DECUS U.S. CHAPTER SIGs NEWSLETTERS

DATATRIEVE/4GL SIG ..... DTR

OFFICE AUTOMATION SIG ..... OA

PERSONAL COMPUTER SIG ..... PC

ARTIFICIAL INTELLIGENCE SIG ..... AI

BUSINESS APPLICATIONS SIG ..... BA

DAARC SIG ..... DAR

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The Wombat

EXAMINER and 4GL Dispatch

"Increases the Circulation of Anyone in America" Volume 9 Number 6

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

Once again the DECUS Symposium broke all the records. At the 1987 Fall Symposium in Anaheim, there were over 2000 attendees at the pre-symposium seminars and over 7100 symposium attendees!

Sessions were well presented and attended; the weather was good; the food was good; and DEXPO was bigger than ever.

The special happening for the DTR/4GL SIG were

- For the first time, there were more presentations on 4GL's (29) than on DATATRIEVE (28).
- At Wombat Magic, Donald E. Stern, Jr. was presented with a DATATRIEVE Greybeards Award for his service and contribution to the SIG. Congratulations, Don!
- The 10th Birthday Party for DATATRIEVE was well attended and received. On hand to cut the cake (a square cake with a chocolate wombat on top in the shape of the well known wombat magnet) was Jim Starkey, the original developer of DATATRIEVE and Greybeard(5-82). Assisting in the cake cutting were current DATATRIEVE-11 developer Carl Fisher, VAX-DTR developer Donna Brown and VAX-DTR development manager (Greybeard(10-86) and former Counterpart) Andy Schneider. Other old-timers in attendance were Ann Duncan, former development manager and Greybeard(12-82); Dave Nordby, co-founder of the SIG and Greybeard(5-82); Jim McIlvaine, co-founder of the SIG; and Disk Azzi, Greybeard(10-83). The Wombat made an appearance and sang Happy Birthday to DATATRIEVE in a high, squeaky voice (aided by several beers for courage and a couple of gulps of Helium from the party balloons).
- At the SIG Steering Committee Meeting on December 11th, Donald E. Stern, Jr. was unanimously elected to a term as DTR/4GL SIG Chair. Again, congratulations, Don. He will begin his two year term mid-week at the 1988 Spring Symposium.
- Several new working groups were formed. These include a RALLY Working Group, an Oracle Working Group, and a FOCUS Working Group. The Powerhouse and Smartstar Working Groups meet and re-organized.

One of the most important functions of the SIG Chair is to recruit volunteers to work on the SIG Steering Committee. I am happy to report a most successful meeting from the recruiting standpoint. Joining the DTR/4GL SIG Steering Committee are: Janet G. Banks, Assistant Symposium Representative; Herbert G. Reines and Alan Winston, Associate Newsletter Editors; Harry Miller, Assistant Volunteer Coordinator; Bernadette Reynolds, Session Note Editor; Steven C. Fredrickson, Rally Working Group Chair; David Nagurney, Powerhouse Working Group Chair; Thomas Colati, Smartstar Working Group Chair; Eric S. Fanwick, Oracle Working Group Chair; Les Hulse, FOCUS Working Group Chair. Addresses and phone number for these new leaders are found in the SIG Steering Committee Lists in the back of the newsletter.

Creating Multiple Mail Messages Within A FOR Loop

Chris Wool, E.I. duPont, Wilmington, DE

I have a situation where I am processing a group of records using a FOR loop. Within the FOR loop, I can do one of several things, depending on a CHOICE statement. Two of the choices include creating a MAIL message to be sent via a batch job. An outline of the code is as follows:

```
FOR <rse> BEGIN
   .
   .
   .
   CHOICE
      .
      .
      .
      FUNCTION EQ j BEGIN
         .
         .
         .
         PRINT <MAIL message information> ON MAIL_FILE
         .
         .
         .
         END
      .
      .
      .
      FUNCTION EQ k BEGIN
         .
         .
         .
         PRINT <MAIL message information> ON MAIL_FILE
         .
         .
         .
         END
      .
      .
      .
      END_CHOICE
   .
   .
   .
   END
```

I would like to be able to send the MAIL messages created in this code after I exit the FOR loop. Unfortunately, each PRINT statement creates another version of MAIL_FILE, which is not closed until the FOR loop is completed. This can cause my open file limit to be exceeded if I am processing a large number of records. It can also cause problems if I have a version limit on the files in my directory. In addition, it is difficult to submit the file(s), as I do not know how many, if any, were created.

Changing the "PRINT <items> ON <file>" to "ON <file> PRINT <list>" does not help, because the two PRINT statements are within different sections of the CHOICE statement.

To solve this problem, I created a domain called MAIL. Each record in the domain consists of one 80 character field (called MAIL_TEXT). I create a sequential data file for the domain and READY the domain before I enter the FOR loop. I changed the PRINT statements to STORE statements. Now I can submit the file on exiting the FOR loop, since there will be one and only one file, no matter how many MAIL messages are generated. I will never exceed my open file limit or my file version limit. The code becomes:

```
DEFINE FILE FOR MAIL
READY MAIL WRITE
FOR <rse> BEGIN
   .
   .
   .
   CHOICE
      .
      .
      .
      FUNCTION EQ j BEGIN
         .
         .
         .
         STORE MAIL USING MAIL_TEXT = <MAIL message information>
            (Note - There will be several STORE statements)
         .
         .
         .
         END
      .
      .
      .
      FUNCTION EQ k BEGIN
         .
         .
         .
         STORE MAIL USING MAIL_TEXT = <MAIL message information>
            (Note - There will be several STORE statements)
         .
         .
         .
         END
      .
      .
      .
      END_CHOICE
   .
   .
   .
   END
FINISH MAIL
FN$DCL('SUBMIT/DELETE MAIL_FILE')
```

Wombat Wizard

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

Dear Wombat Wizard:

I would like to develop an input routine in a high-level language which allows input of DATE values. I cannot find any detailed information on exactly how Datatrieve stores data information in an 8-byte field. What information is stored where in all those bits?

Signed,
Looking for a Date

Dear Looking:

Datatrieve is actually a very standard software environment. Just as there are no Datatrieve-only files (DTR uses standard RMS, Rdb, or DBMS for all it's data storage), there is no Datatrieve-specific data type. The Datatrieve DATE data type is exactly the same as the VAX Date data type. In fact, the Datatrieve DATE datatype is the same in both the VAX and the PDP-11 versions of DTR!

A VAX Date is measured in units called "klunks." Each klunk is 10 nanoseconds long (0.01 microseconds), so there are 100,000,000 or 10**8 klunks in a second. The VAX date is a number of klunks since a base time, and is stored in the VAX as a quadword (four 16-bit words, or 64 bits). The VAX base time (the "zero" time) is the same as the base time for Smithsonian Astrophysical time, midnight on November 17, 1858. The VAX Date for that time is a quadword with a value of zero. For each second since that time, the quadword is incremented by 100,000,000, and each day is represented by an additional number of klunks that can be computed by the formula

```
klunks/day =   24 hours/day * 60 minutes/hour * 60 seconds/minute *
             100,000,000 klunks/minute = 8,640,000,000,000
```

By doing basic arithmetic, one can find the difference between two dates in klunks and then divide by the number of klunks per day to find the number of days between two dates.

To convince you that Datatrieve dates are indeed in this format, let's do a little DTR magic.

```
DTR> declare date-1 usage date.
DTR> date-1 = "27-OCT-1954"
DTR> print date-1

   DATE
    1

27-Oct-1954

DTR> ! We can print a date using a numeric format...
DTR> print date-1 using 9(20)

        DATE
         1

00030276288000000000

DTR> ! We can also find the number of days between two dates
```

```
DTR> print date-1 - "17-NOV-1858"
                  35042

DTR> ! Then multiply that number of days by the number of klunks in a day...
DTR> print 35042*24*60*60*10000000
   30276288000000000

DTR> ! ...and check to make sure that the result is the same as the internal
DTR> ! representation of the date...
DTR> if 35042*24*60*60*10000000 eq date-1 print "They're the same!"
They're the same!

DTR> ! We can also reverse the process and use a quadword as if it were
DTR> ! a date...
DTR> declare quad-date usage quad.
DTR> quad-date = date-1
DTR> print quad-date

        QUAD
        DATE

    30276288000000000

DTR> print quad-date using w(9)bnn-dd-yy, date-1

       QUAD            DATE
       DATE             1

Wednesday 10-27-54  27-Oct-1954
```

You can see how easy it is to manipulate dates in DTR. DTR numeric operations on date data type variables and fields is done in days. Thus, DATE-1 +1 is 28-Oct-1954. But on quadword variables the numeric operations are done in klunks. For example:

```
DTR> print fn$time(quad-date + 10000000), fn$time(date-1 + 1)

   Time         Time

00:00:01.00 00:00:00.00
```

In this example, 10*8 klunks were added to a quadword, yielding a date (plus time) one hour later. However, in the expression on the right the arithmetic is done in days because DATE-1 is a date, so the time printed out is midnight on 28-Oct-1954 (one day after the value of DATE-1).

In your question, you indicated that you want to develop a high-level language input routine for dates. There are two questions that this brings to mind. The first is "What language are you using," and the second question is "Why?" Not to be impertinent, but you may be better off doing your date input in Datatrieve. DTR understands many different date formats and does a good job of date input. For example, you can define the DTR$DATE_INPUT logical name to change the default date input format from Month-Day-Year to Year-Month-Day or to any other order you might desire. Datatrieve also does a very good job of converting arbitrary text strings to dates, including text strings that are all numbers. Here are some examples:

```
DTR> print "10/27/54" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "102754" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "10-27-54" using w(9)bmmmbdd,byyyy
```

```
Wednesday Oct 27, 1954
DTR> print "oct-27-54" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "27-oct-54" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "oct 27, 1954" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "october 27, 1954" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "october 27, 54" using w(9)bmmmbdd,byyyy
Wednesday Oct 27, 1954
DTR> print "today" using w(9)bmmmbdd,byyyy
Sunday Dec 20, 1987
```

Now, assuming that you do indeed want to input dates using third-generation language, you have two equally good options for passing that data to DTR. The first is to pass the date as a quadword in the klunk format used by all VAX dates. Or, you can pass the date as a text string and let DTR convert it into date format at input time. If you pass the date as a quadword, you can use the system services $NUMTIM and $BINTIM to manipulate the data before you pass it to DTR.

By the way, the record definition for a date in Datatrieve is directly usable in a COBOL program. The data read by COBOL is in seconds since the base date. For example:

```
DTR> DEFINE RECORD ONE_DATE USING
DFN> 01 DATA.
DFN>    03 A_DATE USAGE DATE.
DFN>    03 A_DESCRIPTION PIC X(20).
DFN> ;
[Record is 28 bytes long.]
DTR> DEFINE DOMAIN SOME_DATES USING ONE_DATE ON DATES.DAT;
DTR> DEFINE FILE FOR SOME_DATES
DTR> CLOSE
```

You can then use the following COBOL record definition to read the data in the file DATES.DAT:

```
.
.
.
```

FILE SECTION. FD SOME_DATES ACCESS_MODE IS SEQUENTIAL. 01 ONE_DATE COPY ONE_DATE FROM DICTIONARY. . . . In this case, COBOL will extract ONE_DATE from the CDD and define the date as PIC 9(11)V(9), which corresponds to the number of seconds being to the left of the decimal point and the fraction of seconds to the right.

One note about VAX dates. It turns out that the VAX system clock is not nearly as precise as the date format. That is, the VAX clock will only record times as close together as 0.01 seconds, so successive times stored in the VAX will have mostly zeros in their lower-order bits. In fact, there are enough bits down there to be quite useful, and more than one Datatrieve application has used those bits for storing information.

The Wombat Wizard

Dear WW:

First, I would like to thank everyone who sends in articles and questions. I have learned so much from them!

I am using the menu that was introduced in the December 1986 issue, which uses logicals to connect to submenus and procedures. My question is, "How do you get out of DTR without having the user type in EXIT?" I would like them to be able to choose an option from a menu to return to DCL. Is this possible.

Signed,

Lazy Exiter

Dear Lazy:

Depending on how you invoked the procedure, there are two solutions to your problem.

If you invoke a DTR procedure directly from the DCL command line, the DTR ABORT statement will return you to DCL. For example, referring to the example on pages DTR-18 and DTR-19 of the December 1986 Wombat Examiner, then you can simply invoke that procedure as follows.

In your LOGIN.COM or the system-wide synonym definition, do this:

$ DTR:==$DTR32 (or whatever the correct filename for DTR is on your system)

Then, invoke DTR and run the procedure like this:

$ DTR EXECUTE MAIN_MENU

That will cause DTR to exit to DCL upon encountering an ABORT statement.

The other solution will work anywhere in DTR - inside a BEGIN-END block, inside of nested procedures - anywhere! It's simple, too.

Create a user defined function that calls SYS$EXIT. This function is defined in the VMS System Services Manual. It returns control directly to the command interpreter (DCL), so calling SYS$EXIT (say, by using a new function called FN$EXIT) you can exit from anywhere in DTR that a user defined function is allowed.

Your friend,
WW

Dear WW:

While using Datatrieve for some weekly computer usage reports I discovered some anomalies in the way that Datatrieve handles dates. At first I thought I was using the BETWEEN qualifier incorrectly, but switching to a LT/GT compound statement did not help, so, I ran a little test.

```
DTR> DECLARE DATE_1 USAGE IS DATE EDIT_STRING IS DD-MMM-YYYY.
DTR> DECLARE DATE_2 USAGE IS DATE EDIT_STRING IS DD-MMM-YYYY.
DTR> DECLARE DATE_3 USAGE IS DATE EDIT_STRING IS DD-MMM-YYYY.
DTR> DATE1 = "16-Nov-1987 00:00"
DTR> DATE1 = "16-Nov-1987 12:00"
DTR> DATE1 = "16-Nov-1987 23:59"
DTR> IF DATE2 BT DATE1 AND DATE3 THEN PRINT "2 is between 1 and 3"
2 is between 1 and 3

DTR> IF DATE1 LT DATE2 THEN PRINT "1 is less than 2"
DTR> IF DATE1 EQ DATE2 AND DATE2 EQ DATE3 THEN PRINT "All dates equal"
All dates equal
```

As you can see, Datatrieve ignores the time portion entirely and looks strictly at the date, so you would think. But when using a

```
PRINT CURRENT REDUCED TO END_DATE
```

where END_DATE is part of a record:

```
01 CHARGES_REC.
       03 END_DATE USAGE IS DATE EDIT_STRING IS DD-MMM-YYYY.
```

Datatrieve insists on printing every record in the collection. If I have 20 records for 16-Nov-1987, all of them with different times, Datatrieve will list all 20 records, instead of grouping them under one date. This implies that Datatrieve sees the dates as being unique, therefore, unequal.

I assume that the records have different times because the probability of 20 people logging in at the same time (to the thousandth of a second) is not very high.

The problem that this causes is that if you wish to use the BETWEEN qualifier to look at a period of records you must specify the day AFTER your actual ending date to capture all of the records you wish to examine. How do I make Datatrieve give me the records I want by specifying the dates that I want? Also, is there any way to display the time portion of each date field?

Signed,

Dang Dates

Dear Dang:

Actually, things are not nearly as hopeless as you would think. The reason that DATE1, DATE2, and DATE3 all appear to be the same is that you gave them all the same date! Datatrieve date input, as wonderful as it is, does not know anything about time. Therefore, the three variables you declared will all have the same value. If you want to input date and time values, use the function FN$DATE and pass it a valid VMS Date-Time string. Be warned: the function wants the date/time in EXACTLY the correct VMS format. You must have all letters in upper case, and each punctuation mark exactly correct. Your example would then work like this:

```
DTR> declare date1 usage is date edit-string is dd-mmm-yyyy.
DTR> declare date2 usage is date edit-string is dd-mmm-yyyy.
DTR> declare date3 usage is date edit-string is dd-mmm-yyyy.
DTR> date1 = fn$date("16-NOV-1987 00:00")
DTR> date2 = fn$date("16-NOV-1987 12:00")
DTR> date3 = fn$date("16-NOV-1987 23:59")
DTR> if date2 bt date1 and date3 then print "2 is between 1 and 3"
2 is between 1 and 3

DTR> if date1 lt date2 then print "1 is less than 2"
1 is less than 2

DTR> if date1 eq date2 then print "True"
DTR> if date2 lt date3 then print "2 is less than 3"
2 is less than 3

DTR> if date1 eq date2 and date2 eq date3 then print "All dates equal"
DTR> !Voila
```

So, that explains your problem with dates variables. Now we need a method to get exactly the dates you want. I believe that BETWEEN will provide you with the records you want. Note that BETWEEN is an inclusive qualifier - it is equivalent to GE and LE, not GT and LT.

Finally, you ask how to get the time portion of the date fields. There are several ways:

```
DTR> print date1 using x(23)

         DATE1

16-Nov-1987 00:00:20.34

DTR> print fn$time(date1)

   Time

00:00:20.34

DTR> declare my_time_format computed by
[Looking for value expression]
CON>   fn$hour(date2)|||"Hours"|||fn$minute(date2)||| -
CON>   "Minutes"|||fn$second(date2)|||"Seconds".
DTR> print my_time-format

                          MY
                        TIME
                      FORMAT

12 Hours 0 Minutes 43 Seconds
```

Happy dating!
The Wiz

Developing Applications in DATATRIEVE: Browsing under Program Control

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

One of DATATRIEVE's strongest features is the ability to browse through data interactively. With alternate use of FIND with an RSE (record selection expression) and PRINT, one can rather quickly narrow in on one or a few records within a domain. The ability to discriminate records requires that the user observe the records collected in each FIND, and then form a more restrictive record selection expression. The form of this more restrictive record selection expression is not pre-specified, and may be any one or a combination of the allowable Boolean expressions in DATATRIEVE. It may take the interactive user one or many attempts to isolate the record or records of interests.

Under program control (as within a DATATRIEVE procedure that can be run within a menu system), the form of record selection expressions must be limited to a a few possibilities. One could certainly not afford the procedure compile time if one attempted to program all possible record selection expression or combinations thereof. In addition, most, if not all, procedures will be coded with selection and display of candidate records within a BEGIN-END block so that multiple attempts may be make. Of course, the use of a BEGIN-END block precludes the use of the FIND statement and collections.

So how can one browse through a data base under program control without using a FIND statement and making one or more collections? There are two possible ways to accomplish this: first, candidate records (or part of candidate records) could be written into a temporary domain; and second, a key or pointer to candidate records could be created within memory in a temporary global variable. Transferring candidate records to a temporary domain is unlikely to be a big performance win; the overhead of initializing a new file or erasing the previous version and then copying records (or part of records) to a temporary file will take a significant amount of time. Such a slow method which uses disk space will not be considered further. Creating memory resident keys or pointers using global variables is fast, but tricky. Because there are no arrays in DATATRIEVE (Note: There really are arrays in the plot language of DATATRIEVE, but these arrays can not be effectively used at the DATATRIEVE command level.), the DATATRIEVE programmer will have to create and manage such pointers in a large global variable.

To illustrate how such a global variable might be used as a pointer, consider the following domain and record definitions which are part of a (fictitious) library data base system:

```
define domain SUBJECTS using SUBJECTS-RECORD on SUBJECTS.DAT;
define record SUBJECTS-RECORD using optimize
01 SUBJECTS-REC.
   03 SUBJECT PIC X(10).            ! primary key
   03 SUBJECT-DESCRIPTION PIC X(40).
;
```

Now, a simplified procedure to browse this data would look like:

```
define procedure BROWSE
ready SUBJECTS shared read
declare buff pic x(200).
declare counter usage is integer.
declare cnt usage is integer.
declare selection usage is integer valid if selection between 0 and counter.
declare answer pic x.
declare tsubject pic x(10).
declare subject-key pic x(10).
declare tdescription pic x(40).
answer = "N" while (answer ne "Y")
 begin
  print "<ESC>[H<ESC>[J"                    ! clear the screen
  print "Browsing the SUBJECT Data Base",skip,
               "Enter only one search criteria."
  tsubject = *."first part of subject code or a blank"
  tdescription =*."phrase within the description or blank"
  buff = ""
  counter = 0
  if (tsubject ne " " and tdescription eq " ") then begin
    for SUBJECTS with SUBJECT starting with tsubject||"" begin
      counter = counter + 1
      buff = fn$str_extract(buff,1,10*counter)|SUBJECT            ! <---
      end
    end
  if (tsubject eq " " and tdescription ne " ") then begin
    for SUBJECTS with SUBJECT-DESCRIPTION cont tdescription||"" begin
      counter = counter + 1
      buff = fn$str_extract(buff,1,10*counter)|SUBJECT            ! <---
      end
    end
!
```

```
! For simplicity, I have only considered the case when we "find" several
! records.  In actual practice, one must consider the cases when one "finds"
! none, 1, between 1 and 20 (the number which can easily be displayed on a
! CRT screen), and more than 20 (too many to display easily on a screen).
!
  cnt = 0
  repeat counter begin
    cnt = cnt + 1
    for SUBJECTS with subject = fn$str_extract(buff,10*cnt-9,10) begin
      print cnt("Selection") using zz9, SUBJECT, SUBJECT-DESCRIPTION
      end
    end
  print skip
  selection = *."selection or 0 to try again"
  if (selection eq 0) then begin
    answer = "N"
    end else begin
    print subject, subject-description of subjects with
      subject = fn$str_extract(buff,10*selection-9,10)
    answer = fn$upcase(*,'"Y" if this is the correct choice')
    end
  end
!
subject-key = fn$str_extract(buff,10*selection-9,10)
!
! subject-key now contains the primary key of the record which
! has been selected by the "browsing" process and it can easily
! be modified, deleted, or otherwise manipulated
. . .
. . .
end-procedure
```

Well, the procedure BROWSE looks like it will do just what we want. We can search on a "STARTING WITH" on the subject code or a "CONTAINING" in the description. And we can do it over and over again.

The problem is that NONE OF THIS WORKS! The line of code (which was marked with "! <— ")

```
buff = fn$str_extract(buff,1,10*counter) | SUBJECT
```

doesn't work the way we think it does. The default length of a string is 30 characters; if counter is greater than 3, buff is not computed correctly. So it is not possible to construct keys for more than three candidate records. That is, the string extract function has an implied edit string of the form

```
format fn$str_extract(buff,1,10*counter) using x(n)
```

where n is 30 or less. One can not overcome this limitation since a format statement like

```
format fn$str_extract(buff,1,10*counter) using x(10*counter)
```

is illegal!

If the fields SUBJECT is always exactly 10 characters (never any trailing blanks), then we can change the code to

```
buff = buff || SUBJECT
```

However, this works only if the key field never has any trailing blanks.

The only way around this impasse is to create a new DATATRIEVE function which will solve this problem. There is a string function in the VMS library which will do exactly what is needed. This function is STR$REPLACE. Its arguments are the output string, the input string, the starting position in the input string, the ending position in the input string, and the replacement string. Check your VMS documentation, in the VAX/VMS Run-Time Library Routines Reference Manual (continued), Volume 8C, page RTL-822. The code which must be added to the DATATRIEVE function definition macro library file DTR$LIBRARY:DTRFND.MAR is

```
;
; FN$STR_REPLACE- String replace
;
$DTR$FUN_DEF FN$STR_REPLACE, STR$REPLACE, 5
    $DTR$FUN_OUT_ARG  TYPE = FUN$K_STATUS
    $DTR$FUN_IN_ARG  TYPE = FUN$K_TEXT, OUT_PUT = TRUE
    $DTR$FUN_IN_ARG  TYPE = FUN$K_DESC, DTYPE = DSC$K_DTYPE_T, ORDER = 1
    $DTR$FUN_IN_ARG  TYPE = FUN$K_REF,  DTYPE = DSC$K_DTYPE_L, ORDER = 2
    $DTR$FUN_IN_ARG  TYPE = FUN$K_REF,  DTYPE = DSC$K_DTYPE_L, ORDER = 3
    $DTR$FUN_IN_ARG  TYPE = FUN$K_DESC, DTYPE = DSC$K_DTYPE_T, ORDER = 4
$DTR$FUN_END_DEF
```

This new function is added to DATATRIEVE by setting default to DTR$LIBRARY, editing changes to DTRFND.MAR, assembling DTRFND.MAR, adding the new version of DTRFND.OBJ to the DTRFUN library, and re-linking the shareable DATATRIEVE image with the command file DTRBLD.COM as shown below.

```
$set default dtr$library
$!
$!    edit changes to dtrfnd.mar shown above
$!
$macro dtrfnd
$library/replace dtrfun dtrfnd
$@dtrbld.com
```

The procedure BROWSE is now changed in two places where

```
buff = fn$str_extract(buff,1,10*counter)|SUBJECT
```

is replaced by

```
buff = fn$str_replace(buff,10*counter-9,10*counter,SUBJECT)
```

In a real application (rather than a simplified example shown here), the size of the in-memory global variable, BUFF, can be extended to a much larger size if needed. Also, it is highly advisable to make sure that one does not try to store keys in the buffer past the end of the variable which was specified in the DECLARE.

The procedure BROWSE illustrates the principle of browsing, but the full impact of such a technique can be realized only in multi-level browsing. Suppose that books in our (fictitious) library are "keyed" by SUBJECT, AUTHOR, and TITLE. A partial record definition might look like,

```
01 BOOKS-REC.
   03 SUBJECT   PIC X(10).
   03 AUTHOR    PIC X(10).
   03 BOOK-CODE PIC X(10).
   03 TITLE     PIC X(60).
   . . .
;
```

```
01 AUTHORS-REC.
   03 AUTHOR-CODE   PIC X(10).
   03 AUTHORS-NAME  PIC X(35).
   . . .
;
```

and would include the SUBJECTS record from the example above. There might typically be 100,000 records in the BOOKS domain; 5,000 records in the AUTHORS domain; and 250 records in the SUBJECTS domain. Clearly, one does not want to browse initially in the BOOKS domain; there are just too many records and a careless mistake which is equivalent to "FIND BOOKS WITH TITLE CONT 'E'" would seriously discourage browsing. A better strategy would be to browse in either the SUBJECTS or AUTHORS domains until one had a SUBJECT code or AUTHOR code to restrict the browsing in the BOOKS domain.

Procedures to browse through multi-level, complex data bases are certainly not trivial and may be several hundred lines of DATATRIEVE statements. However, I hope that you can see the great utility that can be accomplished by browsing under program control.

User Defined Function (UDF) to Translate VMS Status Values

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

I have been processing information from the System Accounting file with Datatrieve. One of the fields has the final status (longword) for each process. A longword doesn't mean much to me: I'd rather see the system message corresponding to that status, so I added the following function to Datatrieve (with a few helpful hints from the Wombat Wizard) which makes the SYS$GETMSG (LIB$SYS_GETMSG) RTL call available to Datatrieve.

```
; FN$GETMSG - Get System
Message
                                                        ; B. Z. Lederman
;
; Output is string
; Input is longword message-id (condition), longword (unsigned) flags

$DTR$FUN_DEF FN$GETMSG, LIB$SYS_GETMSG, 5
    $DTR$FUN_OUT_ARG  TYPE = FUN$K_STATUS
    $DTR$FUN_EDIT_STRING ^\T(80)\
    $DTR_FUN_HEADER  HDR = <"Message"/"Text">
    $DTR$FUN_IN_ARG TYPE = FUN$K_VALUE, DTYPE = DSC$K_DTYPE_L, ORDER = 1
    $DTR$FUN_IN_ARG TYPE = FUN$K_NULL
    $DTR$FUN_IN_ARG TYPE = FUN$K_TEXT, OUT_PUT = TRUE
    $DTR$FUN_IN_ARG TYPE = FUN$K_VALUE, DTYPE = DSC$K_DTYPE_LU, ORDER = 2
    $DTR$FUN_IN_ARG TYPE = FUN$K_NULL
$DTR$FUN_END_DEF
```

It is called with two arguments: the first is the longword holding a status, the second is a flag which determines how the text is formatted: if it's zero, you get the entire message. I suggest looking at the system library manuals for a full description, but basically VMS messages are of the form

```
source-t-abbriev "lots of message text"
```

and with the flag you can determine if you get just the source, just the type, just the text, some combination of the above, etc.

By the way, if you (or the system manager) have defined a symbol for Datatrieve like this:

```
DTR :== $SYS$SYSTEM:DTR32
```

then you can get a translation of any numeric value into message text from DCL level by doing this:

```
$ DTR; PRINT FN$GETMSG(1,0)
```

DATATRIEVE Dates and Leap Years

James Fullerton, Institute of Logopedics, Wichita, KS

---

1. Introduction

In the October 1987 issue of the Wombat Examiner and 4GL Dispatch, Dr. Joe Gallagher briefly discussed leap years in his article on the DATE data type in DATATRIEVE [1]. Unfortunately, there is an error in the set of rules he gave for determinining whether any given year is a leap year. He noted that he was unable to find a complete set of rules in an encyclopedia, so this was an honest mistake.

2. Determining Leap Years

The correct rule should be given in any good astronomy text. I found it in [2]. The rule is that years evenly divisible by 4 are leap years, *except* for "century" years. A "century" year is any year which is evenly divisible by 100. Century years are leap years if they are evenly divisible by 400. This means that only every fourth "century" year is a leap year. (It is also improtant to note that "century" years are NOT the first years of new centuries. Rather, they are the LAST years of centuries. The year 2000 is the last year of the 20th century; 2001 is the first year of the 21st century.)

The rule means that 2000 is a leap year, while 2100, 2200, and 2300 are not. The next few leap "century" years are 2000, 2400, 2800, and 3200. Dr. Gallagher was suspicious that DTR-32 was incorrect in determinining 3200 to be a leap year. According to the examples in Dr. Gallagher's article, DTR-32 uses the correct leap year rule, specifically 3200 is a leap year. DATATRIEVE-11 users should be aware that DTR-11 *DOES NOT* correctly determine "century" leap years, with the single exception of 1900, which is probably handled as a special case. I have submitted an SPR on the problem. Until or unless this is fixed, DTR-11 users should not rely on DATATRIEVE-11 date conversions for astronomical, or other, databases which contain dates beyond 2/28/2100.

In one 400-year cycle of the modified Gregorian calendar, there are 97 * (3 * 365 + 366) + 3 * (3 * 365 + 365) = 146,097 days. So, the modified Gregorian rule yields a year of 365.2425 mean solar days. Thus, every 400 years, the modified Gregorian calendar gets ahead of the earth by just over 2h 53m 30s, or just over one day ahead every 3,320 years.

There are no 3,200-year or 25,600=year rules in the modified Gregorian calendar. On a time scale of the order of 10,000 years, one must correct for orbital variations of the (at least) two Milankovitch cycles. Beyond that, there are corrections for lunar gravity which slows the earth's rotation. There is also a large number of other effects — some cyclical, some random — which produce small variations on the length of the day and year.

Back to the rule... Using a combination of ADA® and the guarded command notation of Prof. Edsger Dijkstra, the rule can be stated as follows:

```
function leap (year : integer) return boolean is
  begin
    if ediv(year, 100) => leap := ediv(year, 400)
    || not ediv(year, 100) => leap := ediv(year, 4)
    fi
  end leap
```

where EDIV(A,B) is a function which determines if a is evenly divisible by B. EDIV can be simply written as:

```
function ediv (a, b : integer) return boolean is
  begin
    ediv := gcd(a, b) <> 1
  end ediv
```

Proof

Given integers a, b, with a >= b,

$$\gcd(a, b) \text{ is defined as } \max_{k} \left(\frac{a/k}{b/k}\right): a \bmod k = b \bmod k = 0,$$

where also k is an integer.

If b/k = 1 then a/k = entier(a/k) and gcd(a,b) = a/k. Hence, b divides a evenly.

If b/k <> 1 then a/k <> entier(a/k) and gcd(a,b) <> a/k. Hence, b does not divide a evenly.

Therefore, if b divides a evenly, gcd(a, b) > 1. If b does not divide a evenly, gcd(a, b) =1.

End of Proof

The Greatest Common Divisor (GCD) function can be written as:

```
function gcd (aa, bb : integer) return integer is
  begin
    a, b := aa, bb;
    do a > b => a := a - b
    || b > a => b := b - a
    od;
    gcd := b
  end gcd
```

which is probably most efficient if written in MACRO and optimized. Unless a / b >> 10, the subtractive method is probably faster than integer division and multiplication (e.g., gcd := a - (a / b) * b), since one can do several subtractions in the time it takes to do one division or multiplication operation.

3. References

[1] Gallagher, Joe. H., Developing Applications in DATATRIEVE: The DATE Data Type, DECUS SIGs Newsletters, Vol. 3, No. 2, October 1987, DTR-12 - DTR-19.

[2] Motz, Lloyd, and Duveen, Anneta, Essentials of Astronomy, Wadsworth Publishing Company, 1966, 83.

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OFFICE AUTOMATION

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FROM THE EDITOR...

This month finds us with a number of great 'how to' technical articles for ALL-IN-1, complete with scripts to implement them at your facility. We also have some more information about the OA Tape contest.

For those of you who are anxiously awaiting the SIR feedback and new listing so you can vote... hang on until next month. We will have all of the SIR information for you in March.

I would like to thank all of the OA SIG's new volunteers and steering committee members who volunteered for positions in Anaheim - WELCOME! With your help we can continue to offer Symposia attendees a high quality of sessions and services.

Regards,

Therese LeBlanc
OA Newsletter Editor

MULTIPLE READ FOR NEW MAIL MESSAGES

Trace G. Roth, OHM Materials Corp., Findlay, Ohio

I have written a small script to read all of the mail messages that are in the INBOX. This script will only read the unread mail messages. The valid options allowed by the script are to return to read the entire message, exit screen to go onto the next message, P to print the message just read, or A to answer the message just read. P and A options perform their respective functions then go on to read the next message in the INBOX.

This script is a script script so it must be called with the SCRIPT command as opposed to the DO command. The script file name is GETMAIL.SCP. GETMAIL was placed in the OA$SCP directory so ALL-IN-1 could find it properly.

I have added an option to the electronic messaging menu (form EMC in OA$LIB:OAFORM) so that this script can be called from that menu. The option I have chosen to add is RMN for Read Multiple New Mail. The name data for that option is SCRIPT GETMAIL. SCRIPT being the script command and GETMAIL being the name of the script file in OA$SCP.

I have included the script below in both commented and no comment form. I am sure the users will like this option instead of entering RN for each new mail message they need to read.

I hope that this script will help others as they implement this type of a procedure on their ALL-IN-1 system.

Script with Comments

```
! GETMAIL.SCP
! Written by Trace G. Roth - October 30, 1987
! Modified by TGR - November 25, 1987 to add print option
! Modified by TGR - November 30, 1987 to add answer option
!
! Always go to EM menu.
!
em{cr}
!
! Remind user of valid options.
!
.text 22,1,"Remember, you can use P RETURN to print or A RETURN to answer"
.prompt 23,1,"any message read. Press RETURN to continue."
.label read_next
!
!Check if mail message flags unread mail messges.
!
.if mail:3:2 eqs "" then .goto exit
!
!Read New Mail if there is unread messages.
!
rn{cr}
.label keep_reading
!
!Check to see if the current form is Electronic Messaging.
!If it is, read the next new mail message if there is one.
!If it is not, there is more of the message to be read.
!
```

```
.if oa$form_name eqs "EMC" then .goto read_next
!
!Get user input at end of message page.
!
.prompt 24,49,"or P to print this message."
!
!See if user input P to print.
!
.judge "P{cr}"
.process {advance}
.fx get #print_document=oa$curdoc
.fx parse_user oa$user
.fx get #print_listfile=Sparse_user_name:3 oa$curdoc_docnum
.fx do wpprint
.fx form emc
!
! See if user input A to answer.
!
.judge "A{cr}"
.process {advance}
.fx mail answer
.end_judge
!
!See if user input was carriage return.
!
.judge "{*}{cr}"
.process {cr}
.end_judge
!
! See if user input was exit screen
!
.judge "{*}{advance}
.process {advance}
.end_judge
!
! Goto Keep_reading if more of message to read and exit screen not input
!
.goto keep_reading
!
! Exit script.
!
.label exit
.text 23,1,"All of the Mail Messages have been read."
.exit
```

Here is the code of the script minus any comments.

```
em{cr}
.text 22,1,"Remember, you can use P RETURN to print or A RETURN to answer"
.prompt 23,1,"any message read. Press RETURN to contunue."
.label read_next
.if mail:3:2 eqs "" then .goto exit
rn{cr}
.label keep_reading
.if oa$form_name eqs "EMC" then .goto read_next
.Prompt 24,49," "
.judge "P{cr}"
```

```
.process {advance}
.fx get #print_document=oa$curdoc
.fx parse_user oa$user
.fx get #print_listfile=$parse_user_name:3 oa$curdoc_docnum
.fx do wpprint
.fx form emc
.end_judge
.judge "A{cr}"
.process {advance}
.fx mail answer
.end_judge
.judge "{*}{cr}"
.process {cr}
.end_judge
.judge "{*}{advance}"
.process {advance}
.end_judge
.goto keep_reading
.label exit
.text 23,1,"All of the Mail Messages have been read."
.exit
```

THREE HELPS FOR ALL-IN-1 TESTING

Roger E. Bruner, Foreign Mission Board

INTRODUCTION:

Tailoring ALL-IN-1 has become a way of life at the Baptist Foreign Mission Board in Richmond, Virginia. But tailoring also involves testing, and testing ALL-IN-1 creates some interesting needs and problems of its own.

1. TLIB (TEST LIBRARY)

We have a small test group which puts ALL-IN-1 modifications and enhancements through their paces and provides us with the necessary feedback to improve upon our work before it goes into production.

The members of the test group must be able to turn the DEVOAFORM test library on ahead of the OAFORM library or to turn it off entirely and access only OAFORM. Furthermore, they must be able to change the TXL search order when an enhancement involves the modification of an existing script.

The placing of form library names in the PROFIL records of our test group would only complicate the situation, so instead we have designed a TLIB screen which gives this group the ability to switch back and forth as needed. It is installed in MEMRES.

Named Data for TLIB:

```
==========================================================================

;;.TYPE;;

MENU/CHOICE=CHOICE/CLEAR/HARD='TESTLIB Menu'/GET=TXL_STAT,#TXL_STAT;
LIB_STAT,#LIB_STAT/PRE='.IF #TXL_STAT EQS "" THEN GET #TXL_STAT=
"NORMAL"\.IF #LIB_STAT EQS "" THEN GET #LIB_STAT="PRODUCTION"'
```

```
                        TEST LIBRARY MENU


      T       TEST LIBRARY On              Open Library:
      P       PRODUCTION LIBRARY On          TEST, with PRODUCTION second
      TXL1    Reverse Script Order
      TXL0    Normal Script Order          TXL Status:
      LL      List Libraries                 REVERSED

      Enter selection and press RETURN
```

```
;;T;;

GET #TLIB_CHOICE="T"\DO TLIB_FUNCTION

;;P;;

GET #TLIB_CHOICE="P"\DO TLIB_FUNCTION

;;TXL1;;

GET #TXL_STAT="REVERSED"\GET OA$TXL_SEARCH_LAST=1\DISPLAY
Script search order has been reversed for testing.

;;TXL0;;

GET #TXL_STAT="NORMAL"\GET OA$TXL_SEARCH_LAST=0'DISPLAY
Script search order has been restored to normal.

;;LL;;

CLEAR\OA$FBT_LIST_LIBTREE\.PROMPT 24,1,"Open libraries are indicated by
'—  .FLB open=1'. Press RETURN to continue."\CLEAR
```

==========

Note that the two fields, TXL_STAT and LIB_STAT, are 'display only'. The displayed values change whenever the test user switches to the opposite library.

Althrough the TXL search order is set automatically the the 'T' and 'P' options, 'TXL1' and 'TXL0' do allow the TXL search order to be set independently of the libnrary that is being accessed.

An effort was made to make the TLIB screen an overlay. However, ALL-IN-1 would not close the library which contained the screen being overlaid — the DUMP_CACHE just wouldn't do it! We would advise not wasting time trying.

The script, TLIB_FUNCTION, does the real work of the 'T' and 'P' options. However, these functions can be included in the Named Data for TLIB if you prefer.

==========

```
!   TLIB_FUNCTION.SCP                                    REB, 20-NOV-1987
!   Purpose: to perform functions related to TLIB screen

.label check

    .if #tlib_check eqs "T" then .goto test_on
    .if #tlib_check eqs "P" then .goto prod_on
    .goto error
```

```
.label test_on
    oa$flo_close_lib oa$lib:oaform
    dump_cache
    oa$flo_open_lib oa$devlib:devoaform
    oa$flo_open_lib oa$lib:oaform
    get oa$txl_search_last=1
    get #txl_stat="REVERSED"
    get #lib_stat="TEST, with PRODUCTION second"
    oa$msg_purge
    display -
The TEST library has been opened ahead of the PRODUCTION library.
    .goto exit_procedure
.label prod_on
    oa$flo_close_lib oa$devlib:devoaform
    dump_cache
    get oa$txl_search_last=0
    get #txl_stat="NORMAL"
    get #lib_stat="PRODUCTION"
    oa$msg_purge
    display -
The PRODUCTION library has been turned on and the TEST library off.
    .goto exit_procedure
.label error
! NOTE: should never reach this point . . .
    oa$msg_purge
    display No CHOICE has been made.
    .goto exit_procedure
.label exit_procedure
.exit
```

==========

2. *SETLIB*

Those people who actually do ALL-IN-1 programming at our site have an enhanced version of TLIB called SETLIB. SETLIB allows for the switching of additional libraries (including user-specified libraries). Especially useful are the 'Nx' options for doing a 'NEWLIB' (this function makes certain that the newly modified version of a screen is the one being accessed).

Excerpts from SETLIB Named Data:

==========

```
;;.TYPE;;
MENU/CHOICE=CHOICE/CLEAR/GET=TXL.OA$TXL_SEARCH_LAST
;;MY;;
OA$FLO_OPEN_LIB OA$LIB:MANAGER\DISPLAY Manager library turned on.
;;MN;;
OA$FLO_CLOSE_LIB OA$LIB:MANAGER\DISPLAY Manager library turned off.
;;NM;;
NEWLIB OA$LIB:MANAGER\DISPLAY MANAGER library has been closed.
```

```
                              S E T L I B
      MY       Manager Library on        NM       NEWLIB Manager Library
      MN       Manager Library off

      DY       DevOaform Library on      ND       NEWLIB DevOaform Library
      DN       DevOaform Library off

      OY       Oaform Library on         NO       NEWLIB Oaform Library
      ON       Oaform Library off

      UY       User Library on           NU       NEWLIB User Library
      UN       User Library off

      SY       Specific Library on       NS       NEWLIB Specific Library
      SN       Specific Library off

      DC       Dump Cache                LL       List Libraries open
      FLS      Form Library Search       TXL      0

      Enter selection and press RETURN
```

dump_cached, and re-opened.

.

.

.

;;DC;;

DUMP_CACHE\DISPLAY DUMP CACHE has been performed.

;;FLS;;

* DO FORMLIB

;;SY;;

* DO LIB_ON

;;SN;;

* DO LIB_OFF

;;NS;;

* DO LIB_NEWLIB

==========

Scripts (*) related to SETLIB have not been included here, but you should be able to see how SETLIB relates in its functionality to TLIB.

Like TLIB, SETLIB needs to be installed in the MEMRES form library to prevent unwittingly turning off the library which contains it.

Unlike TLIB, however, SETLIB is broken down into small steps. A TLIB 'T' would require a SETLIB 'ON DY OY TXL1' to accomplish the same thing. On both screens, however, 'LL' may be used to verify that the library order is as desired.

