laboratory. and Data Systems and Development of Martin Marietta Energy Systems to sponsor a conference on the application of AI to ADP development and operations within the government.

Lloyd F. Arrowood
Program Chair
Oak Ridge National Laboratory
4500 North
Mail Stop 207
Oak Ridge. TN 37831
(615) 576-8272

November 9-12

1987 Intl. Conference on Computer Aided Design
Santa Clara. CA

Topics to include systems. simulation. layout. and test of CAD systems for electronic circuit design.

ICCAD-87 Secretary
Mentor Graphics Corp.
1940 Zanker Road
San Jose. CA. 95112
(408) 436-1500

November 10-12

1st Annual Conference on Expert Systems Applications in Business & Finance New York Penta Hotel. New York. NY

The theme is building and using expert systems in the competitive for-profit arena. Topics include: financial planning/analysis. insurance. investment banking. real estate. trading. project management. tax analysis. stock market. mergers & acquisitions. and more.

Jerald L. Feinstein
ICF/Phase Linear. Inc.
International Square
1850 K Street. NW
Washington. D.C. 20006
(202) 862-7793

November 30-December 2

IEEE Workshop on Computer Vision
Fontainbleau Hilton. Miami Beach. FL

Keith Price
Institute for Robotics and Intelligent Systems. MC 0273
Electrical Engineering - Systems
University of Southern California
Los Angeles. CA. 90089
(213) 743-5526
EMAIL: price@ganelon.usc.edu

December 1987

December 9-11

Frontiers in Computing
Amsterdam. The Netherlands

Latest developments in Numerical and Symbolic Processing. Parallel Computing. Optical. Molecular. and Biological Computing.

Frontiers in Computing
c/o CWI
P.O. Box 4079
1009 AB Amsterdam. The Netherlands

January 1988

January 5-8

21st Annual Hawaii Intl. Conference on System Sciences
Kona. Hawaii

Topics to include: Automatic Deduction. Knowedge Representation. Learning. Natural language. Planning. Rule-based Systems and Search. as applied to software design and implementation with emphasis on large-scale software systems.

Prof Gail E. Kaiser
Columbia University
Dept. of Computer Science
New York. NY 10027
(212) 280-3856
EMAIL: kaiser@cs.columbia.eu. ...!columbia!cs!kaiser

March 1988

March 14-18

4th IEEE Conference on AI Applications
Sheraton Harbor Island Hotel, San Diego, CA

Dedicated to new, significant and unpublished works on the application of AI techniques to solving real-world problems.

Submission Information:
Elaine Kant, Dennis O'Neill
Program Chairs, CAIA-88
Schlumberger-Doll Research
Old Quarry Road
Ridgefield, Ct 06877-4108

DEC BRINGS AI INTO MAINSTREAM

By Terry C. Shannon

SEATTLE, Wash.— The American Association for Artificial Intelligence's AAAI-87 conference and product exhibition served as the backdrop for two Digital AI software product announcements that further the vendor's strategy of offering efficient, affordable AI development and delivery systems based on the VAX architecture.

Unveiled by Digital at the AAAI-87 conference were a new version of the VAX Lisp AI programming language and an agreement to offer Neuron Data's NEXPERT OBJECT expert system development tool on VAXstations and VAX 8000 processors.

Digital's substantial role in the development and delivery of commercial AI applications on conventional computers was also highlighted on the AAAI exhibit hall floor, where numerous third-party AI software vendors demonstrated their wares on MicroVAX II and VAXstation workstations.

According to Digital developers, VAX Lisp Version 2.2, which is available for both the VMS and Ultrix operating systems, contains significant enhancements that make the language more appropriate for commercial applications. Chief among these is the ability to deliver Lisp-based programs without the need to purchase a VAX Lisp run-time license for each end user.

"Developers can now write VAX Lisp applications that look and act like applications produced with conventional languages, and deliver them without purchasing separate VAX Lisp run-time licenses for users," a Digital spokesman explained.

Of equal importance, Digital has addressed one of the Lisp language's most notable shortcomings— execution speed. According to a DEC AI specialist, VAX Lisp 2.2 runs 20 percent faster than its predecessor.

"VAX Lisp Version 2.2 is the fastest Lisp language implementation available for VAX systems," he claimed, adding that the performance improvements were obtained by improving the language's garbage collection scheme and through the inclusion of a new program development tool called the System Build Utility.

VAX Lisp Version 2.2 includes a System Build Utility that lets developers write smaller, more efficient Lisp programs. With the System Build Utility, a VAX Lisp programmer can create applications that contain only those portions of the Lisp system necessary to run those applications.

"The System Build Utility allows the programmer to omit Lisp development tools such as the editor, compiler and debugger from VAX Lisp executable programs," the specialist said. "The end result is a single executable image that can be shared among multiple users. Because such images lack Lisp development facilities, the need for run-time VAX Lisp licenses has been eliminated," he added.

Digital also announced the availability of Neuron Data's NEXPERT OBJECT AI software package through the Digital Distributed Software Program.

NEXPERT OBJECT is a low cost, graphics-oriented expert system development tool that runs on VAXstation workstations and VAX 8000 processors as well as on Apple Macintosh and IBM PC-AT microcomputers.

According to Neuron Data co-founder Dr. Alain Rappaport, NEXPERT OBJECT is a rule-based tool that features an inference engine, or problem-solving interpreter, that is capable of both forward and backward chaining. Consequently, the tool is appropriate for both diagnostic and predictive applications, Rappaport said. In addition, NEXPERT OBJECT uses structures called objects to graphically represent the facts that are evaluated by the tool's inference engine.

NEXPERT OBJECT features an open architecture that simplifies the integration of AI technology into conventional EDP applications. Rappaport explained that NEXPERT users can, for example, dynamically query a VAX Rdb database and load the resulting information into a NEXPERT knowledge base.

Under the terms of the Digital Distributed Software agreement, NEXPERT OBJECT licenses are provided with a full year of Digital software support services. According to Digital, the NEXPERT OBJECT software and a fully configured VAXstation 2000 workstation can be purchased for approximately one-eighth the cost of a similar VAX-based AI development and delivery system just one year ago.

THE DEVIAS LETTER

IAS

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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 KERMIT servers available. Give the editor a call at (312)-791-2515 (preferably later in the day,) to obtain access information, etc.

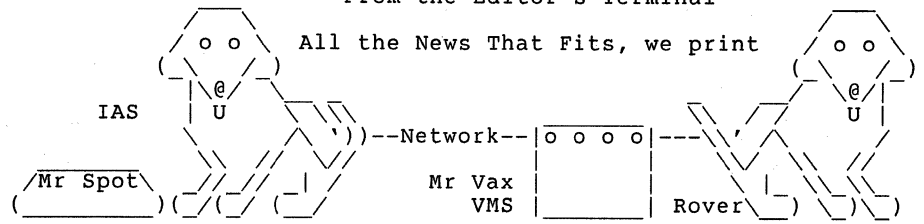
4. If long distance dialout is not possible on your system, we'll be willing to call your system and do the work, (unless you want to transfer the entire manual set at 300 baud.)

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.

From the Editor's Terminal



Your humble servant has been spending a much needed (and well deserved) vacation for the last two weeks, so time is short to prepare this issue. Please excuse the paucity.

After looking at my submission of old versus new versions of the bylaws, (which is further confusing because it's actually two copies of the new version,) I decided that I should not have tried to push that package into the newsletter with all the hardware problems I was having at deadline time. You now have a copy of the proposed new bylaws, I have included a simplified description of just the changed items in this issue. Hope it's a simpler description than that of two issues ago.

This month's program is a MCR program that returns the day of the week in its exit with status block. We often find it nice to include the day of week in a status report, (or for scheduling purposes to see if it is a weekend, etc.) Users should be able to make simple adaptations of the above program, (to be a Fortran callable module, for example.)

This issue includes slides from "A practical Application of Supervisor Mode Libraries and Memory management Directives" and "Experience with an IAS-VMS DECNET system" from the Spring DECUS Symposium.

By the time you are reading this, Summer will be almost over.

Ten Years Ago Today

The September 1977 Multi-Tasker contained:

A note from James Downward of KMS fusion noting the presence of three undocumented switches in dump,

/HX -- Output in hexidecimal byte format
/WD -- Output in hexidecimal word format
/LW -- Output in hexidecimal double word format

He noted that since they were involved in transferring tapes between an IBM system and their 11/45, they found the switches very useful.

(Editor's note, DEC is sure proud about connecting to IBM systems now, but this is one of few notes of the time where DEC even admitted that hexidecimal existed.)

A report of a CAMAC BOF meeting at the spring DECUS said that with 18 people attending, it was felt that that was not enough to form a CAMAC SIG. The initial group co-ordinator was James Tippie, of Argonne National Labs.

Results from the June questionnaire were reported. Replies were received from 273 RSX or IAS users. Notable responses and comments included:

I have found the Multi-Tasker a very useful supplement (or complement) to the Dispatch and would be willing to pay for a subscription. DECUSCOPE has declined badly in interest in the last 2 years. There is a need for a DEC- Related newsletter: new DEC hardware and software; new releases; major software packages (such as BMDP); other-vendor memory and peripherals; compatible terminals; news of alternate operating systems such as UNIX; news of OEM systems based on DEC. At the moment, Computerworld, in spite of its IBM-Burroughs bias, is the best source of such news that I know of. The ideal newsletter would accept advertising (which can be very informative) both fromn DEC and form other vendors, would run critical evaluations of gear and software, and would encourage correspondence and ness items from readers.

DECUSCOPE is no longer worth reading. In its place I wish there was a journal similar to BYTE but DEC hardware, software, and tutorial oriented.

(Sounds like users wanted something like the current DEC oriented mags, ed.)

Proposed Changes:

Items enclosed thusly <xxx> are additions to the new proceedures.
Items enclosed thusly [xxx] are deleted in the new proceedures.

Article III
Membership

3.0 Membership requirements:

1. Any DECUS member [using or interested in the IAS operating system or its related products, equipment or services] is qualified to be a member.

2. Any person qualified to be a member will be accepted as a member either upon submitting a request to the DECUS U.S. chapter, <or personally indicating interest at a Symposium.>

<3. Any member that believes that they are being denied participation in SIG activities shall have recourse by petition to the DECUS U.S. chapter SIG council.>

Article IV
Steering Committee

4.0 General

3. There will <also> be a non-voting, ex officio member of the IAS SIG Steering Committee appointed by the RSX SIG to be the RSX liason with the IAS SIG.

4.4 Duties of the Chairman

<4. The Chairman will represent the IAS SIG's interest in the DECUS U.S. Chapter SIG council.>

4.5 Duties of the Newsletter Editor.

<3. The Newsletter Editor will represent the IAS SIG's interests in the DECUS U.S. Chapter Communications Committee.>

4.6 Duties of the Symposia Coordinator

<3. The Symposia Coordinator will represent the IAS SIG's interests in the DECUS U.S. Chapter Symposia Committee.>

4.7 Duties of the Program Librarian.

<3. The Program Librarian will represent the IAS SIG's interests in the DECUS U.S. Chapter Library Committee.>

The Program of the Month

```
;A program to convert an RSX/IAS date to day of week
;
;MCR calling proceedure:
;
;day mm/dd/yy           (to get day of week for any date)
;or
;day                    (to get current day of week)
;
;       Task build using standard command file
;       With task name of ...DAY or $$$DAY
;
;       day of week (0=Sunday, 1=Monday, etc.)
;       is returned in status returned after spawn
;
;a cludge for use with basic, etc
;
        .mcall  gmcr$,gtim$,exst$,dir$
        .page
dayofw::
        dir$    #getmcr         ;get mcr command line
        cmp     @#0,#12.        ;full date specified
        beq     date            ;yes, calc him
;
; no date specified, do today's date
;
nodate: dir$    #gettim         ;no fill in today in time buffer
        br      calc            ;and calculate day of week
;
; date given, convert to month, day, year
;
date:   mov     #getmcr+6,r0    ;get mm/dd/yy part of command
        jsr     pc,$cdtb        ;convert month
        cmp     r2,#'/          ;terminated on "/"
        bne     nodate          ;if not, give todays date
        mov     r1,timbuf+2     ;put month in buffer
        jsr     pc,$cdtb        ;convert day
        cmp     r2,#'/          ;terminated on "/" ?
        bne     nodate          ;if not, give today's date
        mov     r1,timbuf+4     ;put day in buffer
        jsr     pc,$cdtb        ;convert year
        mov     r1,timbuf       ;assume year ok
;
; calculate days from jan 01 1900
;
calc:   mov     #timbuf,r1      ;point to time buffer
        bit     #3,(r1)         ;is year divisible by 4?
        bne     notlpy          ;no its not leapyear
        incb    daysmo+2        ;increment # of days in feb to 29
```



```
notlpy: clr     r5              ;clear for day of year addition
        mov     2(r1),r2        ;# of current month in r2
        mov     #daysmo,r3      ;use r3 as pointer
addamo: movb    (r3)+,r4        ;get # of days in r4
        add     r4,r5           ;add to date
        sob     r2,addamo       ;if not done, do another
        add     4(r1),r5        ;now add day to r5
        movb    #28.,daysmo+2   ;set feb back to 28 for next time
;
; now have julian day of year in r5
;
        mov     (r1),r3         ;year in r3
        mul     #365.,r3        ;compute 365.25 * year
        mov     r3,r4           ;have 365.
        mov     (r1),r3
        ash     #-2,r3          ;.25 times year
        add     r3,r4           ;have 365.25 * year in r4
        add     r4,r5           ;now have 365.25*year + day in r5
        clr     r4              ;for divide
        bit     #3,(r1)         ;leap year ?
        bne     1$              ;br if not
        dec     r5              ;patch for leap year
1$:     div     #7,r4           ;divide modulo 7
                                ;have day of week in r5
        mov     r5,exit+e.xsts  ;return day of week as status
        dir$    #exit           ;and exit
        .page
;
;table (byte of # of days to add for each (completed) month
;
daysmo: .byte   0.,31.,28.,31.,30.,31.,30.,31.,31.,30.,31.,30.
;
;directive parameter blocks
;
;exit with status dpb
;
exit:   exst$   ex$suc
;
; get mcr command line dpb
;
getmcr: gmcr$
;
; get time dpb
;
gettim: gtim$   timbuf
;
; buffer to receive current time
;
timbuf: .blkw   8.
;
        .end    dayofw
```

A Practical Application of Supervisor Mode Libraries and Memory Management Directives (I016)

Plas Directives

- Create Region (CRRG$)
- Attach Region (ATRG$)
- Detach Region (DTRG$)
- Create Address Window (CRAW$)
- Eliminate Address Window (ELAW$)
- Map Address Window (MAP$)
- Unmap Address Window (UMAP$
- Send By Reference (SREF$)
- Send By Reference and Request or Resume (SRFR$)
- Receive By Reference (RREF$)
- Get Mapping Context (GMCX$)
- Get Region Parameters (GREG$)

Region Definition Block (RDB)

Word Offset		
0	R.GID	Region ID
1	R.GSIZ	Region Size (32 Word Blocks)
2	R.GNAM	Region Name (RAD50)
3		
4	R.GPAR	Partition Name (RAD50)
5		
6	R.GSTS	Region Status Word
7	R.GPRO	Region Protection Word

RDBADR: RDBBK$ size, name, par, status_bits, pro_bits

Window Definition Block (WDB)

Word Offset		
0	W.NAPR | W.NID	Window ID/Base APR
1	W.NBAS	Virtual Base Address
2	W.NSIZ	Window Size (32 Word Blocks)
3	W.NRID	Region ID
4	W.NOFF	Offset In Region (32 Word Blocks)
5	W.NLEN	Length To Map (32 Word Blocks)
6	W.NSTS	Window Status Word
7	W.NSRB	Send/Receive Buffer Address

ADDR: WDBDF$ apr, siz, rid, off, len, sts, srbuf

Supervisor Mode Libraries

- Extra 8 APRs of usable instruction space.
- Must be read-only code, with no data
  - not even read only data
- Stack manipulations must be done carefully
  - Calls to a Supervisor Mode Library will use from two to five words on the stack
  - If the stack is used, the stack pointer must be set back before a return is attempted.

The Problem:

- Buffer variable sized text for input and output data streams in a communications processor
- Use a mechanism that that will minimize the possibility of data corruption (as opposed to global commons)
- Preserve to the extent possible the Subroutine calls in the existing application code

FORTRAN Calling Convention

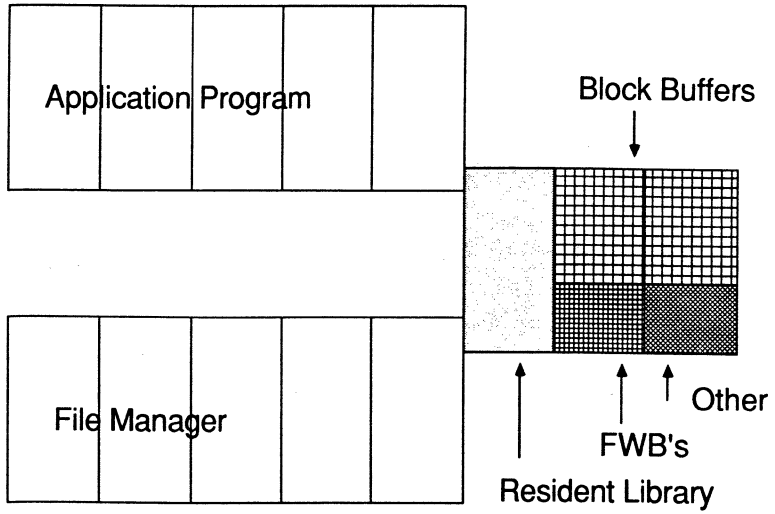
Subroutine Subr (Arg1, Arg2[,Arg3][,Arg4])

Call Subr (Arg1, Arg2,,Arg4)

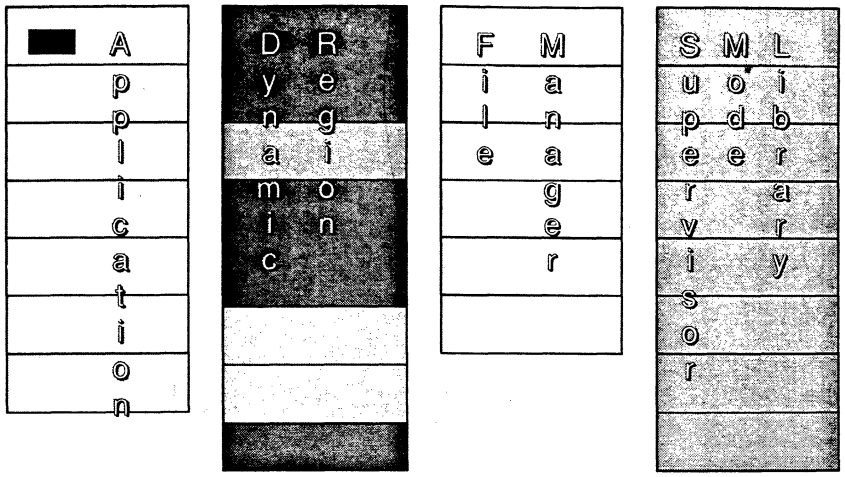
```
        mov   r5, -(sp)
        mov   #arglst, r5
        jsr   pc, subr
        mov   (sp)+, r5

arglst:
        .byte  4,0
        .word  Arg1_addr
        .word  Arg2_addr
        .word  -1
        .word  Arg4_addr
```

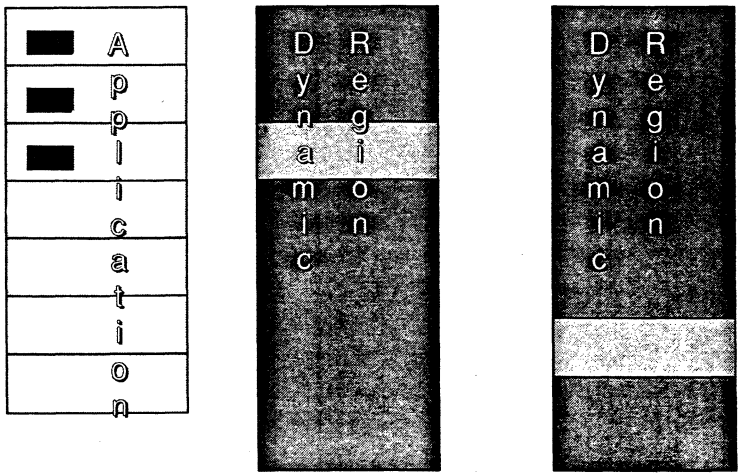
Before



After



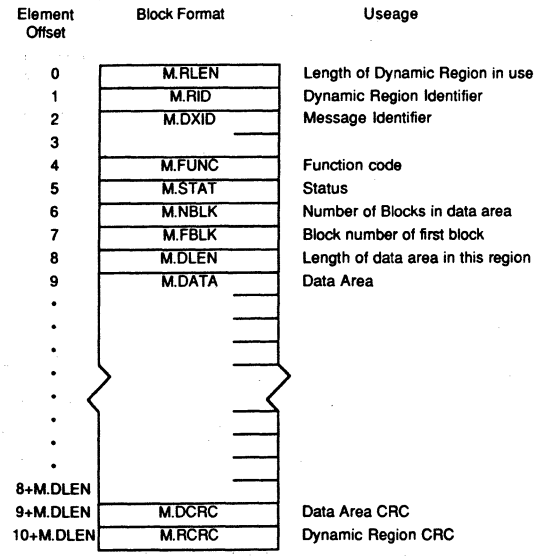
Application's View



File Work Block

Element Offset	Block Format	Useage
0	F.SSEQ | F.FILE	File Identifier / Sequence Number
1	F.SBLK	Starting Block of message
2	F.NBLK	Total blocks in message
3	F.SCRC	CRC of entire message
4	F.DXID	Message Identifier
5		
6	F.QENT	Queue Entry Identifier
7	F.QPRI	Queue Priority
8	F.USER	User word
9	F.EROR | F.STAT	I/O Status / Message Status
10	F.PNTR	Record Pointer
11	F.CBLK	Current Block of message
12	F.CSEQ | F.FLAG	FWB Flag/Current Sequence #
13	F.RDB	Region Definition Block
14		
15		
16		
17		
18		
19		
20		
21	F.WDB	Window Definition Block
22		
23		
24		
25		
26		
27		
28		

Dynamic Region Offsets



Implementation Rules

- All Supervisor Mode Library Subroutines that were to be accessable by application tasks were to follow the FORTRAN calling convention.
- Supervisor Mode routines that called other Supervisor routines that had to meet the first rule above generated the FORTRAN argument list on the stack and cleaned it off immediately upon return.


```
Results of Disassembly
of Module:  PRIO.OBJ

.PSECT ..BUF ,CON,RW,REL,LCL,D
;MAX LEN = 000002
.
.
.PSECT
.
.
.
MOV #'..BUF+0,R0
JSR PC,$RLBL
BCS 462
.
.
.
MOV #'..BUF+0,R0
CLC
RTS PC
```

```
Cause of multiple errors:

LOAD ADDRESS OUT OF RANGE IN...

1 Modules linked alphabetically

2 R/O modules follow R/W modules

3 HNDLIB routines under version
  3.2 are in psect $$HNDL rather
  than in the blank psect.

Quick Solution:

1 Copy version 3.1 HNDLIB to new
  system as HNDLIBV31

2 Edit any .CMD files to use the
  version 3.1 HNDLIB
```

HOW COULD THIS EVER WORK?

3.1 RO and RW psects mixed

3.1 psect ..BUF was LAST

3.1 other overlays were longer than one containing ..BUF

3.2 RO psects follow RW

3.2 psect ..BUF was followed by SYSLIB routines

3.2 Routine $MUL was overwritten by garbage

Now that DECNET is up,
DEC Sales Finally Calls

"Heard you are having a Problem with DECNET !"

o Get Software Support

o Get Update B

n.b. Update Z wouldn't have helped.

n.b. Update to DECNET is finally out, a year and a half later.

A STATEMENT TO DEC

EITHER:

When we bought the update to IAS version 3.2, we should have recieved software that properly ran the current layered products.

OR:

When we later bought DECNET, we should have either received software that was tested with the current release of the operating system, or our order should have been put on hold until DECNET was tested properly.

PUTTING VERSION 3.1 DECNET UP ON VERSION 3.2 IAS

o Copy Version 3.1 HNDLIB as HNDLIBV31.

o Edit TKB command files to use this library.

o Edit NTLBLD.CMD Iclude the line:

EXTSCT=..BUF:776

ALMOST TRANSPARENT TRANSFER

At the VMS end

o Define VMS command get11
  $get11 :==@[frank.com]get11

```
$ fra := "fra"
$ han := "han"
aa := "copy mrspot""username
       password"""::"'p2' sy:
bb := "copy mrspot""username
        password"""::"'p2' sy:
$ if 'p1' .eqs. 'fra' then 'aa'
$ if 'p1' .eqs. 'han' then 'bb'
```

```
mrspot>get11 fra program.for
```


ALMOST TRANSPARENT TRANSFER

At the IAS end

o Use NFT instead of PIP

o Use Alias command to create pseudo node name. It contains username/password information

o At NETWORK startup, execute
  SET ALIAS FRANK DESTINATION..
  MRVAX/username/password::

o NFT SY:=FRANK::PROGRAM.FOR
  KED PROGRAM.FOR
  NFT FRANK::=PROGRAM.FOR

ALMOST TRANSPARENT TRANSFER

At the IAS end

o Define pseudo command using Reese ECR, (editing MCR) CLI

o In ECR.CMD startup file:

```
GET NFT SY:=FRANK::~
PUT NFT FRANK::=~
```

o Issue these ECR commands:

```
get program.for
put program.for
```

Other problems with IAS to VMS file transfers

o IAS - Octal Version Numbers
  VMS - Decimal Version Numbers

  Wild-card transfers screw up

o VMS names and types extended from limit of 9/3 characters to 39 (39 ????) characters

o VMS names not encoded rad-50 can contain (_) (-) or ($)

o VMS had named directories and up to 7 subdirectories.

From DECnet-IAS Release Notes

RMT Terminal Characteristics

"The features that are not supported include restore cursor position, read with time out, send XOFF, and read with a specified special terminator."

```
00134:  MOV     .MCRTO,R3
        CLR     R2
        DIV     #12,R2
        MOV     R2,G00046
        MOV     #G00026,-(SP)
        EMT     377
        CMPB    G00136,#IS.TMO
        .
        .
G00026: NEG     R3
        .WORD   IO.RPR!TF.TMO
        WAIT
        WAIT
        .WORD   G00136
        HALT
        .WORD   G00146
        JMP     (R0)+
G00046: HALT
        .WORD   E01146
        RTT
```

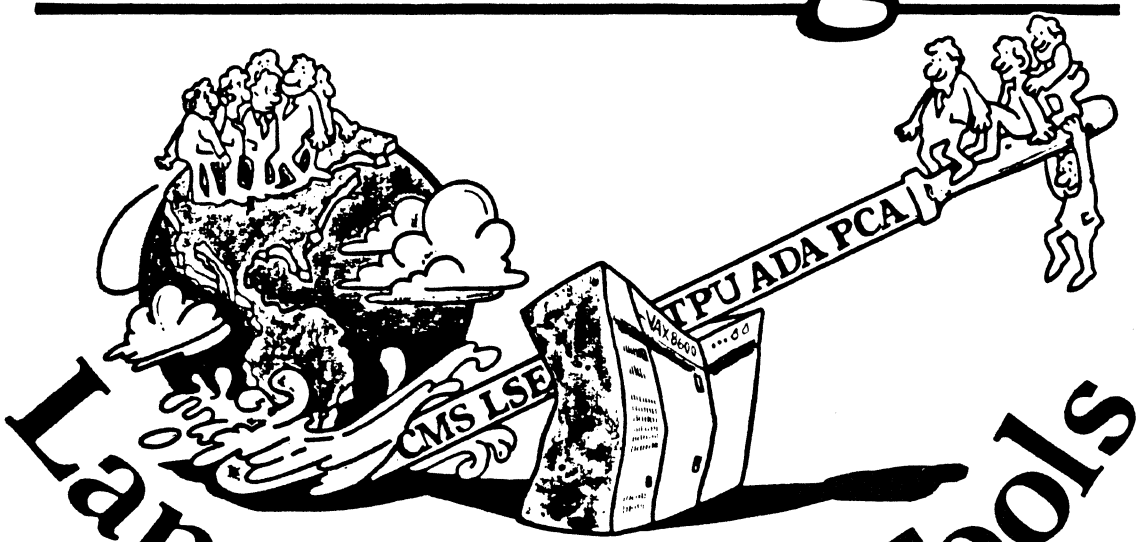

Problems with SET HOST

- RMT cannot connect to a VMS host. (Unsupported utility RVT can, but I can't get it)
- RMT on IAS does not pass an <esc> character so the following things don't work.
  - MCR>RUN PROGRAM<esc>
  - Escape sequence keypad mode. (You go into KED in screen mode and can never get out again.)

DECnet IAS Wishlist

- Fix RMT or HT so that it will pass escape character.
- Make SET HOST work from IAS to VMS.
- For file transfer to IAS, if name/type is too long, truncate. Also remove '_', '$', & '-' characters. Convert version number from dec to oct.
- Fix remote terminal handler to do read with prompt, read with terminator, etc.

Leverage



Languages & Tools

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EDITOR'S NOTES

This issue of *Leverage* contains a real mix of articles. First are two reports from working groups within the SIG. Wayne Sewell is chairing the Pascal Working Group, and has submitted a status report for that activity. Wayne has taken on a lot of responsibility in the SIG lately, and I hope you will all support him in his new role as chair of this group.

As you may be aware by now, the Commercial Languages has merged with Languages and Tools. Our new Cobol Working Group is chaired by Bill Leroy, who has submitted a column. I believe the print size may be a little small, but I feel the material is important enough to include, despite my not having had the time to transcribe it. You will notice that there are two reports from Bill. For a number of reasons, not the least of which was the U.S. Postal Service taking five days to deliver "Next Day Air", I was unable to get a newsletter to the DECUS office in time last month. Bill has sent me a second submission, and I've included both in this issue.

Dr. Gilbert Cardwell, of Precision Visuals, has submitted an article on User Interface Management Systems. I found it interesting, and hope it will prove so for you too.

Finally, also in this issue is a revised version of the 'Masters' List, and an update on the VAX Languages and Tools release status.

Enjoy. I'll see you next month.

Al Folsom
Leverage Editor

L&T SIG COBOL Working Group

by

Bill Leroy

To all users of the DEC COBOL language:

It is now official, the **COBOL Working Group** of the Commercial Languages SIG has merged, effective July 1st, 1987, into the Languages & Tools SIG, with Ed Woodward of SAIC, 10210 Campus Point Drive, M/S #24, San Diego, California 92121 -- as **COBOL Working Group** Chairman. I will continue to be the **COBOL Working Group** Editor, submitting material to Alan Folsom, the L&T Newsletter Editor, for publication.

In the next issue, we will be reporting on Ed's attendence at the L&T's Woods meeting to be held the middle of July. This is the meeting where the past year is reviewed, and the next year is planned for.

Please send me copies of any SPR's submitted to DEC, so that we may keep the COBOL community at large aware of what is happening. Remember, **DIVIDED**, we don't know what is happening, **UNITED**, we can conquer the world.

And finally, please send any questions, hints, kinks, wish list items, bugs, "puff" sheets on yourself to be showcased in a future issue, new members, or whatever -- on pieces of paper, or if a long article, in VAX/VMS format, on 1600 bpi magnetic tape, or TK-50 magnetic tape -- to me at:

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Atlanta, GA 30305-2120

Showcase on members - Mike Error

Mike is a programmer with the Croatian Fraternal Union of America (CFU), an ethnic life and health insurance, and financial organization. He has a VAX 11/750 with 6 mb of memory, 3 RA-81's, 1 TU-81, 16 Intecolor 220 terminals, 6 DEC 241 terminals, 1 LQP-03, 5 LN-03's and 2 line printers.

CFU uses COBOL, Datatrieve, and WPS-Plus. Color terminals are used to aid in being more user friendly. USER activity is through the use of menu's that lead to display screens for file maintenance, and run-time menu's for batch processing and DCL commands. All transactions are journalized, and may be recalled to a screen for status and/or audit. Most of the printing is done on one of the five LN-03's, including their insurance policies. Premium notices, financial advice, and some letters are sent in self-contained mailers.

Building List Processing Files from COBOL

Michael Error
Croatian Fraternal Union of America

When printing a form letter using COBOL it is difficult to achieve the desired professional looking document and ease of modifying the wording of letters. This is due to the rigid structure necessary to insert fields that will be placed in the letter such as name, dates, values, etc. One solution is to use list processing in a word processor to print high quality form letters. A problem here is that you cannot access

most files or do all the complex calculations that can be done using COBOL.

A solution that I have been starting to use is to build a list processing list document file using a COBOL program. This way I can accessor any type of information on the CFU system, calculate any type of value and then produce the quality form letters that CFU needs. The following description is a simple and non-detailed example of how it is done at CFU. The output file can be written to any desired location that my word processor's document transfer utility can access. CFU is currently using DEC's WPS-Plus.

```
SELECT WPS-FILE ASSIGN "wpsfile.dat".
```

The file must have a variable length record structure. The reason is that a fixed length record when transferred into the word processor keeps the carriage return at the end of the record. In the case of a name with 20 characters, that is in a record defined as 80 characters, shows up as an 80 character name in the document. The simple solution of a variable length record sets the carriage return right after the last character in the data field, allowing all of our documents to be properly formatted.

```
FD  WPS-FILE
        RECORD VARYING IN LENGTH FROM 1 TO 40 CHARACTERS
            DEPENDING ON WPS-REC-LENGTH.
01  WPS-REC                PICTURE X(40).
```

The list names are all seven (7) characters in length, except for the end record marker. This eliminates having to remove spaces between the list name, and its corresponding data fields.

```
01  WPS-LIST-TYPES.
    05  LIST-FNAME     PICTURE X(7)   VALUE "<FIRST>".
    05  LIST-LNAME     PICTURE X(7)   VALUE "<LNAME>".
    05  LIST-END       PICTURE X(2)   VALUE "< >".
```

The following are examples of fields that calculate the record length and write the list name and data to the output file.

```
01 WPS-DATA-LINE.
    05  WPS-LIST-TYPE     PICTURE X(7).
    05  WPS-FIELD-DATA    PICTURE X(33).

01 WPS-REC-LENGTH       PICTURE 99  VALUE 40.

01 WPS-REC-LENGTH-FIELD.
    05  WPS-REC-LENGTH-CHAR PICTURE X OCCURS 40 TIMES.
```

In the PROCEDURE DIVISION, the following routines are used to extract the information that was needed for the letter. These MOVE statements create a record with the list type and its associated data fields.

```
MOVE LIST-FNAME TO WPS-LIST-TYPE.
MOVE name-field     TO WPS-FIELD-DATA.
PERFORM WPS-WRITE.
```

This next routine performs the write of the variable record.

```
WPS-WRITE.
    PERFORM LENGTH-COUNT-RTN.
    WRITE WPS-REC AFTER 1.
```

The LENGTH-COUNT-RTN is used to calculate the number of characters in the record. It starts at 40 characters and subtracts 1 each time until it finds the first non-space position from the right. It then returns to the WPS-WRITE routine, and writes out the variable length record.

```
LENGTH-COUNT-RTN SECTION.
LENGTH-COUNT-A.
    MOVE 40 TO WPS-REC-LENGTH.
    MOVE WPS-DATA-LINE TO WPS-REC, WPS-REC-LENGTH-FIELD.
LENGTH-COUNT.
    IF WPS-REC-LENGTH-CHAR(WPS-REC-LENGTH) NOT = SPACE
       GO TO LENGTH-COUNT-EXIT.
    SUBTRACT 1 FROM WPS-REC-LENGTH.
    IF WPS-REC-LENGTH = ZERO
       MOVE 1 TO WPS-REC-LENGTH
       GO TO LENGTH-COUNT-EXIT.
    GO TO LENGTH-COUNT.
LENGTH-COUNT-EXIT.
    EXIT.
```

A user then uses the document transfer utility to pull the file into the word processor and print the letters. I have not yet tried any method of automating this part of the procedure, or placed any elaborate error checking routines in the program. However, I must say that it works for CFU.

A definition of STRESS

That confusion created
when one's mind overrides
the body's basic desire
to choke the living tar
out of some nogood SOB
who desperately needs it.

L&T SIG -- COBOL Working Group
by
Bill Leroy

To all users of the COBOL language:

Membership in the DECUS L&T COBOL Working Group is open to **ALL users of "anybodys" COBOL on any DEC computer**, including Rainbows, VAX-Mates, PDP-11s, VAXs and DEC-10s and 20s, and clones. The known compilers are "RM/COBOL-8X" from Ryan-McFarland, "COBOL-Plus" from S&H Computer Systems, DEC's "COBOL-81" on the large PDP-11's, as well as DEC's compilers for the VAX and DEC-10's and 20's.

If any of you out there feel abandoned, lost, homeless -- probably the COBOL Working Group is not the answer -- but if you want to know of someone else using COBOL that you can ask to try out the same problem you are having before sending in an SPR (to verify that you are not crazy) -- Welcome Friend! -- and if you send me your address, I will send you (at least for a while) a copy of this material as it is submitted to DECUS (a six+ weeks lead time!).

Attached is a copy of an article on "The Care & Feeding of Working Groups", written by Sam Whidden and Marg Knox. Sam is the chair of the L&T SIG. The article originally appeared in the June 1987 "SUGgestions", published by DECUS for its leadership.

And finally, please send any questions, hints, kinks, wish list items, bugs, "puff" sheets on yourself to be showcased in a future issue, new members, or whatever -- on pieces of paper, or if a long article, in VAX/VMS format, on 1600 bpi magnetic tape, or TK-50 magnetic tape -- to me at:

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"The COBOL 85 Example Book"
by
Jerome Garfunkel

A Wiley-Interscience Publication -- ISBN 0-471-80461-4 (pbk)

Bruce Gaarder of the COBOL Working Group is trying to get Jerome Garfunkel for a DECUS Pre-Symposium Seminar (PSS) in Anaheim, which we hope you will plan on attending. I recently purchased a copy of the book, and found it quite fascinating. The book is pocket sized (4-1/2" by 7" by 7/8") and easy to read. His examples are good, and there is a liberal use of bold and reversed text for highlighting. For those of you still looking forward to converting old programs to COBOL 85, his section on conversion should be of great help. The book is divided into six sections:

I.	Introduction	(pp 1 - 28)
II.	Syntax Skeleton	(pp 29 - 68)
III.	Examples	(pp 69 - 148)
IV.	Conversion of COBOL 74/68 Programs	(pp 147 - 206)
V.	Appendices	(pp 207 - 310)
VI.	Index	(pp 311 - 322)

I personally would recommend it as a "PURCHASE ITEM" to all members of the Working Group. By the way, the price is affordable.

Showcase on members -- Mike Skypek

Mike is the system manager of two clustered VAX 785 systems at STANLEY-PROTO Industrial Tools, Covington, Ga. The two systems are used for manufacturing and distribution applications, with over 100 terminals and four C.ITOH LIPS-10 laser printers, all connected via ETHERNET. Other equipment includes 3 TA-78s, two HCS-50s, 16 RA-81s, and two line printers. The major languages used are COBOL, BASIC, and Datatrieve.

SOME COMMENTS ON VAX COBOL

by
Mike Skypek

SUGGESTIONS

Having worked with a variety of languages, on a variety of machines, I have been relatively pleased with VAX COBOL as a business language. The only improvements that I could suggest are the following functions:

- START regardless of locks. RMS allows Macro programmers this functionality, so why not give it to COBOL programmers?

- Support of segemented keys. Again, RMS gives MACRO (and BASIC) programmers this feature. Why limit COBOL?

HINTS

Most other "programming challenges" are easily solved with the use of system library calls and/or small macro subprograms. To illustrate the use of these, I am including a situation that can be of use, at least in principal, to other COBOL programmers.

When laser printers started proliferating, users naturally wanted the ability to get a hardcopy of their screen displays or of file inquiries. The COBOL programs could be modified to output the desired information to file. The challenge was to print the files. Possible solutions were:

- The LIB$SPAWN subroutine. This creates a subprocess, executes the print commands via DCL, and returns to the calling program. However, many users had a subprocesses limit of 0, not allowing a program to use the LIB$SPAWN service.

```
CALL "LIB$SPAWN" USING BY DESCRIPTOR "PRINT filename".
```

- The LIB$DO_COMMAND subroutine. This method exits the program and DCL executes the command. Control is not returned to the calling program.

```
CALL "LIB$DO_COMMAND" USING BY DESCRIPTOR "PRINT filename".
```

- The $SNDJBC system service. This sends a request directly to the job controller and returns to the calling program. The $SNDJBC call is complicated and a small macro subprogram can greatly simplify use of this service. This option was chosen as the best solution, and below is a macro routine that I found on a DECUS tape and modified. The modifications allow for better use of laser printer features.


```
        .title  jbcshell
        .ident  /v1/
;++
; This module provides a shell to the $SNDJBC system service, allowing
; calling programs to queue files for printing.
;
; Author: Eric Wentz  27-Nov-1985
;               -  Original version (on Decus tape - VAX86A)
; Mods:   Mike Skypek 17-Jan-1987
;               -  Remove code for submitting jobs to batch.
;               -  Add/remove various print options.
;--
        $SJCDEF                 ; $SNDJBC definitions
;++
;============================================================================
;       JBC_PRINT
;
; Calling sequence: (IN COBOL):
;
; 01    FILE_NAME               PIC  X(15) VALUE "SPL$:CUSORD.LIS"
; 01    QUEUE_NAME              PIC  X(15) VALUE "FINANCE_LASER"
; 01    SETUP_MODULE            PIC  X(15) VALUE "LANDSCAPE"
; 01    NUM_COPIES              PIC S9(09) COMP VALUE 1.
; 01    DELETE_FLAG             PIC S9(09) COMP VALUE 0.
; 01    HOLD_FLAG               PIC S9(09) COMP VALUE 0.
; 01    RETURN-CODE             PIC S9(09) COMP.
;
;       CALL "JBC_PRINT" USING  BY DESCRIPTOR FILE_NAME
;                               BY DESCRIPTOR QUEUE_NAME
;                               BY DESCRIPTOR SETUP_MODULE
;                               BY REFERENCE COPIES
;                               BY REFERENCE DELETE_FLAG
;                               BY REFERENCE HOLD_FLAG
;                       GIVING RETURN-CODE.
;
; Below is an example using literals and defaults.
;
;       CALL "JBC_PRINT" USING  BY DESCRIPTOR "SPL$:TRANS.LIS"
;                               BY DESCRIPTOR "FINANCE_LASER"
;                       GIVING RETURN-CODE.
;       IF RETURN-CODE IS FAILURE PERFORM PRINT_FAILED_ROUTINE.
;
; Parameters
;       file-name       name of the file.
;       queue           name of the queue.
;       setup           allows one to specify a setup module in the
;                       device control library.  Setup modules can be
;                       used to specify fonts, pre-designed forms,
;                       and/or whether to use PORTRAIT or LANDSCAPE
;                       mode on laser printers.
;                       (default = no setup module)
;       copies          number of copies - (default=1).
;       delete_flag     true (odd) if file is to be deleted
;                       (default = false).
;       hold_flag       true (odd) if file is to be held
```

```
;                       (default = false).
;       return-code     status of call.
;                       (See $JCBMSGDEF macro for definitions).
;+-----------------------------------------------------------------------
;--
;++
; Define AP offsets for JBC_PRINT
;--
        FILE    = 4
        QUEUE   = 8
        SETUP   = 12
        COPIES  = 16
        DELETE  = 20
        HOLD    = 24
;
        .PSECT  JBC_SHELL RD,SHR,NOWRT,EXE,PIC,LONG
        .ENTRY  JBC_PRINT M<R2,R3>
        CLRL    -(SP)                   ; Set end of list on the stack
;
; Create an item list entry with the file specification
        SUBL    #12, SP                 ; Allocate an item list entry
        CLRL    8(SP)                   ; Clear the return address
        MOVQ    @FILE(AP),(SP)          ; Load up file descriptor
        MOVW    #SJC$_FILE_SPECIFICATION,2(SP) ; And the item type
;
; Create an item list entry with the queue name
        SUBL    #12, SP                 ; Grab another item list entry
        CLRL    8(SP)                   ; Clear the return address
        MOVQ    @QUEUE(AP),(SP)         ; Get the queue descriptor
        MOVW    #SJC$_QUEUE,2(SP)       ; Load the item type
;
; If requested, specify the setup module
        CMPW    #2, (AP)                ; Argument there ?
        BGEQ    30$                     ; Branch if only two arguments
        MOVL    SETUP(AP), R0           ; Get address of descriptor
        BEQL    30$                     ; Branch if null ptr
        SUBL    #12, SP                 ; Allocate an item
        CLRL    8(SP)                   ; Clear the return address
        MOVQ    @SETUP(AP),(SP)         ; Get the queue descriptor
        MOVW    #SJC$_FILE_SETUP_MODULES,2(SP)  ; Set setup flag
;
; If requested, specify the number of copies
30$:    CMPW    #3, (AP)                ; Copies specified ?
        BGEQ    40$                     ; Branch if only 3 arguments
        MOVL    COPIES(AP), R0          ; Null pointer ?
        BEQL    40$                     ; Branch if null
        SUBL    #12, SP                 ; Get another item
        CLRL    8(SP)                   ; Clear the address
        MOVW    #4, (SP)                ; Length of a longword
        MOVW    #SJC$_FILE_COPIES, 2(SP); Item type
        MOVL    R0,4(SP)                ; Address of number of copies
;
; If requested delete the file after printing
40$:    CMPW    #4, (AP)                ; Delete flag specified
        BGEQ    50$                     ; Branch if only four args
```



```
        MOVL    DELETE(AP),R0           ; Null pointer ?
        BEQL    50$                     ; Branch if null pointer
        BLBC    (R0), 50$               ; Branch if no delete
        SUBL    #12, SP                 ; Item space
        CLRL    8(SP)                   ; Clear return address
        CLRQ    (SP)                    ; Clear the 1st 2 longwords
        MOVW    #SJC$_DELETE_FILE,2(SP) ; Set the delete item
;
; Finally, specify whether or not we should 'hold' the file
50$:    CMPW    #5, (AP)                ; Hold flag specified?
        BGEQ    90$                     ; Branch if only five args
        MOVL    HOLD(AP),R0             ; Null pointer ?
        BEQL    90$                     ; Branch if null pointer
        BLBC    (R0), 90$               ; Branch if no hold
;
; Here, we should specify that the file should be held
        SUBL    #12, SP                 ; Item space
        CLRL    8(SP)                   ; Clear return address
        CLRQ    (SP)                    ; Clear the 1st 2 longwords
        MOVW    #SJC$_HOLD_FILE,2(SP)   ; Set the hold item
;
; Queue the file for printing
90$:    MOVL    SP, R1                  ; Get item list pointer
        SUBL    #8, SP                  ; Make room for an IOSB
        MOVL    SP, R2                  ; R2 now points to the IOSB
        $SNDJBCW_S FUNC = QFILE,-       ; Call the system service
                   ITMLST  = (R1),-     ;
                   IOSB    = (R2)       ;
        BLBC    R0, 100$                ; Branch on system service err's
        MOVL    (SP), R0                ; Return IOSB status
100$:   RET                             ; Return with status to caller
QFILE:  .LONG   SJC$_ENTER_FILE         ; $SNDJBC function code
        .END
```

Pascal Working Group Status

E. W. (Wayne) Sewell, Chair

June 16, 1987

The Pascal Working Group was formed at the Nashville Symposium, at the inaugural BOF held on Friday morning. Three persons were present, though one wasn't interested in joining the group. The remaining two were myself and Denny Thury (see address list). John Reagan (DEC VAX Pascal developer) had planned to attend, but forgot. I talked to him later. A few other people signed up on Friday as I approached them individually.