3. MBI_DELETE

Much of the testing we do in ALL-IN-1 necessitates the sending of dummy mail messages to ourselves ("I" or "ME") or to other members of our test group. The importance of this mail lies in the sending and receiving process rather than in what the messages themselves have to say.

Consequently, we have made the following MBI_DELETE script available to members of our test group. This script allows them to delete all UNREAD mail messages without having to read them. It is their responsibility to make sure they have already read all REAL messages before using this options.

==========

```
!   MBI_DELETE.SCP                                                    REB, 12-MAR-1987
!   Purpose: to allow a user to delete all UNREAD messages without
!   having to read them

.LABEL BEGIN_HERE

! label the FOLDER, TITLE, & DOCNUM of what's in the window
    get #p_doc_fldr=oa$curdoc_folder
    get #p_doc_title=oa$curdoc_title
    get #p_doc_docnum=oa$curdoc_docnum

! attempt to select the first UNREAD mail message
    mail next/unread

! if the attempt failed (presumably because there is no UNREAD mail)
    .if oa$status = 0 then .goto no_mail

.label process_deletion
! tell the user what's going on . . .
    get oa$display="Deleting " oa$curdoc " . . . "\force

! change necessary characteristics of this message
    write change cab$ %key=oa$curdoc, mail_status="READ"
    write change cab$ %key=oa$curdoc, delete="Y"

! put in WASTEBASKET and decrement mail count by 1
    cab delete_or_refile , "WASTEBASKET"
    cab decrement_count "MAIL"

! attempt to continue the loop
    mail next/unread
.if oa$status = 1 then .goto process_deletion

.label finish_up
    ! make the original document current again
    cab select #p_doc_fldr,#p_doc_docnum,#p_doc_title,@#curdoc

! if that doesn't work, go to top of File Cabinet
    .if oa$status = 0 then cab select ,,,@#curdoc

! tell the user that processing is done
    oa$msg_purge
    display ALL UNREAD messages have been deleted.
    .goto exit_procedure

.label no_mail
    oa$msg_purge
    display There is no UNREAD mail.
.goto exit_procedure

.label exit_procedure
.exit
```

==========

This script may be accessed by '<DO MBI_DELETE' or by use of a hidden option which performs the same function. By all means, keep this feature away from the regular users; they'd love it, but it's dangerous!

CONCLUSION:

I hope these three approaches to meeting the special needs and problems of ALL-IN-1 testing will give you some useful ideas. If you have questions or suggestions, please get in touch with me at 804/353-0151.

SIG TAPE CONTEST AND HOW TO SUBMIT ARTICLES

Roger E. Bruner, OA Tape Coordinator, Foreign Mission Board

It's not too late to send in your submission(s) for the OA SIG SWAP tape and to compete for that yet-to-be-announced superprize Kit Trimm was talking about in Anaheim.

However, to make the tape a useful collection for all of us we need lots more submissions. Nothing you have accomplished in the OA area is too insignificant to share with others.

Wouldn't it be great for ALL of us to sit in the WISHLIST session at Cincinatti and be able to pipe up and say, "That can be done already. And it's available for free because I submitted it to the tape; I thought it would be useful to somebody, and I see now I was right!"

Please send your submissions by February 29 - Guidelines for Submitting an Item to the SIG Tape:

- The tape should be made in VAX/VMS BACKUP format, at a density that is acceptable to the tape coordinator (usually 1600 BPI).
- Each submission should be in a separate "save set" that is made up of whatever files relate to that submission and a README file that briefly describes what the submission is. Typically, the README file is named "AAAREADME.TXT" so that it can be easily located in a directory listing of the tape. In submissions where there are many parts to the submission, each "piece" of the submission should have its own subdirectory was well.
- Each submission must include a DECUS PROGRAM LIBRARY Submittal Form. These forms are available through by contracting me at the address listed below. Processing of your submission will be delayed if this form is not completed.

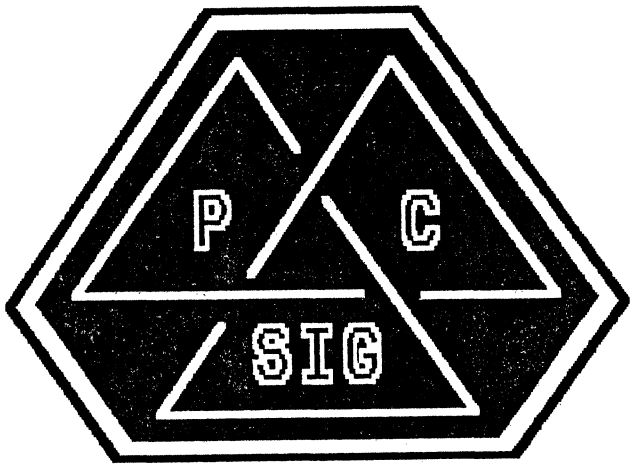
Remember, you are not limited to the number of items you submit. Of course, no previously copyrighted work, commercially available products, or Digital layered software should be in your submissions.

Roger E. Bruner, Volunteer OA Tape Coordinator
MIO
Foreign Mission Board
3806 Monument Ave.
P.O. Box 6767
Richmond, VA 23230

PERSONAL COMPUTER

SPECIAL INTEREST GROUP

PC



NEWSLETTER

Chairman's Column

By Lynn Jarrett PC SIG CHAIR

After personally surviving another DECUS, I returned back to the grind at the office and tried to recall what really happened in Anaheim.

What with the explosion of PCSA sessions, Mac to VAX connectivity sessions, and a multitude of other excellent sessions plus the usual entertainment extras, we were kept on our toes the entire week.

Bob Denny, the president of Alisa Systems, gave the PC SIG keynote session on "Connecting the Mac to the VAX" and it was overwhelmingly successful. In fact, it was so successful that the session was repeated later in the week. We are looking forward to having Bob giving another session in Cincinatti and he promises that that one will be on a very timely subject as well.

The Rainbow third party hardware and software sessions were a success, of course. Those vendors participating included Duncan Macdonald of DMI, Jerry Miller of Suitable Solutions and Andre Çoltrin of Rainbow- Works, Inc.

In addition to the successful sessions offered by the PC SIG, the PC SIG Campground proved to be a "must" for DECUS attendees. Digital Equipment's Don Call from the PCSG group donated a large part of the Digital equipment in the campground. Also Don spent a considerable amount of time assisting with the setup of the equipment and software.

The third party vendors mentioned above and Bob Denny all contributed equipment for use in the campground, and I must say that the campground setup in Anaheim was by the far the most complex and the most beneficial to visitors ever offered through the combined efforts of all the vendors and our SIG executive officers Jimbo Wilson and Jim Hobbs.

In Nashville, PCSA sessions were not so popular since there weren't too many sites using the new VAX/VMS Services for DOS, but by the time Anaheim rolled around, it was difficult to find a seat in the small rooms that the sessions were scheduled in. Naturally, this was an indication of how many sites now had bought into the PCSA architecture. We're asking for larger sessions rooms for Cincinnati!

A special thanks goes out to Barbara Maaskant who has done a great job in leading this SIG over the past 3 years and helped to make it a huge success. Barbara turned over the reins to me in Anaheim and I must say I'll have to go some to do the job that she has done with the PC SIG. (Barb, I won't let you down!)

Also Rick Eliopoulos, our Symposia Coordinator for the last 3 years, turned his position over to Jimbo Wilson. Rick did his job well and we know that Jimbo will be a professional at it his first time into scheduling.

I can't thank all the SIG steering committee and the Digital folks enough who made DECUS Anaheim a great success for those interested in the PC arena. Now onto Cincinnati with the PCSA Working Group that has been formed. . We found many more interested parties with this interest and we're looking forward to working with these people!

Hope to see you there.

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No submissions this month.

DECmate Section

No submissions this month

MACINTOSH Section

Watch for articles in this space as our PC SIG evolves

Workstations Section

Watch for articles in this space as our PC SIG evolves

The New PC SIG

By Gary Rice, Newsletter Editor

As you can tell from the "Chair's Column", our SIG is changing. Terms-of-office have come to an end for Barbara Maaskant, Rick Eliopoulos and Jimbo Wilson. Both Barbara and Rick are "retiring" for awhile, but Jimbo has taken on new responsibilities. In addition, we have added three new working groups. The new groups include the PCSA Working Group, the MACINTOSH Working Group and the Workstations Working Group. The PCSA Working Group Chair position is not yet filled. The MAC and Workstations Working Groups Chair positions are currently folded into the PRO Working Group Chair's position. As these Working Groups gain momentum, they will likely blossom into separate positions with different people in each.

PRO
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Maynard, MA 01754
(617) 493-9340

These people on the SIG Steering Committee are here to help you. If you have questions or need assistance in any way, please feel free to contact any of us.

Coming Next Month

PRO/FORTRAN-77 v5.2 breaks all FORTRAN programs.

There is a compatibility problem with PRO/FORTRAN-77 v5.2 that causes ANY program using the PROF77.TSK resident library to break after you install the v5.2 update. The symptom appears as an error message stating that there is a "Common block length mismatch". If you are not able to re-link your FORTRAN programs (for whatever reason), DON'T INSTALL FORTRAN-77 v5.2. A DEC supplied work-around will be published here next month.

BIGger Disk Drives and the PRO

By Tony Klancar, Ministry of Environment & Parks, KAMLOOPS, British Columbia, Canada

This article will detail my experience in hooking up non DEC drives to PRO/350's. In about June of 1986 I was experiencing disk space problems with a 10 meg PRO that I was using. I decided to investigate obtaining a larger drive for the machine. DEC's offering at that time was the RCD52 33 meg drive and controller at a cost of $4000.00. I noted that similar drives for the IBM PC were selling at a fraction of that cost, and wanted to try a non DEC drive to see if it would work. I borrowed a Microscience 20 meg half height drive from a local store and hooked it up. After installing P/OS V2.0, I was dismayed to find out that only 10 megs of the drive was recognizable. Since this system also had Toolkit V2.0 on it, the I/O driver fiche gave a listing of the DW driver code as well as an octal listing of the assembled code. I reasoned that if I changed the size parameters of the drive as shown in the DW driver listing, all 20 megs should be useable. I DUMPed the P/OS.SYS file out in octal and used EDT to search for the octal codes as shown on the fiche. In about half an hour, I narrowed in on disk block 162 and 163 of P/OS.SYS (V2.0). Using the fiche listing and the ZAPper, it was easy to enter the drive parameters in the required locations. When installed, the modified V2.0 operating system gave me access to all 20 meg of the drive. When I read Neil J Szuminsky's submission detailing how he discovered the same process, I felt a DEJA VU coming on, because I had been there before! I won't go into any further detail on exactly which locations to change, since Neil's submission has covered that in a previous edition of this newsletter.

Editor's note: The article that Tony is referring to appeared in the June '87 issue of these Newsletters starting on page PC-10.

Another machine which I work on also had the 10 meg drive, but had the newer P/OS V2.0A operating system. Software was always failing because of no disk space, and I felt that I could remedy the problem. The Kanata hotline told me that the only significant change between V2.0 and V2.0A was in the DW driver, and when I dumped the P/OS.SYS (V2.0A) file, I found quite a few changes. Since my fiche listing of the DW driver was for the 2.0 system, I couldn't figure out what to change. Reasoning that the new system would have to size the 5, 10 and 33 meg drives, I decided to order a CMI 6640 30 meg drive at an unbelievably low price (compared to DEC's) of $349.00. The vendor was BCE (Business Computer Exchange), who regularly advertise in "The Computer Shopper".

Editor's note: More recently The CMI 6640 drive has appeared in "The Computer Shopper" for as little as $250.

I figured that if it didn't work in my PRO I could always find a PC that would love to have it. The ad said that it had an ST506 interface which is an industry standard, and which is the same standard used in the RCD50/51 DEC drives. The drive arrived in two weeks, and I plugged in to my RCD50 controller. When I turned it on, the self test showed a picture of the system with the hard drive controller card and diskette symbol highlighted. The system maintenance manual led me to reason that perhaps without any formatting or a boot block, something was running amuck, since the system could sense the presence of the controller. So I rebooted with the unmodified P/OS V2.0a system installation diskette in drive one, and the installation proceeded as normal ie. it asked me for more disks! Eventually I loaded all the required disks, rebooted and checked out the view utility to find I had 55679 blocks available which is 28.8 meg of formatted space. After loading the toolkit, DIR/FR gave me the same numbers. This puts the drive in the RD52 category.

One slight problem remained however, and that was that every time I cold booted the PRO (and I mean physically cold) the same system self test bugcheck happened. If it had been used within the last hour, it usually came up just fine. If I let it run for about 30 seconds after the (cold) boot, and then rebooted, (warm boot??), everything operated properly. I lived with this problem for about 3 months, all the while saying that one of these days, I'm going to figure this out. Before I ever got around to it, I noticed that the bugcheck happened with less and less frequency, ie. the thing was healing itself! Now, it never bugchecks on boot, however if you shut it off and on without waiting for the drive to spin down it does bugcheck. Living within that restriction is easy since it only takes 20 sec's or so to stop. Looking at the spec's which came with the drive showed that it takes about 30+ seconds to initialize itself and spin up to speed, and I suspect that P/OS is looking for the drive to do something at about this time limit. When the drive is still spinning, it takes a second or two longer to initialize itself, and this pushes it over the timeout limit. The only reason I can think of for it getting better was that now that the drive is run in, it gets up to speed a bit faster, and can respond to P/OS within the timeout limit. This seems to be Murphy's Law in reverse!

As far as my controller card, it has the following ROM's in it: R1:014B2 R2:013B2 R3:021B2. There are a few other marks on it but no Rev level. From Thomas Hintz's submission in the July 87 Newsletter, I couldn't figure out what Rev Level it was, since R3 with 021B2 was not listed there.

Editor's note: The following information was provided by DEC regarding the controller ROM levels. It contains information not found in Tom's article:

First released controller for RD50 ONLY had the following ROMS
013B2 014B2 015B2

ROM Change
013B2 014B2 021B2

ROM Change
013B2 014B2 063B2 (the 63 might have been 61 or 62, don't know for sure)

LAST Change
071B2 072B2 073B2

The last change provided support for ALL disks that are available fro the PRO from the RD50 thru the RD53 as well as the RD31 and RD32.

The only thing you need to worry about if you have the ROMS on your controller is the REV of P/OS necessary to support the disk.

The physical layout of the CMI drive is the same as the DEC RD52, and it uses the same cables to connect to power and controller. The controller cables were supplied with the drive, however the power cable was not.

The CMI drive has been in operation for over a year now, on almost a daily basis, with no problems other than as detailed above. The Maintenance Application in service mode (press F12, F19, F5 when in the application) gives the following information. The drive has been in service for 420 hours of cumulative run time. It has done 11,898,559 read/writes. There were no bad blocks found at the time of installation, and none have developed to date. The application also reports that the drive has 16 sectors per track, 511 cylinders and 6 heads.

I have not tested the CMI drive under P/OS V3.0. My rough timing tests for compiles and links show the same results as for an DEC RCD52.

I hope that this information will be of use to anyone else contemplating upgrading to a non DEC drive. If you have any experiences with the PRO, why not share them in this newsletter. We'd like to hear about them.

Here, Here! Many thanks to Tony (a NEW author to the Newsletters) for sharing his expertise with us. How about YOU? Ed.

PRO Retirement Plans

By Digital Equipment Corporation

Editor's Note: The following article first appeared as session notes for the PROFESSIONAL 300 Series Product Panel session at Fall '87 DECUS Symposium.

These session notes will include the retirement plans for the Professional 300 Series systems supplying final ordering dates for hardware and software products as well as service plans. It will also include what software and hardware products work on the Professional 300 Series systems today. It will also cover what DEC developed software has been revised in the past year.

The schedule below will give the final ordering dates for PC380 systems, PRO Software packages and PRO unique Hardware options. It is hoped that this schedule will give our customers time to plan for the future and not negatively impact their computer requirements.

HARDWARE RETIREMENT SCHEDULE:

Option	Description	Last order	Last ship
PC380-xx	System unit	March 25 1988	July 1 1988
PC3K1-xx	Country Kit	March 25 1988	July 1 1988
PC3XS-AA	CP/M & SOFTCARD	March 25 1988	July 1 1988
QBA46-H3	PRO CP/M-80 UPDATE	March 25 1988	July 1 1988
RCD31-A	20MB disk & controller	March 31 1989	June 30 1989
RCD32-AA	40MB disk & controller	March 31 1989	June 30 1989
RCD53-A	67MB disk & controller	March 31 1989	June 30 1989
MSC11-B	512Kb Daughter card	March 31 1989	June 30 1989
MSC11-CK	256Kb Option Module	March 31 1989	June 30 1989
VC241-B	EBO for PC380	March 31 1989	June 30 1989
PC3XA-An	Disk Expander BOX (PC380 only)	March 31 1989	June 30 1989
PC3XC-BA	Quad Serial Line Unit	March 31 1989	June 30 1989
PC3XX-AA	Real Time Interface	March 31 1989	June 30 1989
PC3XX-AB	RTI Connector Pod	March 31 1989	June 30 1989
ADMPC-AA	Analog to Digital Multi	March 31 1989	June 30 1989
BCC10-03	PRO RTI Y cable	March 31 1989	June 30 1989

BCC11-03	IEEE-488 RTI	March 31 1989	June 30 1989
BCC12-03	RTI Parallel I/O	March 31 1989	June 30 1989
DECNA-K	PRO/Ethernet Controller	March 31 1989	June 30 1989
DTC11-A	TMS	March 31 1989	June 30 1989

xx denotes different variations depending on country of use

The Software that is available on the Professional 300 Series systems is planned to be available for ordering through March 31 1989 with shipments completed by June 30 1989. Refer to the lists below under "Available DEC Developed Software" and "DCS Available Products" for the currently available software under P/OS.

SERVICES AND SUPPORT:

Hardware support for systems and options will be provided by Digital Field Service for at least 7 years after retirement of product.

Software Product Services will be notifying PRO Telephone Advisory Service contract customers and Update Service customers that Software Product Services will continue to be available on these products until June 1989.

WHY RETIRE THE PROFESSIONAL 300 SERIES

If you look at the classical product life cycle, a product is developed, it gets enhanced and then new technology replaces it with bigger, better, faster, cheaper systems. In the case of the Professional 300 series it started in May 1982 when Digital Equipment Corporation announced the Professional 350 and Professional 325 Series systems. The system was enhanced in January 1985 with the announcement of the Professional 380 series system and will end June 1989 when the last option and software package is shipped.

The second reason for end of life at this time is because customer demand is decreasing for this product.

We have worked to established an end-of-life schedule that will provide adequate planning windows in migrating to other Digital products and minimize the impact to our customer base.

Digital Equipment Corp. has VAX-based products in a similar price range as the Pro today. The VAX based products start at this low price range and move up in price as functionality increases. Doing a conversion from the Professional 300 Series System using P/OS to a VAX based system is a one time conversion that will translate into a long-term growth path into a wide range of systems that use the same software. For applications that require graphics we suggest the VaxStation line of products, and for applications that do not require high resolution graphics we suggest the MicroVAX line of product.

NEW OR REVISED PRODUCTS FOR THE PROFESSIONAL 300 SERIES

HARDWARE:

NEW HARDWARE SUPPORTED UNDER P/OS V3.2

RCD32-AA	40MB half-hight disk and controller
RCD53-A	67MB full-hight disk and controller
LN03S-xx	LN03-PLUS Laser Printer
LA75-xx	Companion Printer

SUPPORTED HARDWARE FOR PROFESSIONAL 300 SERIES SYSTEMS WITH P/OS V3.2

DISKS

RCD50-A	5MB full-hight disk and controller	retired
RCD51-A	10MB full-hight disk and controller	retired
RCD31-A	20MB half-hight disk and controller	
RCD52-A	33MB full-hight disk and controller	retired
RCD32-AA	40MB half-hight disk and controller	
RCD53-A	67MB full-hight disk and controller	

PRINTERS/PLOTTER

LA50-RA	LA50 Personal Printer	retired
LA100-PC	LA100 for Professional	retired
LA75-xx	Companion Printer	
LA210-xx	LA210 letter printer	
LQP02-AA	LQP02 Letter Quality Printer	retired
LQP03-AA	LQP03 Letter Quality Printer	retired
LN03-AA	LN03 Laser Printer	
LN03S-xx	LN03-PLUS Laser Printer	
LVP16-AA	Color Graphics Pen Plotter	

xx denotes different variations depending on country of use

MEMORY

MSC11-B	512K bytes Daughter card
MSC11-CK	256K bytes Option Module

EXTENDED BITMAP Option (required for color monitors)

VC241-A	EBO for PC325 & PC350	retired
VC241-B	EBO for PC380	

MONITORS

VR201-A	12' Black and White Video Monitor
VR201-B	12' Green Phosphor Video Monitor
VR201-C	12' Amber Phosphor Video Monitor
VR241-AA	13' RGB Color Video Monitor (requires EBO)
VRTS1-A	13' Color/Touch Screen Monitor (requires EBO)

MISCELLANEOUS OPTIONS

PC3XA-AA	Disk Expander BOX (PC380 only)	
PC3XC-BA	Quad Serial Line Unit	
PC3XS-AA	CP/M softcard (last order March 25, 1988)	
PC3XX-AA	Real Time Interface	
PC3XX-AB	Real Time Interface Connector Pod	
DECNA-K	PRO/Ethernet Controller	
DFMSA-AA	Mini-Exchange auto port select	
DTC11-A	Telephone Management System	
DTC11-B	Telephone Management System Voice Unit	retired

SOFTWARE:

REVISED SOFTWARE

P/OS V3.2	Available September 1987
PRO/Toolkit V3.2	Available September 1987
PRO/DECnet V2.1	Available September 1987
PRO/TK Pascal V1.3	Available January 1987
PRO/TK Basic Plus 2 V2.5	Available December 1987
PRO/TK Fortran V5.2	Available August 1987

P/OS V3.2

P/OS V3.2 provides support for the RCD32 and RCD53 hard disks. It also provides enhanced LA75 support to allow graphics to be printed on the LA75 in the correct aspect ratio. Previous versions of P/OS support the LA75 correctly only in text mode. Support for the LN03-PLUS in P/OS V3.2 also allows more complex images to be printed on the laser printer utilizing Print Services.

A revised PDI driver is included in P/OS V3.2 for better support the DECtouch monitor, the communications port, and the printer port.

A new utility, SYSTEM INSTALLATION AND CUSTOMIZATION, enables users of standalone or single-user systems to tailor the system to remove unneeded functions and recover disk space. This is not recommended for use in a server environment.

Another utility, DISK MAINTENANCE, allows the user to add bad blocks to the bad block file manually or to search the disk for lost files. It can be either installed or run as a standalone system application.

A GIDIS to SIXEL converter is included for those devices supported by P/OS V3.2 print services for printing on other systems.

Allow MESSAGE BOARD messages to be put into a file.

A new utility call BROADCAST to send one line messages to all user logged onto your system or with PRO/DECNET to any system on your local Ethernet.

The account Management program now allows you to enter eight-character passwords or null passwords, and to choose from a list of accounts when you are adding, modifying, or deleting an account.

A change in terminal setup, which now allows you to change the shading on black and white monitors.

PRO/DECNET V2.1 This release of PRO/DECNET will run on P/OS V3.0, V3.1 and V3.2

Password has been increased from a maximum of 6 characters to a maximum of 8 characters

The Remote Terminal utility will now set the /eight_bit terminal characteristic when set hosted.

NTD now understands PC3XX and VT2XX terminals, and will allow screen updating.

The PRO/DECnet Mail Utility documentation describes the use of comment indicators "!" and ";" in distribution mailing list files. In this release, please note that the use of the "!" as a comment indicator has an extra requirement added to it. Now the "!" must either be the first character on the line, or it must be preceded by at least one blank. This has been done to allow node name path names with "!" from message routers.

The following problems have been corrected in this release.

DECnet Nodes running DECnet-Ultrix V1.1 were unable to connect to PRO nodes.

Wildcard copies initiated from a VMS node would eat up secondary pool on the PRO side when FAL logging was running.

An attempt to pull files from a PRO system would fail if the file record type was VFC and if the fixed part was greater than 127.

Directory listings of a network node which contained files with short "owner" fields were not displayed properly.

Doing a wildcard copy from an Ultrix system to a PRO system would result in the output files being named .;1, .;2, .;3, etc. if the remote file names did not follow the expected naming convention.

Network copy commands with multiple input file specs were not successful because the input file specs were not expanded properly.

File ownership of copied files were not always properly set.

The creation date of files copied over the network were sometimes improperly set. If a wildcard copy command is used, the creation date will be the preserved. If any part of the output spec is defined, the creation date will be the today's date.

When transferring files to a PRO, if the directory did not exist, an incorrect error message of "invalid wildcard operation" was returned.

Attempting a rename operation concurrently with another file operation to a PRO would fail.

DEL/LOG RMS-NMF-ERROR would occur when deleting files on a PRO from VMS 4.x nodes.

In the Mail utility, the "TO" field size was too short to handle answering messages from a message router.

In a multiple terminal environment, network aliases could be destroyed when the user logged in or out.

If a mail message was selected to be edited before sending, the unedited version would sometime be sent.

While installing an application that uses a network object, the installation would fail with a 'network management error of 34".

When set hosted to a VMS system, you could not set the terminal /EIGHT_BIT characteristic.

The following problem corrections apply only to systems running v3.2 of P/OS :

The status of "2" (completed the operation but lost some data) was returned after the DECnet GNDNT call because the node number was not placed into the user's buffer.

If a message being sent across a logical link was larger than the DECnet segment size and it was too large to fit in the user's receive buffer, the system would crash.

A user attempt to send an interrupt message immediately after accepting a connect request would sometimes never complete.

File transfers to TOPS systems would sometimes hang.

If a circuit was down, there was a time delay before informing the user that the node was unreachable.

The COMM1 port KCP driver would sometimes hang during a line re-initialization.

When using DLX for Ethernet access, if a bad value was passed in the characteristic buffer, the system would crash.

Unnecessarily long delays would occur before lost or corrupted packets would be retransmitted at the logical link level.

If bad transport control messages were received, the PRO system would crash.

When using the WAITNT call for DECnet intertask communications, AST processing was enabled on return even if AST processing was disabled before the call.

If the DECnet EXEC verification state was set to OFF using NCP, the PRO would crash whenever any network access was tried to it.

PRO/TOOLKIT V3.2

Flying install is the process by which DCL installs, runs, and then removes a task or utility that is needed to process a command, if the task is not currently installed in the System Task Directory (STD).

ANALYZE/MEDIA command allows you to identify the number of bad blocks on a disk.

The BROADCAST AND REPLY commands allow you to send messages to users on one or more workstations connected to you system or to a Professional that is connected to your local network.

The SET FILE command allows you to establish certain file characteristics. You can change the end-of-file marker, direct a directory entry to point to a file in another directory, or truncate a file.

The SET PROMPT command allows you to set the prompt that DCL displays on your terminal.

The SHOW USERS/NODE command displays information about users on your local node.

The /PROTECTION qualifier to the CREATE/DIRECTORY command allows you to specify a protection code for the directory file when it is created.

The /TERMINAL qualifier to the CONTINUE, START, START/UNBLOCK, or STOP/BLOCK command directs the command to operate on a terminal other then the terminal from which the command was issued.

The CATCHALL FACILITY is a DCL feature that allows you to customize DCL command processing by defining a logical name and equating it to one or more values. With this feature, you can set up DCL to interpret MCR commands, install, run, and remove a task, run a user-written task, or run the system- supplied sample catchall task, TDX.TSK. The TDX.TSK and its source file, TDX.MAC, are supplied on the DCLHLP2 diskette.

You can change the default editor that DCL invokes by defining the logical name DCL$EDITOR and equating it to the value EDT, PROSE, SLP or the name of an installed editor task.

You can selectively disable the EXIT command on one or more terminals in a multi-user system.

The APPLICATION DISKETTE BUILDER (ADB) has been enhanced to allow you to build an application diskette for P/OS V3.0 or later.

Available DEC Developed Software under P/OS

QBA02-A3	P/OS Hard Disk	V3.2
QBA04-A3	PRO/Basic	V1.4
QBA05-A3	PRO/Comm Hard Disk	V3.0
QBA11-A3	Prose Plus	V2.0
QBA13-A3	P/OS Diskette	V1.8

QBA14-A3	PRO/Toolkit	V3.2
QBA15-A3	PRO/TK Fortran	V5.2
QBA16-A3	PRO/TK Dibol	V1.7
QBA17-A3	PRO/TK Basic + 2	V2.5
QBA18-A3	PRO/TK Pascal	V1.3
QBA19-A3	PRO/TK Cobol 81	V2.4
QBA21-A3	PRO/TK Symbolic Debug	V2.0
QBA22-H3	Ivis System update	V3.1
QBA25-A3	App Starter Kit HD	V1.0
QBA26-A3	App Starter Diskette	V1.0
QBA27-A3	PRO/Producer toolkit	V1.6
QBA35-A3	Sight	V1.1
QBA43-A3	PRO/datatrieve	V2.0
QBA44-A3	PRO/Decnet	V2.1
QBA45-A3	PRO/Comm Diskette	V1.8
QBA46-H3	PRO-CP/M-80 update	V1.1
QBA58-A3	PRO/TK RTI Library	V2.1
QBA63-A3	WPS-PLUS/Pos	V1.0
QBA65-H3	Install & Maint update	V3.2
QBA71-A3	PRO/RDT	V1.1
QBA76-A3	Synergy	V2.0

Available DEC software under RT-11

QB813-A3	Fortran IV/RT-11	V2.8
QB913-A3	Basic Plus/RT-11	V3.0
QBA39-A3	RT-11 on the PRO	V5.4B

DCS Product available from DEC under P/OS

QA179-C3	Logo
QA384-C3	MJA General Ledger
QA385-C3	MJA Payroll & Personnel
QA386-C3	MJA Accounts Receivable
QA387-C3	MJA Accounts Payable
QA388-C3	MJA Order Entry/Inventory
QA497-C3	RS/1 for the PRO
QA550-C3	Athena/Graph
QA569-C3	PRO/Videotex
QA684-C3	Design Graphix/Executive
QA767-C3	CT*OS
QAAAO-C3	PRO 20/20
QAAC2-C3	Phoenix/PRO

PROgramming Quickie - A diskette based bootable DCL application

By Digital Equipment Corporation

SINGLE APPLICATION SYSTEM

The Single Application System (SAS) provides a base for applications that must run without a hard disk subsystem.

The major component of a SAS is a bootable diskette containing the operating system components and an application script. This diskette can also contain the application, which may span multiple diskettes.

Three commonly used SAS Diskettes and their primary uses are:

PRONVR - Used to change the boot sequence and modify the boot blocks on disk. Used when you wish your PRO to boot from a different Server or another hard disk.

PROBRU - Used to backup files for future restoration. The Bootable PROBRU can be used to save files on a system that will not boot up and it has been decided to load a completely new P/OS. Also used to make complete copies of the P/OS Disk to another hard disk in an expander box. PROBRU may also be installed as an application where it would be used for normal backup of user and other files.

PROSCAN - Used to check for bad files on a hard disk that will not boot up. Contains "File Services" which can be used to replace corrupted files and restore the hard disk.

Single Application System Components

A single application system consists of one or more diskettes which contain the operating system, a script processor, the application script, and the application. Certain components are required, others are optional, depending on application use.

Required Components -
The following components must reside on the bootable diskette in directory [ZZSYS].

1. [ZZSYS]POS.SYS is the P/OS system image. It can be found on the PRONVR diskette. This system image contains no support for DECnet. (Boot block on diskette is plugged to POS.SYS)

2. [ZZSYS]SASCOM.TSK is the message file for the script processor. It can be found on the PRONVR diskette. The source for this file is SASCOM.MAC, and can be found on the Application Diskette Builder diskette, in directory TOOLKIT:[SAS]. Instructions for building SASCOM.TSK are contained in the source.

3. [ZZSYS]STARTUP.TSK is the script processor. It can be found on the PRONVR diskette.

4. [ZZSYS]SAS.COM is the application-specific script file.

Example of a SAS Diskette. The PRONVR Diskette:

PRONVR - Used to change the boot sequence and modify the boot blocks on disk. For more information see the "P/OS Server User's Guide" chapter 2, 3 & 4.

```
Directory PRONVR:[ZZSYS]
POS.SYS         441         ; Standard SAS P/OS (441 Blks)
STARTUP.TSK     19          ; Script Processor Task.
SASCOM.TSK      4           ; Message file for STARTUP.TSK
SAS.COM         1           ; Application-specific script file.
POSRES.TSK      42          ; Task MENU/HELP/MESSAGE driver.
SUMPBB.TSK      17          ; Server for PROVOL calls.
NVR.TSK         43          ; NVR Task
NVR.MNU         2           ; NVR Menu File
NVR.MSG         2           ; NVR Message File
```

FILE SAS.COM on PRONVR Diskette:

```
INSTALL DZ1:[ZZSYS]POSRES.TSK/READ/FIXED
INSTALL DZ1:[ZZSYS]SUMPBB.TSK
INSTALL DZ1:[ZZSYS]NVR.TSK
RUN NVR
```

Optional Components -

1. PROLOD.TSK is the server task used for LOAD and UNLOAD commands. It can be found in LB:[ZZSYS] on the hard disk.

2. Device drivers for DECTouch, the Communications port, and TMS can be found in LB:[ZZSYS] or on the PRODRIVERS diskette.

3. YQAUTO.TSK is the task that configures additional terminal driver Quad SLU units into the system. This will be done if YQAUTO.TSK is on the boot diskette in directory [ZZSYS].

4. Language OTSs and message files are needed if the application is written in a high-level language. They can be found in LB:[ZZSYS] and LB:[1,2].

5. POSRES.TSK is needed if the application uses help, menu, or message services. It can be found in LB:[ZZSYS].

6. SUMFBI.TSK is the server for initializing diskettes or hard disks. It can be found in LB:[ZZSYS].

7. CREDEL.TSK is the server for creating or deleting directories. It can be found in LB:[ZZSYS].

8. SUMPBB.TSK is the server for PROVOL calls. Used to Plug the Boot Block. It can be found in LB:[ZZSYS].

9. ALPH00.TSK is the font common for GIDIS. It must be installed before GDSCOM.TSK. It can be found in LB:[ZZSYS].

10. GDSCOM.TSK is the graphics portion of the terminal subsystem. It must be installed if any graphics are to be used. When this common (or any common named $GIDIS) is installed, the script processor enables the graphics subsystem. GDSCOM.TSK can be found in LB:[ZZSYS].

11. CGLFPU.TSK is the CORE Graphics Library. It can be found in LB:[ZZSYS].

12. Any tasks, libraries, example files, etc. that are used by the main task.

Script File Commands - "SAS.COM"

All script file commands must be UPPERCASE. The following sections, which describe the application script commands, use these conventions:

Convention	Meaning
file_specification	A fully qualified file name (device, directory, and file name)
dd:	A device name
dd00n:	A device name and unit number
logical_name	A logical name that is to be used by the application
equivalence_string	The string to be assigned to a logical name

INSTALL - The INSTALL command is used to install a task or common. The /FIXED qualifier specifies that the task or common is to be fixed in memory. The /READ_ONLY qualifier specifies that the common be installed for read-only access.

Format:
    INSTALL file_specification[/FIXED][/READ_ONLY]
Example:
    INSTALL DZ001:[ZZSYS]POSRES.TSK/FIX/REA

LOAD - The LOAD command loads a device driver into memory. PROLOD.TSK must be installed from diskette before using the LOAD command. Both the driver's .TSK and .STB files must be in directory [ZZSYS] on the diskette in drive 1 when the LOAD command is issued.

Format:
   LOAD dd:
Example:
   LOAD XK:

The device drivers can be found in LB:[ZZSYS] or PRODRIVERS:[ZZSYS].

DTDRV.*	DECTouch driver
XKDRV.*	Communications Port driver
XTDRV.*	TMS driver

MOUNT - The MOUNT command requests the user to place a particular diskette in a specified drive.

Format:
   MOUNT ddn:volume_label
Example:
   MOUNT DZ1:PROBASICV14

UNLOAD - The UNLOAD command removes a previously loaded device driver from memory. PROLOD.TSK must be installed from diskette before using the UNLOAD command. Both the driver's .TSK and .STB files must be in directory [ZZSYS] on the diskette in drive 1 when the UNLOAD command is issued.

Format:
   UNLOAD dd:
Example:
   UNLOAD XK:

ASSIGN - There are four forms of the ASSIGN command. they are mainly used if your application uses POSRES.

ASSIGN MENU - This command creates the logical APPL$MENU. This logical is used by the POSRES menu routines.

Format:
    ASSIGN MENU file_specification
Example:
   ASSIGN MENU DZ001:[APPLDIR]MYAPPL.MNU

ASSIGN HELP - This command creates the logical APPL$HLP. This logical is used by the POSRES help routines.

Format:
ASSIGN HELP file_specification
Example:
ASSIGN HELP DZ001:[APPLDIR]MYAPPL.HLP

ASSIGN MESSAGE - This command creates the logical APPL$MSG. This logical is used by the POSRES RDMSG routine.

Format:
ASSIGN MESSAGE file_specification
Example:
ASSIGN MESSAGE DZ001:[APPLDIR]MYAPPL.MSG

ASSIGN LOGICAL - This command assigns an equivalence string to a logical name.

Format:
ASSIGN LOGICAL logical_name "equivalence_string"
Example:
ASSIGN LOGICAL WORK$DSK: "DZ001:[APPLDIR]"

RUN - The RUN command starts the application. The script processor will not process any commands after the RUN line is encountered.

Format:
RUN task_name
Example:
RUN MYAPPL

COMMENTS - Comment lines begin with either a "!" or ";" character as the first nonblank character on the line. **Comments are not allowed on command lines.**

Building a Single Application System (SAS) Diskette

This section describes the steps needed to build a SAS diskette:

1. Enter the Command Language or PRO/Toolkit application.
2. Initialize the diskette, create directory [ZZSYS]
3. Copy the required components to [ZZSYS].
4. Issue the command:

RUN $LCT/COMMAND="MMV PBB DZn:[ZZSYS]POS.SYS"

This makes the diskette bootable.

Alternative to steps 1 through 4

A. Use File Services to make a copy of the PRONVR Diskette and give the new diskette a new volume label (ex. NEWVOL). The Boot Block will automatically be put on the new diskette by File Services (because File Services sees POS.SYS)

B. Next from Tool-Kit unprotect all the files with the command:

"SET PROT=(SY:RWED,OW:RWED,GR:RWED,WO:RWED) NEWVOL:[*]*.*".

C. Then delete all the NVR files, including SAS.COM.

5. Copy the application components to the diskette.

Guidelines for Building Single Application Systems

All Applications - The following guidelines apply to all applications:

1. For compatibility, all device unit numbers, **except** in the MOUNT command, should be justified to three digits. For example, use

```
INSTALL DZ001:[ZZSYS]PROLOD.TSK
        rather than
INSTALL DZ1:[ZZSYS]PROLOD.TSK
```

because the MOUNT command is incompatible with standard P/OS device name usage.

2. The logicals APPL$DIR and SY000:, and the default directory context are not set up by the application script processor. If the application requires these logicals, it should create them with the ASSIGN LOGICAL command. If the application requires a default directory context, it should set the default.

Multiple Diskette Applications - The following guidelines apply to multiple diskette applications.

1. It is the application script processor's responsibility to ensure that diskettes are not removed from the drives (unless requested by a MOUNT command) until the RUN command is encountered. If the application requires that the diskettes remain in place, it should open a file on each diskette.

2. When a diskette is removed, all tasks and commons installed from that diskette are removed, unless they were installed with the /FIXED qualifier. If a task with disk-resident overlays was installed from the diskette with the /FIXED qualifier, overlay loads will fail.

3. All device driver .TSK and .STB files must be on DZ1: when the LOAD or UNLOAD command is issued. The .TSK & .STB files may need to be duplicated on a multi-SAS Diskette system.

Memory Usage and Checkpoint File - An application developer must determine minimum memory requirements and/or if an application requires a checkpoint file and must allocate the file appropriately. If checkpointing is required the SAS Diskette left in DZ1: must be INIT'ed with Check_pointing. Example:

```
$ INITIALIZE/CHECKPOINT_SPACE:200 DZ1: NEWVOL
```

Sample Application & Script Files

The PROBRU - Backup and Restore Diskette - May be installed on the Hard Disk or used as a SAS Diskette. See the "Hard Disk System User's Guide" chapter 10 for more information.

Directory PROBRU:[ZZSYS]

```
POS.SYS         398     ; Special PROBRU-SAS P/OS.
STARTUP.TSK     19      ; Script Processor Task.
SASCOM.TSK      4       ; Message file for STARTUP.TSK
SAS.COM         1       ; Application-specific script file.
POSRES.TSK      42      ; Task MENU/HELP/MESSAGE driver.
SUMFBI.TSK      23      ; Server for init-ing disks/diskettes.
```

```
FMDRES.TSK      16              ; Forms Management Driver
BRU.TSK         126             ;
BRUIF.TSK       49              ;
BRU.HLP         12              ;
BRU.MNU         2               ;
BRU.MSG         18              ;
BRUERR.MSG      6               ;

Directory PROBRU:[001002]

LOGIN.MSG       2               ;

Directory PROBRU:[BRUIF]
BRUIF.INB       1               ;

Grand total of 719./719. blocks in 15. files in 3. directories
```

File SAS.COM on PROBRU Diskette:

```
INSTALL DZ1:[ZZSYS]POSRES.TSK/READ/FIXED
INSTALL DZ1:[ZZSYS]FMDRES.TSK/READ/FIXED
INSTALL DZ1:[ZZSYS]SUMFBI.TSK
INSTALL DZ1:[ZZSYS]BRUIF.TSK
RUN BRUIF
```

PROSCAN Diskette - Primary use is, to check for bad blocks on the Hard Disk when your system crashes or won't boot up. Includes File Services which can be used to replace bad files on the Hard Disk. For more information see the "Hard Disk System User's Guide" chapter 11.

```
Directory PROSCAN:[ZZSYS]

POS.SYS         398             ; Special PROSCAN-SAS P/OS.
STARTUP.TSK     19              ; Script Processor Task.
SASCOM.TSK      4               ; Message file for STARTUP.TSK.
SAS.COM         1               ; Application-specific script file.
POSRES.TSK      42              ; Task MENU/HELP/MESSAGE driver.
SUMFBI.TSK      23              ; Server for init-ing disks/diskettes.
SUMPBB.TSK      17              ; Server for PROVOL calls.
CREDEL.TSK      15              ; Server for CRE/DEL Directories.
DAPRES.TSK      40              ; RMS remote file access library.
NFUTL.TSK       62              ; New File Utility Task.
ONBUI.TSK       45              ;
ONBSRV.TSK      17              ;
ONB.HLP         7               ;
ONB.MNU         4               ;
ONB.MSG         5               ;

Directory PROSCAN:[001002]

NFUTL.MSG       19              ; Message file for NFUTL.TSK.
```

Directory PROSCAN:[ONB]

ONB.INB 1 ;

Grand total of 719./719. blocks in 17. files in 3. directories

File: SAS.COM on PROSCAN Diskette

```
INSTALL DZ1:[ZZSYS]POSRES.TSK/READ/FIXED
INSTALL DZ1:[ZZSYS]DAPRES.TSK/READ/FIXED
INSTALL DZ1:[ZZSYS]SUMFBI.TSK
INSTALL DZ1:[ZZSYS]SUMPPB.TSK
INSTALL DZ1:[ZZSYS]CREDEL.TSK
INSTALL DZ1:[ZZSYS]ONBUI.TSK
ASSIGN LOGICAL ONB$SAS "1"
RUN ...ONB
```

HOW TO DETERMINE WHAT FILES ARE REQUIRED.

In the previous example of the PROSCAN Diskette, DAPRES.TSK is installed by the SAS.COM file. One of the tasks that will be run is the New File Utility task (NFUTL.TSK), if DAPRES.TSK is not installed when you try to run NFUTL, then you will get an error message saying "INS common block not loaded". To find out what other files a task needs you could do a dump of the first block of the task in RAD50 mode as shown below:

```
$ DMP TI:=LB:[ZZSYS]NFUTL.TSK/R5/BL:1:1


Dump of LB0:[ZZSYS]NFUTL.TSK;1 - File ID 102,1,0
                    Virtual block 0,000001 - Size 512. bytes


000000                GEN        LW9   LW9   CX
000020  G5            FQ    R    A     BE    K     N
000040  RMS   RES     0.2   0.2  8O    C
000060  FR    R       DD    BC   H     G     DAP   RES
000100  0.2   0.2     8O         GI          FR    R
000120  EE.   BC      C     L    POS   SUM   0.2   0.2
000140  53W           AO         FQ    R     EE.   BE
000160  K     L
000200
............
```

By looking at the output you can see that RMSRES, DAPRES, & POSSUM are required by this task. RMSRES & POSSUM are part of POS.SYS, but DAPRES is not and must be installed.

Sample Script File - SAS.COM

The following script file shows an application that uses POSRES, graphics, and the Communications Port driver.

! Install Graphics Components

```
!
INSTALL DZ001:[ZZSYS]ALPH00.TSK/FIXED
INSTALL DZ001:[ZZSYS]GDSCOM.TSK/FIXED
INSTALL DZ001:[ZZSYS]CGLFPU.TSK/READ/FIXED
!
! Load Communications Port Driver
!
INSTALL DZ001:[ZZSYS]PROLOD.TSK
LOAD XK:
!
! This application uses POSRES.
!
INSTALL DZ001:[ZZSYS]POSRES.TSK/FIXED
!
! The application itself resides on a second diskette with the
! volume label "SASAPPL". Since all components from the bootable
! diskette are now either fixed in memory or no longer needed,
! the next diskette will replace the bootable diskette in drive 1.
!
MOUNT DZ1:SASAPPL
!
! Install the application task
!
INSTALL DZ001:[APPLDIR]MYAPPL.TSK
!
! Assign the help, menu, and message logicals.
!
ASSIGN HELP DZ001:[APPLDIR]MYAPPL.HLP
ASSIGN MENU DZ001:[APPLDIR]MYAPPL.MNU
ASSIGN MESSAGE DZ001:[APPLDIR]MYAPPL.MSG
!
! Set up an application directory logical.
!
ASSIGN LOGICAL APPL$DIR "DZ001:[APPLDIR]"
!
! Set up an application specific logical.
!
ASSIGN LOGICAL USER$DIRECTORY "DZ001:[USERDIR]"
!
! Now run it.
!
RUN MYAPPL
```

How to make a DEC Command Language SAS

Shown below is a sample of what is required for a minimum SASDCL System. This is only a sample and should not be viewed as a tested or released system. DEC assumes no responsibility for the use or reliability of this information.

The first of two SASDCL Diskettes - The Bootable Diskette:

Directory SASDCLV32:[ZZSYS]

```
POS.SYS          441          ; Standard SAS PO/S (441 Blks)
STARTUP.TSK      19           ; Script Processor Task.
SASCOM.TSK       4            ; Message file for STARTUP.TSK
```

```
SAS.COM          2          ; Application-specific script file.
POSRES.TSK       42         ; Task MENU/HELP/MESSAGE driver
SUMPBB.TSK       17          ; Server for PROVOL calls.
CREDEL.TSK       15         ; Server for CRE/DEL Directories.
FCSRES.TSK       32         ; File Control Services Library.
FMSRES.TSK       23         ; Forms Driver Library.

Directory SASDCLV32:[ZZPRODCL]

*VFY.TSK         60          ; File Structure Verify Utility
*DMP.TSK         54          ; File Dump Utility

Grand total of 709./709. blocks in 11. files in 2. directories
```

* NOTE: Put this Diskette in DZ2:, after installation, if you want to install these tasks. The Tasks are placed here because there is not enough room to put them on the second diskette. They are not required for a SASDCL, but would probably prove to be useful. Also note that if there is a hard disk on the system and DW2:[ZZPRODCL] is intact, files can be installed from that area or anywhere else that uncorrupted tasks can be found.

The second SASDCL Diskette

```
**    Directory SPRODCLV32:[ZZSYS]    **

SUMFBI.TSK       23          ; Server for init-ing disks/diskettes.
LOCK.TSK         4           ; Task to lock 2nd diskette in place.

Directory SPRODCLV32:[ZZPRODCL]

CA2.TSK          137         ; Handles most MCR oper. - (SHOW TERM)
TKN.TSK          10          ; Task Term. Handler. - (Reports Traps)
LCT.TSK          46          ; DCL to P/OS interface. - (SH DEFAULT)
CATCH.TSK        14          ; Handles other MCR oper. - (ABORT)
INDRCT.TSK       72          ; Indirect Processor Task.
LNBDMP.TSK       9           ; Logical Name Dump Task.
PRODCL.TSK       288         ; DCL Task.
PIP.TSK          56          ; PIP Utility.
SASDCL.TSK       4           ; Task to setup and start DCL
START.CMD        1           ; DCL Startup command file.
EXIT.CMD         1           ; DCL Exit command file.

Directory SPRODCLV32:[001002]

QIOSYM.MSG       29          ; Has PIP Error Messages
LCT.MSG          28          ; Has LCT Error Messages

Directory DZ2:[USERFILES]

SASDCLASM.CMD;1  1           ; "PMA @SASDCLASM" - To Assemble.
SASDCLBLD.CMD;1  1           ; "PAB @SASDCLBLD" - To Link.
SASDCL.MAC;1     9           ; Source for SASDCL.TSK
LOCK.MAC         5           ; Source for LOCK.TSK
LOCKBLD.CMD      1           ; "PAB @LOCKBLD" - To Link.

Grand total of 739./739. blocks in 20. files in 4. directories
```

** NOTE: ** This Diskette must remain in DZ1: after installation.

File: SAS.COM

```
! Command Language V3.2 SAS
! DZ1 BOOT IS SASDCLV32
INSTALL DZ001:[ZZSYS]SUMPBB.TSK/READ/FIXED
INSTALL DZ001:[ZZSYS]CREDEL.TSK/READ/FIXED
INSTALL DZ001:[ZZSYS]FCSRES.TSK/READ/FIXED
INSTALL DZ001:[ZZSYS]FMSRES.TSK/READ/FIXED
INSTALL DZ001:[ZZSYS]POSRES.TSK/READ/FIXED
MOUNT DZ1: SPRODCLV32
INSTALL DZ001:[ZZSYS]LOCK.TSK/FIXED
INSTALL DZ001:[ZZSYS]SUMFBI.TSK/READ
INSTALL DZ001:[ZZPRODCL]CA2.TSK
INSTALL DZ001:[ZZPRODCL]TKN.TSK/FIXED
INSTALL DZ001:[ZZPRODCL]LCT.TSK
INSTALL DZ001:[ZZPRODCL]CATCH.TSK
INSTALL DZ001:[ZZPRODCL]INDRCT.TSK
INSTALL DZ001:[ZZPRODCL]PRODCL.TSK
INSTALL DZ001:[ZZPRODCL]PIP.TSK
INSTALL DZ001:[ZZPRODCL]SASDCL.TSK
ASSIGN LOGICAL IND$COMMAND_LIBRARY "LB000:[001002]"
ASSIGN LOGICAL APPL$DIR "DZ001:[ZZPRODCL]"
RUN DZ1LCK
RUN SASDCL
```

File: START.CMD

```
.DISABLE DISPLAY
.ENABLE SUBSTITUTION
.DISABLE QUIET
;
;         1987 by Digital Equipment Corporation.
;              Starting Standalone DCL V3.2
;
.ENABLE QUIET
.;
INSTALL DZ1:[ZZPRODCL]LNBDMP.TSK/TASK=...SLG
.;
.;     THE FOLLOWING COMMAND LINE COMMAND SHOULD NEVER BE REMOVED.
.;
RUN LB0:[ZZPRODCL]CATCH/COMMAND:"INS"
.;
DEFINE DCL$COMMAND_OPTIONS (DCL,MCR,IRR)
DEFINE DCL$DISABLE$EXIT T1
.EXIT
```

File: EXIT.CMD

```
.;
.; This command file is executed when the Command
.; Language application
.; Standalone system is exited.
```

```
.;
.; The following command line should not be removed.
.;
     RUN $CATCH/COMMAND:"REM"
.;
     .DISABLE DISPLAY
     .EXIT
```

Running the SASDCL:

Turn power off, put "SASDCLV3.2" Diskette in drive DZ1: then turn power on. After several seconds you will see:

Please insert volume "SPRODCLV32" in DZ1:

Press RETURN to continue:

Copyright) 1987 by Digital Equipment Corporation.
Starting Standalone DCL V3.2

$

Using the SASDCL: (User commands are underlined):

$ show logical

Contents of the User Logical Name Table:

DCLAPPL$DIR: = "DZ001:[ZZPRODCL]"
IND$COMMAND_LIBRARY = "LB000:[001002]

Contents of the Session Logical Name Table:

DCL$COMMAND_OPTIONS = "(DCL,MCR,IRR)"
DCL$DISABLE$EXIT = "T1"
APPL$DIR = "LB000:[ZZPRODCL]"
APPL$DIR: = "LB000:[ZZPRODCL]"

Contents of the System Logical Name Table:

CL000: = "TI000:"
DW002: = "PRO$$PROVOLUME:"
DZ001: = ""SPRODCLV32:"
LB000: = "_LB:"
LP000: = "TT002:"
PRO$PROVOLUME: = "_DW002:"
SPRODCLV32: = "_DZ001:"
SY000: = "LB000:"
SY: = "SY000:"
TT000: = "TI000:"

LB000: = "_DZ001:" (concealed)

```
LB001: = "_DZ001:[ZZWLOCAL.]" (concealed)

$ dir

Directory LB0:[ZZSYS]
26-OCT-87 10:19

SUMFBI.TSK;1       23.     C 10-JUL-87 16:44

Total of 23./23. blocks in 1. file

$


; SASDCL.MAC
;
;                   Copyright © 1985-1987 by
;    DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS.
;
;         This software may be copied without fee provided that the
;         copies are not made or distributed for direct commercial
;         advantage, that credit to the source is given and that this
;         copyright notice is included.
;
;         The information in this software should not be construed as
;         a commitment by Digital Equipment Corporation.
;
;         Digital Equipment Corporation assumes no responsibility for
;         the use or reliability of this software.
;
;
;
  .TITLE        SASDCL -- STAND ALONE DCL . MAC
  .IDENT        /X01.00/
;
;
;++
; This task will set up a minimum usable environment for the DCL
; Application running in a Stand Alone Environment. (using the P/OS
; V3.+ SASSY System)
;
; The Terminal is marked as LOGGED-IN, set as NOSLAVE, PRIVILEGED, and
; the UIC is set to [1,1]. Then the DCL is started on the Terminal TT1:
; and running under the UIC of [1,1]. This is done because the SASSY
; System runs the tasks on the Terminal CO0:. This causes problems for
; DCL in that it performs GLUN$S'S QIO to determine which Terminal it
; is executing from to rename the tasks to spawn. This causes the ^C
; command not be processed correctly. In addition the Indirect Command
; Processor cannot communicate with DCL properly.
;
;++
;
; To Assemble:
;$ PMA SASDCL,SASDCL/-SP=LB:[1,5]EXEMC/ML,SY:[]SASDCL
;
; To Link:
```

```
;$ PAB SASDCL/PR:0,SASDCL/MA/-SP=SASDCL,LB:[1,5]POS.STB/SS
;
;** Note **      EXEMC.MLB & POS.STB can be found on the PRODCL2:[ZZPRIVDEV]
;                diskette. Copy then to LB:[1,5] on your PRO before
;                                assembling and linking.
;--
; SYSTEM MACRO CALLS
;
                .MCALL          EXIT$S, RPOI$, DIR$, SWST$
                .MCALL          UCBDF$
                .MCALL          ACNDF$

                ACNDF$                          ; DEFINE ACCOUNTING DEFINITIONS LOCALLY

                .SBTTL          DEFINE LOCAL MACROS

;+
; MACRO --LOCDFL--
;
; THIS MACRO WILL DEFINE A DEFAULT VALUE FOR A STATIC BUFFER.
;
; MACRO INPUTS:
;               BLKNM  -- LOCAL LABEL OF BLOCK TO DEFINE A STATIC VALUE FOR
;                OFFSET -- OFFSET FROM BLKNM TO PUT THE DATA
;                DATA   -- DATA TO PUT AT THE SPECIFIED LOCATION
;
; MACRO OUTPUTS:
;               NONE
;
; MACRO EFFECTS:
;               AS DESCRIBED ABOVE
;
;-

                .MACRO          LOCDFL BLKNM, OFFSET, DATA
                $$              $SAV            =.
                .=              BLKNM+OFFSET
                DATA
                .=              $$$SAV
                .ENDM

                .EVEN

TTDEF=1
SYSDF=1
UABLEN          = <B.ULEN+77>/100               ; LENGTH OF A UAB IN 32. WORD BLOCKS
PRVUIC=401                                      ; UIC VALUE FOR [1,1]

                UCBDF$ ,,TTDEF,SYSDF            ; DEFINE TERM. UCB DEFINITIONS LOCALLY


;
; STATIC DIRECTIVE PARAMATER BLOCKS
;
RPOI:           RPOI$           ...DCL,,,1,1,,,,RP.OAL,TT,1
LOGIN:          SWST$           LOGTI, LOGTI
```

```
;
; CODE
;
START:                                  ; ENTRY POINT
            DIR$        #LOGIN          ; CREATE THE ENVIRONMENT
            DIR$        #RPOI           ; STARTUP DCL
            EXIT$S                      ; EXIT THIS TASK
;
; LOCAL SUPPORT ROUTINES
;
LOGTI:                                  ; CREATE THE ENVIRONMENT
            MOV         @#$TKTCB, R0    ; GET OUR TCB POINTER
            MOV         T.UCB(R0), R0   ; GET OUR UCB POINTER
5$:         CMP         U.RED(R0), R0   ; FOLLOW ANY REDIRECT POINTER
            BEQ         10$             ; IF EQ, THERE IS NONE
            MOV         U.RED(R0), R0   ; GET THE REDIRECT POINTER
            BR          5$              ;  AND CHECK THIS ONE
10$:
            BIC         #U2.LOG!U2.SLV,U.CW2(R0)  ; SET TERM AS LOGGED IN AND NOSLAVE
            BIS         #U2.PRV, U.CW2(R0)  ; SET THE TERM AS PRIVILEGED
            MOV         #PRVUIC, U.UIC(R0)  ; SET THE CURRENT UIC
            MOV         #PRVUIC, U.LUIC(R0) ; SET THE LOGIN UIC
            MOV         R0, R5          ;; SAVE UAB BIAS
            MOV         #UABLEN, R1     ;; LENGTH OF A UAB IN 32. WORD CHUNKS
            CALL        @#$ALSEC        ;; GET A CHUNK OF SECONDARY POOL
            BCS         99$             ;; IF CS, RETURN
            MOV         R0, U.UAB(R5)   ;; SET THE UAB BIAS IN THE UCB
            MOV         R0, @#KISAR6    ;; MAP THE UAB IN SECONDARY POOL
            MOV         #140000, R1     ;; POINT TO UAB IN SECONDARY POOL
            MOV         #$UAB, R0       ;; POINT TO UAB TO COPY
            MOV         #B.ULEN, R2     ;; LENGTH TO COPY
20$:
            MOVB        (R0)+, (R1)+    ;; COPY THE UAB
            SOB         R2, 20$         ;; UNTIL DONE

99$:        RETURN                      ;; RETURN TO USER STATE

;
; UAB DATA BASE STORED HERE SO THAT IT IS MAPPED
; DURING THE SWST DIRECTIVE.
;
            .EVEN
$UAB::      .BLKB       B.ULEN          ; DATA FOR A UAB

;
; INITIALIZE A FEW STATIC FIELDS IN THE UAB
;
LOCDFL      $UAB        B.TYP           <.BYTE   BT.UAB>
LOCDFL      $UAB        B.LEN           <.BYTE   B.ULEN>
LOCDFL      $UAB        B.STM           <.BYTE   BS.ACT>
LOCDFL      $UAB        B.USE           <.BYTE   1>
LOCDFL      $UAB        B.CPUL          <.WORD   -1,-1>
LOCDFL      $UAB        B.TID           <.BYTE   124>
LOCDFL      $UAB        B.TID+1         <.BYTE   1>
LOCDFL      $UAB        B.NAM           <.ASCII  /SYSTEM/>
```

```
LOCDFL      $UAB        B.UUIC          <.WORD  401>
LOCDFL      $UAB        B.RNA+0         <.WORD  0>
LOCDFL      $UAB        B.RNA+2         <.WORD  0>
LOCDFL      $UAB        B.RNA+4          <.WORD  0>

            .END        START


; LOCK.MAC  -  A file to keep the SAS-DCL diskettes in place.
;
;
;++
;
; To Assemble:
;$ PMA LOCK,LOCK/-SP=LOCK
;
; To Link:
;               $ PAB @LOCKBLD
;
; LOCKBLD.CMD:
;               LOCK/-FP/PR:0=LOCK
;               LB:[1,5]EXELIB/LB
;               LB:[1,5]PRVLIB/LB
;               LB:[1,5]POS.STB/SS
;               /
;               STACK=200
;               UNITS=1
;               TASK=DZ1LCK
;               //
;
;** Note **     PRVLIB.OLB, EXEMC.MLB & POS.STB can be found on the
;               PRODCL2:[ZZPRIVDEV] diskette.  Copy them to LB:[1,5]
;--
            .LIBRARY    "LB:[1,5]RSXMAC.SML"
            .LIBRARY    "LB:[1,5]RMSMAC.MLB"
            .LIBRARY    "LB:[1,5]EXEMC.MLB"

DZ$LUN      =1
DZ$EFN      =1
            .PSECT      SAS$ID          RW,D        ; Impure data

            .MCALL      QIOW$

FID:        .WORD       4,4,0                       ; FID for [0,0]000000.DIR
ACRDPB:     QIOW$       IO.ACR,DZ$LUN,DZ$EFN,,IOSB,,<FID,,,,200*400>
IOSB:       .BLKW       2                           ;

            .PSECT      SAS$PC          RO,I        ;Pure code
            .PSECT      SAS$PD          RO,D        ; Pure data
            .PSECT      SS$COD          RO,I        ; System state code
SS$COD:                                             ; Start of system state code and data
            .PSECT      SS$DAT          RW,D        ; System state data

            .MCALL      EMST$S,SREX$S,STOP$S

            .PSECT      SAS$PC
LOCK:       MOV         #1,R1                       ; Access DZ1:[0,0]000000.DIR
```

```
            CALL    ACRVOL                  ; Do it
            SREX$S  #$SASCC
            EMST$S  ,#1
10$:        STOP$S
            BR      10$

.SBTTL      ACRVOL                          - Access [0,0]000000.DIR for Read
            .MCALL  ALUN$S,DIR$,SWST$S

ACRVOL:     MOV     R1,-(SP)                ; Save R1
            ALUN$S  #DZ$LUN,#"DZ,R1         ; Assign the LUN
            DIR$    #ACRDPB                 ; Access [0,0]000000.DIR
            MOV     @#$DSW,R3               ;
            MOV     IOSB,R4                 ;
            MOV     IOSB+2,R5               ;
            DEC     R1                      ; Make unit number 0 based
            ASL     R1                      ; Make unit number
            MOV     R1,-(SP)                ;  an offset
            ASL     R1                        to the LUN
            ADD     (SP)+,R1                ;   save area
            SWST$S  #SS$COD,#SAVLUN         ; Save and then clear LUN info from header
            MOV     (SP)+,R1                ; Restore R1
            RETURN                          ;
            .SAVE
            .PSECT  SS$COD

SAVLUN:     MOV     @#$SAHDB,@#KISAR6       ; Map to the header
            MOV     #<140000+H.LUN+<<DZ$LUN-1>*4>>,R2    ; R2 -> 1st LUN word
            ADD     PC,R1
            ADD     #<LUNSAV-.>,R1
            MOV     @R2,(R1)+               ; Save it
            CLR     (R2)+                   ; Clear it.  R2 -> 2nd LUN word
            MOV     @R2,(R1)+               ; Save it
            CLR     @R2                     ; Clear it
            MOV     @#<140000+H.NLUN>,R0    ; R0 = number of LUN's
            ASL     R0                      ; *2
            ASL     R0                      ; *4 bytes/LUN
            ADD     #<140000+H.LUN>,R0       ; R0 -> LUT
            MOV     @R0,@R1                 ; Save it
            CLR     @R0                     ; Clear it
            RETURN                          ;

            .PSECT  SS$DAT

LUNSAV:     .BLKW   6
            .RESTORE

.SBTTL      $SASCC  - Handle CTRL/C

            .MCALL  ASTX$S

$SASCC::
            ADD     @SP,SP                  ; Clean the stack
            ASTX$S                          ; and ignore the CTRL/C

            .END    LOCK
```

Editor's note: This 2 diskette bootable DCL system package is part of my Public Domain collection cataloged as SYM-1. See the next article for details.

Announcing the PRO Public Domain Software Collection

By Gary Rice, PC SIG Newsletter Editor

This article is a "catalog" of the Public Domain collection that I have accumulated over the years for the PRO series computer. The catalog number appears in the left columns and roughly indicates where the original source of the programs were. For example, F83-1 indicates that the item is from the Fall '83 RSX SIG tape. LIB 1 indicates that the source was the DECUS library. SYM-1 indicates that the software was given to me at a DECUS Symposium. The entries are listed alpabetically by catalog number.

This "catalog" is incomplete. I have quite a few more programs that are not yet described here. As I catalog the programs, I will publish the abstracts here in the Newsletters.

To use this collection most effectively, you should have the PRO/Toolkit available. SOME of the software I have gathered will work without ANY modification at all. SOME has been specifically written for the PRO, but MOST of it came from RSX developers. Regardless, almost without exception, you will ONLY be able to use this stuff from the command language application or Toolkit.

Distribution of the Public Domain Library is handled in the following way: After looking through the catalog and selecting the items you want, send me enough diskettes to hold the software you desire. Diskette counts are listed with each catalog entry. Include a return mailer, box, carton, palette, etc. sufficiently large to hold the diskettes. Include enough postage to pay for the return trip. I will NOT use UPS. Sorry. 1st class mail is recommended, but parcel post is ok. I will then copy the requested software for you and send it along. Give me at least a week for ANYTHING (plus travel time). Large (more that 5 diskettes) orders will likely take longer.

PLEASE don't ask for "specials". It took a lot of time to put THIS collection together.

Contributions are also welcome. However, if the work is NOT YOURS TO GIVE, please DON'T.

In addition to this diskette based distribution, we are planning a tape distribution as well. The tape will be available after the Spring '88 symposium in the following formats: RSX BRU (1/2 " 9 track 1600 BPI and TK50); VMS BACKUP (1/2" 9 track 1600 BPI and TK50). The tape will contain EVERYTHING that we can assemble by then.

Send your diskette based contributions and/or software requests to me:

Gary Rice
PC SIG Newsletter Editor
McDonnell Douglas
5555 Garden Grove Blvd.
Westminster, CA 92683

Send your tape based CONTRIBUTIONS ONLY to:

Tom Hintz
PRO/MAC/WORKSTATIONS Working Group Chair
University of Florida
IFAS Computer Network
Bldg 120
Gainesville, FL 32611

Abstracts

F83-1 This submission includes a version of the FCB program that was on a previous DECUS tape, modified for RSX-11M-PLUS V2.0. FCP.TXT is a discussion of F11ACP tuning on same.
ALSO:
CRTLIB was created to enhance several of our screen oriented, interactive programs. The main objective was to eliminate, or reduce the jerkey fashion which the screen was updated. To do this, instead of having each routine do QIO's to the terminal, we send the output to a central buffer, and output that buffer when it fills. This library will give the user access to most of the features of a VT100 with AVO. Several routines are included which ease the use of the VT100 function keys. A test program (DEMO.FTN) is included to test the library. This library has only been tested under RSX-11m V4.0. It works for us, but this library is to be used at your own risk.
ALSO:
This submission contains two separate Datatrieve programs which run on either VAX-11 Datatrieve or Datatrieve-11. They are in the form of separate Datatrieve indirect command files which can easily be invoked by Datatrieve by simply preceding the file specification with an @ sign. Before being able to use the programs, however, the user must know the basics of Datatrieve and must create a data file for the specific Datatrieve domain defined in the program. This is done with a DEFINE FILE command using the file name specified in the domain definition found in the first few lines of the indirect command file. The first program is for creation, maintenance, finding contents and printing of a personal address and telephone directory. It contains programs for storing entries (STORE-ENTRY), finding phone numbers (FIND-NUMBER), printing the directory (PRINT-DIRECTORY), adding missing zip codes (CHECK-ZIP), and eliminating unwanted entries from the printing process (CHECK LIST). The second program is for maintaining, printing and testing oneself on the contents of a vocabulary list and its meanings. Creating the list is done via commonly known Datatrieve commands for preparing a domain for WRITEing (READY domain-name WRITE) and storing data (STORE domain-name). Programs are included for testing (TEST-ME), printing the list (PRINT-DICTIONARY) andreintroducing list entries temporarily bypassed as part of the testing process (TEST-WORD).
ALSO:
INTERR is a program which interrogates the Network Management Listener / Network Information and Control Executor (NICE/NML) on a central node to obtain node numbers and node names for the current network configuration. When it has obtained this information, it spawns NCP SET commands to the local host to set this information locally. An additional advantage of INTERR is that, for networks which are partitioned into subnets, it is possible to interrogate a node in the local subnet for information rather than a globally known node which would not know about the subnetwork nodes.
ALSO:
This distribution kit contains the RSX-11M/M-Plus user monitor files. Note that this version of the monitor was upgraded with the release of RSX-11M V4.1 and M-Plus V2.1. This version introduces time limiting. This means that the monitor may be built to run only during time periods specified at generation time. This may be useful to sites which do not wish to log idle terminals out during normal working hours.
ALSO:
This distribution kit contains the RSX-11M/M-Plus network time coordination task source files. This update removes a previous restriction causing the time receiver task to run only under RSX-11M V4.0 or RSX-11M-Plus V2.0 (or later) systems.

1 diskette; Sources included; NO Objects; NO task images
MACRO, FORTRAN-77, ICP, Runoff

F83-2 Multi-trek (Multiplayer startrek)
This account contains an enhanced M/M+ version of M-trek from the Miami RSX tape (Fall 81, I believe) which was written for IAS. This is a "must have" for those of you who haven't seen it yet. If

you liked startrek, you'll love M-trek! No more fighting nameless Klingons & Romulans, now you can destroy your friends (if you're fast enough). M-trek is a real-time shoot'em up where your enemies are the other players. It's got lots of weapons & strategy, but you'd better learn to use them instinctively because the game goes on whether you do anything or not.

2 diskettes; Sources included; Objects included; Task images included
MACRO, FORTRAN-77, RATFOR(optional), Runoff

F83-3 VMSCOMLIB - A version of the COMLIB module of BRU (V4 patch code to attempt to correct problems under VMS. The module has not been tried, but corrects a problem that prevented BRU from writing to mounted disks with the /NOINITIALIZE switch under VMS. May even allow writing to ODS-2 volumes, since the ACP does the actual allocation and only write-virtual-block is used to write the data (though sysprv may be needed). Don't turn loose on an ODS2 pack with LOG_IO privilege; shouldn't need it, and may cause mischief if the priv is set.
ATT - file attributes read/write, from a very old RSX SIG tape and reissued because of its' great usefulness. Allows any file attributes to be listed or changed (including carriage control attributes, fixed record length max length, etc.).
LISTRS - Reissue of multicolumn lister. A switch for controlling what continuation line indicator is generated was added. In addition, the program has been modified to clear the high bit of all characters passed through it. This allows it to filter out such characters, which can be introduced by moving files edited with programs such as Wordstar on micros onto PDP11 or VAX machines. LST will also filter out tabs, but programs such as LBL Tools Entab can put those back.
DGT - TAR, DG, IBM, etc. etc. tape reader/writer (only reads TAR tape). Some small improvements over S83 version including better magic number recognition for TAR (Unix) tapes. Now recognizes and correctly identifies archives and object files as well as program code image files as not just regular ASCII. Also fixes some minor glitches with junk after the last real line of text from a tape file.
ORC - ORC disassembler from DECUS with additions to allow you to tell it whether a PSECT should be handled as code or data. Handy for compilers that don't set this attribute right. However there are cases where symbols don't make it to the output file. Still, ORC will handle some object files that crash DOB from earlier SIG tapes, making it useful to have around.

1 diskette; Sources included (Compressed format); NO objects; NO task images
MACRO; FORTRAN-77;

F83-4 This is a version of DOB (the object disassembler) with some mods to allow it to handle internal symbols from compilers like F77 V5.0. It does not fully support language specific features but is usable nevertheless.

1 diskette; Sources included; NO objects; Task image included
MACRO

F83-5 This UIC contains the files for building SRD V6.4. SRD is a directory sorting/manipulation program.
ALSO:
This SIG Tape submission accompanys the paper "Developing an RSX-11M ACP in a Higher Order Language" presented at the Fall 1983 DECUS Symposium in Las Vegas, Nevada. The submission contains a copy of the paper manuscript (without figures) and a number of program source files taken from the ACP software described in the paper. The program files are provided as examples of how an interactive program can be used to aid in the development of an RSX-11M ACP. The *.RAT files are FORTRAN source language files coded in the RATFOR preprocessor language.

2 diskettes; Sources included; NO objects; SOME task images included
MACRO, RATFOR

F83-6 This account contains the sources for SUPMAC. SUPMAC is a pre-processor for the structured assembler language SUPER MAC. It is written in FORTRAN IV.
ALSO:
This account contains Datatrieve structures to produce reports of RSX-11M-Plus system accounding data. The file ACCOUNT.DOC is the text of a paper on this subject scheduled for the Fall 1983 Las Vegas symposium describing these reports, which I believe are more useful and more easily adaptable to individual sites than those distributed by DEC. A description of the files and how to set things up is in SETUP.DOC. This account also contains some commands for producing reports from the Console Log file, which work for both 11M and M-Plus, and are also described in the documents given above.

2 diskettes; Sources included; NO Objects; NO task images
FORTRAN-4, Runoff, MACRO

F83-7 RSX11M version of Empire. Uses a PLAS region to handle its variables and is known to work under M 3.2, 4.0 and 4.1 with or without FPEM.
ALSO:
Adventure compiler and run-time system for RSX. Comes with a much expanded version of the originalAdventure as an example of how to code one.

3 diskettes; Sources included; NO objects; Task images included
MACRO, FORTRAN-77

F84-1 This area contains several task images for the PRO 350/380 running P/OS. These images are nonprivileged and should work on most any P/OS version. They include: ANALYT.TSK- New task image for PortaCalc, sources on this tape. Note you need AK*.CMD and KY*.CMD and KEYPAD.PIC in directory [DK] to use this image most effectively.
ATT.TSK- Task to read/write file attributes. Use the ATT /HELP command to get switch list. Can change FCS/RMS attributes of any file; very handy for diddling.
FORTH- FIG Forth V1.3 for the PRO (off an old RSX SIG tape).
DOB- Object disassembler. Will allow you to make MACRO source out of any object files (also can use /LB:module to get object modules out of an object library.) Very handy for patching code you don't have sources for.
ALSO:
[300,70] contains LUT (look at the LUT of a running task) and TTPOOL (displays number of free buffers in TT driver) Both were originally written for RSX11M, and have been modified for RSX-11M/PLUS V2.1.
ALSO:
1. CDDRV- DR11-W interprocessor link (M/M+)
2. INDIRECT.NDX- Documentation (M/M+) An alphabetic index to the chapter on Indirect in the MCR Reference Manual.
3. INSFL.COR- Correction file for INStall (M+ V2.1)
4. MVD.MAC- Mounted Volume Display (M/M+) A privileged task to list for each user, all mounted volumes, sorted by user and device. Information displayed includes volume label and "Foreign", ACP name, "Private", "Nowrite", and "Marked_dismount" as appropriate.
5. MYMACS.MLB (M/M+) A general macro library used here to assemble MVD.
6. WHO.MAC- Who, What, & Where (M/M+) A privileged task to provide a display of logged-in terminals along with the default UIC and active tasks, if any, for each. It identifies privileged users, privileged tasks, and displays task priorities, if requested.

2 diskettes; Sources INCOMPLETE; NO objects; SOME task images
MACRO, Runoff

F84-2 The following two programs are sufficient to network various machines in a simple fashion:
1) The SOFTWIRE terminal emulation program
2) XMODEM file transfer program
SOFTWIRE was designed to execute under RSX11M without loosing characters at 1200 baud. It will handle higher baud rates if the remote machine supports XON-XOFF protocol. It has file transfer capability and can send a break character. It has been used to converse with RSX, IAS, UNIX, CMS, and DIALOG. These programs have been tested under RSX11M V4.1 and RSX11M+ V2.1. They may be rebuilt using the DECUS C compiler system and the RSX extensions (CX.OLB). Note that there are only two files in this system, SOFTWIRE.C and XMODEM.C. RUNOFF user manuals can be extracted from these files with the CTOOL GETRNO.
ALSO:
CPU- Taken from the Spring '83 US RSX tape [370,1] and modified to run on a VT100 or equivalent and give a full 0-100% range on an 11/44 with M-Plus.
DISKUSAGE
SNAPDISK- Two versions of a program to spawn PIP to determine the disk usage by account. DISKUSAGE reports to the logfile and SNAPDISK spools to the line printer. Both rely on an account file set up to have seperate group values for each account. These programs sum the disk blocks allocated over all members of an account group.
DTCCHECK- Routine to spawn to the Indirect Command File Processor a DTC.CMD command file to check the calendar for the users and prompt them of upcoming appointments.. This program will usually be placed in the clock queue to run at some predetermined time. The command file and DTC are setup to run every 30 minutes.
GETPORT Routine to spawn to the Indirect Command File Processor a PORTSTAT.CMD command file to check the status of a user specified port. It determines(from the exit status) from ICP that the port is Logged in or not, allocated, or attached. If none of these is the case, The baud rate is asked for and set. The primary use is to be able to remotely dial out of the system using the TALK program and an auto bauding auto-dial modem such as the RIXON 212A.
LISTEN- Prints on the issuing terminal all input to a specified terminal port. All characters received are displayed, including control characters. I have found this program simple but invaluable in testing RS232 equipment.
SCREEN- A program that uses the Get CLI Information (GCII) directive to determine the logged out terminals and to write to those terminals, their terminal number, Time of day, and number of users logged on. This is written at the top line of the crt and is walked across the line. I have this run every minute. Off working hours it just clears the screen of every logged off terminal.
SHOWTASK- Routine to Show the attributes of a task image.
SINGLETKB- A simple program to prevent multiple copies of TKB from running on the system. Applies to BP2 and F77 as well.
T2T- Another tape to tape program. Does a fast tape to tape copy of any structured tape that ends with an EOV as all tapes should do. Will even handle the large (32256) VMS backup tapes.
ALSO:
DYCOPY - A PROGRAMME TO MAKE IMAGE COPIES OF RX01/RX02 FLOPPY DISKS
ALSO:
Clunk Library -A collection of routines to handle 8-byte clunks. A clunk being the number of 100 nano second time intervals since 17-NOV-1858. That date being the Smithsonian Astrophysical Base Date (celebrating the day the first photographic plate was exposed at the Harvard Smithsonian Observatory). These routines make use of the routines in the STRLIB library on account [310,3]. Two macro routines are included and part of the library. Clunks are used as the time/date field by Datatrieve as well as time fields in file headers.
ASCCLK Routine to convert a time/date ascii string to an 8 byte CLUNK value. The input string is null terminated and always 18 bytes long in the following format: hh:mm:ss dd-mmm-yy CLKASC Routine to convert an 8 byte CLUNK value to a time/date ascii string. The output string is null terminated and always 18 bytes long in the following format: hh:mm:ss dd-mmm-yy
TIMCLK Routine to get the current time and return the time/date in the 8-byte clunk format.
ALSO:
PROGRAM Findit; { PROGRAM TO FIND STRINGS IN FILES }
ALSO:
TCR- Terminal Characteristics Report program modified to support user defined terminal types ("200

and up) and user names to six characters (if using M+ accounting).
ALSO:
General purpose library used by the Canadian Hydrographic Service.
ASCBCD Convert an ascii buffer to BCD
ATTACH Attach/detach an lun
BCDASC Convert a BCD buffer to ascii
CONVER Conversion error handler for VT100 terminals
DOESC Do and escape sequence qio to a specified lun
FCSERR Return an FCS error description in text form
GETTRM Get the terminal type from the system
INQUIRE Get the full file spec (ala VAX). Spawns to DSP
ITIME Return time of day as 3 integers
JULIAN Return the current day of the year
QUEST Logical function to ask a question
SETCPI Setup the horizontal spacing of a LA100/LA120 type terminal
SETVID Set up the video attribute sequences for BOLD, REVR, etc.
TIMER Start and stop an elapsed timer
TSKLOG Log to the console log file the task name and elapsed time
CNV2UP Convert a character type string to upper case

1 diskette; Sources included; NO objects; NO task images
C, FORTRAN-77, MACRO, PASCAL

F84-3 This account contains the 'STAT11' package that is in the DECUS library. It has been modified to be compiled with BASIC-PLUS-2 under RSX11M/M+

2 diskettes; Sources included; NO Objects; Task images included
BASIC-PLUS-2, TECO

F84-4 This is the latest version of Online Pool Analyzer (OPA), which identifies a few more pool structures than previously.
ALSO:
Once accounting data is obtained, it can be reported by Datatrieve, but we prefer to graph it on a PRO. The programs DEVICE.FTN and TASK.FTN graph Device statistics and Task statistics, respectively. They use Core Graphics, but have never been tried on anything other than a PRO-350. GRAPHIC.CMD and GRAPHBLD.CMD are used to compile and task build any fortran program which uses the graphics library on a PRO.
ALSO:
ABORT.MAC makes it easy to have Abort AST's in Fortran programs, so your programs exit cleanly. There were articles recently on this in the multi-tasker, and mine is included here.
CIPHER.FTN A data encryption program, easy to use, difficult to break.
COPYPACK.CMD To simplify generating skeleton system packs from masters. Uses two other files to copy only the desired UICs from one pack to another.
GRAPHIC.FTN;3 To put VT100 family terminals out of graphics mode.
LIFE.FTN;1 A LIFE program for VT100 family terminals. Entertaining. Also demonstrates ABORT.
LINEOFF.CMD To switch devices from DECNet back to RSX
LINEON.CMD To switch devices from RSX to DECNet.
MODULE.FTN Extracts names of modules and sources from maps. Handy if you want to get a list of modules actually used by a task to prepare overlays, or determine what resident libraries can be used, etc.
TIME.MAC Tests the Floating Point Processor and prints the time. Because the FPP on some 11's (especially the 11/70) can fail in a mode where the FPP generates arithmatically incorrect values, but does not generate system errors, a method of obtaining a warning when the FPP fails was wanted. This program does this, and also prints the time and error count out. Normally it is run on the

clock queue to print out every 10 minutes or so. Also handy to mark the time off on your console listings.

1 diskette; Sources included; SOME objects; NO task images
MACRO, FORTRAN-77, Runoff

F84-5 The COMPLETE Kermit distribution

16 diskettes; Sources included; NO objects, Task images included
C, MACRO

F84-6 This third release of Hgraph includes support for REGIS compatible terminals. It was initially developed for the VT-125 terminal although it should work with other REGIS compatible terminals. Refer to the VT125.DOC file for information on which modules were modified to adapt Hgraph to this terminal; it includes insights as to the conversion for other terminals if users would like to make changes. The HGR125 files support a REGIS terminal and the Bausch and Lomb DMPL plotters. Hgraph is coded in FLECS. This structured Fortran code is contained in the .FLX files. The FLECS generated Fortran 66 code is in the .FOR files. PLOT3D.FOR is included as a separate file. A FLECS version is not included as it does not exist. PLOT3D is known to have bugs, but will work for many of the 3D plots you may wish to do.

2 diskettes; Sources included; NO objects; NO task images
FORTRAN-4

F85-1 [5,1]Top level directory [decusc]
[5,6] CROSS directory. A variety of cross assemblers.
[5,7] CTEXLIB directory. Part of P/OS version of DECUS C. Access to menus, etc.

1 diskette; Sources included (compressed format); NO Objects; NO task images
C

F85-2 [5,2] BIN directory (.H files, libraries, and VAX .EXE's)

3 diekettes; NO sources, Object files; VAX .EXE files ONLY

F85-3 [5,3] COMMAND directory. Documents, more .H files, some other stuff.

5 diskettes; Sources included; SOME objects; NO task images
MACRO, BASIC, Runoff

F85-4 [5,4] COMP directory. Sources for AS and CC, compiler and assembler.

3 diskettes; Sources included; Objetcs included; NO task images
MACRO, C

F85-5 [5,5] CPP directory. C preprocessor.

2 diskettes; Sources included; NO objects; NO task images
C

F85-6 [5,10] DECNETRSX directory. RSX DECnet support.
[5,11] FONT directory. Part of P/OS C kit, fonts for bitmapped display.
[5,13] LIBC directory. C library items.

1 diskette; Sources included; NO objects, NO task images
MACRO, C, Runoff

F85-7 [5,12] LEX directory. A lexical scanner generator for DECUS C

1 diskette; Sources included; NO objects; NO task images
C

F85-8 [5,14] MISC directory. Odds and ends, some quite useful, but not part of the compiler proper. Includes a speller, file compress utility, and more.

6 diskettes; Sources included (compressed format); NO objects; NO task images
C

F85-9 [5,15] OTSCOM directory. Common OTS routines for C runtime.

1 diskette; Sources included; NO objects; NO task images
MACRO

F85-10 [5,16] OTSIO directory. I/O areas for C OTS.

2 diskettes; Sources included; NO objects; NO task images
MACRO, C

F85-11 [5,17] PML directory. Portable Math Library (in C)

1 diskette; Sources included; SOME objects; NO task images
C

F85-12 [5,20] POS directory. Executable DECUS C for P/OS with libraries.

1 diskette; NO sources; SOME objects; Task images included

F85-13 [5,21] POSCTEX directory. Later version (?) of CTEXLIB for POS C.
[5,22] RMSPCLIB directory. RMS I/O support items. Used for POS flavor of DECUS C.
[5,32] ZZDECUSC directory. H files needed (in a directory named ZZDECUSC) for P/OS DECUS C.

1 diskette; Sources included; NO objects; NO task images
C, MACRO

F85-14 [5,23] RSTSLB directory. RSTS (and RT) I/O support items for runtime.
[5,30] VAXLIB directory. VMS I/O components for runtime.

1 diskette; Sources included; NO objects; NO task images
C, MACRO

F85-15 [5,24] RSXLIB directory. RSX I/O support items for runtime.
[5,25] SPRSX directory. file I/O-free support for tiny "standalone" C programs. Also support's R. Denny's special ACP.