The initial goals of the Pascal W/G are to:

1. Organize sessions (including tutorials, panels, and clinics) and BOFs at Symposia pertaining to Pascal.
2. Solicit newsletter and Proceedings articles on Pascal.
3. Interface with Pascal development staff at Digital.
4. Coordinate with Masters Program to make effective use of Pascal Masters for user-assistance, clinics, field-testing, product-reference, etc., and to recruit new Pascal Masters for the program.
5. Report on current status of Pascal standardization effort.
6. Solicit wish list items for Pascal, to be incorporated into the main Languages and Tools list.
7. Solicit Pascal-related submissions to SIG tape, such as environment and include files and utilities and sample programs written in Pascal.

In realization of the first goal, the working group came up with some ideas for sessions at Anaheim. In addition to the three I have already submitted (software engineering in Pascal; the WEB language, which isn't strictly Pascal, but uses it internally; and the working group meeting, of course), we thought of a couple of topics.

1. A panel of users discussing exotic applications using Pascal. The emphasis would be on projects not normally associated with Pascal (similar to my talk on systems programming in Pascal at the San Francisco symposium). Four speakers would be needed, each with a ten minute slot, followed by Q & A directed to all four.
2. A presentation explaining use of VAX Pascal attributes, one of the most confusing areas of VAX Pascal and the largest departure from standard Pascal.
3. A session on VAX Pascal internals. This wasn't actually discussed at the BOF—I came up with it myself later. Digital has presented compiler internals before (primarily the VCG, the common code generator used for the C, Scan, and PL/I compilers).

Items 2 and 3 above have already been passed to DEC—I talked to John Reagan about them.

Future goals to strive for after the group is more established:

1. Pre-Symposium Seminars on Pascal programming.
2. Direct involvement in standardization effort. (Dependent on overall DECUS policy on standards).

Any DECUS member who is interested in Pascal and wishes to join the working group is invited to contact Wayne Sewell, Pascal Working Group Chair. Name, address, and phone number are requested, as are addresses other than US Mail (Arpanet, Bitnet, Compuserve, DCS, BIX, MCI Mail, jungle drums, etc). Additionally, anyone who has an exotic application of Pascal and would like to be on the panel mentioned above is *definitely* invited to contact the W/G.

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June 16, 1987

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"An Introduction to User Interface Management Systems"

Gilbert F. Cardwell, PhD
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ABSTRACT

This paper provides an introduction to a newly emerging group of software development tools most frequently called User Interface Management Systems (UIMS). Major topics covered include: a) the problems associated with development of user interface software, b) the development of the UIMS concept, c) the parts and functions of a UIMS, d) the benefits associated with use of a UIMS, e) guidelines for design and selection of a UIMS, and f) a review of commercially available systems.

INTRODUCTION

Development of the user interface portion of interactive software systems is not well supported by current software development methods and tools. Typical "top down" approaches fail to address the range of problems typical of interface design.

The Constellation of User Interface Problems

Differences Between Users. Computer users, like most groups of people, are a diverse collection of individuals. They are very different in their experience with and tolerance for computer based tools. They need different user interface techniques to get started with and to continue using an automated tool.

Users Do Not Participate. Current system planning and design techniques do not allow users to participate effectively in creation of what is to become their system. Typical users cannot understand design documents. From pages of menu layout specs they could never see where bottlenecks would emerge in actual use of a new system.

Divided Responsibility. Responsibility for design of a user interface is often divided among several members of a development team each of whom has many other duties.

Limited Resources. The effort required to build the non-user interface parts of an application is so large that more

sophisticated interface methods cannot be implemented with available resources.

Difficult to Modify. When a poor interface must be changed development managers realize that major portions of an application must be rewritten.

Over the past several years workers at a number of academic and industry sites have attempted a software tools based solution to this constellation of problems. The result of their efforts is a new generation of Computer Aided Software Engineering tools most frequently called User Interface Management Systems or UIMS.

WHAT IS A USER INTERFACE MANAGEMENT SYSTEM?

But what, exactly, is a User Interface Managment System and how can these tools help with the design and development of interactive computer systems? There are three key elements in the definition of a UIMS:

1. A UIMS is a set of shared or reuseable code modules which are separate and independent from application specific software.

2. Shared or reuseable code modules implement an abstract or generalized set of user interaction or "dialogue" techniques.

3. UIMS code modules are designed to work with a set of methods, techniques or tools for the description or specification of the user interface for specific applications.

Implicit in this definition are a number of familiar concepts. In fact, UIMS's are not so much a revolutionary idea, as a bringing together and integration of several quite familar software tools ideas.

Windowing Systems and the UIMS Concept

One important precursor or model for UIMS's is the windowing systems found on many of today's advanced workstations and personal computers. Windowing systems, like that illustrated in Figure 1, help applications manage the visible or "display" portion of a user

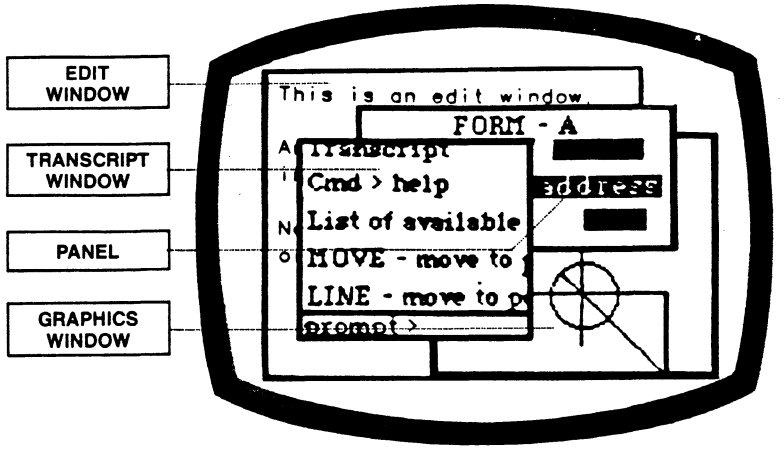

Figure 1. A multi-window display showing windows of several different types. Windowing systems are a widely used software tool where a portion of the user interface has been separated from application specific software.

interface. These system also provide cursor positioning and button click operations which allow users to move, size, overlap, and even delete portions of the display. Any application constructed to run in a windowing system includes two elements that are fundamental to the UIMS concept:

Reused Code. The windowing portion of the user interface is implemented in code which is shared or reused by a number of applications.

Independent Code Modules. The software which controls windows is separated from and independent of the code which performs the actual work of the application.

Separation in this case means that application code can be built and modifed with little or no effect on the windowing system. In fact, in most systems windowing code is hidden away from the application programmer in what is usually regarded as part of the operating system.

Graphics Standards and Logical Input Devices

There is, however, much more to a typical user interface than management of display regions or "windows". A second important component is handleing of input devices. The joysticks, knobs, dials, joydisks, tablets, mice, keyboards, and function keys included with today's graphics terminals and workstations are also a very significant portion of an application's user interface.

The challenge of managing this diverse range of devices has lead to development of a second important precursor of the UIMS concept. Both the older CORE and the more recent GKS graphics

standards include the concept of a virtual or "logical" input device. As illustrated in Figure 2, a logical input device is an idealized

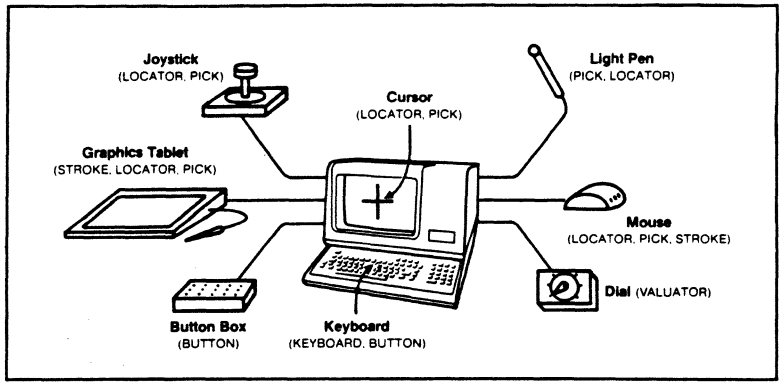

Figure 2. Many different physical devices can be supported by a given logical device. The logical device concept is part of all modern device independent graphics packages.

device of a particular class. For example, a "locator" device always returns to the application a pair of coordinate values together with a button or trigger number. To enter a locator value the user may have used cursor keys, a joystick, a mouse, a tablet or any of a number of very different input devices. However, when the application uses a "logical" input device it need not know about or allow for the major differences between physical devices. Again, applications constructed to run on a modern graphics system include two fundamental elements of the UIMS concept:

Reused Code. Code which manages input devices and is shared or reused among several applications.

Independent Code Modules. Graphics system code is separated from and independent of application specific software.

Separation in this case provides device independence. Input devices may be changed with little effect on application code.

Forms Packages and Fourth Generation Languages

But user interfaces are also more than logical input devices and windows. Missing from both these concepts is any means to specify a dialogue between the user and the application. That is, a user interface must set the ground rules for communication

between the application and the user. The interface must specify what the user can say to the application and when s/he can say it. And, similarly, the interface must specify what the application can say to the user and when it can make a statement. The Forms and Menuing packages which are part of modern data base systems and their "fourth generation languages" are existing systems which tackle part of the dialogue problem.

Forms are a popular form of user computer dialogue. The titles and prompts on a form define "what the application may say to the user" and the data fields and menu selections on a form define "what the user may say to the application" (see Figure 3). But most important

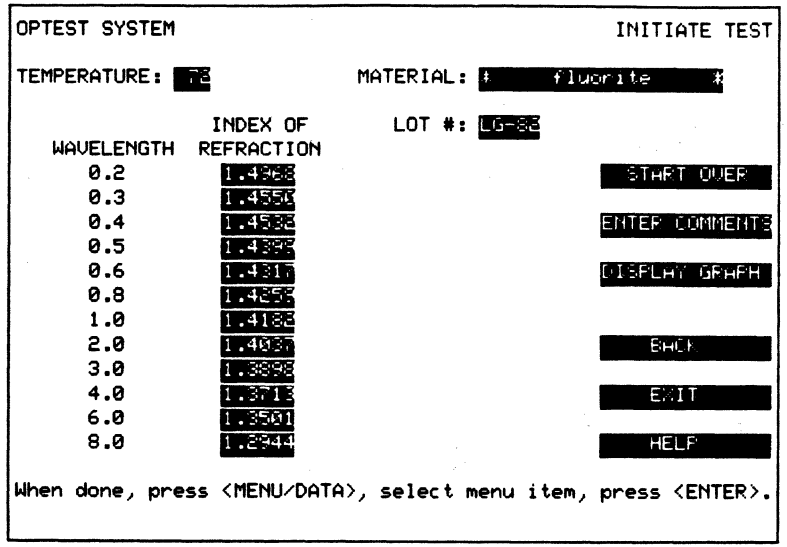

Figure 3. The forms style of user-computer dialogue is supported by many data base systems and their associated "fourth generation languages". These forms systems are an example of an abstract or generalized dialogue technique.

for our purposes, forms packages implement an abstract or generalized interaction technique. Provided with forms packages are reuseable code modules which are designed to display forms and manage entry of data into form fields. But these code modules are general purpose. They can display and manage a wide range of forms. The specific form they will display is defined in a data structure which is separate from the forms management software. Further, that data structure can be readily replaced as new forms are required.

Forms packages also provide tools or methods for the description of a particular form. These tools vary from form description languages to "what-you-see-is-what-you-get", forms editors. But

what ever method they employ, applications which use forms packages include three elements that are fundamental to the UIMS concept:

A Generalized Dialogue Technique. Forms packages provide an abstract or generalized user interaction technique. Specific forms can be produced without any coding effort.

Dialogue Tools. Forms packages provide code modules that work with a set of methods or tools for the description or specification of a particular dialogue.

Independent Code Modules. Forms packages provide form display and input code that is separate from and independent of application specific code.

Functional separation in the case of forms packages permits the layout and much of the content of a form to be changed with no effect on application specific software.

It is not difficult, then, to see the beginnings of the UIMS concept in windowing systems, logical input devices, and forms managment packages. However, none of these existing systems include the features and capabilities of the others. And, in each area, existing implementations are often too specialized to provide general user interface tools. Forms packages, for example, provide a single kind or style of user-computer dialogue. The forms method works well for data entry applications, but a graphical editor or flight simulator would demand very different dialogue techniques. Further, multiple dialogue techniques may help with the "diversity of users" problem mentioned in the introduction. Forms and prompts might work well for inexperienced or mistrustful users, but the skilled users would probably prefer a command language. To get all the capabilities developers need to solve the user interface problem we must look at complete User Interface Managment Systems.

THE PARTS AND FUNCTIONS OF A UIMS

There have been a number of attempts to classify and model existing interface systems. For example, several models were proposed by the Graphical Input Interaction Technique Workshop [Thomas 83] in this country and another concept was offered by the Seeheim Workshop on User Interface Management [Seeheim 84] in Europe. In their attempt to be all inclusive and completely general, however, these models often fail as vehicles for presentation of the UIMS concept. A more specific and heuristic model is presented in Figure 4.

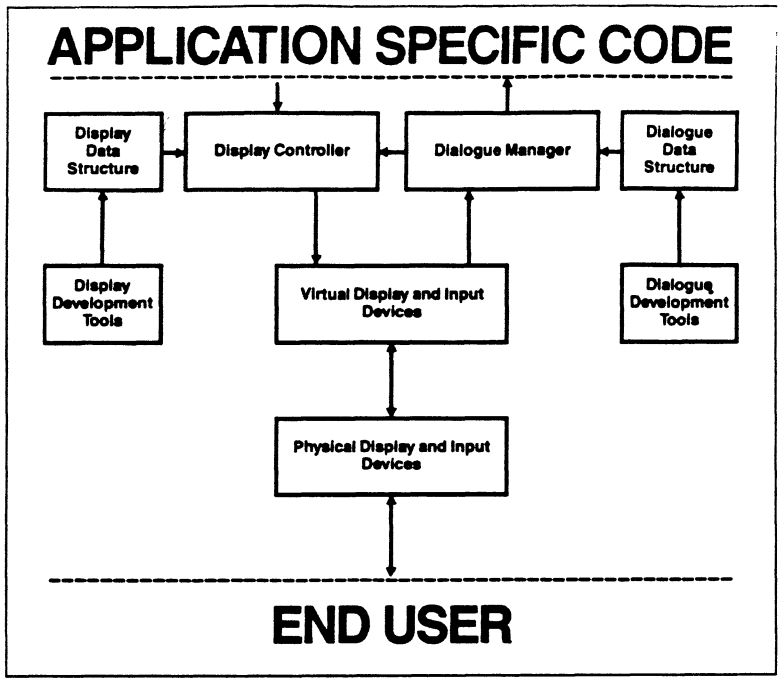

Figure 4. A model User Interface Management System. The end user looks at and operates Physical Devices which are managed by Virtual Device code modules. The Dialogue Manager recognizes valid input based on the Dialogue Data Structure and passes input by the user to the application. The Display Controller presents the system's side of the user-computer dialogue based on the Display Data Structure and provides application specific code with access to display devices.

Virtual Display and Input Devices

At the bottom of the model UIMS is the End User who "looks at" Physical Display Devices and "operates" a set of Physical Input Devices. At the next level is a set of code modules which manage physical devices. These Virtual Display and Input Devices convert a potentially diverse set of hardware into an idealized and consistent set of logical devices. These logical devices are then used as resources by higher level code modules in the UIMS.

The Dialogue Manager

Input from virtual devices is directed to the Dialogue Manager which tests user input for consistency with the current dialogue specification. When the dialogue manager recognizes valid input it will make some or all of the data available to the application and it may use the resources of the Display Controller to present the system's side of the conversation to the user.

Forms managment packages must include a specialized version of a Dialogue Manager. A forms system must use a form definition data structure to validate user input. For example, a form definition data structure might specify that a given field must hold an integer value in the range 0 to 100. The Dialogue Manager associated with the forms system would then test for a valid integer value before passing input to the application.

The Dialogue Manager in a UIMS is a more general purpose module. A typical Dialogue Manager is capable of working with a number of dialogue techniques and can frequently switch between different methods when required. The Dialogue Manager in a UIMS might, for example, allow users to make menu selections in a "menu" window or enter commands in a "transcript" window by simply moving the cursor between windows.

What happens after valid input is recognized varies in different UIMS's. In many system an application specific "Action Routine" is called or invoked to handle a user request. In other systems, an application's request for input is satisfied and control returns to the application. Application invoking designs are termed "external control" as branching control resides outside the application. Designs which return to the application are termed "internal control" as branching control is retained within the application.

The Display Controller

The display controller has two principle functions. It presents the application's side of the User-Computer dialogue to the user and it provides an interface which the application may use to access display hardware.

Again, forms packages include a specialized version of a Display Controller. The appearance of a form is defined in a form definition data structure. The code in a forms package which interprets that data structure to generate a form display is a specialized Display Controller. A UIMS Display Controller is, again, more general purpose. It may include the ability to display forms as well as windows, iconic menus, command prompts, error messages, and other dialogue related displays.

In addition to its role in conducting the computer's side of the dialogue, the Display Controller makes the display hardware available to application specific software modules. The application must generate any displays which cannot be completely handled by the Dialogue and Display Managers. For example, in a graphical editor all menu displays would be handled by the UIMS but the application would control display of the image being created or modified by the user.

Development Tools

To the left and right sides of the diagram are the tools which developers use to specify the interface for a particular application. On the left side are display development tools. For example, a menu editor might be used to produce a graphical data structure. The Display Controller would use that data structure to place a menu on the screen when menu display is requested by the Dialogue Manager. The menu editor in this example is a Display Development Tool and the graphical data structure generated by the editor is some portion of the Display Data Structure for a particular user interface.

On the right side of the diagram are Dialogue Development Tools. These tools might allow developers to specify the command language to be used by a particular application. For example, developers might generate a file which contains the formal specification of a command language grammar (e.g a BNF specification). A utility supplied by the UIMS would then covert the grammar file into a parse table that would be used by the Dialogue Manager to validate user input (see Figure 5). The utility programe in this example is a Dialogue Development Tool and the parse table is part of the Dialogue Data Structure for a particular application.

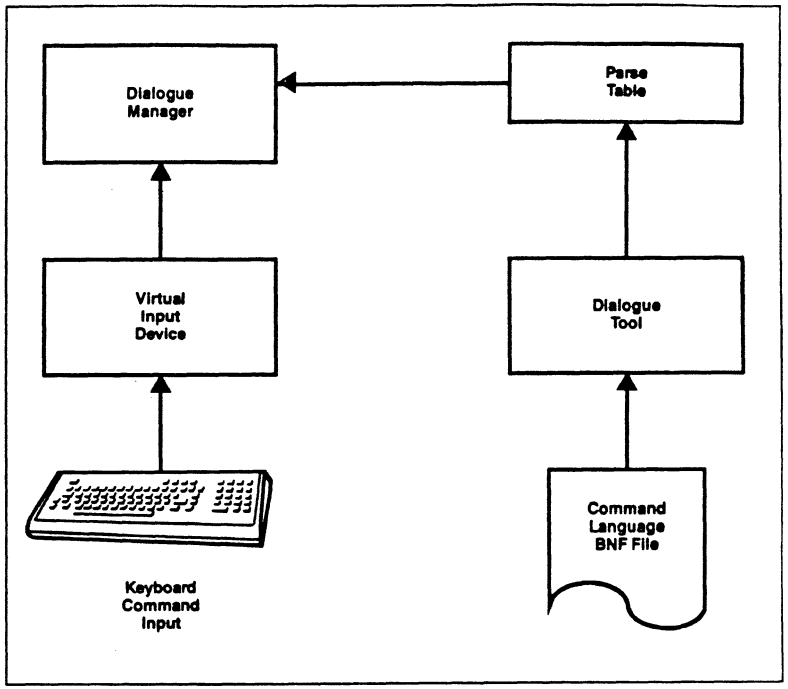

Figure 5. An example of a dialogue development tool. BNF grammar files are created which the development tool converts to a parse table. The parse table is used at run time by the Dialogue Manager to recognize valid command input.

HOW A UIMS CAN HELP

At the earliest stages of the effort a UIMS allows developers to use superior planning and specification techniques.

Rapid Prototyping

One of the major benefits of separating user interface code from application specific software is the prototyping possibilities created by this separation. Menu displays and command languages can be designed and then rapidly implemented using Display and Dialogue Development Tools. In the ideal case these tools require no programming and no knowledge of programming. Designs are turned quickly into error free Dialogue and Display Data Structures. Combined with the precoded, reuseable Display Controller and Dialogue Manager and their support software, interface data structures can be executed directly on target hardware configurations. That is, commands can be entered,

prompts observed, menus displayed, forms filled in, and windows popped before any application code is written. Users are able to take the application for a "test drive" as part of their evaluation of a user interface design.

Involving End Users

Among its major benefits, the ability to prototype user interfaces allows end users to participate effectively in the planning and design process. When users are asked to evaluate a prototype and their suggestions are incorporated into a new version, they become a very real part of the development team. The system is no longer a set of procedures which will be imposed on users, it is a tool they helped create. Responsibility for success of the project is now shared by end users and the development team.

In addition, prototype evaluation allows developers to learn more about their user community. If prototypes come back with conflicting modification requests, developers can recognize the need for and make plans to provide multiple dialogue techniques.

Standard, Consistent, Easy to Learn User Interfaces

Consistency is one of the key elements in a high quality user interface. In consistent systems:

1. Users have less to learn as they familiarize themselves with an application.

2. What users have learned in one area of the system does not interfere with and cause errors in their use of other parts of the system.

3. Users readily form "mental models" of the system which allow them to predict how a feature used for the first time will operate. This ability to guess makes applications seem safe, predictable, familiar.

A UIMS can have a very direct effect on consistency. Part of the user interface is supplied by the UIMS. If menu selections are made by moving the cursor to "point at" a selection and then clicking a trigger button, those methods are coded into the Display Controller and Dialogue Manager. They need not be specified by the development team and are guaranteed to be the same in all parts of the application and in all applications developed with a given UIMS. Many other aspects of an interface can be similarly "supplied" by the system. A partial list includes: window functions, cursor positioning techniques, command entry and editing operations, menu formats, prompt and message positioning, form field delineation and many others. The net result can be that users know a very great deal about a

new application because they have used other applications developed with the same UIMS.

User Interface Specialists

When good user interface tools are used as part of a project, developers are able to spend their time designing rather than coding the user interface. This ability to focus on design issues often allows organizations to select a member of the development team for the role of "User Interface Specialist." Among a number of other important duties, these specialists can produce "style guides" which provide recommendations for the many design decisions that make up a user interface.

It might be recommended, for example, that a title listing the name of an application always be placed on the upper left of a menu and a subtitle describing a menu's function be placed on the upper right of the display. Good user interface tools may also allow creation of templates that encourage consistent style. For example, a menu editing tool might read a stored command file to produce a "dummy" or starter menu. The words "TITLE" and "SUBTITLE" would appear on the template menu at desired locations and the developer's task would be to "edit in" a specific title and subtitle (see Figure 6).

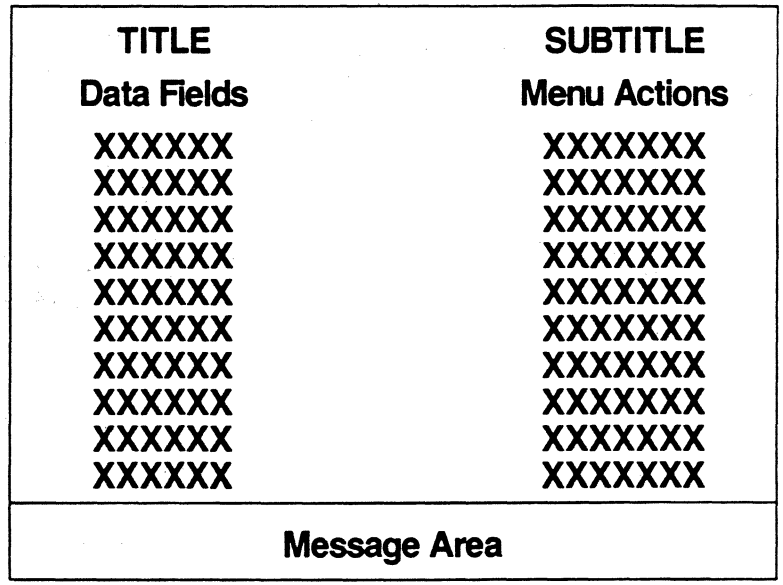

Figure 6. A "template" form that might be created by a Display Development tool. Consistency in the user interface is encouraged by providing a "starter" layout that developers would edit to produce a specific form.

Increasing the Developer's Range of Options

Differences between users is one of the major challenges of user interface design. Users differ from one another not only in their experience and comfort level with automated systems but also in:

1. The time they are willing or able to devote to learning a new system.

2. Their mastery of prerequisite skills such as typing or a technical vocabulary.

3. The frequency and duration of their use of an application.

4. The time they have available to complete a task.

5. The level of frustration they will tolerate before abandoning use of the system.

And a myriad of other large and small factors that make each user a unique individual. Given the universal truth of human diversity user interface design efforts should begin with the question:

"How many and which user interaction techniques should we make available with this application?"

"Code-it-from-scratch" design methods rarely ask this question because they can't afford the answer. Many person-years would be required to code several very different user interfaces for the same application. Few projects are large enough to justify this level of effort devoted solely to the user interface portion of the application.

But the problem of human differences has yet another challenge in store for user interface developers. Users are not only different from one another but change over time. User interfaces must also be dynamic. At a minimum a good user interface should allow users to quickly and easily select among several styles of interaction.

Again, conventional coding methods have little hope of meeting this requirement. Application programmers are not specialists in the design and development of user interface systems. While many may know how to build a command parser or design a menuing system, very few have struggled with the problem of making several interface styles concurrently available in the same system.

A Fully Implemented User Interface

A full, complete, or finished user interface is also a major

problem for conventional development methods. A single project may, for example, justify development of a command parser as the key element in a command language interface. However, time may not permit implementation of a host of ancillary features such as:

1. Command editing and recall capabilities.

2. Acceptance of unique command abbreviations and prompting for ambiguous commands.

3. Help features which list and explain each currently available command.

4. Help features which make approprate sections of the user's manual available from within the application.

5. The ability to save and replay command sessions.

Among the most significant benefits of a UIMS is its ability to increase a development team's range of options. When using UIMS tools developers are able to assemble rather than develop interface software. The result is that multiple interaction methods and very complete interface implementations become feasible for even modest projects.

Easing the Maintenance Burden

Maintenance of existing applications is often the single most costly activity associated with software development. Maintenance is required, of course, because software exists in a dynamic and changing environment. New requirements are identified which lead to enhancement of existing systems. Newer, cheaper, more capable hardware becomes available and applications must be ported to multiple computor systems.

Clean separation of functions between code modules is the most promising approach to minimizing maintenance efforts. If all machine and device dependencies are isolated in code which implements Virtual Input and Output Devices then only these portions of code need to be replaced when new hardware must be supported.

Similarly, separation of user interface functions from application code can greatly reduce maintenance efforts. Just as UIMS tools allow rapid prototyping of user interfaces, changes to only the user interface portion of an application can often be quickly and easily implemented.

HOW TO SELECT A UIMS

Having recognized that the user interface problem can be solved

by development of appropriate tools, the question becomes:

"How can an organization insure that a particular UIMS will deliver on the promise of more rapid development of better user interfaces?"

There are really two separate and somewhat independent systems in any complete UIMS. There are first the reuseable code modules we have labeled the Dialogue Manager, the Display Controller, and Virtual Input and Output Devices. The second major aspect of the system are the Development Tools which allow developers to implement specific user interface designs.

System evaluation should begin with a review of the reuseable code modules as these systems provide the foundation for the remainder of the UIMS. These modules also include the "built-in" user interface features that will become part of all applications developed with that system.

User Interface Features

To support the user with a minimally adequate user interface reuseable code modules must provide:

Multiple Dialogue Techniques. Dialogue methods should include commands, forms, menus, and graphical interaction methods such as returning a coordinate value and picking a graphical object.

Dialogue Switching. The UIMS must supply easy and unrestricted methods for users to switch between dialogue techniques. As shown in Figure 7, a menu might be displayed in one window but the user is allowed to enter commands by moving the cursor to a second window and typing a command string.

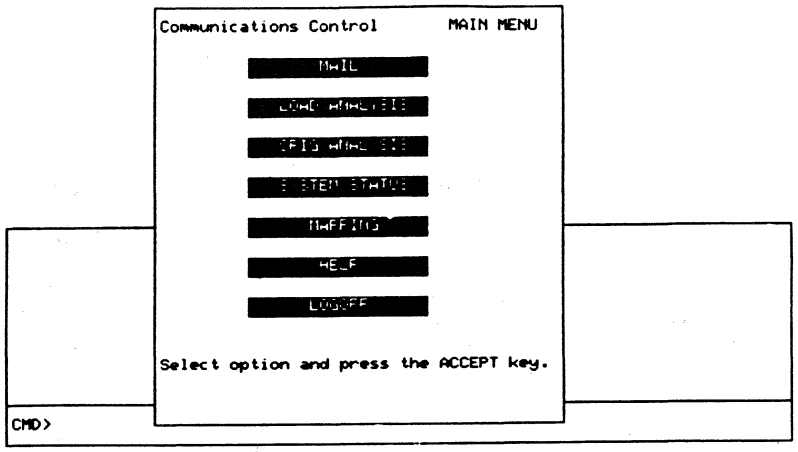

Figure 7. Simultaneous display of a command and a menu window allows users to select between different dialogue techniques.

Complete Implementation of Supported Dialogues. The system must supply a finished implementation for each supported dialogue method. For example, if forms are supported then: 1) editing of data values should be supported, 2) the system should readily accept default values, 3) data values should be validated by the system before they are accepted, and 4) provision should be made for reporting errors in entered data.

Help Features. A complete UIMS must include a "help" facility which makes it easy for developers to supply help information and easy for users to request and get assistance. Explanations should be available in multiple levels which vary from "remind me what I can do here" to "tell me what this application does and why I might want to use it". Help should also be context sensitive. That is, an explanation should be specific to a user's current activities and should not force him to search through volumes of irrelevant information. A multile level help display might be implemented in a windowing system as shown in Figure 8.

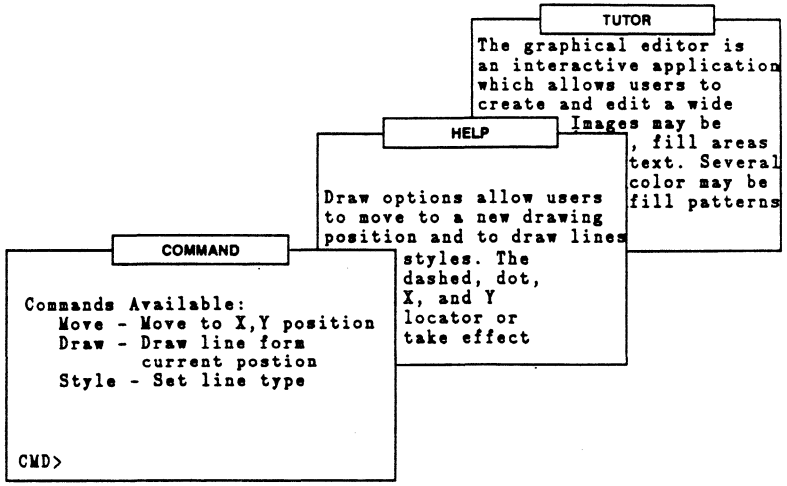

Figure 8. Multiple levels of help are a minimum requirement for a complete UIMS system.

Application Support Features

To support the application, reuseable code modules must provide:

Access to Display Devices. Paths to the screen must be supplied which do not entangle the application with the user interface system or the display hardware. Features to look for include messaging systems which allow text to be stored and accessed from files (not in application code) and the ability to write text to "streams" whose destination may be changed with no effect on application software. Similarly, access to graphics displays should be provided through a device independent graphics package.

Access to Information Entered by Users. Again, access to user-entered data must not make application code device or dialogue technique specific. For example, coordinates should be passed to the application in the same form whether they are entered as part of a command string or by using a graphical pointing device (e.g. a mouse).

Some Desirable Features

A number of additional capabilities provided by reuseable code modules will distinguish a first rate UIMS from a minimal system. Desirable features include:

Windowing Systems. A UIMS should provide a complete windowing system where that capability is missing from the host environment and the ability to work compatibly within host supplied windows where they are available. Windowing systems are important for a number of reasons. Overlapping windows allow efficient use of limited screen space. In addition, windows provide a means of grouping logically related activities. That is, windows of different types are physical locations on the screen where the user can employ different dialogue methods (e.g. a Menu vs. an Edit window).

Dialogue Files. The ability to save sessions in a "dialogue file" as they are being entered. This capability allows users to tailor and extend applications. The user who discovers that his/her use of an application demands that s/he make the same menu selections or enter the same commands over and over again will work much more efficiently if he can save and rapidly play back often repeated dialogue sequences.

Programming in the Dialogue File. The ability to program in an application's dialogue language, or "macro programming" features, allow end user to add even more powerful extensions to an application. "Smart" dialogue files can request new data from the user as they are played back and loop or branch as indicated by that data. For example, a chart package might require many commands to create a line graph showing the effect of doseage level on an experimental animal's eating behavior. If this study were to be repeated many times then the commands to create the line graph could be stored in a smart command file. Macro programming instructions added to that file could request data for a particular study and then automatically generate a finished graph.

A Library of "Utility Dialogues". Greater consistency and productivity can be provided by a system if frequently used "interface fragments" are supplied by the system. For example, a wide range of application will require that users enter data in the form of a numerical expression. The Dialogue Manager should provide a means to request a numerical value and should allow the user to enter that value as an arbitrarilly complex expression. The portions of the user interface which allows the user to enter a numerical expression should be supplied by the UIMS.

An Operating System Interface. To supply complete portability of application software reuseable code modules should provide host independent access to operating system functions as well as to input and output devices. Functions such as file I/O, string and bit manipulation, time and date requests, and logical unit number managment should be provided in a host independent library.

Evaluating the Tool Set

Specification of user-application dialogues is often the most conceptually difficult part of designing a user interface and is also the central element in creating a good or poor interface. A menu tree organization that forces users up and down many branches of the tree to perform closely related activities is a poor interface design as is a command language that forces users to complete an initiated activity before moving on to another action.

The best way to minimize these design errors is to allow developers to work with highly visual concepts when designing a dialogue. For example, in designing a command language, a state transition diagram (Figure 9) provides a much better tool than a BNF grammar. In designing menu sequences, a transition diagram is again superior to a procedural language which only describes the conditions under which a menu will be displayed. Procedural languages do not provide the developer with a visual context for individual menus.

The principle feature to look for in Display Specification tools is a "What-you-see-is-what-you-get" user interface. That is, a form design tool should allow title and prompt text to be typed directly "onto" a blank form at the text string's target display position. Data fields should be sized and placed using typing or pointing operations and the attributes of data fields should be defined by pointing at fields and then supplying the required attribute data. Similar requirements can and should be applied to tools such as icon and menu editors.

It is absolutly crucial, of course, that the tool set provide a method to prototype user interfaces. That is, it must be possible to run or "test drive" an interface before application code is written. Having verified that a prototyping feature is present, the UIMS evaluator should also examine the steps required to modify a prototype system. If a number of time consuming actions are required to generate a new prototype, then much of the benefit of a "test and refine" design process may be lost.

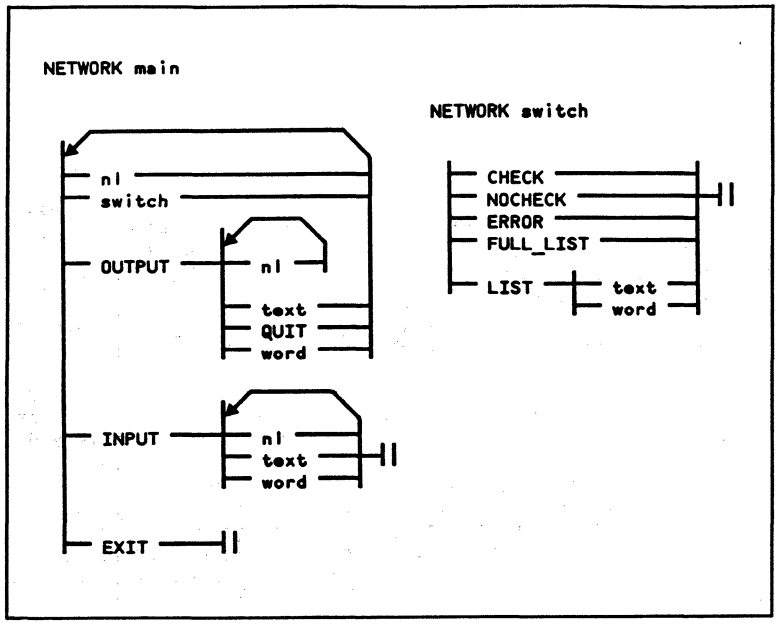

Figure 9. A command network diagram allows developers to define a command language using visual concepts that help prevent poor interface designs.

It is also worth noting that development tools often provide a crucial test of a user interface system. Evaluators should ask developers of a UIMS if they used their own tools to provide user interfaces for their development tools. If the answer is no, then it may be interesting to discover why the UIMS was not used. Was it, possibly, not able to handle the dialogue techniques required by the tools? If the UIMS was used in implementing the tool's user interface, then running the tools provides an excellent example of the quality of user interface that can be developed with the system. If the tools are easy to learn and use than other applications developed with the UIMS are likely to share those characteristics.

Evaluating Performance

Different aspects of a user interface require different levels of performance but, in general, to be useful an interface system must be fast. It must keep up with the user as s/he operates input devices and it must not insert noticeable delays into the process of interacting with an application.

The highest performance requirements are associated with what is

generally termed "echo" or "guiding" feedback. Activities such as echoing keystrokes typed by the user, moving the cursor as a joystick is operated, and putting up a message or highlighting a region following a menu selection must appear to be instantaneous (within the limits of human perception).

Implicit in this requirement for rapid feedback is a fundamental principal of good user interface design. Each of a user's actions must be acknowledged by the system and actions must be acknowledged quickly. That is, the user must never be left wondering if his/her last action was or was not detected by the system. Notice also that this is an area where the interface system may have to compensate for a slow application. When the user requests an action from the application, that action will inevitably take some period of time. It is the interface system's responsibility to insure that the user's request is acknowledged before the delay begins.

A second level of performance is required as the Display Manager presents the system's side of the the user-computer dialogue. Menu and form displays must come up quickly, but need not be instantaneous. Two to four second screen display times are acceptable to most users as they move through a system. However, delays longer than the four second range will become annoying and will seem to "get in the user's way".

Unfortunately, a number of systems fail in this area as a result of poor design decisions. For example, because a graphics package is often part of a UIMS it seems natural to use that package to display menus or paint window borders. But fully functional, device independent, 3D graphics systems are often too much software for these simple requirements. Evaluators should be cautious in evaluating a UIMS that makes extensive, internal use of a device independent graphics package.

Finally, the Development Tools should not be omitted from the performance review. It is more difficult to provide specific performance targets in this area but evaluators should identify the steps developers will need to repeat again and again in building an interface. To get a meaningful increase in programmer productivity, it is important that these frequently repeated steps require at most minutes, and certainly not hours.

A REVIEW OF COMMERICAL SYSTEMS

The following sections summarize the capabilites of three commercially available user interface systems. Included in the review are: Enter/Act from Precision Visuals, Dialogue from Apollo Commputer Systems, RAPID/USE from Interative Development Environments.

ENTER/ACT FROM PRECISION VISUALS INC

Pricing. Enter/Act is priced at $5,000 to $30,000 depending on machine class.

End User Environment

Interaction Methods Supported. All interfaces created with Enter/Act include a command language capability. Commands are entered in a "Command Window" which provides recognition of unique command abbreviations, scrolling through the command session, recall and editing of commands, and user settable command synonyms.

"Panels", which provide menu and forms like capabilities, can be added to a command language interface. Panels are displayed at designated states in the state-transition network which defines the command language. Panels may include "Data Boxes" for entry of text and numerical data and "Action Boxes" to support menu selections. Data boxes provide data validation including type and range checking.

Graphical menus are not directly supported but graphical displays can be created by the application in a "graphics window". Further, "graphical pick" and "grphical locate" are supported as transition types in the command network definition.

Screen Layout Techniques. Enter/Act includes a windowing system that provides six window types including: command windows, display only text windows, edit windows, virtual display device windows, panel windows, and graphical windows. A static work-area and menu- area screen layout can be produced through a combination of Enter/Act windows where the end user is denied access to window operations.

Help System. The developer may supply three levels of context sensitive help. At the first level a list of available commands is displayed together with a one line explanation of each command. Developer supplied text files are displayed in scrollable windows when the user requests help or tutorial assistance. Help and tutor files are associated with states in the command network.

Security. The application program may set one of 10 security levels and security levels may be associated with transitions, states, or subnetworks in the command network definition.

Session Trace and Save. The end user may enable tracing of application sessions to a named command file. The syntax of commands written to the trace file is independent of the interaction method employed by end users. Cursor movement and window operation are not stored in command files.

Command / Dialogue Language Programming. All command languages developed with Enter/Act are interpreted programming languages. A subset of Microsoft BASIC programming instructions may be added to command files and these instructions will be interpreted when files are invoked from within an application.

User Interface Development Environment

Command languages are specified as state-transition networks and networks are described using a text file based data description language. An interactive panel editor is provided which supports direct placement on a blank panel of text strings, action boxes, and data boxes. Box attributes are specified by selecting boxes and completing box definition panels.

To support prototyping of user interfaces a tool is provided which generates a skeleton application program from the command network definition. When this skeleton is liked to Enter/Act's runtime library a prototype application is created which can be executed in supported machine environments.

Run Time Application Support Environment

Internal vs. External Control. Enter/Act is an external control UIMS. Application code is contained in "Action Routines" which are invoked by the system when appropriate command transitions are exercised.

Access To User Input. Application code makes calls to Enter/Act runtime routines to retrieve input.

Access To Displays Devices. Application code may create and define the attributes of text and graphics windows. A 3D, device and machine independent graphics subroutine library may be called to create images in graphics windows. Text files may be displayed and edited in text windows and messages may be transferred from "message files" to textual windows.

Operating System Wrappers. Enter/Act includes a library of subroutines that provide machine independent access to operating system specific functions such as file control, character manipulation, and time and calendar functions.

Programming Languages Supported. Enter/Act currently supports Fortran '77 only. 'C' language support is planned.

Machine Versions. Operating systems supported include VAX/VMS and UNIX. A wide range of satellite graphics and alpha display terminals are supported. All features except graphics windows are supported on VT100 like alpha displays devices.

DOMAIN/DIALOGUE FROM APOLLO COMPUTER INC.

Pricing. Dialogue is priced at $1200.00 per workstation or network node.

End User Environment

Interaction Methods Supported. Dialogue provides "techniques" which define the appearance of the user interface. Techniques are divided into "presentation" and "structuring" types. A wide range of presentation techniques may be structured using a "Pop-up" technique. Pop-ups are retangular areas which overlay the currently visible "technique" and pop-ups are by default displayed at the current cursor position. In additon, Dialogue provides an "icon" presentation technique. An icon diplays pictures or text and passing the cursor over an icon highlights it by inverting foreground and background.

A forms style interface can be constructed from the "techniques" provided by Dialogue. Field types provided include: boolean, enumerated lists, integer, real, and text string.

No support is provided for command language based interfaces.

Screen Layout Techniques. Dialogue is implemented as part of the Apollo window environment. Graphical and textual windows are provided. Static work-area and menu-area screen layout styles can be produced through a combination of presentation techniques and subareas within windows called "panes".

Help System. Dialogue supports two sources of help. Each dialogue technique has the attributes "help_file" and "help_text". Text referenced by these attributes will be displayed in a pop-up when the user presses the help key with the cursor positioned inside a given technique. In addition, the application is notified of each help request and may provide information which overrides the text referenced as technique attributes.

Security. Dialogue user interface definitions do not include specification of authorization levels for protected parts of an application.

Session Trace and Save. Dialogue does not support session trace and save.

Command / Dialogue Language Programming. Dialogue does not support programming in the user interface language.

User Interface Development Environment

All Dialogue user interfaces are specifed by creating text files which describe "tasks" and "techniques". Direct manipulation or "WYSIWYG" development tools are not provided.

A prototype user interface may be created by specifying "external control" tasks (see below) and manually creating "stub" or empty action routines.

Run Time Application Support Environment

Internal vs. External Control. Dialogue tasks may either invoke application specific "action routines" which return control to Dialgoue or tasks may return control to application code which called or invoked the task. Given this option, Dialogue may be used as an external control, an internal control or a mixed control UIMS.

Access To User Input. Application code makes calls to Dialogue runtime routines to retrieve input.

Access To Displays Devices. Application code may create and define the attributes of text and graphics windows. A 3D, device and machine dependent graphics subroutine library may be called to create images in graphics windows. Text files may be displayed and edited in text windows and messages may be displayed in "message tasks".

Operating System Wrappers. No operating system wrappers are provded.

Programming Languages Supported. Dialogue provides support for Fortran, 'C', and Pascal.

Machine Versions. Dialogue runs only on Apollo workstations and supports only Apollo integrated workstation displays.

RAPID/USE FROM INTERACTIVE DEVELOPMENT ENVIRONMENTS

Pricing. RAPID/USE is priced at $3000.00 to $6000.00 depending on machine class.

End User Environment

Interaction Methods Supported. RAPID/USE is primarily a tool for creation of command language based user interfaces. However, application specific software must be created to support command-entry features such as command recall and editing and scrolling through command entry sessions.

Forms and menu style user interfaces are not directly supported but can be created by including text with embedded display control characters as part of the user interface specification.

RAPID/USE does not support graphical display devices as part of the end user environment.

Screen Layout Techniques. RAPID/USE does not provide nor work within a windowing environment. Menus can be created (see above) but graphical work areas are not feasible as graphical display devices are not supported.

Help System. Help text is created and displayed like all other display information in RAPID/USE by including text with embedded control characters as part of the user interface specification.

Security. RAPID/USE interface definitions do not include specification of authorization levels for protected parts of an application.

Session Trace and Save. RAPID/USE provides two session logs. A "raw input" log saves every keystroke so that complete sessions may be replayed for detailed analysis. For example, keystrokes can be counted as a measure of "usability". The "transition log" includes a record of each transition in the command network together with a time stamp. Analysis of the transition log provides task completion times, screen viewing times, and user error patterns. A utility is provided to extract statistics from the transition log.

Command / Dialogue Language Programming. RAPID/USE does not support programming in the application user interface language.

User Interface Development Environment

Command languages are specified using a state-transition method. Command networks may be described using a text file based data description language or by using a graphical state diagram editor. The state diagram editor also provides debugging assistance by animating state diagrams as commands are entered. The current state and the transition path to that state are highlighted in the animated display.

RAPID/USE's graphical state diagram editor produces a textual definition of the command network and these textual definitions can be executed by the "Transition Diagram Interpreter." Prototype user interfaces are thus available before application specific software is developed.

RAPID/USE does not provide tools to support development of forms or menu style user interfaces.

Run Time Application Support Environment

Interanl vs. External Control. RAPID/USE is an external control UIMS. Application code is contained in "Action Routines" which are invoked by the system when appropriate command transitions are exercised.

Access To User Input. User input is stored in variables which are declared as part of the state transition diagram. These variables may be accessed by application specific software.

Access To Displays Devices. RAPID/USE makes no specific provision for application access to display devices.

Operating System Wrappers. RAPID/USE is supported only in the UNIX environment and does not provide operating system wrappers.

Programming Languages Supported. RAPID/USE provides support for Fortran, 'C', and Pascal.

Machine Versions. RAPID/USE's interactive tools are supported on SUN workstations. Applications may be developed for VT100 like display devices running in the UNIX environment.

CONCLUSIONS

The computer industry has recognized for many years that software is prominent among the major costs and risks associated with the development of automated systems. The industry's most sucessful response to these problems has been the progressive "systemization" of the components of interactive software design, development, and maintenance. General purpose data bases now handle many of the data management tasks required by interactive programs, operating systems handle many of the details of interacting with the hardware components of a system, and standard graphics packages provide device independence and numerous drawing functions. Fully developed and carefully combined with education in user interface principles, User Interface Management Systems will permit another important advance in the path to cheaper and more reliable software development.

REFERENCES

[Seeheim 84] Pfaff, G. and ten Hagen, P.J.W.(editor) EUROGRAPHICS-Springer. Seeheim Workshop on User Interface Management Systems. Springer-Verlag, Berlin, 1984

[Thomas 83] Thomas, James J. Graphical Input Interaction Techniques Workshop Summary. Computer Graphics 17(1):5-30, January, 1983

VAX LANGUAGES AND TOOLS RELEASE STATUS

VAX (tm) Ada (r) - Q*056
Current Version: V1.4
V1.4 Began Shipping: June, 1987
Major Features of V1.0: -Full ANSI Language
-Production quality
-Highly integrated into VAX/VMS Environment
-Multi-language capabilities
-Comprehensive diagnostics
-U.S. Government validated
-Full symbolic debugging support
-VAX Language-Sensitive Editor support
-SCA support

(tm) VAX is a trademark of Digital Equipment Corporation
(r) Ada is a registered trademark of the U.S. Government (Ada Joint Program Office)

VAXELN Ada - Q*A97
Current Version: V1.1
V1.1 Began Shipping: February, 1987
Major Features: -Compatible with VAX Ada
-Retargetable to real-time/embedded environment
-Remote debugger
-Tailorable run-time environment
-Run-time library retargetted from VAX/VMS to VAXELN
-Package of interfaces to VAXELN services

VAX APL - Q*020
Current Version: V2.1
V2.1 Began Shipping: June, 1986
Major Features: -Performance Improvements
-APL can call other VAX languages which adhere to the VMS calling standard
-Multi-key ISAM
-Full screen Editing

VAX Basic - Q*095
Current Version: V3.1
V3.1 Began Shipping: May, 1987
Major Features: -Embedded graphics statements
-Structured error handling
-Optional line numbers
-Print using format strings

VAX Bliss - Q*106
Current Version: V4.3
V4.3 Began Shipping: July, 1987
Major Features: -Ease of use
-/Check qualifiers
-/Cross reference switch
-VAX Language-Sensitive Editor support
-SCA support

VAX C - Q*015
Current Version: V2.3
V2.3 Began Shipping: May, 1987

Major Features: -ANSI X3J11 features
-Full debug support
-CDD support
-VAX Language-Sensitive Editor support
-VAX Source Code Analyzer support
-Improved run-time routines for UN*X compatibility
-Shareable run-time library (which is now distributed as part of VMS, no longer on the VAX C binary kit)

VAX Cobol - Q*099
Current Version: V3.4
V3.4 Began Shipping: March, 1987
Major Features: -VAX Language-Sensitive Editor support
-Screen handling extensions
-Extended DML
-Support for VAX Cobol Generator

VAX Cobol Generator: Q*365
Current Version: V1.1
V1.1 Began Shipping April, 1987
- 4GL approach to Cobol programming
- Graphical interface
- Generates error-free VAX Cobol code
- direct access to RMS and Rdb
- promotes structured design

VAX DEC/CMS - Q*007
Current version: V2.3
V2.3 Began Shipping: May, 1987
Major Features of V2.3 are:
-A callable interface
-New security features
-Significantly improved performance
-Groups for the easy organization of related files
-VAX Source Code Analyzer support

VAX DEC/MMS - Q*500
Current version: V2.2
V2.2 Will Begin Shipping: May, 1987
Major features of V2.2 are:
-Support for VAX Source Code Analyzer
-Support for CDD
-Support for TDMS
-Support for FMS

VAX DEC/Shell - Q*143
Current Version: V2.0
V2.0 Began Shipping: January, 1987
Major features of the V2.0 DEC/Shell include:
-An alternate command line interpreter
-UUCP, NROFF and termcap support
-A set of commonly used UN*X utilities
o DEC/Shell is based on the UN*X V7 Bourne Shell

VAX DEC/Test Manager - Q*927
Current Version: V2.2
V2.1 Began Shipping: May, 1987
Major features: -Ability to test interactive applications on a character cell terminal
-Increased integration with VAX DEC/CMS (can store tests in a CMS library for Test Manager retrieval)

-Performance Improvements
-Ability to edit session files

VAX DOCUMENT - Q*ZE7
Current Version: V1.0
V1.0 will begin shipping: July 1987
Major Features:
- Generic markup language
- Multiple document designs and styles
- Sophisticated page composition and pagination software
- Complete book-building facilities
- High quality output
- Integrated into the VAX/VMS Environment
- VAX Language-Sensitive Editor support

VAX Fortran - Q*100
Current Version: V4.6
V4.6 Began Shipping: February, 1987
Major Features:
-VAX Language-Sensitive Editor support
-Global optimizations
-CDD support
-Records
-VAX Source Code Analyzer support
(VAX Fortran on Ultrix - Q*A99, Started shipments: May, 1986 will not have SCA support just bug fixes.)

VAX Language-Sensitive Editor: Q*057
Current Version: V2.0
V2.0 Began Shipping: May, 1987
Major Features:
-Supports Ada(r), Basic, Bliss, C, Cobol, Fortran, Pascal, PL/I, SCAN, EPascal, Dibol, and others.
-Edit, compile, review, and correct compilation errors withing a single editing session
-Speeds up source code entry using formatted language-specific source code templates
-Provides for interactive editing capabilities during a debugging (VAX Debug) or performance analysis session (VAX Performance and Coverage Analyzer)
-User tailorable and user extensible
-Extensive on-line help for supported VAX languages
-New diagnostic file

VAX NOTES: Q*960
Current Version: V1.2
V1.2 Began shipping: June, 1987
Computer-based conferencing software
- Supports online discussions between groups of people
  - Project team communication
- Maintains a permanent record of discussions
  - Easily accessible by variety of search criteria
- Unique distributed architecture
  - Server based
  - Leadership performance in DECnet networks
  - Easy discussion between geographically dispersed groups
- Easy to learn and use

- Choice of DEC standard editing styles

VAX Pascal - Q*126
Current Version: V3.5
V3.5 Began Shipping: April, 1987
Major Features:
-Performance/Runtime Optimizations
-CDD Support
-VAX Language-Sensitive Editor Support
-Compatibility support for VAELN Pascal
-Source Line Debugging
-VAX Source Code Analyzer support

VAX Performance and Coverage Analyzer - Q*119
Current Version: V2.0
V2.0 Will Begin Shipping: September, 1987
Major features:
-Helps to find execution bottlenecks in application programs
-Provides test coverage analysis to determine which lines of an application are executed by a given set of test programs
-Has an interface to the VAX DEC/Test Manager
-Windowing
-Ada Support

VAX PL/I - Q*114
Current Version: V3.0
V2.4 Began Shipping: June, 1987
Major Features:
-VAX Language-Sensitive Editor support
-CDD support
-Compile-time pre-processor
-VMS Integratation
-RMS and performance

VAX Software Project Manager - Q*A82
Current Version: V1.0
Scheduled to ship: Q1FY88
Major features:
- A software development project management system designed to plan, schedule, and estimate projects.
- Contains WBS (Work Breakdown Structures) that shows all tasks in a tree structure.
- Choice of user interface, menu-driven or command line mode
- Uses traditional project management tools, PERT and CPM (Critical Path Method), and Gantt charts to help keep projects on time
- Easy to use graphic interface
- Generates a variety of reports and charts

VAX RPG II - Q*631
Current Version: V2.1
V2.1 Began Shipping: October, 1986
Major Features:
-Conforms and is an extended implementation of the IBM RPGII defacto standard
-Fast compile and runtime performance
-Full screen editor
-Compatible with IBM implementations on Systems 3, 34, and 38
-CDD support
-FMS translator for System 34 screen handling

```
VAX Source Code Analyzer - Q*ZBZ
        Current Version: V1.0
        V1.0 Began Shipping:  May, 1987
        Major Features:  -An on-line cross referencing source code
                          analysis tool
                         -Closely integrated with VAX LSe and provides
                          extended capabilities for VAX LSE

VAX Scan - Q*495
        Current Version:  V1.1
        V1.1 Began Shipping: January, 1987
        Major features: -A complete VAX programming language used to create
                             programs that deal with pattern matching and
                             text transformation
                        -Used for creating translators, preprocessors,
                             filters, and parsers
                        -To build tools for converting data from other
                             vendor's computing equipment
                        -Finds and replaces text in files

VAXset - Q*965
        Current Version:  V4.0
        V4.0 Began Shipping: May, 1987
        A package of software engineering tools consisting of:
                -VAX DEC/CMS
                -VAX DEC/MMS
                -VAX Language-Sensitive Editor
                -VAX Performance and Coverage Analyzer
                -VAX DEC/Test Manager
                -VAX Source Code Analyzer (Spring 1987)


VMS - current version is 4.5
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LANGUAGES & TOOLS SIG

MASTERS DIRECTORY

July 16, 1987

Those listed here have agreed to answer questions from users, normally by telephone, on the products or subjects listed beside their names. Expertise is generally in VMS layered software, unless otherwise noted. A State Code in braces {} follows each name to help the user locate Masters in appropriate geographical areas. Complete addresses and phone numbers appear in an alphabetical list following this directory. The alphabetical listing includes [notes] on other software in use at the Master's installation, where this information could be helpful to a user in selecting a Master and where the Master has supplied it.

The list will become fuller as time goes on. Not all L&T products are listed here, and we await volunteer Masters in all the missing areas. A few non-L&T products are mentioned to accommodate individual Masters with interests broader than L&T's. Mumps is included by special request of the Mumps SIG, as a service to Mumps users.

The expertise of these volunteer Masters overlaps; you may find it necessary to call more than one. Please remember that these Masters can provide you with brief assistance, not with long-term support. Some Masters are professional consultants who have agreed to donate their time and talent in their areas of expertise; it is not L&T's intent to provide a reference service for consultants, and any instance of unwanted commercialism should be reported to the L&T Masters Coordinator (see below). Neither L&T nor DECUS make any claim that the information you receive will necessarily be correct or complete.

Please also notify the L&T Masters Coordinator of any errors in the entries in this Directory, or if you experience real difficulty in your effort to obtain help through this list. **Please note that this list expires three months from the date appearing above. After that time, please consult a more recent issue of the Newsletter for a current list.**

If you can participate as a Master yourself, please fill out the Masters Program application which you will find in the back of the Newsletter, or, at Symposium, in the L&T Information Folder or in the Campground. Submit it to the L&T Campground Host during symposium or mail it to:

Dena Shelton, L&T Masters Coordinator, Cullinet Software, Inc., 2860 Zanker Road, Suite 206, San Jose, CA 95134; (408)434-6636

•Ada

Donald E. Amby {WI}	•Ada •C •CMS •EDT •LSE •MMS •Pascal •Runoff & DSR •TPU
William Graham {AZ}	•Ada •CMS •Debug •Fortran •Runoff & DSR •TPU
Richard Wallace {OH}	•Ada •C •Cobol •Fortran •Pascal

•APL

Richard Golden {IL}	•APL (& NON-DEC APL)

•Basic

Ted A. Bear {CA}	•Basic (INCL. VAX) •Basic Plus 2
R. Alan Bruns {TX}	•Basic
Joel Finkle {IL}	•Basic •CMS •Fortran •MMS •Pascal •Test Manager •TPU
Stephen Jackson {MN}	•Basic (VAX) •Basic-Plus •Basic Plus 2
Noah Kaufman {MA}	•Basic •Fortran (& F77)
Brian Lomasky {MA}	•Basic (VAX) •Basic Plus 2 (RSX) •FMS
David Santistevan {CO}	•Basic (VAX)
Tom Stewart {CO}	•Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Cobol (RSTS/E, VAX) •Dibol (RT, RSTS/E, VAX)
William Tabor {FL}	•Basic (VAX) •Basic Plus 2 (RSX)
Robert van Keuren {CA}	•Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Eve

•Basic-Plus

Stephen Jackson {MN}	•Basic (VAX) •Basic-Plus •Basic Plus 2
Tom Stewart {CO}	•Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Cobol (RSTS/E, VAX) •Dibol (RT, RSTS/E, VAX)
Robert van Keuren {CA}	•Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Eve

•Basic Plus 2

Ted A. Bear {CA}	•Basic (INCL. VAX) •Basic Plus 2
Joel Garry {CA}	•Basic Plus 2
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William Tabor {FL}	•Basic (VAX) •Basic Plus 2 (RSX)
Christopher Thorn {NY}	•Basic Plus 2 •EDT •Kermit •Runoff & DSR
Robert van Keuren {CA}	•Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Eve

•Bliss

Lawrence J. Kilgallen {MA}	•Bliss •TECO

•C

Donald E. Amby {WI}	•Ada •C •CMS •EDT •LSE •MMS •Pascal •Runoff & DSR •TPU
Fred Avolio {MD}	•C
Dale Hites {IL}	•C •Macro
Jim Maves {CA}	•C •CMS •Debug •LSE
Teri McNamara {MN}	•C (CP/M,First Sys,VAX) •Config Mgmt
Kenneth Robinson {NJ}	•C •CMS •Debug •EVE •MMS
Mike Terrazas {UT}	•C •Debug •EDT •Macro •SQL (Oracle)
Richard Wallace {OH}	•Ada •C •Cobol •Fortran •Pascal

•CMS

Donald E. Amby {WI}	•Ada •C •CMS •EDT •LSE •MMS •Pascal •Runoff & DSR •TPU
Earl Cory {CA}	•CMS •DCL •EDT •Fortran •LSE •Runoff & DSR
Joel Finkle {IL}	•Basic •CMS •Fortran •MMS •Pascal •Test Manager •TPU
William Graham {AZ}	•Ada •CMS •Debug •Fortran •Runoff & DSR •TPU
Jim Gursha {NY}	•CMS •Debug •MMS •SCA
Howard Holcombe {NJ}	•CMS •Fortran •MMS •Runoff & DSR
Mark Katz {MA}	•CMS •LSE •MMS •Runoff & DSR •SCA •TECO •TPU
Jim Maves {CA}	•C •CMS •Debug •LSE
G. Del Merritt {MA}	•CMS •Config Mgmt •Emacs •Fortran •MMS
Joseph A. Pollizzi 3rd {MD}	•CMS •MMS •SCAN
Kenneth Robinson {NJ}	•C •CMS •Debug •EVE •MMS
George Scott {NJ}	•CMS •Config Mgmt
Jay Wiley {CA}	•CMS •Fortran •LSE •Test Manager

•Cobol

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Scott Krusemark {OH}	•Cobol •EDT •FMS •Fortran •Test Manager
Walter W. Leroy {GA}	•Cobol

David K. Ream {OH} •Cobol •PL/I •SCAN
Kenneth Richardson {CO} •Cobol
Tom Stewart {CO} •Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Cobol (RSTS/E, VAX) •Dibol (RT, RSTS/E, VAX)
Richard Wallace {OH} •Ada •C •Cobol •Fortran •Pascal
Edward Woodward {CA} •Cobol

•Config Mgmt

Mark Kidwell {TX} •Config Mgmt
Teri McNamara {MN} •C (CP/M,First Sys,VAX) •Config Mgmt
G. Del Merritt {MA} •CMS •Config Mgmt •Emacs •Fortran •MMS
George Scott {NJ} •CMS •Config Mgmt

•DCL

Earl Cory {CA} •CMS •DCL •EDT •Fortran •LSE •Runoff & DSR

•Debug

Jack Davis {TN} •Debug •Fortran (VMS) •LSE •Modula II
William Graham {AZ} •Ada •CMS •Debug •Fortran •Runoff & DSR •TPU
Jim Gursha {NY} •CMS •Debug •MMS •SCA
Jim Maves {CA} •C •CMS •Debug •LSE
Kenneth Robinson {NJ} •C •CMS •Debug •EVE •MMS
Mike Terrazas {UT} •C •Debug •EDT •Macro •SQL (Oracle)

•Dibol

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Rod Brayman {NY} •Dibol
Mark Crego {VA} •Dibol
Dave L. Dirks {MN} •Dibol
Stewart F. Flood {SC} •Dibol
Paul Manning {OR} •Dibol
Bruce L. Mebust {MN} •Dibol •TECO
Lyle Phillips {CA} •Dibol
Tom Stewart {CO} •Basic (INCL. VAX) •Basic-Plus •Basic Plus 2 •Cobol (RSTS/E, VAX) •Dibol (RT, RSTS/E, VAX)
Stan Tucker {TX} •Dibol

•EDT

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Scott Krusemark {OH} •Cobol •EDT •FMS •Fortran •Test Manager
James Meeks {TN} •EDT •EVE •TPU
Mike Terrazas {UT} •C •Debug •EDT •Macro •SQL (Oracle)
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Allen Watson {NJ} •EDT •EVE •Runoff & DSR •TECO •TPU •VAX Notes

•Emacs

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•EVE

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Gerald Lester {LA} •EVE •Macro •TPU
David Medvedeff {NY} •EVE •Fortran •TPU •VAX Notes
James Meeks {TN} •EDT •EVE •TPU
Kenneth Robinson {NJ} •C •CMS •Debug •EVE •MMS
Rick Stacks {AR} •EVE •Fortran •TPU
Dennis Thury {TX} •EVE •Pascal •TPU
Allen Watson {NJ} •EDT •EVE •Runoff & DSR •TECO •TPU •VAX Notes
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•FMS

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•Focus

John Pajak {TX} •Focus (VAX)

•Forth

John Lundin Jr. {VA} •Forth (CPM,&86,MSDOS,VAX)

•Fortran

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Earl Cory {CA}	•CMS •DCL •EDT •Fortran •LSE •Runoff & DSR
Jack Davis {TN}	•Debug •Fortran (VMS) •LSE •Modula II
Joel Finkle {IL}	•Basic •CMS •Fortran •MMS •Pascal •Test Manager •TPU
William Graham {AZ}	•Ada •CMS •Debug •Fortran •Runoff & DSR •TPU
Howard Holcombe {NJ}	•CMS •Fortran •MMS •Runoff & DSR
Noah Kaufman {MA}	•Basic •Fortran (& F77)
Scott Krusemark {OH}	•Cobol •EDT •FMS •Fortran •Test Manager
David Medvedeff {NY}	•EVE •Fortran •TPU •VAX Notes
G. Del Merritt {MA}	•CMS •Config Mgmt •Emacs •Fortran •MMS
John Miano {NJ}	•Fortran
Paul Plum {PA}	•Fortran (& F77)
Andrew Potter {NY}	•Fortran •Runoff & DSR •VAX Notes
Rick Stacks {AR}	•EVE •Fortran •TPU
Lindsay Todd {NY}	•Fortran •PL/I
Richard Wallace {OH}	•Ada •C •Cobol •Fortran •Pascal
Jay Wiley {CA}	•CMS •Fortran •LSE •Test Manager

•Kermit

Christopher Thorn {NY}	•Basic Plus 2 •EDT •Kermit •Runoff & DSR

•LaTeX

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Gerald Lester {LA}	•EVE •Macro •TPU
Mike Terrazas {UT}	•C •Debug •EDT •Macro •SQL (Oracle)

•MMS

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Kenneth Robinson {NJ}	•C •CMS •Debug •EVE •MMS

•Modula II

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Christopher Thorn {NY} •Basic Plus 2 •EDT •Kermit •Runoff & DSR
Allen Watson {NJ} •EDT •EVE •Runoff & DSR •TECO •TPU •VAX Notes

•SCA

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•SQL

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•TPU

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•VAX Notes

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DECUS

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

Volume 1, No. 2 September, 1987

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

$VIEW(Editor)

Where, oh where, has the US Chapter Commercialism Policy gone? To my knowledge, as of this moment there is officially no such animal. In its place, we have an arbitrary set of restrictions, haphazardly enforced, upon what may be presented during Symposium sessions or published in Newsletters.

A task force currently exists, with a mandate to revise [invent?] the Commercialism Policy. A report from this group was due at the Nashville Symposium, but that did not happen. What is the hold-up?

The delay might be understandable if the task force had to build a policy from scratch, but such is not the case. The DECUS General International Arm, which comprises Chapters outside the US and Europe, currently has a tremendously cogently policy (see next page) in force. I have submitted copies of this policy to Board members at each of the last two General Meetings (Sunday evening, before the Symposium Ice Cream Social), each time with a very favorable reception. Then, poof! Black hole! I think it's time for the US Chapter to stop spinning its wheels and enact the GIA policy. Then we can apply ourselves to what will ultimately prove to be a longer and more arduous task: the implementation, interpretation, and improvement of that policy.

$DATA

The MUMPS Users' Group Conference was held in Atlanta, June 8-12. The conference featured significant international activity, including formation of a federation to coordinate the transfer of MUMPS information and efforts between foreign countries and the United States. In addition, the chairman of the MUMPS User's Group of Japan, Dr. Wakai, was in attendance. He had just presented MUG Japan's Validation Package to the US National Bureau of Standards. This package validates a MUMPS implementation against the ANSI standard, and provides a list of language specifications that are not met.

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*Free publications or hand-outs on products designed for use with Digital products, provided these are distributed under DECUS supervision.

3.5 Digital, upon request from DECUS, will consider exhibiting equipment at symposia. It is not appropriate for other vendors to exhibit equipment unless specifically invited by Digital and agreed to by the appropriate Chapter Board.

3.6 Digital, upon request from DECUS, will occasionally run a hospitality suite for the purpose of conveying specialized information. It is not appropriate for other vendors to have hospitality suites at DECUS activities, unless they exhibit as defined under 3.5.

3.7 Digital expects its sensitivity to be considered when other vendors are invited to participate in DECUS activities outside the definition in Section 3.5. Specifically, third-party vendors of either hardware or software, if invited to a symposia by DECUS, will be limited to technical aspects of a product.

4. Responsibility for Interpretation and Enforcement

The appropriate DECUS Chapter Executive Board is responsible for the overall implementation of these guidelines and is at all times available to offer advice. The Board itself, rather than the individual listed below, will at its discretion seek Digital's view through the Digital Delegate on the Board. Subject to this overall responsibility, supervision in specific areas is delegated as follows:

*Symposia — paper reviewers
— session chairpersons
— symposia planning committee
— demo area co-ordinator

*DECUS Newsletters — Publications Co-ordinator

*LUG Meetings — LUG Chairperson

DECUS CANADA POLICY ON COMMERCIALISM

The tutorials presented at MUG included File Manager, Artificial Intelligence, Software Development, and Project Design and Documentation. Round table sessions included discussions on fourth-generation interfaces, and how MUMPS and non-MUMPS implementations compare.

In addition to DEC, major vendors presenting were Honeywell-Bull, Texas Instruments, Hewlett-Packard, Pyramid, Tandem, and IBM.

MUMPS Development Committee business included a review of procedures embodied in the existing standard, and enhancements awaiting the new standard. A simplified format for the subtree copy was suggested but has still not passed.

--Reported by: Chris Richardson

$HOROLOG

September 20	Submission deadline for Nov. newsletter
Oct. 29-31	MUG Cont. Ed. Seminars; Washington, DC
Dec. 7-11	Fall '87 Symposium; Anaheim, CA
Feb. 8-12, 1988	Canadian '88 Symposium; Toronto
May 16-20, 1988	Spring '88 Symposium; Cincinnati, OH
June 13-17, 1988	MUG '88 Conference; New Orleans

$ORDER("Product")

It has recently become standard "corpo-speak" to refer to whatever it is that people pay you for as your *product.* For example, almost everyone within DEC refers to their output as a product, and this is reasonably consistent with Digital's primary emphasis in manufacturing. In the DECUS realm, things become a little hazier; certainly, discussion of "Program Library Products" misses the point that the primary function of the Library is the dissemination of information. Finally, the most screamingly obnoxious example that I have yet encountered is discussion among bank officers of their "wonderful new financial products."

This sloppy usage tramples upon a significant distinction: some people are paid for the objects they provide, while others are paid for the acts they perform. While we may certainly speak of products in the first case, in the second we must instead refer to *services.*

$NEXT

The November issue will be the last chance I will have to get information into your hands before the Fall Symposium, so stay tuned to this channel for "Sessions You Won't Want to Miss in Anaheim." (As I write this, the Northeast is basking in respite from the late July heat wave. Shocking how the schedule does keep marching right along!)

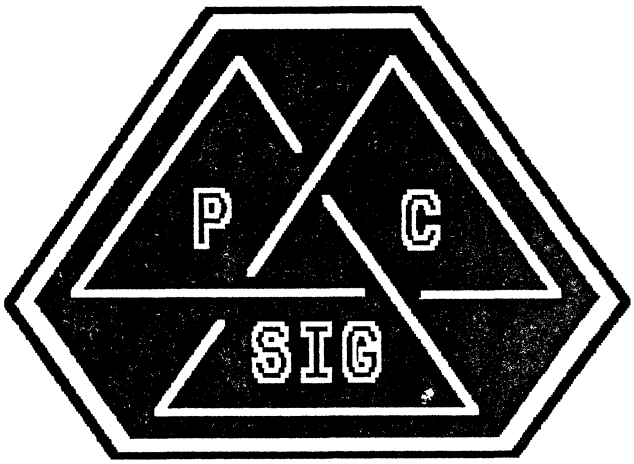
```
$NEXT($ORDER)="Author"
```

$RANDOM

Recently, John R. Bilski ran for Chicago Board of Elections commissioner on a third-party ticket. His candidacy forced the city to reprint ballots, and to reprogram computers and voting booths that were geared for only two candidates. Mr. Bilski was defeated--he received just one vote.

PERSONAL COMPUTER

SPECIAL INTEREST GROUP



NEWSLETTER

Changing of the Guard

Within the DECUS community, since we are ALL volunteers, there comes a time when each of us has to weigh our responsbilities and evaluate our changing roles. Ken LeFebvre has just done that and regretfully he has found that it is impossible for him to continue as PC SIG Newsletter Editor. For me, that is difficult to accept. Ken has taken a sporatically published section of the Newsletters and turned it into something elegant. His pioneering work with high quality copy and special attention to contributors has not gone unnoticed. I will be directly affected, since Ken made my job as Contributing Editor very simple. All I had to do was submit, and he took care of the rest. I'm going to miss that.

Ken, I wish you every success in your new duties.

When Ken indicated to Barbara Maaskant (our current, but soon to be former) SIG Chairperson, she contacted me and asked if I would consider the position that Ken was leaving. After some initial hesitancy, I accepted.

I hesitated only because I have a specific interest in the PRO area of the SIG, and I didn't want that interest to detract from the other areas that the SIG represents. Therefore, I need your help in providing high quality articles for the VAXmate, Rainbow and DECmate users. Please don't let me down.

If you have an article to contribute, please contact me to arrrange the method of transfer. I must ultimately supply the Newsletter to the DECUS staff electronically. SO, I prefer to RECEIVE your article(s) electronically, since I am NOT a touch typist.

You can reach me by calling: (714)952-6582
or by writing to me at: McDonnell Douglas
Mail Code: K20 77/200
5555 Garden Grove Blvd.
Westminster, CA 92683

Gary Rice
PC SIG Newsletter Editor

T A B L E O F C O N T E N T S

Starting with this issue, the order that articles are presented will be determined by system type and based on the number of pages related to each system. The system that has the most number of pages in the issue will appear first. The syetem with the second most number of pages will appear next, and so on.

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PRO Software Update List PC-12
by Gary Rice - New and Revised Software has been released
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by Lynn Jarrett - Lynn details DECUS activities on your behalf
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by Gary Rice - Revised Software has been released

The Cipher Tape Drive for the PRO
A Review By
Gary Rice

I recently received what appeared to be a final field test version of the Cipher 1/4" cartridge tape drive being marketed for the PRO series systems. The documentation indicated support for the entire PRO line (including the PRO 325). While support for the PRO 325 is theoretically possible, logically it doesn't make too much sense so I will address the 350 and 380 models only.

Installation of the tape drive began easily. The manual was clear (including separate diagrams for the 350 and 380 models). I began by freeing up a bus slot (since my PRO is completely filled). There appears to be no restriction as to the slot you select for the tape controller, other than DEC's requirements for the first 2 or 3.

The controller has a cable attachment on the top of the board, and takes advantage of the same access hole arrangement that the floppy disk controller uses. The card cage has an opening for each slot on the bus. I used the second to last slot because that is where the card was that I removed.

At this point, the installation instructions got vague and the illustration accompanying the text was incomplete. I soon discovered why. The cable that attaches to the top of the controller is supposed to be routed to the back of the system unit and attached to an access port along the back edge. Upon examining the size of the cable mount, I realized that the intended location for the cable to be mounted was the SAME location that I had used for the TMS module. I solved the problem by simply NOT attaching the tape drive cable and let it dangle out the back of the system unit. This approach appeared to work, although there was a ground clip on the cable that was not effective since it made no contact to anything due to this arrangement.

I closed up the system unit (as best as I could) and turned it on. Ther system came on , but almost immediately failed self test with one of those dreaded hardware pictures highlighting the tape controller module. I turned the unit off, and read the instructions again. The installation instructions didn't come out and say it, but the ERROR appendix listed the cause of the failure: The tape drive cable wasn't attached. Well I did that on purpose, because I wanted to see if it was reasonable to SHARE the tape unit among multiple systems. Well, after plugging in the tape unit into the controller, I discovered the answer. Self test passes ONLY if the tape unit is connected. Obviously, sharing the tape drive isn't possible. I removed one question from my list to ask Cipher: Can I buy the controller separately from the tape unit? The answer was academic.

With the tape drive attached, it was time to try the unit out. I rummaged through the packing materials, but there was no tape cartridge to be found. I went back to the manual and found two tape vendors listed, 3M and DEI. Upon consulting some mail order catalogs, I found both represented. Prices ranged from $23.00 to $29.00. Well, I didn't want to wait for the mail, so I went to the local Computerland and bought a cartridge for a total price (including California sales tax) of $38.44. The product description on the cartridge indicated that it was capable of holding 60 megabytes of data, but when I looked at the Cipher manual again, it said that the capacity of the cartridge was 25 megabytes. Upon asking Cipher, I found that the apparent discrepancy was no discrepancy at all. It was a design "feature" of the tape drive. It appears that the tape head writes a fairly wide bit pattern, thus reducing the theoretical 60 megabytes that the cartridge is capable of storing to 25 megabytes.

Well, since my testing was going to be based on a 20 megabyte RD31 that wasn't full yet, I decided that the single cartridge I had purchased would do the job. So I began the test.

The first thing I did was copy both diskettes to minimize the risk of clobbering something. I will explain the reason for two diskettes later. I put the original diskettes away, and put the backup system diskette into drive #1. The system booted the standalone backup application and displayed the initial application screen. The diskette drive then began to have a "hissy-fit". After about 20 seconds of pain, the screen changed and told me that the application had completed successfully and I was to put the diskette away. Well, the noise that the drive made was the SAME noise that I have heard when I have write protected a diskette and attempted to write to it. So, I removed the write-protect tab (the original diskettes were BOTH write-protected), and tried again. The results were the same. I thought that maybe the copy I had made was no good, so I did it again. The results were identical. Well, I figured I would try using the distribution diskette directly as a last resort. Well, this time the system booted and the application started successfully (write- protect tab and all). There is obviously a copy protection scheme included on the diskette of some sort. Anyway, I tried several different diskette copy programs (including the supported one in P/OS), but none would copy the diskette and permit the application to start.

In case you missed it in the previous paragraph, this backup system is a standalone application. It operates in the same way as the standalone backup system supplied with P/OS (starting with version 3.0). Like the DEC supplied version, the Cipher system is a menu driven form of the RSX standalone form of BRU (Backup & Restore Utility).

Well, on to the testing. The instructions state that when you use the tape unit, it is advisable to "format" the tape

cartridge each time you do a backup. The "format" process checks the tape for bad spots, and marks them so they aren't used during the actual backup. If a bad spot is encountered during backup, the system crashes and the backup in progress is lost.

I selected the "format" option and began the first test. The screen cleared and requested that I insert a cartridge into the tape unit. Since I had already done that, I wondered if the tape drive was broken. I pressed <Resume> anyway and the tape drive began to move the tape. From the sounds I heard, it appeared that about a 2 foot section of the tape was advancing and rewinding repeatedly. This went on for a total of 7 minutes. The drive began to stream and 1 hour and 5 minutes later, the word "Starting" appeared on the screen. The drive began the "advance/rewind" business again and 23 minutes later, another message appeared on the screen saying "Operation Completed". I had successfully backed up 9 megabytes (yes NINE) and it had only taken 1 hour and 45 minutes. I could have done the same thing with 24 - 25 floppies in about 60% of the time. Well, to be fair, the tape drive DID run unattended during the 2 hour test, and I would have had to change diskettes every 2 and 1/2 minutes the other way.

Well, since formatting took so long, I decided to take advantage of the remaining space on the cartridge and do a second test. I selected the backup menu again and set up to do another full backup (without formatting this time). I fully expected the tape unit to begin recording immediately, but instead, the unit rewound the tape and started writing from the beginning. A search of the manual revealed no mention that multiple backups couldn't be placed on a single tape, but I could find no way to keep the tape drive from rewinding to the beginning before writing data. Subsequent tests all were performed WITHOUT formatting. Timing was consistently 23 minutes to back up the 9 megaybytes of data on the test disk each time I ran the application. At NO time other than during the formatting process did the tape drive "stream".

I did not attempt to restore any data from the tape cartridge. However, the documentation describes a full restore (including formatting the output disk) and file level partial restore as being supported.

The test was performed on a PRO 350 with an RD31, an RCD50 controller that had the H1 ECO applied.

Cipher supplied two diskettes with the product. Here are the contents of the backup application diskette:

```
Directory DZ1:[ZZSYS] 4-APR-87 10:15

POS.SYS;1        403.  C 02-FEB-87 12:08
STARTUP.TSK;1     19.  C 02-FEB-87 12:09
SASCOM.TSK;1       4.  C 02-FEB-87 12:09
```



```
BRUIF.TSK;1       50.  C 02-FEB-87 12:09
POSRES.TSK;1      42.  C 02-FEB-87 12:10
FMDRES.TSK;1      16.  C 02-FEB-87 12:10
SUMFBI.TSK;1      38.  C 02-FEB-87 12:10
DCLOAD.TSK;1       7.  C 02-FEB-87 12:10
BRU.TSK;1        122.  C 02-FEB-87 12:10
BRU.HLP;1         11.  C 02-FEB-87 12:10
BRU.MNU;1          2.  C 02-FEB-87 12:10
BRU.MSG;1         18.  C 02-FEB-87 12:10
BRUERR.MSG;1       6.  C 02-FEB-87 12:10
SAS.COM;1          1.  C 02-FEB-87 12:11

Total of 739./739. blocks in 14. files


Directory DZ1:[001002] 4-APR-87 10:15

LOGIN.MSG;1 2.  C 02-FEB-87 12:11

Total of 2./2. blocks in 1. file

Grand total of 741./741. blocks in 15. files in 2. directories
```

. . . and the other diskette:

```
Directory DZ2:[USERFILES] 4-APR-87 10:16

Total of 0./0. blocks in 0. files


Directory DZ2:[ZZUPDATE] 4-APR-87 10:16

D00065.MSG;1      24.    02-FEB-87 12:15
D00065.TSK;1      29.  C 02-FEB-87 12:15
UPDATE.INS;1       1.  C 02-FEB-87 12:15

Total of 54./57. blocks in 3. files

Grand total of 54./57. blocks in 3. files in 2. directories
```

The collection of files on thee second diskette reepresents a "patch" to the "maintenance" application available from DEC. By applying the "patch" the maintenance application will test the Cipher tape controller and drive. I didn't try this portion of the product, because the "patch" is intended for a more recent version of the Maintenance application than I have. The "patch" will work with the PRO Maintenance Application version 3.0 ONLY.

The Cipher tape drive appears to be usable, despite the flaws I have detailed here. Aftre all, what is the purpose of a review besides letting you know about those things that the vendor isn't going to tell you (ie: the BAD things rather than the GOOD

things).

My recommendation is that you should consider the Cipher unit if you need to back up disk drives larger than 30 megabytes (RD32, RD52, RD53). For smaller drives, choosing a select subset of files to back up to diskette (those files that you've created of modified) is probably just as good as buying the Cipher tape unit.

The Cipher tape subsystem is available from Cipher Data Products, Inc. Their phone number is: 1(800)-4-CIPHER
List Price: $1495.00

PRO Technical Note or What does QIOW wait for?

by
Harold Salwen
Department of Physics and Engineering Physics
Stevens Institute of Technology, Hoboken, NJ, 07030

In Gary Rice's useful notes on using QIO's from FORTRAN programs (Vol 2, No 7), he points out that one can make a program wait for the "completion" of a QIO either by using QIOW instead of QIO or by using an appropriate "wait for significant event" directive. Now that I have developed fast graphics routines which use direct access to the video registers, I have learned to be wary about the word "com- pletion". As far as I can tell, the system puts your output into the appropriate buffer, gets that buffer on an appropriate queue, and then sets the event flag to say that it's done. Your program, which has been waiting for the event flag (or, equivalently, the end of the QIOW), will now continue merrily on its way. My reason for believing this is that I can "crash" my PRO/350 in the following way: I send out a sufficiently complicated QIOW to the screen that the data transfer and screen update take a noticeable time (half a second?). I then use fast graphics commands that directly access the video registers and, voilà, both writes get to the regi- sters at once and, somehow, confuse the poor machine so badly that it decides to crash!

PROgramming Quickie

Interrupting a Fortran Program without Crashing It

by
Harold Salwen
Stevens institute of Technology

Suppose you've set your PRO to doing some repetitious calculation but you don't know, without seeing some intermediate results, when you'll want it to quit. You could resort to the old standby --- have the program stop once every loop (or every 10 loops, or...) and ask, "Do you want me to continue calculating?" --- but that ties you down to the computer. You have to be there to answer yes each time or the PRO will just stop and wait for your reply. Today's quickie will give you a way to let the computer go on churn- ing away until YOU press a key to tell it what to do next. The basic idea is to use the IO.RNE (read, do not echo) QIO to set up a buffer for your keyboard input and a status block to let the program know when a key has been pressed. Once each loop, the program looks at the status block to see whether a key has been pressed. If no key was pressed, it continues to loop. If a key was pressed, it decides what to do next on the basis of WHICH key was pressed. The "dummy" program below contains the necessary lines to send the QIO and do the branching but none of the actual program:

```
      INTEGER ISTAT(2)          ! Status block
      INTEGER IPARAM(3)         ! Parameter block
      CHARACTER*1 CHAR          ! Character for pressed key
      CALL GETADR(IPARAM(1),CHAR) ! Address of CHAR for QIO
      IPARAM(2)=1               ! Length of CHAR = 1 byte
      IPARAM(3)=0               ! 0 to avoid timeout
      IFLAG=0                   ! 0 when QIO not waiting
!
!  Preloop programming goes here
!  10 continue
!  beginning of loop
!
!  Calculation loop (and some intermediate output) here
!
      IF (IFLAG.NE.0) GO TO 20
      CALL QIO(528,5,1,,ISTAT,IPARAM) ! send the QIO
      IFLAG=1                   ! 1 when QIO is waiting
20    IF (ISTAT(2).NE.0) GO TO 30
      GO TO 10                  ! key not yet pressed
30    IF ((CHAR.EQ.'A'.) .OR. (CHAR.EQ.'a')) GO TO 1000
      IF ((CHAR.EQ.'B'.) .OR. (CHAR.EQ.'b')) GO TO 2000
      IF ((CHAR.EQ.'C'.) .OR. (CHAR.EQ.'c')) GO TO 3000
      GO TO 4000
```

The choice of four options, with code at 1000, 2000, 3000, and 4000, is, of course, totally arbitrary. In a typical case, you might press A to start over with new parameters, B to start at an intermediate point with a few parameters changed, C to examine large amounts of intermed- iate results and decide what to do next, and any other letter ("GO TO 4000") to output current results and exit.

References: Nov. 1985 P/OS System Reference Manual, pp 7-18, 8-132, 11-4, 11-13, A-3.
Note 1020 octal = 528 decimal.

PRO Technical Tip or How to really wait!

by
Harold Salwen

Since QIOW and event flags will not necessarily force your program to wait long enough, it is useful to be able to program in a wait for a fixed length of time. There are also a number of other situations (especially in "animation" programs) where a programmed wait can be useful. The P/OS system provides a pair of directives, MRKT$ (Mark time) and WTSE$ (Wait for single event flag), which are designed to facilitate the insertion of waits into a program. These directives, callable from FORTRAN programs as CALL MARK and CALL WAITFR , are documented in the P/OS System Reference Manual. MARK arranges for an event flag at a certain time and WAITFR can be used to wait for that flag. The documentation for MRKT$ also describes a single FORTRAN call, CALL WAIT ,which does the whole job:

```
CALL WAIT(num,iunit)
```

num = the number of time units to wait iunit = code for time unit (0 = ticks, 1 = milliseconds, a tick is 1/64 second).

For example,

```
CALL WAIT(64,0)          ! means "Wait a second!"
```


Fixing the TFEA$ directive so it works in P/OS v3

by
Jerry Ethington
Prolifix, Inc.
Frankfort, KY

Developers and programmers utilizing some of the many new features present on P/OS version 3 systems may have noticed a very useful new directive, TFEA$ - the Task Feature directive. TFEA$ can return important information to a task about itself - whether it was linked for fast mapping (another new version 3 directive), whether it is privileged, whether it was linked with memory resident overlays, and many other pieces of information from the status words T.ST2, T.ST3, and T.ST4 in its own task control block (TCB). The first thing I tried to use TFEA$ for was to determine whether the task had been linked with fast mapping support, so at run time I could dynamically decide to use the new fast map directive or, on pre-version 3 systems, I could fall back to the much slower MAP$ directive to remap dynamic regions for an application.

I quickly discovered, however, that TFEA$ did not work as documented, or in fact work at all. According to the documentation, the directive status word ($DSW) should return one of four possible values; IS.CLR, indicating the feature being tested is NOT present; IS.SET, indicating the feature being tested IS present; and the two standard return codes, IE.ADP and IE.SDP, respectively indicating that the DPB is out of the issuing task's address space or that the DPB size or DIC are invalid. Instead, testing discovered that whether or not the specified feature was enabled, an error code of IE.ITS (inconsistent task state) was ALWAYS returned, making the directive useless.

Fortunately, the all too limited source microfiche supplied with the P/OS version 3.0 Tool Kit contained the code involved, and through the miracles of superior Klingon technology I was able to locate and solve the problem. I am distributing the correction for P/OS V3.0 and V3.1 to other PRO users and developers so they may take advantage of this new functionality before the official correction from DEC appears in the future release of P/OS V3.2.

To correct the problem, you must create the following file and use the ZAP utility supplied with the Tool Kit to apply the correction to the P/OS system image. You must be logged in as a privileged user and, in PRO/Clusters, you must be logged on local at the file server system. The file name given in the first line will depend upon whether or not you are using the PRO/Cluster functionality added in P/OS V3.0. ALL users must apply the correction file to LB:[ZZSYS]POS.SYS, but users of Pro/Clusters must ALSO apply it to the file server system image, LB:[ZZSYS]POSFS.SYS, so they will need to make two files and apply both of them with ZAP.

Create the correction file or files, enter the Tool Kit and issue the command "RUN $ZAP". ZAP will prompt with "ZAP>", and you enter the name of the file you created as an indirect command file. For example, if you create the correction file with the name TFEA.ZAP, the dialogue would look like:

```
$ RUN $ZAP ZAP>@TFEA.ZAP
```

ZAP will print several numbers as it applies the correction and then exit. After you reboot the system, the correction will be in place and the TFEA$ directive will work as documented. The correction will also take effect on all diskless workstations in a PRO/Cluster after the workstation is rebooted.

The correction file is as follows:

```
Lb:[Zzsys]Pos.Sys/Ab (or Lb:[Zzsys]Posfs.Sys/Ab)
200+3:200+120000-120000;0R
213+3:000+126572-120000;1R
0,320+330/
053332V
Q+100000
1,72/
005742V
240
1,124/
000004V
Q-2
1,132/
000006V
Q-2
1,140/
000022V
Q-2
X
```


PRO Software List Update
coordinated by
Gary Rice, PC SIG Newsletter Editor

In an effort to keep you informed about software being shipped from various vendors, I began the following list in April, 1986. This list reflects information that I received as of July 20, 1987. An asterisk by an entry indicates that the item has changed or been added sine the last time the list was published.

DEC Software	List Price	Last Rev	Source of info	Still Avail?	P/OS v3 Supported?
20/20	495	1.0.54	User	Yes	UNK
Athena/Graph	450	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	UNK	1.0	DEC	Yes	UNK
Design Graphix /Executive	595	1.0	User	Yes	Yes
Easyentry	995	3.0B	DEC	Yes	UNK
FORTRAN IV/RT-11	495	*2.8	DEC	Yes	N/A
LOGO	350	1.4	DEC	Yes	UNK
MAIL-PLUS	N/A	1.0	DEC	No	N/A
MJA Accounts Payable	600	5.2	DEC	Yes	UNK
MJA Accounts Receivable	600	5.2	DEC	Yes	UNK
MJA General Ledger	600	5.2	DEC	Yes	UNK
MJA Order Entry/Inventory	600	5.2	DEC	Yes	UNK
MJA Payroll & Personnel	600	5.2	DEC	Yes	UNK
NPL Information Management	N/A	1.4	DEC	No	UNK
Phoenix-PRO	1795	1.0A	DEC	Yes	UNK
*P/OS ADCCP Driver	UNK	1.0	DEC	UNK	UNK
P/OS (Diskette)	N/A	1.8	DEC	No	No
P/OS (Hard Disk)	475	3.1	User	Yes	Yes
*P/OS Hard Disk (Arabic)	783	R3.1	DEC	Yes	Yes
PRO 2780/3780	N/A	1.2	DEC	No	No
PRO Application Starter Kit	399	1.0	DEC	Yes	No
PRO/Associate	N/A	1.0	DEC	No	No
PRO/BASIC	195	1.4	DEC	Yes	Yes
PRO/Comm (diskette)	N/A	1.7	DEC	No	No

DEC Software	List Price	Last Rev	Source of info	Still Avail?	P/OS v3 Supported?
PRO/Comm (hard disk)	195	3.0	DEC	Yes	Yes
PRO/CPM-80	UNK	1.1	DEC	UNK	UNK
PRO/Datatrieve	495	2.0	User	Yes	Yes
PRO/DECnet	250	2.0	DEC	Yes	Yes
PRO/FORTRAN-77 Debug	(See PRO/Toolkit Symbolic Debugger)				
PRO/IVIS	UNK	3.1	DEC	Yes	Yes
PRO/Laboratory Subroutine Lib.	300	1.2	DEC	Yes	Yes
PRO/NAPLPS	N/A	1.0	DEC	No	No
PRO/Office Workstation	UNK	2.0	DEC	Yes	Yes
PRO/PRODUCER Toolkit	300	1.6	DEC	Yes	Yes
PRO/RDT	495	1.1	DEC	Yes	Yes
PRO/Scientific Subroutine Lib.	300	1.3	DEC	UNK	No
PRO/SIGHT	295	*1.1	User	Yes	*Yes
PRO/SNA	N/A	1.1	DEC	No	No
PRO/Smart Mailer	53	1.0	User	Yes[2]	Yes
PRO/Toolkit	520	3.1	User	Yes	Yes
PRO/Toolkit BASIC-PLUS-2	495	2.3	DEC	Yes	Yes
PRO/Toolkit COBOL-81	495	2.4	DEC	Yes	Yes
PRO/Toolkit DIBOL	495	1.7	DEC	Yes	Yes
PRO/Toolkit FORTRAN-77	495	5.0	User	Yes	Yes
PRO/Toolkit PASCAL	495	1.3	User	Yes	Yes
PRO/Toolkit Real Time Library	150	2.1	DEC	Yes	Yes
PRO/Toolkit Symbolic Debug	200	2.0	DEC	Yes	Yes
PRO/VENIX	495	2.0	DEC	Yes	N/A
PRO/Videotex	895	1.0	DEC	Yes	UNK
Professional CTS-300	995	1.0	DEC	Yes	N/A
Professional Real Time Lib/RT-11	250	1.0	DEC	Yes	N/A
PROSE PLUS	295	2.0	User	Yes	Yes
RS/1	1900	12.0	User	Yes	UNK
RSX Host Toolkit	UNK	3.0	DEC	Yes	Yes
RT-11	550	*5.4a	DEC	Yes	N/A
Supercomp-20	N/A	1.28	User	No	UNK
Synergy	695	2.0	User	Yes	Yes
VAX Host Toolkit	UNK	3.0	DEC	Yes	Yes
WPS/Plus	695	1.0	DEC	Yes	Yes[1]

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

3rd Party Software (Vendor)	List Price	Rev	Info Source	Still Avail?	P/OS v3?
D-M-DRIVER for P/OS (PROTO SYSTEMS)	295	V2/V3a	Vendor	Yes	Yes
Fingraph (Graphic M*I*S)	N/A	2.0	DEC	No	UNK
IT*OS (Intermation)	UNK	5.2	User	Yes	UNK
Online Disk Unfragmentor (By Hand)	47	*1.4g	Vendor	Yes	Yes
PRO/Menu Manager (Wasatech Computer)	25	1.0	User	Yes	No
PRO/Session Logger (By Hand)	29	2.0	Vendor	Yes	Yes
*PRO/Text Locator (By Hand)	43	1.1	Vendor	Yes	Yes
RDM Relational Data Manager (Interactive Technology)	995	4.0L	User	Yes	Yes
*SPSS/Pro (SPSS Inc.)	UNK	1.1	Vendor	Yes	Yes
TK!Solver (Software Arts)	N/A	1 (2A)	User	No	UNK

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I will publish a new list each time it changes.

You can contact me by writing to:

Gary Rice
McDonnell Douglas
5555 Garden Grove Blvd.
MS: K20 77/200
Westminster, CA 92683
or calling: (714) 952-6582

Rainbow Chair's Column
by
Lynn Jarrett
PC SIG Vice Chair and Rainbow Working Group Chair

As you see in this issue, the Rainbow Wish List lives on. I've talked to several third party developers out there who are making a good living working on products just to make our lives easier.

MS-DOS 3.1 now becomes the number one item wished by Rainbow users, since Lotus 2.1 has arrived and is running well!!! MS-DOS 3.1 strikes a sour note in talks I've had with countless Rainbow owners for almost 2 years.

Barbara Maaskant, our European PC SIG leaders and I generated a letter together in Nashville on May 1 and sent it to the leader of DEC's PCSG group in Littleton, Mass., and not one of us has had a reply to this date. We requested MS-DOS 3.1 for the Rainbow be released in behalf of all users, and we are still working diligently to see that something happens in this area. If it is a legal issue between Microsoft and DEC, it's certainly something that should be able to be worked out. We won't quit asking.

A note of interest to many of you...

I was saddened to hear of the death of Don Brauns. After a lengthy illness, he passed away in July. He was the owner of Rainbow Data Systems and not only did he develop third-party hardware add-ons, but he provided a bulletin board to the Rainbow world chock full of valuable information and public domain. The Rainbow was near and dear to his heart. He will be missed by all.

I'm always open to hearing about your experiences and use of the Rainbow, so don't be afraid to write to me and I'll publish some of your information for others to share. Isn't that what DECUS is all about? Until next month.....lj

RAINBOW WISH LIST
(Compiled by Lynn Jarrett)

The following list represents the collective desires of the Rainbow community. Use tha ballot located in the "QU" section of these Newsletters to indicate your preferences. Also, you will find a place to add your OWN wish if it isn't on the list that follows.

1. MS-DOS 3.1.
2. Removable hard disks at reasonable prices.
3. Larger than 20MB hard disks and controllers.
4. Nationwide TRUMP upgrades--update from a 100A to 100B.
5. Printer drivers for LN03 and more non-DEC printers on all DCS software.
6. A second COMM port that doesn't require you to disconnect the hard disk controller to put it in.
7. 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.
8. MS-DOS installable graphics driver similar to GSX-86.
9. Rainbow versions of RBase 5000, Framework, Thinktank, and Borland's Sidekick.
10. 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.)
11. More software packages overall--for business and personal use, as well as updates on dBase III, WordStar, etc.
12. Concurrent MS-DOS.
13. DEC's basic documentation for BIOS, firmware listing and schematics.
14. Software Reset and Halt Keys.
15. Terminal mode to support the additional keys of the LK201 keyboard.

16. Remove copy protection from all Rainbow software.

17. Coordination between local DEC Field Service offices and Atlanta Hotline Support Center.

18. ASSIGN command.

19. Cheaper maintenance prices.

20. Rainbow Draw and Paint.

21. VT220 and VT240 emulation software.

22. Lap-top or portable Rainbow.

23. Rainbow LAN without the need for a VAX.

24. 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.

25. Full featured GW-Basic compiler.

26. "Open" Winchester utility that allows users to specify disk geometry to take advantage of great third-party disk prices.

27. 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.

28. Liberal trade-in allowance on Rainbow to VAXmate.

29. Ability to read and write to RX33 diskette drive upgrade kit.

30. Monitor connections for CAD products.

31. DEC support for third party vendors wanting to develop and market hardware and software for Rainbows.

32. Ability to use CP/M BACKUP to back up the entire hard disk (all users) in one command.

Thanks, LJ

Rainbow Software List Update
coordinated by
Gary Rice, PC SIG Newsletter Editor

In an effort to keep you informed about software being shipped from various vendors, I began this list in September, 1986. This list reflects information that I received as of July 20, 1987. An asterisk by an entry indicates that the item has changed or been added sine the last time the list was published.

DEC Software	List Price	Rev	Source of information	Still Avail?	Operating System
CP/M-86/80	UNK	1.01	User	Yes	CP/M
DECnet-Rainbow	UNK	1.0	DEC	Yes	
GSX-86	UNK	1.0	DEC	Yes	CP/M
GW-BASIC	UNK	2.01.01	DEC	Yes	MS-DOS
MS-DOS	UNK	2.11-1	User	Yes	MS-DOS
Rainbow ATHABASCAN Kit	UNK	1.0	DEC	Yes	CP/M
Rainbow CONNECTION	UNK	1.0	DEC	Yes	MS-DOS
Rainbow Office Workstation	UNK	1.0	DEC	Yes	
WPS-PLUS/Rainbw - or -	*595	*1.1	DEC	*Yes	*MS-DOS

*WPS-PLUS/Workstation (See WPS/PLUS-Rainbow)

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DECmate Software List Update
coordinated by
Gary Rice, PC SIG Newsletter Editor

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DEC Software	List Price	Rev	Source of info	Still Avail?	Operating System
COS-310	UNK	9.3	User	UNK	COS-310
DECmate CP/M-80	UNK	2.1W	User	Yes	CP/M
DECmate DBMS	UNK	1.0	DEC	Yes	
DECmate Graphics Terminal Emulator	UNK	2.0	DEC	Yes	
DECmate II Construction Business	UNK	1.0	DEC	Yes	
DECmate II Construction Management	UNK	1.0	DEC	Yes	
DECmate Master Menu	UNK	*1.2	DEC	Yes	Menu
DECmate MS-DOS	UNK	1.0	DEC	Yes	MS-DOS
DECmate Office Workstation	UNK	*2.01	DEC	Yes	
DECmate TYPEasy	UNK	1.0	DEC	Yes	
DECmate WPS	UNK	*2.2	*DEC	Yes	WPS
DECmate WPS DECspell Verifier	UNK	2.1	DEC	Yes	WPS
DECmate WPS Natural Languages	UNK	1.02	DEC	Yes	WPS
Graphtalk	UNK	1.0(3.27)	User	UNK	MS-DOS
MS-DOS	UNK	2.11-1	DEC	Yes	MS-DOS
Multiplan	UNK	1.05	User	UNK	CP/M
OS/278	UNK	V2-VB3	User	UNK	OS-278
R:BASE 4000	UNK	1.1	DEC	Yes	MS-DOS

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I will publish a new list each time it changes.

RST

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Next month's theme - DECNET/E (hopefully!)

From the Editor
Terry Kennedy

Last month I promised that this month's topic would be DECNET/E. Unfortunately, due to the press of work here I was unable to complete the featured programs for that topic. I hope to have them ready for next month. If not, I'll stop promising them until I get them done - but I have high hopes for next month.

As I am writing this, my primary RSTS system is down with sick disk drives, so some of the example listings shown may be slightly incorrect. I will have been able to verify them long before you get to read this, however. Therefore, any corrections will be posted on the SIG Newsletter system. Also, you may download any of the included listings from the system rather than typing them in yourself. The newsletter system phone number is (201) 435-2546. Access is at either 300 or 1200 baud. Press RETURN until you get the LOGIN banner. There you will see further instructions.

Anyway, instead of DECNET/E, this month I am presenting that old standby, '101 (almost) Interesting Patches to LOGIN'. I hope you find it useful.

Letter(s) to the Editor

Jeff Killeen writes:

The following program can be used to connect to a dialout modem. You just run the program and give the KB number you want to dialout on. To disconnect the line type a accent mark (`) followed by the KB number you connected to. We use it to "hop" over several RSTS systems when running DIALUP and KERMIT software. [From the editor: This program is available on the SIG newsletter system as file DU0:[49,1]CONECT.BAS]

(listing begins on next page)


```
610     DIM OUTPUT.TERMINAL%(127%) &

1000    ! &
        !       PROGRAM INIT &

1010    ON ERROR GO TO 10000 &

1300    ! &
        !       GET INPUT TERMINAL &

1310    PRINT &

1320    INPUT "Connect to terminal (0-127)";CONNECT.TERMINAL% \ &
        PRINT \ &
        GO TO 1320 IF CONNECT.TERMINAL%<0% OR CONNECT.TERMINAL%>127% &

1330    DISCONNECT.STRING$="`"+NUM1$(CONNECT.TERMINAL%) &

1350    S$=SYS(CHR$(6%)+CHR$(10%)+STRING$(20%,0%)+"KB"+ &
                CHR$(CONNECT.TERMINAL%)+CHR$(-1%)) &

1360    HOME.TERMINAL%=ASCII(MID(SYS(CHR$(6%)+CHR$(9%)),2%,1%))/2% \ &
        OUTPUT.TERMINAL%(CONNECT.TERMINAL%)=HOME.TERMINAL% \ &
        OUTPUT.TERMINAL%(HOME.TERMINAL%)=CONNECT.TERMINAL% &

1370    S$=SYS(CHR$(6%)+CHR$(-9%)+CHR$(CONNECT.TERMINAL%)+CHR$(-1%)) &

1390    PRINT "KB";NUM1$(HOME.TERMINAL%);": is cross connected to KB"; &
                NUM1$(CONNECT.TERMINAL%);":" \ &
        PRINT &

1400    ! &
        !       OPEN FILES &

1410    OPEN "KB:" AS FILE 1%, MODE 1% \ &
        FIELD#1%, 1% AS INPUT.TERMINAL$, 127% AS INPUT.BUFFER$ &

2000    ! &
        !       MAIN ROUTINE &

2010    GET#1%, RECORD 32767%+1%+16384%+4096% \ &
        INPUT.TERMINAL%=ASCII(INPUT.TERMINAL$) \ &
        INPUT.COUNT%=RECOUNT &

2020    GO TO 2090 IF INPUT.TERMINAL%<>HOME.TERMINAL% &

2030    Z%=INSTR(0%,INPUT.BUFFER$,"`") \ &
        GO TO 2090 UNLESS Z%

2040    IF Z%>1% &
         THEN &
          PUT#1%, RECORD 32767%+1%+16384%+4096%+ &
                OUTPUT.TERMINAL%(INPUT.TERMINAL%), &
```

```
            COUNT Z%-1%, USING 1% &

2050    Z$=MID(INPUT.BUFFER$,Z%,INPUT.COUNT%-Z%) &

2060    IF INSTR(0%,DISCONNECT.STRING$,Z$)=0% &
         THEN &
          LSET INPUT.BUFFER$=Z$+"" \ &
          PUT#1%, RECORD 32767%+1%+16384%+4096%+ &
                OUTPUT.TERMINAL%(INPUT.TERMINAL%), &
                COUNT LEN(Z$), USING 1% \ &
          GO TO 2010 &

2070    GET#1%, RECORD 32767%+1%+16384%+4096%+HOME.TERMINAL% \ &
        INPUT.TERMINAL%=ASCII(INPUT.TERMINAL$) \ &
        INPUT.COUNT%=RECOUNT \ &
        Z$=Z$+LEFT(INPUT.BUFFER$,INPUT.COUNT%-1%) \ &
        GO TO 5000 IF Z$=DISCONNECT.STRING$ \ &
        GO TO 2060 &

2090    PUT#1%, RECORD 32767%+1%+16384%+4096%+ &
                OUTPUT.TERMINAL%(INPUT.TERMINAL%), &
                COUNT INPUT.COUNT%-1%, USING 1% \ &
        GO TO 2010 &

5000    ! &
        !       EXIT &

5030    PRINT \ &
        PRINT \ &
        PRINT "KB";NUM1$(CONNECT.TERMINAL%);": is disconnected" \ &
        PRINT &

5050    S$=SYS(CHR$(6%)+CHR$(-9%)+CHR$(CONNECT.TERMINAL%)+CHR$(0%)) &

5090    S$=SYS(CHR$(6%)+CHR$(11%)+STRING$(20%,0%)+"KB"+ &
                CHR$(CONNECT.TERMINAL%)+CHR$(-1%)) &

9999    GO TO 32767 &

10000   ! &
        !       ERROR TRAPS &

10010   IF ERR=27% &
         THEN &
          PRINT \ &
          PRINT \ &
          PRINT "?Disconnect from remote system" \ &
          PRINT \ &
          RESUME 5000 &

10990   ON ERROR GO TO 0 &

32767   END &
```


DCL Trick of the Month

Every SIG seems to be publishing DCL 'goodies' lately. I'll try to have some of the more interesting ones here. As usual, this is not restricted to RSTS DCL, any DCL trick will be included. However, preference is given to RSTS-unique ones.

This month I will show you how to perform simple modifications to the RSTS DCL command tables. Unlike VMS, RSTS does not have a utility to do this. NOTE: THE FOLLOWING PROCEDURE IS **DANGEROUS**. IF YOU ARE NOT FAMILIAR WITH RSTS, DO NOT ATTEMPT THIS. ALL MODIFICATIONS MADE ARE AT YOUR OWN RISK. DON'T BLAME ME!

The sample shown below will modify the DCL command SHOW NETWORK to display information on ALL nodes, regardless of their status. As distributed, DECNET/E will only show information on nodes it 'knows about'. In this context, non-routing Ethernet nodes only 'know' about the nearest router. First, we will use SET VERIFY/WATCH (from last month) to see exactly what command DCL issues for SHOW NETWORK:

```
$ SET VERIFY/WATCH
$ SHOW NETWORK
(NCP SHO ACT NOD)
```

That's the problem - we're doing a show active instead of a show known command. What we wanted was NCP SHO KNO NOD. This brings out an important point - strings we replace must be the SAME LENGTH as the originals. Now, we'll copy the existing DCL.RTS to a temp file for our changes:

```
$ COPY [0,1]DCL.RTS [0,1]NDCL.RTS
```

Next, we'll invoke the SCAN program (listing at end of article or on the newsletter systems as DU0:[49,1]SCAN.BAS) to locate the text string. Note that SCAN won't find matches across disk blocks, so you may have to use a different search string:

```
$ RUN SCAN
Binary file search 1.10 - 14-Jul-87 TMK

File? [0,1]ndcl.rts
Search string? ACT NOD
Found in block 97 (000140), offset 205 (000314).
Done...
$
```

We can compute the address used by ODT as follows:

```
  Disk block (in octal):  000140
+ Offset (in octal):         000314
                          ---------
                          000140314 (or 140314 for short)
```

Now that we know the ODT address, we will need to know the octal values for the replacement text (ACT versus KNO). We can get this by doing HELP ADVANCED ASCII. From the chart that is displayed, we see that K is 113 octal, N is 116, and O is 117. Now we will run the ODT program to actually modify the text in our copy of the DCL run-time system. The text in ***BOLD ITALICS*** is what you type.

```
$ run auxlib$:odt
ODT  V9.4-01  RSTS V9.4-05 Newsletter Sys.
File<MEMORY>? [0,1]ndcl.rts<LF>

[display the text to make sure we are at the right spot]
*140314/ 041501  " AC  <LF>
140316/ 020124  " T   <LF>
140320/ 047516  " NO  <LF>
140322/ 000104  " D   <CR>
[look at the previous 4 bytes to make sure]
*140310/ 044123  " SH  <LF>
140312/ 020117  " O   <CR>
[now we will modify the ACT to KNO using the octal codes]
*140314\ 101  113  <LF>
140315\ 103  116  <LF>
140316\ 124  117  <CR>
[now let's make sure the changes were correct]
*140314/ 047113  " KN  <LF>
140316/ 020117  " O   <CR>
[all done, let's exit]
*^Z
```

Now, make SURE that you have only changed the bytes that you wanted to change. ANY extraneous changes will cause SEVERE problems sooner or later. In the worst case, you might not even be able to reboot your system! If you are ABSOLUTELY SURE, issue the following command to replace the old DCL run-time system:

```
$ copy [0,1]ndcl.rts [0,1]dcl.rts
OK to replace existing file DU0:[0,1]DCL    .RTS ? y
[File [0,1]NDCL   .RTS copied to [0,1]DCL    .RTS]
```

Now, reboot your system in order for the change to take effect. You can verify this after rebooting by re-issuing the original set of commands, as follows:

```
$ SET VERIFY/WATCH
$ SHOW NETWORK
(NCP SHO KNO NOD)
```


If you have made an error, restore DCL.RTS by re-booting your RSTS installation tape (you DO know where it is, right?) and specifying an UPDATE (as opposed to an installation). Specify your system disk name and let it proceed. Answer 'NO' to 'Start timesharing?'. At the 'Option?' prompt, say INSTALL monitorname, where monitorname is the name of your system monitor (usually RSTS). Now you may re-start your system as usual.

Please note that neither DEC nor I can be responsible for any problems or incompatibilities that this type of patching may introduce. I would add, however, that I am running at least a dozen patches like this, and have been over the last 3 releases of RSTS, and have not had any problems as long as the patches are carefully applied.

This is the listing for SCAN.BAS:

```
1000    EXTEND
1010    ON ERROR GOTO 32000 &
        \ PRINT "Binary file search 1.10 - 14-Jul-87 TMK" &
        \ GOSUB 10000 &
        \ PRINT
1020    PRINT "File";
1030    INPUT LINE F1$ &
        \ F1$=MID(F1$,1%,LEN(F1$)-2%)
1040    INPUT "Search string";S$
1050    OPEN F1$ FOR INPUT AS FILE #1%, RECORDSIZE 512%
1060    FIELD #1, 512% AS I1$ &
        \ I%=1%
1070    GET #1% &
        \ BYT%=INSTR(1%,I1$,S$) &
        \ GOTO 1080 IF BYT%=0% &
        \ PRINT "Found in block ";NUM1$(I%);" (" &
        \ I$=CVT%$(I%-1%) &
        \ GOSUB 11000 &
        \ PRINT "), offset ";NUM1$(BYT%);" (" &
        \ I$=CVT%$(BYT%-1%) &
        \ GOSUB 11000 &
        \ PRINT ")."
1080    I%=I%+1% &
        \ GOTO 1070 &

10000   REM DEFINE XLATE STRINGS
10010   E1$=E1$+STRING$(64%,I%) FOR I%=48% TO 51% &
                ! XLATE FOR 1ST OCTAL DIGIT
10020   E2$=E2$+STRING$(8%,I%) FOR I%=48% TO 55% &
        \ E2$=E2$+E2$+E2$+E2$ &
                ! XLATE FOR 2ND OCTAL
10030   E3$=E3$+'01234567' FOR I%=1% TO 32% &
                ! XLATE FOR 3RD OCTAL DIGIT
10040   RETURN &
```

```
11000   REM SUBROUTINE TO PRINT IN OCTAL
11010           R1$,R2$,R3$='' &
        \       FOR J%=1% TO LEN(I$) STEP 2% &
        \               J1%=CVT$%(MID(I$,J%,2%)) &
        \               R4$='0' &
        \               R4$='1' IF J1%<0% &
        \               J1%=J1% AND 32767% &
        \               R6$=NUM1$(J1% AND 7%) &
        \               R5$=NUM1$((J1%/512%) AND 7%) &
        \               R8$=NUM1$((J1%/8%) AND 7%) &
        \               R7$=NUM1$((J1%/4096%) AND 7%) &
        \               R9$=NUM1$((J1%/64%) AND 7%) &
        \       NEXT J% &
        \       PRINT R4$;R7$;R5$;R9$;R8$;R6$; &
        \ RETURN &

32000   IF ERL=1050 THEN PRINT "?That file does not exist "; &
        "- try again..." &
        \ RESUME 1020
32010   IF ERL=1070 THEN PRINT "Done..." &
        \RESUME 32767
32020   IF ERL=1020 THEN RESUME 32767
32030   IF ERL=1030 THEN RESUME 32767
32040   IF ERL=1040 THEN RESUME 32767
32050   PRINT "Received error ";NUM1$(ERR);" at line "; &
        NUM1$(ERL);"." &
        \ RESUME 32767 &

32767 END
```

Software Problem Report (SPR) Log

Please send the newsletter editor copies of any SPR's (and Digital's answer) on RSTS/E, DECNET/E, or RSTS layered products. We will print any that are of general interest. The reason for this is that many SPR's are answered with a patch or a notice of restriction, but due to space considerations, they are not published in the Software Dispatch. Since we're desperate for material, this should be useful information and we will print it.

Questionnaire

In the back of this newsletter, you will find a questionnaire. Please fill it out and return it to the editor. This will help us serve you better by defining the areas you're interested in. There is a section for your comments, as well.

CUSP of the Month

Every month, we'll pick a CUSP (Commonly Used System Program) and show you new things to do with it. This may be either in the form of patches, or simply a new way to use it. When we provide modifications to the source, we will only show the lines which need to be changed. If you decide you want the patch, edit a COPY of the program (NOT the original). Please remember that Digital can't be responsible for modified programs.

This month's victim is LOGIN.BAS. These patches modify the functionality of the program in certain areas. Some of them may have a impact on security provisions that DEC provides in LOGIN. These will me marked with the comment SECURITY: and a discussion of what the impact is. This section is structured as a set of 'mini-articles', each detailing a particular modification to LOGIN. They may be applied in any combination, except where noted.

101 (almost) Interesting Patches to LOGIN - #1

Did you ever wish that you could supply a real username instead of a cryptic PPN to login? (This is known as 'VMS envy'). Well, now you can - if you have DECMAIL-11 for RSTS. This patch to LOGIN.BAS lets you supply your MAIL username as a valid response to LOGIN's User: prompt. RSTS/E version 9.3 or later and DECMAIL-11 version V3.0-00.04 were used for this modification. You may have to edit the supplied patch for other releases of either product.

Re-compile LOGIN as documented at the end of this article. Basic installation is now complete. You may now enter any valid MAIL username when logged-out, and then provide the password in the usual manner. If you want this new feature to work when logged-in also, read the next paragraph, otherwise don't bother.

DCL will try to outsmart you my not allowing non-numeric user information in the DCL LOGIN command. You can cure this by inserting the following two lines in their respective files:

```
In [0,1]START.COM:
$ define/command/system LOG-IN $LOGIN.* /privilege

In [0,1]LOGIN.COM:
$ LOG-IN == "CCL LOGIN"
```

Note that this will 'break' the DCL command login/terminal. To work around this, simply put an underscore in front of that command wherever it is used, as so:

_login/terminal=kb1: [1,2]. This problem only happens when you add the two lines for logged-in name translation.

Name translation will not work in DECNET requests for access information, as they are not handled by LOGIN. Oh well.

Change the line number of line 13001 to 13008. Insert the following code immediately before that line:

```
13001   OPEN "MAIL$:NAMES.SYS" FOR INPUT AS FILE #2%, &
            RECORDSIZE 512%, MODE 8192% &
        \ FIELD #2%, 512% AS MAIWRK$ &
        \ LOGIN1$=CVT$$(LOGIN$,34%) &
        \ GOTO 13004 IF LOGIN1$="" &
        \ GET #2%, BLOCK 1% &
        \ MAIREC%=CVT$%(MID(MAIWRK$,5%,2%)) &
        ! OPEN THE MAIL NAMES FILE &
        ! CONVERT TYPED USERNAME TO UPCASE, NO SPACES OR TABS &
        ! GET THE FIRST RECORD OF MAIL USERNAMES &

13002   GET #2%, BLOCK MAIREC% &
        \ FOR MAITMP%=33% TO 512% STEP 16% &
        \ MAINAM$=CVT$$(MID(MAIWRK$,MAITMP%,12%),160%) &
        \ GOTO 13003 IF MAINAM$=LOGIN1$ &
        \ NEXT MAITMP% &
        \ MAIREC%=CVT$%(LEFT(MAIWRK$,2%)) &
        \ GOTO 13002 UNLESS MAIREC%=0% &
        \ GOTO 13004 &
        ! READ THE FIRST USERNAME BLOCK &
        ! LOOK AT ALL THE POSSIBLE NAMES IN IT &
        ! IF WE HAVE A MATCH, EXIT &
        ! ELSE LOOK AT REST &
        ! IF NOT FOUND, DETERMINE NEXT RECORD AND LOOP IF NOT &
        !   AT END &
        ! ELSE RETURN A NON-MATCH &

13003   LOGIN$="["+NUM1$(ASCII(MID(MAIWRK$,MAITMP%+12%,1%))) &
           +","+NUM1$(ASCII(MID(MAIWRK$,MAITMP%+13%,1%)))+"]" &
        ! CONSTRUCT PPN FROM MAIL USERNAME ENTRY &

13004   CLOSE #2% &
        ! CLOSE THE MAIL NAMES FILE &
```

Change the start of line 13900 as follows:

```
13900   RESUME 13008 IF ERL=13001 &
        \ resume 13008 if ERL=13002 &
        \ RESUME 19999 IF KB.SPAWNED% OR (NOT (LOGGED.IN%)) &
            OR A%=0% &
        \ PRINT "?Invalid entry - try again" IF A% &
```

101 (almost) Interesting Patches to LOGIN - #2

The next patch will disable the ever-increasing delay after an invalid login attempt. This is a particularly obnoxious problem when you are attempting to dial in over a noisy phone line. SECURITY: DEC feels that the delay helps prevent system breakins.

Find the following lines in LOGIN.BAS:

```
\  WHILE HOLD% AND (DELAY%>0%) &
\        SLEEP 1% &
\        DELTA%=J%-(PEEK(516%) AND 255%) &
\        HOLD%=((DELTA%>=0% AND DELTA%<DELAY%) &
           OR (DELTA%<0%  AND (DELTA%+60%)<DELAY%)) &
\  NEXT &
```

Now, replace all of the backslashes (\) with exclamation marks (!). This will disable the delay.

101 (almost) Interesting Patches to LOGIN - #3

This patch cause the system header to always print (as it did in Version 8 and earlier). In V9, the full header will only print if you invoke LOGIN while already logged-in. This patch will correct that [mis]feature. SECURITY: DEC feels that people are less likely to break into your system if the full header is not printed (and thereby not revealing your system ID string).

Find the line 10000 in LOGIN.BAS. Now skip down a few lines to the line which reads:

```
\ IF A% THEN
```

Replace the A% with 1%. The header will now always print.

101 (almost) Interesting Patches to LOGIN - #3

If you have many dial-up users or network users logging onto your system, you will probably find that you are generating many operator console log messages for all this LOGIN and LOGOUT activity. The following patches turn off all operator console messages relating to LOGIN/LOGOUT activity. SECURITY: If this patch is applied, there will be no console log of LOGIN/LOGOUT activity, making potential breakins harder to detect.

In LOGIN.BAS, insert the line:

```
\ SEND.OPSER%=0% &
```

between the lines of each of the the following line pairs:

```
13020  SEND.OPSER%=-1% IF L.CLASS% &
       [insert here]
       \ M2%(J%)=0% FOR J%=0% TO 30% ! CLEAR IT OUT FIRST &

       \ SEND.OPSER%=(TTINTF% AND 16384%)<>0%
       [and here]
       \ CUR.DAT%=PEEK(512%) &
```

In LOGOUT.BAS, insert the line:

```
   \ SEND.OPSER%=0% &
```

before the line:

```
   \ MAXCNT%=M%(4%) &
```

101 (almost) Interesting Patches to LOGIN - #4

The following patch will cause LOGIN to type a welcoming message before printing the User: prompt message. The welcome message is kept in the file $LOGIN.TXT, allowing it to be easily changed as conditions require.

Replace line 32000 of LOGIN.BAS with the following lines:

```
32000   !       ENTRY POINT IF LINE TYPED AND NOT LOGGED IN &
        ! &
        ON ERROR GOTO 32400 &
        \ PRINT CHR$(7%); &
        \ GOSUB 22500 &
        \ I$=SYS(CHR$(0%))+SYS(CHR$(2%)) &
        \ LOGGED.IN%=0% &
        \ OPEN "_KB:LOGIN.CMD" FOR INPUT AS FILE #1% &

32002   I$=SYS(PRIV.ON$) &
        \ OPEN "$LOGIN.TXT" FOR INPUT AS FILE 2%, MODE 8192% &
        \ I$=SYS(PRIV.OFF$) &
        \ PRINT FNC$; &

32004   INPUT LINE #2%,I$ &
        \ PRINT I$; &
        \ GOTO 32004 &

32006   CLOSE #2% &
        ! Print welcoming message &
```

Replace line 32420 with the following lines:

```
32420   RESUME 7035 IF ERL=7030% &
        \ RESUME 9900 IF ERL= 9005% &
        \ RESUME 32670 IF ERL=32010% AND ERR=15% &
        \ RESUME 32320 IF ERL=32310% AND ERR=11% &
```



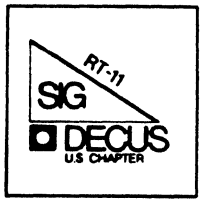
```
        \ RESUME 32600 IF ERL=32300% OR ERL=32310% &
        \ RESUME 32006 IF ERL=32004% AND ERR=11% &
        \ RESUME 32010 IF ERL=32002% OR ERL=32004% &
        \ RESUME 32670 IF ERL=32650% &
        \ RESUME 32767 IF ERL>=32670% &
        \ RESUME 32650 IF A% &
        \ RESUME 32600 &
        \ &
```

Common instructions for all LOGIN patches

Enter the patch(es) into a COPY of your LOGIN.BAS. Don't modify the original! Then compile it with Basic-Plus 2 if you have it, as documented in the Maintenance Notebook. NOTE: Basic-Plus 2 V2.4 has a bug which prevents it from compiling LOGIN, with or without these modifications. Therefore, you must use V2.3 or earlier. If you don't have BP2, you can use Basic-Plus. CSPCOM will not work, so don't use it! Now, log onto your system from at least two terminals (so you can recover if something goes wrong). Rename $LOGIN.TSK to $LOGIN.OLD, and copy the new LOGIN program (either LOGIN.TSK for BP2 or LOGIN.BAC for B+) to $. Ensure it has a protection code of <232>.

THE mini·tasker

DECUS
RT-11 SIG NEWSLETTER



From the editor:

At the Nashville DECUS Symposium, Jacquelyn Proulx gave a session outlining RT-11 Device Handler structure, including a description of the otherwise undocumented new handler macros. Needless to say, when the handouts were distributed, the sharks went for the chum, and we ran out almost immediately. I prevailed upon the chronically cute Miss Proulx to send me copies of the handouts for inclusion in the Minitasker. They are included in this issue.

Sally Antill, the chainrman of the European RTSIG sends us a log of the UK DECUS Conference Adventure Game. It seems that their Symposia are not that much different from ours.

I'm always looking for newsletter material, seious, humerous, or just wierd. Please send your contributions to:

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RT-11 Newsletter Editor
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****

The Flit Gun

There's still noword from Digital about the FPJ-11 problem reported last month. I hope that my the next issue they will not only have corrected the problem, but will also tell us the ECO number so that we can all get properly working chips.

Since no-one else has reported bugs this month, I'll throw in a fix of my own:

Problem: If using a VT220/240/241 in VT200 mode (i.e. no true ESCAPE key), IND will not accept the "customary" F11 key as an ESCAPE response to a question. (F11 normally generates <CSI>23~)

Fix (?): Replace "CMP #1,R3" with "CMPB @R2,#ESC" in routine INDAS2.

Possible Drawback: Any function key (F6-F20, arrow keys, etc.) will also serve as an ESCAPE. (But this is easier than testing specifically for F11, and can be done as a 2-word binary patch.)

Patch:

```
.SIPP  IND.SAV
Segment? 0
Base?    0
Offset?  7770
Segmennt     Base     Offset    Old       New
000000       000000   007770    022703    121227
000000       000000   007772    000001    33
000000       000000   007774    001401    ^Y
```


Sally Antill
European RTSIG Chairman
Yard Software Systems
UK

You are in Heslington village. A picturesque, very English, scene. There are roads in many directions; there are signposts in many directions.

READ SIGN

The signposts say things like "York", "Fulford", "University".

UNIV

What do you want to do with the University?

GO

Where do you want to go?

FOLLOW SIGN

The signposts are not moving.

XYZZY

You are in a maze of twisty little avenues, all wet.

LOOK

This is Your University campus. There is a DECUS conference in progress. Everywhere there are hexagonal symbols with strange codes written on them in non-waterproof ink. People are weaving oddly through tiny little passages, cluthcing brochures full of more strange codes. The prople are wearing plastic badges. Some of them have different coloured ribbons attached to their badges. All of them are wet.

READ CODES

Which codes, the ones on the hexagonal symbols, or the ones in the brochures?

SYMBOLS

You cannot read the codes - the ink has run.

READ BROCHURE

You do not have a brochure.

HELP

Help can be found at the Information Desk

PLUGH

Funny, the rain pouring off the rooves makes a very similar noise.

XYZZY

Heslington village.

PLUGH

You are at the Information Desk. A man with a pipe is smiling at you. Or maybe that's just the way he keeps his pipe in his mouth. He has a red ribbon on his badge.

HELP

The man says, "How can I help you?" Four other people, also wearing red ribbons, swoop down on you and all try to help you.

LISTEN

You cannot make out what any of the people is saying. Oddly, you can still hear the rain falling outside.

LOOK

You are at the Information Desk. To the left you can see the Registration area, full of beautiful women and white envelopes. To the right appears to be a coffee lounge. Behind you is the way out of the main building. It is raining outside. Directly in front of you, five people with red ribbons are struggling to make you listen to them.

LEFT

Registration area. A woman with long blonde hair and a lovely smile waits expectantly. She has a pale blue ribbon and an orange one.

REGISTER

The woman gives you a white envelope, a mug with a hexagonal symbol on it, and a smile which could brighten a rainy day in Birmingham. Unfortunately, this is York, and it is still raining.

OPEN ENVELOPE

The envelope contains a plastic badge with your name on it, no ribbons, a newspaper, and a brochure full of strange codes.

READ BROCHURE

It is full of strange codes.

READ NEWSPAPER

The newspaper tells you where in the brochure to look for the translation of the codes.

READ BROCHURE

It is full of strange codes.

READ TRANSLATION

Which code do you want to translate?

ALL The human brain has insufficient neurones to maintain such a vast amount of data on-line.

HELP

You can get help at the Information Desk.

RIGHT

You are in a maze of twisty little passages, all alike - but dry.

LEFT

You have banged your nose on the wall. Although the blood has dripped on your shirt, it will not fool anyone. The red ribbons have EXECUTIVE BOARD written on them. No-one knows why.

LEFT

Registration area.

LOOK

You are in the Registration Area. Beautifuul women wearing pale blue ribbons are handing out white envelopes to people wearing nothing but their ordinary clothes. Behind you is the main corridor through Vanbrugh. Ahead of you is the main door. It is raining outside. To your left is the Information Desk.

LEFT

Information Desk.

HELP

Fifteen men and two women , all wearing red ribbons, are corwded behind the desk. They all want to help you.

RIGHT

You are in the coffee lounge. Posters with acronyms on them are all over the walls. There are lots of people here, all of them wear plastic badges, some of them have ribbons. None of them look at you.

LOOK

Coffee Lounge. To your left is the DEC Exhibition. It is full of people wearing dark blue ribbons. Ahead of you is a counter with coffee cups and urns on it. To your right is the bar. It is closed. Behind you is the Information Desk.

COFFEE

A woman totally devoid of plastic badges, ribbons, or smiles pours you a wonderful cup of coffee.

A man wearing a plastic badge covered with coloured stickers just threw a strange glance at you.

READ BADGE

Your badge has no ribbons or stickers. It is singularly uninformative.

BACK

Information Desk. A man with a pipe is smiling at you.

ASK STICKERS

The man points at the Registration Area.

LEFT

Registration Area. There is a board covered with photographs of vaguely familiar faces. There is a table covered with strips of coloured stickers.

READ STICKERS

The stickers are covered with acronyms.

LOOK

You are in Mugshot Alley in the Registration Area. Ahead of you is a dark and dingy corridor. To you rleft is the main door. It is raining outside. To your right is the main Registration Desk. Behind you is the Information Desk.

BACK

Information Desk. The man with a pipe asks you if you are in trouble. On learning that this is your first DECUS conference, he directs you to the New Participants session, where men and women with red ribbons explain all the ribbons, stickers, acronyms and strange codes to you. You learn far more about DECUS than you ever wanted to know, but at least you can now read the brochure.

READ BROCHURE

-working-
-working-
-working-

The brochure is a maze of sessions, rooms, codes, maps, acronyms and information. However after several false starts you get the hang of it. You realize that your company should have sent at least two people, as it is not possible to attend all the sessions which

interest you. You retire to the coffee lounge to plan your week. With the help of your brochure you decode the acronyms on the posters and move to the seats by the relevent SIG (Special Interest Group) poster. There are lots of other people here, all wearing the same coloured sticker as you, which has the same acronym on it as the poster. One of them has a yellow ribbon, which you now know means he is the Chair Entity of the SIG. You begin to feel that you are getting on top of the situation.

ASK CHAIR The Entity smiles at you and whisks you off to the opening session of the SIG, the Roadmap. The entity outlines the sessions sponsored by other SIGs which may be of interest to you. You realize that your company should have sent three people.

After the rest of the opening sessions, which are product updates given by people wearing dark blue ribbons (DEC personnel), you make your way to the Central Building where your brochure tells you that people wearing ribbons want to buy you beer.

The bar is surrounded by people with no ribbons and pink cards. People wearing ribbons are dotted around the perimeter. They all have fistfuls of pink and blue cards. You have a blue card.

A woman with red, green and white ribbons waves a pink card at you.

SAY HELLO

The woman introduces herself, and explains that when you have introduced yourself, she will swap your blue card for a pink card, which is worth an English pound at the bar. She also explains, somehwat plaintively, that she is not allowed to have a drink until she has got rid of all her pink cards.

INTRODUCE ME

The woman talks to you for a few minutes, and then gives you a pink card. You offer to buy her a drink. She is embarrassingly grateful, and asks for a pint. Her coloured stickers inform you that, among other things, she is interested in RT (Real Time).

BUY BEER

-working-
-working-
-working-

There are 800 people at the conference. 760 of them are currently trying to exchange pink cards for liquid refreshment. Two women wearing no badges, ribbons or stickers, and very fixed smiles, are doing their best.

Much later you return with the beer. There are lots of people wearing RT stickers, and a great quantity of beer. It begins to dawn on you that RT actually stands for Real Tipplers. After this, your recollection of events becomes somewhat hazy, and the next thing that dawns on you is dawn.

It is raining.

You are in a maze of twisty little staircases, all alike.

PLUGH

You don't get away with it that easily. This is a DECUS conference, and the Magic is on Wednesday.

XYZZY

Oh alright! We'll skip over the bit about student gyp rooms, libraries, courtyards and tunnels. You are pretty wet by the time you get to the coffee lounge though. All of the SIG booths are full of people, except the RT one. A solitary man, wearinga dark blue ribbon, explains that all RT people work on IJH time.

TRANSLATE IJH

You are obviously an imposter in this SIG area.

EXPLAIN IJH

Many have tried.

It is time for your first session. The day is a flurry of wet and windy passages, hot and stuffy rooms, and more information than you can open to scribble down, let alone assimilate. You realize that your company should have sent four people.

This evening's entertainment is the Social Event. The National Railway Museum is a tremendous venue, and is full of people you have never seen before. You approach a friendly-looking woman and offer to buy her a drink. She introduces herself and asks for a pint. Belatedly you notice the RT sticker on her badge. You realize that she has the same name as the woman you met last night. When you remark on this, she replies, "Well, you'd hardly expect us to be called Jim, would you?"

Unfortunately the bar does not sell any real beer, and she moves away. You do not see any more RT stickers until you are on the coach going back to the campus. However, by now you have made lots of new friends in other SIGs and it is not until afterwards that the incongruity of spending an entire evening discussing VMS internals while surrounded by ancient railway engines dawns on you.

You have had a tiring day. As you fall into bed, you realize that the mazes do not seem to pose any problems at night.

LOOK

You are in total darkness

GET UP

Incredibly, you are half-way through the conference. Today there are more sessions than any other, but you have realized that a major part of the benefit of a DECUS conference is the discussions you have with other users. You decide that your company should send five people next year.

The AGM provides a welcome break from sessions to go and look around the exhibition. You have never soon so much DEC kit connected to so much other DEC kit in so many locations in the UK. You take advantage of the bookshop discount included in your registration pack, and save your company 1000 pounds. You realize that the cost of sending you to the conference is a fraction of that.

You also enter the free competition for a VT220.

All the DEC people are very friendly, and you have a look at a couple of products your company is considering buying. There are some third-party products dotted about, too, and you are impressed by the range of markets that DEC and their collaborators can address.

The afternoon fills in some gaps in your knowledge about DEC's offerings, and you attend some user sessions which seem to be filling in some gaps in DEC's knowledge, as well as yours!

The evening is for MAGIC. The breadth and depth of knowledge of the user base astounds you. The fun you can have with computing teasers amazes you. You understand why no-one has ever tried to define a MAGIC session.

Thursday dawns, and you can no longer remember a time when you were not at a DECUS conference. You attend some more sessions in the morning, have lunch with some new friends, find yourself contributing to the SIG wrap-up sessions, and at last collapse exhausted in the coffee lounge.

People with ribbons and stickers keep smiling at you.

BACK

Oh yes, you will be! Warwick, 23-26 March, 1988!

****
****

Editor's note:

Overheard at a social event after a RTSIG steering committee meeting:

Sally Antill (suspiciously): "Nigel, are you trying to get me drunk?"

Nigel: "No, I haven't got time."

Overheard after the social event at the UK DECUS conference:

Sally John: "No thanks, I don't want another drink. My V-bit is set."

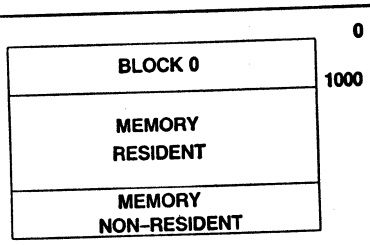
RT-11

HANDLER

STRUCTURE

[1]

RT-11 DEVICE HANDLERS HANDLER FILE



[2]

RT-11 DEVICE HANDLERS Memory Non-Resident

Boot Code
SET Overlay Code
Install Overlay Code
Fetch Code
Release Code
Load Code
Unload Code
Extend Memory Area

All of the sections listed here are OPTIONAL.

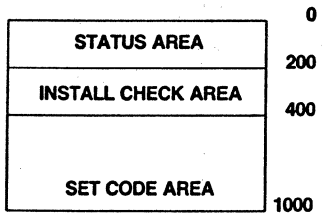
[5]

RT-11 DEVICE HANDLERS MACROs

.DRAST	.DRBEG	.DRBOT	.DRDEF
.DREND	.DRINS	.DRFIN	.DRSET
.DRVTB			
.DREST	.DRPTR	.DRSPF	.DRTAB
.DRUSE			

[6]

RT-11 DEVICE HANDLERS BLOCK 0



[3]

RT-11 DEVICE HANDLERS MEMORY RESIDENT

I/O INITIALIZATION
INTERRUPT PROCESSING
I/O COMPLETION CODE

[4]

RT-11 DEVICE HANDLERS Block 0

.DRDEF name, code, stat, size, csr, vec

name	2 character device name
code	device code number (200–377)
stat	status bits
size	device size in blocks (0=unknown)
csr	default csr
	"csr="NO"" – none
vec	default vector

This macro stores the argument information in block 0, defines symbols for handler assembly and .MCALLs the other macros.

ex: .DRDEF SK, 350, RONLY$!WONLY$!SPFUN$, 1, 176543, 220

[7]

RT-11 DEVICE HANDLERS Block 0

Status Bit Options:

VARSZ$	=	Variable sized
ABTIO$	=	Always enter on .EXIT
SPFUN$	=	Accepts .SPFUNs
HNDLR$	=	Enter on all aborts
SPECL$	=	Special directory
WONLY$	=	Write only
RONLY$	=	Read only
FILST$	=	File structured, random access

[8]

RT-11 DEVICE HANDLERS Block 0

.DRPTR [fetch=N1] [,release=N2] [,load=N3] [,unload=N4]

Nn = address to handler service routine to be run in processing a fetch (.FETCH), release (.RELEASE), load (KMON LOAD command), unload (KMON UNLOAD command)

= 0 default, no handler service routine exists.

= *NO* – for fetch only – indicates to the operating system that this handler cannot be fetched, it must be loaded

This macro uses locations 2 to 10 in block 0 to store the pointers to handler service routines.

RT-11 DEVICE HANDLERS Memory Non-Resident

Fetch, Release, Load, and Unload Routines

If a handler has a FETCH routine, this routine is executed as part of processing a .FETCH request, after the handler is already in memory.

If a handler has a RELEASE routine, this routine is executed as part of processing a .RELEASE request, while the handler is still in memory. The RELEASE routine is also executed when a job that fetched the handler aborts or exits without explicitly releasing it.

RT-11 DEVICE HANDLERS Block 0

.DREST [class=n] [,mod=n] [,data=n] [,type=n] [,size=n] [,replace=n]

class = device classification
mod = modification device classification
data = handler data table address
type = handler data table type
size = size of handler data table in bytes
replace = replacement geometry table

This macro specifies extended status information for the handler.
EX: .DREST CLASS=DVC.NL, DATA=DATTAB, TYPE=NLT

RT-11 DEVICE HANDLERS Memory Non-Resident

Fetch, Release, Load, and Unload Routines

If a handler has a LOAD routine, this routine is executed as part of processing the KMON LOAD command, after the handler is already in memory. The LOAD routine is also entered when a system handler is loaded into memeory by the BSTRAP routine.

If a handler has an UNLOAD routine, this routine is executed as part of processing a KMON UNLOAD command, while the handler is still in memory.

RT-11 DEVICE HANDLERS Block 0

CLASS Argument:

DVC.UK = Unknown device class
DVC.NL = NULL handler class
DVC.TT = Terminal class
DVC.TP = Reserved
DVC.DK = RT-11 file structured disk class
DVC.MT = Magtape class
DVC.CT = Cassette tape class
DVC.LP = Printer class
DVC.DE = DECnet executive class

RT-11 DEVICE HANDLERS Block 0

CLASS Argument:

DVC.DP = DECnet protocol class
DVC.DL = DECnet port (line) class
DVC.NI = Ethernet port class
DVC.PS = Pseudo-handler class
DVC.VT = Virtual terminal port class
DVC.SI = Serial input
DVC.SO = Serial output
DVC.SB = Serial input and output

RT-11 DEVICE HANDLERS Block 0

MOD Argument:

DVM.DX = RX01 compatible drive

DVM.DM = device uses extra error word

DVM.NF = device can not be fetched (it must be loaded)

RT-11 DEVICE HANDLERS Block 0

Replacement Geometry Table:

This table has 6 byte entries:

RESERVED	S
BLOCKS TO SKIP	
SECTORS IN TABLE	
TRACKS / CYLINDER	
SECTORS / TRACK	
2**N SECTORS / BLOCK	

S = 1 Some are replaceable
0 All are replaceable

Blocks to Skip = Blocks between last data block and bad sector table

N = Sectors/Block stored as a power of 2

.DRSPF arg [,arg2]

This macro is used to specify which .SPFUN codes will be supported by the handler. .SPFUN codes are numeric values from 200 to 377(octal).

These .SPFUN codes may be specified in two ways:

- o List Method
- o Extension Table Method

List Method:

Up to 30(octal) .SPFUN codes can be specifies by this method. Using this method, however, restricts you to 3 unique ordered combinations of the first two digits. Locations 22-27 in block 0 are used to store the codes.

Example:

```
.DRSPF <360,370,371,365>
```


.DRSET option, value, rtn, mode

option = set option name
value = non-zero constant to be passed to the SET routine in R3
rtn = routine to execute
mode = parsing mode option(s):

NO – accept NO prefix
NUM – accept decimal number
DEC – accept octal number

This macro defines a SET command table entry. .DRSETs must be used contiguously. They produce a self-terminating SET table starting in block 0 at location 400(octal).

.DRBEG name

name = 2 character device name

This macro begins the memory resident portion of the handler. It defines the I/O initialization entry point and the queue pointers.

Extension Table Method:

Any number of .SPFUN codes can be supported using this method. A pointer to the list of codes is placed in block 0.

Example:

```
        .DRSPF  +XTAB
        ...
XTAB::  .DRSPF  -,<200,202,207>
        .DRSPF  -,<222,224>
        .WORD   0
```


.DRINS name[, csr]

name = device name, preceeded by a "–" if the CSR should not be checked on install
csr = list of csr's

This macro defines installation and display CSR(s) and identifies the entry point for the install verification code.

.DRVTB name, vec, int, ps

name = 2 character device name
vec = vector address (000–474)
int = interrupt entry address
ps = interrupt PS condition code status

A handler with more than one interrupt vector must contain a table of three word entries for each vector. Use this macro to define a vector table entry. The macros must be used contiguously in the file, and the vector table will terminate itself.

.DRVTB name, vec, int, ps

Example:

```
;PUNCH-READER VECTOR TABLE
.IF EQ PR11$X                       ;IF BOTH READER AND PUNCH
        .DRVTB  PC,PC$VEC,PCINT ;TABLE FOR READER
        .DRVTB  ,PP$VEC,PPINT   ;TABLE FOR PUNCH
.ENDC
```

.DRTAB type, addr, size

type = RAD50 table type identifier
addr = table address
size = size of table

This macro creates an entry to a .DRTAB table, containing information about a handler data table. .DRTAB macros must be used contiguously. Terminate the .DRTAB table by calling .DRTAB with no arguments.

Reserved for use by Digital.

.DRUSE type, addr, size

type = RAD50 table type identifier
addr = table address
size = size of table

This macro creates an entry to a .DRUSE table, containing information about a handler data table. .DRUSE macros must be used contiguously. Terminate the .DRUSE table by calling .DRUSE with no arguments.

.DRFIN name

name = 2 character name of device handler

This macro generates the linkage to RMON to declare an I/O request done.

.DRBOT name, entry, read [,control=n] [,sides=n] [,force=n][,psect]

name = 2 character device handler name
entry = software boot entry
read = bootstrap read entry point
control = controller and bus type (Q, U, C) (BUS, MSCP) – types
sides = number of diskette sides
force = passes the argument to .DREND
psect = passes the argument to .DREND

This macro generates header information for the boot portion of a bootable handler.

example:

```
        .DRUSE  HND, HAND, SZHND
        .DRUSE  HRT, HEART, SZHRT
        .DRUSE
        ...
HAND:   .WORD   ^RHND,1,2,3,4,5,6
SZHND=:.-HAND
HEART:  MOV     #1000,R0        ;Set up ticks
1$:     DEC     R0              ;Avoid race condition
        BNE     1$              ;In a loop
        RETURN
SZHRT=: .-HEART
```


.DRAST name, pri, abo

name = 2 character name of device handler
pri = device priority
abo = abort entry point

This macro defines an interrupt entry point. It declares the interrupt and lowers the device priority. It also defines an abort entry point.

Example:

```
.DRAST  SK,4,ABORT
```


.DREND name [,force=n] [,psect]

name = 2 character device name
force = forces the value in the SYSGEN features word to be on for the purpose of generating the handler vector table
psect = forces the .DREND request to be placed in the specified program section

This macro generates symbols and a call vector to terminate the memory resident portion of the handler. Invoked by .DRBOT.

****

DON'T FORGET!!!!!

Send your Wish List Survey forms to:

RT-11 Wish List Survey
c/o Multiware, Inc.
2121-B Second St. Suite 107
Davis, CA 95616

The wish list survey (and form) was in the July Newsletter. If you lost yours, and want a copy, write to the address above.

NEWSLETTER OF THE VAX SYSTEMS SIG

Pageswapper

Our Mascot

VAX SYSTEMS SIG
DECUS U.S. CHAPTER

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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.

Change of address, reports of non-receipt, and other circulation correspondence should be sent to:

DECUS U.S. Chapter
Attention: Publications Department
249 Northboro Road (BP02)
Marlborough, MA 01752
USA

Only if discrepancies of the mailing system are reported can they be analyzed and corrected.

Editor's Workfile

Technology Marches On

There is a mythology that to learn REAL operations techniques for a large computer center, one must study an IBM shop, because those folks truly understand "where it's at". This seems to have been dispelled by an article on page 61 of the July 6 issue of Computerworld.

The article describes a plan for reducing the burden of backups, including reduction of risk, labor needs and storage requirements. The problem faced by the site featured in the article was that 99 disks had to be backed up each night and the available window for downtime was steadily shrinking. The solution? It was revolutionary enough to warrant a headline at the top of a page labeled "management". The solution was a technique apparently new to IBM shops (or at least the one featured and others known to the staff at Computerworld). The solution (hold onto your hats) was something called "incremental backups".

VAX 8700 Experiences

NOTE

The following presentation was given by Richard Garland of Bankers Trust Co. at the monthly meeting of the New York Commercial Cluster LUG held at Bankers Trust Company, New York City, June 15, 1987. The meeting was attended by about 40 members and several representatives of DEC Field Service, including the Unit, District Support, and the Area Customer Relations manager. After the talk, questions were addressed both to the speaker and to DEC Field Service.

I am in charge of hardware support, with the Distributed Processing Technical Support group of Bankers Trust. Our Group provides centralized system and hardware support to all DEC systems at Bankers Trust. Bankers Trust is a fairly centralized organization with all of its VAXes in 3 data centers in 2 locations. I would like to relate the experiences we have had in setting up and operating a number of 8700 systems. We currently run 10 8700s and 1 8500. The first 2 were installed at our New Jersey data center in October of 1986 and the last were installed in February 1987. We encountered a number of problems over the period from November to about March, all of which were eventually solved. It is our hope that the information in this presentation will be of help to other organizations using or contemplating acquiring this type of system.

I will present the problems and solutions from a user's perspective. In other words I will address particular symptoms which were observed even if 2 or more symptoms had the same fix. When the FCOs are published, these problems may be broken down differently.

VAX 8700 Issues and Answers

- Overview
- Typical Configuration
- Problems
  - Set up problems
  - Early crashes - solid
  - LAT problems
  - Console problems
  - Intermittent crashes
  - Timer problems
- Fixes
- Summary

Before describing the first problems were encountered, it is important to describe the configuration we use at the Bank, with particular regard to the system console. In what I might call the "Normal" configuration of a VAX 8700, (A slide here shows an 8700 with the Pro-380 console on a terminal stand next to the CPU) the Pro-380, which is the system console subsystem, is located adjacent to the CPU on its own stand. This configuration is typically what you would see at a DECUS symposium or a trade show. The distance between the CPU and the Pro-380 is limited be the length of the cable joining the 2, about 6 feet. In this configuration, the system operator is expected to use the Pro-380 to boot the system, Halt it, etc. This configuration is probably fine for a Lab or department with a single CPU.

This configuration was not, however, the way we wished to use these systems in our data centers. Our centers typically consist of 10 - 20 VAXes in a highly conditioned room with all the system consoles in a centralized control room. This layout allows us to better manage the large number of systems and optimizes the operators' productivity. In order to use the 8700 in our environment, and upon the advice of the DEC 8700 product line, the VAX's RDC port, located on the Pro-380, was used as a console port, and an LA120 in the control room was wired to it. Appropriate commands are issued to the Pro-380 and our LA120 then becomes the system console transparently. (Another slide shows a sketch of an 8700 with the Pro-380 on top and a wire going off to a distant LA120). While the system is running, the LA120 in the control room is used for all commands and output. The Pro-380 sits on top of the 8700 and is essentially ignored.

Another options which we considered, was the use of the VAX Cluster Console (a microVAX which serves as the console to several VAXes simultaneously) We considered this at one time but decided that it does not suit our needs as we currently operate.

The problems we encountered after setting up the first 2 systems were both related to the use of the remote console port. The first issue was that the console would get into various states of confusion as to whether the remote port were enabled or disabled and would sometimes hang the VAX and some times require itself (the Pro-380) to be rebooted or power-cycled. The second issue was that the LA120 was incapable of sending certain control characters to the console subsystem - notably CONTROL-P. Naturally the console lacks some essential functionality in this case: we could BOOT the system but we could not HALT it. We were eventually put in touch with the development group which wrote the Pro-380 console software and in a 3 way conference call solved the control character problem. The LA120 had to be set with the "P" parameter set to 2 or 8. Ours had been set to 1 as on all the other VAXes. They also sent us a pre-release of the console software rev. D (since released) which solved the problems of console confusion when enabling the remote port.

Set up Problems
- Connecting the console remote port
- Control character pass-through
- Console problems/hangs
- Fixes:
  - LA120 Setup: Parity setting: 2 or 8
  - Console software Rev D

At this point in time, the 8700 were given over to the users and several projects began to build applications on them. There was a general impression that things were working well although in retrospect we know there were several problems which were not yet recognized.

In January of 1987 we took delivery on the fifth 8700 and immediately discovered a real problem. The system would crash 1 to 3 times a week with a Bugcheck: "Unexpected Unibus Adapter Interrupt". This was particularly unexpected since the system had no Unibus Adapter. Field Service was able to identify this as a known problem through the Colorado Support Center and a fix was obtained. This consisted of a new version of the 8700 microcode (rev. D3). This is now the released version and is part of the Console rev. E software kit. The new microcode was also put on the other 8700s although the problem seems only to

have occurred on this one system. The DEC engineers refer to this as the "Read Lock Timeout" problem and it concerns the logic controlling the NMI bus and the BI controller.

Early "Solid" Crash

- Fatal Bugcheck: UNEXUBAINT
- About every 1-3 days
- Microcode bug: NMI - BI logic
- Fix: New Microcode Rev. D3
  - Standard with Console Rev. E or
  - New file for Console Rev. D

In late February, complaints from users and data center operations personnel began to show a pattern pointing to several problems. After many meetings with our users and with DEC we could recognize 2 major problems: LAT terminal problems and crashes.

The LAT problems observed were that users sessions would drop. The configuration in use for most users involved approximately 150 users in our New York City Office communicating with 4 8700s in our New Jersey facility. The users in New York were on terminals connected to DECserver-100s and DECserver-200s. The New York Ethernet was connected to the New Jersey systems using a Vitalink TransLAN, which operated over 2 T1 links. The symptom was unfortunately reminiscent of problems encountered in the Fall of 1986 due to Vitalink configuration problems. For some time users would simply say "The Vitalink just went down again" and they would complain to our telecommunications group. It was soon recognized that the Vitalinks were working properly and the problem lay in the Ethernet controller of the 8700 systems (known as a DEBNT). After lengthy study by one of our systems programmers, a correlation was found with DECnet traffic: high DECnet traffic would cause the LAT problem; LAT traffic (in itself) would not. An additional symptom was the presence of a high number of "System Buffer Unavailable" (1-2 per second worst case) when the Ethernet counts were displayed. After we had thus narrowed down the issue, DEC was able to determine that the DEBNT microcode was at fault (several VMS driver patches were first tried). A new chip set (rev. 1.3B) was sent and tested and this solved the problem. Eventually all DEBNTs in the bank were thus upgraded. An unexpected but welcome side effect was that the units performed noticeably faster with the new firmware. (DEC has since incorporated the firmware into a redesigned module which is now shipping. It is

module number T1034. Older units requiring the fix will be replaced by the new module.)

LAT / Ethernet Problems

- User LAT sessions would drop
- Only on 8700
- First suspected TransLAN (Vitalink) bridge
- Occurs concurrent with heavy DECnet traffic
- "System Buffer Unavailable" errors
- Fix: new firmware for DEBNT: Rev. 1.3B
  (Since incorporated into a new module: T1034)
- Improved performance a nice side effect

Along with the LAT problems we became aware that the systems were crashing or hanging. We recognized several cases: use of the Pro-380 (say to edit the default BOOT file) would usually hang or cause VMS to crash. At a meeting with DEC we found that there were cases where the Pro-380 software and VMS would not interact properly, particularly when the Pro-380s disks were being accessed. This could happen in two cases: editing files on the Pro-380 (actually typing on the Pro) and reading/writing the disks from VMS. It had long been documented that the two floppies on the Pro could be used as read/write, but the hard disk (an RD53) was to be write-only from VMS. We found that any use of the disks from VMS, even simply reading the RD53, could cause problems. Using the Pro-380 to edit files likewise caused problems. DEC informed us that a new version of the Pro-380 software (rev. E) together with VMS V4.6 would solve these console disk problems. Since VMS V4.6 was (an is) not yet released, patches for VMS V4.4 and V4.5 were obtained as well as a pre-release version of rev. E console software (since released). With these fixes in place we have found that we can do all the operations that used to cause problems. There is still the restriction that VMS can not write to the Pro-380's RD53. We have told DEC that this is an inconvenience and have been told that the restriction will be lifted in the future. At this time if VMS issues a MOUNT to the RD53, a message comes back "Drive is write-locked".

Problems using Console disks

- Editing BOOT files using Pro-380 would hang / crash system
- Accessing Console disks from VMS would hang / crash system
- Fix:
  New Console software Rev. E and
  VMS V4.6 (not yet released) or
  new CWDRIVER (V4.4 or V4.5)
- Still cannot write to Pro-380's hard disk from VMS

We also recognized that VMS would sometimes crash when no one was using the Pro and no one was accessing the Pro's disks from VMS. Curiously, these crashes would generally occur on 2 out of 4 systems in New Jersey at around midnight every night, and on 2 out of 3 systems in New York at 6 PM every evening. After analyzing a number of crash dumps, DEC (in Colorado) found that we had uncovered the "18 hour crash" bug. Apparently, 18 hours after first issuing a "SYSGEN> CONNECT CONSOLE" command the system would crash. It turns out that the New Jersey systems were typically BOOTed at 6 AM each day and the New York systems are BOOTed at midnight. Our system startup procedure requires that a file be read off of the console and thus the curious timing was explained. The systems that were not crashing were running VMS V4.5. The fix was to go to VMS V4.5 (and to use console software rev. E which we had just started using). Since it was infeasible for several of our groups to go to VMS V4.5 we requested a fix to VMS V4.4 and eventually received it.

Intermittent Crashes - I

- Fatal Bugcheck - INVEXCEPTN
- 18 hours after
  SYSGEN> CONNECT CONSOLE
- Work around:
  Mount/Dismount console disk
- Fix:
  New Console software Rev. E and
  VMS V4.5 or
  new SYSLOA8nn (V4.4)

After carefully studying error logs over a 2 month period we noticed that a few crashes did not fall into the same category as the previous. The Bugcheck message were generally very obscure, never before seen bugs. DEC informed us that a memory controller error had been diagnosed which resulted in a timing problem when memory not installed at the factory was used on a system. It turns out that factory installed memory was matched with the controller but that field installed memory was not matched. The problem was very infrequent - we believe we saw it around 4 or 5 times in 6 months of running between 4 and 10 machines. New controllers (rev. F3, current rev. is F4) were sent for all of our systems. We have not seen any of these crashes since.

Intermittent Crashes - II

- Various Bugchecks (see following screens):
  - SSRVEXCEPT
  - PGFIPLHI
  - NOTFCPWCB
  - SECREFNEG
- Infrequent
- Memory controller with mixed memory types
- New controller: Rev. F3 or F4

At this point it seemed that all of our systems were running reliably. We began to receive complaints from our operators that the system time which came up when the system BOOted was occasionally wrong by a random amount. If this went unnoticed it would wreak havoc with file creation times, DECnet, etc. After several attempted work-arounds, DEC sent us a fix to the console (rev. E) software which addressed the problem. It seems that on the 8700, the Pro-380 is the repository of the time when the CPU is down (unlike earlier VAXes which had a separate battery powered TODR). The Pro would fail to save the time properly when a VMS "SET TIME" command was issued (with no argument this is supposed to set the time back into the hard ware register). This fix is the only thing that was not fixed in console rev. E. and will be part of rev. F (not yet released). The patch is available from Field Service and should ship with currently shipping systems.

Time of Day problems

- Incorrect time values at BOOT
- Seemingly random
- Related to Pro-380 state since last
  $ SET TIME
- Fix: Fixes to Console Rev. E files

Summary:

	Problem	Module	Fix
1)	Remote console	LA120	Setup P: 2/8
2)	"Unibus" Interrupt ("Read Lock Timeout")	8700	uCode Rev D3 (Cons. Rev E)
3)	LAT sessions drop	DEBNT	Rev 1.3B or new module: T1034
4)	Console disks	Console VMS	Rev E CWDRIVER
5)	18 hour crashes	VMS	V4.5 or SYSLOA8nn
6)	Various other crashes	8700	Memory Controller Rev F3 or F4
7)	TODR errors	Console	Fix to rev E

At this point a representative of DEC Field Service outlined procedures for solving any of these problems. A service call should be logged for all suspected problems. All fixes and updates outlined here are available immediately. Furthermore, it was stated, in the New York Area, all installed 8700s have been audited and known problem situations have been identified. All systems shipped as of this time are said to incorporate all fixes. Users were advised to use escalation procedures, in place, if problems are not resolved. Lou Schiavone (212-714-6746), the New York Area Customer Relations manager said he would be happy to converse with DEC Field Service from

other areas on these problems.

Several users questioned DEC Field Service on the issue of notification to the user community at large of known problems and fixes. The publication of FCOs, it was pointed out, lags months behind problem identification and resolution. (In fact, the FCOs incorporating the fixes outlined above are not yet published as of the latest issue of DEC-O-LOG).

A question on whether the information, attributed to DEC, that Local Area VAXclusters (Ethernet based) should not use an 8700/DEBNT as a load host, was due to the DEBNT problem mentioned in this presentation. DEC said they would look into that question.

Turbo Charging VAX/VMS Ram Disk

Cass Witkowski
ALCOA DEFENSE SYSTEMS, INC.
16761 Via Del Campo Ct.
San Diego, CA 92127
(619) 592-2078

Once upon a midnight dreary,
as I pondered weak and weary,
Trying to get the proposal,
the proposal, out the door...

I was trying to get PATRAN, a structural program written by PDA Inc., to run faster on our VAXstation II/GPX. PATRAN is written for a multitude of machines and most likely not taking advantage of some of the features of VAX/VMS that could speed it up.

One PATRAN operation that the engineers perform many times requires a horrendous amount of disk accesses (8000 in 13 minutes). The RD54 on the GPX speeds along at 12 I/O's per second (Did I say speed?). Monitoring the system, I found that 20% of the time was spent in kernel mode and about 70% in user mode.

Next I tried the Pseudo Disk supplied with stand-alone backup (PDDRIVER). The pseudo disk was actually slower than the RD54! Only 9 I/O's per second. The system spent 70% of its time in kernel mode and only 20% in user mode.

Apparently the system was spending most of its time transferring the data between the pseudo disk's memory and the user's buffer. This normally would be done by DMA hardware with a real disk.

Looking into the fiche I found that the pddriver uses two routines to move the data to and from the user, IOC$MOVTOUSR and IOC$MOVFRUSR . These routines use four instructions to move each byte of data. By patching pddriver to use the MOVC3 instruction, I was able to speed it up by a factor of 3.

The patch to pddriver replaces the calls to the data movement routines with inline code that does the same function. Upon entering the patch code:

R1 = Address of data in the pseudo disk memory

R2 = Size of the transfer in bytes

R5 = Address of the UCB

The call to IOC$INITBUFWIND set R0 = Address of the user buffer and maps the first page of it. Next the amount of data to transfer is computed. Since only one page is mapped at a time, the maximum amount of data that can be transferred at one time is 512 bytes. If the user buffer is not page aligned, then only the amount of data up to the end of the page can be transferred. This amount is then minimized by the size of the transfer in R2. The transfer occurs. If more data needs to be transferred then the next page of the user's buffer is mapped and the process begins again.

The engineers at our site have used this modified driver without any ill effects, except that now their coffee breaks are shorter.

This was a very quick and dirty patch to get a speed improvement. A better way would be to map the entire user buffer first and then do one transfer. This is left to the reader as an exercise.

As always, patching DEC code has its support problems. Remember to keep the original version around for updates.

Excerpts From DECUS France Publications

selected and translated by
Nom D. Plume, Pageswapper Linguist

DECUS France News No. 14, November 1986

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Schedule of DECUS Symposia for 1987

UK, Ireland, and Mideast	March
Munich	March
Norway	April
France	April
US	April
Iceland	May
Denmark	May
Europe	September [just before DECworld!]
US	December

****

"VTX20, the First Computer Terminal That's Both Professional and a Multistandard Videotex Terminal"

Completely compatible with the VT220 family of Digital terminals, the VTX20 offers, besides the functional characteristics of the VT220, access to the three principal European videotex standards (Prestel, Teletel, and BTX/CEPT). Two sessions can be in use simultaneously, with ASCII characters for dealing with data and videotex properties for access to the VTX database.

Presented first at DECville '86, it is 100% European. The VTX20 is made in France at Digital's factory in Valbonne.

[Translator's note: public videotex services are widely available by telephone subscription throughout France, and since their introduction several years ago have become extremely popular. Inexpensive small videotex terminals are likewise widely available. There are directories of videotex services, ranging from tourist information through shopping services past

government data services to interactive pornography, the "pink services".]

"Digital Networks: the Latest Figures"

Digital has just made public the latest figures of its installed base, which show its dynamism in the domain of networks. (The figures exclude Digital's internal network.)

	March 86	June 86
DECnet licenses	55,000	65,000
CPU Ethernet nodes	50,000	60,000
Total Ethernet nodes (CPU, server, etc.)	73,000	95,000

DECUS France News No. 15, December 1986

Editorial by Dr. Jean-Francois Vibert, in charge of Symposia

Last March, 600 of you took part in our eighth annual Symposium, making 1/6 the members of DECUS [France]; that's still too few.... The biggest new thing [of the next Symposium] will be the day of pre-Symposium seminars on April 6.

"DECUS Speaks to DECUS: the Bulletin Board at Your Disposal"
Alain Barthelemy, President of DECUS France

We're finally there! Today our bulletin board is working at 300 and 1200 baud via modem...and that's only the beginning!... Already the members of the VAX SIG know how to use it. Your turn will come very soon! Your moderator, our friend Jean-Pierre Petit, President of the VAX SIG, will send you your username and your password on request.

A permanent dialogue among all DECUS members can only make our relationship with Digital improve. So return the attached response card today.

DECUS France News No. 16, January 1987

Editorial by Nicole Bonis, DECUS France representative to DECUS Europe

..Thanks to its number of members, DECUS Europe is an important organization, which can talk with DECUS US about subjects like the US Newsletters, the DECUS library ["Programmatheque"], relations with Digital... The DECUS US Newsletters, for instance, are edited in the USA, but, for European users, printed in Europe, which keeps the costs down considerably. Of course, the big European event is the Symposium that takes place each year in September and brings together about 1,700 persons. It's the place where you're privileged to meet English, German, Italian, Dutch, and Finnish users... and French ones who share your concerns; as well as many developers from Digital US. Between two Symposia, the contacts between the countries aren't broken; SIG heads meet twice a year, the country representatives four times a year. So if you need a European contact, don't hesitate to talk to me. While we wait, let's dream a little (after all, X400 is coming), that all the members of DECUS Europe may have access to a European bulletin board.

"Express Consultation" [insert to the newsletter] "CDROM"

All the members of DECUS France are getting this publication ...

For about a year Digital has offered to its clients, at least in the USA, a CDROM (Compact Disk Read-Only Memory) reader. Among the most attractive applications it might support, it's envisaged to use the medium to distribute hardware and software documentation. In this model of things, at some undefined intervals we would get a CDROM (600 megabytes) instead of the habitual unwieldy documentation kits. This medium could also allow, through a system of encryption, the distribution of software binaries.

Take a few moments to give us your advice.

[Second side]

1. Do you want the distribution of documentation on CDROM?

Program documentation	___ no	___ exclusively	___ optionally
Microfiches	___ no	___ exclusively	___ optionally
Software binaries	___ no	___ exclusively	___ optionally

If not, please specify your reasons:

2. Would you want the documentation of groups of Digital software products on the same CDROM, or would you want one CDROM per product?
   ___ All products on the same disk
   ___ Only one product per disk

3. How often would you want to get updates?
   ___ At each new version of any product(s) on the disk
   ___ At a fixed interval of one disk each month
   ___ At a fixed interval of one disk each two months
   ___ At a fixed interval of one disk each three months
   ___ At a greater fixed interval

4. Would you want to get binary updates, accompanied by decryption keys tied to usage licenses, on CDROM or by traditional means?
   ___ Traditional means (diskettes, cassettes, tapes...)
   ___ 1 CDROM per product
   ___ All products on the same CDROM with a system of encryption/decryption This method of distribution supposes the acquisition of a CDROM for your system(s), and moreover, the generalization of this equipment.

5. If this mode of distribution were envisaged, should the reader be:

   ___ Sold as usual to all interested clients
   ___ Sold at a special price to all interested clients
   ___ Integrated into all new systems
   ___ Without surcharge ___ With a surcharge
   ___ Furnished in the context of a software support contract
   ___ Furnished and installed in all systems in the same way as remote diagnostic hardware

6. If this system of distribution were adopted, do you think it would:
   ___ Completely replace the distribution of support documentation on paper (the impression being given of your concern for a standard means of using it, integrated into the system)
   ___ Coexist with the classical support documentation on paper

PAGESWAPPER - September 1987 - Volume 9 Number 2
Excerpts From DECUS France Publications

"DECUS France CAROLLs"

There were already Cesars and Oscars for the cinema, so there had also to be a trophy for DECUS. There's been one since 1984, since our Symposium in Bagnolet. The Office of DECUS France decided to pick out each year one award per SIG during the Symposium. This reward crowns the author(s) of the best program presented to DECUS during the preceding year (from one Symposium to the next). It is presented in the form of a trophy which has rapidly taken the character of an honor and a reward for the winners.... During the year, with your SIG chair, you choose the "best" among the the programs created and donated by members of the SIG. Let's understand as "best" those you use most, those that show up the most in your daily work, or those that seem to you the most useful to the community; you should really take the term "best" in its largest sense. During SIG meetings held during the Symposium, by secret ballot, winners will be chosen for each SIG. The results will be proclaimed during the General Meeting the same evening, and the Trophies solemnly bestowed....

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.

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Note 565.2 RM02's on a VAX/750 2 of 2
"Jim Preciado" 25 lines 6-JUL-1987 22:42
-< Here's the recipe >-

Open the bottom of the RM02 and slide out the MASSBUS card cage. On the right side of the card cage is a wire wrap backplane. In the upper left corner of this backplane are three jumpers. On of them is labeled 3600 RPM. Put this jumper in and your RM02 will appear now to be an RM03. Actually, this jumper has nothing to do with the spindle speed of the disk, it just toggles the low bit of the MASSBUS drive type register (RMDT). This device type is a 25 (octal) for an RM03 and 24 for an RM02. Voila, DRDRIVER configures the device as an RM03 and all is well. MASSBUS disks can be dynamically dual-ported between both ports even if one side is an RSX system. Just deal with the disk like you did in non-cluster days and mount it read/write on one side only and read-only on the other. Also include the /NOCACHE switch so that directories get updated as soon as possible on the disk. All VAX RM03 diagnostics run on this RM02 that thinks its an RM03. The seek tests will fail because the spindle speed of the drive is slower but things like data reliability work just fine. I had an arrangement where an RM02 was dual-ported between an 11/780 and an PDP-11/34. I used to back my real RM03 system disk up to the RM02 (after taking down the PDP) and it saved me a few reels of tape. RM03 and RM02 disk packs are interchangeable so I could rotate my system disk

backup when done. I was also able to boot the 780 from the RM02 when the RM03 was down. The processor ran a bit slower but a slow VAX is better than no VAX at all when your system disk is in trouble.

Jim Preciado
139 Johnson Ave
Mahwah, NJ 07430

==========

Note 599.10 Any PSI users out there? 10 of 11
"Carl Hartshorn" 23 lines 8-JUL-1987 14:24
-< Early success with PSI/DecNet >-

I used PSI at a former company over two years ago under VMS 3.5. At that time, we were one of the first in the Bay Area to set up a PSI network for more than just dial-in. We had a 9600 line to TYMNET and the intention was mail and file transfer via DecNet.

After some initial PSI protocol problems, we had a link to our local office in Munich, WG. This required going TYMNET to Piscataway, NJ where RCA or ITT took over (it varied), then to the West German equivalent of Tymnet, which is government-owned. I can't remember the name of the facility.

We routinely transferred large (1-Megabyte) files, usually at night or over weekends, back and forth. Transfer times were typically 0.8Meg/hour. Also mail was sent back and forth on a daily basis.

The only problems were trying to log in via Set Host on the other VAX. In this case, EDT was a problem because of the nature of the X.29 protocol. (I think this has been improved in later versions of PSI. We had 1.2)

Carl Hartshorn
116 Whispering Pines Ct
Scotts Valley, CA 95066
408/773-8484

```
================================================================
Note 599.11          Any PSI users out there?          11 of 11
"Bob Tinkelman"                        26 lines   8-JUL-1987 21:36
                -< Experience with VAX PSI >-
----------------------------------------------------------------
```

< Is anyone who reads this using VAX PSI? If so, what for?>

For those still interested in the original question, here's a summary of our experience.

We use VAX PSI for two purposes. The primary one is for DECnet between a VAX in New Jersey and a PDP11 in Hong Kong. (Of course the 11 is running RSX PSI.) The link is brought up once a week for a few file transfers.

Initially, we had a lot of grief getting all of the parameters set consistently on the two PSIs and the two hosts. Once things stabilized, we were able to run with the link staying up long enough for multi-megabyte files to get transferred. (Earlier, the symptom of most problems was "broken link".) We never satisfactorily solved the problem of low throughput though we did identify exactly what was going wrong (the subject of another note in this conference).

The other use we've made of VAX PSI is for PAD terminal access. We've found performance quite acceptable here (though clearly not as good as directly connected non-multiplexed terminal connections). I guess I should mention that in our environment, all the terminals were connected to their "pads" via 9600 baud lines and all of the synchronous links in the path were at least 9600 bps.

Bob Tinkelman
Cambridge Computer Associates, Inc.
56 Beaver Street, 3rd floor
New York, NY 10004
1-212-425-5830


```
================================================================
Note 604.1              VAX 11/750 Boot ROMs              1 of 1
"Stephen Simm"                         22 lines   5-JUL-1987 14:36
                          -< DEFBOO >-
----------------------------------------------------------------
```

While not a direct answer to your UB1 problem the following may be of help:

The VAX-11/750 processor ROM will only boot off of the zero-th unit on the controller. This device can obviously be a TU58. Now here comes the fun part:

The console TU58 works the same as the console disk required to boot a VAX-11/78x. Start with an EXCHANGE COPY of the console TU58 that (hopefully) is kicking around in the box of F/S diagnostics. Create a file on the cassette containing the bootstrap commands required for the particular controller -- see the other *BOO.CMD and *GEN. procedures -- under the name DEFBOO.CMD. When BOOT58 finds this file it will start executing commands from it.

For an example pull apart the V4.0 VMS upgrade kit. Digital used this tactic to boot off of an alternate root during the upgrade.

Stephen Simm
P.O. Box 4
Poestenkill, NY 12140-0004
518-458-2409

```
================================================================
Note 607.12   DECserver 200 application ports - how?    12 of 13
"Ken A L Coar"                         26 lines   2-JUL-1987 09:56
        -< Finding the physical port on a DECserver >-
----------------------------------------------------------------
```

```
>                                          Now just fix it
>    so I can tell what physical port I'm logged into!!!
```

Found it!

There are currently two ways of doing this (VMS 4.5). The first is to use the following sequence:

```
$ MCR LATCP
LCP> SHOW PORT LTA133
```

The other is to look at the UCB of your LTA terminal. At offset 134 (hex) there is a counted string containing the name of the port on the DECserver that you are physically connected to. Note that, by default, this string will be something like PORT_1, unless you've changed the name of the port on the server.

Further information: Colorado Springs says that VMS 4.6 contains an 'undocumented but supported' (that's a new one on me! ;-)}) $QIO interface which will allow you to fetch this information. They wanted to get it into $GETDVI, but couldn't manage it, for 4.6, at least. When you get 4.6, call Colorado and ask for the terminal server team - they should be able to give you the details on how to use the interface.

#k

Ken A L Coar
General Dynamics
Office Systems
12101 Woodcrest Executive Drive
Creve Coeur, MO 63141
(314) 851.4003 (CST)

```
================================================================
Note 631.1              RA81 FCT File Format              1 of 1
"Stephen Simm"                        18 lines   5-JUL-1987 14:46
                     -< N'way at N'ville >-
----------------------------------------------------------------
```

I was looking for roughly the same information at the N'ville symposium. The folks at the storage systems booth said it "wasn't available with VMS up since the drive and the controller handled it."

The suggestion was made (by a 3rd party F/S-type to scrounge up a set of diagnostic listings and figure it out the hard way.

I am still looking for a way to get the volume serial number back -- with VMS running. (I know that the GETDVI call doesn't work on RA81's...) If you find what you're looking for I'd appreciate a note...

Stephen Simm
P.O. Box 4
Poestenkill, NY 12140-0004
518-458-2409

```
================================================================
Note 635.2            CALLABLE EDITORS IN MAIL            2 of 2
"Mark Oakley"                          12 lines  21-JUL-1987 00:32
                    -< CALLABLE_LSE also. >-
----------------------------------------------------------------
```

> I'm not sure how many people are aware of it, but there
> is a way to create/edit mail messages without creating a
> subprocess. Simply define the following logical name:
>
> $ DEFINE MAIL$EDIT CALLABLE_xxx
>
> where "xxx" is either "TPU" or "EDT".

A user brought to my attention that "xxx" can also be LSE, if you have that product. However, it is important to install LSESHR (in SYS$LIBRARY) and LSEMSG (in SYS$MESSAGE).

Mark Oakley
Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201-2693
614/424-7154

Note 642.11 print&batch complaints 11 of 11
"John Osudar" 19 lines 30-JUN-1987 12:05
-< What does all this mean? >-

I think that the whole sequence of comments to this note reflects the basic problems with the job controller/queue manager under VMS V4.x: there is a lack of consistency in the way operations are carried out; there is a lack of documentation on both the queue manager's and the default print symbiont's operations (and please note: being able to find it "in the fiche" is NOT good enough, nor is it reasonable to force every system manager to read every manual in the VMS manual set to find the information -- especially since it may not even be there!); and there is a lack of support for the types of devices that are used on VAXes (e.g. various laser printers). I don't expect DEC to support my (brand X) laser printer directly -- but I also don't expect them to make it an order of magnitude more difficult for me (or the printer manufacturer) to support it, but quite often they DO.

I guess this amounts to a plea/request/demand to the VMS developers in the queue manager/print symbiont area: PLEASE look at the problems users are having with the V4.x software, and try to give us some clean, documented fixes in that "unnamed, unnumbered", unmentionable future major release that we might be getting sometime next year.

John Osudar
Argonne National Laboratory
9700 S. Cass Ave.
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Argonne, IL 60439-4837
(312) 972-7505

Note 650.8 Heavyweight update! 8 of 12
"Reece Pollack" 18 lines 30-JUN-1987 21:05
-< Bugs in DECServers & LATplus >-

Bug Alert!! Bug Alert!!

There is a bug in the standard DECserver 100, DECserver 200, and LAT-Plus distributions! The problem is with terminals mysteriously dropping off of the host and other such fun stuff. Check the rev levels of your software --

Product	Standard	Patched
DS-100	V1.3 BL15	V1.3 BL15A
DS-200	V1.0 BL20	V1.0 BL20C
LATPlus	V1.1-23	V1.1-24X

These patches should be available from your local DEC office, or wherever you normally get special patches. I spent months trying to fix some of the problems these patches fixed (including not being able to do a SET HOST/DTE to an LTAn port for more than 30 seconds at a time (this plays havoc with KERMIT).

Reece Pollack
American Satellite Company
MS 34/MIS 1801 Research Blvd
Rockville, MD 20850

Note 650.9 Heavyweight update! 9 of 12
"Brian Tillman, Lear Siegler, Inc." 6 lines 1-JUL-1987 15:16
-< LATplus is now V1.2 >-

RE: < Note 650.8 by NODE::US216482 "Reece Pollack" >
-< Bugs in DECServers & LATplus >-

| LATPlus V1.1-23 V1.1-24X

LATplus is now V1.2.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
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(616)241-8425

Note 656.1 Replacement of BNT 1 of 2
"Gus Altobello" 28 lines 22-JUL-1987 17:02
-< Replacement of DEBNT with DEBNA >-

Our newly-purchased (about 2 months ago) 8530 arrived with a DEBNT BI Ethernet controller. It had a number of strange hardware problems, so I called Colorado Support Center. After being told that my problems "didn't sound like any of the known problems", I asked what OTHER kind of problems were occurring.

It appears that the DEBNT (which isn't listed in my Systems and Options Catalog) has been replaced by a device called the DEBNA. Later shipments of 8530's to us are reputed to contain the DEBNA device.

My understanding is that there was a small window during which DEC shipped 8xxx systems with DEBNTs. Before that the only Ethernet devices were DEUNAs on a Unibus, and since then they've been shipping DEBNAs. My first 8530 fell into this window.

Field Service replaced my DEBNT with a DEBNA, and things are working better now. I still haven't resolved the problem where disconnecting the transceiver cable causes circuit up/down messages to repeat at 10 second intervals, though...

Gus Altobello
PO Box 11274
Hauppauge, NY 11788
516/435-7036

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Note 656.2 Replacement of BNT 2 of 2
"Kevin Angley" 9 lines 30-JUL-1987 10:14
-< The "T" stands for tape >-

I have an 8550 that fell into (out of?) the DEBNT window. This is an interesting beast. DEC won't talk about it. It doesn't work well.

The "T" in the DEBNT stands for tape - it has something to do with TK50 (and/or TK70). Now - does that mean that the DEBNT was a TK controller which was modified to be an Ethernet controller? Or does it mean that at one time, there was the intention that it be a dual function card? Speculate.

Kevin Angley
3301 Terminal Drive
Raleigh, NC 27604
(919) 890-1416

Note 660.27 Applications software standards 27 of 29
"John Osudar" 31 lines 9-JUL-1987 16:24
-< software installation maintenance issue >-

This reply is loosely related to the original topic... One thing that would be useful, both for system managers and applications software suppliers (and, most likely, to DEC as well) would be a file identifying which versions of software products are installed on the current system. (Yes, I know this can be done by checking the IDENT of executable images, but what about products that consist of command procedures or other non-EXE files?) I have developed a number of software packages that are installed on various systems here at ANL and elsewhere; some of these rely on common components. I also share system management duties on several VAXes with a couple of other people; in that role, I often have to install software packages supplied by others (including DEC, of course). When I install (or send out for another system manager to install) one of these packages, it would be very useful to know:

(a) whether any of the underlying software is already installed on that system

(b) if it is, whether it's the latest version

(c) (and, in some cases) whether the software has been modified locally, where applicable.

I could set up my own file, listing my own software components and the versions installed, but wouldn't it be more useful if this were a single, central, DEC-supported, DEC-documented (and, yes, DEC-used) facility? Your installation procedure (whether VMSINSTAL or not) could then verify, for example, that the versions of other related products currently installed are compatible with what you're attempting to install. Further, for us system-manager types, it would provide a more convenient, and certainly easier to maintain (if it's automatically maintained by installation procedures!) list of currently installed products. By making the list open to DEC, non-DEC commercial, and local software products, there would be a single, common method for determining the software available on the current system. Any comments?

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==========

Note 660.28 Applications software standards 28 of 29
"John Saunders" 6 lines 10-JUL-1987 19:49
-< Could you be More Specific? >-

I'm not 100% sure what you mean by "related" products. Could you give some examples?

I've never had any problem with this installing commercial products. They usually don't need anything which isn't provided with the product, and they usually keep track of their own interdependencies.

John Saunders
FEL Computing

PO Box 72
Williamsville, VT, 05362
(802) 348-7171

==========

Note 660.29 Applications software standards 29 of 29
"John Osudar" 18 lines 10-JUL-1987 20:30
-< more specifically... >-

In the case of DEC-supplied products, an example of "related" products would be: CDD, Datatrieve, RDB -- new releases of these typically have certain inter-dependencies upon specific releases of the others. For a non-DEC commercial example: we have Talaris laser printers here, and Talaris supplies software, fonts, etc. to support them. You need certain versions of some software (e.g. their font manager) to support other software (e.g. font definition files), possibly to several levels (e.g. a version of TeX may depend upon a certain version of the fonts being installed). Other examples involve locally developed software, Sig tape software, and software developed at other sites. For example, I have a generic server symbiont called EXECSYMB that is used in about a dozen different software packages, and is in use at a bunch of sites (both here at ANL and around the country). When I send out a new release of one of those packages, I need to know whether the target system has the latest version of the symbiont, so that the installation procedure can install the latest version if it's not there (or can at least complain about it).

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```
================================================================
Note 663.26          Comments on the SPR process          26 of 27
"John Burnet"                          24 lines  22-JUL-1987 14:15
                -< BTW, DSIN is now on Tymnet >-
----------------------------------------------------------------
```

-< DSIN: both good and bad >-

On the subject of DSIN... I agree that this "service" is practically useless where getting timely information about VMS problems and bug fixes is concerned. However, I have found that there *is* a great deal of useful and interesting stuff available through DSIN. Now, I'm not talking about the "flash" items; those seem to have died out (last time I checked, there were three items listed under product "VMS"), and DEC might as well remove the "flash" facility if they're not going to add any useful items to the database. What I *have* found to be a good service is what used to be called "ssi" and is now called "txt" (text search, by keyword, of the symptom/solution database). Of course, this usually isn't much good for getting up-to-the-minute information on recently discovered bugs; but if you choose the keywords carefully, you can find out a lot of things that don't appear in the vms doc set.