2 diskettes; Sources included; SOME objects; NO task images
C, MACRO, Runoff

F85-16 [5,26] TOOLS directory. LOTS and LOTS of tools no programmer should be without. Also buildable with VAX11C. Tom Shinal has contributed a super enhanced GREP also.

3 diskettes; Sources included; NO objects; NO task images
C

F85-17 [5,27] USEFUL directory. Odds and ends that may be handy compiling C code from other systems.

1 diskette; Sources included; NO objects; NO task images
C, Runoff

F85-18 [5,31] YACC directory. Compiler-compiler dialect (parser generator) that will work with LEX above. (IBM PC versions of these are on various bulletin boards also, but have added restrictions in space for tables.)

1 diskette; Sources included, NO objects; NO task images
C, Runoff

F85-19 This is VT Kermit from Tad Marshall, Bankers Trust. It is a complete VT100 emulation in Kermit with the ability also to handle script files. Look over the other .DOC and .TXT files for complete documents. IBM PC version is supplied as an .EXE and the sources have Rainbow and IBM PC versions.

2 diskettes; SOME sources; NO objects; Some task images
C

F85-20 This is the code for a BUILD command which enables most task builder options to be put on a single line. It is capable of choosing defaults and relieves most users of having to know about the task builder, since they will use the BUILD command instead. See the BUI.DOC file. You will probably want to customize some of the logic to your system before building the task.

1 diskette; Sources included; NO objects; NO task image
FORTRAN-77

F85-21 These GRAF subroutines produce high quality x-y graphs of tabulated functions. The graphs are labelled, and the endpoints of the axes are chosen to be nice numbers depending on the range of data point values. Also included are several device dependent libraries for generating the actual plot on several devices such as Tektronix 4010 compatible terminals, HP7221 plotters, Epson FX-80 printers, and a device-independent interface for generating plotfiles which may later be plotted on any and all supported devices. The actual program is independent of the plotting device; the choice is made at task build time.

3 diskettes; Sources included; NO objects; SOME task images
FORTRAN-77, MACRO

F85-22 This submission is the TRAMP package from the DECUS library. It contains several programs including a complete forms driver package and some forms-oriented data handling programs and can serve as a controllable replacement for FMS in which all source code is available.

3 diskettes; Sources included; NO objects; NO task images
FORTRAN-77, MACRO

F85-23 The SPELL files are part of the submission from E-Systems Greenville Division. The update to SPELL (a spelling checker program) (current version 4.5) adds the overlay "feature" due to increase of the size of the F77 OTS with v5.0.

3 diskettes; Sources included; NO objects; NO task images
FORTRAN-77, MACRO

F85-24 Bonner Lab Runoff is a text formatter which when used with your favorite editor makes a complete word processor. Its syntax is almost a complete emulation of DSR (Digital Standard Runoff) and it is very compatible with previous versions of Runoff. The document and help file for this version can also be used for DSR. The intent of this program is to support complete scientific word processing to produce publication quality output. It has been used to produce thesis, progress reports, and scientific papers here at Rice University.

5 diskettes; Sources included; Objects included; Task images included
MACRO

F85-25 1.1 RUNNER and INSREM Set of programs used to send parameters to a task, install the task, activate it and remove it upon exit. This is a complete 'flying install' subsystem and will work for permanently installed tasks as well (see RUNNER.DOC).
1.2 SNDPRM and RCVPRM Interface to RUNNER and INSREM for sending and receiving parameters.
1.3 VXDRV and VXUTIL This is yet another re-write of the VSDRV by Osudar. It provides mulitple units each capable of having 16kb of pool space. This will only work on RSX11M+ with I/D.
1.4 PIPE Interface to VXDRV QIO's for sending, receiving, creating queues.
1.5 SNDTST and RCVTST Test programs for demonstration.
2.0 CMB Compare binary. Compares two fixed length binary files for equality. Can be used for task images, data files, etc.
3.0 WATCHER Nifty patch for finding executive space memory clobbers.
4.0 IODUMP Dumps buffers in hex-ascii byte or word format.
5.0 BUGMSG Prints debug messages only if lun 4 is not assigned to the NL: device (i.e. TT: or HT:).
6.0 SYSMS Prints messages on the system terminal device (ST0:).
7.0 CDUMP Searches a binary CDA file for a given pattern.

1 diskette; Sources included; Objects included; SOME task images
FORTRAN-77, MACRO

F85-26 The DIRECTORY command lists the files contained in a directory. When you use certain qualifiers with the command, additional information is displayed, along with the names of the files. The output of the DIRECTORY command depends on certain formatting qualifiers and their defaults. These qualifiers are: /COLUMNS, /DATE, /FULL, /OWNER, /PROTECTION, and /SIZE.

1 diskette; Sources included; SOME objects; NO task image
MACRO

F85-27 This account contains modifications to the DOB program originally released on the Fall '83 RSX DECUS tape on account [351,30]. The original version was written by Tom Getzinger of Hughes Aircraft. This version has been extended to recognize RT11 object libraries (at least on RSTS), allow global symbols to be specified, dynamically increase its size as needed, use I&D space (if your processor supports it), new error messages, print numbers larger than 170000(8) as negative numbers, print comment lines decoding some of the Internal Symbol Directory (ISD) entries documented in the TKB manual, correctly print "TRAP global" and "EMT global" (instead of printing ".BYTEs"), handle library symbol tables that now specify offsets to start of a library .PSECT, and a couple of minor bug fixes.

1 diskette; sources included; SOME objects; Task image included
MACRO

F85-28 CAM'MAC backwards' A sophisticated utility to reduce PDP-11 object code to source macro. CAM labels where possible using the original global or local symbol names. Many (many) formatting options are available including pretty features such as converting 'mov x,-(sp)' into 'push x' etc. It is possible to produce 'listings' or code that can be fed directly back into MACRO without editing. A number of support programs are supplied in the CAM package to assist in MACRO development and debugging. These include a object module analyser on the lines of VMS's "ANALYSE/OBJECT".

2 diskettes; Sources included; SOME objects; NO task images
C, MACRO

S85-1 This program is a small DATABASE program designed to store and retrieve information of a relative simple nature. Facilities to manage this information are MENU oriented and for the most part self explanatory. There is ENTER DATA, UPDATE DATA (to change or modify), DELETE a RECORD (to delete a RECORD), SEARCH (to find a specific RECORD), PRINT a REPORT (to the default DIRECTORY or to the attached PRINTER), SCREEN REPORT (prints the REPORT to the SCREEN), LIST ALL DATA (displays all DATA in the file with RECORD and FIELD numbers), SORT (a general purpose SORT of the FILE by FIELD name), and EXIT (to quit).
ALSO:
DTC - The Desk Top Calender by Mitch Wyle as revised by Glenn Everhart. The idea here is to automate an appointment calender. Most appointment calenders give only one of Month-At-A Glance, Week-At-A-Glance, or Day-At-A-Glance. DTC is an attempt to give all of these functions in a paperless, fast, menu-driven format.

1 diskette; Sources included; NO objects; Task images included
BASIC Plus-2, FORTRAN-77

S85-2 The following new or revised programs await your delectation: The standard RSX SIG format independent tape copy utility.
The latest and greatest DDT. This version has had some more work with the I / D space option of RSX11M+ V2 and is smoother in operation and has some minor bugs fixed.
The famous Floating Point Emulator for RSX11M. I have added support for RSX11M+ in this version and also added some logic for RSX11M V4 to let it work with headers in new locations.
A Generalized Histogram and Scatter Plot routine for ordinary printers. The program was submitted a few years ago but the source now contains documentation on use. Also runs well on VAX.
The version of Ray French's file recovery program from the "Reese's Pieces" tape of Frank Borger. Handles multiheader files, works well on RSX. No RSX installation should be without it. Use it when

your long-running task aborts with a 20000 block output file that you want to recover up to the point of failure...
This is a TECO macro that runs (RSX or VMS) in TECO to emulate EDT V2. I have cleaned up the draw and overprint modes (which EDT lacks) and added text justification.
Truncate will truncate all files needing to be truncated but not alter any revision dates.
This version of FFL knows how to handle in image mode some extra file types. In particular, it will now recognize files of type .ULB, .HLB, .CLB, .DSK, and .DOS as image mode files and transfer them in that way. The list of types is parametrized now so you can alter it at will.
There appears to be other things in this collection that are not documented such as a spreadsheet and file attribute alteration program.

5 diskettes; Sources included; Some objects; Some task images
MACRO, PASCAL, FORTRAN-77, BASIC
Some source is in compressed format

S85-3 The DBSMNG package developed from a suite of modules used to facilitate file I/O and complex data manipulation. As the number of modules in the package expanded, management routines were added to combine the individual modules into programs to perform commonly used functions especially those needed to create, maintain and exploit small databases. DBSMNG is designed to support small, homogeneous databases (ie of approximately 100-10000 records), and allows databases to be quickly established and easily maintained.

Approved environments :
PDP11-40, RSTS/E under RT11 emulator.
PDP11/23, TSX-plus
PDP11/03, RT11

4 diskettes; Sources included; NO objects; NO task images
MACRO

F86-1 This diskette contains five tasks. APFEL1 ... APFEL4 are for experimental purposes only.In APFELM all functions tried up to now are included. The tasks and all subroutines needed are written in FORTRAN_77. They work well with P/OS V2.0A,later releases are supposed to function too. All sources are included. A typical set of start-parameters for the task APFELM is

X = -2.0
Y = -2.0
Window = 5.0
Iterations = 50
Resolution = 5

When you use the Graphic-Microscope the cursor position is the origin of a new picture.You can change the origin with the four Cursor-Keys and select a specific origin with the Select-Key. To continue with a new frame you have to press the Resume-Key.
ALSO:
Regis to HPGL Conversion Program This disk contains the sources and other information to construct this program.
ALSO:
RSX SIG Other media working group tape tree
RSX SIG Other media working group users list
ALSO:
POOL Monitoring and Analysis Package This is a POOL monitoring and analysis package for the disk-based series of RSX operating systems. It consists of two parts: (1) A privileged, Exec-mapping data acquisition task (POOLMN), and (2) an unprivileged Fortran data analysis task (POOLANAL).

1 diskette; Sources included; NO objects; SOME task images
FORTRAN-77, MACRO

F86-2 RSX BASIC - MICHAEL REESE VERSION Reese Basic is a highly upgraded version of what used to be a DECUS library program for DOS.

4 diskettes; Sources included; Objects included; NO task image
MACRO

S86-1 SHEAP - SuperHeap for Pro Pascal. The SHeap is a way to allow your Pro Pascal programs to get more memory. It deals with a data structure called a super pointer which is 32 bits big. The first 16 bits are the region number and the last 16 bits are the pointer within the region. When you create a region, it creates a region with the name SHPxxx, where xxx is the number of the region that it created. If you are multi-tasking, you can have one task send a pointer to another task, and connect to it, thus sharing data.
ALSO:
COOKIE - A fortune cookie message generator
ALSO:
This is the last release of the old RMDEMO. A new RMDEMO supporting most terminals via a table driven driver is now actively supported by DEC. This version of rmdemo bears no internal resemblence to the new one. It is not now, and will not be in the future supported by DEC. It is the version of RMDEMO used for BL25(V3.2 FIELD TEST) of RSX11M. It works well(no bugs) and has the following advantage. the new RMDEMO is about twice the size of this version. Users with small systems or with insufficient core may have trouble justifying running the new RMDEMO. This version maintains the original small size of RMDEMO and modifies the display page to provide the same information as the new RMDEMO(ie worst case pool statistics).
ALSO:
CRU: Convert, Compress, and Restore File Utility This program is primarily designed for operations on text files, and includes the following options:

1) Converts files between fixed and variable length records.
2) Converts carriage control types (FORTRAN, LIST, and NONE).
3) Converts between 8 column tabs and spaces.
4) Truncates or padds records.
5) Removes trailing blanks and tabs from records.
6) Selects a range of pages for output.
7) Compresses (or restores) records.

The compression algorithm is based on repeat characters, and is therefore especially effective on reducing the storage required for files which contain significant amounts of filler (spaces) or nulls.

1 diskette; Sources included; SOME objects; SOME task images
MACRO

S86-2 FIGure - Calculator for RSX and VMS -- Version: 86.080 FIGure is a calculator to evaluate arithmetic and logical expressions. Syntax is similar to the FORTRAN assignnemt statement. Up to 100 variables may be defined, with 1 to 6 character alphanumeric names beginning with an alphabetic.
ALSO:
Remote file access for DECUS "C" DECnet provides remote file access routines for FORTRAN, BASIC and COBOL, but not for DECUS "C". The routines in this area provide block mode access to files on a remote DECnet node running a special Remote File Access (RFA) object.

1 diskette; Sources included; SOME ojbects; SOME task images
FORTRAN-77, C

S86-3 CKP - This privileged program is intended to run on RSX-11M BL31 or greater only. It will checkpoint all checkpointable tasks that are stopped and have no outstanding I/O. The purpose of this program is to clear out the 'DEADWOOD' that might be sitting around in memory and using up needless pool. When this program runs on a periodic schedule (such as once per minute) pool fragmentation seems to be minimized.
CVL - CHANGE VOLUME LABEL Read the disk label block and change the label to that specified in the MCR command. If no MCR commmand is available, the operator is prompted for commands.
DIRDL -- Execute directive This subroutine is meant to be called by assembler routines to execute directives which might fail because of insufficient nodes. it will only work correctly on qio and mark time directives, and the various task execution directives. it will not work correctly on the various send data directives.
FRG - DISK FRAGMENTATION This MCR task will produce fragmentation statistics for the specified FILES-11 device. The output is a frequency count of contiguous free blocks (holes) falling within each of several ranges, the total number of blocks for each range, and the total number of free blocks for the device.
FSU -- GET REPRESENTATION This program will print out all files which have a specifec string contained in them, and print the lines in the files which contain the string.
GREP -- GET REPRESENTATION This program will print out all files which have a specifec string contained in them, and print the lines in the files which contain the string.
LIST - This program will list a file to TI:
PRFCS - Print FCS error code Subroutine to get a textual explanation for an FCS error.
RMC - Remote MCR function Allows remote manipulation of terminals
TCF - Terminal control functions MCR command line is used to acquire octal byte values, separated by commas, to be passed to the terminal to set-up terminal control functions.
ALSO:
FRG -DISK FRAGMENTATION This MCR task will produce fragmentation statistics for the specified FILES-11 device. The output is a frequency count of contiguous free blocks (holes) falling within each of several ranges, the total number of blocks for each range, and the total number of free blocks for the device. MODIFIED FOR P/OS BY R Uleski, Baker Instruments 23-APR-86
TAPEMOVE - POSITION A MAG TAPE Positions a magtape forward or backward by file mark or rewinds and optionally unloads
USE - Program to display the top CPU users on VT52 or VT100... Modified for the PRO 350 by R Uleski, Baker Instruments
Session notes from the Beginners and Advanced Users PRO/Toolkit sessions presented at Spring '86 DECUS Symposium.

1 diskette; Sources included; SOME objects; SOME task images
MACRO, FORTRAN-77, Runoff

S86-4 MAIL - VMS compatible network mail for RSX-11M This program was submitted by the Digital Equipment People as Network software for RSX-11M

2 diskettes; Sources included; SOME objects; Task images included
BASIC Plus-2, MACRO

S86-5 Portacalc

2 diskettes; SOME sources; SOME objects; Task images included
C

S86-6 REX - ARemote RSX Execution System REX provides a means to log in and execute commands to another RSX system while still being able to issue commands to your local system. REX can also be used from an indirect command file to start tasks on another system. It even returns the exit status of a remote task,

which allows testing completion status in indirect.
ALSO:
Experimental "Fast Virtual Array" package. This code is meant to replace standard Virtual arrays when performance or Virtual Array index limitations need to be stretched. Allows creation of one or more regions, and performs manual mapping to the region through any arbitrary common block. Once mapped, array accesses to the "Virtual array" are as fast as normal array accesses. Look at the source files and the test program for details. Virtual disk I/O routines from Fortran-77. Allows you to read and write disk blocks directly into arrays (regular OR Virtual!) using direct QIOs. Uses the GETVIR routine for accessing Virtual Arrays. A MUST for reducing disk I/O overhead for an application. See the source files for details.
ALSO:
"B4S" and "BASIC MINUS 2" B4S is a preprocessor set up by Dean Elsner in an attempt to make BP2 compile and run at a finite speed and fit into a reasonable area of disk at a time when both time and space were critical. There would be little justification for taking such a course on today's hardware. However at the time (1982) it was a lifesaver. It could still be of great use to those with old, small, slow systems who are using Basic Plus 2..

1 diskette; Sources included; NO objects; SOME task images
C, MACRO, FORTRAN-77, BASIC Plus-2

S86-7 AnalytiCalc (PortaCalc) This version of AnalytiCalc has greatly enhanced resistance to crashes on erroneous user input and is far more bullet proof than all earlier ones. It also implements some new functions to enhance its programmability. It is now fully 3 dimensional as well (by a reasonable definition of that.) Also, the keypad works on VAX as well as PDP11. the supplied default command files for implementing keypad functions. This spreadsheet finally can do matrix math and has (in the usrfct module which may be optionally included) some routines for iteratively searching up to 8 dimensional spaces for solutions to problems. It is the first spreadsheet able to do really significant math in addition to the simple routines needed for finance calculations. There is also a word processing interface and date arithmetic, plus numerous other goodies.

5 diskettes; Sources included; NO objects; NO task images
FORTRAN-77, MACRO

S86-8 Software Tools This account contains source for a number of programs that are generally useful. The programs are: archThe old (mostly obsolete) archive maintenence program. The data format is slightly different from the newer archc and archx programs. archcThe new archive builder (reads files, writes an archive). archxThe new archive extractor (reads an archive, writes the files). buildReads C source files, builds a command file to compile them. commCompare the contents of two files, indicating what is common to both files, and what is different. comm ? gives help. cppC pre-processor with full functionality. Usage: cpp [input [output]]. cpp replaces mp. Follows the Draft Ansi C Standard and may be conditionally compiled to accept other "non-standard" flavors of cpp. See the source code (especially CPPDEF.H) for details. detabConvert <TAB> to an appropriate number of blanks. diffDifferential file comparison program, as described in Bell Labs C.S. technical report 41. echoEcho arguments -- used mostly to debug the compiler and run-time system. entabConverts a string of blanks to <TABs>. fixdocFor building the documentation. getcmdReads filenames to build macro compilation commands. For maintaining Decus C. getkwkBuilds index entries for kwik -- for building the documentation. getrnoReads C and macro source files, extracting runoff documentation source. grep"Global Regular Expression Pattern" -- search files for lines which satisfy an argument pattern. grep ? gives help. kwikKwik index program. See kwik.rno/kwik.doc. Link with sorts.c. lineprlisting utility that writes a line-numbered output file. mcA multi-column print utility. nmPrint "namelist" -- prints global symbols for an object module. Lots of options described in the source code, but nowhere else. odOctal dump of a file -- Options described in the source code only. As the RSX library doesn't mangle file attributes, some of the features don't work. od dumps records on RSX, blocks on RT11 prPrint with line numbers. rnoidxConverts the output of kwik to a form that can be processed by runoff ("quoting" special runoff characters, such as '#'). scatConcatenate a list of files (accepting wildcards). scopyClean

up runoff output files and other files with strange RMS attributes. RSX-11M and VMS only (needs file version numbers). sortcSort a file. sortsSort library routines. Help in the source code. Used by kwik. tFile type (on a video screen) utility. Run T and see. Works well on a network virtual terminal. Handles random RMS file formats. uniqPrint unique lines from a file, uniq ? gives help. unitsConvert between various units. Needs floating-point hardware. The first time you run it, it will compile the units database (this is a slow process). Make sure the units database (units.txt, which becomes units.dat) is in a reasonable place. See the comments in the source code. wcWord/line/byte counter xrfCross reference listing for C programs

3 diskettes; Sources included; NO Objects; NO task images
C

LIB-1 WFPROC expands wild card file names. It accepts a wild card file name as input and it outputs, one at a time, all the file names which match the wild card spec. WFPROC is set up so that it can be linked to and called from FORTRAN 77. The user does not need any knowledge of MACRO-11. An example FORTRAN 77 program which calls WFPROC is included in the package.

1 diskette; Sources included; Objects included; Task image included
MACRO, FORTRAN-77

SYM-1 Diskette based BOOTABLE DCL. These diskettes provide you with the ability to bring DCL up from floppies. The application is complete but requires P/OS v3.2 and Toolkit v3.2 if you want to modify it.

2 diskettes; Sources included; NO objects; Task images included
MACRO

SYM-2 This task will allow you to look at and/or modify file attributes
ALSO:
This is a diskette image copier. It always copies from drive 1 to drive 2.
ALSO:
This privileged task will display the FCB's for all the open files on a given device.
ALSO:
This task will display the disk fragmentation for a given device.
ALSO:
This task will reformat ASCII files. It can put up to 10 columns of text on a single page.
ALSO:
This task lists for each user, all mounted volumes, sorted by user and by device.
ALSO:
This program will recover a file locked as a result of task abortion.
ALSO:
This utility will find and recover files from a corrupted disk. It will also "undelete" files that were deleted by accident.
ALSO:
This is a somewhat modified version of SRD the SoRt Directory utility.

1 diskette; SOME sources; SOME objects; Task images included
MACRO, FORTRAN-77

SYM-3 This is a POOL analysis program.
ALSO:
This is a POOL monitor program.
ALSO:

This is a Memory disk. It comes complete and ready to use.
ALSO:
This is a binary file comparison program.
ALSO:
This is a task image label block modification program and a symbol table file interpreter.
ALSO: This is a FORTRAN-77 callable MACRO subroutine that provides the FORTRAN developer with the functionality of the RMS $SEARCH macro.

1 diskette; Sources included; SOME objects; SOME task images
MACRO, FORTRAN-77

Announcing Electronic Newsletter Submissions

In the December '87 issue, I mentioned that I would be arranging for you to make electronic submissions to the Newsletters in addition to the various diskette and papaer methods.

The process is now formalized and ready for you to use.

To submit electronically, you will need a DECUServe account. Details for obtaining a DECUServe account will be published in the next issue of DECUScope. After you have an account, you can use VMS Mail to send me articles. Also, Kermit is planned, but not available as I write this (in December). However, it is likely that by the time you read this information in February, Kermit will be available for you to use.

Along with the ability to submit articles electronically, you will also gain a valuable resource by having access to the DECUServe system. Tne VAX Notes conferencing system that forms the heart of DECUServe contains many conferences on topics ranging from Desktop Publishing to Electronic Law.

My Username on the DECUServe system is RICE. Use it to submit articles electronically. Otherwise, send me a diskette or tape (most any format) or (gulp) a paper copy with your article. Also, please include your name, address and phone so I can contact you. Several of the articles that I have received have required me to contact the author for clarification of something or other.

You can reach me at: McDonnell Douglas
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Gary Rice
PC SIG Newsletter Editor

VAXmate Wishlist Results

By Fritz Howard, VAXmate Working Group Chair

At the Anaheim Symposium, the results of balloting for the VAXmate Wishlist were presented to Anita Uhler, the DEC PCSG Counterpart for the PC-SIG.

At the Cincinatti Symposium, DEC will respond to the top 10 items receiving the highest vote counts. Once DEC indicates that a wishlist request has been fulfilled, it will be removed from the wishlist.

73 ballots had been received as of the Anaheim Symposium. A sorted list with vote totals and relative ranking follows (out of a possible 730 votes):

VOTES	RANK	ITEM
702	1	Support for AT clones using NI kit.
655	2	Increase network disk I/O speed.
650	3	Support for EGA graphics and Color output.
645	4	Provide support for VT-200 emulater external to MS-Windows.
639	5	Reduce price of system to an affordable level. (Under $3,000 with O/S).
593	6	Eliminate need for KEY disk. (Make it optional).
577	7	Support ACL's on network disks.
575	8	Fix addressing problem with CGA, extended memory, and DEPKA board.
570	9	Provide 80386 processor.
562	10	Provide a VAXmate newsletter. (Similar to PERSPECTIVE)

Vote totals for items that didn't make the top 10 ranged from a low of 281 for providing extra card slots in the VAXmate expansion box, to 546 for fixing the VT-240 emulator.

A new wishlist excluding the top 10 items will appear in the next issue of the newsletter. You will again have the opportunity to cast your ballots for your most sought after improvements to the VAXmate product. If you have any questions regarding the voting process, or wish to receive information on items that didn't make the top 10 this time, contact me at the following address:

Fritz Howard
VAXmate Working Group
2988 Ridge Road West
Williamson, New York 14589

VAXmate Vernacular

By Fritz Howard, VAXmate Working Group Chair

Miserable weather here in Upstate NY! Anaheim was much much nicer. There was a lot of interest in the VAXmate and PCSA out there in the land of Disney, and with good reason. DEC announced (I believe "program announced" is the proper term) PCSA V2.0 which will have numerous new and enhanced features. An article detailing the new and proposed features will hopefully appear in the next issue.

I received a letter from Mr. Leroy Kelm of Playa del Rey, CA. awhile back. Mr. Kelm asks about networking IBM-PC's or clones to his stand-alone configuration. One of the things DEC often forgets to mention in the product literature is that the VAXmate can be used as a SERVER in a local area network (LAN). This capability is achieved through the SHARE and SERVER commands that come with the PCSA Client software for the VAXmate. For those of you who are interested, I refer you to the "VAXmate System Administrator's Guide". It offers a fairly complete discussion of how to set up your VAXmate in "Server" mode to act as a file and print server for several other PC's.

Mr. Kelm also notes that technical information about the VAXmate seems to be difficult to find. I'm interested in finding out if others have had the same experience. If you've had a hard time finding out what makes your VAXmate tick, let me know. Send your inquiries (and/or interesting stories) to:

Fritz Howard
VAXmate Working Group
2988 Ridge Road West
Williamson, New York 14589

You can also reach me via modem at (315) 589-7361 (300/1200/2400 baud).

That's it for this month. Stay tuned fans...

welcome to
tales from
the
DAARC
side
Eer

Editorial Contact:

Linda Simon
(617) 467-2332

Digital Equipment Corporation
Maynard, Massachusetts 01754-2571

igital

DIGITAL BUILDS MOMENTUM

IN REALTIME COMPUTING

MARLBORO, Mass. -- December 7, 1987 -- Digital Equipment Corporation announced today product enhancements for VAX systems and related software that extends their capabilities for realtime computing.

Realtime applications are those that require fast, predictable responses to external, time-critical events. They require interfacing computers with experimental, test, or control devices. Examples of realtime applications are materials testing, chemical process control and engine testing.

"Digital is committed to expanding the range of realtime hardware and software products, and to ensure these products can be integrated into a single, organization-wide computing environment," said Michael I. Titelbaum, Group Manager, Realtime Business Group, Digital Equipment Corporation. "Customers need to have information flow from the factory floor and the laboratory bench through the corporate network. Digital's ability to deliver tightly linked realtime and general purpose products satisfies that need."

The new products are Version 1.2 of the VAXlab system family for data acquisition and analysis, including the VAXlab Software Library; Version 3.0 of VAXELN realtime software; and DECscan/ELN driver, the newest member of the DECscan family of products used for realtime applications on the factory floor.

"These products reinforce Digital's continuing commitment to realtime computing," said Titelbaum.

Extensions to VAXlab Workstation Family

The VAXlab Data Acquisition and Analysis systems have been enhanced to perform a broader range of realtime applications than previously and now incorporate the complete line of VAX systems.

"We've made VAXlab systems a viable solution for a broader range of applications. Configured with a MicroVAX system, VAXlab Version 1.2 system can now be used more effectively for data acquisition at the low-end of the computing spectrum. Larger VAX systems make the VAXlab family practical for highly sophisticated, compute-intensive applications such as telemetry," said Bob Nilsson, Marketing Manager Data Acquisition & Analysis Applications, Digital Equipment Corporation.

"In addition, device-dependent realtime applications can be migrated between Q-bus and VAXBI bus software configurations with little or no reprogramming," said Nilsson. "This gives the customer the flexibility to decide which systems to use for data acquisition and which for plotting, analysis and other functions."

Enhancements to the VAXlab Scientific Workstation family include support for serial I/O and IEEE-488 bus, both using standard VAXlab high-level subroutine; a new Q-bus analog-to-digital converter, the ADQ32, offering 32 channels of input and data acquisition speeds of up to 200KHz; and repriced VAXlab Software Library (VSL) reducing the cost for configuring customized VAXlab workstations.

For ease of ordering and installation, packaged systems are available for the four most popular VAXlab configurations. All packaged systems include the VMS operating system, DECnet software, graphics kernal system for graphics plotting, Q-bus and a realtime clock. They are fully expandable.

Base price for the VAXlab/VAXstation 3500 system is Prices for VAXlab systems range from for packaged VAXstation 2000 system to for a VAX 8800-based system.

Enhanced VAXELN Software

VAXELN Version 3.0 software complements and extends VMS software for realtime computing. For scientific, technical and computer-integrated manufacturing applications, VAXELN Version 3.0 offers significant new features of optimized speed and efficiency and reduced implementation time.

VAXELN Version 3.0 software now supports three new runtime systems -- the MicroVAX 3500, MicroVAX 3600, and VAX 8800 systems -- and includes several new tools for both development and runtime environments.

"We're continuing to extend the VAX runtime target system offerings to provide customers the price/performance options they need for distributed applications," said Joe Dale, Senior Product Manager, Digital Equipment Corporation. "What makes Digital systems particularly attractive is that VAXELN systems can be networked together with other realtime and general-purpose VAX systems."

VAXELN software support makes the new MicroVAX systems cost-effective alternatives for performing distributed applications such as process and quality control. The new VAX 8800 configuration provides a tightly-coupled, symmetric multiprocessing capability that delivers powerful performance levels required for compute-intensive, scientific applications including flight simulation, radar tracking, medical imaging and diagnostics, and seismic data processing.

The VAXELN Toolkit incorporates an extended, ANSI/ISO Pascal compiler and runtime libraries for Pascal, VAX C and VAX FORTRAN. Toolkit enhancements include an error logging capability; the VAXELN Command Language for file and program manipulation and limited system control functions; VAXELN Resource Monitor for dynamically displaying system activity information; and VAXELN Performance Analyzer for performance data collection and runtime behavior analysis.

Support for VAX Ada and Rdb/ELN relational database management software, and VAX C and VAX FORTRAN compilers are available as options under separate licensing agreements.

The VAXELN runtime system developed with the VAXELN Toolkit consists of an efficient executive with runtime libraries, debuggers, device drivers and Ethernet support. The VAXELN Runtime system can be installed on any of the following systems: MicroVAX II, VAX-11/730, VAX-11/750, MicroVAX 3500, MicroVAX 3600, VAX 8500, VAX 8530, VAX 85500, VAX 8700 and the VAX 8800.

Prices for VAXELN Version 3.0 software, including VAXELN Toolkit Licenses and VAXELN Runtime System Licenses, range from as low as for a VAXstation 2000 Toolkit and MicroVAX II Runtime system combination at the low end; to as low as for a VAXstation 2000 Toolkit and VAX 8800 Runtime system combination at the high end. VAXELN Version 3.0 software will be available for delivery in January.

Realtime DECscan Driver

The DECscan/ELN driver has been added to the DECscan family of products to support realtime dedicated applications on VAXELN target systems. The DECscan/ELN gives users access to data from BITBUS I/O devices on the factory floor and enhances their ability to tie the factory to their corporate computing environment. With the addition of the DECscan/ELN driver, users can now chose the VAXELN runtime operating environment for shop floor applications.

DECscan consists of a hardware controller and a software driver which operates as an interface between the controller and a MicroVAX computer. DECscan links the VAX Q-bus to Intel's BITBUS, a serial I/O expansion bus designed to connect emote intelligent devices to a control host system. The BITBUS open architecture allows users to select from a broad base of third-party I/O. DECscan can link up to 250 BITBUS-compatible devices to a realtime MicroVAX host, giving users realtime access to data used to control process operations.

"The DECscan controller handles all message transactions between the MicroVAX and the I/O devices that are distributed along the BITBUS," said Bill Hughes, Product Manager, Digital Equipment Corporation. "This frees the system to process the data received from these devices and give shop-floor managers faster access to that data.

"A VAXELN target system does not require as much memory and mass storage as a general-purpose VAX/VMS operating system," said Hughes. "Additionally, such a system can be diskless, which offers industrial users lower-cost solutions with comparable functionality."

The DECscan/ELN driver is packaged with the DECscan/VMS driver and is priced A user's license is and is currently available for delivery.

Digital Equipment Corporation, headquartered in Maynard, Massachusetts, is the world's leading manufacturer of networked computer systems and associated peripheral equipment, and is the leader in systems integration with its networks, communications, software and service products.

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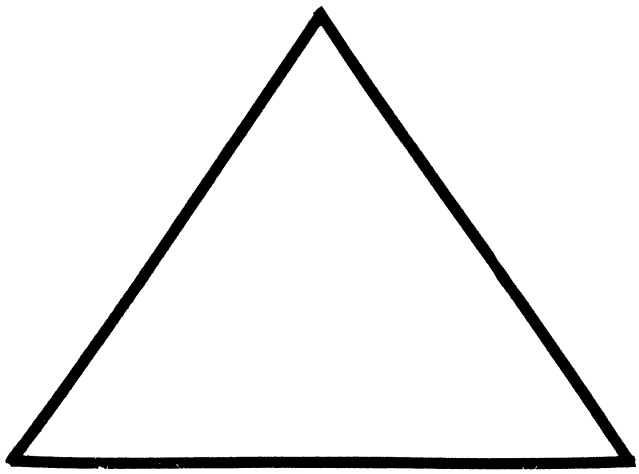

Merry Christmas Everyone;

I guess this will seem strange coming to you in the month of February but it is two days before Christmas. Here I sit with my trusty word processor trying to hammer out a few words of wisdom. Trying to write newsletters two months in advance makes the creative thinking a might difficult. It seems especially hard when you have Christmas spirit and chocolate breath. Peace on Earth and Goodwill to all men. It seems as if we need this more than ever. Oh well! Now to the business at hand.

What a Decus! I think the Decus in Anaheim was the best yet. Mary Jac, the Edusig symposium coordinator, really outdid herself. So many great ones and so little time. It covered it all: networking, CBE, X-Windows (be sure to keep your eye on this one), work stations, security and privacy and many others to choose from. Sessions from 8:00 am to 11:30 pm. I cannot remember when I have worked and played so hard. Oh yes, I am a kid at heart. Disneyland was everything you would expect it to be.

I would like to write about one of the sessions that was held on Friday afternoon. You know when everyone is waiting anxiously to get home and tell their war stories and see their loved ones. DEC is thinking about updating their software product CAS. They are asking for our input. No, we cannot throw the baby out with the bath water, but what we can do is offer some constructive opinions that might help DEC, as well as ourselves, make a better product. If you will send me your ideas

I promise that you will be heard. I cannot guarantee that the suggestions will be enacted but I promise to publish and send your point of view to DEC. Let me share with you a few ideas that came up during this session.

1. Some users were not too happy about the menus in CAS.
   a. The browse option should have the option of turning it off and/or on for individual groups.
   b. The mail option should have the same flexibility.
   c. The assignment section should not be so rigid. The instructor should be able to assign the lessons in the order they prefer. The menu does it alphabetically.
   d. The report section received a lot of criticism from yours truly. Who ever heard of only recording the first score when someone does an assignment. I want it recorded each time they do a lesson.
2. Some people wanted to be able to run CAS on other terminals. It will only run on REGIS terminals now.
3. The password was another item that was brought up. I would like the CAS manager to have the same control that a systems manager has in RSTS . He should be able to print out all the passwords for a CAS group.
4. The setting of the running flags was another item that was brought up. It has always been a headache the way it works now.

Since this was one of the last sessions we did not have to worry about being pushed out of the room. The session went over its allotted hour so a lot of suggestions were given. There were other items that I can not recall just now, but DEC was there to heard all of them. So if you have a suggestion or two now is the time to get your two bits in.

Send suggestions to:

Fred Bell
Coordinator of CBE
Taft College
29 Emmonds Park Drive
Taft, Ca 93268 phone: 805-763-4286

THE DeVIAS LETTER

IAS

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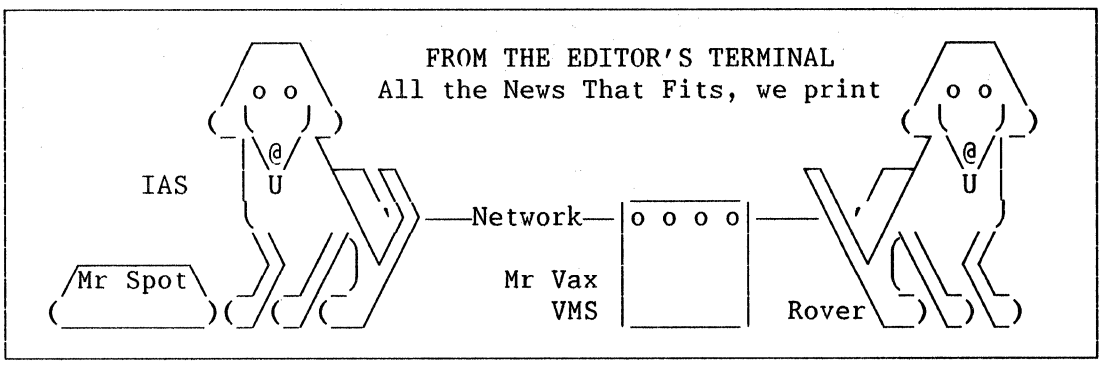

This issue marks the first issue in what your Editor has chosen for the new format style. You will notice that as usual, IAS marches to the beat of a different drummer. (Drummer . . . IAS has been around so long we don't have a drummer, we got a guy banging two rocks together.) Anyway, we found a software package that runs nicely on 11's, It doesn't take megablocks of disk, megabytes of memory, or mega cpu cycles to execute, and does what your editor wants, (it produces output similar to the DECUS proceedings.) Your editor is soliciting comments, pro and con on the new format. We should also be able to electronically submit the newsletter to the LN03 at the DECUS office, although that is still in the testing stage. Hopefully anything is better than two up.

Surprisingly, this month's hardware foul-up hasn't affected the production of the newsletter. Mercifully the melting snow on the roof that poured into the printer room rather than going down the roof drains managed to rain on one of the daisy-wheel printer rather than on the LN03. We even managed to get the printer on the air after only a day of work. Santa was nice to us for a change, but I sure wouldn't hire that roofing company that put a new roof on our department last SPRING again, we've had nothing but floods every month or so after they "fixed" our roof. Anybody know a company that makes waterproof computers?

We received more comments on Ted Smith's SPR from Robert H. French of J. S. Lee Associates Inc. from Prof. Harold Salwen of Stevens Institute of Technology, and from Frits Vanmelenbrouik of Stamicarbon bv, The Netherlands. (I know there are still IAS users in Europe, I hope the newsletter is providing a service to them.) Mr Vanmeulebrouk made the interesting suggestion that extensions to the Fortran Compiler and the Task builder could be made to flag global symbols as data addresses or as code entry points during compilation, and check for the correct match at link time. As far as demonstrating use of passing routine names in subroutine calls, Mr French's answer is included because his had the earlier postmark. (Your editor loves it. First we beat the bushes for submissions, then we are flooded with competing ones!)

Ten years ago this month was a combined January and February issue, (the result of Mark Lewis's abdication.) As such our nostalgia column is rather short.

The program of the month is really a teaser. We use the SET/CLI= command a lot, but many of our CLIs aren't real CLIs. This one keeps people from trying to log on when we

have just re-booted and haven't got the system fully up yet.

CONTRIBUTION GUIDLINES

Contributions 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, SPR's etc will be accepted in any form, (including notes jotted on stained tablecloths.) They will be more graciously accepted in one of the following formats:

Non machine readable sources, (SPR's etc,) should be reasonably dark to insure good photocopying. Text should be 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. We can also accept submissions by FAX, call us.

Contributions may be submitted on 9-track Mag-tape, (800,1600, 3200 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.

We have 1200 baud modems on our IAS system and our VAX, with KERMIT for electronic submission. Give the editor a call at (312)-791-2515 (preferably later in the day,) to obtain access information, etc.

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 send the entire manual set at 300 baud.)

Any media sent to us will be promptly returned.

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.

TEN YEARS AGO THIS MONTH

A newcomer to the world of Digital sent a letter to the sig saying among other things:

"I have joined DECUS and four SIG's. So far, the only SIG that seems to be working is your's."

"I have included a copy of an SPR I recently sent to DEC. It simply states that the multiple output despooler SPR2 is a poor piece of software that is overly sensitive, hard to control and not user oriented. I hope there are not too many offerings designed similarly."

ASK THE DEVIAS DEMON

From: Robert H. French
J. S. Lee Associates, Inc.

Arlington, VA 22202

The "bug" reported by Mr Smith in the Fortran-77 V5.0 compiler and or linker (TKB) is not a bug at all: it is a programming error:

The FORTRAN language allows function and subroutine names to be passed as arguments to functions and subroutines. Thus in his SUBROUTINE C,the dummy argument ITABLE is interpreted by the compiler as being an INTEGER*2 function name, with the entry address of the actual function to be passed by the calling program. The code generated for the subroutine obtains the address of the first parameter, takes it to be the entry address of whatever actual function is supplied by the caller, and does a JSR to that address. Since this is a dummy argument, the subroutine does not place an entry for it in the external symbols to be resolved by the Linker: the external reference comes from the calling program.

The main program calling C has supplied the address of an INTEGER *2 array rather than an external function. The FORTRAN EXTERNAL statement is needed to declare a symbol to be the name of a function or a subroutine, so that the compiler will enter it in the list of global symbols to be resolved by the Linker, rather than assume it to be a variable and allocate storage for it along with all other local variables of the program.

The result of Mr Smith's code is that the subroutine C has transferred control to the data area of the main program. Executing one's data is an excellent way to obtain an SSTO or other similar trap, and the results he got are to be expected.

To illustrate the utility of being able to pass function and subroutine names as arguments, consider the following (somewhat trivial) example which passes the name of a function to be integrated to a numerical integration subprogram.

```
      EXTERNAL GAUSS
      Y = TRAP(GAUSS, 0., 3.0)
      STOP
      END

      FUNCTION TRAP(F, A, B)
C TRAP = Integral from A to B of
C F(X) by trapezoidal rule
      TRAP=0.5*(F(B)+F(A))*(B-A)
      RETURN
      END

      FUNCTION GAUSS(X)
C Gaussian Density Function
      DATA PI/3.14159265/
      GAUSS = EXP(-X*X/2.)
     1 /SQRT(2.*PI)
      RETURN
      END
```

THE PROGRAM OF
THE MONTH CLUB

You know what it's like. The minute your system crashes and you re-boot, half your users sit there pounding on control-c to help make the reboot finish faster. In our case, if users manage to log on before re-boot is finished, they can really hang themselves if certain cusps aren't installed, certain redirects aren't done yet, etc. To protect our users, the first thing our startup command file does is a command of: "SET/CLI=XXX:TTnn" for each terminal on the system. All XXX does is send a message to the

terminal telling the user that we are rebooting and should be up shortly.

The last thing our startup command file does is to set the cli back to MCR or DCL, and then the user can log on.

```
        .title   xxx
; This is a pseudo cli
;
; Its sole purpose  is to output a message saying  that system
; startup is in progress. (Until all changes are made we don't
; wan't anybody to log on,  but we should tell them about it.)
; It should be  built with  the TKB  command line  TASK=...XXX

        .mcall  dir$,qiow$,exit$s

start:  dir$    #mesdpb                 ;Write first line
        mov     #mess1,mesdpb+q.iopl    ;change starting line
        mov     #mess1l,mesdpb+q.iopl+2 ;and length
        dir$    #mesdpb                 ;write second line
        exit$s
mess:   .ascii  /***  A system re-boot is in progress  ***/
        messl=.-mess
mess1:  .ascii  /*** please wait for system up message ***/
        mess1l=.-mess1
        .even
mesdpb: qiow$   io.wvb,1,1,,,,<mess,messl,40>
        .end    start
```

There are other versions of this "CLI" for other occasions. For instance, if we have users locked out to do system work, or are trying to debug a problem, another version of the above sends the users a message, "Sorry but system work is in progress, call Danny, Frank, or Hans if you have an urgent problem!"

The main thing is that even if the system is not useable, the users get some positive indication that either the system will soon be useable, or a notice as to why things are down, not just a "Dead terminal."

Once you realize that CLI's can do more that be just a different version of MCR or DCL, you really can think up good things to do. One of our favorite CLI's was one that worked just like MCR, except that every time the user made any error, (such as requesting "PIIP",) the CLI cleared one more bit in the users privilege word. To add insult to injury, as the users privileges slowly went out the window, it also prevented the user from running "BYE". A rather strange CLI? Of course, but just the thing to run for some unsuspecting user on April 1st. Positively DeVIAS.

REPORT ON THE FALL SYMPOSIUM

We hoped to have some reports on the fall symposium, but with the effects of the holidays were unable to make the submission deadline. Hopefully if we get electronic submission going it will give us

another 4 or 5 days grace. Anyway we should have a report next month.

UPDATE D FIELD TEST USERS NOTE

As your Editor reported in a previous column, we are not pursuing putting Update D up on our system. For our purposes, we have a stable system that does what we want, and about the only thing we would have gotten out of Update D was RMS version 2.0. Since Brian Nelson was kind enough to send us the sources for IAS Kermit from NBS, and we now have Kermit running using FCS IO, we really don't need RMS version 2.

We therefore ask any Update D field test sites to send us copies of anything they think would be useful to readers of this newsletter. Come on guys and gals, send us zeroxes, anything.

RSTS/E

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From the Editor
Terry Kennedy

Well, I'm still recovering from the Fall Symposium as I write this. It was a pleasure to meet some of the people I've communicated with over the Bulletin Board system in person. Thank you all for your comments and suggestions.

We had a full schedule of RSTS sessions, which were well attended. In addition to DEC's presentations, we had many user presentations. It is good to see so many sessions given by users. DEC had a number of sessions where you could get an advance peek at some of the ongoing issues affecting RSTS users. Among there were a RSTS/VMS compatibility session where pre-release copies of the RSTS/VMS Compatibility Guide were given out. There was also a session on Operator Services Futures, where DEC gave an outline of a hypothetical package which, if implemented, could replace OPSER and give added functionality to PBS. Most of our sessions were taped, so you can order the tapes if you missed the session or didn't get to go at all.

It is good to see so many contributions this month. There should be something for everyone in this issue, from an entertaining 'snake' game to some complex modifications to the DISPLY program.

Since the how-to form has been removed, here is how to contact me for submissions, etc.:

Via US Mail:	Via UPS, FedEx, etc.:
Terence M. Kennedy	Terence M. Kennedy
St. Peter's College	St. Peter's College
Department of Comp. Science	Department of Comp. Science
2641 Kennedy Blvd.	121 Glenwood Avenue
Jersey City, N.J. 07306	Jersey City, N.J. 07306
(201) 435-1890	(201) 435-1890

You may electronically submit material by calling the RSTS SIG bulletin board system at (201) 915-9361, or you may reach me as user KENNEDY on both DCS and DECUServe, if you have access to either of those systems.

You may submit material on RX50's or RX33'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.

Letters to the Editor

Otto W Lutz
PO Box 236
CH-8402 Winterthur
Switzerland

Dec 20th, 1987

To
Terence M Kennedy
St Peter's College
Dpt Computer Science
2641 Kennedy Blvd
Jersey City, NJ 07306
U S A

Re: RSTS Newsletter

Dear Terry,

Sorry for the delay in my response to the fresh wind you brought into the Newsletter. I know the problem for I've tried the same for the Swiss Newsletter for more than a year now.

I include the Reader Survey form hereafter; a modest try of a contribution I have sent earlier through the Newsletter Dialup System.

I have tried again to communicate through the Dialup System using the new number and got quite well into the system. Once in the MAIL program however there was no ways to reach NEWS as described in the October NEWSLETTER. The system kept answering me "%No such user as news". Do I need a private account for a more successful communication? *[Ed: No, there was a problem that the "NEWS" nickname went away when I installed the DECmail update. I have now made NEWS a real username so this won't happen again.]*

Thanks again and best regards

Otto W Lutz

Att: Article

ODT with RSTS-DCL

The following question I owe to Adrian Coughlan and Malcolm Nicholas of the DEC Training Center in Reading. I have submitted it to the Swiss Newsletter earlier, amazingly with no visible response. I therefore dare repeating it here hoping for more success. If it really were trivial I bet a trip to Switzerland to the one who explains a solution to me (joke).

Here it comes:

When using the On-line Debugging Tool in developing Macro-11 programs you may encounter a slightly confusing message from the system as the following sequence of events shows.

According to the manuals the procedure is as follows:

```
$ MACRO/LIST file-spec.MAC       -->     produces: file-spec.OBJ
                                                   file-spec.LST

$ LINK/RSX11/DEBUG/MAP file-spec -->               file-spec.TSK
                                                   file-spec.MAP
        this qualifier asks for the                CMD00x.TMP
        RSX-type linker under RSTS                 ODL00x.TMP
        DCL (see $ HELP LINK)

$ RUN file-spec

?Illegal I/O channel
```

You receive the above message and consequently you won't be able to start the debugging run.

The problem most probably lies with the temporary command-file created by the linker, which looks like this:

```
;  TKB .CMD file created by DCL LINK  V9.3-18   12-Jul-87   20:35
SY:[1,3]TEST1/FP/DA,TEST1=ODL002.TMP/MP
UNITS   =14
ASG     =SY:1:2:3:4:5:6:7
ASG     =SY:8:9:10:11:12:13:14
//
```

The command file specifies 14 (I/O) units while RSTS/E can handle only 12 of them. Therefore you are stuck, unless you either design assembler programs that do not need any debugging - without the "DEBUG"-qualifier the above procedure works fine - or you refrain from using the elegance of the DCL-language and call the task builder directly instead of the the DCL LINK step above:

```
$ TKB file-spec/DA,file-spec=file-spec
$ RUN file-spec
_ODT:file-spec
_ ...
```

This way you can run the debugging in the usual i.e. the RSX-way.

It would be interesting to learn from the readers whether they have heard of the problem, which most probably has its origin in the fact that the command-file meant 14 (octal) which could

be handled by the RSTS-monitor or whether there is a more elegant solution to work around it.

Otto Lutz, PO Box 236, CH-8402 Winterthur, Switzerland

****

Dear Terry,

Recently I picked up SCAN from your system. It's a useful program, but I found a few limitations that had relatively simple fixes, so I'm offering you a revised version with the following changes: matching a string that spans a block boundary, matching all occurrences of the string (instead of just the first one), removing some unused code, and replacing your octal print routine with one I'd previously designed which is about as fast as possible in a dialect of BASIC. Since this program doesn't print many octal numbers, it's not so important here, but people might find other situations where it would be of use, so I offer it in this context.

Feel free to share this with anyone who might be interested. *[Ed: This program is available on the SIG bulletin board system as file [49,1]SCAN2.BAS]*

Kelvin Smith
Financial Computer Systems, Inc.
1 Strawberry Hill Ct.
Stamford, CT 06902

Att: Program

```
1000    EXTEND
1010    ON ERROR GOTO 32000 &
        \ PRINT "Binary file search 1.20 - 16-Nov-87 KS" &
        \ PRINT
1020    PRINT "File";
1030    INPUT LINE F1$ &
        \ F1$=MID(F1$,1%,LEN(F1$)-2%)
1040    PRINT "Search string"; &
\       INPUT LINE S$ &
\       S$ = LEFT(S$, LEN(S$) - 2%)
1050    OPEN F1$ FOR INPUT AS FILE #1%, RECORDSIZE 1024%
1060    FIELD #1, 511% + LEN(S$) AS I1$ &
        \ I%=1%
1070    GET #1%, BLOCK I% &
\       ST% = 1%
1075    BYT%=INSTR(ST%,I1$,S$) &
        \ GOTO 1080 IF BYT%=0% &
        \ PRINT "Found in block ";NUM1$(I%);" ("; &
        \ F.NUM% = I% - 1% &
        \ GOSUB 11000 &
        \ F.NUM% = BYT% - 1% &
```

```
        \ PRINT "), offset ";NUM1$(F.NUM%);" ("; &
        \ GOSUB 11000 &
        \ PRINT ")." &
        \ ST% = BYT% + LEN(S$) &
        \ GOTO 1075
1080    I%=I%+1% &
        \ GOTO 1070 &

11000   REM SUBROUTINE TO PRINT IN OCTAL
11010   IF F.NUM% < 0% &
           THEN F.I$ = "1" &
           ELSE F.I$ = "0" &

11020   F.I$ = F.I$ &
          + CHR$( (((F.NUM% AND 16384%) <> 0%) AND 4%) &
                 +(((F.NUM% AND  8192%) <> 0%) AND 2%) &
                 +(((F.NUM% AND  4096%) <> 0%) AND 1%) + 48%) &
          + CHR$( (((F.NUM% AND  2048%) <> 0%) AND 4%) &
                 +(((F.NUM% AND  1024%) <> 0%) AND 2%) &
                 +(((F.NUM% AND   512%) <> 0%) AND 1%) + 48%) &
          + CHR$( (((F.NUM% AND   256%) <> 0%) AND 4%) &
                 +(((F.NUM% AND   128%) <> 0%) AND 2%) &
                 +(((F.NUM% AND    64%) <> 0%) AND 1%) + 48%) &
          + CHR$( (((F.NUM% AND    32%) <> 0%) AND 4%) &
                 +(((F.NUM% AND    16%) <> 0%) AND 2%) &
                 +(((F.NUM% AND     8%) <> 0%) AND 1%) + 48%) &
          + CHR$(   (F.NUM% AND     7%)           + 48%) &
\       PRINT F.I$; &
        \ 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
```

****

Dear Mr. Kennedy:

In Issue 12 of TUG lines, The Journal of the Turbo User Group, Re`ne H. Ritter provided the Turbo Pascal source code for a Snake Game. This game is said to be well known to VAX users.

After getting it up and running on my PC and adding color and various bells and whistles, I decided to try to "port" it to RSTS. A "port" to Oregon Pascal-2 "worked" except I was unable to get the time between "moves" to less than 1-second -- a no-wait or very short wait read proved to be beyond my programming capabilities in Pascal or MACRO-11. However, BASIC-PLUS-2 has some nice features: dummy = ONECHR(1) \ GET #1, RECORD 8192 either gets a character or generates a trappable error, so "real-time" screen handling is feasible.

I hereby submit SNAKE.B2S for possible publication in the RSTS Newsletter. It is written in BASIC-Plus-2 as implemented in version 2.4. *[Ed: The program in both .B2S and .TSK format is available in account [49,1] on the SIG bulletin board system. It is 7 pages long, so it hasn't been reprinted here - if you cannot access the BBS for some reason and want a copy, drop me a note and I'll see what can be done.]*

NOTES:

1. The Direct cursor addressing functions are specific to terminal types used at our site and will undoubtedly require modification at other sites for terminals other than VT-102 & VT-220.
2. The existence or protection code of file GM:SNAKE.OK determines whether the program runs.
3. To be fun, SNAKE should be run when you are alone on the system -- it uses all the cycles it can get. Running SNAKE at ZERO priority when someone else might want to do something on the system is NOT advised.

Sincerely,
Larry Ingersoll
System Programmer

Tri-State University
Angola, Indiana 46703-0307

Hardware Update Bulletin

At the Symposium I received a number of requests for information about the current revision level of various hardware devices found on RSTS systems. Here is a "dump" of my information so far. If you have information on a device not listed, please send it in so I can publish it.

Please note - only experienced users should attempt to determine board revisions by opening the CPU cabinet. System damage caused by users will generally not be covered by a service contract. When in doubt, contact your service representative to check these revision levels.

J-11 based systems (11/53, 73, 83, 84, and assorted third-

party products) - The minimum revision of the J-11 to work with a floating point chip is Rev. 8. The J-11 is the large white chip with two gold squares on it, found on the CPU board. There is a part number stamped on the white space between the two gold squares. The part number is in the form xx-xxxxx-xx. The last two digits are the revision level. The companion revision to this for the floating point chip is 5. The floating point chip is a smaller brownish-purple chip on the same board as the J-11 chip. It also uses the same part-numbering system, but the last two digits should be 05 or higher. Rumor has it that 11/84 systems need a Rev. 9 or higher J11 for proper operation. A quick test to see if you have a floating point chip is to boot your system and type HA LI at the Start timesharing? question. If your system responds with the text "FPU with FPA" you have a floating point chip at the correct revision level. If you only get the "FPU" part, your system does not have a floating point chip installed.

11/44 systems - The latest revision of the CPU that I know of prints "(Console V3.40C)" when powered on. If you don't get this message, or if you have the "user hostile" console that prints "?01 SYN" whenever you make a typo, you should see about getting the updates installed.

TU-80 tape subsystem - Early revisions of the TU80 controller cannot read data blocks of less that 14 bytes, nor can they do a read reverse with an odd byte count. Very few users will ever experience either of these problems, but if you are trying to read foreign tapes or are writing your own tape handling utilities, this can affect you. The way to tell if this revision is installed in your system is to look on the tape controller card in the CPU (handle code M7454). If it is installed, there will be a ROM part number 278F3 at either location E95 or location 3A. If you need the upgrade, the DEC part number for the kit is EQ-01349-01.

LP-11 printer controller - There is a timing problem on some controller cards when used with LP25 or LP26 printers. The symptom can be a '?Device hung or write locked' message even though the printer is on-line and ready. Also, other odd problems can occur. Field Service generally will approach the problem as a "static problem", which it is not. The printer controller in the CPU (handle code M7258) should be revision T or higher. The quick way to check for this is to look at the card (the side with the parts on it) and see if there are 2 wires running from near the top right of the card to the bottom of the card.

RQDX1 disk controller (found in older Micro PDP-11 systems) - There are a number of problems with early RQDX1's. Symptoms can include odd system hangs, logging errors each time the system is booted, etc. To check revision levels, look at the controller card (handle code M8639) [Note - there are two

different boards with this code - only the RQDX1 has the problem - the RQDX1 can be identified by a board color that is mustard-yellow. The RQDX2 board is dark brown]. Look at the two socketed parts on the left side of the board. They should be labeled 172E5 and 173E5. If they are not, the upgrade kit is DEC part number EQ-01361-01.

Software Update Bulletin

Several software updates have arrived since the last issue. DECmail-11 V3.1 and Basic-Plus-2 V2.5 both arrived and installed with no difficulty. If you have received an update, please call the Bulletin Board system and post the information so it can be distributed to others.

Software Problem Report (SPR) Log

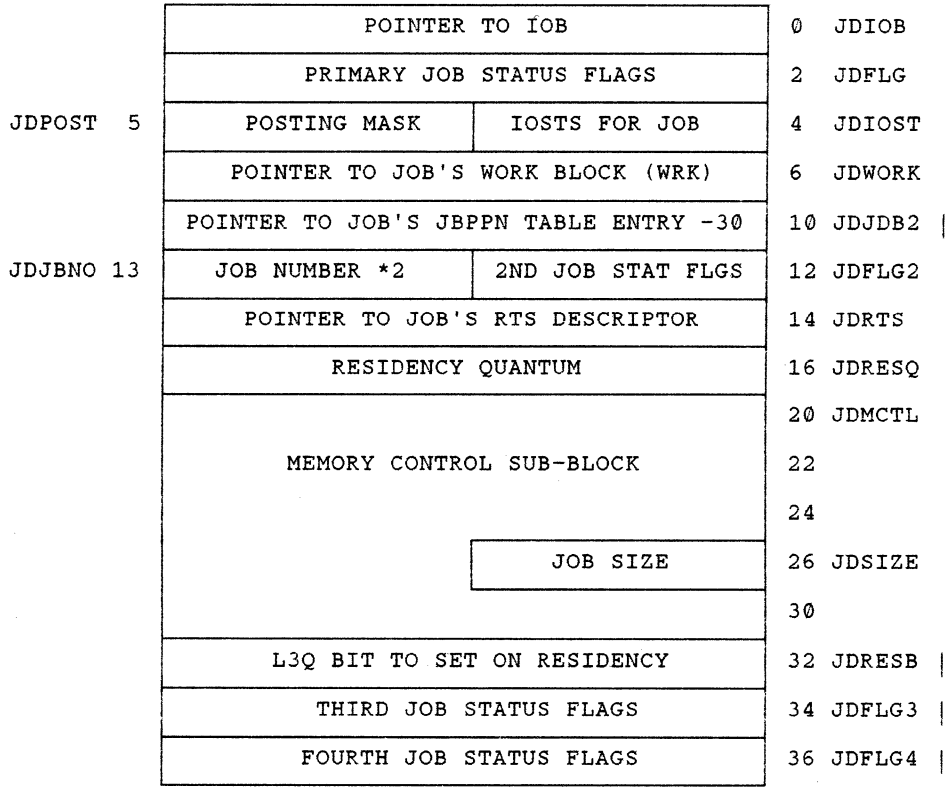
Please send the newsletter editor copies of any SPR's (and Digital's answer) on RSTS/E, DECNET/E, or RSTS layered products. We will print any that are of general interest. The reason for this is that many SPR's are answered with a patch or a notice of restriction, but due to space considerations, they are not published in the Software Dispatch. Since we're desperate for material, this should be useful information and we will print it.

The Newsletter system will be expanded in the near future to allow bulletin-board style messages to be posted for users to exchange this information, which should make it much more timely.

RSTS/E Monitor Internals V9.4 Update - Session Notes

The following slides are from Mike Mayfield's excellent session on "RSTS/E Monitor Internals - V9.4 Update" at the Fall Symposium. These slides may be used to supplement the information in the DEC RSTS/E Internals and Data Structures manual (DEC order no. AA-CL35B-TC), which is now somewhat out of date. The change bars in the right margin indicate areas changed from those described in the DEC manual.

JOB DATA BLOCK (JDB)



PRIMARY JOB STATUS FLAGS (JDFLG)

<0>	JFPOST	UPDATE FIRQB OR XRB USING JDPOST
<1>	JFIOKY	UPDATE KEYWORD AND POST JDIOST TO FIRQB
<2>	JFCEMT	LET COMPLEX EMT HANDLING CATCH JOB POSTING
<3>	JFCC	^C HAS BEEN TYPED
<4>	JF2CC	AT LEAST 2 ^C'S HAVE BEEN TYPED
<5>	JFFPT	TAKE FLOATING POINT EXCEPTION TRAP (P.FPP)
<6>	JFGO	IGNORE JFREDO
<7>	JFREDO	JOB IS STALLED WAITING ON I/O COMPLETION
<8>	JFSYST	JOB MAY USE TEMPORARY PRIVILEGES
<9>	JFFPP	SAVE FPU HARDWARE REGISTERS WITH JOB CONTEXT
<10>	JFPRIV	JOB IS LOGGED INTO A PRIVILEGED ACCOUNT
<11>	JFSYS	JOB IS CURRENTLY USING TEMPORARY PRIVILEGES
<12>	JFRSTD	JOB HAS AN AST COMPLETION RTNE DELIVERY PENDING
<13>	JFBIG	JOB CAN EXCEED ITS PRIVATE MEMORY SIZE MAXIMUM
<14>	JFLOCK	JOB IS LOCKED IN MEMORY
<15>	JFSPCL	CHECK JDFLG2 FOR SPECIAL PROCESSING REQUIREMENTS

JOB STATUS FLAGS (JDFLG2)

<0>	JFCTXT	THE JOB'S CONTEXT SHOULD BE SAVED
<1>	JFPRTY	A MEMORY PARITY ERROR OCCURRED
<2>	JFRUN	A NEW PROGRAM RUN EREQUEST OCCURRED
<3>	JFSWPR	A RTS OR RESIDENT LIBRARY LOAD FAILURE OCCURRED
<4>	JFSTAK	A STACK OVERFLOW OCCURRED
<5>	JFSWPE	A SWAP ERROR OCCURRED
<6>	JFDINI	THE JOB'S D-SPACE AREA NEEDS TO BE INITIALIZED
<7>	JFKILL	THE JOB SHOULD BE KILLED

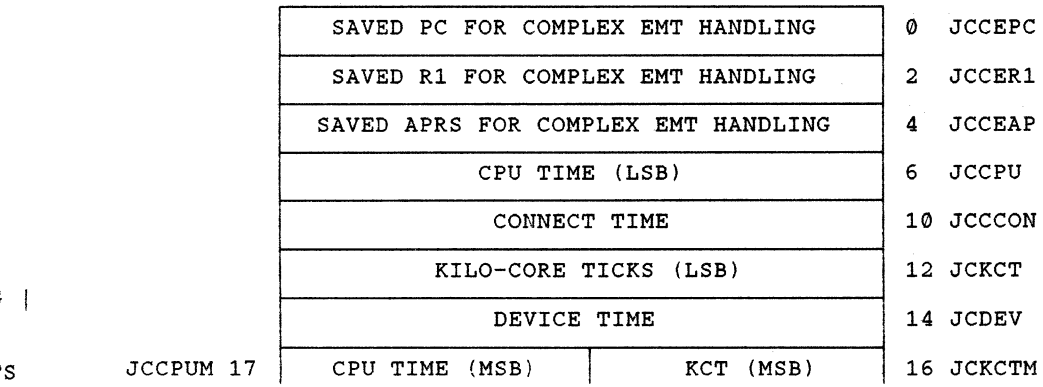
JOB STATUS FLAGS (JDFLG3)

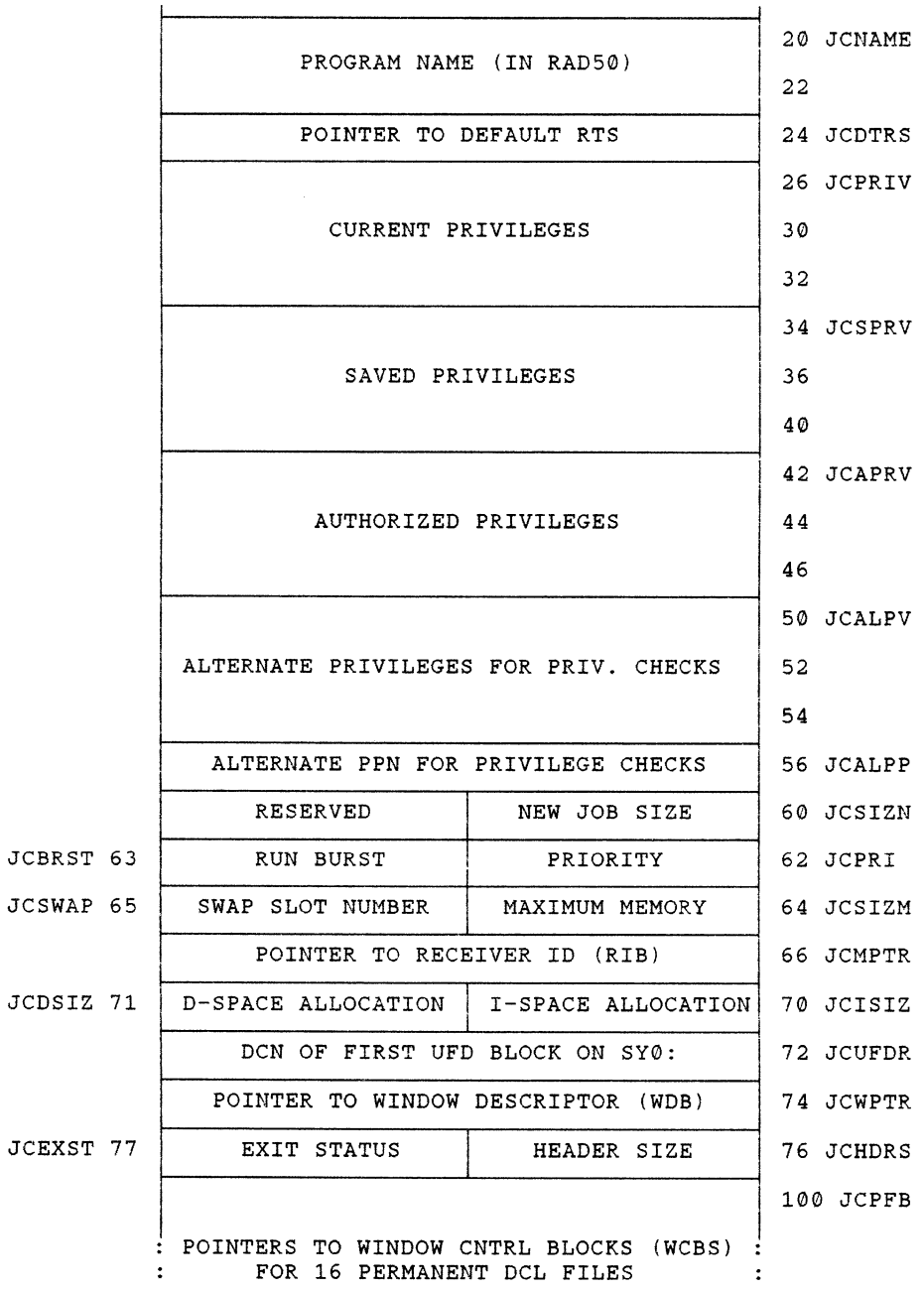
<0>	J2FSPW	JOB IS BEING SPAWNED (LOGGED IN)
<1>	J2BAT	THIS IS A BATCH JOB (PBS)
<2>	J2NET	THIS IS A NETWORK JOB (NPKDVR)
<3>	J2KIL2	LOGOUT COMPLETE FOR JOB KILL
<4>	J2IHDR	JOB'S HEADER NEEDS INITIALIZATION
<5>	J2CAPT	RUNNING IN A CAPTIVE ACCOUNT
<6>	J2PRVP	PRIVILEGED PROGRAM RUNNING (JFSYS IS/WAS SET)
<7>	J2ICF	EXECUTING FROM AN INDIRECT COMMAND FILE
<8>	J2VFY	VERIFY MODE IS IN EFFECT IN DCL
<9>	J2NDAT	NO-DATA MODE IS IN EFFECT IN DCL
<10>	J2SYSV	SYSTEM PASSWORD HAS BEEN VALIDATED
<11>	J2ASTA	AST POSTING ROUTINE IS CURRENTLY ACTIVE
<12>	J2ASTD	AST POSTING IS DISABLED
<13>	J2NCHO	NO-ECHO MODE IS IN EFFECT IN DCL
<14>	J2NERR	NO-ERROR MODE IS IN EFFECT IN DCL
<15>	J2LOG	DCL LOG FILE IS ENABLED

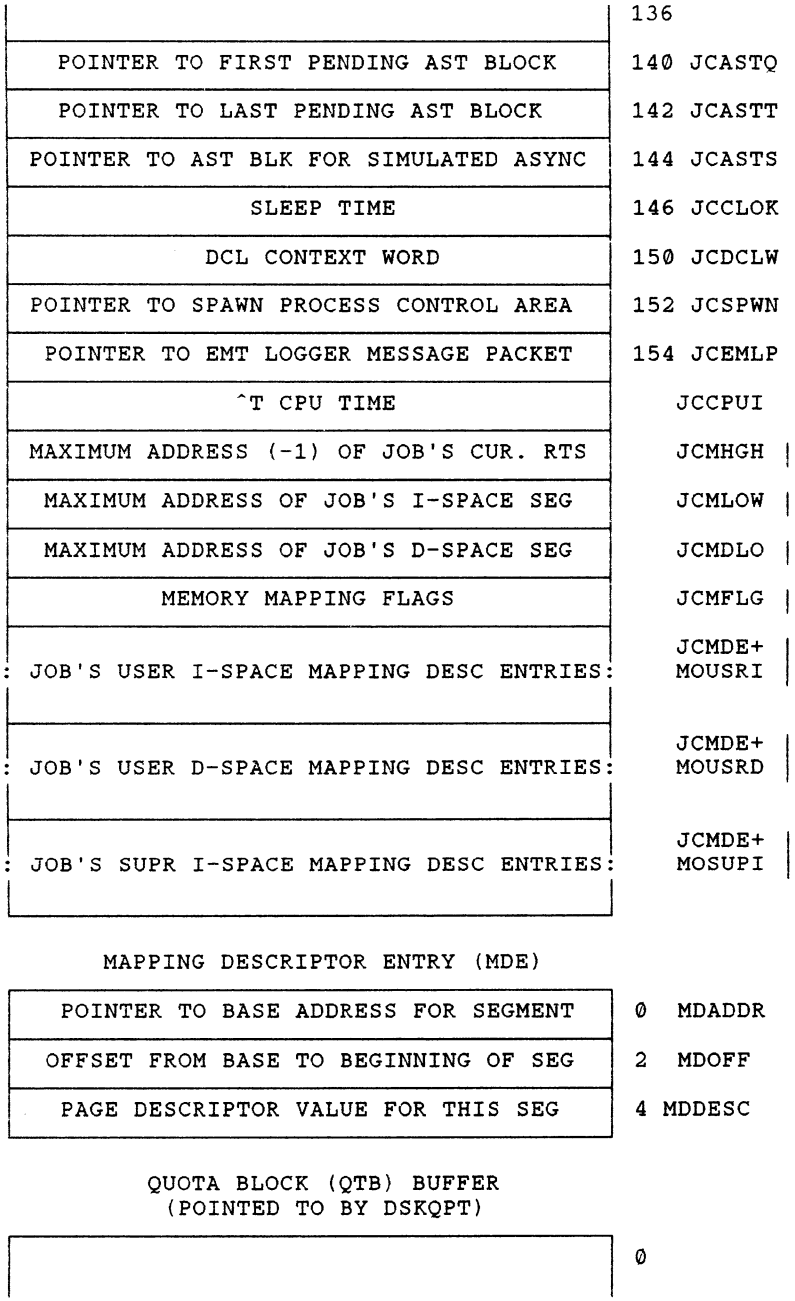
JOB STATUS FLAGS (JDFLG4)

<0>	JDFSTM	USE MAPPING DESCRIPTOR ENTRIES
<1:4>		UNUSED
<5:15>	J2SLAP	POINTER TO JOB'S SLA LIBRARY (BITS 0:4 ARE 0)

JOB CONTROL REGION (JCR)

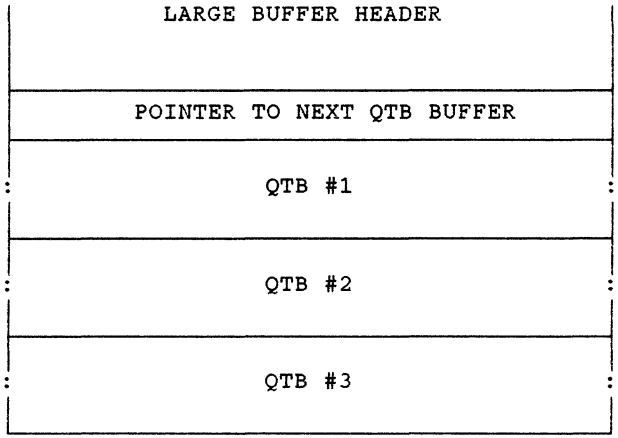




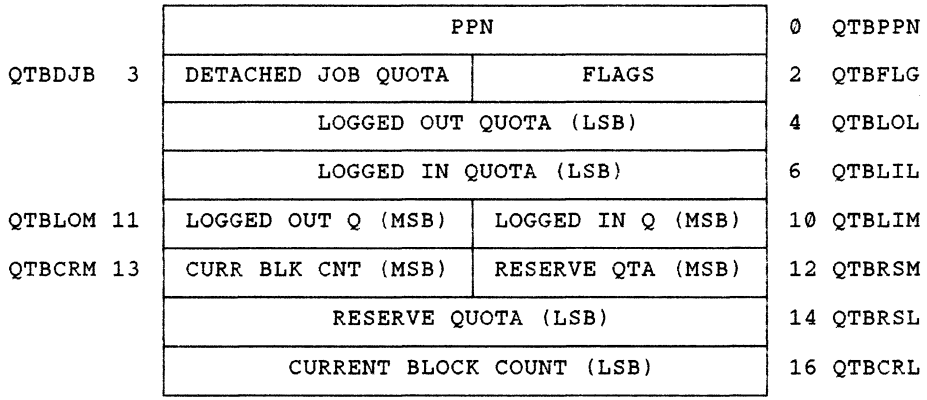


MAPPING DESCRIPTOR ENTRY (MDE)

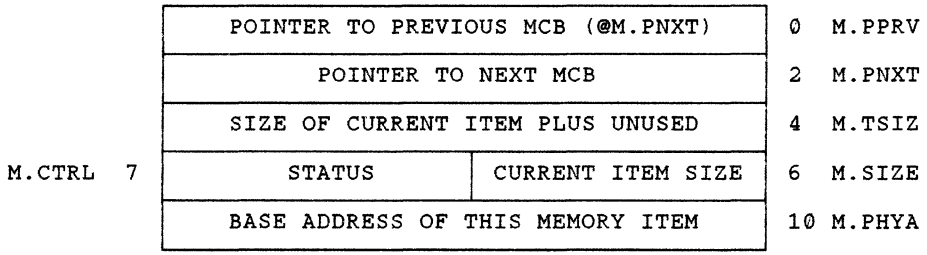
QUOTA BLOCK (QTB) BUFFER
(POINTED TO BY DSKQPT)



QUOTA TABLE BLOCK (QTB)



MEMORY CONTROL SUB-BLOCK (MCB)



MEMORY CONTROL STATUS (M.CTRL)

<8>	REQ	RESIDENCY REQUESTED BY JOB SWAPPING OUT
<9>	OUT	SWAP DIRECTION IS "OUT"
<10>	IN	SWAP DIRECTION IS "IN"
<11>	SWP	A SWAP IS DESIRED OUT/IN SPECIFY DIRECTION
<12:15>	MC.LCK	NUMBER OF OUTSTANDING I/O'S (LOCKED)

FIXED MEMORY LOCATIONS

1000	DATE	CURRENT DATE
1002	TIME	CURRENT TIME
1004	TIMSEC	SECONDS UNTIL NEXT MINUTE
1005	TIMCLK	CLOCK TICKS UNTIL NEXT SECOND
1006	JOB	JOB NUMBER (TIMES 2) OF CURRENT JOB
1007	NEXT	JOB NUMBER (TIMES 2) OF NEXT JOB TO RUN
1010	JOBDA	POINTER TO JOB'S DESCRIPTOR BLOCK (JDB)
1012	JDBF	POINTER TO JOB'S PRIMARY FLAGS (JDFLG)
1014	IOSTS	POINTER TO JOB'S I/O STATUS (JDIOST)
1016	JOBWRK	POINTER TO JOB'S WORK BLOCK (WRK)
1020	JOBJD2	POINTER TO JOB'S JBPPN ENTRY AT OFFSET -30
1022	JOBRTS	POINTER TO JOB'S RUN-TIME SYSTEM BLOCK (RTS)
1024	CPUTIM	POINTER TO JOB'S CPU TIME BUCKET (JBTICK)
1026	JOBWDB	POINTER TO JOB'S WINDOW DESCRIPTOR (WDB)
1030	JOBJCR	POINTER TO JOB'S JOB CONTROL REGION (JCR)
1032	JOBJC6	MMU ADDRESS TO MAP JOB'S JCR ENTRY
1034	JOBF3	POINTER TO JOB'S THIRD FLAG WORD (JDFLG3)

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 DISPLY.BAS. DISPLY is a handy program which shows some of SYSTAT's information on a screen, updating the information at regular intervals. DISPLY hasn't received much attention from RSTS Development in recent years, though. It still outputs in VT52 mode, for example. This can become quite annoying, because it leaves a VT100-type terminal in VT52 mode when it is done. Therefore, I modified the program to output in VT100 mode. Of course, this means you can't run it on a VT52 anymore, so you should keep the unmodified original around, too. The first set of changes below, which are optional, modify some of the display parameters for neater formatting or minor enhancements. Each of the changes may be applied individually, or all of them applied, at your discretion. The second set of changes below

shows the necessary modifications for VT100 mode output. All of the changes must be applied for the alterations to function properly.

Having moved the program to VT100 mode, I thought "why not use 132-column mode to display more information?" The third set of changes below shows the (extensive) modifications for wide terminal output. if you have a "real" VT100, you may need the Advanced Video Option to display 24 lines of 132 columns. Newer DEC terminals (VT102, VT2xx, VT3xx) have AVO as a standard feature. Once the changes are made, the program will **only** display in 132-column mode, so you should keep an 80-column version around, too. The changes also set the maximum screen height to 66 lines, so if you have a full-page display, you can see **everything** on one screen. Again, all of the changes must be applied for the modification to work properly. A sample screen is shown below the third set of changes.

Please bear in mind that as more information is displayed on the screen, the CPU usage of the program will increase. There are two ways to deal with this, however. The first is to change to a longer re-display interval. This way you can 'tune' the program to whatever level of CPU usage you can allow. The second is a matter of adjusting to the additional information presented - you will no longer have to sign on and do a SYSTAT to see more detailed information.

Editor's note - I had hoped to provide these changes in CPATCH format because of the huge number of modifications. However, CPATCH command file format eludes me at the moment. Therefore, the instructions are still given 'the old way'. Some lines have been truncated or wrapped to fit the Newsletter margin settings. Any line ending with "..." is either a "don't care" or a "copy identically from the old line".

How to re-compile the program with BP2:

```
$ SWITCH BP2
SCALE 0
OLD DISPLY.BAS
COMPILE DISPLY.OBJ/OBJ/CHA/LIN/NODEB/WOR/NOCRO/NOLIS/FLAG:NODEC
$ SW DCL
$ TKB
DISPLY.TSK/FP=DISPLY.OBJ,LB:BP2OTS.OLB/LB
/
UNITS=13
ASG=SY:5:6:7:8:9:10:11:12
EXTTSK=512
LIBR=CSPLIB:RO
//
$ DELETE/NOLOG DISPLY.OBJ
```

Section 1 - Optional cosmetic changes

1A - Change default order of items from bsy-dsk-rts-msg-buf-lib to buf-bsy-dsk-rts-msg-lib.

```
Modify line 1040 as indicated:
  Old:  \ W%(T%)=T% FOR T%=1% TO 9% &
  New:  \ W%(1%)=5% &
        \ W%(2%)=1% &
        \ W%(3%)=2% &
        \ W%(4%)=3% &
        \ W%(5%)=4% &
        \ W%(6%)=6% &
        \ W%(T%)=T% FOR T%=7% TO 9% &
```

1B - Display total CPU time instead of increment by default.

```
Modify line 1040 as indicated:
  Old:  \ O%=2%+16384% &
  New:  \ O%=0%+16384% &
```

1C - Fix spacing in CPU %'s when monitor statistics enabled.

```
Modify line 1510 as indicated:
  Old:  \ PRINT #1%, "    "; &
        FNU$(H(0%,1%)-H(1%,1%)-H(2%,1%)-H(3%,1%)-H(4%,1%)); &
        "User,  "; &
        FNU$(H(1%,1%));"I/O,   "; &
        FNU$(H(3%,1%));"Exec,"; &
        "  ";FNU$(H(4%,1%));"Idle,  "; &
        FNU$(H(2%,1%));"Lost";CHR$(13%); &
  New:  \ PRINT #1%, "    "; &
        FNU$(H(0%,1%)-H(1%,1%)-H(2%,1%)-H(3%,1%)-H(4%,1%)); &
        " User, "; &
        FNU$(H(1%,1%));" I/O, "; &
        FNU$(H(3%,1%));" Exec, "; &
        FNU$(H(4%,1%));" Idle, "; &
        FNU$(H(2%,1%));" Lost";CHR$(13%); &

Modify line 15180 as indicated:
  Old:  \ T$="    "+NUM$(100.*T/H(0%,1%)+.05) &
        \ FNU$=MID(T$,INSTR(1%,T$,".")-3%,5%)+"%" &
  New:  \ T$=NUM$(100.*T/H(0%,1%)+.05) &
        \ FNU$=MID(T$,1%,INSTR(1%,T$,".")+1%)+"%" &
```

1D - Change time display from hours:minutes:seconds to days hours:minutes:seconds.

```
Modify line 15000 as indicated:
  Old:  \       FNT$=FNT0$(3600.)+FNT0$(60.)+FNT0$(1.)
  New:  \ T$="" &
        \ Z9%=T/86400. &
        \ T$=NUM1$(Z9%)+" " IF Z9%>=1% &
        \ T=T-(Z9%*86400.) &
```

```
        ! DAYS &
        \ Z9%=T/3600. &
        \ T$=T$+RIGHT(NUM1$(Z9%+100%),2%)+":" &
        \ T=T-(Z9%*3600.) &
        ! HOURS &
        \ Z9%=T/60. &
        \ T$=T$+RIGHT(NUM1$(Z9%+100%),2%)+":" &
        \ T=T-(Z9%*60.) &
        \ T$=T$+RIGHT(NUM1$(INT(T+100%)),2%) &
        ! SECONDS (TEMP) &
        \ FNT$=T$ &
```

1E - Display cpu usage as mmm:ss.t instead of mm:ss.t

Modify line 15080 as indicated:

```
  Old:  \ IF T<0. OR T>=36000. THEN &
              FNT1$="??:??.?" &
  New:  \ IF T<0. OR T>=600000. THEN &
              FNT1$="???:??.?" &
```

1F - Prompt with program name as part of 'Continue' message.

Modify line 19140 as indicated:

```
  Old:  \ INPUT "Continue";T$ &
  New:  \ INPUT "Continue (DISPLY)";T$ &
```

Section 2 - Change to ANSI mode output

Modify line 19110 as indicated:

```
  Old:  V0$+"[?21"+V0$+"\"+V0$+"G"+V0$+"H"+V0$+"J"+ &
  New:  V0$+"<"+V0$+"[1;1H"+V0$+"[2J"+ &
```

Modify line 20020 as indicated:

```
  Old:  \ V4$=V4$+V0$+"A" FOR T%=0% TO ROWS%  !default to TAB &
        \ V6$ = V0$ + "Y"                     !default to DCA &
        \ V2$=V2$+V0$+"C" FOR T%=0% TO COL% &
  New:  \ V4$=V4$+V0$+"[1A" FOR T%=0% TO ROWS%!default to TAB &
        \ V6$ = V0$ + "["                     !default to DCA &
        \ V2$=V2$+V0$+"[1C" FOR T%=0% TO COL% &
```

Modify line 20100 as indicated:

```
  Old:  \ V$=V0$+"[?21"+V0$+"\"+V0$+"G"+V0$+"H"+V0$+"J" &
  New:  \ V$=V0$+"<"+V0$+"[1;1H"+V0$+"[2J" &
```

Modify line 200200 as indicated:

```
  Old:  20200   V$=V0$+"K" IF LEN(V$)=0% AND V1%<=COL% &
  New:  20200   V$=V0$+"[0K" IF LEN(V$)=0% AND V1%<=COL% &
```

Modify line 20400 as indicated:

```
  Old:  20400   V$=V0$+"H" &
  New:  20400   V$=V0$+"[1;1H" &
```

Modify line 20520 as indicated:


```
  Old:  V$=V$+V6$+CHR$(32%+T0%)+CHR$(32%+T%) &
  New:  V$=V$+V6$+NUM1$(T0%+1%)+";"+NUM1$(T%+1%)+"H" &
```

Modify line 20550 as indicated:

```
  Old:  V$=V$+LEFT(V2$,T%+T%-V1%-V1%) &
  New:  V$=V$+LEFT(V2$,(T%-V1%)*4%) &
```

Modify line 20580 as indicated:

```
  Old:  V$=V$+LEFT(V4$,V2%+V2%-T0%-T0%) &
  New:  V$=V$+LEFT(V4$,(V2%-T0%)*4%) &
```

Modify line 20700 as indicated:

```
  Old:  20700   V$=V0$+"J" &
  New:  20700   V$=V0$+"[0J" &
```

Section 3 - Change to 132-column output

First, perform all of the Section 2 modifications.