P. S. to the last note...

DSIN can now be accessed through Tymnet. This means that all of us folks outside the 303 area code no longer have to make long-distance calls to get to it. (DEC should have provided an 800 number for DSIN years ago, but Tymnet's almost as good.)

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```
================================================================
Note 670.2                    Set Watch                     2 of 3
"Larry Kilgallen"                      57 lines   4-JUL-1987 08:53
            -< Simultaneous Discovery Elsewhere >-
----------------------------------------------------------------
```

```
================================================================
Note 684.0          UNDOCUMENTED DCL COMMAND          No replies
"Jerry Tardif"                         50 lines   3-JUL-1987 09:28
----------------------------------------------------------------
```

Recently, I came across an undocumented DCL command that causes some interesting information to dump out as you execute other DCL commands. The command is called "SET WATCH" and allows you to view (among other things) the read attributes of files accessed and the contents of the File Information Block.

The command itself is invoked as follows:

```
$ SET WATCH FILE/CLASS=ALL
```

Currently, there appears to be only one object to watch - Files. One can only assume that DEC will at some later time add such objects as "DEVICES" and "TABLES" (Logical Name Tables?).

The CLASSES options are as follows:

1) ALL
2) ATTRIBUTES
3) CONTROL_FUNCTION
4) DIRECTORY_OPERATIONS
5) DUMP
6) ATTACHED
7) MAJOR_FUNCTIONS
8) NONE
9) QUOTA_OPERATIONS

I have been using this command from a privileged account running under VMS V4.5. It does not work from a non-privileged account and I have not yet attempted to determine exactly what the required privileges are.

I could not find anything documented in "HELP". It appears that DEC has ceased entering remarked-out help text into "HELPLIB" now that they are fully aware of our lust for unannounced "features". A call to the CSC for another problem prompted me to ask circuitous questions about "SET WATCH FILE" but was to no avail. CSC said that the problem with providing this type of information is that they have had to take a lot of heat from some customers who expect EVERYTHING to be supported whether it is documented or not. The fact that some people don't realize that DEC needs some time to develop and debug new features is really too bad because it means the rest of us lose access to early information we might have had.

I would be interested in hearing from others who have tried this command, or better yet, have derived still more information regarding its use. Good Luck!

Jerry Tardif
CMEEC
268 Thomas Road
Groton, Connecticut 06340

==========

Note 670.3 Set Watch 3 of 3
"Larry Kilgallen" 28 lines 4-JUL-1987 09:05
-< "Announcement" History of SET WATCH FILE >-

This undocumented feature has been mentioned in several DECUS Symposia presentations, and I know of at least one presentation where it was mentioned (as an undocumented feature) well in ADVANCE of its release (in VMS V4.4). It has been discussed a bit in the security context, as a first level approach to finding out what a layered product (from any vendor) is doing to the file system, and a way of looking for some of the more simple-minded of Trojan Horses. It is analogous to a similar feature of TOPS-10.

So how does one get this information if one does not get to go to DECUS Symposia? I think one group to hold "responsible" is those from your Local Users Group who DO get sent to symposia. The Boston VAX LUG reserves the monthly meeting after each symposium for an exchange of information learned at the symposium, with various members relating what they "covered". It turns out even those who attend symposia learn a lot from the LUG meeting because nobody can go to all the simultaneous

sessions.

Personally I would rather see the programmer who implemented SET WATCH FILE go on to the next neat feature (and there are several I want to see) than fight the DEC internal establishment about just when and in what fashion this should be documented/supported. Since it requires CMKRNL anyway, this discussion in the Pageswapper may be enough. Long live the Microfiche !

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA 02139-0901

==========

Note 673.3 Tab problems with LN01 3 of 5
"Reece Pollack" 7 lines 30-JUN-1987 20:49
-< DMF32 Tab Expansion >-

I confirm the fact that the DMF32 does tab expansion in its firmware, and I also recall a bug in that firmware. However, I'm not sure that the print symbiont doesn't do tab expansion; the symbiont checks the device characteristics to see if it needs to do tab expansion (otherwise a left margin might screw things up). I'll check on it and call back one of these days...

Reece Pollack
American Satellite Company
MS 34/MIS 1801 Research Blvd
Rockville, MD 20850

==========

Note 673.4 Tab problems with LN01 4 of 5
"Jamie Hanrahan" 7 lines 1-JUL-1987 14:23
-< print symbiont can do it too >-

Yes, the print symbiont does do tab expansion if the left margin specified in the form definition is not a multiple of 8. This suggests an interesting work-around to my problem -- specify left margins of 1 for all forms!

Tab expansion in firmware is a neat trick. Does anybody know the exact FCO or ECO number for the DMF?

Jamie Hanrahan
Simpact Associates
9210 Sky Park Court
San Diego, CA 92123
619-565-1865

```
================================================================
Note 673.5              Tab problems with LN01              5 of 5
"Jonathan Pinkley"                    54 lines   2-JUL-1987 15:59
                -< The problem is LCDRIVER >-
----------------------------------------------------------------
```

We reported this problem and its cause to Colorado in April of 1986.

We had just begun using the DMF32 parallel port instead of an older LP11 card. After we determined that the problem was in the incorrect interpretation of the LP$M_TAB bit in the setmode/setchar $QIO to the LCDRIVER, we reported this to Colorado. The following is essentially what we told them.

We have seen problems with the DMF32 mishandling tab characters at OSD. We have printers on DMF32 parallel ports and LP11 cards. None of the printers are capable of handling tab characters. However, to tell the LP11 driver to expand tabs into spaces, we use the

```
$ SET PRINTER/NOTAB LPxx:
```

command. To tell the DMF32 driver to expand tabs into spaces, we say

```
$ SET PRINTER/TAB LCxx:
```

The negation of those commands allows tabs to be passed to printers that can handle tabs correctly.

Our first call to Colorado was answered with "Make sure your DMF32 is above Rev K." After finding that the board was at Rev L, we were told "O. K. We'll be sure to fix the documentation to reflect that." (This is not a joke!)

In short, the work around to the problem is to tell the LC port on the DMF to do the opposite of what the documentation indicates the /TAB switch does. It appears that our call was "Noted" (ignored). All DEC has to do is flip a bit the other way in a DMF CSR. A single instruction in the LCDRIVER could fix this problem. In fact in VMS V4.5 this can be done with the following patch to LCDRIVER.EXE:

```
$ copy sys$system:lcdriver.exe sys$scratch:
$ set default sys$scratch:
$ patch lcdriver.exe
PATCH>ex/ins 1f9
000001F9:  BBS     #06,B^44(R5),00000206
PATCH>deposit/ins 1f9='bbc #06,b^44(r5),206'
old:    000001F9:  BBS     #06,B^44(R5),00000206
new:    000001F9:  BBC     #06,B^44(R5),00000206
PATCH>update
PATCH>exit
```

You can test this patch by reloading it with sysgen.

For more information see fiche #150 and 151 of the VMS 4.4 fiche set.

Jonathan Pinkley
Gould OSD
Dept. 913, Bld. 2
18901 Euclid Avenue
Cleveland, OH 44117
(216)486-8300 x1335

```
================================================================
Note 676.1          CMS 2.3 problem with ACL's              1 of 7
"Reece Pollack"                       12 lines  30-JUN-1987 21:19
                -< "MAGIC" ACE problems again >-
----------------------------------------------------------------
```

It looks like you got bit by the same bug DEC said would never happen with the automatic ACE trick. RMS adds an ACE to the new file which is built from the default protection for the file plus the CONTROL access. It looks like you have no access for the user by default, and since the "magic" ace has that protection...

Try adding a DEFAULT_PROTECTION ACE to the directory file or changing the default protections specified if you already have one to add access for the owner (I think it's owner -- somebody help me out!). DEC said that the "magic" ACE wouldn't cause problems, but they wuz wrong! This has already been SPR'd and was a lively subject of discussion at DECUS.

Reece Pollack
American Satellite Company
MS 34/MIS 1801 Research Blvd
Rockville, MD 20850

```
================================================================
Note 676.2          CMS 2.3 problem with ACL's          2 of 7
"Brian Tillman, Lear Siegler, Inc."  13 lines  1-JUL-1987 15:24
          -< OWNER field is a template for ACEs >-
----------------------------------------------------------------
```

RE: < Note 676.1 by NODE::US216482 "Reece Pollack" >
-< "MAGIC" ACE problems again >-

| (I think it's owner -- somebody help me out!).

Yes, indeed. The ACL facility is going to be nice to you and grant you "OWNER" privileges. So, it takes the OWNER field as a template and creates an ACE containing your UIC, an OPTIONS=NOPROPAGATE clause, and the OWNER access with CONTROL added. So, if the DEFAULT_PROTECTION ACE specifies OWNER=RWED, the ACE will contain R+W+E+D+C.

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Grand Rapids, MI 49518-8727
(616)241-8425


```
================================================================
Note 676.3          CMS 2.3 problem with ACL's          3 of 7
"Jack Patteeuw"                    14 lines  10-JUL-1987 12:02
                    -< Bad Magic >-
----------------------------------------------------------------
```

re: .2

Yes the "magic" ACE has bitten me in the butt too !!

Even if I have an ACE on the directory that specifies what the ACE should be on the files I create in that directory I get the "magic" one !! This is especially a problem because the "magic" ACE contains a OPTION=NONPROPAGATE which means that if someone else who has write access to this directory comes along and places another file with the same name in the directory I can't access it !!

The "magic" ace is nice in some cases but I think if a default ACE is specified on the directory file for your identifier that you should get that ACE and NOT the "magic" one

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI 48150
313-323-8643

```
================================================================
Note 676.4          CMS 2.3 problem with ACL's          4 of 7
"Michael R. Pizolato"              44 lines  13-JUL-1987 15:04
                    -< How we handle it >-
----------------------------------------------------------------
```

We use ACL's in this type of situation very heavily (on a directory structure containing thousands of files), and have had no problem. We simply insure that the default ACL's to be applied to the files ignore the "magic" ACE, so that there is an ACE to cover anyone who will be accessing the file. We have about 5 different types of users who need different kinds of access to the files, but the ACL is not terribly long, and it's self-maintaining (we put it on the directory at the top of the tree and it just propagates itself downward very nicely). Of course, if it ever has to be modified, it's a little bit

difficult, but we've managed quite well so far.

Here's what the ACL looks like on the top level directory (the DIRECTORY command output has been edited to fit on the screen):

```
$ DIRECTORY/SEC CODES.DIR

Directory USER_DISK:[CUSTOM]

CODES.DIR;1          CUSTOM_PROGRAMS          (RWE,RWED,,)
     (ID=[CUSTOM,CUSTOM_MGR],ACC=R+W+E+D)
     (ID=[CUSTOM,*]+TEST_ENGR,ACC=R+W+E+D)
     (ID=[CUSTOM,*]+PROD_ENGR,ACC=R)
     (ID=[TECH,*],ACC=R)
     (ID=*,ACC=NONE)
     (ID=[CUSTOM,CUSTOM_MGR],OPT=DEFAULT,ACC=R+W+E+D)
     (ID=[CUSTOM,*]+TEST_ENGR,OPT=DEFAULT,ACC=R+W+E+D)
     (ID=[CUSTOM,*]+PROD_ENGR,OPT=DEFAULT,ACC=R)
     (ID=[TECH,*],OPT=DEFAULT,ACC=R)
     (ID=*,OPT=DEFAULT,ACC=NONE)
```

The first 5 lines are the protection on the directory itself, and the second 5 lines are the ACE's that get propagated down the tree. The files in the tree are owned by identifier CUSTOM_PROGRAMS so that individual users aren't charged for the space. CUSTOM_MGR is the username of the group manager for group CUSTOM. All TEST_ENGR's get full access to the files, regardless of who put them there. PROD_ENGR's and members of group TECH get read access. TEST_ENGR and PROD_ENGR are non-resource identifiers that are granted to the appropriate users. In this scheme, the "magic" ACE is completely irrelevant, since every user's access (including that of users who are "world" with respect to the tree) is covered in the ACL.

Michael R. Pizolato
AT&T Technology Systems
Dept. 323610
555 Union Blvd.
Allentown, PA 18103
215/439-5500


```
================================================================
Note 676.6           CMS 2.3 problem with ACL's            6 of 7
"Brian Tillman, Lear Siegler, Inc."  50 lines  14-JUL-1987 13:46
                  -< Thoughts on an example >-
----------------------------------------------------------------
RE: < Note 676.4 by NODE::US191492 "Michael R. Pizolato" >
                       -< How we handle it >-

!    CODES.DIR;1          CUSTOM_PROGRAMS          (RWE,RWED,,)
|         (ID=[CUSTOM,CUSTOM_MGR],ACC=R+W+E+D)
|         (ID=[CUSTOM,*]+TEST_ENGR,ACC=R+W+E+D)
|         (ID=[CUSTOM,*]+PROD_ENGR,ACC=R)
|         (ID=[TECH,*],ACC=R)
|         (ID=*,ACC=NONE)
|         (ID=[CUSTOM,CUSTOM_MGR],OPT=DEFAULT,ACC=R+W+E+D)
|         (ID=[CUSTOM,*]+TEST_ENGR,OPT=DEFAULT,ACC=R+W+E+D)
|         (ID=[CUSTOM,*]+PROD_ENGR,OPT=DEFAULT,ACC=R)
|         (ID=[TECH,*],OPT=DEFAULT,ACC=R)
|         (ID=*,OPT=DEFAULT,ACC=NONE)
```

We, too, use ACLs extensively and our files get owned by resource identifiers, just as in your example. The ACL, though, seems just a little at odds with my understanding of how things would work. Perhaps you can tell me how you perceive the operation of the above directory. My perception is as follows:

Since you don't specify who holds CUSTOM_PROGRAMS, I first assume no one does. This means that any process creating a file in this directory (the process with UIC [CUSTOM,CUSTOM_MGR] and those processes in the same UIC group which hold the TEST_ENGR identifier) will wind up owning the file, since you must hold the resource identifier in order to charge against it. RMS won't add an ACE for the creating process, since the process will own the file.

Now I'll assume those who are allowed WRITE access also hold the CUSTOM_PROGRAMS identifier. Why then would you not want to just have an ACE that states:

```
(IDENTIFIER=CUSTOM_PROGRAMS,ACCESS=READ+WRITE+EXECUTE+DELETE)
```

and just get rid of your first two ACEs (of course, the same applies to the OPTIONS=DEFAULT ACEs as well). It's not clear to me that even if the two collections of processes that are allowed write access do hold the CUSTOM_PROGRAMS identifier, that ownership would be assigned to CUSTOM_PROGRAMS, since

CUSTOM_PROGRAMS isn't mentioned in the ACL at all.

Finally, since the WORLD access field in the UIC-based protection doesn't allow access, the ID=* ACE is redundant. While this wasn't true in VMS 4.3 and earlier, in VMS 4.4 they changed ACLs so that WORLD protection means something, which is reasonable, since the concept of WORLD is still valid.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

Note 676.7 CMS 2.3 problem with ACL's 7 of 7
"Kevin Angley" 15 lines 30-JUL-1987 10:38
-< Further info on Magic ACE >-

Some further thoughts on the issue ... I have spoken to people who support the magic ACE by saying "All it is doing is exactly what the owner UIC protection gives you anyway". Well, yes and no. This is true only if

Access provided via UIC > Access provided by ACL

As it stands in my example, the magic ACE blocks the holder's access to the file which would otherwise be granted by the ACL. If the magic ACE were at the bottom of the ACL list, there would be no problem in this case (but you;'d have to think about that too).

The point is ... the magic ACE is NOT harmless ... it is not a No-op. I see WHAT it is - my question is WHY is it?

Kevin Angley
3301 Terminal Drive
Raleigh, NC 27604
(919) 890-1416

Note 677.3 Bug with ACL (VMS 4.5) 3 of 8
"Reece Pollack" 15 lines 30-JUN-1987 21:27
-< Fixed in a future release... >-

Just playing the Devil's Advocate, let's look at this from DEC's side. I'll bet DEC is already spending most of their time fixing bugs in (dare I say it) V5.0, and spending the time to go back and fix a bug in V4.x when it's already fixed in V5.0 looks an awful waste of time.

On the other hand... I once got an SPR answer (!) which stated a bug in V3.5 was fixed in V4.0 -- a very terse answer at that.

I later got a phone call from a very embarrassed DEC employee who suddenly desired to give me full details on what the bug was and how it could be worked around. It seems his boss got ahold of his response and jumped on him with both feet for being inconsiderate. Sometimes they lose sight of the fact that waiting 6 months to a year for a bug fix is not acceptable, even if it is already fixed in the next release.

Reece Pollack
American Satellite Company
MS 34/MIS 1801 Research Blvd
Rockville, MD 20850

Note 677.4 Bug with ACL (VMS 4.5) 4 of 8
"Greg Isett" 35 lines 2-JUL-1987 20:43
-< BACKUP/SCRATCH ACL problem >-

-->Reply to 677.1 --> Backup/Acl problems

>By the way, watch out for BACKUP and ACLs. Here at Lear Siegler
>we have our disks organized such that personal files (login
>directories) are on one set of disks and project files (owned
>by resource identifiers and accessed via ACLs) are on another
>set.

We have a very similar project accounting scheme here at HRB. The only way I found restores to work is via:

BACKUP/INTERCHANGE [source] [destination]/OWNER=PARENT

This appears to work by /OWNER=PARENT giving the correct UIC, and /INTERCHANGE doesn't copy ACLs and thus VMS puts the appropriate default ACLs on the files. Granted, it's a real PAIN and most users forget /OWNER and get "quota exceeded" or more irritating, forget /INTERCHANGE and get "protection violation" (i.e. create a file that they can't delete).

>Now, on project disks, only the resource identifiers have
>quotas, so the file can't be created because the restoring
>process doesn't have any quota.

Tho we try to give only resource identifiers a quota on our project disks, we had to give some users a UIC quota on the project disk. We found that FORTRAN files opened as "SCRATCH" will be charged to the user's UIC quota rather than the project's quota.

Greg Isett
hrb-singer incorporated
department 125
p o box 60
state college pa 16804

==========

Note 677.5 Bug with ACL (VMS 4.5) 5 of 8
"Brian Tillman, Lear Siegler, Inc." 20 lines 6-JUL-1987 12:11
-< Scratching where it itches >-

RE: < Note 677.4 by NODE::US183688 "Greg Isett" >
-< BACKUP/SCRATCH ACL problem >-

| BACKUP/INTERCHANGE [source] [destination]/OWNER=PARENT

Thanks, I'll try it!

| We found that FORTRAN files opened as "SCRATCH" will be
| charged to the user's UIC quota rather than the project's
| quota.

You can fool some of the images that create scratch files with:

$ define FORxxx 'f$environment("default")'forxxx.

If you write your own applications in FORTRAN and want to have scratch files charged to the project quota, make sure the OPEN statement contains "FILE='SYS$SCRATCH:FORxxx'" and

$ define SYS$SCRATCH 'f$environment("default")'

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

==========

Note 677.6 Bug with ACL (VMS 4.5) 6 of 8
"Brian Tillman, Lear Siegler, Inc." 9 lines 7-JUL-1987 14:16
-< Thanks!!! >-

RE: < Note 677.4 by NODE::US183688 "Greg Isett" >
-< BACKUP/SCRATCH ACL problem >-

| The only way I found restores to work is via:
|
| BACKUP/INTERCHANGE [source] [destination]/OWNER=PARENT

It work, it WORKS!!! Great! Thanks, Greg!!! This solves a TREMENDOUS problem with us.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

```
================================================================
Note 680.0      Looking for DEC PCFS Experiences       2 replies
"Mark Oakley"                        13 lines  29-JUN-1987 23:19
----------------------------------------------------------------
```

We would like very much to contact any sites that use DEC PCFS (VMS Services for MS/DOS). What have your experiences been, and why did you select DEC PCFS? Please respond to this note, or contact:

Brian Lockrey	Ken Baugess
Battelle Columbus Division	Battelle Columbus Division
505 King Ave.	505 King Ave.
Columbus, OH 43201-2693	Columbus, OH 43201-2693
(614) 424-7281	(614) 424-5978

Thanks!

Mark Oakley
Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201-2693
614/424-7154

```
================================================================
Note 680.1      Looking for DEC PCFS Experiences       1 of 2
"M. Erik Husby"                      19 lines   1-JUL-1987 17:28
                    -< PCFS Experiences >-
----------------------------------------------------------------
```

I have some limited experience with PCFS. I have it running on our 785 and our microVAX. As we were getting VAXmates to run on an ethernet there was a lot of choice.

It appears to work nicely provided:

> Your ethernet is stable -- we had hardware problems for a while that caused transmission errors. The VAXmate would loose its virtual disks and the only way to get them back was to reboot. The VT220 and VT240 emulators could recover from the error.

I have not tried to measure throughput, and as we only have 3 VAXmates, I am not concerned now. Although I maybe concerned in the future.

M. Erik Husby
Project Software & Development
14 Story St.
Cambridge, MA. 02138
(617)-661-1666

```
================================================================
Note 680.2      Looking for DEC PCFS Experiences       2 of 2
"Chris Erskine"                      29 lines   2-JUL-1987 12:50
                    -< Additional Experience >-
----------------------------------------------------------------
```

I have been supporting a site that currently has about 35 VAXmates with more coming in all of the time. The biggest problem that we have had is all of the key diskettes with there own DECnet node numbers required. I am currently working on a problem which according to DEC can not be done which is assign a key diskette to the hardware and prompt for username. I also allow a user to enter a bad password and not have to reboot. (YES DEC it can be done.)

The other problem we have had with PCFS is as Erik said, problems in the Ethernet system. We too lose connections to the virtual disks but have not yet been able to find where the problem is.

We are running PCFS on a cluster having the connections made to the cluster alias, not a given VAX node. This feature also works. One problem which has been seen is that for the LAT terminal emulator, it hangs at times when connecting to a common service if the service table become full and all of the services being offered by the nodes offering the common service do show up in the table. When the table size is increased, this problem goes away.

Chris Erskine
6001 Adams Rd.
Bloomfield Hills, MI 48013
(313) 258-4049

```
================================================================
Note 681.0          Looking for XYBION users          No replies
"Mark Oakley"                          14 lines  29-JUN-1987 23:23
----------------------------------------------------------------
```

We use a data acquisition package called XYBION, that was developed by Xybion Medical Systems of New Jersey. We are very much interested in locating other sites that use this software, so that we can share experiences. Please respond to this note, or contact:

Craig Rentenberg	Mark Oakley
Battelle Columbus Division	Battelle Columbus Division
505 King Ave.	505 King Ave.
Columbus, OH 43201-2693	Columbus, OH 43201-2693
(614) 424-4801	(614) 424-7154

Thanks!

Mark Oakley
Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201-2693
614/424-7154

```
================================================================
Note 682.0            $INSTALL PURGE ddcu:              3 replies
"George Walrod"                        24 lines  30-JUN-1987 15:23
----------------------------------------------------------------
```

I was considering submitting an SPR for an improvement in the VMS Install Utility. Before doing that I would like some comments and feedback.

My suggestion is to modify the PURGE option in the VMS Install Utility, so I may give a disk drive name. Currently the PURGE option removes all installed images and global sections. If I could specify the Disk to Purge this would help me to no end. If you have ever had to dismount a drive on your system and found that images were installed on that drive, then had to go back and deinstalled each image/section manually you know my headache.

The syntax of the command could be as follows:

For the New Interface

```
$INSTALL PURGE ddcu:
```

For the Old Interface

```
INSTALL> ddcu:/PURGE
```

This syntax would minimize the coding changes.

George Walrod
4260-b chain bridge rd
fairfax, va 22030

```
================================================================
Note 682.1            $INSTALL PURGE ddcu:                1 of 3
"Reece Pollack"                          8 lines  30-JUN-1987 21:35
          -< Additional $INSTALL functionality >-
----------------------------------------------------------------
```

Let's go one better, George, how about a fix to INSTALL so that we can get a list of the files installed from a specified disk and/or a specified disk and directory? The we could do:

```
INSTALL> list disk$wdp:[mass11]/full
```

and get a list of all of the files installed from that directory? Anyone else like or need this??

Reece Pollack
American Satellite Company
MS 34/MIS 1801 Research Blvd
Rockville, MD 20850

```
================================================================
Note 682.2              $INSTALL PURGE ddcu:              2 of 3
"John Saunders"                        9 lines   1-JUL-1987 00:52
                -< More INSTALL Functionality >-
----------------------------------------------------------------
```

Even better, how about allowing wildcards in all commands:

```
INSTALL> delete sys$sysroot:[*...]wpcorp_*.exe
```

And while we're at it, how about:

```
INSTALL> list/global name*
```

to get a list of all such global sections?

John Saunders
FEL Computing
PO Box 72
Williamsville, VT, 05362
(802) 348-7171

```
================================================================
Note 683.0              Multi-point DECnet              No replies
"Joseph Stith"                        34 lines  30-JUN-1987 16:58
----------------------------------------------------------------
```

I am trying to bring up a multi-point line (yes, I know DEC will not support them in the future but we did not discover that until recently) and I am having some problems. Everything is VMS 4.5 or MicroVMS 4.5 and is running 9600 baud.

The control node is an 8250 with a DMP-11 and at address "00" and I am defining it with:

```
DEFINE LINE DMP-0 PROTOCOL DDCMP CONTROL DEAD TIMER 30000 -
        RETRANSMIT TIMER 1200
DEFINE CIR DMP-0.0 COST 9 STATE ON TRIBUTARY 1
DEFINE CIR DMP-0.1 COST 9 STATE ON TRIBUTARY 2
```

The tributary is a MicroVAX with a DMV-11 at at address "02" and I am defining it with:

```
DEFINE LINE DMP-0 PROTOCOL DDCMP TRIBUTARY STATE ON
DEFINE CIR DMP-0.0 COST 9 STATE ON TRIBUTARY 2
```


Should the tributary definition of the circuit have the tributary's address or the controller's address? Should the circuit definition have "DMP-0.0" or "DMP-0"?

Any other assistance?

Thanks

P.S. What are people doing with their existing multi-point lines once DEC drops them. Seems like point-to-point is going to make the phone companies rich.

Joseph Stith
Longman Group USA Inc
520 N Dearborn
Chicago, IL 60610
(312) 983-6400

```
================================================================
Note 685.0          Need unread Mail count              11 replies
"Alan E. Frisbie"                      18 lines  5-JUL-1987 16:52
----------------------------------------------------------------
```

I need to be able to find out the unread message count that Mail displays. I need to be able to do this from a command file (Login.Com).

I am told that this information is kept in an indexed file, SYS$SYSTEM:VMSMAIL.DAT. Since access to this file is closely guarded, what is needed is a program that will return the unread mail count only for the user requesting it. This program can then be installed with the necessary privileges. Does anyone know of a program on the SIG tapes that does this, or will I have to write it myself?

Alan E. Frisbie Flying Disk Systems, Inc. 4759 Round Top Drive
Los Angeles, CA 90065

(213) 256-2575

Alan E. Frisbie
Flying Disk Systems, Inc.
4759 Round Top Drive
Los Angeles, CA 90065

```
================================================================
Note 685.2            Need unread Mail count            2 of 11
"Frank J. Nagy"                        2 lines  11-JUL-1987 10:12
                -< FINGER reads mail count >-
----------------------------------------------------------------
```

The FINGER program, found on several past SIG tapes, contains code to read the unread mail count for VMS V4.0.

Frank J. Nagy
Fermilab
PO Box 500 MS/220
Batavia, IL 60510
(312)840-4935

```
================================================================
Note 685.5            Need unread Mail count            5 of 11
"Chris Erskine"                        4 lines  22-JUL-1987 09:26
                     -< One Caution >-
----------------------------------------------------------------
```

A quick gottcha you for the last one is if you have moved your VMSMAIL file from SYS$SYSTEM. This file is sometimes pointed to by the logical VMSMAIL. If this is defined, the file may be somewhere else or named something else.

Chris Erskine
6001 Adams Rd.
Bloomfield Hills, MI 48013
(313) 258-4049

```
================================================================
Note 685.6            Need unread Mail count            6 of 11
"Jack Patteeuw"                        5 lines  23-JUL-1987 09:43
                  -< There's always DCL ! >-
----------------------------------------------------------------
```

There is a DCL command file called MAILUAF.COM on your system that allows System Managers to play with many of the fields in MAILUAF.DAT. Although the count field is not defined in this procedure I'm certain that you could figure out from the other example where it is and then modify this procedure to do what you want.

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Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI 48150
313-323-8643

```
================================================================
Note 685.7            Need unread Mail count            7 of 11
"Brian Tillman, Lear Siegler, Inc."  12 lines  23-JUL-1987 15:07
         -< I know where that little guy's hiding! >-
----------------------------------------------------------------
```

```
RE: < Note 685.6 by NODE::US176598 "Jack Patteeuw" >
                          -< There's always DCL ! >-
```

> Although the count field is not defined in this procedure
> I'm certain that you could figure out from the other
> example where it is...

It's in the word at bytes 34 and 35 of the mail record. I've got a program that tells you all the stuff in the mail record (your own only, of course). It's too bad DECUS doesn't have a BBS yet where we can upload (on line tape submissions would be great, eh?). If there's interest, I can just make it a note here. It's not very long.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

Note 685.9 Need unread Mail count 9 of 11
"Bob Hassinger" 35 lines 24-JUL-1987 10:49
-< DECUS BBS and on-line software distribution >-

> ... It's too bad DECUS doesn't
> have a BBS yet where we can upload (on line tape submissions
> would be great, eh?).

An interesting subject. DECUServe has started up but is only available to a limited group at this point and in any case it's current charter does not include this kind of function. The issues are the same for DECUS if the DECUServe system or another one is considered for this.

I just got done with the DECUS/US Library Committee meetings. Some of us have been working very hard for several years along this line. It turns out to be difficult to do for a couple of reasons. One is politics and personalities of course - the bigger an organization gets the more of that you get. I hope we are making progress on that front now.

The other problem area is technical and economic. A system to really do what you want is not going to be cheap. It is going to need quite a lot of disk storage. The CPUs are cheap enough but big disks are not.

The people involved are very concerned with the technical design of a system that would be secure and stable and in particular we still have problems figuring out how to meet the costs. We are looking at those issues and have talked many times about the obvious options. New ideas are always welcome however. For example, does anyone know anything about the possibility of using 900 numbers to recover more than a nominal service charge? On line submissions get us into issues with signed release forms and such - ideas?

Bob Hassinger Liberty Mutual 617-435-9061

Bob Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkinton, MA 01748
617-435-9061

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Note 685.10 Need unread Mail count 10 of 11
"Bill Mayhew" 67 lines 24-JUL-1987 11:50
-< Getting it off the dime >-

There are, of course, other places where this kind of activity takes place, including software etc. specifically for VAXen. Mostly, these are "commercial" sources, e.g. CompuServe (which has a VAX forum, but where you must pay for connect time to get things), or ARIS (which has no direct charges, but does involve long-distance bills for many, and does have some "commercialness" to it by virtue of its affiliation with the DEC Professional magazine), though I don't know if ARIS has yet gotten into publicly-submitted software.

By this time, the problems associated with providing a reliable, reasonably bulletproof system should be well understood and there exists considerable expertise that can be used to advantage to solve the technical implementation issues.

There are also, of course, the perpetual "trojan horse" concerns which can be quite important (how do you know the software that's on the system really does what it says it will do). While the potential consequences of errant software on a multi-user system are obviously higher than they are on a PC (where this type of activity is very widespread), VMS' security features help mitigate the problem. None of the other services that I'm aware of require signed release forms. Many of them prefer source code so that the public-domain nature of the software can be more easily verified (and so the functionality can be enhanced, again in the public domain).

IMHO, the major costs would be for a person(s) to maintain the library and screen the submitted software (though there is precedent elsewhere for this being a volunteer position), and the operating costs of the system. I would imagine that grants of various sorts would be reasonably readily available to establish the hardware configuration.

Lurking in the wings is the FCC's new rule-in-progress to impose an approximate $5 per hour to vendors of "enhanced communications services" for access to the long-distance network. The definition of "enhanced services" has been widely distorted and I don't claim to know the definitive one, but many of the definitions I've seen would include a system such as the

one described here, or, for that matter, the Pageswapper system.

While DECUS is clearly the logical organization to develop and support this system, I have some trouble, personally, believing that it will happen in our lifetimes. Frankly, I feel the DECUS national organization is just *far* too political and insufficiently able to initiate new services (I am *not* criticizing the job they are doing with existing services, btw; I have great respect for the job being done with Symposia and a good deal of respect for the administration and operation of the program library.). To a large degree, I think this is an inherent consequence of a large, volunteer-run organization. My sense is that an online software exchange service is an idea whose time has been here for a good while now, and that the only way it will get off the ground anytime soon is for some private company or group of individuals to pick up the idea and run with it ... (OR for DECUS to explicitly charter a small, tightly-knit group of people to go off and get the job done, free of DECUS' politics, and with the authority to solicit hardware and cash contributions in DECUS' name to pull it off.)

Having worked in and with a large number of volunteer-run, not-for-profit organizations, I am very much aware of the political and organizational challenges. However, the only way, in my opinion, for it to happen is for DECUS leadership to really *be* leaders, delegate the job, and prepare to take whatever heat falls out of that. The biggest problem in this situation is the constant study, design, restudy, redesign of the idea by committees of well-meaning volunteers who, in their earnest desire to meet everybody's individual positions and goals, cannot accomplish the job. I shudder to think what VMS would look like if it were designed by a committee of volunteers... we'd probably all still be using DOS/Batch-11. (Please forgive me if I've forgotten the exact name of that venerable product.)

Now that my soapbox is beginning to sag... {grin}

Bill Mayhew
Village Systems Workshop Inc
PO Box 642
Natick MA 01760
617-237-0238

==========

Note 686.0 MicroVaxII Time Measurement Limitation 2 replies
"Richard Herdell" 10 lines 6-JUL-1987 18:59

The MicroVAX II seems to have an 'available' timer resolution of 10 milliseconds. At least 10 ms is the minimum update rate to any clock register which I have access to. The larger Vaxes are different, clock register wise, and thru Macro, routines can be written where time intervals of less than 10 ms can be measured. I keep running into a wall on measuring, within Fortran, Macro..., any interval less than 10 ms on the MICROVAX II though. An auxiliary clock in the q-bus would do it but I have not yet located the beast.

Any ideas?

Richard Herdell
7000 Hollister
Houston, TX 77040

==========

Note 686.1 MicroVaxII Time Measurement Limitation 1 of 2
"Chris Erskine" 3 lines 9-JUL-1987 09:31
-< Realtime Clock >-

DEC has a product called the KWV11-C which is a programmable realtime clock. This would require you write a driver to interface with it.

Chris Erskine
6001 Adams Rd.
Bloomfield Hills, MI 48013
(313) 258-4049

Note 686.2 MicroVaxII Time Measurement Limitation 2 of 2
"Frank J. Nagy" 8 lines 11-JUL-1987 10:17
-< Realtime Clock w/o needing driver >-

If you want to use a KWV11-C but don't intend to service interrupts from it, then a driver is not needed. Just write a privileged program to map a global section, using PFNMAPing, to the Q-bus addresses which correspond to the registers of the real time clock. Then write a small set of routines to read/write these registers and go to it with any normal program. I've done similar things (for hardware other than real time clocks); its easy to do and works well on MicroVAXes or any VAX for diddling simple devices.

Frank J. Nagy
Fermilab
PO Box 500 MS/220
Batavia, IL 60510
(312)840-4935

Note 687.0 Directory Creation from within a Program 1 reply
"Jim Preciado" 8 lines 7-JUL-1987 00:12

Can anyone suggest an easy way of creating directories from within a program. There is an RMS function to set a default directory, how about one to create it ? Maybe an option on the RMS open to create the directory (too easy but I'd figure that I'd try) ? Maybe via the ACP QIO interface is another possibility ? I had a need to do this and solved it with a command procedure. I could not find adequate documentation on how to do this under program control so it left me wondering.

Jim Preciado
139 Johnson Ave
Mahwah, NJ 07430

Note 687.1 Directory Creation from within a Program 1 of 1
"Mark Oakley" 6 lines 7-JUL-1987 07:47
-< Use LIB$CREATE_DIR >-

LIB$CREATE_DIR creates a directory or subdirectory. It is described on page RTL-26 of the VAX/VMS Run-Time Library Routines Reference Manual (Volume 8B of the VAX/VMS V4.4 Documentation set).

LIB$CREATE_DIR can set ownership, protection, and file version limit.

Mark Oakley
Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201-2693
614/424-7154

Note 688.0 NROFF, anyone 2 replies
"Carl Hartshorn" 6 lines 8-JUL-1987 14:12

Does anyone know of a utility to convert RUNOFF to NROFF or vice-versa? Or does anyone know of a NROFF utility for VMS. (The old one I got from a 82 DECUS tape from the LBLtools doesn't seem to work correctly with the newer NROFF files that I have.

Carl Hartshorn
116 Whispering Pines Ct
Scotts Valley, CA 95066
408/773-8484

```
================================================================
Note 688.2                  NROFF, anyone                   2 of 2
"Greg Isett"                          9 lines   9-JUL-1987 22:40
                -< DEC/Shell contains nroff >-
----------------------------------------------------------------
```

Yes, the latest version of DEC/Shell does include NROFF.

Greg Isett
hrb-singer incorporated
department 125
p o box 60
state college pa 16804

```
================================================================
Note 689.0     C version of SEA ARC utility for vms      1 reply
"DAVID JENSEN"                       17 lines   9-JUL-1987 10:56
----------------------------------------------------------------
```

help!! ; I have stumbled across a version of "ARC" (the great PC archive utility) for VAX/VMS. It is still in 'C' but been hacked to compile and link under VMS. [which it does without any errors]

But this is my problem (I am not a C person) if I $ RUN ARC it gives me the 'normal' help screen of how it should be run with parameters and positions (just like invoking arc on the pc).

How do I supply parameters to this program?

Hope I have explained this well enough!?

DAVID JENSEN
COORS PACKAGING COMPANY
PO BOX 1501
GOLDEN, CO 80401


```
================================================================
Note 689.1     C version of SEA ARC utility for vms      1 of 1
"Brian Tillman, Lear Siegler, Inc."  15 lines   9-JUL-1987 11:45
            -< Maybe you need a foreign command >-
----------------------------------------------------------------
```

RE: < Note 689.0 by NODE::US206885 "DAVID JENSEN" >
-< C version of SEA ARC utility for vms >-

> how do i supply parameters to this program?

Try making it a foreign command, i.e. enter the following:

```
$ arc :== $your_disk:[yourdir]arc
$ arc whatever
```

I know that all the software tools (a la Kernihan and Plauger) that mimic UNIX programs but run under VMS must be defined this way and if they are executed simple with a run, as you tried, they too give their standard little help line. Try it. It can't hurt.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

```
================================================================
Note 690.0                  New to VMS                   9 replies
"MICHAEL GRATTAN"                    19 lines   9-JUL-1987 16:01
----------------------------------------------------------------
```

I am new to DEC and my company is converting from a Datapoint system to a VAX. (Right now we have a MicroVAX II but will get a 8250 in the fall.) I have been appointed (or condemned, depending on your point of view) to be the system manager.

I would greatly appreciate any thoughts and suggestions that anyone would care to share with this novice. I have thoroughly read the MicroVMS books that we got, but now I want to know more. (Can't wait for the big box and full set of documentation.)

What kind of privileges do you normally give users, programmers, etc.? What kind of pitfalls should I be aware of? What publications do you suggest I get my hands on?

Any thoughts at all would be greatly appreciated. Thanks.

MICHAEL GRATTAN
FAIRHAVEN CORP.
358 BELLEVILLE AVE.
NEW BEDFORD, MA. 02742
617-993-9981 EXT 106

Note 690.1 New to VMS 1 of 9
"M. Erik Husby" 19 lines 10-JUL-1987 09:42
-< System management notes >-

Get a hold of the latest VAX SIG tapes (the ones put out after each DECUS. They contain the back issues of the PAGESWAPPER where you will find a lot of useful information. The SIG tapes also have a lot of useful programs for managing systems.

I have also found attending the DECUS to be a great source of help when I was a system manager. The installation I used to manage uses a lot of techniques I picked up from other managers.

I am always willing to spend a few minutes on the phone to answer questions. System management can be a lot of fun if done with the correct mind set -- I always found that a healthy sense of paranoia was essential.

M. Erik Husby
Project Software & Development
14 Story St.
Cambridge, MA. 02138
(617)-661-1666

Note 690.2 New to VMS 2 of 9
"Brian Tillman, Lear Siegler, Inc." 8 lines 10-JUL-1987 10:32
-< Welcome to the family >-

RE: < Note 690.0 by NODE::US219201 "MICHAEL GRATTAN" >
-< New to VMS >-

On the whole, DEC gives fairly good advice in its manuals concerning defaults, but every site has its own requirements. As to privileges, NETMBX and TMPMBX are the only two generally needed. DON'T!!! forget to change the default passwords for the SYSTEM, FIELD, and SYSTEST accounts.

Brian Tillman
Lear Siegler, Inc.
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(616)241-8425

Note 690.3 New to VMS 3 of 9
"Frank J. Nagy" 10 lines 11-JUL-1987 10:26
-< Try DEC Ed Services also >-

Welcome to the Atilla-the-Hun School of System Management.

I agree with Brian that DEC gives good advice in its manuals. If you are really feeling green, look into some of DEC's Educational Services offerings. There are courses for all levels of users and system managers which are fairly good (for the most part, there are duds of course).

One thing to NOT worry about: paranoia is not a disease in a system manager; its just part of the job!

Frank J. Nagy
Fermilab
PO Box 500 MS/220
Batavia, IL 60510
(312)840-4935

Note 690.4 New to VMS 4 of 9
"Michael R. Pizolato" 30 lines 13-JUL-1987 14:35
-< Hello! >-

I've been doing system management for a while now, and I'm always willing to share ideas. Here are a few:

1. Never give a new user more that TMPMBX and NETMBX privilege. Not even if he makes a specific request for more, or is known as a guru on another system, or anything else. Then, once he's been on for a while, and if he can justify it TO YOUR SATISFACTION, you may add other privileges.

2. One of my most important observations: the number of files a user has always expands to fill his entire disk quota, no matter how big it is. Remember, to paraphrase an old Japanese saying, "to increase a disk quota is easy, but to decrease it creates enemies".

3. Decide on some basic management strategies, and DOCUMENT, DOCUMENT, DOCUMENT them. I didn't at first, and now I've been trying for over a year to do it and I don't have the time.

DEC generally gives good support, so don't hesitate to turn to them (even Colorado Springs). I've had good experiences at all my training classes except one (System Performance Mgmt. - what a sleeper!).

You can call me any time; I'll be glad to help any way I can.

Michael R. Pizolato
AT&T Technology Systems
Dept. 323610
555 Union Blvd.
Allentown, PA 18103
215/439-5500

Note 690.6 New to VMS 6 of 9
"Gus Altobello" 51 lines 16-JUL-1987 21:54
-< A few more new-user hints... >-

Welcome to the wild wonderful world of system management. Here's just a few ideas to add to the preceeding ones.

1. Take the advice regarding TMPMBX and NETMBX. I do, however, make exceptions for GRPPRV, GROUP, and GRPNAM if the group leader okays it. All my new users have been restricted to these, and few problems have arisen so far.

2. Get the VAX SIG tapes from the symposia as suggested in <.2>, they're a gold mine.

3. GO to a symposium. They are NOT simply play time, you will work your tail off and enjoy every minute of it. It's the fastest way to get wide exposure to a large number of different issues, as DEC's training classes address a single issue each and cost nearly the same. (This is not to suggest you shouldn't try to attend pertinent DEC classes.) When you go to the symposium, attend a pre-symposium seminar.

4. Look up the NEWS utility on the SIG tapes. This has been a very effective method of disseminating policy statements at our site. Everyone gets notification of the news item, and new users get all the back news to read when they first enter their account.

5. READ the manual set (yes, it's big). If you get only microVAXen, buy a full set. It's expensive, but you get what you pay for.

6. Read the "Guide to Security" early on. Then, for many-user systems, TURN ON THE SECURITY LOGS! You'll be surprised at what turns up. Experience will guide you as to how much logging is too much (as will the bill for console paper).

7. Use the Customer Support Center in Colorado, if you purchase software support. Their quality can be spotty at times, but they've been life-savers for me any number of times. Don't be afraid to call back if the answer you got makes no sense or doesn't work: Sometimes you'll get a real guru who can explain away the mess you're in.

Good luck! You're in for quite an experience, but that's what this career field is all about. Just don't let the system get away from you, make sure you have management behind you and your policies, and you'll keep your VAX purring nicely.

Gus Altobello
PO Box 11274
Hauppauge, NY 11788
516/435-7036

==========

Note 690.7 New to VMS 7 of 9
"Andrew Whitt" 74 lines 20-JUL-1987 02:28
-< The start of something great! >-

Where to start? I came from the PDP RSX side of the house and have been working with VAX/VMS for little over a year. Finding help is only a symposium away! After San Francisco and Nashville, I have acquired knowledge and established personal contacts required to feel semi-confident. Anyway, here are some things that may help you get a good start down the VAX trail....

Along with the others mentioned, Disuser the RSC account.

Establish logical ACCOUNT names before you start. I have had to redo the rights identifier database several times do to conflicts. Give each ACCOUNT name a unique UIC group number. As each user is added, the proper text translation of the numeric UIC group and member numbers will be displayed when files are listed with DIRECTORY /OWNER. I've even added an identifier for [1,4] so that all system files display as [VMS,OPSYS]. the SYSTEM account files display as [VMS,SYSTEM]. Now that you have LOGICAL groups identified, use the names to build directory structures for each group. Example -> DU:[OFFICEX.GRUNTS.JOE] for user Joe in group GRUNTS, which has the UIC group of 500, who works in office X. When you list a

file owned by Joe, it will display; [GRUNTS,JOE]. File names can get lengthy so, use the concealed device switch of DEFINE to produce the logical device name of MY_DISK. With a definition of MY_DISK = DU:[OFFICEX.GRUNTS.], the file name DU:[OFFICEX.GRUNTS.JOE]NOTES.TXT shrinks to MY_DISK:[JOE]NOTES.TXT. This helps in keeping users from looking around the system. Even if they list [000000], they will only see fellow workers root directory files and the group login.com file. What's a group login file you ask? With printers spread through out our building, we use a group login file to create a SYS$PRINT logical name in the JOB table. Other group dependent SYMBOLS and LOGICALS can be defined here. We have a command file which runs out of the SYLOGIN.COM file and uses the default directory specified in the UAF record to determine which group login file to execute. If someone moves from one group to another, you can 'reconnect' a users root using the RENAME command. To move Joe, RENAME DU:[OFFICEX.GRUNTS]JOE.DIR TO DU:[OFFICEY. BOSSES]JOE.DIR. All of Joe's subdirectory files will follow.

Don't give yourself all privileges by default! Authorize yourself for everything but Default to the basic privileges and grant others as you go with SET PROCESS/PRIVILEGE=xxx.

Build a START_QUEUES.COM file for creating all system queues and forms, and STOP_QUEUES.COM to reflect each entry in the first. Unlike other systems I know, not everything gets 'flushed' when you reboot the system.

Watch the ACCOUNTNG.DAT file under SYS$MANAGER. Use the /NEW_FILE option every once in a while to keep search times and disk usage down to reasonable values.

Lastly, welcome to the family. If you would like to talk about other specific items, give a call.

Andy Whitt
General Telephone
Midwest Telephone Operations
8001 W Jefferson BLVD
Mail Code: IFCSO
Fort Wayne, IN 46801
(219) 482-7716

```
================================================================
Note 690.8                    New to VMS                    8 of 9
"Jack Patteeuw"                      15 lines  24-JUL-1987 08:51
                          -< Welcome >-
----------------------------------------------------------------
```

You are already doing one of the best things possible ... you joined DECUS !!

The next best thing to do is jump in and get your feet wet, which your doing on that MicroVAX.

Lastly, I found the DEC Educational Services class on VAX System Management to be invaluable. Please note that the quality of the class is dependant directly on the expertise of the instructors. I have found that the Ed Services facility outside of Boston is the best. Besides everyone needs to get away from the office for a while!

Don't worry, if an (ab)user like me can become a System Mangler then anyone can !

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI 48150
313-323-8643

```
================================================================
Note 690.9                    New to VMS                    9 of 9
"RICHARD WISEMAN"                    14 lines  26-JUL-1987 23:05
                    -< welcome to vax/vms >-
----------------------------------------------------------------
```

welcome to the family...

one of the most important things to establish is that every one will use logical names for any hardware on the system.... this way if you have to move someone or change the hardware to something else then it's not apparent to anyone that you moved them.

RICHARD WISEMAN
STORAGE TECHNOLOGY CORP

2270 SOUTH 88TH STREET
MAIL STOP G4
LOUISVILLE CO 80233-0001

```
================================================================
Note 691.0                tape server?                 2 replies
"John Osudar"                        3 lines  10-JUL-1987 20:49
----------------------------------------------------------------
```

Does anybody out there know the status of tape server software support (a la MSCP Server for disks) for clusters (CI and/or LAVC)? Never? Ever?? Soon???

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Bldg. 205 A-051
Argonne, IL 60439-4837
(312) 972-7505

```
================================================================
Note 691.1                tape server?                   1 of 2
"Frank J. Nagy"                      7 lines  11-JUL-1987 10:30
                    -< Being worked on? >-
----------------------------------------------------------------
```

Last I heard, its under active consideration at least. Maybe even active development. I'll be surprised, however, if it appears in that ever-popular "future major release" we hear about (heh heh).

Also, I'd heard that the spur to the development is the LAVC where now there is more need to provide access to locally connected tape drives since that's all the LAVC has!

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Fermilab
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Batavia, IL 60510
(312)840-4935

```
================================================================
Note 691.2                    tape server?                  2 of 2
"John Osudar"                          7 lines  11-JUL-1987 15:12
                      -< Let's hope so! >-
----------------------------------------------------------------
```

Yeah, that (LAVC) is exactly what prompted the question. We're just getting into the LAVC game, and I've got a MicroVAX-II that would love to use a real tape drive (instead of its TK50, which is a real [CENSORED]). I don't care how much (elapsed) time it might take to do useful things over my Ethernet to my TU78, it would beat what I've got now. I'm sure there are other users in the same (leaky) boat. Hope somebody at DEC is listening...

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```
================================================================
Note 693.0      Opening a file with NIL sharing       17 replies
"Bill Mayhew"                         31 lines  13-JUL-1987 18:21
----------------------------------------------------------------
```

I've discovered some interesting behavior with VAX C and RMS, on which I'd like to solicit comments.