Modify line 910 as indicated:

```
  Old:  910     DIM B%(19,2), D%(19,8), M%(19,4), R%(39,6), &
                C%(4), H(4,1), &
                H0%(30), H1%(30), H2%(30%), &
                J%(20,8), R(63), I(63), &
                R0%(39,1), &
                L0%(10), T%(1), W%(9) &
  New:  910     DIM B%(19,4), D%(19,11), M%(19,4), R%(39,8), &
                C%(4), H(4,1), &
                H0%(30), H1%(30), H2%(30%), &
                J%(20,12), R(63), I(63), &
                R0%(39,1), &
                L0%(10), T%(1), W%(9), AN$(20) &
```

Modify line 910 as indicated (at end of comments):

```
  Old:  &
  New:  ! &
        ! AN$() - USED TO STORE THE ACCOUNT NAMES OF ACTIVE &
        !       JOBS DISPLAYED ON THE SCREEN. &
        &
```

Modify line 1120 as indicated:

```
  Old:  \ T%=FNV%(10%,1%,T$) &
  New:  \ T%=FNV%(15%,1%,T$) &
```

Modify line 1210 as indicated:

```
  Old:  T%=FNV%(0%,W%,SPACE$(45%)) &
  New:  T%=FNV%(0%,W%,SPACE$(72%)) &
```

Modify line 1400 as indicated:

```
  Old:  \               T%=FNV%(45%,Z0%-1%,N$) IF Z0%<>2%
  New:  \               T%=FNV%(72%,Z0%-1%,N$) IF Z0%<>2%
```

Modify line 1440 as indicated:

```
  Old:  1440    T%=FNV%(45%,Z%,N$) FOR Z%=L0%(0%) TO Z0%-1% &
                STEP -1% &
  New:  1440    T%=FNV%(72%,Z%,N$) FOR Z%=L0%(0%) TO Z0%-1% &
                STEP -1% &

Modify line 1450 as indicated:
  Old:  TIME$(T%(1%))+"  Up:") &
  New:  TIME$(T%(1%))+"    Last restarted on "+ &
        DATE$(PEEK(36%))+B$+TIME$(PEEK(38%))+"    Up:") &

Modify line 1480 as indicated:
  Old:  \ T%=FNV%(63%+16384%,0%,FNT$(((PEEK(512%)-PEEK(...
  New:  \ T%=FNV%(105%+16384%,0%,FNT$(((PEEK(512%)-PEEK(...

Modify line 1490 as indicated:
  Old:  \               T%=FNV%(10%,1%,T$) &
  New:  \               T%=FNV%(15%,1%,T$) &

Modify line 2070 as indicated:
  Old:  !       3       P (PRIORITY INSTEAD OF +-) &
        !       4       L (LOGICAL DEVICE NAME) &
  New:: !       3       UNUSED (WAS P[RIORITY]) &
        !       4       UNUSED (WAS L[OGNAM]) &
  Old:  !       11      N   (RTS INSTEAD OF 'WHAT') &
  New:  !       11      UNUSED (WAS N [RTS INSTEAD OF 'WHAT'])&

Modify line 2160 as indicated:
  Old:  !       W,L,K,P,O OR I &
  New:  !       W,K,O OR I &
  Old:  !               BIT 3   P &
        !               BIT 4   L &
        !               BIT 14  I &
        !               K,N AND O REMAIN UNTOUCHED. &
  New:  !               BIT 14  I &
        !               K AND O REMAIN UNTOUCHED. &
  Old:  !               BIT 11  N &
        !               OTHERS REMAIN AS THEY ARE. &
  New:  !               OTHERS REMAIN AS THEY ARE. &

Modify line 9400 as indicated:
  Old:  9400    DATA    W,1,0,          P,8,0, &
                        L,16,0,         O,0,32, &
                        K,0,64,         I,16384,0, &
                        N,0,2048,       *E*,0,0 &
  New:  9400    DATA    W,1,0,          O,0,32, &
                        K,0,64,         I,16384,0, &
                        *E*,0,0 &

Modify line 10000 as indicated (enter the new line all on the
same line):
  Old:  "Job  Who  Where  What Size State Run-time Pr ") &
  New:  "Job  Who   Name           Where What Size State Run-
        time Pri/RB RTS") &
```



```
Delete the entire text of line 10055.

Modify line 10090 as indicated:
  Old:  ! IF THE PPN HAS CHANGED THEN &
  New:  \       AN$(L%)=FNACCOUNT.NAME$(PN%)+B$+B$ &
        \       T%=FNV3%(11%,AN$(L%)) &
        ! IF THE PPN HAS CHANGED THEN &

Add the following comments to the end of line 10090:
  New:  !       STORE NEW USER NAME DATA IN AN$ &
        !       AND DISPLAY IT &

Modify line 10110 as indicated:
  Old:  \ T%=FNV3%(11%,FNJ2$(T$,6%)) &
  New:  \ T%=FNV3%(26%,FNJ2$(T$,6%)) &

Modify line 10120 as indicated:
  Old:  \ NAM%=27% IF (O% AND 2048%) &
        \ J1%=SWAP%(CVT$%(MID(UU.SYS0$,NAM%,2%))) &
  New:  \ J1%=SWAP%(CVT$%(MID(UU.SYS0$,NAM%,2%))) &
  Old:  \       T%=FNV3%(17%,RAD$(C%)) &
        ! PREPARE TO CHECK PROGRAM NAME - REPLACE WITH RTS...
        ! APPROPRIATE. &
  New:  \       T%=FNV3%(32%,RAD$(C%)) &
        ! PREPARE TO CHECK PROGRAM NAME &

Modify line 10130 as indicated:
  Old:  \       T%=FNV3%(20%,RAD$(C%)) &
  New:  \       T%=FNV3%(35%,RAD$(C%)) &

Modify line 10140 as indicated:
  Old:  \       T%=FNV3%(23%,FNJ$(C%,3%)) &
  New:  \       T%=FNV3%(38%,FNJ$(C%,3%)) &

Modify line 10220 as indicated:
  Old:  \ T%=FNV3%(26%,B$+MID(H$,SWAP%(C%) AND 255%,2%)+T$) &
  New:  \ T%=FNV3%(41%,B$+MID(H$,SWAP%(C%) AND 255%,2%)+T$) &

Modify line 10270 as indicated:
  Old:  \       T%=FNV3%(33%,FNJ0$(T$,8%)) &
  New:  \       T%=FNV3%(48%,FNJ0$(T$,8%)) &

Modify line 10280 as indicated:
  Old:  \ C%=C% OR 256% IF (O% AND 8%) &
        \ IF FNC%(J%(L%,8%),C%)=0% THEN &
                GOTO 10300 &
        ELSE    J%(L%,8%)=C% &
        \       T%=C% AND 255% &
        \       T%=T%-256% IF T%>127% &
        \       T%=(T% AND (NOT 7%))/8% &
        \       IF (C% AND 256%) THEN &
                        T%=FNV3%(41%,FNJ$(T%,3%)+B$) &
```

```
        \               GOTO 10300 &
        ! GET THE PRIORITY FROM JDPRI. &
        ! IF +P HAS BEEN SPECIFIED THEN &
        !       ADJUST PRIORITY TO INDICATE THIS &
        ! IF THE PRIORITY HASN'T BEEN CHANGED THEN &
        !       GO ON TO NEXT JOB &
        ! ELSE  GET THE EXACT PRIORITY &
        !       MAKE ADJUSTMENT FOR NEGATIVE PRIORITY &
        !       FORCE TO MULTIPLE OF 8 &
        !       IF +P SPECIFIED THEN &
        !               PRINT THE EXACT PRIORITY (+n,0,-n) &
        !               GO TO THE NEXT JOB &
  New:  \ IF FNC%(J%(L%,8%),C%)=0% THEN &
              GOTO 10285 &
        ELSE    J%(L%,8%)=C% &
        \       T$=NUM1$(C%*256%/256%)+"/" &
        \       T%=FNV3%(56%,FNJ0$(T$,5%)) &
        ! GET THE PRIORITY FROM JDPRI. &
        ! IF THE PRIORITY HASN'T BEEN CHANGED THEN &
        !       GO ON TO RUNBURST &
```

Delete the entire text of line 10290.

Add the following new lines:

```
10285   C%=ASCII(MID(UU.SYS1$,18%,1%)) &
        \ IF FNC%(J%(L%,9%),C%)=0% THEN &
              GOTO 10295 &
        ELSE    J%(L%,9%)=C% &
        \       T$=NUM1$(C%)+B$ &
        \       T%=FNV3%(61%,T$) &
        ! GET THE RUNBURST FROM JDBRST. &
        ! IF IT HASN'T CHANGED THEN GO ON &
        !       TO NEXT JOB &

10295   NAM%=27% &
        \ J1%=SWAP%(CVT$%(MID(UU.SYS0$,NAM%,2%))) &
        \ IF FNC%(J%(L%,10%),J1%) THEN &
              J%(L%,10%)=C% &
        \       T%=FNV3%(64%,RAD$(C%)) &
        ! PREPARE TO CHECK RTS NAME &
        ! IF THE 1ST 3 CHARACTERS OF THE NAME HAVE CHANGED &
        ! THEN &
        !       SAVE THE NEW CHARACTERS &
        !       PRINT THEM &

10296   NAM%=NAM%+2% &
        \ J1%=SWAP%(CVT$%(MID(UU.SYS0$,NAM%,2%))) &
        \ IF FNC%(J%(L%,11%),J1%) THEN &
              J%(L%,11%)=C% &
        \       T%=FNV3%(67%,RAD$(C%)) &
        ! DO THE SAME WITH THE 2ND 3 CHARACTERS &
```

Modify line 10310 as indicated:


```
  Old:  NUM1$(STK%)+"K)",45%)) &
        \ J%(T0%,T%)=-1% FOR T%=0% TO 8% FOR T0%=0% TO 20% &
  New:  NUM1$(STK%)+"K) ['*'=RTS, '-'=LIB, ' '=JOB]",72%)) &
        \ J%(T0%,T%)=-1% FOR T%=0% TO 12% FOR T0%=0% TO 20% &
```

Modify line 10380 as indicated:

```
  Old:  \               IF J0%<=7% THEN 10410 &
  New:  \               IF J0%<=11% THEN 10410 &
```

Modify line 10415 as indicated:

```
  Old:  \       WHILE J0%<=7% &
  New:  \       WHILE J0%<=11% &
```

Modify line 10440 as indicated:

```
  Old:  10440   IF J%(L%,8%)<>STK%+L%*8% THEN &
                        J%(L%,8%),T%=STK%+L%*8% &
  New:  10440   IF J%(L%,12%)<>STK%+L%*12% THEN &
                        J%(L%,12%),T%=STK%+L%*12% &
```

Modify line 10460 as indicated:

```
  Old:          \ IF L%*8%+J0%+STK%=KSZ% THEN &
                        T$="END" &
                ELSE    IF L%*8%+J0%+STK%>KSZ% THEN &
                        T$=" . " &
  New:          \ IF L%*12%+J0%+STK%=KSZ% THEN &
                        T$="END" &
                ELSE    IF L%*12%+J0%+STK%>KSZ% THEN &
```

Modify line 10500 as indicated:

```
  Old:  \       T%=FNV3%(44%,B$) IF J0%=7% &
  New:  \       T%=FNV3%(64%,"       ") IF J0%=11% &
```

Modify line 10520 as indicated:

```
  Old:  \ IF J0%<=7% THEN &
  New:  \ IF J0%<=11% THEN &
```

Modify line 13000 as indicated:

```
  Old:  T%=FNV8%("      Busy devices") &
  New:  T%=FNV8%("                    Busy devices") &
```

Modify line 13020 as indicated:

```
  Old:  \ T%=FNV1%(0%,N$) IF B%(L%,0%)<>-1% IF (L% AND 1%) &
        \ T%=FNV0%(16384%,0%,"      *** None ***") &
              IF L%=0% AND B%(0%,0%)<>-1% &
        \ B%(T%,0%)=-1% FOR T%=L% TO 19% &
        \ L%=1%+(L%+1%)/2% &
  New:  \ T%=FNV1%(0%,N$) IF B%(L%,0%)<>-1% IF (L% AND 3%) &
        \ T%=FNV0%(16384%,0%, &
          "                     *** None ***") &
              IF L%=0% AND B%(0%,0%)<>-1% &
        \ B%(T%,0%)=-1% FOR T%=L% TO 19% &
        \ L%=1%+(L%+3%)/4% &
```

```
Modify line 13050 as indicated:
  Old:  \       T%=FNV0%(16384%,0%,"Dev Job Why  Dev Job Why")&
  New:  \       T%=FNV0%(16384%,0%, &
                        "Dev Job Why   Dev Job Why   "+ &
                        "Dev Job Why   Dev Job Why") &

Modify line 13080 as indicated:
  Old:  \ T%=FNV1%(7%-(16384%*((L% AND 1%)<>0%)),B$+T$+B$) &
  New:  \ T%=FNV1%(7%-(16384%*((L% AND 3%)=3%)),B$+T$+B$+B$) &

Modify line 13110 as indicated:
  Old:  T%=FNV8%("      Disk Structure") &
  New:  T%=FNV8%("                    Disk structure") &

Modify line 13130 as indicated:
  Old:  \ SIXTH$="Comments" &
        \ SIXTH$="Name" IF (O% AND 16%) &
        \ T%=FNV0%(16384%,0%,"Dsk Open    Free Clu  Err "+ &
          SIXTH$) &
  New:  \ T%=FNV0%(16384%,0%, &
                "Dsk Open    Size      Free   Clu  Err Name"+ &
                "      Comments") &
  Old:  \ UNTERR%=H2%(23%) &
  New:  \ SATEND%=H2%(7%) &
        \ UNTERR%=H2%(23%) &

Add the following new line:
13145   IF FNC%(D%(L%,2%),PEEK(SATCTL%+FUN%)) OR &
                FNC%(D%(L%,3%),PEEK(SATCTM%+FUN%)) &
            THEN &
                PCS%=UNTCLU.ENTRY% &
        \       T9=FNDISKSIZE(PCS%,PEEK(SATEND%+FUN%), &
                PEEK(DEVCLU%+FUN%) AND 255%) &
        \       T%=FNV2%(8%,FNJ$(T9,8%)) &
        ! &
        !       COMPUTE THE DISK SIZE AND DISPLAY &

Modify line 13150 as indicated:
  Old:  \               T%=FNV2%(8%,FNJ$(T,8%)) &
  New:  \               T%=FNV2%(16%,FNJ$(T,8%)) &
        \               T8=INT((T/T9)*100%) IF T9>0. &
        \               T%=FNV2%(24%,FNJ$(T8,3%)+"%") IF T9>0.&
        ! &

Add the following comment at the end of line 13150:
  New:  !       CALCULATE THE FREE SPACE AS A PERCENTAGE AND &
        !       DISPLAY &

Modify line 13160 as indicated:
  Old:  \               T%=FNV2%(16%,FNJ$(D%(L%,4%),3%)) &
  New:  \               T%=FNV2%(28%,FNJ$(D%(L%,4%),4%)) &

Modify line 13170 as indicated:
```



```
  Old:  \       T%=FNV2%(19%,FNJ$(PEEK(UNTERR%+FUN%),6%)) &
  New:  \       T%=FNV2%(32%,FNJ$(PEEK(UNTERR%+FUN%),5%)) &

Add the following new line:
13175   IF (FNC%(D%(L%,9%),PEEK(DSKLOG.PTR%)) &
                OR FNC%(D%(L%,10%),PEEK(DSKLOG.PTR%+2%)) &
                OR FNC%(D%(L%,11%),PEEK(DSKLOG.PTR%+4%)))=0% &
            THEN &
                GOTO 13180 &
            ELSE &
                D%(L%,9%)=PEEK(DSKLOG.PTR%) &
        \       D%(L%,10%)=PEEK(DSKLOG.PTR%+2%) &
        \       D%(L%,11%)=PEEK(DSKLOG.PTR%+4%) &
        \       T$="*******" &
        \       T$=RAD$(D%(L%,9%)) &
                  +RAD$(D%(L%,10%)) &
                  +RAD$(D%(L%,11%)) UNLESS &
                  (UNTCNT.ENTRY% AND 4096%) &
        \       T%=FNV2%(37%,B$+T$) &
        !       IF NONE OF THE PARTS OF THE LOGICAL NAME HAS &
        !       CHANGED THEN &
        !               SKIP THIS ROUTINE &
        !          ELSE SAVE THE NEW PARTS &
        !               SET THE DEFAULT STRING TO "*" &
        !               RESET TO REAL NAME IF NOT OPENED &
        !               NON-FILE STRUCTURED &
        !               AND PRINT IT &

Modify line 13180 as indicated:
  Old:  13180           IF (O% AND 16%)=0% &
                          THEN &
                            IF FNC%(D%(L%,5%),SWAP%(...
  New:  13180           IF FNC%(D%(L%,5%),SWAP%(...
  Old:  !       IF LOGICAL NAMES NOT REQUESTED THEN &
        !           IF NONE OF THE BIT FLAGS IN THE...
  New:  !           IF NONE OF THE BIT FLAGS IN THE...

Delete the entire text of line 13190.

Modify line 13200 as indicated:
  Old:  13200           T%=FNV2%(16384%+25%,B$+T$) &
  New:  13200           T%=FNV2%(16384%+47%,B$+T$) &

Modify line 13250 as indicated:
  Old:  T%=FNV8%("     Run-time systems") &
  New:  T%=FNV8%("                     Run-time systems") &

Modify line 13370 as indicated:
  Old:  \ IF F% THEN &
                T%=FNV8%("    Message receivers") &
  New:  \ NSP%=0% &
        \ IF F% THEN &
                T%=FNV8%("      Message receivers") &
```

```
Modify line 13400 as indicated:
  Old:  ! IGNORE THIS ENTRY IF NULL ENTRY OR NO ROOM ...
  New:  \       T%=PEEK(J0%+8%) AND 255% &
        \       T$=LEFT(T$,3%) IF (T% AND 1%) &
        \       T$=FNN$(2%,T%/2%)+B$ UNLESS (T% AND 1%) &
        \       T%=FNV2%(6%,B$+B$+T$+ &
                    FNJ$((SWAP%(PEEK(J0%+10%)) AND 255%),3%)+ &
                    FNJ$((SWAP%(PEEK(J0%+8%)) AND 255%),4%)) &
        ! IGNORE THIS ENTRY IF NULL ENTRY OR NO ROOM ...

Delete the entire text of lines 13410 through 13440

Add the following new lines:
13420   IF FNC%(M%(L%,4%),PEEK(J0%+14%)) THEN &
                M%(L%,4%)=C% &
        \       T%=FNV2%(18%,FNJ$(SWAP%(C%) AND 255%,3%)+ &
                "/"+NUM1$(C% AND 255%)) &
        \       IF (C% AND 255%)<10% THEN &
                        T%=FNV2%(23%,B$) &
        ! IF THE # OF MSG'S QUEUED OR THE DECLARED MAX HAS &
        ! CHANGED THEN &
        !       SAVE/PRINT THE INFO &

13425   IF FNC%(M%(L%,3%),(PEEK(J0%+10%) AND 255%))=0% THEN &
                GOTO 13430 &
        ELSE    M%(L%,3%)=C% &
        \       C%=(C% AND (NOT 1%)) IF (C% AND 2%)<>0% &
        \       T$=N$ &
        \       T$=T$+", "+ &
                CVT$$(MID("LclPrvNetOneNcs   Evt", &
                  I%*3%+1%,3%),2%) &
                        IF ((C% AND 2%^I%)<>0%) AND (I%<>5%) &
                                FOR I%=6% TO 0% STEP -1% &
        \       T$="  None" IF T$="" &
        \       T%=FNV2%(16384%+24%,B$+B$+RIGHT(T$,3%)) &
        ! IF THE TYPE OF SENDERS ALLOWED HAS CHANGED THEN &
        !       SAVE THE INFO &
        !       SET DEFAULT STRING TO INDICATE PRIVE SENDERS &
        !       RESET IF NECESSARY &

13430   L%=L%+1%
13435   J0%=PEEK(J0%) &
        \ IF J0%=0% AND NSP%=0% THEN &
                J0%=PEEK(SWAP%(CVT$%(MID(SYS(CHR$(6%)+ &
                  CHR$(22%)+CHR$(-24%)+CHR$(3%)),9%,2%)))) &
        \       NSP%=-1% &
        ! PICK UP NEXT RIB. IF NONE INDICATED AND HAVEN'T &
        ! DONE NSP, SELECT NSP. &

13440   NEXT &

13445   T%=FNV0%(16384%,0%,"      ***** None ******") &
```



```
                IF L%=0% AND M%(0%,0%)<>-1% &
        \ M%(T%,0%)=-1% FOR T%=L% TO 19% &
        \ L%=1% UNLESS L% &
        \ T$=N$ &
        \ RETURN &
        ! IF WE'VE HIT THE END OF THE TABLE (-1) THEN &
        !       PRINT APPROPRIATE MSG IF NO RECEIVERS &
        !       FLAG NON-PRINTED ENTRIES &
        !       BUMP 'PRINTED' COUNTER IF 'NONE' PRINTED &

Modify line 13450 as indicated:
  Old:  \ T%=FNV8%(" Gen FIP  Jobs  TTY  Err") &
        \ T%=FNV0%(16384%,0%,"   0   0   0/0    0    0") &
  New:  \ T%=FNV8%(" Gen buf  FIP buf  Jobs/Jobmax  Hung "+ &
          "TTY's  Errors") &
        \ T%=FNV0%(16384%,0%,"     0        0       0/0"+ &
          "              0         0") &

Modify line 13470 as indicated:
  Old:  \       T%=FNV2%(0%,FNJ$(C%,4%)) &
  New:  \       T%=FNV2%(0%,FNJ$(C%,6%)) &

Modify line 13480 as indicated:
  Old:  \       T%=FNV2%(4%,FNJ$(C%,4%)) &
  New:  \       T%=FNV2%(6%,FNJ$(C%,9%)) &

Modify line 13490 as indicated:
  Old:  \       T%=FNV2%(8%,FNJ0$(NUM1$(C% AND 255%) &
                +"/"+NUM1$(SWAP%(C%) AND 255%),6%)) &
  New:  \       T%=FNV2%(15%,FNJ0$(NUM1$(C% AND 255%) &
                +"/"+NUM1$(SWAP%(C%) AND 255%),11%)) &

Modify line 13500 as indicated:
  Old:  \       T$=FNJ$(C%(3%),5%) IF C%(3%)>=0% AND ...
        \       V$=" *****" &
        \       V$=FNJ$(SAV.ERR-C%(3%),6%) IF C%(3%)>=0% &
        \       T%=FNV2%(16384%+14%,T$+V$) &
  New:  \       T$=FNJ$(C%(3%),11%) IF C%(3%)>=0% AND ...
        \       V$=" ****" &
        \       V$=FNJ$(SAV.ERR-C%(3%),11%) IF C%(3%)>=0% &
        \       T%=FNV2%(16384%+26%,T$+V$) &

Modify line 13530 as indicated:
  Old:          T%=FNV8%("    Resident Libraries") &
  New:          T%=FNV8%("          Resident Libraries") &

Add the following new line:
15110   DEF* FNDISKSIZE(PACK.CLU.SIZ%,HI.PCN%,DEV.CLU.SIZ%) &
        \ DSIZE=HI.PCN% &
        \ DSIZE=DSIZE+65536. IF DSIZE<0. &
        \ FNDISKSIZE=((DSIZE+1.)*PACK.CLU.SIZ%)+DEV.CLU.SIZ% &
        \ FNEND &
        ! &
```

```
        ! FIND THE MAXIMUM SIZE (IN BLOCKS) FOR A DISK DEVICE &

Modify line 15220 as indicated:
  Old:  15220 DEF* FNV0%(T%,T0%,T$)=FNV%(T%+45%,T0%+1%+L0%(...
  New:  15220 DEF* FNV0%(T%,T0%,T$)=FNV%(T%+72%,T0%+1%+L0%(...

Modify line 15230 as indicated:
  Old:  \ T%=T%+13% IF (L% AND 1%) &
        \ FNV1%=FNV%(T%+45%,2%+L0%(W%)+L%/2%,T$) &
  New:  \ T%=T%+(14%*(L% AND 3%)) &
        \ FNV1%=FNV%(T%+72%,2%+L0%(W%)+L%/4%,T$) &

Modify line 15260 as indicated:
  Old:  15260   DEF* FNV2%(T%,T$)=FNV%(T%+45%,1%+L0%(W%)+...
  New:  15260   DEF* FNV2%(T%,T$)=FNV%(T%+72%,1%+L0%(W%)+...

Modify line 15280 as indicated:
  Old:  15280   DEF* FNV8%(T$)=FNV%(16384%+45%,L0%(W%),T$) &
  New:  15280   DEF* FNV8%(T$)=FNV%(16384%+72%,L0%(W%),T$) &

Modify line 17270 as indicated:
  Old:  ! INIT POINTER &
  New:  \ DKBM.PTR%=PEEK(H1%(15%)-2%) &
        ! INIT POINTER &

Modify line 17280 as indicated:
  Old:  \       T%=FNV2%(0%,RAD$(R%(L2%,0%))+RAD$(C%)) &
  New:  \       T%=FNV2%(0%,RAD$(R%(L2%,0%))+RAD$(C%)+B$+B$) &

Add the following new line:
17290   GOTO 17305 IF A% &
        \ IF FNC0%(R%(L2%,7%),PEEK(R%+6%)) THEN &
                R%(L2%,7%)=PEEK(R%+6%) &
        \       T%=FNV2%(8%,RAD$(R%(L2%,7%))) &
        ! IF IN RTS DISPLAY AND IF THE RTS DEFAULT EXTENSION &
        ! HAS CHANGED THEN PRINT IT &

Modify line 17300 as indicated:
  Old:  \       T%=FNV2%(6%,FNJ$(C%,4%)+"K") &
        ! IF THE SIZE OF THE MODULE, IN K (R.KSIZ) HAS &
        ! CHANGED THEN &
        !       SAVE/PRINT IT &
  New:  \       T%=FNV2%(11%,FNJ0$(NUM1$(C%)+"("+ &
                NUM1$(PEEK(R%+28%) AND 255%)+")K",9%))

Add the following new lines:
17302   GOTO 17310 &
        ! IF THE SIZE OF THE MODULE, IN K (R.KSIZ) HAS &
        ! CHANGED THEN &
        !       SAVE/PRINT MODULE/USER SIZES &

17305   IF FNC%(R%(L2%,8%),SWAP%(PEEK(R%+28%)) AND 255%) THEN &
                R%(L2%,8%)=SWAP%(PEEK(R%+28%)) AND 255% &
```



```
        \       T%=FNV2%(6%,"  <"+FNN$(3%,R%(L2%,8%))+">") &
        ! IF THE PROTECTION CODE OF THE LIBRARY HAS &
        ! CHANGED THEN &
        !       SAVE/PRINT IT &

17308   IF FNC%(R%(L2%,2%),PEEK(R%+14%) AND 255%) THEN &
                R%(L2%,2%)=C% &
        \       T%=FNV2%(13%,FNJ$(C%,4%)+"K") &
        ! IF THE SIZE OF THE MODULE, IN K (R.KSIZ) HAS &
        ! CHANGED THEN &
        !       SAVE/PRINT IT &

Modify line 17310 as indicated:
  Old:  17310   IF FNC%(R%(L2%,3%),PEEK(R%+26%) AND 255%) THEN&
                R%(L2%,3%)=C% &
        \       T%=FNV2%(11%,FNJ$(C%,4%)) &
  New:  17310   P%=18% &
        \ P%=20% UNLESS A% &
        \ IF FNC%(R%(L2%,3%),PEEK(R%+26%) AND 255%) THEN &
                R%(L2%,3%)=C% &
        \       T%=FNV2%(P%,FNJ$(C%,4%)) &

Modify line 17320 as indicated:
  Old:  ELSE    T$="Tmp" &
        \       T$="Prm" IF J1%<0% &
        \       T$="Mon" IF ( PEEK(R%+14%) AND 255% )=0% &
  New:  ELSE    T$="Temp" &
        \       T$="Perm" IF J1%<0% &
        \       T$="Monitor" IF ( PEEK(R%+14%) AND 255% )=0% &

Delete the entire text of line 17330.

Add the following new lines:
17330   P%=22% &
        \ P%=24% UNLESS A% &
        \ T%=PEEK(R%+16%) &
        \ T$=T$+", Addr:"+NUM1$(FNSHFT.RGT%(T%,5%)) IF T%<>0% &
        \ IF (J0% AND 256%) THEN &
                T$=T$+", DF KBM" IF DKBM.PTR%=R% UNLESS A% &
        \       T$=T$+", KBM" IF DKBM.PTR%<>R% UNLESS A%
17340   T$=T$+", "+MID("1USR/WNERRemCSZ",(I%-9%)*3%+1%,3%) &
                IF (J0% AND 2%^I%) FOR I%=9% TO 13% UNLESS A% &
        \ T$=T$+", "+MID("1USR/WNERRem",(I%-9%)*3%+1%,3%) &
                IF (J0% AND 2%^I%) FOR I%=9% TO 12% IF A% &
        \ T$=T$+", DYN" IF (PEEK(R%+28%) AND 192%) = 192% &
        \ T$=T$+", E:"+NUM1$(J0% AND 255%) IF J0%<0% &
        \ T%=FNV2%(16384%+P%,B$+B$+LEFT(T$,31%)) &
        \ GOTO 17280 &

Modify line 17360 as indicated:
  Old:  T%=FNV0%(16384%,0%,"    ****** None ******") &
  New:  T%=FNV0%(16384%,0%,"          ****** None ******") &
```

```
dd the following new lines:
.7500   DEF* FNN$(S%,N%) &
        \ S$=NUM1$((N% EQV 32767%)+32768.) &
        \ FNN$=SPACE$(S%-LEN(S$))+S$ &
        \ FNEND &
        ! LEFT PAD A NUMBER TO SPECIFIED LENGTH &
        &

.7510   DEF* FNACCOUNT.NAME$(PN%) &
        \ ON ERROR GOTO 17520 &
        \ Z$=SPACE$(13%) &
        \ LSET Z$="<No name>" &
        \ LSET Z$="<Logged out>" IF PN%=0% &
        \ LSET Z$=CVT$$(MID(SYS(CHR$(6%)+CHR$(-25%)+ &
                  CHR$(-1%)+CHR$(5%)+CHR$(PN%)+ &
                  CHR$(SWAP%(PN%))+STRING$(16%,0%)+"SY"+ &
                  STRING$(2%,0%)),8%,13%),5%) UNLESS PN%=0% &
        \ GOTO 17530 &

 7520   RESUME 17530 &

 7530   FNACCOUNT.NAME$=Z$ &
        \ ON ERROR GOTO 19000 &
        \ FNEND &
        ! RETURN THE ACCOUNT NAME BLOCKETTE DATA &

 7600  DEF* FNSHFT.RGT%(X%,Y%)= &
       (X% AND 32767%)/(2%^Y%) OR ((2%^(15%-Y%)) AND (X%<0%)) &
       &
       ! FUNCTION TO SHIFT A 16-BIT INTEGER X%, BY Y% BITS. &

 9045   IF ERL=13435 THEN &
                NSP%=-1% &
        \       RESUME 13440 &
        ! IF DECNET/E NOT PRESENT THEN &
        !       SAY WE ALREADY DID IT AND SKIP &

odify line 19100 as indicated:
 Old:  \       GOSUB 20100 &
 New:  \       GOSUB 20110 &

odify line 20020 as indicated:
 Old:  20020   COL%=80%-1%     !default to 80 columns &
 New:  20020   COL%=132%-1%    !default to 132 columns &

odify line 20055 as indicated:
 Old:  \       IF (V3% < 11%) OR (V3% > 24%) THEN &
       PRINT "%Row specification must be between 12 and 24" &
                \       EFLAG%=1% &
                \       GOTO 20095 &
       ! ROWS MAY RANGE BETWEEN 12 (VT50) AND 24 (VT52). &

 New:  \       IF (V3% < 11%) OR (V3% > 66%) THEN &
```



```
       PRINT "%Row specification must be between 12 and 66" &
                \       EFLAG%=1% &
                \       GOTO 20095 &
       ! ROWS MAY RANGE BETWEEN 12 (VT50) AND 66 (FULL-PAGE) &

Modify line 20100 as indicated:
  Old:  \ V$=V0$+"<"+V0$+[1;1H"+V0$+"[2J"
  New:  \ V$=V0$+"<"+V0$+"[?3h"+V0$+"[1;1H"+V0$+"[2J" &
        \ GOTO 20120 &

Add the following new line:
20110   V8%=0% &
        \ V$=V0$+"<"+V0$+"[?31"+V0$+"[1;1H"+V0$+"[2J" &

Modify line 20540 as indicated:
  Old:          IF (T%-V1%)/8% AND (T%<=71%) THEN &
  New:          IF (T%-V1%)/8% AND (T%<=72%) THEN &
```

If you suffer through entering all of the above, here is what you can expect to see when you run it:

```
RSTS V9.5-08 SPCCSPDP/RED   Status on 03-Dec-87 07:52 PM   Last restarted on 20-Nov-87 12:22 AM   Up: 13 19:30:23   19:54

Job  Who   Name          Where What Size State Run-time Pri/RB RTS     Gen buf  FIP buf  Jobs/Jobmax  Hung TTY's  Errors
 1   1,2   (SYSTEM)      Det   ERRCPY  5 SR       26.4   0/6  ...RSX    619      368       9/63         1         1
 2   1,2   (SYSTEM)      Det   NPKDVR  9 SL     1:16.7  -8/6  ...RSX
 3   1,2   (SYSTEM)      Det   PBS... 19 SL     7:15.2  -8/6  ...RSX                  Busy devices
 4   1,2   (SYSTEM)      Det   EVTLOG 18 SL     8:33.3  -8/6  ...RSX  Dev Job Why   Dev Job Why   Dev Job Why   Dev Job Why
 5   1,2   (SYSTEM)      Det   MAILQ  32 SR       16.8 -16/6  ...RSX  KB1   8 Open
 6   1,2   (SYSTEM)      Det   ...KIL  3 SL   215:21.6  -8/6  ...RSX
 7   1,254 Terry Kennedy KB27* DIS132 18 RN       16.9  -8/6  ...RSX
 8   1,3   Operator      Det   DIS132 18 SL   ???:??.?  -8/6  ...RSX
 9  108,15 ADA RIVERA    KB26* GAMES   2 ^C       6.3  -8/6  BASIC      Disk structure
                                                                Dsk Open    Size     Free   Clu  Err Name     Comments
                                                                DV0    0    1200      223 18%   1    0 SYSTMP   Pri,DLW
                                                                DM0    0   53765    50536 93%   4    0 SYSWK2   Pri,DLW
                                                                DM1    0   53765    46556 86%   4    0 SYSWK3   Pri,DLW
                                                                DB0   40  340664   185808 54%   8    0 SYSRES   Pub,DLW
                                                                DB4    0  340664   312248 91%   8    0 SYSWK1   Pri,DLW

                                                                        Run-time systems
                                                                ...RSX  TSK   0(64)K   8  Monitor, KBM
                                                                DCL     COM   24(8)K   0  Temp, Addr:87, DF KBM
                                                                RT11    SAV   4(28)K   0  Temp, Addr:124, KBM, CSZ, E:255
                                                                RSX     TSK   1(28)K   0  Non-res, KBM
                                                                BASIC   BAC  16(16)K   1  Temp, Addr:189, KBM, CSZ
                                                                TECO    TEC  10(20)K   0  Temp, Addr:259, KBM
                                                                PASCAL  SAV   4(28)K   0  Non-res, NER, E:255
                                                                APL     APC  16(16)K   0  Non-res, KBM
                                                                BP2            1(1)K   0  Non-res, KBM
                                                                BASDEB  BAC  16(16)K   0  Non-res, KBM, CSZ
                                                                CLE     CLE    3(1)K   0  Non-res, KBM, NER

                                                                     Message receivers
                                                                ERRLOG   1   0   1  0/40  Prv
```

```
NWPK02   2   0  23  0/16  Net
QMSCMD   3   1   3  0/20  Prv
QMSSRV   3   2   4  0/30  Prv
QMSURP   3   3   5  0/10  Lcl
PRS03A   3  17  65  0/5   Prv
PRS03B   3  25  65  0/5   Prv
BAS03A   3  41  66  0/5   Prv
BAS03B   3  49  66  0/5   Prv
BAS03C   3  57  66  0/5   Prv
EVTLOG   4   0   0  0/32  Evt, Prv
EVTLSN   4   1  26  0/16  Net, Prv
MAILQ    5   0   0  0/1   Lcl
NSP     NSP  0   0  0/0   None

         Resident Libraries
CSPLIB  ( 42)   8K   5  Temp, Addr:116
EDT     ( 42)  39K   0  Temp, Addr:308
RMSRES  ( 42)   4K   1  Temp, Addr:1660
RMSLBA  ( 42)   4K   1  Temp, Addr:155
RMSLBB  ( 42)   3K   1  Temp, Addr:148
RMSLBC  ( 42)   3K   1  Non-res
RMSLBD  ( 42)   2K   1  Temp, Addr:159
RMSLBE  ( 42)   3K   1  Temp, Addr:141
RMSLBF  ( 42)   4K   1  Temp, Addr:144
DAPRES  ( 42)  10K   0  Temp, Addr:1650
BP2RES  ( 42)  17K   0  Non-res, Addr:89
B25SHR  ( 42)   4K   0  Temp, Addr:128
B25SH1  ( 42)   4K   0  Temp, Addr:132
CBLIB   (  0)   3K   0  Perm, Addr:1647, R/W
CBCODE  ( 42)  18K   0  Perm, Addr:983
```

RSX

MULTI-TASKER

The RSX Multi-Tasker

February, 1988

"Ars Longa ... Vita Brevis"

Fine Realtime Commentary Since 1975

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Opinions expressed in the editorial section of the Multi-Tasker are those of the Editor. They do not represent the official position of the RSX SIG or that of DECUS leadership in general.

Food for Thought

"When the ship lifts, all bills are paid. No regrets."

- Robert A. Heinlein
The Notebooks of Lazarus Long

The Editor's Corner

Bruce R. Mitchell

The Editor apologizes to the readership for the lack of a January issue of the Multi-Tasker. There are extenuating circumstances.

Part of the Multi-Tasker editorship is reporting news to the membership of the SIG. Pleasant or unpleasant, regardless of personal opinion, this editor's motto has been - and continues to be - "All the news". Period.

As you may know, our SIG Chairman, Dan Eisner, became very sick last year. The illness was eventually diagnosed as abdominal cancer. Dan did not survive.

It now becomes my duty to be the first Multi-Tasker editor to write an obituary. I wish it were not so.

From time to time, it has been my privilege to know people whose performance I consider "sterling". Dan Eisner was one of those people. From his original "signing on" with the SIG as session notes editor, to his final office as SIG Chair, Dan discharged his duties honorably and well.

But to those of us who worked with him and knew him beyond the interface of SIG offices, Dan was a friend. As one of those whose lives were touched by Dan, I cannot express the grief I

feel at knowing that he is gone. For me, a little of the light in the world is gone today.

At this writing, in late December, the pain and grief of those who knew Dan is still fresh. It is not my intention to reopen those wounds, but to pay tribute to a special friend.

The Multi-Tasker now pauses for a moment in its month to month business of reporting and commentary. The March issue will continue with that business as it has in the past, but, for this month ...

This issue of the Multi-Tasker is dedicated to Dan Eisner.

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

Please submit machine readable media. RX01/2, RX50 and 9 channel 800/1600 BPI magtape are preferred. Almost any medium I can't read can be converted. All RSX volume formats are acceptable, but please don't send VMS Backup or ODS-2 format media.

You can also submit articles through the RSX bulletin board system at (612) 777-7664. Send them via MAIL to username MULTITASKER.

Submissions which aren't machine readable may take longer to get into print. If you format your submission in RUNOFF, please set page size 58,80; left margin 10; right margin 75; and, when changing margins, use incremental changes rather than absolute. The editor thanks you for the consideration.

Send your articles and other submissions to the luxurious Multi-Tasker offices:

Bruce R. Mitchell
Machine Intelligence and Industrial Magic
PO Box 77
Minnesota City, MN 55959

----- And That's The Way Things Are -----

... this month in Pool Lowbegone, where our memories of Dan remain strong, his contribution to the RSX SIG is handsome, and the number of glasses raised to his memory in Anaheim was above average.

D E C U S - I N T E R O F F I C E M E M O R A N D U M
Date: 29-Oct-87 02:06am EST
From: Alan Frisbie
FRISBIE
Dept: RSX SIG Historian
TO: See Below
Subject: Re: Dan Eisner

It is with great sadness that I report the death of our good friend, Dan Eisner. I received the call just minutes after posting the previous note. It can truly be said that Dan did not let death take him easily. He fought to the very end.

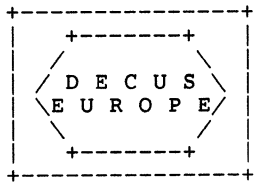
Dan asked that no flowers be sent, but that donations to the American Cancer Society would be appreciated. He also wished that we not waste time mourning.

I will post a message as soon as I know when and where the services are scheduled.

Requiescat in pace.

Alan Frisbie

```
+---------------+
|   +-------+   |
|  /         \  |
| / D E C U S \ |
| \E U R O P E/ |
|  \         /  |
|   +-------+   |
+---------------+
```



E U R O P E A N R S X - S I G

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY

Oss, 2 November 1987.
DECUS U.S. RSX SIG Board

Bruce Mitchell, Hans Jung,
Rick Sharpe, Glenn Everhart,
Alan Frisbie, Ed Cetron,
Dick Day

J.H. Belgraver
Organon Int. bv
CNS Pharmacology Dept.
Room RE 1148
P.O. Box 20
5340 BH Oss
The Netherlands
Tel. 04120 - 6 29 43
Telex 37500 ORGA NL

Dear Friends,

Yesterday I received the sad news that Dan Eisner passed away last Thursday. As the new European RSX SIG chairman I did not yet have the pleasure of meeting him in person, but from my predecessor David Guerlet and others that happened to know him I understood he was a fine guy and highly motivated to keep the U.S. RSX SIG alive, respected by everybody for the way he acted as the SIG chairman.

It was at the DECUS Europe Symposium last September that I heard about his illness through Alan Frisbie. At that time Alan was still very hopeful about the results of his treatment. I find it hard to understand why it was not given for Dan to stay with his family and friends and have to die so young.