Suppose user A has a file with protections (rwed,rwed,r,r). Now suppose user B has a C program which attempts to open user A's file... and the open() call specifies "shr=nil", meaning that nobody else should be allowed to do anything with the file while user B is reading it.

The open() fails, with the RMS$_PRV error code (basically, "you don't have permission to open that file").

If the file's protections are broadened to include W for the world, the open() succeeds. Likewise, if the file's protections are left alone, but "shr=get" (or default sharing) is specified, the open() succeeds.

My question: Is this rational behavior, and if so, can someone explain the rationale? If it's *not* rational behavior (which I would argue, though I'm not sure if I'm on solid ground), does it happen in other languages, or is it a VAX C problem?

I discovered this with VAX C V2.2 on VMS 4.5 (VAX C 2.3 did not change the behavior).

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PO Box 642
Natick MA 01760
617-237-0238

```
================================================================
Note 693.1      Opening a file with NIL sharing         1 of 17
"John Osudar"                         11 lines  13-JUL-1987 20:54
                      -< speculation >-
----------------------------------------------------------------
```

How do you judge "rational" behavior? Although I have no concrete evidence, I suspect that you'll find the same behavior in other languages. RMS tends to look at access and sharing options together, and some combinations "make no sense" to it. shr=nil implies that you'll be doing something to the file that should prevent others from even reading it; if you open the file for read access only, this can be considered "unreasonable". All this implies that the specified access, and not the protection (which gives POSSIBLE access) should be the criterion for what sharing is "reasonable"; however, I doubt that the operations in question are occurring above RMS level. (But I'd also be interested in an answer from someone who's tried it in another language.)

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(312) 972-7505

Note 693.2 Opening a file with NIL sharing 2 of 17
"Bill Mayhew" 27 lines 14-JUL-1987 19:43
-< well, sort of. >-

Some kind of plausible explanation along these lines, with possibly an illustrating example, is what I was hoping to find, in the event that I'm out in left field somewhere.

To me, it seems perfectly rational that I might be opening a file planning only to read it, and planning to create a new version as a result of my processing; and the fact that I'm creating that new version means that I want to be sure that nobody else tries to do anything with this about-to-be-ancient data, *and* that nobody else currently has it open (in which case open() would return with a "file-locked-by-other-user" error code, or some such).

Now, in reality, the problem is that the situation arose due to a routine many levels deep in my code that opens this file without particularly *knowing* what kind of sharing it should apply (the higher-level, calling routines are, as of yet, unknowledgeable about all the implications of RMS file-sharing, since they came from UNIX where this all happens "transparently" but with a much smaller set of features available to the programmer). So the actual problem is not of all that much impact to me. I did think it was mighty peculiar though, that an attempt to open a file with NIL sharing would fail if the protections on the file were world:r, but succeed if they were world:rw (assuming I fall into the "world" category of users with respect to this file).

If I'm going to be doing something to the file, but opening it for read-only, as you hypothesize, and that's "unreasonable", fine, but it seems to me it should behave the same regardless of the protections on the file. Yes?

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617-237-0238

Note 693.3 Opening a file with NIL sharing 3 of 17
"Bob Hassinger" 11 lines 15-JUL-1987 12:39
-< Are you opening for read-only with NIL? >-

I have no background or info on the language you are using and it's open statements. Just a thought though: does the mode you are using to open the file imply it is to be opened read-only? For example, in FORTRAN I believe the default for an open is read-write, even though the program only intends to read. This is not changed by the use of options to specify the kinds of sharing that are to be allowed. Many users are never aware of this because they only deal with files they have created and own and so, typically, have full RWED access to.

Bob Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkinton, MA 01748
617-435-9061

Note 693.4 Opening a file with NIL sharing 4 of 17
"Bruce Bowler" 5 lines 15-JUL-1987 13:39
-< I agree w/.3 >-

I suspect that .3 is correct. As stated, FORTRAN assumes R/W access unless stated otherwise. Although I am not well versed in VAX C, it does seem 'logical' to me that 'shr=nil' would IMPLY that want to both read AND write to the file thereby requiring that world have at least RW protection.

Bruce Bowler
General Electric
1 River Road
Bldg 2 Room 609
Schenectady, NY 12345

```
================================================================
Note 693.6          Opening a file with NIL sharing          6 of 17
"Bill Mayhew"                          16 lines  17-JUL-1987 11:41
                    -< Sorry, I don't buy it. >-
----------------------------------------------------------------
```

I'm opening the file explicitly for read-only access. It may seem "logical" to somebody that shr=nil implies read/write access, but I would think explicitly stating otherwise should overrule; after all there is no "damage" done to anybody by obeying the explicit instruction. Not to mention the fact that undocumented, implicit interactions between file protections, sharing specs, and file-open access specs bother me. It seems to me that even documented interactions should confine the programmer only to the extent that they prevent the programmer from doing something that is patently absurd. For a facility like RMS to make implicit judgments seems to me to be inappropriate, unless there's a clear and justifiable reason for doing so. Of course that's all philosophical; the practical issue is that if the documentation doesn't say it will behave this way, then it's a bug. ON THE OTHER HAND, I don't pretend to have read every word in the VMS doc set {grin}.

Bill Mayhew
Village Systems Workshop Inc
PO Box 642
Natick MA 01760
617-237-0238

```
================================================================
Note 693.7          Opening a file with NIL sharing          7 of 17
"Gus Altobello"                        16 lines  17-JUL-1987 22:46
                     -< Try this, perhaps... >-
----------------------------------------------------------------
```

There are a number of files at my site that I have security auditing enabled for. These include the DECnet database and other system database files. I'm looking for unauthorized changes to these files, and therefore have auditing enabled only for WRITE access.

I've often noticed (and been annoyed by) security alarms caused by READING these files. For example, an NCP LIST command fires off an alarm, although this is a read operation. The alarm shows the access is READ/WRITE, not just READ.

You may wish to enable audit alarms on your system, and put an alarm ACE on the file, just to see what comes up.

-gus

Gus Altobello
PO Box 11274
Hauppauge, NY 11788
516/435-7036

```
================================================================
Note 693.8          Opening a file with NIL sharing          8 of 17
"John Burnet"                          21 lines  20-JUL-1987 11:48
                -< Aren't you forgetting something? >-
----------------------------------------------------------------
```

I think that the problem which was originally described (in .0) is caused by not specifying "fac=get" in the open() call. Doesn't the fac (file access) default to <get,put>? If I remember correctly, it does... so you'll have to specify that in addition to "shr=nil". The way that this corresponds to keywords in a VMS Fortran OPEN statement is as follows:

```
Fortran:        status='old', readonly  ! no "shared" keyword
C:              O_READ, "fac=get", "shr=nil"

Fortran:        status='old', readonly, shared
C:              O_READ, "fac=get", "shr=get" /* or <get,put>? */

Fortran:        status='new', shared
C:              O_RDWR, "fac=<get,put>", "shr=<get,put>"
```

I don't have the VAX C manuals with me, so I don't know whether the "<get,put>" syntax is correct... maybe the vaxcrtl open() function doesn't want the angle brackets, which are used in macro-32 to prevent the assembler from interpreting the comma as an end-of-argument delimiter.

John Burnet
P. O. Box 1838
Evanston, IL 60204

(312) 272-6520 x2118

```
================================================================
Note 693.9        Opening a file with NIL sharing        9 of 17
"Bill Mayhew"                          6 lines  21-JUL-1987 12:33
                  -< fac=get PLUS o_read?? >-
----------------------------------------------------------------
```

Are you suggesting that the "fac=get" is needed, in ADDITION to O_READ? This is a novel idea. I'm afraid I don't understand the logic behind this, though; but I will try it and see what happens. I would expect that O_READ would cause a "fac=get", otherwise what is the purpose of O_READ?

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Village Systems Workshop Inc
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617-237-0238

```
================================================================
Note 693.10       Opening a file with NIL sharing       10 of 17
"Bill Mayhew"                          4 lines  21-JUL-1987 21:50
               -< Well, it *sounded* good... >-
----------------------------------------------------------------
```

According to my documentation, there is no "fac=..." option accepted by the C RTL. I tried it anyway and it made no difference in the behavior.

Bill Mayhew
Village Systems Workshop Inc
PO Box 642
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```
================================================================
Note 693.11       Opening a file with NIL sharing       11 of 17
"John Burnet"                          25 lines  22-JUL-1987 13:52
                  -< sorry... i'm stumped too >-
----------------------------------------------------------------
```

< Note 693.10 by NODE::US175845 "Bill Mayhew" >
-< Well, it *sounded* good... >-

>According to my documentation, there is no "fac=..." option
>accepted by the C RTL. I tried it anyway and it made no
>difference in the behavior.

Oh well. I haven't (yet) done much experimentation with the VMS C run-time library; where C is concerned, I'm more used to Unix (where this kind of problem doesn't crop up in the first place). I agree that O_READ should imply "fac=get", but sometimes it's hard to tell what the vms c rtl developers had in mind.

Which brings up another, related topic (probably should be a separate note)... it seems to me that VAXC is a kind of "ugly duckling" as far as DEC is concerned. VAXC usually doesn't get mentioned in places in the documentation where all the other compiled languages which DEC pushes for VMS are listed. Also, the 2.3 VAXC manuals--user's guide/reference manual and rtl manual--are of much lower quality (writing quality, accuracy, lack of typos, etc.) when compared to the manuals for (e.g.) Pascal or Fortran. Did the C development and documentation groups have to put up with low budgets, or what? And why does DEC try to ignore C? For the same reasons it tries to ignore Unix?

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Note 693.12 Opening a file with NIL sharing 12 of 17
"Bill Mayhew" 20 lines 22-JUL-1987 19:04
-< VAX C has its problems. >-

For one thing, VAX C is a much newer product than FORTRAN or Pascal. I can accept that as the reason why all the references one finds (in things like the system library manuals) are to Pascal or FORTRAN. DEC still seems to suffer from the delusion that virtually every VMS site runs FORTRAN.

Actually, my favorite gripe about DEC and C is that (on several occasions) when I've called for telephone support on VAX C, the screening operator doesn't have the faintest idea what I'm talking about, and thinks I have some kind of new, un-released, "seed" VAX. {grin}

I was sort of looking forward to the 2.3 VAX C manuals, since the 2.2 ones are such a disaster. On the other hand I've heard reliable rumors about problems with 2.3 such that Colorado is suggesting that you don't upgrade to it until you have VMS 4.6. I must say that I am considerably disappointed by this product, not because of any innate faults of the compiler, but because of incredibly poor runtime library implementation decisions and poor documentation.

Bill Mayhew
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Note 693.13 Opening a file with NIL sharing 13 of 17
"John Burnet" 19 lines 24-JUL-1987 15:29
-< C 2.3 >-

>I was sort of looking forward to the 2.3 VAX C manuals, since
>the 2.2 ones are such a disaster. On the other hand I've heard
>reliable rumors about problems with 2.3 such that Colorado is
>suggesting that you don't upgrade to it until you have VMS 4.6.

We're running VAXC V2.3 using the VMS V4.5 VAXCRTL with no problems. Apparently, the 4.6 RTL will provide full support for all the new ansi features that DEC included in C 2.3 (which is the major improvement in the 2.3 release, I understand). We're not using many of the new features yet, though, and our pre-2.3 C programs that just use the age-old stdio, malloc, etc. libraries link fine.

The manuals *are* pretty bad. I took a pencil along on my initial trip through the 2.3 user's manual/language reference, marking up all the mistakes, typos, and inaccuracies I could find, and when I was done I practically needed a new pencil. The manuals could be a lot worse, but there are many, many little things wrong that could trip people up, especially subtle inaccuracies in the example programs listed.

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Note 693.14 Opening a file with NIL sharing 14 of 17
"Frank J. Nagy" 18 lines 25-JUL-1987 11:35
-< VAX C V2.3, RTL doc and "fac=" >-

We too are using VAX C V2.3 under VMS with no problems. We aren't using any of the new RTL routines so its no problem, but are awaiting V4.6 with baited breath (but no held breath). At least the V2.3 documentation fixed the index problem for the RTL routines of having to look them all up under "B" (for Bold)...

Speaking of which, how many people would like to see the VAX C RTL documentation reorganized as two sections along the lines of the VAX RTL volumes. Section 1 would provide a general description of the various groups of routines, much like the current VAX C RTL manual but without the detailed descriptions of each routine. Section 2 would provide detailed descriptions of the individual routines ORGANIZED ALPHABETICALLY BY ROUTINE; again much like the VMS RTL manuals are currently organized. Any support?

Finally, as I remember, the extended "fac=", etc. arguments are accepted by the VAX C RTL routines fopen(), freopen() and creat(). Others I'm not sure about.

Frank J. Nagy
Fermilab
PO Box 500 MS/220
Batavia, IL 60510
(312)840-4935

==========

Note 693.15 Opening a file with NIL sharing 15 of 17
"Bill Mayhew" 7 lines 28-JUL-1987 09:38
-< RTL doc and "fac=" >-

I would agree wholeheartedly with your proposed change to the documentation structure.

As for "fac=", there are a bunch of such things that are accepted by open(), creat(), et al., it's just that "fac=" is not among them (from what I can tell).

Bill Mayhew
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617-237-0238

==========

Note 693.16 Opening a file with NIL sharing 16 of 17
"John Burnet" 23 lines 28-JUL-1987 12:11
-< More thoughts on the central philosophical question >-

>I would agree wholeheartedly with your proposed change to the >documentation structure.

Second the motion! The VAXCRTL doc really needs to be revamped. As far as I'm concerned, it's unacceptable to have to look in the index to find the description for a particular RTL routine.

On the subject of nil sharing... I was thinking about that, and the more I ponder the original problem (see .0), the more I think that it makes a certain kind of sense to require write permission on a file to specify nil sharing for that file. After all, in this particular case, it's not your file, so why should you have any say about whether other people can read the file while you're accessing it? The owner of that file--or anyone with a system uic or sysprv or bypass privilege [:-)]--can give you (and others) that say by setting w:rw protection.

Opening the file with "shr=get" (which is the default) will work, and that makes a kind of sense too... you're (in effect) warning other accessors of the file that you've got it open and that they shouldn't write to it; but that's no reason for them not to *read* it...

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```
================================================================
Note 693.17        Opening a file with NIL sharing        17 of 17
"Bill Mayhew"                            26 lines  28-JUL-1987 21:43
          -< C seems to be unique in this behavior >-
----------------------------------------------------------------
```

I think there are reasons why I would not want other people to be able to read the file while I am, although they are admittedly somewhat obscure. Meanwhile, adding w:rw permission to the file opens it up to a whole class of other perpetrators of violence.

The further problem seems to be that this behavior is, as far as I can tell, unique to VAX C. The behavior certainly doesn't appear in MACRO (where of course you're programming RMS to within an inch of its life) and I have reliable reports that it also doesn't appear in FORTRAN, where no-sharing is the default (I think).

This problem is the second of three RMS-related bugs in the C RTL that I've learned about in the past two months (two of them through personal discovery). I am of the opinion that the C RTL developers responsible for the interface to RMS need to learn what RMS is all about (OR be taken out behind the woodshed for a good thrashing). I am also persuaded, more and more, that Digital doesn't seem to take C seriously outside of Ultrix (and whether it takes Ultrix seriously is another Note...).

Fortunately, I learned from software support that some (undefined) of these problems or ones like them are being worked on for a future release. Otherwise I'd have an awful time delivering a reliable product to my customer tomorrow. {grin}

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PAGESWAPPER - September 1987 - Volume 9 Number 2
INPUT/OUTPUT

```
================================================================
Note 694.0          Exit Handler Bug in VMS            2 replies
"Mark Oakley"                            19 lines  14-JUL-1987 21:31
----------------------------------------------------------------
```

I believe I have discovered another bug in VMS. Exit handlers that are declared in executive mode are NOT executed at image termination. Handlers declared in user mode (and I suspect supervisor mode) are executed. According to the documentation, you should be able to declare exit handlers in user, supervisor, and executive modes (but not kernel). I contacted TSC about this, and they ran a test program and got the same results (they could not get exit handlers declared in exec mode to execute).

It appears that an exit handler declared in executive mode gets declared properly, but at image termination it is not executed.

This is not a problem for our users, since they can not write executive-mode code. It's a problem for me, as there were some things I was hoping to use this for.

Has anyone else ever seen this? Can anyone suggest a fix or work-around?

Mark Oakley
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614/424-7154

```
================================================================
Note 694.1          Exit Handler Bug in VMS              1 of 2
"Jamie Hanrahan"                         27 lines  15-JUL-1987 15:33
                    -< DCL is the culprit >-
----------------------------------------------------------------
```

This is not a bug, but rather a feature... er, a consequence of the context in which you were running the image -- or, rather, the context in which I *suspect* you were running the image: The DCL RUN command.

DCL runs in supervisor mode. It gets control back from an image by declaring a supervisor-mode exit handler. ("Termination handler" according to the IDSM, but we'll stick with "exit handler" for brevity.) This handler returns control to the DCL command processing loop, still in supervisor mode. So the image rundown service never gets a chance to look at the lists of executive- or kernel-mode exit handlers.

I'm not sure whether DCL gets rid of user-declared E-mode exit handlers at image end. I rather think that it does, but if not, your E-mode handler should be executed when your process is deleted (i.e. when you log out).

User-declared E-mode and K-mode handlers WILL be called at image end if the image is run "by itself" (i.e. without DCL) in a detached or subprocess (RUN process command, or $CREPRC). (User-defined K-mode exit routines are declared not via the $DCLEXH service but via the dispatch vector in a user-written system service -- see SYS$EXAMPLES:USSDISP.MAR .)

This stuff is described in sections 21.2, 21.3, 23.3, and 23.4 of the V3 IDSM.

Jamie Hanrahan
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9210 Sky Park Court
San Diego, CA 92123
619-565-1865

==========

Note 694.2 Exit Handler Bug in VMS 2 of 2
"Frank J. Nagy" 38 lines 19-JUL-1987 09:51
-< Image Rundown >-

Jamie Hanrahan is correct (<.1>) in saying that DCL is the culprit preventing your executive-mode exit handler from running. However, DCL does appear to remove these EXEC exit handlers at image exit even though they are never called; otherwise strange things would happen if an attempt was made to invoke the routines later long, long after the image was gone (long gone) from memory!

I once ran into this problem (way back in VMS V2.x). I started using, or attempting to use, an executive mode exit handler when my reading pointed out that a user-mode exit handler can be gotten around (as simple as having another exit handler do its own $EXIT or just by doing a $DELPRC). WHat I needed was to recover resources used at the user's behest by a package of routines interfacing to our in-house control system network.

My solution to the whole thing was to discover how to patch into the image rundown handler (this was later documented with in VMS V3 with the information on how to write user-written system services). The image rundown handler executes in kernel mode and is ALWAYS called, even if a $DELPRC (or DCL STOP/ID) is done on the process. THis is the same code patch used to invoke the RMS rundown service and avoid the dangling open files left locked which are so common in RSX systems.

My ultimate trick was to declare my exit handler in user-mode executive-mode and call it via my image rundown handler. If the exit code runs at user-mode it sets a flag and shortcuts its own execution at the higher access modes. This is because the system will call user-mode exit handlers first, then supervisor-mode (which is how DCL gets control), then executive-mode and finally, last of all, the image rundown code is called.

The information on using the image rundown stuff is in with the information user-written system services in Appendix A of the System Services manual. Beware: your image rundown code is called in kernel mode (at IPL 0) so it had better be quite robust or you will get to watch lots of system crashes.

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```
================================================================
Note 695.0      VAXstation goes dead for 30 seconds      2 replies
"Alan E. Frisbie"                    40 lines  14-JUL-1987 23:38
----------------------------------------------------------------
```

Has anyone out there done any I/O driver debugging on a VAXstation-II? I am encountering some problems (besides the usual self-inflicted ones) that lead me to believe that there is a problem with either VCDriver, WTDriver, XDelta, or the Symbolic Debugger. I am using VMS v4.5 with v3.0 of the Workstation software.

The symptom I see is that when:

1. The system was booted with XDelta
2. A non-DEC driver (mine) is loaded
3. The test program (for the driver) uses the debugger with separate windows for the debugger and the test program.

Before I perform any QIO's to my driver, I single line-step the test program in the debugger window (no problems so far). When the test program requests input, that has to come from the separate window. I use the mouse to select the window, but there is no keyboard response (echo of my input) for 30 seconds. The same delay occurs when I switch back to the debugger window after entering my input.

A clue that indicates that this is a very low-level problem is that if I repeatedly enter control-Z (without releasing the "Ctrl" key), eventually a "z" is echoed. This means that ALL keystrokes during that 30-second dead time are ignored.

Naturally, I suspected my driver first. I have breakpoints at every entry point. At the point where I first see this problem, the only driver code that has executed is the Controller Init code. It is stolen directly from the XADriver example, but with the device reset subroutine call removed.

I don't want to flood you with information at this point, but will happily supply anything you might think is useful.

Alan E. Frisbie
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Los Angeles, CA 90065

```
================================================================
Note 695.1      VAXstation goes dead for 30 seconds        1 of 2
"Frank J. Nagy"                       8 lines  19-JUL-1987 09:56
                    -< Try adding memory >-
----------------------------------------------------------------
```

Alan, we have seen sort of similar problems with VAXStations, but not when debugging drivers (my driver worked first time (:-)). Mostly when people were working on UIS applications. We sort of tracked it down to being tight on nonpaged pool. THe VAXStation software likes to use lots and lots and lots of nonpaged pool so you might try increasing it beyond the current size. I'm not sure, but we might be running with 1 MB or so of nonpaged ocean (our VAXStations have 13 MB on them right now).

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```
================================================================
Note 695.2      VAXstation goes dead for 30 seconds        2 of 2
"Bruce Bowler"                        6 lines  20-JUL-1987 10:38
                      -< try VWS v3.1 >-
----------------------------------------------------------------
```

Alan, we too saw a similar problem on our GPX, the problem was also pool related, but it was paged pool that was taking the hit. Something kept taking VCA blocks, and never giving them back. We solved the problem by going to version 3.1 of the VWS software and have not had the same problem since

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```
================================================================
Note 696.0          Wildcard filename matching          3 replies
"Bruce Bowler"                        15 lines  15-JUL-1987 13:47
----------------------------------------------------------------
```

I am wondering if anyone out there can point me in the direction of a RTL routine or system service that will do wild card processing of file-names (STR$MATCH_WILD doesn't do the trick).

The situation is as follows. I have a list of fully specified file names (which may or may not exist on disk, so LIB$FIND_FILE doesn't cut it either) and a wild card file specification. I then want to find all of the files in the fully specified list that match the wild card specification. The BIG problem with STR$MATCH_WILD is that it doesn't recognize directory specs of the form [BOWLER...] which is, of course, a valid spec. Currently I parse the stuff myself, but that's a real pain in the ^#*$%#, not very elegant, and oh so SLOOOOOOW.

Any help would be greatly appreciated. Thanks

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```
================================================================
Note 696.1          Wildcard filename matching          1 of 3
"Larry Kilgallen"                     16 lines  15-JUL-1987 21:11
                    -< Try SYS$FILESCAN >-
----------------------------------------------------------------
```

My initial reaction is to suggest using the SYS$FILESCAN system service to pull apart the filespecs and then use STR$MATCH_WILD as appropriate. The main source of file wildcard matching used by VMS utilities is in RMS, which gets invoked by LIB$FIND_FILE. LIB$FIND_FILE and the matching LIB$FILE_SCAN are the only paths to DEC-supported parsing of search lists, but given your desire to work without the files present, these all seem inappropriate. There is a capability in SYS$PARSE (RMS) not to check for existence of directories on disk, but since you are matching against another list, that seems not to be a solution either.

So, looking at the "pure" parsing routines, SYS$FILESCAN and STR$MATCH_WILD would seem to be your available tool kit.

Larry Kilgallen
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Cambridge, MA 02139-0901

```
================================================================
Note 696.2          Wildcard filename matching          2 of 3
"Mark Oakley"                         12 lines  18-JUL-1987 16:15
                -< MATCHNAME in VMS Source Fiche >-
----------------------------------------------------------------
```

There is a routine listed in the fiche called MATCHNAME which (according the functional description) performs "the general embedded wild card matching algorithm". The routine is located in frame 532, picture B10 of the fiche. You may have to type this routine in, because it may not be available in VMS. It is fairly short (about 40 lines of macro), and I suspect very fast. You might also need to modify it to handle the strings you wish to match.

I have heard good things about this routine from people who have used it. Andy Goldstein is the author. If you have to write your own pattern matching routine, this might be worth looking at.

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Note 696.3 Wildcard filename matching 3 of 3
"Bruce Bowler" 4 lines 20-JUL-1987 10:33
-< thanks >-

Thanks for the tips guys, the method Larry suggested is what I ended up using for now, but I am definitely going to take a look at the fiche for MATCHNAME. Perhaps I should get motivated and fill out an SIR suggesting a filename matching routine.

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Note 697.0 Where's the file? 4 replies
"MICHAEL GRATTAN" 9 lines 17-JUL-1987 07:43

We have an accounting package written in Dibol. When we run reports they are automatically spooled to SYS$PRINT. This in itself is not a problem, however, when I do a SHOW/QUEUE/FILES SYS$PRINT, all I see for the file name is $DISK2:[].DDF;1. If I try a find this .DDF, I can't. Is there a LIMBO somewhere, where spooled files go? Is this a problem in the Dibol?

Any thoughts would be appreciated. Thanks.

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Note 697.1 Where's the file? 1 of 4
"M. Erik Husby" 6 lines 17-JUL-1987 10:55
-< On the disk but not in a directory >-

Those files do exist on the disk, however, it is not necessary for a file to be entered into a directory.

You can find those files by using the ANALYZE/DISK/REPAIR command. You will need a directory called [SYSLOST] where ANALYZE can make directory entries for those files.

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Note 697.2 Where's the file? 2 of 4
"John Burnet" 7 lines 17-JUL-1987 16:35
-< That's normal; nothing to worry about >-

Don't be too hasty to do an ANALYZE/DISK/REPAIR, though. Having spooled files exist on the disk but not appear in a directory is completely normal behavior. If you do an ANALYZE/DISK/REPAIR while people are using the disk, and you don't give the /CONFIRM qualifier as well, you might inadvertently do some harm. ANALYZE/DISK/REPAIR should always be done on a "quiescent" disk.

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RT-11 DUCM/DYC GRAF11 DEL DIR PLOT-10 IMAGE LIBED FSTATS MS/DOS TIC-TAC-TOE QIX VAX-LIB-
DATMAN/VAX EDTPlus SPICE2 TREEDUPL LISPEX MCLS TYPE_PLUS MINC DISK_USE FRAG EDTEX
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BLOCKER SCAN CODER BITMAP DTC/PC ADDRESS BOOK LaserWriter PORTACALC SPICE 3A6 PRO/Sma
Mailer CBASIC2 Accts JP5-JP6 Payable/Receivable McGraw-Hill Payroll SEDT: EDT/WPS Screen CLNDRS:
Calendar Program INDEX AKCOUNT CORPHONE E-Systems Grab BaRGT RDG PLTXSMB ICON DEVIC
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10 IMAGE LIBED FSTATS MS/DOS TIC-TAC-TOE QIX VAX-LIB-5 DATMAN/VAX SPICE2 RT-11 DUCM/DYC G

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DECUS NO: V-SP-64 **Title:** Symposium Collection from the VAX SIG, Spring 1987, Nashville **Version:** Spring 1987

Author: Various

Submitted by: J.L. Bingham, Mantech Services Corporation, Alexandria, VA

Operating System: MicroVMS, VAX/VMS **Source Language:** BASIC, VAX, C, FORTRAN,VAX, MACRO-32 **Software Required:** Reference may be made to previous tapes. **Keywords:** Symposia Tapes - VMS

Abstract: This submission contains the programs submitted to the VAX Systems SIG tape copy effort at the Spring 1987, DECUS U.S. Symposium in Nashville, Tennessee. The programs have been placed in two major backup sets named VAX-87A and VAX87B as there is too much material for one reel at 1600BPI. Also included is an update to VAX000 which contains AAAREADME files and an index into previous VAX SIG tapes. Some material has been compressed, and the tapes contain the LZDCM program needed to decompress the compressed material. The AAAREADME files in each area note that either contains the top level documentation or tells where that documentation is. The following is a brief summary of the contents of the tape:

VAX87A

[.ALLIED] **Command procedures for auto file reorganization crash notif. via mail, SMG interface in BASIC** (+ .OLB), system statistics utility.

[.AUBURN] A disk defragmenting utility, show interactive processes, modified version of XMODEM.

[.ANLJOHNO] Remote DECnet printer support, remote batch support. Multithreaded "executive" server. DCL preprocessor. Utility to ASCIIze BACKUP savesets for mailing to other sites. Multinode VMS V4 chargeback accounting sys.

[.BASSETT] Loan and investment programs. Large game collection (compressed into saveset and moved to VAX87B.GAMES). Golf handicap system. Kill program (forcex or delete process choice). Menu system on FORTRAN. Reminder. Another WATCHDOG update.

[.BATTELLE] All-IN-1 quickly delete A1 accounts. CSVN -change volume set name. Check_PWexp enforce password change at login time. SEARCH - TPE based search util. TPU procedures to show or set directory, expand fcn keys like Emacs.

[.BBS] Nifty bulletin (somewhat NOTES like) utility for VMS. Also works across DECnet.

[.BRYANT] Enhanced EDT emulator in TPU. Global substitute utility for TPU to allow text substitution in multiple files.

[.BULLV4_0] Bulletin utility to allow selective and available system notices.

[.CSC] Update to CALC calculator to fix an earlier bug.

[.DOWDIR] MAIL/PHONE_book system used at DOW. Includes src so network phonebooks can be better understood.

[.EDISON] Accounting report generators. Batch priority booster to give Batch a burst of priority for once every fifteen minutes.

[.EVEANDEDT] An EDT keypad emulator for EVE, a listing facility.

[.FARM_CREDIT] Produces banners in Roman or Gothic on lineprinter. CONTIG - updates to JUICER disk compressor. Update to WATCHDOG idle terminal killer.

[.FORCE] Allows you to stop a program without killing the whole process. (NOT to be confused with an earlier tape's program called FORCE which forced commands onto another process.)

[.GENDYN] LOCK - DCL interface to LOCK service. Useful for coordinating multiple processes via distrib. lock mgr. VT200-KIND - creates DCL symbol showing term. type. CTRL-T - set application specific T message.

[.GOULD] AUTOMOUNTupdate. AUTH_ID security fix from earlier DECUS submission.

[.IIT] BYE - forcibly log out users. CHAP - change priority of other users. FINDFILE - find files by scanning the index file. FORCEX -Force image exit on a process (even across DECnet). NOTICES - manage system notices. PASSWD - change passwords from command line.

[.IMU] Rights identifier management utility with AUTHORIZE like control.

[.INTPRCTMO] Time out interactive processes which are idle.

[.ISU] DELFILES - delete files by directory or UIC. DISK - report free space on disks. ISUEDT - spawn from inside EDT. ISUPRTSMB -modified print symbiont. RUNOFF postprocessor.

[.JMU] FMS based Bulletin Board system, FMS based calculator program, and unread mail checker.

[.KILL] Kill other peoples' processes by username, process name, CPU time, etc.

[KMSKIT] System management procedures. Update to ZEUS. Convert MacPaint to sixel. Quick login facility. Print VT240 screens. SMG libraries. Neat stuff for LSE or TPU. Bug fixes for VPW and some new procedures.

[.LBGS87] ALL-IN-1 system management tools. A usable "BECOME user". Mailcompress utility. FMS to DCL interface. Utility to resubmit a batch file IFF not already on a queue. Clear error counters on devices.

[.LILUG] Create index of LaTeX document. Account/billing system. List inactive accounts. Tape read/write card images. Trim trailing blanks off file. Manipulate DTR line on a modem. Group quota maintenance utilities. Menu interface to CMS. Directory tree draw. Search and display string in reverse video. Printer setup files.

[.LMSC] Utility to give information on a user out of UAF. HOGS - shows CPU hogs. MASS11 font update. Toggle two queues on one device (w/different forms etc.) Another WHO. Send one line messages to other user.

[.LZW] Source and executable of LZW compress programs used to compress several long submissions on these tapes. Documents are in start of the C source code. No C compiler needed to use these.

[.MNVAX] Cribbage game. Command files, DTR function showing privileges, statistical program, many TPU extensions, a Video Attribute Text Formatter, printer controls.

[.NSTL_LUG] EDIT/ACL replacement. AUTOLOG idle terminal killer with better logging, SET/ACL replacement, incremental backup aids, printer symbiont for security labels (TS,S,C,U), EDT/TPU update. Fast block I/O for FORTRAN. LIST all IDs on a system. Procedure to delete DCL commands from a user file at login.

[.PAGESWAPPER] Pageswapper issues since last DECUS VAX Symposium tape.

[.PWPLUM] Menu utility using FMS, in FORTRAN. .RIT Compress and decompress RMS files utility. (May work with LZCMP/LZDCM). MAKE - a very good VMS MAKE utility. NETCOPY - like COPY over DECnet but allows secure entry of passwords. PIPE - allows filtering and redirection. Print files on attached printers. SETUSER - become another user (if priv'd enough).

[.SCS] MAKE - emulates Microsoft MAKE utility on VAX. BATCH_ACL - verify that a batch job has proper identifiers. FTP - Foreign Tape Processor (ASCII or EBCDIC). Also tape-disk-tape. LIST - screen lister in TPU, like EDT in read only mode. BIGBRO -dynamic user display/modify. LILBRO -smaller user display. GRADE - class grading prog. SMAUG - lower priority of CPU hogs. GOLLUM - idle process killer.

[.SEALUG] NETPRINT - cross network printer fix. MACINTOSH - various MAC utilities uploaded to VAX in MACbinary or XMODEM formats. BINtoXMOD format converter.

[.SOUTH_FLA] Command procedure to set a new accounting file each month, program to check for unread mail.

[.STOCKTON] Batch queue scheduler. Reminder system. Idle terminal process killer. Report on last login time.

[.TELEX] Idle terminal monitor. CPU monitor cross cluster. HEX object file manipulator.

[.TSO] Miscellaneous system utilities from Paul Clayton, TSO Financial, including disk exerciser, struct, privdump...

[.UIF] Generic User InterFace system programs from the Nashville session.

[.UNDHEP] Base converter for decimal/hex/octal binary. Commands to copy VMS Update media. EDTINI for use with VT100/-VT200, GIGI, or H88. Extension to HELP. Set ownership utilities. Several programs to handle foreign tapes, especially IBM tapes or display their characteristics. Show users extension.

[.UTCCDSG] Batch mail; text archivers (self unpacking); convert text files to Postscript. MACpaint display on UIS VMS Workstation. MicroGNUEmacs V 1b. Extract pages from Postscript output file. Create or unpack Unix shell archive files. Convert Tek 4015 to Postscript.

[.UTEXAS] PROXY - let users make their own proxies. Print symbiont for Apple Laserwriter. Check files not altered.

[.VMS_SLIDES] Slides used in the VMS Update session. From Trevor Kempsell, VMS Development.

[.WATCHDOG] Upgrade to WATCHDOG idle terminal monitor.

[.WILLIAMS] EVE Extensions with integrated calculator, generic callout facility, access to DCL symbols,

[.WSIPC] SCRIPT command language resubmission.

VAX87B

[.BNELSON] KERMIT-11 update, VMSTPC FAST tape to disk to tape utility, Kermit server process, TED editor update.

[.CAROSSO] Calendar - appointment calendar. Dialout utility to connect to other computers. EVE_EDT EDT emulator (Plus some stuff from VTEDIT) and more. Hershey fonts. Network print symbiont. Pseudo terminal driver (much improved). UUCP mail hooks.

[.COY]	DM directory management program. SD set default update. WPS-PLUS emulator for TPU ("Complete"). VT241 color management.
[.DTRSIG]	Large collection of Datatrieve utilities. Includes accounting conversions, ALL-IN-1 log readers, standalone corporate phone directory, various user functions includes: SPAWN, plots, command line recall.
[.ERI]	Macintosh utilities of interest to sites using both Macintosh and VAXen.
[.GAMES]	Games from [.BASSETT] and [.MNVAX]. (Protection set to World:noaccess).
[.GNUEMXV18]	Update of VMS GNE Emacs, V18. [.RCAS87] Variety of vital patches and programs from CSnet (mostly the INFO-VAX conference). VMS disassemblers with sources. EVE extensions (4 layer keypad, much more). TAR reader and writer for VMS tapes (with exe if you don't have C). Also some upgrades (by Marty Sasaki) to VMS VD: virtual disk driver. VTedit in TPU from DECUS. Large collection of especially useful utilities for Amiga.
[.VAXNET]	VAXnet V12 from DECUS Library. Now fixes some bugs and supports Kermit, VAXnet, and XMODEM protocols.

Restrictions: See documentation on individual programs. VAX/VMS version 4.0 or higher is required to load tape with no file name errors.

Complete sources not included.

Media (Service Charge Code): 2400' Magnetic Tape (PS) **Format:** VMS/BACKUP, TK50 Tape Cartridge (TC) **Format:** VMS/BACKUP

DECUS NO: VAX-260 **Title:** PCTRL: Combined Command For VMS Process Control **Version:** V1.0, April 1987

Submitted by: Ken A. L. Coar, General Dynamics, Data Systems Division, Creve Coeur, MO **Operating System:** VAX/VMS V.4.5 **Source Language:** BLISS-32 **Memory Required:** 3KB **Software Required:** VMS **Keywords:** DCL, Utilities - VMS

Abstract: PCTRL provides DCL command-level access to all of the process control functions, namely the following System Services: $SUSPND, $RESUME, $SETPRI, $WAKE, $DELPRC, and $FORCEX.

PCTRL is implemented as a DCL command. As such, it has a verb definition which must be added to some command table (default is the system command table, DCLTABLES.EXE). It also has online help, in the form of a module intended for insertion in a VMS help library (the default is SYS$HELP:HELPLIB.HLB).

Notes: Operating system VMS V4.0 or higher required. Uses VMSINSTAL procedure and command definition utility features. Source for BLISS-32 system and private libraries are not included.

Restrictions: Group or world privilege may be needed to affect some processes.

Complete sources not included.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: VAX-267 **Title:** MAKE Utility For VMS **Version:** 1.7

Submitted by: William T. Dunn, ARGOSystems Inc.

Operating System: MicroVMS Version 4.2, VAX/VMS **Version** 4.5 **Source Language:** VAX FORTRAN **Software Required:** None for installation. VAX FORTRAN to recompile sources. **Keywords:** Tools - Applications Development

Abstract: MAKE is a utility that automates the build portion of the program development cycle. By using a pre-defined set of file dependency rules, MAKE determines and executes only those commands necessary for rebuilding the software system. For example, if a programmer edits an INCLUDE file that is only used by 2 out of 7 source files, then only those 2 source files will be recompiled. This utility was written in response to a coworkers claims about the usefulness of MAKE on the UNIX operating system.

This utility requires system privileges to install. The verb MAKE is added to the DCL command tables and a MAKE.HLP file can be added to the system HELP library. Also a users guide is included on the distribution media.

Features included in this version are:
- Automatic dependency rule generation.
- A macro facility.
- STARTUP, BATCH and FINISH directives.
- IF-THEN-ELSE directives.
- Ability to submit MAKE commands to the Batch Queue.

Media (Service Charge Code): One RX50 Diskette (JA) **Format:** VAX/ANSI, 600' Magnetic Tape (MA) **Format:** VAX/ANSI

DECUS NO: VAX-269 **Title:** FRAGMENT **Version:** 1.0, June 1987

Submitted by: Bob Armstrong, Algonquin College, Ontario, Canada K26 IV8

Operating System: VAX/VMS V4.5 **Source Language:** C **Memory Required:** 1000 Virtual Pages **Keywords:** Utilities - Disk - VMS

Abstract: FRAGMENT is a tool used by system managers to measure the degree of fragmentation on a specified VAX/VMS FILES-11 disk. The utility first scans the BITMAP.SYS file on the disk to analyze the hole distribution on the disk. It prints a histogram of the hole fragment size as well as a rough distribution of where the holes are on the volume. The utility next scans the INDEXF.SYS file to determine the degree of file fragmentation on the volume. Some overall file statistics are given and a histogram of file fragmentation frequency. Also file headers of files which are fragmented above a specified threshold value are printed (in a form similar to the DUMP/HEADER format).

Notes: Currently only for FILES-11 structure level 2 disks. Tested only on RA81 and SA482 disks. Requires read access to 000000 INDEXF.SYS files.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: VAX-268 **Title:** VAXMAC **Version:** 2, May 1987

Submitted by: Randall W. Jordan, H & R Block, Kansas City, MO **Operating System:** MicroVMS, VAX/VMS V4.4 **Source Language:** FMS, VAX-11 BASIC **Memory Required:** 135 blocks **Hardware Required:** VT200 Terminal (recommended), VT100 (minimum) **Keywords:** Utilities - VMS

Abstract: VAXMAC is a 'Pulldown Menu' user interface to VMS. It operates as a menu driven 'Windowed' type interface to many common VMS Direct Command Language commands and functions. The system is a prompting system with interactive help on most commands. It offers a window directly to VMS as well as a program selector of layered products and user written applications.

The application also offers a Calendar/memo database filing/prompting system, a calculator with formula translation capability, a simple

'Spreadsheet' program, a network monitor/display, an ASCII/OCTAL/HEX/BINARY lookup table/display, VAXMAIL send Screen/display, and a terminal lock/protection screen.

The requirements are a recommended VT200 terminal or compatible terminal. The system will work on a VT100 (or a PC with an emulator). The source code is VAX-11 BASIC Version 2, the screens are FMS. Included are a few FMS/BASIC demonstration programs.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP, TK50 Tape Cartridge (TC) **Format:** VMS/BACKUP

NEW LIBRARY PROGRAMS AVAILABLE FOR THE PROFESSIONAL-300 SERIES OF COMPUTERS

DECUS NO: PRO-161 **Title:** UTILITIES FOR PRO/RT **Version:** April 1987

Submitted by: Earl Chew **Operating System:** RT-11 V5 **Source Language:** MACRO-11, PASCAL **Software Required:** NBS PASCAL required to recompile some programs. **Keywords:** Utilities - RT-11

Abstract: This is a potpourri of programs written for RT-11. The following is a list of the programs offered.

DIRS	A directory listing program which has options to automatically search down sub-directories and to list creation times (TSX compatible). DIRS.501 provided for RT-11 versions without the plain GTLIN facility. /HELP for help.
BUILD	A utility modeled on the UNIX MAKE program. It will generate the minimum set of commands required to compile a program made up of separately compiled program modules (i.e. an object module need not be recompiled if its creation time is more recent than all its sources). BUILD.501 is provided for RT-11 versions without the plain GTLIN facility. This program has been updated slightly.
TS	A handler which will time stamp files with their creation times (TSX compatible). This version will automatically reconfigure itself for EIS machines.
DC	A digital clock handler which will display a digital clock in the upper right hand corner of a VT100 screen.
DWDISK	A Winchester disk formatting program allowing the user to change the interleaving pattern, cylinder spiral and track spiral on the disk. Improvements in speed of 50% have been achieved using the standard DW: handler and formatting with an interleave of 7. This has only been tested on a Pro-350 using an RD51 (10MB)) disk. Also included is a program to time disk read operations.
DW	A modified DW: handler recoded for speed and compactness. Average improvements in speed of 65% have been achieved using a disk formatted by FORMAT.SAV. The handler is 45% smaller than the standard DW: handler. This has only been tested using an RD51 (10MB) disk.
EXECUTABLE IMAGE	The DECUS-C Lempil-Ziv data compression program, tailored for RT-11, and a faster version of GREP (makes use of Boyer Moore searches) are provided. The source code for these are not included here due to lack of space and time. LZDCMP is required to decompress the program.

Notes: Some programs will not work on older versions of RT.

Changes and Improvements: New programs.

Complete sources not included.

Media (Service Charge Code): One RX50 Diskette (JA) **Format:** RT-11

DECUS NO: PRO-164 **Title:** Selective Copy/Sort a Directory **Version:** V1.1, March 1987

Submitted by: Jorg Buchner, D-5064 Rosrath, West Germany **Operating System:** P/OS V2.0 **Source Language:** FORTRAN 77, MACRO-11 **Memory Required:** 535KB **Keywords:** DCL, Sorting, Utilities - P/OS

Abstract: This diskette contains two applications which work as an enhancement of the DCL commands COPY and DIRECTORY.

SCOPY	Similar to PIP's /SD-Switch (selective delete) the task allows a selective copy (like RT-11's Copy/Query). According to a PIP command line (output=input) filenames are displayed, and the user is prompted with "AY/N/G/QU" for approval

to copy the files. Wildcards are allowed. If the output is directed to the video terminal, and the user answers the prompt with "Go", the files are announced with their names before they are displayed (a feature that is not comprised in the DCL TYPE command, e.g. "TYPE *.DOC").

SORTDIR Arranges and outputs any directory to a chosen device and/or file. The sorting can be done alphabetically by filename or type and chronologically by date. The directory to be arranged and the sorting mode are specified in one command line with optional switches. Default values are preset.

Changes and Improvements: Enhanced and bugs removed.

Complete sources may or may not be included.

Media (Service Charge Code): One RX50 Diskette (JA) **Format:** FILES-11

DECUS NO: PRO-170 **Title:** P/OS V2 Extensions **Version:** March 1987

Submitted by: John Childs **Operating System:** P/OS V2.0A **Source Language:** FORTRAN 77, MACRO-11 **Software Required:** PRO/TooL Kit **Keywords:** Utilities - P/OS

Abstract: This package contains two features not available on P/OS V2 or earlier:

- A set of command procedures and associated "help" information to allow a second user to run the PRO/Tool Kit via a VDU attached to the printer port.
- A task and associated command procedures providing print-spooler functionality for such a two-user machine, and more usefully for a network of such machines, either via an Ethernet or a Mini-exchange. The printer runs on the communications port.

Also included are various other bits and pieces which may be of use:

- Improved START.CMD and EXIT.CMD files for PRO/Tool Kit.
- Improved Link command file generators for FORTRAN and PASCAL.
- INCLUDE files for VDU control for FORTRAN and PASCAL.
- A loan calculator utility based around monthly repayments.
- EDT initialization file re-defining keypad for numeric entry.

Notes: This package is not relevant to P/OS V3 which already contains these features.

Media (Service Charge Code): One RX50 Diskette (JA) **Format:** FILES-11

NEW LIBRARY PROGRAMS AVAILABLE FOR THE PDP-11 COMPUTER FAMILY

DECUS NO: 11-872 **Title:** LAP: Slave Print Utility **Version:** V1.4, April 1987

Submitted by: Sel Ellis, Victorian Crops Research Institute, Horsham, Victoria, Australia 3400 **Operating System:** RT-11 V5.1, TSX-PLUS V6.1 **Source Language:** MACRO-11 **Memory Required:** 4KB **Hardware Required:** VT1xx, VT2xx terminal, LA50 printer. **Keywords:** Utilities - RT-11

Abstract: This program simplifies the process of printing a file on a LA50 compatible printer attached to a VT100 compatible terminal. The printer can be configured for 40, 80 or 132 columns and normal or enhanced density. If the file is unpaginated, a four line skip is inserted over page perforations. For paginated documents, the formfeed is expanded to the required number of linefeeds to circumvent the TT: handler's habit of gobbling up formfeeds. The file name is printed at the top of the first page. The program is set up for seventy lines per page with a four line skip, i.e. sixty-six lines per page on A4 paper. These parameters can be readily altered. The default options are normal density, eighty columns. Other combinations, if required, are presented as yes/no choices.

Notes: TSX-PLUS V5 or later uses SYSGEN options word to determine if under TSX or RT-11.

Media (Service Charge Code): One RX01 Diskette (KA) **Format:** RT-11, 600' Magnetic Tape (MA) **Format:** RT-11

DECUS NO: 11-879 **Title:** RT-11 Cache **Version:** 6.0

Submitted by: H.T.M. Haenen, University Hospital Groningen **Operating System:** RT-11 V5.1 or later **Source Language:** MACRO-11 **Memory Required:** Ca. 250 words **Software Required:** Source of device/disk handler and VM: (virtual mem.) handler. **Keywords:** Utilities - Disk -RT-11, Data Caching

Abstract: The disk data cache accelerates system and applications considerably in a fully transparent way. With this cache, disk areas are mapped to extended memory. Disk reads within the cached areas are serviced quickly with data from memory. The cache is failsafe as the

"Write-through" principle is followed. However, disk areas containing only temporary data (E.G. SY:SWAP.SYS) may be put in a "temporary" cache and then also writes are cached very quickly. Also, when the system disk is properly cached, the disk can be set to read only without problem.

Notes: Articles in DECUS Proceedings, Europe and US. See references in documentation on media.

Restrictions: Requires VM: disk files. Device/disk handler must be rebuilt with utility supplied.

Media (Service Charge Code): One RX01 Diskette (KA) **Format:** RT-11, 600' Magnetic Tape (MA) **Format:** RT-11

DECUS NO: 11-880 **Title:** Multiprocessor RT-11 **Version:** 5.0

Submitted by: H.T.M. Haenen, University Hospital **Operating System:** RT-11 V4.0, RT-11 V5.1 - V5.4 **Memory Required:** Minimum 1.2K **Hardware Required:** DR-11C/DRV-11 or WB-11/WBV-11 or Qnector. **Keywords:** Data Communications, Networking

Abstract: The software links single RT-11 systems together in order to form a network. Network shapes like star, chain, ring and mixed may be easily realized. The data communication is fast because a low overhead protocol is used combined with fast hardware (several interface implementations exist, including DMA). The single RT-11 systems run a standard, unmodified RT-11 monitor and may be memory-only as they can boot from a remote disk. Remote devices such as disks, lineprinters, and special directory devices like magtape can be used in a fully transparent way and they appear to the user as if they were local. Systems may read/write to each others memory for parallel processing. The software is very modular, small and all is realized within handlers (0.6 KW.), system/foreground jobs (1.5 KW.) and some background utilities for accounting, error reporting and displaying/changing read/write protection of device units.

Restrictions: RT-11 V5.1 or later is required to use full features of the program. Program handlers must be built from sources. Probably requires system-programmers level.

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** RT-11, 600' Magnetic Tape (MA) **Format:** RT-11

DECUS NO: 11-881 **Title:** GRAPHIC **Version:** November 1986

Submitted by: Jean-Francois Vibert, CHU Saint Antoine, 75571 Paris Cedex 12, France **Operating System:** RSX-11M V4.1, RT-11 V4.2 **Source Language:** C **Software Required:** DECUS Program No. 11-SP-18 **Hardware Required:** Tektronix or compatible or VT240 - V241 **Keywords:** Gaphics

Abstract: Because of LUN conflicts between FORTRAN and DECUS C, it is not possible to use FORTRAN libraries such as PLOT10 from C programs. Three libraries entirely written in C were developed in order to access from C programs to graphic displays and plotters. One is devoted to graphic displays and intended to be used with Tektronix 4010, 4100 and 4105 or compatible (VT241 in TEKTRO mode). They allow management of ten independent windows, work in subject and screen space, absolute or relative, and color management. Device dependent code are grouped into few modules, thus allowing easy portability to compatible devices. They are written in "standard" C in order to be portable. All sources andfull documentation are provided using the DECUS getrno C-tool (UNIX like manual). This package runs under both RT-11 and RSX-11M.

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** RT-11, 600' Magnetic Tape (MA) **Format:** DOS-11

DECUS NO: 11-882 **Title:** BIBLIO **Version:** 3.7, June 1987

Submitted by: Jean-Francois Vibert, CHU Saint Antoine, 75571 Paris Cedex 12, France **Operating System:** RSX-11M V3.2/V4.1 **Source Language:** FORTRAN IV **Memory Required:** 32KW **Software Required:** FORTRAN IV Compiler **Keywords:** Data Base Management

Abstract: BIBLIO is a package written in FORTRAN IV allowing creation, management, interrogation and edition of bibliographic references. Each reference (256 words) is constituted by authors' names and christian names, the paper title, the journal, the pages, the volume, the year, an indication concerning the availability in the lab, and one to ten keywords. They can be accessed through random access by their number, by one of the authors, or by a logical combination of keywords. REFER edits in either RUNOFF format or directly as a listing a list of bibliographic references to add at the end of papers. References can be sorted either in alphabetic or chronological order, or non-sorted, in arbitrary order using a flexible format to fit any of the publisher requirements.

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** FILES-11, 600' Magnetic Tape (MA) **Format:** FILES-11

DECUS NO: 11-883 **Title:** ASKVAL **Version:** 2, June 1987

Submitted by: Jean-Francois Vibert, CHU Saint Antoine, 75571 Paris Cedex 12, France **Operating System:** RSX-11M, RT-11 **Source Language:** C **Software Required:** DECUS Program No. 11-SP-18 **Keywords:** Tools -Applications Development

Abstract: ASKVAL.H is a header file to include in C programs. It provides an easy way to prompt for a value, with a possible default (CR only) answer. Two sets of symetric functions are defined: askival, askfval, askeval and asksval versus faskival, faskfval, faskeval and fasksval. The first reads the stdin with a prompt on stderr, while the seconds read in a file. It replaces scanf and fscanf in the simple cases. ASKVAL was tested on RSX and RT-11.

Notes: Program was tested with DECUS C, DECUS Program No. 11-SP-18.

Media (Service Charge Code): One RX01 Diskette (KA) **Format:** FILES-11, 600' Magnetic Tape (MA) **Format:** FILES-11

DECUS NO: 11-884 **Title:** XYSTAT **Version:** V2, April 1987

Submitted by: Jean-Francois Vibert, CHU Saint Antoine, 75571 Paris Cedex 12, France **Operating System:** RSX-11M V4.1 **Source Language:** C **Memory Required:** 32 KW **Software Required:** DECUS C Compiler, DECUS Program No. 11-SP-18, RUNOFF for the documentation **Hardware Required:** BENSON Plotter for some programs. **Keywords:** Plotting, Statistics

Abstract:XYSTAT constitutes a package of statistical programs mainly devoted to XY data analysis. Several regression analysis (linear, exponential, polynomial) and covariance analysis (with possible data linearisation: log, hyperbolic, sigmoid, power, exponential) and curve adjustment (spline, bezier, lagrange) are provided. Plots are done on a Benson plotter. Other non parametrics and simple statistical programs are also included. This package is written in DECUS C, and uses a C library to access the plotter and mathematical library. Both are included in the distribution (their sources are available through the DECUS Library, PLOTC, DECUS Program No. 11-886 by J.F. Vibert and CMATH, DECUS Program No. 11-800 by G. Kowalsky).

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** FILES-11, 600' Magnetic Tape (MA) **Format:** FILES-11

DECUS NO: 11-886 **Title:** PLOTC **Version:** March 1986

Author: J.F. Vibert & J.N. Albert

Operating System: RSX-11M V4.1 **Source Language:** C **Software Required:** DECUS C Compiler, DECUS Program No. 11-SP-18 **Hardware Required:** BENSON 1x3x Plotters **Keywords:** Graphics, Plotting

Abstract: Because of LUN conflicts between FORTRAN and DECUS C, it is not possible to use the FORTRAN library BENLIB from C programs. This library was entirely rewritten in C in order to access from C programs to the BENSON graphic plotters (microprogrammed mode). It allows management of the paper space and works in subject and paper space, absolute or relative, and color management. Device dependent codes are grouped into few modules, thus allowing easy portability to compatible devices. They are written in "standard" C in order to be portable. All sources and a full documentation are provided using the DECUS getrno C tool (UNIX like manual).

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** FILES-11, 600' Magnetic Tape (MA) **Format:** FILES-11

NEW LIBRARY PROGRAMS AVAILABLE FOR THE PDP-11 COMPUTER FAMILY

DECUS NO: 11-887 **Title:** CLE **Version:** 6.2

Submitted by: A.J.M. Driessen

Operating System: RSX-11M V4.2, RSX-11M-PLUS V3.0 **Source Language:** MACRO-11 **Memory Required:** 15KB **Hardware Required:** VT100 terminal series **Keywords:** Calculators, Calendars, Editors, Utilities - RSX-11

Abstract: CLE is a command line editor, which has also built-in desktop functions. It is made for RSX-11M and RSX-11M-PLUS and runs on VT100 terminal series only. The program spawns commands to the current command line interpreter (MCR, DCL or any other CLI). The last N lines (specified during generation) are stacked and can be recalled for spawning or editing. There are also M special lines available for commands.

The editor is EDT like. Most of the EDT commands are supported.

CLE has the following major functions/options:
. Command logging with time and exit status
. Defining user commands
. String substitution
. Chaining of commands
. Timer display in upper right corner of screen
. Help displays

The desktop functions of CLE are:
. Fullscreen calculator with ten memories and decimal/octal switch
. Calendar with note-blocks for every day
. Alarm functions

Notes: Full duplex terminal with escape sequence recognition is required along with get/set multiple characteristics and parent/offspring tasking.

Media (Service Charge Code): User's Manual (EA), 600' Magnetic Tape (MA) **Format:** BRU

DECUS NO: 11-888 **Title:** RSX Indirect and EDT Grab Bag **Version:** 1.0, June 1987

Submitted by: James J. Fullerton, Institute Logopedics, Research Division, Wichita, KS

Operating System: RSX-11M V4.2 **Source Language:** EDT, INDIRECT **Memory Required:** 32KW **Software Required:** RUNOFF, DATATRIEVE-11. **Keywords:** System Management - RSX-11, Utilities - RSX-11

Abstract: This is a collection of indirect command files, EDT initialization files, and HELP files that perform a variety of functions from system management to office "automation". Command files are available to perform daily backups, UIC allocation, memos, letters, base conversions, and help with programming.

Among the more unique items is a command file to interactively define a function key on a VT200-series terminal (everything done in indirect). There are also EDT initialization files for editing FORTRAN or PASCAL source code files. These provide some VAX LSE-like operations, but unlike LSE, provide commonly used items in preference to syntactic items only.

Notes: Operating System RSX-11M V4.1 or later is required.

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** FILES-11, 600' Magnetic Tape (MA) **Format:** FILES-11

DECUS NO: 11-889 **Title:** BS-207 Handler for RT-11 and TSX-PLUS **Version:** January 1987

Submitted by: Dataram Corp, Princeton, NJ

Operating System: RT-11 V5.01, TSX-PLUS V6.01 **Source Language:** MACRO-11 **Hardware Required:** BS-207 **Keywords:** Device Handlers, TSX

Abstract: BS is a device handler that can be installed under RT-11 or TSX-PLUS operating systems. It makes the Data-Ram Corporation Bulk Storage Memory System appear to be a high-speed disk.

The Macro Assembler code supplied has been tested under RT-11 version 5.01 and TSX-PLUS version 6.01. It should also work with previous releases of RT-11 back to version 4, and previous releases of TSX-PLUS back to version 3.

The handler as supplied supports eight megabytes of BS memory. To support more or less, the SIZE parameter must be changed, and the handler re-assembled and re-linked.

Driver Specifications:

. RT-11 DEVICE ID number:	174(8)
. CSR base address:	177460
. Vector address:	204
. Handler size (approx):	120(10) words
. RT-11 Features supported:	

-System Device Support
-Memory Management

. Requires EIS hardware
. Hardware bootstrap

This handler supports use as a system device. In many cases, significant performance improvement will occur by loading operating system software onto the BS device, making it bootable, then booting it.

The RT-11 "device identification number" is set to 174 to allow application programs to identify this device. Notes: This handler does not zero-fill short blocks (less than 512 bytes) written to it. Thus the contents of the "non-written" portion of the block is unpredictable when it is read as a whole block. In practice, this does not appear to be a problem with the operating system, nor application programs. It does, however, cause problems with some editors , e.g., KED, which write a short block at the end of the edited file upon exiting.

Media (Service Charge Code): One RX02 Diskette (LA) **Format:** RT-11, 600' Magnetic Tape (MA) **Format:** RT-11

NEW LIBRARY PROGRAMS AVAILABLE FOR THE DECmate II

DECUS NO: DM-112 **Title:** COS-310 **Version:** V9.3, May 1987

Submitted by: Digital Equipment Corporation **Operating System:** COS-310 **Source Language:** PAL-8 **Memory Required:** 32KB **Hardware Required:** DECmate I or DECmate II **Keywords:** Utilities - COS-310

Abstract: COS-310 is an applications development tool designed to implement data management functions. COS-310 is a self-contained, single user, disk-resident operating system. It provides an operation control monitor, easy-to-learn high-level programming language (DIBOL-8), program preparation, debugging and production facilities.

Release Notes are distributed with each order.

The ordering information for the manuals are as follows:

. Order DM-112 (EC) for COS-310 New User's Guide
. Order DM-112 (ED) for COS-310 System Reference Manual

Release notes are distributed with each order.

Documentation available in hardcopy only. Sources not included.

Media (Service Charge Code): User's Manual (EC), User's Manual (ED), Two RX50 Diskettes (JB) **Format:** COS-310

REVISIONS TO LIBRARY PROGRAMS

DECUS NO: V-SP-59 **Title:** DATATRIEVE Library Collection **Version:** V1.1 June 1987

Author: Members of the DTR/4GL SIG

Submitted by: Bart Z. Lederman **Operating System:** P/OS V2.0, RSX-11M-PLUS V2.1, VAX/VMS V4.3, V4.5 **Source Language:** C, DATATRIEVE, MACRO-32, VAX FORTRAN **Software Required:** Some portions use FMS, MACRO, FORTRAN; most require only DATATRIEVE. **Keywords:** DATATRIEVE, Plotting

Abstract: This is a combined effort by the DATATRIEVE/Fourth Genera tion Languages SIG to produce a library of items related to or using DATATRIEVE.

[.ACCOUNTING]	Programs to convert System Accounting and PSI Accounting data to a normalized form readable by DATATRIEVE (and other languages) with record definitions.
[.ALL-IN-1]	Contains DTR definitions to work AI1 logging and data files. The document database also works withWPS-PLUS/VMS. Contains many revisions and improvements for Spring 1987.
[.CORPHONE]	DTR replacement for the AI1 corporate phone directory which also works quite well on its own.
[.FUNCTIONS]	User defined functions including SPAWN and FN$STR__LENGTH plus DATATRIEVE procedures for cataloging, defining, and generating functions.
[.NEWSLETTERS]	Machine readable past issues of the Wombat Examiner (some new material for Spring 1987).
[.PLOTS]	Additional PLOTS and articles on adding your own plots (some extra plots for Spring 1987).
[.RECALL]	Use SMG to give you command line recall while using DTR. Revised for 132 column operation, plus DAB definitions in "C", MACRO-32, RECALL in "C".
[.RSX__ACCOUNTING]	Process RSX-11M-PLUS system accounting with DTR, also RSX console logs, and a routine for all PDP-11's to convert DTR DATE types to/from ASCII outside of DTR.
[.SESSIONS]	Transcriptions of some symposia sessions. Some new sessions added.
[.SYSMGR]	DATATRIEVE definitions for Disk Quotas, SYSUAF, rightslist, network proxy logins, etc.

Restrictions: Some portions of the collection are VMS specific. Some programs may need newest versions of DTR.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS NO: VAX-212 **Title:** PLOT__IT and SPELL: Interactive Dictionary **Version:** V2, June 1987

Submitted by: Dr. D. W. Burgess, RAF Institute of Aviation Medicine, Farnborough, Hants, England GU14 652 **Operating System:** MicroVMS V4.5 **Source Language:** FORTRAN 77, VAX FORTRAN **Memory Required:** Peak 450 pages; average 120 pages for SPELL **Software Required:** FORTRAN for SPELL, GKS V3 for PLOT__IT **Hardware Required:** VT100 type terminal for SPELL, VAXstation or Graphics Terminal supportedby GKS for PLOT__IT. **Keywords:** Graphics, Plotting, Spell

Abstract: PLOT__IT is a graph plotting utility using GKS to produce in an interactive mode a graph suitable for publication from a known set of data. Full annotation can be added in a variety of text styles and sizes to produce the finished graph, or this annotation can be added later with a second program PRINT__IT for later overlay on the plotted data. Present program has interfaces for AnalytiCalc (DECUS Program No. V-SP-24), text files, and direct terminal input.

With the package is a complete set of examples, together with instructions to modify the program for different hardcopy plotters. This program can be used with any supported GKS device for hardcopy and has been tested with both VAXstations and VT240 terminals for interactive display. Full high resolution functions are only supported on the VAXstation.

SPELL is an interactive dictionary used either to find the spelling of a word from limited initial characters or to check a document for spelling errors. Words can be added by the users with password protection to expand the dictionary in specific directions.

The present edition contains over 10,000 English words, but as the program is totally user adjustable, the dictionary can be in any language within a word limit of 15 ASCII characters to a maximum of 70,000 words.

Notes: PLOT__IT tested on VAXstation II/GPX and VT241.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP, TK50 Tape Cartridge (TC) **Format:** VMS/BACKUP, or order VAX-LIB-6

REVISIONS TO LIBRARY PROGRAMS

DECUS NO: VAX-244 **Title:** Golf Handicap/Information System **Version:** V1.2, June 1987

Submitted by: Fred Bassett, J. G. Boswell Company, Corcoran, CA **Operating System:** VAX/VMS V4.2 - V4.5 **Source Language:** VAX COBOL **Software Required:** RDB/VMS, DATATRIEVE, TDMS (not V1.7), Common Data Dictionary **Keywords:** Games

Abstract: This is a golf handicap/information system. It contains it's own built-in menu and security system. It can be used by persons, clubs and organizations to collect information on golf courses either local and remote as to fees and services provided. A complete golfing history is maintained for all players defined to the system. The players' golf score cards are entered into the system which will adjust them according to current USGA rules and calculate an ongoing handicap for each player. Various reports and queries are provided.

Notes: Operating System VMS V4.2 or higher is required.

Changes and Improvements: Connected bugs in program PGMADDSRS. System will not work under TDMS V1.7.

Restrictions: Digital's TDMS V1.7 has bugs which cause this system to not run. VAX/VMS version 4.2 or above is required.

Media (Service Charge Code): 600' Magnetic Tape (MA) **Format:** VMS/BACKUP

DECUS PROGRAM LIBRARY CHANGES:

DECUS NO: V-SP-53, **Title:** KERMIT Distribution, is also available on a TK50, media (service charge code) TC.

DECUS NO: V-SP-63, **Title:** Miscellaneous PC Tool Collection #1, is also available on a TK50, media (service charge code) TC.

DECUS NO: VAX-146, **Title:** WATCHDOG, add the following note:
"Notes: There are two versions of the program included on this tape; one for VAX/VMS V3.X and another for VAX/VMS V4.0 - V4.5. The version for VAX/VMS V3.X is written in both FORTRAN 77 and MACRO-11. The version for VAX/VMS V4.0 - V4.5 is just written in MACRO-11.

DECUS NO: 11-617, **Title:** VLISP-11, is listed in the 1986/1987/1988 catalog as media code (KB). Please change the media code to (KC).

DECUS NO: 11-816 **Title:** Update Suite **Version:** V8.0-03Q, January 1986

Submitted by: John Bennett, Defence Research Centre, Adelaide, South Australia, Australia **Operating System:** RSTS/E V7.2 or later **Source Language:** see Notes below **Memory Required:** 64KB **Software Required:** SPOOL, RSX RTS, RNO (for manual), ATPK (for installation) **Keywords:** Data Base Management

Abstract: The UPDATE Suite is a set of programs for RSTS/E systems. In some respects it may be considered as a simple relational database. It uses RECORD I/O to create, save, change and list records. The entire file may be listed or saved, with a choice of sort keys. A fair amount of HELP is included.

New applications are easily set up by running UPGEN, an easy to use application generator.

Notes: Source language is BASIC-PLUS (EXTEND mode).

Restrictions: Slight bug in ANSI mode cursor addressing routine.

Media (Service Charge Code): One RX01 Diskette (KA) **Format:** RT-11, 600' Magnetic Tape (MA) **Format:** DOS-11

SUBMITTING ARTICLES TO HARD NEWS

The purpose of HARD NEWS, the HMS SIG newsletter, is to serve as a forum to share information related to DEC hardware with the members of the SIG. As such, the existence of the newsletter is entirely dependent on your contributions. If you have an HHK item, a better or safer way to do something, product news, a tutorial article of general interest, etc., we are interested in publishing it in the newsletter. It is intended that HARD NEWS be published at least six times a year.

You can submit material to the editor, Carmen Wiseman, or to the HMS SIG chair, Bill Walker. We can accept submissions in a wide variety of formats:

- Items can be sent to the editor on VMS-format RX50s, TK50 cartridges, or IBM PC format 5 1/4" floppies. The SIG chair prefers RT-11 floppies but can handle any reasonable media.

- Hard copy, like cash, is always acceptable. Camera-ready copy will save us a lot of typing, but we don't insist on it. You can also use the Hardware Submission Form in the "Questionnaires" section of the combined SIGs Newsletters.

- Those of you with access to DCS can send things to WALKER or WISEMAN. DCS is usually checked on a daily basis.

- You can reach the SIG chair on CompuServe as "Bill Walker 71066,24" or via EasyLink mailbox 62752448. You can reach the editor via EasyLink mailbox 62960090 (be sure to say ATTN: or TO: Carmen Wiseman somewhere in the message).

If you have anything to submit, send it! If it is a mess, but we can read it, we will get it into the newsletter somehow. Finally, if you have any questions about submitting material, call one of us. The telephone numbers are listed below.

Contributions can be sent to:

William K. Walker
Monsanto Research Corp.
P.O. Box 32 A-152
Miamisburg, OH 45342
(513) 865-3557 (work)
(513) 426-7094/0344 (home)

OR

Carmen D. Wiseman
Digital Review
Prudential Tower, Suite 1390
800 Boylston Street
Boston, MA 02199
(617) 375-4361 (work)

How to Submit articles to the RSTS Newsletter

The RSTS SIG newsletter solicits contributions of items of interest including, but not limited to, articles, DCL magic, copies of SPR's, and war stories.

You may electronically submit material by calling the SIG newsletter system at (201) 435-2546 at either 300 or 1200 baud. Press a few RETURN's until you get the RSTS banner, then sign on with account 2,1. No password is required. KERMIT is available for uploading material. Then you can use MAIL to compose a cover letter for your material and send it to NEWS.

You may also reach the editor as user KENNEDY on both DCS and DECUServe, if you have access to either of those systems.

You may also submit material on RX50's (in RSTS or RT11 format), on 800, 1600, 3200, or 6250 BPI 9-track tape (in DOS, ANSI, BRU, RSTS BACKUP or VMS BACKUP format), or on PC-DOS floppies (5¼ or 3½ inch format). If you are really desperate, I can also accept RSTS or RT11 format RL02 and RK07 disks. You may also submit hardcopy documents, but these will take longer to get into print.

If you are sending media you want returned, please insure it.

If you want your submission returned, please include a completed airbill billed to you, or include reasonable funds for insurance and return.

The address for sending material via US Mail is:

Terence M. Kennedy
St. Peter's College
Department of Computer Science
2641 Kennedy Blvd.
Jersey City, N.J. 07306
(201) 435-1890

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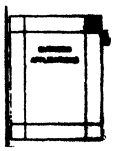

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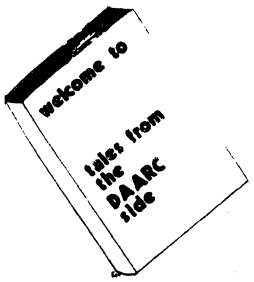

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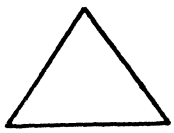

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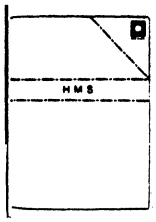

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Ask the WOMBAT WIZARD
Submission Form

To submit a problem to the WIZARD, please fill out the form below and send it to:

WW Editor, Philip A. Naecker
Consulting Software Engineer
3011 North Mount Curve Avenue
Altadena, CA 91001
USA

Name:_____ DECUS Membership No. _____

Affiliation:_____

Address:_____

_____

_____

Telephone Number:_____

Statement of Problem:_____

_____

_____

_____

_____

_____

Please following the following guidelines when submitting support material:

1. If you are trying to demonstrate a method or a concept, please simplify the procedures, records, and other information to the shortest form possible.

2. Annotate your attachments. Simple comments or hand-written notes ("Everything worked until I added this statement.") go a long way toward identifying the problem.

3. Keep an exact copy of what you send. And number the pages on both copies. But send everything that is related to your question, even remotely.

4. If you would like a direct response or would like your materials returned, please don't forget to include a stamped, self-addressed envelope large enough to hold the materials you send.

DATATRIEVE/4GL SIG
Product Improvement Request Submission Form

Submittor: DECUS Membership Number:
Address: Firm:

Phone: Product or Products:

How to write a PIR

A PIR should be directed at a specific product or group of products. Be sure to give the full name of the product(s) and version numbers if applicable. Describe the functionality you would like to see in as complete terms as possible. Don't assume that the PIR editors or software developers know how it is done in some other software product - state specifically how you want the software to function. Provide justification of your request and give an example of its use. If you can, suggest a possible implementation of your request.

Abstract: (Please limit to one or two short sentences.)

Description and Examples: (Use additional pages as necessary.)

[Put my name and address on reverse side, thus:]

PIR Editor, Philip A. Naecker
Consulting Software Engineer
3011 North Mount Curve Avenue
Altadena, CA 91001
USA

DTR/4GL SIG Spring 1987 PIR Ballot

DECUS Membership Number: __ __ __ __ __ __

CPU Types (Check all that apply):
VAXes___ PDP-11's___ DECsystems___ Other (Specify)_____

Application Types at your site (Check all that apply):

___ Business EDP/MIS
___ Education
___ Office Automation
___ Other (Specify)_____
___ Software Development
___ Engineering/Scientific
___ Service Bureau

Number of years using computers:____ **Number of years using 4GL's:** ____

Products Used (Check all that apply):

___ DTR-11 ___ VAX-DTR ___ CDD ___ TDMS ___ DBMS(any)
___ FMS ___ RS1 ___ Oracle ___ Ingress ___ Rdb
___ Others (Specify)_____

_____

PIR Number	Points	PIR Number	Points
_____	_____	_____	_____
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Be sure to return your ballot by July 1, 1987

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H M S S I G

HARDWARE SUBMISSION FORM -- A SIG INFORMATION INTERCHANGE

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Address _____

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Telephone _____

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SUBMIT ANY TYPE OF HARDWARE PROBLEMS AND/OR FIXES.

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IAS WHIMS

WHAT: (Describe your WHIM) (Please print or type)

WHY: (Describe the reason for the WHIM)

HOW: (Make any suggestions for a possible implementation

Name: _____

Company: _____

_____

Address: _____

_____

_____

Phone: _____

Please mail to:

Kathleen M. Anderson
EATON Information Management
Systems Division
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Phone: (804) 326-1941

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Telephone: _____

Current Hardware: (Include number and type of processors, mass storage devices, communication devices, etc.)

IAS Release: (Indicate release of IAS under which these systems are running)

Software: (Indicate software running on these systems, i.e., DECNET, Decus C, etc.)

Application: (Indicate the type of application running on the system.)

Contacts: Would you be willing to be placed on a list of contacts? If so, what areas?

Features: Do you have any features which you would like IAS to include?

Any further comments?

IAS SIG MEMBERSHIP SURVEY

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Michael Reese Medical Center
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Chicago Il 60616

Languages & Tools SIG

MASTERS APPLICATION

Name: _____ **Title** _____

Company: _____

Address: _____

_____

_____ **Phone: ( )** _____

Network Address: _____ **Date:** _____

The Languages & Tools SIG has established the designation "LANGUAGES AND TOOLS MASTER", to be applied to selected, qualified people willing to share their expertise in various subjects with others. Masters are people who are knowledgeable enough in one or more languages or tools to be comfortable answering questions about them. The qualifications of an L&T Master are: expertise in a specific area, a willingness to have his/her name published as a Master, and a willingness to volunteer services in different ways. Each product may have several Masters, and there is an overall Masters Coordinator who is a member of the L&T Steering Committee.

Masters are asked to serve other users (and, under some circumstances, DEC), as a resource on products within their competence. In addition to being listed in the L&T Masters Directory (published in the newsletter) as available for occasional telephone consultation, Masters may act as 'Doctors' at Symposium Clinics, present Symposium sessions on the products of interest to them, field test products, interact with DEC product managers when appropriate, or act as a reference for a product for Digital salespeople. Especially on mature products, the SIG is anxious for knowledgeable users to offer product tutorial sessions at Symposia, and Masters can be of great help here. At Symposia, Masters will wear an identifying button bearing the legend "Ask Me About....." and the name of the language or tool in which he/she specializes.

If you'd like to serve as an L&T Master, please mark the products on which you are willing to answer questions with an "M" (for Master). Please mark any other products running at your site with an "A" (for "also running") to provide users with a broader picture of your facilities. (Although not an L&T product, Mumps is included here at the request of the Mumps SIG as a service to Mumps users). You may request removal of your name from the Masters Directory at any time, although you may continue to be listed for a month or two, because of publication lead times.

I am qualified to act as an L&T Master for the following products: ☐ Mumps

☐ Debug	☐ Bliss	☐ CMS	☐ TPU	☐ C	☐ Test Manager
☐ Pascal	☐ Basic	☐ MMS	☐ EVE	☐ Ada[1]	☐ Runoff & DSR
☐ Fortran	☐ Cobol	☐ LSE	☐ EDT	☐ APL	☐ TEX & LATEX
☐ Document	☐ Dibol	☐ SCA	☐ TECO	☐ RPG	☐ Cobol Generator
☐ VAX Notes	☐ Emacs	☐ PCA	☐ PL/I	☐ Scan	☐ Software Project Mgr

Briefly describe your experience with those you checked. _____

_____

_____

_____

How long have you held your present position? _____

Are you able to attend at least one symposium each year? _____

Users are encouraged to seek assistance with products by calling appropriate Masters listed in the Directory. As a Master, your name and telephone number will be published in the Masters Directory, and users will call on you for limited help from time to time. Please check, below, any additional activities you might do:

☐ Field-test new versions of your product at your work site.

☐ Provide feedback on the product when needed by its DEC product manager.

☐ Act as a reference for the product at the request of Digital Sales or Marketing people.

Mail to: **Dena Shelton, L&T SIG Masters Coordinator, Cullinet Software, Inc., 2860 Zanker Road, Suite 206, San Jose, CA 95134.**

[1] Ada is a trademark of the DoD

Languages & Tools SIG

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Company: _____

Address: _____

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_____ **Phone:** ( ) _____

Network Address: _____ **Date:** _____

The Languages & Tools SIG is principally concerned with the DEC and public domain software products listed below. If your request directly involves one of these products, please check which one (if you have more than one request, please use a separate form for each):

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☐ Document	☐ Dibol	☐ SCA	☐ TECO	☐ RPG	☐ Cobol Generator
☐ VAX Notes	☐ Emacs	☐ PCA	☐ PL/I	☐ Scan	☐ Software Project Mgr

If your request or suggestion doesn't relate to one of the products listed above, check which one of the following Language & Tools SIG topics it concerns:

☐ Newsletter	☐ Symposium Sessions	☐ Pre-Symposium Seminars
☐ Masters Program	☐ Working Group Activities	☐ Session Notes
☐ Information Folder	☐ SIG Tape	☐ DECUS Store Item
☐ Other L&T SIG topic: _____		

Wish List Request—brief description: _____

_____

_____

_____

Complete description—please explain your request thoroughly; don't assume we know details of other products or services; give examples. _____

_____

_____

_____

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_____

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_____

Mail to: **Shava Nerad, L&T Wishlist Coordinator, MIT, 77 Mass Ave. W91-219A, Cambridge, MA 02139**; (617)253-7438

[1]Ada is a trademark of the DoD

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 Hess
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:** _____

Place
Stamp
Here

Vickie Hess
NETWords Editor
2510 Limestone Ln.
Garland, Tx. 75040

Fold Here

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

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 No. _____ No.

Title:_____

Message:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____

Address: _____

_____

Phone: (_____) _____ _____

Signature: _____ **Date**_____

SEPTEMBER, 1987

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._____	9._____	17._____	25._____
2._____	10._____	18._____	26._____
3._____	11._____	19._____	27._____
4._____	12._____	20._____	28._____
5._____	13._____	21._____	29._____
6._____	14._____	22._____	30._____
7._____	15._____	23._____	31._____
8._____	16._____	24._____	32._____

Please add the following to the wish list:

_____

_____

_____

_____

Comments:

Name:_____

Company:_____

Address:_____

_____

_____

Work
Phone:_____

Home
Phone:_____

Return Ballot to:

Lynn Jarrett
DECUS PC SIG Rainbow Working Group Chair
Union-Tribune Pub. Co.
P.O. Box 191
San Diego, CA 92112

RSTS Newsletter Reader Survey

In order to serve you better, the newsletter editor solicits the following information:

I would to see a newsletter article on _____

I am interested in a Symposium session on _____

I am willing to write an article on _____

I/my company have _____ machines running RSTS version _____

I attend the DECUS Symposia: __ Always __ Sometimes __ Never

Do you/your company use DECmail-11? _____

What other operating systems do you use MAIL with? _____

Do you/your company use DECNET/E? _____

What other operating systems do you use DECNET with? _____

What other layered products do you use? _____

_____

_____

Would you be willing to serve as an 'expert' on one of the above products? _____ If so, which one(s)? _____

If so, please give contact information:

Name: _____

Address: _____

_____

_____

_____

Phone: (_____) _____-_____ Ext. _____

Other comments: _____

_____

_____

_____

fold here

Terence M. Kennedy
St. Peter's College
Dep't. of Computer Science
2641 Kennedy Blvd.
Jersey City, N.J. 07306

---

fold here

RT-11 WISH LIST SURVEY

Name (optional) _____

Address (optional) _____

_____

_____

DECUS Number (optional) ----------

1.1	___	3.1	___	3.7u	___	3.13a	___	5.1b	___
1.2	___	3.2a	___	3.7v	___	3.13b	___	5.2a	___
1.3	___	3.2b	___	3.7w	___	3.13c	___	5.2b	___
1.4	___	3.2c	___	3.7x	___	3.13d	___	6.1	___
1.5	___	3.2d	___	3.7y	___	3.14	___	6.2a	___
1.6	___	3.2e	___	3.7z	___	3.15	___	6.2b	___
1.7a	___	3.3a	___	3.7aa	___	3.16	___	6.2c	___
1.7b	___	3.3b	___	3.7bb	___	3.17a	___	6.2d	___
1.8	___	3.3c	___	3.7cc	___	3.17b	___	6.3	___
1.9a	___	3.3d	___	3.7dd	___	3.17c	___	6.4a	___
1.9b	___	3.4a	___	3.7ee	___	3.17d	___	6.4b	___
1.9c	___	3.4b	___	3.8a	___	3.17e	___	6.4c	___
1.9d	___	3.4c	___	3.8b	___	3.17f	___	6.4d	___
1.10	___	3.5a	___	3.8c	___	3.18	___	6.5	___
1.11	___	3.5b	___	3.9a	___	3.19a	___	6.6a	___
1.12	___	3.6a	___	3.9b	___	3.19b	___	6.6b	___
1.13	___	3.6b	___	3.9c	___	3.19c	___	6.6c	___
1.14	___	3.6c	___	3.9d	___	4.1	___	6.6d	___
2.1	___	3.6d	___	3.9e	___	4.2a	___	6.7	___
2.2	___	3.6e	___	3.9f	___	4.2b	___	6.8a	___
2.3	___	3.6f	___	3.9g	___	4.3	___	6.8b	___
2.4	___	3.6g	___	3.9h	___	4.4a	___	6.8c	___
2.5	___	3.7a	___	3.9i	___	4.4b	___	6.8d	___
2.6	___	3.7b	___	3.9j	___	4.5a	___	6.8e	___
2.7	___	3.7c	___	3.9k	___	4.5b	___	7.	___
2.8	___	3.7d	___	3.10a	___	4.6	___	8.	___
2.9	___	3.7e	___	3.10b	___	4.7a	___	9.1	___
2.10	___	3.7f	___	3.10c	___	4.7b	___	9.2a	___
2.11	___	3.7g	___	3.10d	___	4.7c	___	9.2b	___
2.12	___	3.7h	___	3.10e	___	4.7d	___	9.3a	___
2.13	___	3.7i	___	3.10f	___	4.7e	___	9.3b	___
2.14	___	3.7j	___	3.10g	___	4.7f	___	10.1	___
2.15	___	3.7k	___	3.10h	___	4.7g	___	10.2	___
2.16	___	3.7l	___	3.10i	___	4.7h	___	10.3	___
2.17	___	3.7m	___	3.10j	___	4.7i	___		
2.18	___	3.7n	___	3.10k	___	4.7j	___		
2.19	___	3.7o	___	3.10l	___	4.7k	___		
2.20	___	3.7p	___	3.10m	___	4.7l	___		
2.21	___	3.7q	___	3.10n	___	4.7m	___		
2.22	___	3.7r	___	3.11a	___	4.7n	___		
2.23	___	3.7s	___	3.11b	___	4.7o	___		
2.24	___	3.7t	___	3.12	___	5.1a	___		

Send Responses to: RT-11 Wish List Survey
Multiware, Inc.
2121-B Second St. Suite 107
Davis, CA 95616

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.

PAGESWAPPER - September 1987 - Volume 9 Number 2
INPUT/OUTPUT Submission Form

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)

PAGESWAPPER - September 1987 - Volume 9 Number 2
System Improvement Request Submission Form

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 Systems SIG Fall 1987 SIR Ballot

DECUS membership number _____ (six digits)

Our site uses the following VAX cpus (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 I,II ____ MicroVAX 2000, VAXstation 2000 ____

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 11-6008
505 King Avenue
Columbus, OH 43201-2693
USA

To be counted, your ballot must be received by October 30.

PAGESWAPPER - September 1987 - Volume 9 Number 2
VAX Systems SIG Fall 1987 SIR Ballot

Tear out or photocopy reverse to vote on SIRs

Mark D. Oakley
Battelle Columbus Division
Room 11-6008
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Columbus, Ohio 43201-2693
USA

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DECUS	PRO	VMS
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IAS (et. al)	Rainbow	WPS-PLUS

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