Be sure we are with you in our thoughts these days. On behalf of the European RSX SIG I wish you a lot of strength to recover from this severe blow of live.

Yours Sincerely,

Jan H. Belgraver
European RSX SIG Chairman

Dan Eisner
RSX SIG Chairman, DECUS US Chapter

For the past several years, Dan Eisner was the image of the RSX SIG in the DECUS U.S. Chapter. His friendly manner as well as the competence with which he directed the SIG won him the complete support and respect of all his colleagues. He was one of those people who was always able to work on a project without placing himself in the foreground. Just recently Dan had fully immersed himself in the new communications project for the U.S. membership, DECUServe, and belongs to the progenitors and promoters of this system. Many of us here from Europe, who came to know Dan at U.S. Symposia, had learned to give special value to the receptive- ness he had for our problems here and to his constant willingness to listen to us and to accept us as partners.

The news of his serious illness had reached us before the European Symposium in Rome; the concern and empathy of his European colleagues was expressed in many a conversation there. Our wishes and hopes for Dan were unfortunately not fulfilled. In Dan we lose a friend and well-loved colleague.

Otto Titze
(translation by John Covert)

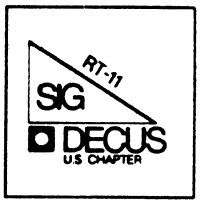
Dan Eisner hat in den letzten Jahren das Bild der RSX SIG in DECUS US geprägt. Seine freundliche Art aber auch die Souveränität mit der er die SIG geleitet hat, hat ihm die uneingeschränkte Sympathie und Wertschätzung aller Kollegen gewonnen. Er gehörte zu den Personen, die sich immer in der Sache engagieren konnten, ohne ihre eigene Person in den Vordergrund zu stellen. Dan hatte sich gerade in letzter Zeit voll für das neue Kommunikationsprojekt DECUSserve für die Mitglieder in den USA eingesetzt und gehörte zu den Vätern und Promotern dieser Einrichtung. Viele von uns hier aus Europa, die Dan bei amerikanischen Symposien kennengelernt haben, haben die Aufgeschlossenheit, wie er auf unsere Probleme hier einging und immer ein offenes Ohr dafür hatte und uns als Partner akzeptierte, besonders schätzen gelernt.

Die Nachricht von seiner schweren Erkrankung hatte uns vor dem Rom Symposium erreicht und schon dort in vielen Gesprächen die Besorgnis und Anteilnahme der europäischen Kollegen ausgelöst. Unsere Wünsche und Hoffnungen für Dan haben sich leider nicht erfüllt. Wir verlieren hier einen Freund und liebenswerten Kollegen.

Otto Titze

THE mini• tasker

DECUS
RT-11 SIG NEWSLETTER



RT-11 MINITASKER
February, 1988

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****

From the Editor:

It seems like it was only yesterday that I was composing last month's "From the Editor." During the DECUS symposium, as usual, the rest of the world was put on hold. Then Christmas occupied all of my attention, and suddenly it's Newsletter Deadline Time again. Over 7000 people attended the symposium at Anaheim, but the RT-11 audiences continue to dwindle. It's not so much that RT-11 isn't being used so much in the world, but that DECUS has become to big, so expensive, and so VAX-dominated, the typical RT-11 user (if there is such a thing) finds it difficult to justify the expense and the time-away-from-work. So for those of you who missed the symposium, I'll try over the coming months to include in the newsletter some of what you missed. For example, in this issue you'll find an article by Milton Campbell which he presented an application note in the "Running Large Programs on RT-11" workshop. Rob Hamilton provided copies of the slides for his talk "Magtape Usage in RT-11." In coming months we'll report some organizational changes in the RT-11 SIG Steering Committee (as soon as the dust settles), and reports on the results of the RT-11 Wish List Survey.

There has been a lot of argument lately among the DECUS Communications Committee and the SIG Newsletter Editors about declining Newsletter subscriptions and proposed changes to form and content (Sturm und Drang).

Apart from the expected controversy of The Big One vs. individual SIG newsletters and one-up vs. two-up paging, there is talk of separating "SIG chatter" from the "technical journal" and uniformity of fonts and formatting. My feelings are simple. I like what I'm doing. Sure I'd prefer a free RT-11 Minitasker sent free to the entire SIG membership, but I appreciate the economic problems involved. Most of all, however, I want the Minitasker to remain a user-produced publication rather than a DECUS publication. I'd rather see a cut-and-paste newsletter with photocopies of your letters mixed with neat articles from those of you who can afford laserprinters than some slick "professionally produced" clone of the DEC Professional. I'd appreciate hearing from you readers your opinions of what you'd like to see in the Newsletter. What do you like? What don't you like? How'm I doin' so far?

And, of course, I'm always looking for things to print. So send articles, bug reports, bug fixes, poison-pen letters, jokes to:

John M. Crowell
RT-11 Newsletter Editor
Multiware, Inc.
2121-B Second St. #107
Davis, CA 95616

Most of the time what you send is printed as-is, but don't think that everything has to be photo-ready. I'll take just about anything I can get. (But, Gil, no more crayon on brown paper bags please.) Machine-readable copy should be sent on RX01/02/50. (I'll even return your floppy if you ask.) I'll also accept RL02's, 9-track magtape, and TK50's (but I don't return those!).

Finally, I am concerned that the Newsletter is not reaching the vast majority of the RT-11 community. So apart from the usual complaints about DECUS policies, if you have any ideas about how we might make better contact with the thousands of RT-11 users out there, please share them with me. RT-11 is far from dead, but we need to let all those people out there who for one reason or another don't get the newsletter that we know they're there and that the SIG has something to share with them.

COMMON (or EQUIVALENCED) VIRTUAL ARRAYS

Milton Campbell
Talisman Systems
Manhattan Beach, CA

I recently needed to convert a large simulation program to FORTRAN-77/RT. This program used a technique of dynamically allocating memory out of a large array held in a COMMON. Converting such programs to PDP-11 FORTRAN has always been a problem because these large COMMONs do not map well to virtual arrays. To properly convert to virtual arrays, you need to modify a lot of code so that the large array is passed as an argument to each routine. I am tired of doing this, so I decided to create a way for virtual arrays in different routines to share the same memory locations. The result is the two routines VCOMND and VCOMNR.

These routines rely on two pieces of semi-hidden information. The first is what is passed to a routine when the calling argument is a full virtual array. The answer is that the receiving routine sees an "Array Descriptor Block" or ADB. The FORTRAN-77/RT ADB is an interesting structure because it is variable length, depending on the number of subscripts, and is variable at both ends. When a virtual array is passed as an argument, the address of the ADB is what is actually pointed to by the argument address. Properly, the receiving routine would have the argument declared as a virtual array and everything would work. If the receiving routines (in our case VCOMND and VCOMNR) do not declare the argument as virtual, the ADB is available as an array.

The second hidden data item is where in the ADB the "virtual" base address of the array is kept. The FORTRAN-77/RT "Object Time System Reference Manual" defines the contents of the ABD, but not the actual offsets. It turns out that the interesting location is the "address" of the ADB. For FORTRAN array subscripting, this is subscript 1 (if you treat the ABD as an INTEGER*2 array).

Note that the virtual array definition in each subroutine consumes some extended memory, at least 32 words. This is not a problem for arrays with only one dimension, but an array with several dimensions could be a problem. The basic rule is that the array definition in the subroutine must have the same number of dimensions as the definition in the main program, and all dimensions but the last must have the same value. The last dimension in the subroutine should be 1. The amount of extended memory wasted by the declaration in the subroutine is the product of all the dimensions times the number of bytes per array element, rounded up to the next 32 word boundary.

First, a code fragment showing how to define the virtual arrays and call the routines.


```
   PROGRAM MAIN
   .
   .
   .
   VIRTUAL IA(32000)
   VIRTUAL IB(31000)
   .
   .
   .
   CALL VCOMND('IA    ',IA)
   CALL VCOMND('IB    ',IB)
   .
   .
   .
   CALL SUB
   .
   .

   END
```

```
   SUBROUTINE SUB
   .
   .
   .
   VIRTUAL IX(1)
   VIRTUAL IY(1)
   .
   .
   .
   CALL VCOMNR('IA    ',IX)
   CALL VCOMNR('IB    ',IY)
   .
   . at this point, references to IX and IY will
   . be to the same physical memory locations as
   .
   END
```

```
   SUBROUTINE VCOMND(BNAME,IADB)
C+
C Routine to define a "virtual" common array.
C
C This routine saves the name and the A.ASTR location of the virtual arr
C ADB for later use by VCOMNR.
C
C BNAME - The 6 character name of the "virtual" common
C VARRAY - The virtual array that defines the location of the common
C-

   BYTE BNAME(6)
   INTEGER*2 IADB(*)
   INTEGER IASTR                    ! ADB Subscript of A.ASTR
```

```
   PARAMETER (IASTR = 1)

   INTEGER MAXDEF                  ! Max number of Virtual common defs.
   PARAMETER (MAXDEF=20)

   INTEGER NUMDEF                  ! Current number of definitions
   BYTE BNAMES(6,MAXDEF)           ! Names of definitions
   INTEGER*2 LOC(MAXDEF)           ! Locations of definitions

   COMMON /VCOMNX/ NUMDEF,BNAMES,LOC
   DATA NUMDEF /0/

C See if the name is already defined

   IF( NUMDEF .GT. 0) THEN

      DO 1000 I = 1,NUMDEF
         DO 800 J = 1,6
            IF( BNAME(J) .NE. BNAMES(J,I)) GO TO 1000
800            CONTINUE

C Got a match - error

         WRITE(*,9999) BNAME
9999           FORMAT(' ?VCOMND-F-Duplicate Define Of:',6A1)
         STOP 'VCOMND - Duplicate Definition'

1000          CONTINUE

   ENDIF

C Add this guy at end

   NUMDEF = NUMDEF+1

   IF( NUMDEF .GT. MAXDEF) THEN
      WRITE(*,9998) MAXDEF,BNAME
9998          FORMAT(' ?VCOMND-F-Limit of ',I3,' Defines Exceeded By:',6
      STOP 'VCOMND - Too Many Definitions'
   ENDIF

   DO 1100 I = 1,6
      BNAMES(I,NUMDEF) = BNAME(I)
1100       CONTINUE

   LOC(NUMDEF) = IADB(IASTR)

   RETURN
   END
```



```
   SUBROUTINE VCOMNR(BNAME,IADB)
C+
C Routine to set up a reference to a "virtual" common array.
C
C This routine matches the name of the incoming "virtual common" and rep
C the A.ASTR value with the value from the definition.
C
C BNAME - The 6 character name of the "virtual" common
C VARRAY - The virtual array should be "equivalenced" to the "virtual"
C  common
C-

   BYTE BNAME(6)
   INTEGER*2 IADB(*)

   INTEGER IASTR                   ! ADB Subscript of A.ASTR
   PARAMETER (IASTR = 1)

   INTEGER MAXDEF                  ! Max number of Virtual common defs.
   PARAMETER (MAXDEF=20)

   INTEGER NUMDEF                  ! Current number of definitions
   BYTE BNAMES(6,MAXDEF)           ! Names of definitions
   INTEGER*2 LOC(MAXDEF)           ! Locations of definitions

   COMMON /VCOMNX/ NUMDEF,BNAMES,LOC
   DATA NUMDEF /0/

C Find the name

   IF( NUMDEF .GT. 0) THEN
      DO 1000 I = 1,NUMDEF
         DO 800 J = 1,6
            IF( BNAME(J) .NE. BNAMES(J,I)) GO TO 1000
800            CONTINUE

C Got a match

         NUMENT = I

1000          CONTINUE

   ENDIF

C No Match

   WRITE(*,9999) BNAME
9999       FORMAT(' ?VCOMNR-F-Virtual Name Not Defined: ',6A1)
   STOP 'VCOMNR - Unknown Name'

C Come here on a match

1200       CONTINUE

   IADB(IASTR) = LOC(NUMENT)
   RETURN
   END
```

Setting RSX straight

Bob Walraven
Multiware, Inc
Davis, CA 95616

The November RSX Multi-Tasker had a code excerpt for counting the number of 1 bits in a word. Unfortunately the code presented there was not only WRONG, it also did not handle the case of a word that was zero. The following FORTRAN and MACRO routines work correctly:

```
        function NBITS ( IWORD )

  ! NBITS returns the number of bits in the integer*2 IWORD.
  !
  ! This function is based on the fact that the logical AND of
  ! a number with the number minus one clears the lowest bit
  ! set in the number.

        integer*2 IWORD , itest

        itest = IWORD
        NBITS  = 0

  10    continue
        if ( itest .ne. 0 ) then
           itest  = IAND ( itest , itest-1 )
           NBITS  = NBITS + 1
           go to 10
        end if

        end
```

```
        .TITLE  NBITS

  ; NBITS - FORTRAN-callable function to return the number
  ; of 1 bits in a word.
  ;
  ; Usage:  N = NBITS ( IWORD )
  ;
  ;       where IWORD is an integer*2 word to be tested,
  ;       and N is the number of 1 bits found.
  ;
  ; Description:
  ;       This function uses the fact that the logical AND
  ;       of a number and the number-1 clears the lowest
  ;       set bit in the number.
  ;
  ; Registers R0 and R5 are modified.

        .PSECT  $CODE1

  NBITS:: MOV     @2(R5),R5       ; R5 = IWORD
          CLR     R0              ; R0 = NBITS

  10$:    TST     R5              ; Anything left?
          BNE     20$             ; Branch if there is
          RETURN

  20$:    MOV     R5,-(SP)        ; R1 = remaining word
          NEG     (SP)            ;      - 1
          BIC     (SP)+,R5        ; R5 = AND ( R5 , R5-1 )
          INC     R0              ; Increment bit count
          BR      10$

          .END
```

****

****

MAGNETIC TAPE USAGE IN RT-11

Rob Hamilton
Digital Equipment Corporation

Editor's Note:

The following are renditions of slides from Mr. Hamilton's presentatio at the DECUS symposium in Anaheim on Friday, December 11, 1987. The audio cassette of this talk is available from:

Chesapeake Audio/Visual Communications, Inc.
6330 Howard Lane
Elkridge, MD 21227

who records nearly all the symposium sessions. For a copy of the cassette that accompanies these slides, refer to the Fall 1987 Symposium, Session No. RT-040.

Magtape Usage in RT-11

- What is a magtape?
- Why does it require special treatment?
- What are its advantages over disk storage?
- What parts of RT-11 deal specifically with magtape?
- How are RT-11 utilities best put to use?

- What is a magtape? Why does it require special treatment?
  - Sequential Access (not Random Access)
  - Concept of Current Position
  - Records, gaps, tapemarks, BOT, LEOT, PEOT
- What are its advantages over disk storage?
  - Inexpensive removable storage
  - Less delicate than disk storage

- What kinds of magtape are supported in RT-11?
  - Traditional industry-compatible 1/2 inch 9-track

800 BPI NRZI odd parity	MT, MM
1600 BPI Phase Encoded (PE)	MS, MM
6250 BPI Group Code Recording (GCR)	MU

  - Cartridge Tapes

TK25	MS
TK50 95MB	MU

- What parts of RT-11 deal specifically with magtape?
  - Magtape bootstrap routines (MDUP, MSBOOT)
  - Utility programs (PIP, DUP, DIR, BUP)
  - Device handlers (MT, MM, MS, MU)
  - File Structure Module (FSM)
  - Special Function Requests (.SPFUN)
  - SYSLIB routine ISPFNx

- Tape Formats and Compatibility
  - PIP tapes (really FSM tapes)
    - Labels are ANSI
    - Data blocks are RT-11 structured
  - BUP tapes (ANSI level 4)

o Utility Programs that operate with magtape

- PIP
  - performs COPY operations
  - uses FSM for transferring 512-byte blocks
  - /M:-1 (/POSITION:-1) switch inhibits initial rewind
  - /VERIFY switch checks data written, but causes LONG delays when used with TK50
- DUP
  - performs INITIALIZE function
  - performs COPY/DEVICE/FILE operations
  - uses FSM for transferring 512-byte blocks
  - /VERIFY switch checks data written, but causes LONGER delays when used with TK50

+-------------+
|d|i|g|i|t|a|l|
+-------------+
Magtape Usage in RT-11
Fall DECUS 1987
Anaheim Convention Center

o Utility Programs that operate with magtape (continued)

- BUP
  - performs BACKUP operations
  - best for large files or /DEVICE backups
  - transfers 4096-byte blocks using multiple buffers
  - BACKUP/VERIFY switch checks data written in separate pass for maximum speed
  - BACKUP/RESTORE/VERIFY restores and verifies disk in one pass; disk blocks read immediately after they are written
  - Beginning with RT-11 V5.4A, writes ANSI level-4 labels
  - Beginning with RT-11 V5.4A, BUP tapes can be read on VAX/VMS systems. DEVICE backups become .DSK files on VMS, which can be read by the EXCHANGE utility
  - Beginning with RT-11 V5.4B, BUP can store multiple savesets on one or more magtape volumes

+-------------+
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Magtape Usage in RT-11
Fall DECUS 1987
Anaheim Convention Center

o BACKUP (BUP) switches for magtapes

/DEVICE	(/I)	Saves or restores an entire device volume
/INITIALIZE	(/Z)	Initializes tape before backup
/RESTORE	(/X)	Restores tape data to disk
/VERIFY[:ONLY]	(/V)	Verifies destination blocks
/NOQUERY	(/Y)	Omits initial MOUNT prompts
/NOREWIND	(/M)	Omits initial rewind
/NOLOG	(/W)	Inhibits informational messages
/SAVESET	(/S)	Selects a particular named saveset

+-------------+
|d|i|g|i|t|a|l|
+-------------+
Magtape Usage in RT-11
Fall DECUS 1987
Anaheim Convention Center

o The File Structure Module (FSM)

- Simulates disk-file operations
  - LOOKUP and ENTER
  - .WRITx and .READx
  - .CLOSE
- Result is an ANSI-labeled tape
- Assembled independently
- Linked with each hardware handler

o Special Function Requests
(NON-FSM usage)

- Allow writing records of any length

- Allow reading records of any length

- Perform positioning operations
  - Rewind
  - Space forward by tapemarks or records
  - Space backward by tapemarks or records
  - Write tapemark

- Tape format is user-defined

- Access from MACRO-11 (.SPFUN) or FORTRAN (ISPFNx)

Example (FORTRAN):

```
INTEGER*2 ERRBLK(4), BUFFER(1024), DBLK(4)
DATA DBLK / 3RMU0, 0, 0, 0 /

IBLKAD = IADDR( ERRBLK )
ICHAN  = IGETC()
IF (LOOKUP( ICHAN, DBLK, ISEQNO) .LT. 0) STOP 'LOOKUP FAILED'
J = ISPFNW( "373, ICHAN, WCNT, BUFFER, IBLKAD )
```

Example (MACRO):

```
.MCALL  .LOOKUP, .SPFUN
  ...
.SPFUN  #EMTARE,CHANL,#370,#BUFFER,#256.,#0    ; Read block
```


Bob Walraven

One of the first program sections to appear in the link map of a FORTRAN-77 program is $$NAM. This psect, which starts with the global symbol NAM, is always one word long, and contains the address of the subroutine $NAM (found later in the $$OTSI program section). The subroutine $NAM is responsible for maintaining on the run-time stack a linked list of the subroutine traceback information that appears on the console when a fatal program error occurs.

Any main module or subroutine that has been compiled with NAM, BLO (default), or LIN traceback will cause its name to be added to the traceback linked list before the first line of executable FORTRAN code. It does this in the following fashion:

```
        MOV     #^RAME,-(SP)    ; Store last  three letters of name
        MOV     #^RMYN,R4       ; Store first three letters of name
        JSR     R4,@$NAM$       ; Add name and calling line to list
```

The JSR instruction causes the subroutine $NAM to be called, which contains the following code:

```
$NAM::  MOV     @#$AOTS,R3          ; R3 -> OTS dynamic work area
        MOV     (R3),-(SP)          ; Push current line number to stack
        MOV     W.NAMC(R3),-(SP)    ; Push current list head   to stack
        MOV     SP,W.NAMC(R3)       ; list head -> stack
        CLR     (R3)                ; Clear current line number
        JSR     PC,@R4              ; Return control to the caller until
                                    ;   it executes an RTS PC, at which
                                    ;   time control is returned to the
                                    ;   next instruction below
        MOV     @#$AOTS,R3          ; R4 -> OTS dynamic work area
        MOV     (SP)+,W.NAMC(R4)    ; Restore previous list head
        MOV     (SP)+,@R4           ; Restore previous line number
        CMP     (SP)+,(SP)+         ; Discard caller's name
        RTS     PC                  ; Return to caller of caller
```

Thus for each main routine and subroutine that is compiled with traceback, the following information is added to the stack: the name of the current routine in RAD50, the FORTRAN line number of the calling routine, and a pointer to the most recent previous traceback information that was added to the stack. When a subroutine finishes, the stacked information is removed and the traceback state on entry is restored.

As you may have noticed, the current line number of the calling program is stored in the first word of the dynamic work area. (This location can also be referenced directly by the global symbol $SEQC.) The value contained in this location will be correct only if the calling routine updates the information properly. When a FORTRAN-77 routine is compiled with traceback, inline code for properly updating $SEQC will be included. FORTRAN-77 modules can be compiled with three kinds of traceback as specified by the CCL /S switch: NAM, BLO (default), and LIN. With NAM traceback, $SEQC is set to zero on entry to a subroutine and is not

lated. With BLO traceback, $SEQC is periodically updated and the value
$SEQC is the negative of the last FORTRAN statement number stored.
:h LIN traceback, $SEQC is updated on every FORTRAN statement and the
.ue stored is positive. If a fatal error occurs, then depending upon
:ther the traceback line number is positive or negative, the traceback
ie number will be reported as "at" or "at or after".

/ lets see how we can use this information to include FORTRAN-77
iceback information in a MACRO routine. To illustrate how this is
ie, we will have a FORTRAN main program call a MACRO subroutine that
.ls a FORTRAN subroutine with a fatal error in it. Thus,

```
      program main
      call sub1
      end
```

```
      .TITLE  SUB1
31::  MOV     #^R1  ,-(SP)     ; Store <1  >
      MOV     #^RSUB,R4        ; Store <SUB>
      JSR     R4,@$NAM$        ; Add traceback info
      MOV     #1,$SEQC         ; Current line number = 1
      CALL    SUB2             ; Call FORTRAN subroutine
      RETURN
      .END
```

```
      subroutine sub2
      W = 1. / 0.
      end
```

ild this program as follows:

```
      .FORTRAN MAIN
      .MACRO SUB1
      .FORTRAN SUB2
      .LINK MAIN,SUB1,SUB2
```

en you run the program, you will see the error report

```
      ERROR 73
      Floating zero divide
      at PC = 013464
        in   "SUB2  " at or after 2
        from "SUB1  " at 1
        from "MAIN  " at or after 2
```

an exercise for next time, try writing your own version of $NAM that
splays on the console the names of subroutines as they are called.
en try it out with one of your own FORTRAN programs (preferably one
th a few appropriately modified MACRO modules).

a further exercise, try writing a version of $NAM that monitors calling
ains for overlayed programs to see if you have violated the overlay
lling rules. If an overlay error is detected, print out the calling
ain. You may also want to consider logging all call information to an
ternal file so that the calling efficiency of your program can be
alyzed later.

anybody comes up with some nifty versions of $NAM, send them in and
will publish them in a later issue.

The Flit Gun

The following bug was reported by Michael Iloff of Stuttgart, Germany:

{Since V5.2}, an ancient Trojanic bug has been there in the BYPASS function service {of DU}.

Line 16 explicitely copies the word count into R0
Line 20 duplicates it into R2 {SJ and FB only}
Lines 25 and 26 set up the buffer address
Line 32 writes the word count over the buffer address

```
 1    .SBTTL  BYPASS  - Bypass RT-11 and Issue MSCP Directly
 2    .ENABL  LSB
 3    BYPASS: ADD     #Q$BUFF-Q$BLKN,R5
 4 .IF EQ MMG$T
 5    MOV     (R5)+,R4
 6 .IFF
 7    CALL    @H$MPPT
 8    MOV     (SP)+,R4
 9    MOV     (SP)+,R0
10    ASH     #-4,R0
11 .IFTF
12    ADD     #4,R4
13       .
14       .
15       .
16    MOV     (R5),R0          ; If <WCNT> is zero, use physical address
17    BEQ     20$              ; in command packet.
18 .IFT                        ; If non-zero, it is a virtual address, ...
19    CLR     R1
20    MOV     R0,R2
21 .IFF
22    MOV     H$P1EX,R1        ; convert it to a physical address, ...
23    CALL    CVAPHY(R1)
24 .IFTF
25    MOV     Q$BUFF-Q$WCNT(R5),R4
26    ADD     #<4+P.MSIZ+4>+P.BUFF,R4
27 .IFF
28    MOV     Q$PAR-Q$WCNT(R5),10$
29    JSR     R0,@H$P1EX
30     .WORD  10$-.
31 .IFTF
32    MOV     R2,(R4)+         ; and put physical address in command packet.
33    MOV     R1,(R4)+
34 .IFF
35 10$:        .BLKW
```

Editor's Note:

This is not a bug. Herr Iloff has misinterpreted what the code is doing, but it's not his fault. The BYPASS function, which allows direct access to the MSCP port, is poorly documented (I suppose to keep us from knowing anything about their precious protocol). If the word-count parameter is zero, the DU handler assumes that you have put the physical address of your buffer in the MSCP packet. If you don't know the physical address, you put the virtual address in the word-count parameter, and DU will convert it to a physical address, and insert that in the MSCP packet. It seems to work for me.

UNISIG

Introducing the New Newsletter Editor

Let me take a moment to introduce myself. I've been a DECUS member for many years, but have not been actively involved in the Unisig (or any other SIG) until now. Between symposia, I do C programming on a microVAX II running ultrix. I make absolutely **NO** claims to guru status, but please send me your questions and problems, and I will try to find someone to address them. If you have an article you'd like to publish in the newsletter, you can send it to me over uucp at

amdahl!cit-vax!ndc!sgf

I have a laser printer available for troff'ed output, but at present do not have Postscript capability (but I'm working on it). If you are unfamiliar with troff, you can send me a plain text file and I'll format it here. If you're not on the network, you can send TK50s, 9-track tape, or RX50s in tar format. Or, you can send me camera-ready copy, or, if you must, any text that I can read and I'll type it in and format it. Send hardcopy/magnetic media to:

Sharon Gates-Fishman
NDC Systems
730 E. Cypress Ave.
Monrovia CA 91016

SASE if you want me to send back your mag media.

I'd like to publish session notes from the Fall Symposium that didn't get into the printed Session Notes. If you were a speaker at Anaheim and didn't get your notes in the Session Notes, please send them to me and I'll put them in the newsletter. If you have experiences (good or bad) that might help someone else in a similar situation, write them up and send them in. Send me questions, send me answers, send me jokes (especially jokes!). Anything unix/ultrix related that you think would be interesting to other SIG members is welcome. I will endeavor to get a newsletter out every month, but I'm new at this game, so please bear with me. The more articles you send me, the better this newsletter will be.

This month, we have the notes from one of the Anaheim DECUS sessions. What follows are copies of the slides from U036 - Network File System Extensions to Support Diskless Workstations on Ultrix. This session was given by Suzanne Logcher (not by Chran-Ham Chang, as written on the notes). This session was taped (along with many other Unisig sessions), and you can order the tape(s) from :

Chesapeake Audio/Video Communications, Inc.
6330 Howard Lane
Elkridge, MD 21227
(301) 796-0040

Tapes are $8 each, some sessions require two tapes.

Yours,
Sharon Gates-Fishman

ULTRIX DISKLESS PERFORMANCE TEST METHODOLOGY

Chran-Ham Chang
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Ultrix Engineering Group
Digital Equipment Corp.

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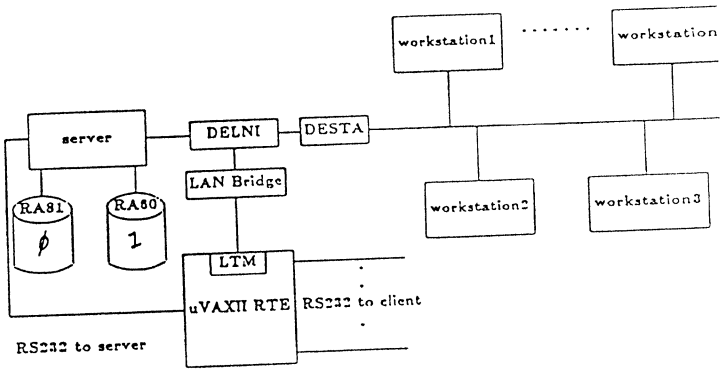
Introduction

- Diskless performance test configuration
- Server and Client configuration
- Performance Test methodology
- Performance Data
- Future study

Performance Test Configuration



Server and Client Configuration

- Server configuration

CPU	MEMORY	DISK	CONTROLLER	NI
MVII	16meg	RA81/RA60	UDA50	DEQNA/DELQA
MVIII	16meg	RA81/RA60	UDA50	DEQNA/DELQA

- Client configuration

CPU	MEMORY	NI	QUANTITY
VAX2000	4/6meg	DESNA	20
VAXII/GPX	5meg	DEQNA	3

Performance test methodology

- Digital Remote Terminal Emulator
- Ultrix Integrated Workload
- Workload enhancement
- Resource usage collection

DIGITAL Remote Terminal Emulator

- From ORACLE to VAXRTE on VAX/VMS
- Provide a repeatable interactive terminal user workload
- Emulate the behavior of I/O device, components or entire system
- Interrupt-driven,real-time application
- Script language and monitor
- Log file and data reduction

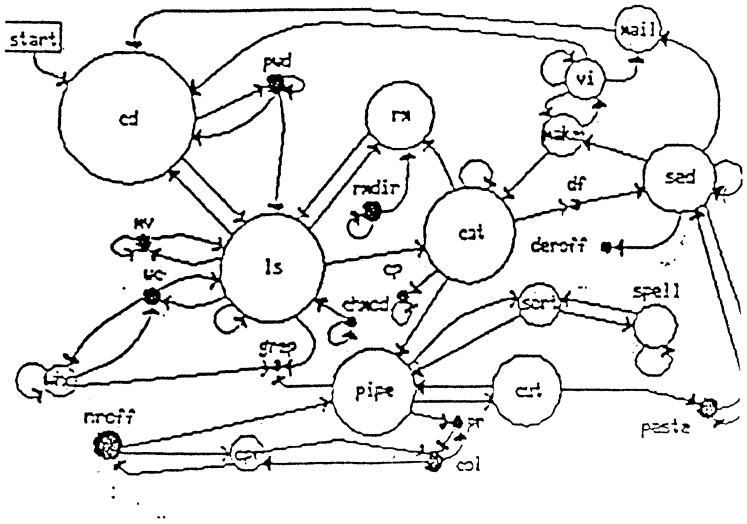
ULTRIX Intregrated Workload

- Workload is coded in a Digital Terminal Emulator language
- Complete probability-driven workload
  - — Internal Digital Human Factors Studies
  - — Public available workload studies done by other UNIX vendors
- Multiuser time-sharing environment workload
- Simulates user sub-activities
- Emulates usage of the 30 most frequently used ULTRIX commands
- Two types of data are collected
  - — Timings of critical or important functions
  - — Resource consumption on the System Under Test

Simulate user sub-activities

- Interruptions (coffee brakes, telephone calls)
- Logging in and out activity
- Differing typing rates and "think" time
- Differing amount of text insertion and text editing
- Command typing error
- Choice of background or foreground processing
- Choice of output to the terminal, a file or bit bucket

Ultrix Finite State Model



Workload Enhancement

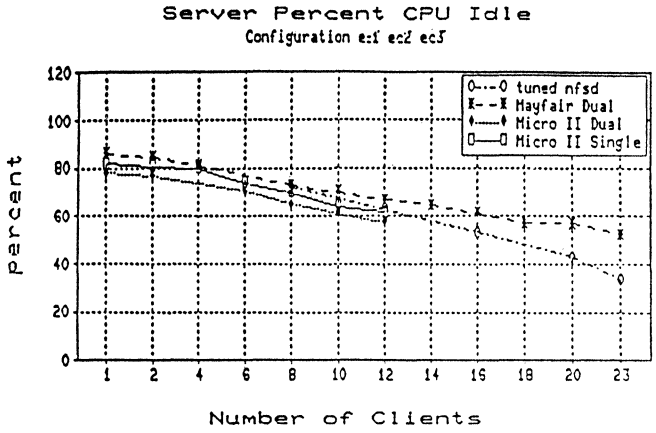
- Ultrix Intergated Workload + window workload
- New features
  - — xclock
  - — xterm - vmstat + disk I/O (every 10 seconds)
  - — xperfmon

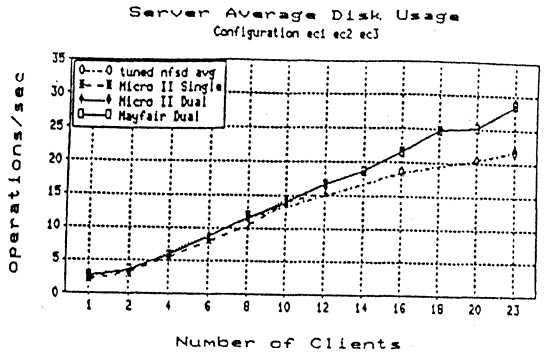
Resource Utilization

- Observation tools
  - — vmstat - memory utilization + cpu utilization + I/O operation
  - — pstat -s - memory status
  - — netstat - network utilization
  - — netstat -m - mbuf utilization
  - — iostat - I/O utilization
  - — nfsstat - nfs and rpc information on both server and client
- Local Area Network Traffic Monitor (LTM)
  - — Ethernet utilization

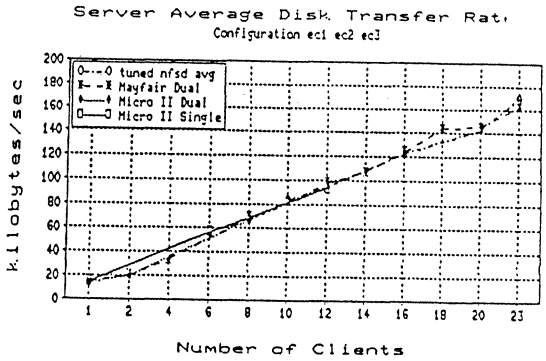
Performance comparison

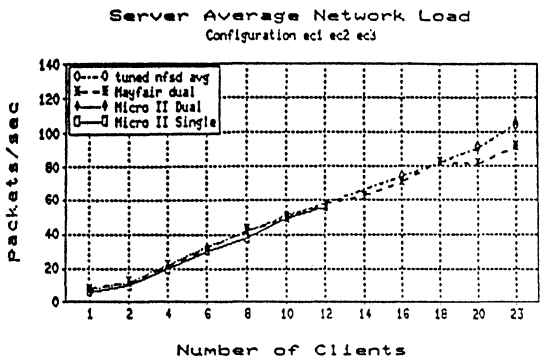
- Different server hardware configuration
  - — Processor
  - — Memory
  - — Storage
  - — Network Interface
- Varying numbers of clients
- Varying numbers of NFS daemons on server
- Different value of NFS mount timeout option
- /tmp and swap file system on local disk

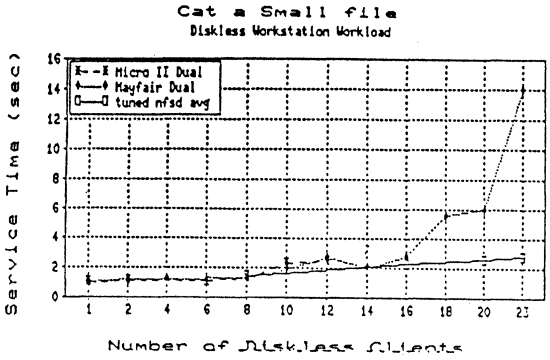


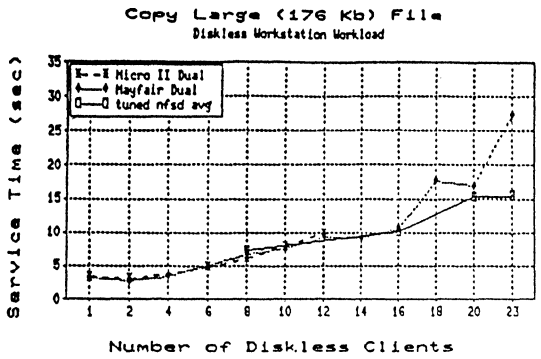


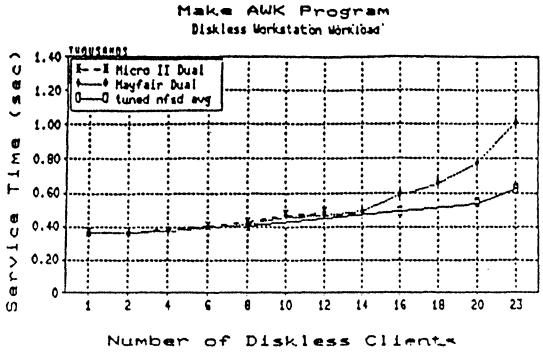
Clients	Tuned NFS Daemons
8	6
16	12
20	20
23	23

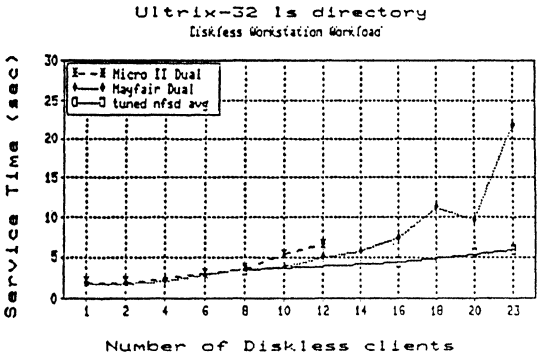


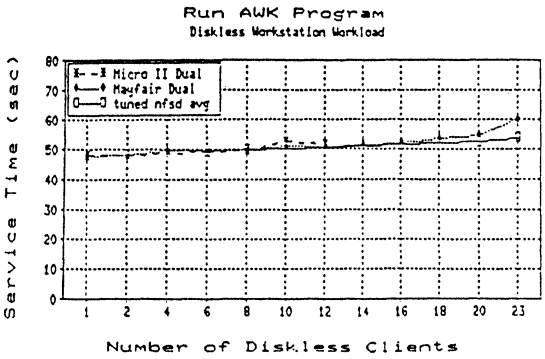












Future

- New Remote Terminal Emulator on ULTRIX
- New workstation application based workload
- Different configuration
- More detail performance informantions

CONFIGURATION GUIDELINES AND PERFORMANCE

Server Node

Client Node

Disk Requirements

Types of Users

Recommended Diskless Users / Server Class

Tuning

Special Notes

Server Node

Class A Server - minimum 12M of memory

- VAX 8500
- VAX 8530
- VAX 8550
- VAX 8600
- VAX 8650
- VAX 8700
- VAX 8800

Server Node

Class B Server - minimum 5M of memory for RQDX3-based uVAX II

- MicroVAX II
- MicroVAX 3500
- MicroVAX 3600
- VAX 11/750
- VAX 11/780
- VAX 11/785
- VAX 8200
- VAX 8250
- VAX 8300
- VAX 8350

Client Node

minimum 4M of memory, 9M for multi-headed GPX

- VAXstation 2000
- VAXstation II
- VAXstation II/GPX
- VAXstation 3200
- VAXstation 3500
- MicroVAX 2000
- MicroVAX II

Disk Requirements

Server filesystems plus diskless usr - 120M

Client root filesystem - 10M

Client swap file - 2M * memory

Client dump file - 1M * memory

Formula :
120M + # clients * (10M + 3M * client memory)

Types of Users

Resource Needs

- Disk
- Memory
- Cpu Capacity

Types of Users

Heavy

- CAD/CAM applications
- Heavy software development
- Artificial intelligence

Moderate

- Software development
- Educational projects
- Electronic publishing
- Financial applications

Light

- Editing files
- Sending mail

Recommended Diskless users / Server Class

Users	Class A	Class B
Heavy	8-14	4-8
Moderate	14-20	8-12
Light	20-26	12-20

Tuning

Server

- Improve network bandwidth (DEUNA => DELUA)
- Multiple disks

Client

- Increase memory
- Local disk

Tuning

Ethernet Layout

- LAN Bridge 100
- Sub-network

NFS daemons

- Start with 4 nfsd
- If bad performance,

  # nfsd = .75 * # clients

Special Notes

DEUNA based machine - 1/2 recommended clients

RQDX3-based machine - maximum 3 clients

NEWSLETTER OF THE VAX SYSTEMS SIG

Pageswapper

Our Mascot

VAX SYSTEMS SIG
DECUS U.S. CHAPTER

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(617) 262-6830

(in the United States) using a 1200 baud modem and log in with the username PAGESWAPPER.

Articles for publication in the Pageswapper can be sent (US mail only -- no "express" services please) to:

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

SIR Voting Time

By the time you read this there will be barely 2 months until the April 8 deadline. Look over the System Improvement Requests in the article in this issue and send in the ballot form from the back. Do it today, before you forget!

Newsletter Survey

At the Anaheim Symposium Newsletter editors (as well as anyone who volunteered for the tally committee) got a chance to look at the results of the survey which was mailed to all newsletter subscribers. I forget the numbers, but those familiar with surveying said the percentage of surveys returned was phenomenal compared to the small numbers one usually gets in response to such a survey.

The overwhelming sentiment on distribution format favored the current combined volume as compared to the former arrangement where each SIG newsletter got mailed separately.

For individual features that readers liked best/worst, almost every feature (across all newsletters) that anybody hated, somebody else loved. You can't please everybody all the time, and to me the survey indicated that everybody (subscribers, anyway) had certain newsletter features which they viewed as valuable to them. That is what it is all about.

The most interesting part of reading the comments from the survey was that several readers said that the newsletters needed more reader submissions, "including from me", or words to that effect. That proof that even non-submitters realize we need submissions makes a newsletter editor happy.

Newsletter Truncation

Many pages have been chopped out of the Pageswapper by DECUS staff in the past six months (remember in August when it said "To be continued in next issue..." and it never was?), so those interested in what they missed should get copies from the Fall 1987 (Anaheim) SIG tape when it is distributed.

There were several "interim" commitments from the Communications Committee at the Anaheim Symposium. There is hope for budget relief in July, with some change in the printing arrangements (I don't remember the details), but in the meantime:

1. "Big" issues for February and May

   Newsletter editors were told that the budget could stand two issues between now and July which exceeded the normal "small" size (weight of the issue, for postage budget). Those issues were designated as February and May, when submissions typically peak anyway. So there should be no cuts for those months.

2. Pageswapper page count allocation

   Cuts have been to give the Pageswapper only 16 pieces of paper (64 page numbers) whereas since before the inception of the combined newsletters we have been working with a budget of 32 pieces of paper (128 page numbers). That is the reason we were quick to adopt the "two up" format - to get more information within the page budget. Our incoming and outgoing VAX SIG Communications Committee representatives are supposed to get this straightened out this month.

Of course the Communications Committee had voted in September to have the staff stop cutting pages out of Newsletters. The cutting continued, so the Communications Committee does not necessarily control what happens.

I/O Submission Form

Editors have been asked to reduce the number of forms each SIG newsletter includes at the end of the combined newsletter to save on printing costs. To that end, I am abandoning the I/O Submission Form, and counting on our noble readership to do the right thing and use a piece of paper in the obvious fashion. The SIR forms will persist for the time being at least, since they include are structured queries that we want answered in order to make the process work.

Larry Kilgallen
Pageswapper Editor

Interlocked QBus Cycles on the MicroVAX-II

Frank J. Nagy
Research Division EED/Controls Group
Fermi National Accelerator Laboratory
P. O. Box 500 Mail Stop 220
Batavia, IL 60510

We recently had a rude awakening about the MicroVAX-II. What we discovered was that interlocked MicroVAX-II instructions (such as BBSSI) do not perform interlocked QBus cycles.

Our group is working on a new distributed control system for the external beam lines at Fermilab. Control system data is acquired by a system of Front Ends and distributed to clients using DECnet. We are developing a Data Acquisition Engine (DAE) for our Front End MicroVAXes to increase the I/O efficiency by offloading the MicroVAX CPU. The DAE consists of a VME crate with two 80386 processor boards with attached I/O boards; the 80386 boards are commercial products, the I/O boards are developed inhouse. Communications between the 80386s and the MicroVAX is via a 4 MB memory module on the VMEBus (the 80386s each have 2 MB of private memory for buffers and program code). Another inhouse group developed a Qbus-to-VME interface which allows us to map VME address ranges into QBus Memory space. Our software sets up a global section by PFN mapping and then manipulates interprocessor queues within the VME memory. We have also built a set of boards to give us bi-directional interrupts between the VME processors and the MicroVAX.

The interprocessor communications protocol is to dequeue a memory block from a free list queue, copy information into the block (which is resident in the 4 MB common memory on the VMEBus), insert the block onto the destination processor's queue and trigger an attention interrupt of the destination processor. The interprocessor queue structures are software locked by a single lock bit manipulated by test-and-set instructions (XCHG on the 80386 and BBSSI on the MicroVAX). The queue is a simple singly linked list and the interlock is needed to prevent multiple accessors from attempting to update the links simultaneously.

Initial testing revealed no problems and development of 80386 code proceeded apace. We started firing asynchronous interrupts at the 80386s which resulted in collisions in the queue manipulation code. These collisions were traced to the fact that the software interlocks were not working correctly. Further investigation with a logic analyzer revealed that the BBSSI instruction on the MicroVAX does not perform an interlocked QBus operation (using either a DATIO or a DATIOB cycle) but uses separate DATI and DATO(B) cycles. Further investigation revealed that the ADAWI similarly does not perform interlocked QBus operations to QBus memory space. We did not check the interlocked queue instructions (INSQxI and REMQxI) since we cannot use them in our environment.:

NOTE

> Interlocked VAX instructions appear to NOT generate read-modify-write QBus cycles to QBus Memory space in the MicroVAX-II.

We kludged a solution since we really wanted the interlocked operation to occur on the VMEBus. Before the BBSSI instruction is executed, a bit in the QVI (QBus-to-VME Interface) is toggled to set a LOCK signal. This signal stretches the next VME cycle (holding the VMEBus BUSY) done by the QVI until a VME Write operation is done. Since the next MicroVAX operation (at IPL above 24 so no one else gets the machine) is the BBSSI, the separate read (DATI) and write (DATO) QBus cycles are stretched into a single read-modify-write cycle on the VMEBus. Our interprocessor queue software now works and we are once again back in business.

Cleaning up the TPU EDT Emulator

Richard D. Piccard
Educational Computing
Kalamazoo College
Kalamazoo, Michigan 49007

Abstract

This paper reports what may well be the final revisions to our customization of DIGITAL's EDT Emulator interface for TPU. Because DIGITAL has announced that they intend no further development of the EDT Emulator, these include the code for fixes to outright bugs as well as some improvements. The full code for our customizations is included in the submission from Kalamazoo College on the DECUS VAX SIG Symposium Tape for Anaheim, 1987.

I. Introduction

VMS V4.6 comes with the cheering news that DIGITAL will provide no further updates to the EDT Emulator interface for TPU. ("But the EDT keypad is available under EVE," or words to that effect; this is comforting?) Furthermore, that section file will disappear automatically during the VMS V5.0 upgrade, so anyone who wants to continue using an interface based on that code must squirrel away a copy of

SYS$SHARE:EDTSECINI.TPU

before the upgrade. After that event, it may prove more effective to modify a copy of their file directly. But we are continuing for now to use the fully layered approach, in which a stock section file is used with a command file that implements our customizations and saves them to a new section file. Since DIGITAL has been happy in the past to provide EDTSECINI.TPU to all licensed VMS sites, it will be included in our VAX SIG Symposium Tape submission, which should be distributed down the tree at about the same time that VMS V5.0 hits the streets.

II. Bug Fixes

The method we use to fix bugs in DIGITAL's EDTSECINI.TPU code is to include in the command file that will create the layered section, KAZSECINI.TPU in our case, a copy of their defective procedure, and then modify it. The corrected version will then supercede the original procedure when the new section file is saved.

The stock word-wrapping procedure, normally bound to the space bar, wraps one column too early and also wraps the entire last word of a line even when all the printing characters do fit within the wrapping margins, but the second (or later) space character following the word moves the cursor beyond the limit. The fix is to modify their procedure EDT$WRAP_WORD, as indicated below.

```
==================================================================

procedure edt$wrap_word                    ! space key (wrap word)
!
!+
!    Modified from EDTSECINI.TPU
!
!                    COPYRIGHT ) DIGITAL EQUIPMENT CORPORATION
!
! Procedure to wrap the word to the next line.  Bound to space
! key when a SET WRAP is done.
!
!    28-SEP-1987  RDP:  use the full number of columns (the
!                       current_column is one beyond the last
!                       character typed); if the previous
!                       character was a space, and are now
!                       too far, then just split_line.
!-

LOCAL   word_size ,
        temp_char,
        trash_space ;
if edt$x_wrap_position = 0
then
    return
endif;
if current_column > edt$x_wrap_position + 1
then
    move_horizontal(-1);
    temp_char := current_character;
    move_horizontal(+1);
    if (temp_char = ' ')
    then
        split_line;
        return;
    else
        word_size := edt$beg_word;
        split_line;
        move_horizontal(word_size);
    endif;
endif;
copy_text(' ');
endprocedure

==================================================================
```


Ever since the original release of the EDT Emulator, FILL has split a word in the middle whenever the select range starts in a word that extends beyond the specified margin. The fix below has been included in previous versions of KAZSECINI, as submitted to the Fall, 1985, and Fall, 1986, VAX SIG Symposium Tapes; it is included here for completeness. As above, a copy of the stock procedure is included in KAZSECINI and modified as shown in the early portion of the procedure, below.

```
==================================================================

procedure edt$preserve_blanks(flag)   ! support routine for fill
    .
    .

on_error
all_done:=1; ! cause exit
endon_error;

        original_position:=mark(none);
        b_mark:=beginning_of(edt$x_select_range);
!
        position (b_mark);
        move_horizontal (-current_offset);
        b_mark := mark(none);
!
!           the above three lines are Kalamazoo's fix of a bug.
!
    .
    .

==================================================================
```

The structured tabs features of EDT have also been poorly emulated ever since the original release. In particular, the emulator procedure bound to CTRL/T sets all indentations in the selected block to exact multiples of the current "tab size", rather than changing the indentation of each line in the block by the specified multiple of the tab size. Our earlier versions of KAZSECINI included attempts to cure this behavior. We are confident that the following code is satisfactory under the current version of TPU. As before, a modified copy of the stock procedure is included in KAZSECINI. The code below is an early portion of the modified procedure.

```
==================================================================

procedure edt$tab_adjust                        !ctrl t (adjust tabs)
    .
    .

!+
! Go to beginning of line.
! Calculate tab depth for this line
! Strip off spaces and tabs at beginning of line.
! Set up new tab goal
! Call the tab routine.
!-
    if length (current_line) > 0
    then
    loop
        exitif (current_character <> ' ') AND
            (current_character <> '     ');
        move_horizontal(1);
    endloop;
!
!    tab_level := get_info(current_buffer,'offset_column')
!                                        / edt$x_tab_size;
!    edt$x_Tab_goal := (tab_level + adjust_level)
!                                        * edt$x_tab_size;
!
!     For KAZSECINI, the above two statements are deactivated
!     and replaced by the next statement.
!
    edt$x_Tab_goal := get_info(current_buffer,'offset_column')
                      - 1 + (adjust_level * edt$x_tab_size) ;
    if (edt$x_tab_goal < 0) then edt$x_tab_goal := 0 endif;
    erase_character(-current_offset);
    edt$tab;
    endif;
```



```
    .
    .
==================================================================
```

In VMS V4.6, once again, DIGITAL's love-hate relationship with the GIGI rears its ugly head. The scrolling region limitation, which is noted in the unchanged TPU documentation, is defaulted differently, so that code that used to function quite nicely is now unworkable. The fix is simple this time. The work-around was developed with Edward M. King of the Colorado Customer Support Center. Even though scrolling is "OFF", the line limits are obeyed by pseudo-scrolling, repainting the screen. Our procedure for setting up the environment now includes the following lines:

```
==================================================================

procedure tpu$local_init

local    gigi;
    .
    .

    gigi := get_info(SCREEN, "vk100");
    if (gigi = 0)
    then
!         this is not a GIGI, so
!
      set (scrolling,KAZ_x_top_window,on,3,3,0);
      set (scrolling,KAZ_x_bottom_window,on,3,3,0);
      set (scrolling,main_window,on,7,7,0);
    else
!         this is a GIGI, so
!
      set (scrolling,KAZ_x_top_window,off,2,2,3);
      set (scrolling,KAZ_x_bottom_window,off,2,2,3);
      set (scrolling,main_window,off,4,4,6);
      set (scrolling,message_window,off,0,0,0);
    endif;
!
    .
    .
==================================================================
```

III. Improvements

While browsing through EDTSECINI we noticed the SHOW VERSION line-mode command. It seemed reasonable to include the date of the KAZSECINI revision. We have created one global variable to carry that information, which is initialized in our procedure tpu$local_init, and modified a copy of the stock procedure edt$show to take advantage of it. The KAZSECINI date does require modification by hand. The modified portions of the two procedures are shown below.

```
================================================================

procedure tpu$local_init
    .
    .

!
    kaz_x_version := ' - KAZSECINI 9/28/87';
!
    .
    .

================================================================


================================================================

procedure edt$show     ! support routine for line mode(show cmd)
    .
    .

.test page 6
[4]:
! SHOW VERSION
    message('TPU Version V'+str(get_info(system,'version'))+'.'+
                         str(get_info(system,'update')) +
                         ' - ' + edt$x_version + kaz_x_version);
    .
    .

================================================================
```


Following the suggestion provided in the July, 1985, issue of "The HEAP," our earlier versions of KAZSECINI had included the following statement in the local initialization:

```
    SET(MESSAGE_FLAGS,1);
```

This did permit more of the informative text of most messages to be visibly displayed on screen, but not the initial file read-in message. We have therefore included in the current KAZSECINI a copy of the stock procedure EDT$INIT_VARIABLES, and moved the statement given above from our procedure TPU$LOCAL_INIT to become the first executable line of EDT$INIT_VARIABLES. This means that the message about reading in the file has room for 15 more characters of subdirectory information before going off the screen.

```
================================================================

procedure edt$init_variables       ! initialize global variables
    .
    .

set (message_flags,1);
    .
    .

================================================================
```

We found that when the procedures we bind to GOLD/B (for reading a file into a buffer) were executed, we were almost always interested in starting at the top of the buffer, but that the code was leaving the cursor at the bottom. We therefore modified the procedure, as shown below, by adding a line to position the cursor automatically at the top of the buffer.

```
================================================================

procedure kaz_grab_a_buffer(buffer_name,new_window)
    .
    .

  if file_name <> kaz_x_empty
  then
    read_file(file_name);
    position (beginning_of(buffer_ptr));              ! new line
  endif;
```

```
!
else
!       buffer already exists
!
  kaz_status_line(buffer_ptr,new_window);
  map(new_window,buffer_ptr);
endif;
!
kaz_x_this_window := current_window;
return 1;
endprocedure
```

==========

IV. What Next

The time is fast approaching to bid a fond farewell to EDT and the EDT Emulator. We plan to try to sustain the enhanced EDT Emulator at Kalamazoo College under VMS V5.0, but probably not beyond. We will be encouraging adventurous users to experiment with EVE and EVE-Plus during the end of VMS V4, and will then try to merge the best parts of our modified EDT Emulator into some variant of EVE. I suspect that we will abandon most of the line-mode commands except, perhaps, EXIT, but that we may prefer to keep more EDT key definitions than just the keypad.

I would be delighted to hear directly, or better yet through these pages, from anyone who has migrated a user community from EDT or the EDT Emulator to any variant of EVE. In particular, our system has many VT-100 and Zenith Z-29 terminals, and no VT-200 series terminal. Hence, the optimization of EVE using the more limited keyboard is critical for us, and it does not strike me as being at all obvious that it has been done right: I suspect strongly that DIGITAL's recent research has mostly been done on their modern terminals.

VMSnet Status

VMS User's Network Working Group
Jamie Hanrahan
Working Group Chair

This is a summary of the current state of the "UUCP and Usenet for VMS" (VMSnet) effort. It is based mostly on the session presented at the Fall '87 Symposium by Tom Allebrandi and Kevin Carosso (presented heroically, I might add, as they both expected me to be the primary speaker, and I was delayed getting back from San Diego).

Background

(Those already familiar with the working group and its goals may skip this section.)

Unix(TM) sites have for many years enjoyed the benefits of "Usenet", a worldwide network of (mostly) Unix systems connected (mostly) via autodialed phone lines. The services provided by this network are electronic mail and "Netnews", an elaborate on-line conferencing system. Usenet differs from dial-in, bulletin-board-like systems like DECUServe and Larry Kilgallen's Pageswapper machine in that the mail and news is delivered automatically to the system you log into every day; there's no need to place an outgoing call when you want to read or send mail.

The Usenet has been of incalculable value to the Unix community. The network encompasses tens of thousands of systems, crossing both corporate and geopolitical boundaries; the body of knowledge that is available from the participants is not inconsiderable. Questions posted to Netnews on almost any topic are generally answered within a few days. Bug reports and fixes, patches to Unix system code, and public-domain software are all distributed through Usenet; many sites justify the telephone expenses (which, for sites with many connections, are not small) on this basis alone. Further, Usenet is effectively part of the Internet, which includes Arpanet, CSNET, and

BITNET... not to mention Easynet, DEC's internal DECnet network.

VMS users who are aware of Usenet have for many years wished for a way to connect to it -- not only so we could talk to all those other folks, but also (or especially) so we could talk to each other. There has never been anything technically impossible about this, but the necessary software and information has not been cheaply available in the correct combinations. A few years ago some of us got together at a DECUS Symposium, started calling ourselves a Working Group of the VAX SIG, and set out to do something about the problem.

RECENT HISTORY

When we published our last report, we had settled on a package called PMDF (Pascal Memo Distribution Facility) as our dialup transport mechanism. PMDF is available at very low cost and offers RFC822- (i.e. Internet-) compliant addressing, routing between various transport mechanisms (including DECnet), automatic store-and-retry when a target system is unreachable, etc. It is an extremely valuable and useful package, and will play a major role in many sites' activity on VMSnet.

Unfortunately, my efforts to build a network with PMDF alone have not been successful. The reason is that there aren't enough VMS sites who are willing to place long-distance phone calls to each other to build a viable backbone. (Among the thirty or so responses I got to my "contact me" request in the August article, only three people said that they would be able to place long-distance calls.) It is true that PMDF can talk to the Unix package, MMDF, which comes with Berkeley Unix 4.3, but it is not actually in use at very many Unix sites, so PMDF does not provide the desired level of Unix connectivity either.

Very Recent History (and some good gnus!)

UUCP for VMS is "Almost Here"

In October I received a package called "gnuucp" from John Gilmore and Lol Grant. It is part of the Free Software Foundation's "Gnu" (short for Gnu's Not Unix) effort. It is copyrighted by the FSF, but anyone can freely distribute it as long as their recipients can do the same. Perhaps best of all, it has been certified by AT&T as not having been derived from Unix sources.

John Gilmore and Lol Grant have gnuucp running under VMS, exchanging mail with a Unix system over hardwired lines. And, I have used it to exchange mail with a Unix system -- albeit with a few bugs -- over a dialin line (that is, the Unix system called VMS; gnuucp can't dial out yet).

Internet Addressing Support

Tom Allebrandi has been working on porting two public-domain Unix programs called smail and pathalias to VMS. These programs eliminate most of the need for route-style addressing in the uucp world and will allow us to use domain-style addressing instead (user@site).

Netnews Support

Geoff Huston of Australia National University has written "NEWS 4.0", a nearly full implementation of Unix netnews under VMS. It will appear on the Fall 87 DECUS VAX SIG tape.

What's Left?

Here's our current list of things to do:

- Fix the dialin and dialout problems in gnuucp, add support for more modem types (it presently can only dial Hayes modems), and track down some other miscellaneous bugs.

- Eliminate the need for a C compiler at the user's site (presently, things like the uucp node name are compiled in rather than being defined via logical names)

- Finish porting pathalias and smail, and integrate smail with gnuucp

- Provide an interface to VMSmail (based on Kevin Carosso's VMSmail foreign protocol interface)

- Allow NEWS 4.0 to send and receive news via gnuucp

This should keep us busy in our spare time (!) through January.

Want to Help Beta Test Some Probably Buggy Code?

If you want to be one of the first sites on VMSnet, you'll need:

- A VAX or MicroVAX or VAXstation running VMS 4.6 (or later)

- Disk space:

  - 4 megabytes temporary (for the uucp map in text form)

  - 1 megabyte permanent

  - 2 megabytes per day per news (if you get all the newsgroups. Multiply by as many days as you plan to keep the news around; there's an automatic "expire" feature)

- DZ, DHU/DHV, or DMF port (with modem control), or equivalent (I don't have any terminal servers here, so I can't say how well it'll work with them)

- An autodialing modem, preferably 2400 bps, and preferably Hayes compatible

- A nearby (probably Unix) site to connect to (you'll be able to find them via the map files)

- The beta test software

To receive the beta test software, send a blank tape (2400' 9-track, or a TK50 cartridge) -- with a stamped, self-addressed return envelope or box -- to:

For 9-track tapes: Jamie Hanrahan, Simpact Associates
9210 Sky Park Court, San Diego, CA 92123

For TK50s: Tom Allebrandi, c/o ACCI
206-F W. Market Street, Charlotsville VA 22901

The tapes will include gnuucp, smail, pathalias, the VMSmail interface, NEWS 4.0, the uucp network map, an encoder/decoder for sending non-text files via mail, various utilities necessary for building it all from the sources (if you are so inclined; executables will also be provided), and some very sketchy documentation.

Warnings

Two things need to be said about the sort of dialup network we are creating. First, it should be obvious that if your mail passes through any machines you don't directly control, it is subject to being read by persons other than the intended reader. So, don't plan on using the network for, say, intracompany mail between offices in various cities, unless you set up direct dialed connections (no intermediate hops) between them. Of course, this is a good idea anyway, because of the second thing:

Second, if you find yourself communicating heavily with particular sites, you should set up your own long-distance links between them, and not ride on the existing backbones (which are already overloaded).

What's Next?

In addition to fixing whatever bugs are found in the test software, there are several other things to be done before we can sit back and rest on our laurels:

- Add support for terminal servers
- Provide gnuucp as a channel under PMDF
- Write good documentation
- Establish procedures for Internet name registry for VMSnet sites
- Allow gnuucp to use DECnet links (where they exist)

The last item is a particularly exciting idea. We're not talking about running the uucp protocol over DECnet, but rather using a DECnet link to perform the file copy operation, at the next level up, as it were. An organization with VMS systems in different cities around the country, connected by leased-line DECnet links, could then provide significant backbone capacity to the net during the off hours when such links are almost always idle. We may have a rudimentary capability along these lines (using DECnet remote file access) in the beta test release; a proper implementation (with our own special-purpose server, as many sites don't like the security problems that FAL opens up) will have to wait until later. (We'd like to have all of this done in time for the Cincinnati SIG tape, but we'll see.)

Naturally, if you want to help with any of this, we'd like to hear from you. See you on the net!

Jamie Hanrahan
Simpact Associates
9210 Sky Park Court
San Diego, CA 92123
619-565-1865

uucp: {sdcsvax,nosc}!crash!jeh
arpa: crash!jeh@nosc.mil
internet: jeh@crash.CTS.COM
or: jeh@crash.CTS.COM
Pageswapper: US194066
DECUServe, DCS: HANRAHAN

An Internet mailing list has been established for those interested in the VMSnet effort. To post an item to the list send a message to:

VMSNET%FALCON@WPAFB-AAMRL.ARPA

on the internet. Requests can be sent to:

VMSNET-REQUEST%FALCON@WPAFB-AAMRL.ARPA

The list manager is Ted Nieland (TNIELAND@WPAFB-AAMRL.ARPA, NIELAND%FALCON@WPAFB-AAMRL.ARPA) and any problems can be reported to him.

I/O Performance

Daryl O. Jones
P.O. Box 773667
Eagle River, Alaska 99577
May 26, 1987

Ross W. Miller
Online Data Processing, Inc.
N. 637 Hamilton
Spokane, Washington 99202

Dear Sir,

The following is in regard to your question of the VAX I/O performance failure featured in the DECUS U.S. NEWSLETTER, April 1987 issue.

I work for Anchorage School District in Anchorage, Alaska, as a VAX programmer. We have several VAXes on site including a cluster which runs the Student Management System (SMS). The SMS is a collection of VAX basic programs which accesses several files to do report cards, attendance reporting, scheduling, and other reports required by the state and federal agencies. The types of RMS files accessed or created are indexed, sequential, and relative file structures. The majority of the time we are accessing indexed files to create a report using the RMS defaults provided by the system.

The VAX I/O performance question raised its head about a year ago, when I wrote a program on VAX 785 that accessed two files, REG.DBS and REGENTRY.DBS. The program accessed sequentially the REG file first and then the REGENTRY file. The run time was about seven hours long.

I was later informed that similar programs took about four hours to run. A review of my program showed that the difference was that the other programs accessed the REGENTRY file first then the REG file. My program was changed to have it access the REGENTRY file first and then the REG file. My program executed with a run time of only four hours, similar to other programs.

The resultant time difference was puzzling. Why was there a three hour difference in run time? The only difference in the programs was the order in which the files were accessed. I began to analyze the file structures for clues.

The REG file is a 1002 byte record, prolog 1, and three blocks per bucket, indexed file. A single record in REG file represents a single student's registration information for a total of about 41,000 student records in the REG file.

The REGENTRY file is a 117 byte record, prolog 3, and three blocks per bucket, indexed file. A single record in REGENTRY file represents an entry/withdrawal record for the student. Therefore, a student may have one or more records depending on the number of transfers and withdrawals. The number of records in the REGENTRY file was roughly 50,000.

The unit of transfer from disk to memory is a bucket for indexed files. I concluded that for every GET I/O on the REG file, a single record was retrieved from disk to memory. Whereas in the REGENTRY file case, two or more records were transferred from disk to memory with each GET I/O. It seemed reasonable to increase the number of blocks per bucket for the REG file, which would drop the number of direct I/O requests being made and increase the number of records retrieved at one time from the disk. I converted the REG and REGENTRY files using convert/fdl routine. The bucket size for REG file was increased from 3 to 54 blocks/bucket and for the REGENTRY file the bucket size changed from 2 to 18 blocks/bucket.

The next file structure to be changed was the type of prolog. I changed the prolog type from 1 to 3 and saw the size of the REG file drop from 135,000 blocks down to 35,000 blocks. Furthermore, the file compression has increased the number of records per bucket. The increased cpu usage due to the expansion of each record seemed to be negligible.

I ran the same program used earlier and looked at the effects on the system via the MONITOR utility. The direct I/O count was lower, ten down to six per second, but the drop in cpu time wasn't much, just 15 minutes out of four hours. I increased the number of I/O buffers from the system default of two to three and ran the same program. Again, I noticed a decrease in the direct I/O counts (six down to 4-5 per second), but not much in cpu time. When I increased the I/O buffers to four I/O buffers, the direct I/O requests dropped from 4-5 per second to 0-1 per second which resulted in processing 15,000 more students (REG

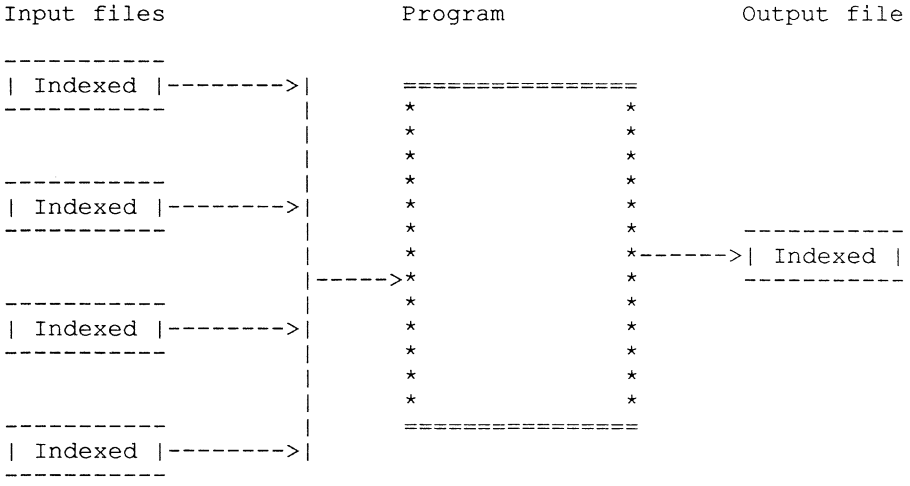
and REGENTRY file records combined) over the old version of the program in the first two hours.

A couple of months later, I attended the RMS Structures and Utilities Seminar. I found out the reasons for the increased I/O performance and applied it to other programs. The following are two brief examples where techniques of I/O buffering and CONVERT utility were used that dropped the run time of each program from hours to minutes.

EXAMPLE 1:

First Run:

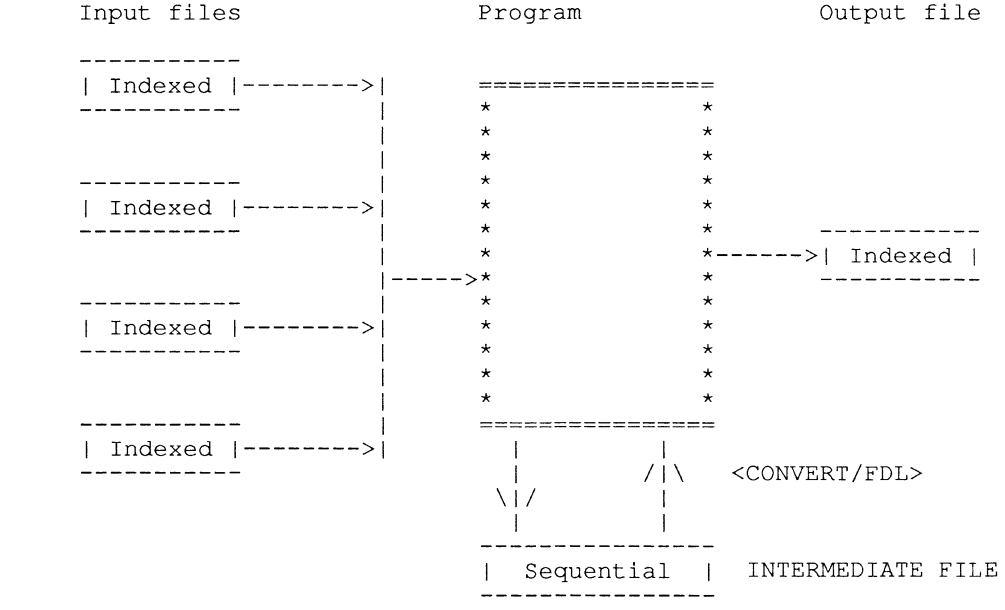
```
     Computer: VAX 785
  Input files: Four indexed, prolog 3 files
  Output file: One four key indexed, prolog 3 file
  I/O Buffers: Two I/O buffers
Prog Language: VAX Basic
   Direct I/O: 6-9 Request/sec
     Run Time: 4 hours
```



(EXAMPLE 1 continued)

Second Run:

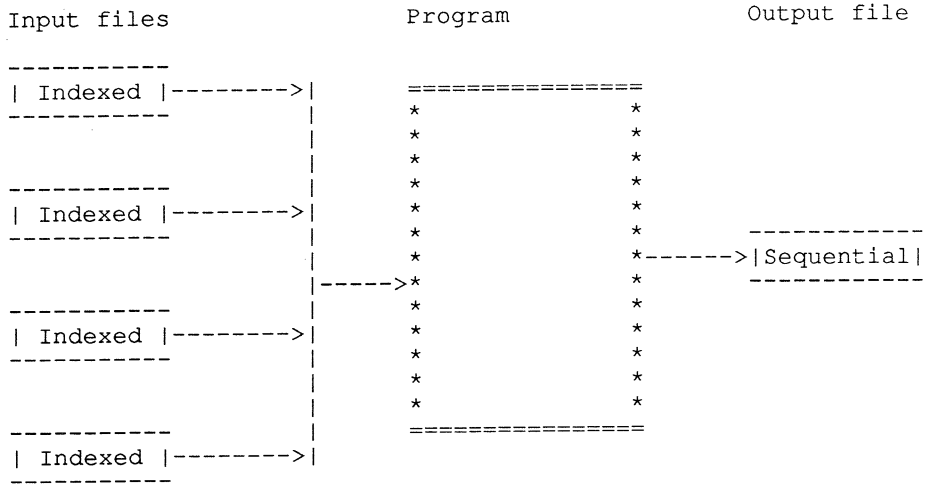
```
        Computer: VAX 785
      Input files: Four indexed, prolog 3 files
 Intermediate file: One sequential file
      Output file: One four key indexed, prolog 3 file
      I/O Buffers: 70 I/O buffers
    Prog Language: VAX Basic
       Direct I/O: 0-1 Request/sec
         Run Time: 10 minutes
```



EXAMPLE 2:

First Run:

```
    Computer: VAX 8500
  Input files: Four indexed, prolog 3 files
  Output file: One sequential file
  I/O Buffers: Two I/O buffers
Prog Language: VAX Basic
   Direct I/O: 6-9 Request/sec
     Run Time: 5-8 Hours
```



(EXAMPLE 2 continued)

Second Run:

```
    Computer: VAX 8500
  Input files: Four indexed, prolog 3 files
  Output file: One sequential file
  I/O Buffers: 80 I/O buffers
Prog Language: VAX Basic
   Direct I/O: 0-3 Request/sec
     Run Time: 30 minutes
```

VAX I/O performance is determined by the I/O buffers when accessing one or more indexed files randomly, two or more indexed files when accessing them sequentially. The reason for this is that the file index and data buckets are kept in memory. However, this is not always a cure! Sometimes just reading the needed information into an array and performing binary searches can be a more effective method.

I hope this will help you in your endeavor. If you are in need of any more information, please feel free to contact me.

Sincerely,

Daryl O. Jones

Daryl O. Jones
P.O. Box 773667
Eagle River, Alaska 99577
August 27, 1987

Ross W. Miller
Online Data Processing, Inc.
N. 637 Hamilton
Spokane, Washington 99202

Dear Sir,

The following are tests conducted to see the effects of I/O buffers on sequential access files and large file sorts.

I/O BUFFERS WITH SEQUENTIAL FILES

One of our computer systems (VAX 750) is used for statistical processing. The response and run times were slow which brought about a discussion that I had with our System Manager, John Borge, on how we might increase the throughput. Since the file processing is sequential with file sizes of a few blocks to about 7,000 blocks. I had suggested that the RMS buffer values should be increased due to the amount of direct I/O.

Our System Manager selected six types of processes to be run in batch mode with RMS default values and again using the increased buffer size and number. The RMS default values are 16 blocks per buffer and one buffer per process for sequential access files. The new RMS default values were set at 127 blocks per buffer and two buffers per process for sequential access. The tests were conducted and tabulated by our System Manager once during the day on a loaded system and again at night in a stand-alone mode.

The test runs were executed about one half hour apart during the day and night times. The daytime results could be explained away via the difference in loads on the system during the test runs. However, the test results at night were made with only a single process executing with no one else on the system.

The nighttime results seemed to validate the daytime results which indicates a drop in resource usage except in working set size as expected due to the increased buffer sizes and number. The new RMS buffers decreased the DIRECT I/O rate, which is expected, however a larger drop was seen in the elapsed time especially under a heavily loaded system. This would indicate that the CPU spent less time waiting for I/O completions and more time doing the job at hand. The decrease in direct I/O requests would also unload the controller allowing it to service more requests. The overall effect was a decrease in system resources and better performance.

The one exception to the trend was the FORTRAN program, where the CPU time decreased and the elapsed time increased. In the previous cases, little or no decrease in CPU occurred with a significant decrease in elapsed time. The increase in the elapsed time could be due to the 268% increase in page faults. An increase in working set size might decrease the page faults and drop the elapsed time.

NOTE

> This test was conducted once and has not been repeated for lack of computer time. However, these programs were executed again with larger files and the results were not reproduced.

The following are the tabulated results.

Computer: VAX 750
Disk: RA 81
Controller: UDA50
Working set size: 4096

SPSSX:

Input files: One sequential file, 6,722 blocks long
Output file: One sequential, results

	DAYTIME			
RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	157	163	-6	-4
DIRECT I/O	1229	1629	-395	-24
PAGE FAULTS	2256	3693	-1437	-39
PEAK W.S. (pages)	1708	1750	-48	-3
PEAK VIRT. MEM (pages)	12339	12211	+128	+1
CPU (SEC)	1691	1699	-8	-1
ELAPSED (SEC)	3154	5962	-2808	-47

	NIGHTTIME			
RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	154	157	-3	-2
DIRECT I/O	1211	1598	-387	-24
PAGE FAULTS	2260	2082	-178	-9
PEAK W.S. (pages)	1750	1750	0	0
PEAK VIRT. MEM (pages)	12339	12211	+128	+1
CPU (SEC)	1651	1672	-21	-1
ELAPSED (SEC)	1897	3628	-1731	+48

Datatrieve:

Input files: One sequential file, 762 blocks long
Output file: One sequential, results

	DAYTIME			
RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	122	152	-30	-20
DIRECT I/O	3950	4148	-198	-4
PAGE FAULTS	1641	1651	-10	-1
PEAK W.S. (pages)	1579	702	+877	+125
PEAK VIRT. MEM (pages)	2254	1742	+512	+29
CPU (SEC)	168	170	-2	-1
ELAPSED (SEC)	357	467	-110	-24

	NIGHTTIME			
RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	122	152	-20	-13
DIRECT I/O	3931	4148	-217	-5
PAGE FAULTS	1681	973	+708	+73
PEAK W.S. (pages)	1560	1508	+52	+4
PEAK VIRT. MEM (pages)	2254	1742	+512	+29
CPU (SEC)	169	166	+3	+2
ELAPSED (SEC)	319	344	-25	-7

SORT1:

Input files: One sequential file, 3,190 blocks long
Output file: One sequential file, 3,190 blocks long

DAYTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	45	44	+1	+2
DIRECT I/O	611	599	+12	+2
PAGE FAULTS	2230	25428	-23198	-91
PEAK W.S. (pages)	1750	638	+1112	+315
PEAK VIRT. MEM (pages)	2598	2598	0	0
CPU (SEC)	22	52	-30	-58
ELAPSED (SEC)	61	552	-491	-89

NIGHTTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	43	44	-1	-2
DIRECT I/O	602	638	-36	-6
PAGE FAULTS	2193	2261	-32	-1
PEAK W.S. (pages)	1750	1750	0	0
PEAK VIRT. MEM (pages)	2598	2598	0	0
CPU (SEC)	22	23	-1	-4
ELAPSED (SEC)	53	98	-45	-46

SORT2:

Input files: One sequential file, 3,102 blocks long
Output file: One sequential file, 3,102 blocks long

DAYTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	43	43	0	0
DIRECT I/O	589	573	+16	+3
PAGE FAULTS	2211	25144	-22933	-91
PEAK W.S. (pages)	1750	622	+1128	+181
PEAK VIRT. MEM (pages)	2598	2598	0	0
CPU (SEC)	21	52	-31	-60
ELAPSED (SEC)	64	555	-491	-89

NIGHTTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	43	43	0	0
DIRECT I/O	586	573	+13	+2
PAGE FAULTS	2216	25144	-22928	-91
PEAK W.S. (pages)	1750	622	+1128	+181
PEAK VIRT. MEM (pages)	2598	2598	0	0
CPU (SEC)	21	52	-31	-60
ELAPSED (SEC)	57	555	-498	-90

MERGE:

Input files: Two sequential files, 3,190 and 3,102 blocks long
Output file: One sequential file, 6,292 blocks long

DAYTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	158	159	-1	-1
DIRECT I/O	1370	1330	+40	+3
PAGE FAULTS	3673	306	+3367	+1100
PEAK W.S. (pages)	494	482	+12	+3
PEAK VIRT. MEM (pages)	1039	1039	0	0
CPU (SEC)	51	51	0	0
ELAPSED (SEC)	103	154	-51	-33

NIGHTTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	158	158	0	0
DIRECT I/O	1337	1327	+10.0	+1
PAGE FAULTS	326	367	-41.0	-11
PEAK W.S. (pages)	491	482	+9.0	+2
PEAK VIRT. MEM (pages)	1039	1039	0	0
CPU (SEC)	50	50	0	0
ELAPSED (SEC)	87	109	-22.0	-20

FORTRAN:

Input files: One sequential file, 9 blocks long
Output file: One sequential file, 6,360 blocks long

DAYTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	172	791	-619	-78
DIRECT I/O	668	3452	-2784	-81
PAGE FAULTS	1424	578	+846	+146
PEAK W.S. (pages)	1380	451	+929	+206
PEAK VIRT. MEM (pages)	1831	940	+891	+95
CPU (SEC)	575	596	-21	+4
ELAPSED (SEC)	1772	2068	-296	-14

NIGHTTIME

RESOURCES RMS BUFFERS (SIZE/NO.)	127/2	16/1	DIFF.	PERCENT
BUFF I/O	164	777	-613	-79
DIRECT I/O	847	4255	-3408	-80
PAGE FAULTS	1548	578	+970	+168
PEAK W.S. (pages)	1314	515	+799	+155
PEAK VIRT. MEM (pages)	1831	940	+891	+95
CPU (SEC)	588	602	-14	-2
ELAPSED (SEC)	1293	1264	+29	+2

IBM 4381 AND VAX SORT BENCHMARK

A sort benchmark was conducted in February 1986 using a file that contained 125,000 records, with a record size of 255 bytes. The sort routines used were the VAX/VMS SORT and for the IBM a third party software sort called CA-SORT was used. The IBM CPU time was 21 seconds and four minutes elapsed time. The stand-alone VAX 785 CPU time was four minutes and eight minutes elapsed time.

Since that time I have conducted several sort tests using the above file on a VAX 750 computer. Each test reflected a different buffer size and number, working set size, or type of sort. The results did not produce any large reduction in CPU times, elapsed times or direct I/O except in the type of sort (address, indexed), where one minute of CPU and five minutes of elapsed time was dropped. The following pages have the tabulated results.

Computer: VAX 750
Disk: RA 81
Controller: UDA50
File Type: Sequential
Record Size: 255 bytes
Number of Records: 123,237

Working set size: 4096

TYPE OF SORT	NUMBER OF WORK FILES	TIME (MINUTES) CPU	ELAPSE	DIRECT I/O	BUFFER (NUMBER/ SIZE)
RECORD	2	8.47	14.34	10,315	2/1
RECORD	2	8.61	15.23	10,337	4/1
RECORD	2	8.34	14.01	10,328	10/1
RECORD	2	8.59	14.59	10,389	1/16
RECORD	2	8.42	16.22	10,930	6/16
RECORD	2	8.48	15.95	10,505	8/16
RECORD	2	8.36	15.66	10,514	10/16
RECORD	2	8.38	15.70	10,480	6/127
RECORD	2	8.33	15.74	10,450	10/127
ADDRESS	2	6.90	8.00	4,379	1/1
ADDRESS	2	6.89	8.00	4,375	2/1
ADDRESS	2	6.91	8.28	4,481	4/1
ADDRESS	2	6.83	7.97	4,394	10/1
ADDRESS	2	7.00	8.47	4,430	1/16
ADDRESS	2	7.03	10.17	4,652	10/16
INDEX	2	7.37	8.52	4,891	1/16
INDEX	2	7.49	11.31	5,486	10/16

DEFAULT BUFFER SIZE = 16 BLOCKS
NUMBER OF BUFFERS = 1

WORKING SET SIZE	PAGE FAULTS	TIME (MINUTES) CPU	ELAPSE	DIRECT I/O
4096	11,512	8.59	14.59	10,389
3584	9,714	8.69	14.44	10,386
3072	7,712	8.50	14.70	10,362
2304	4,702	8.34	14.11	10,402
2152	4,464	8.24	13.96	10,366
2048	4,144	8.30	14.13	10,395
2048*	4,079	8.16	14.09	10,435
1792	3,623	8.51	14.63	10,572
1536	3,172	8.49	15.52	11,027
1280	2,730	8.63	16.27	11,398
1024	8,556	8.89	14.42	11,922

* - BUFFER SIZE = ONE BLOCK
NUMBER OF BUFFERS = 10

The next project is the study of the effect on performance and file size when adding a third key to a large Prolog 3 indexed file (1.2 million records, 128 bytes/record). The following report will contain the following information:

1. RMS Utilities - ANAL/RMS, EDIT/FDL, CONVERT/FDL

2. I/O Buffers - Updating with or without buffers

3. File tuning

I hope this will help you in your endeavor. If you are in need of any more information, please feel free to contact me.

Sincerely,

Daryl O. Jones

Current Field Change Orders

Miscellaneous FCOs
presented at the Fall, 1987 Anaheim Symposium

Stanley M. Rose
Vice-President, Distributed Processing Technical Support
Bankers Trust Company
New York, New York

The purpose of this article is to list various FCOs that were presented in various sessions at the Anaheim Symposium. Each session provided differing amounts of information; the individual presenting the session is listed.

H046

The following FCOs were provided by Jack Toto in session H046, "Hardware ECO Update".

KDJ11-A M8192-MK009
upgrade to rev etch C1
Part 21-21858-05

KA630 (MicroVAX-II)
M7606-AH upgraded to M7606-AS
ECO M7606-ML006
Upgrade kit #EQ-01358-02
Fixes memory errors under Ultrix

MS630-A (MicroVAX-II memory)
M7607-AH upgraded to M7607-AS
Fixes machine check "80" (under Ultrix?)

RQDX3
M7555 upgraded to etch rev D1
ECO M7555-ML003 6/86
Fixes IRQ Detect Logic error

RQDXE (External RD Drive)
M7513 upgrade to rev level B1
ECO M7513-ML001 12/12/86
Fixes corrupted data and/or loss of drive format

Upgrade to rev level F1
ECO M7513-ML002
Fixes signal lines not properly terminated

DEQNA
M7504
ECO M7504-MK005
Upgrade to rev level E1 (note: current revision much higher)

TQK50 M7546
ECO M7546-SH002 4/4/86
Upgrade to rev level B2
Board has intermittent short circuits

ECO M7546-SH003 6/17/86
Upgrade to rev level C1
New E-Proms

ECO M7546-SH004
Upgrade to rev level D1
Fixes a problem with PDP-11 Memory

ECO M7546-SH005 2/2/87
Upgrade to rev level E1
Replaced E-Proms

ECO M7546-SH006 8/5/87
Upgrade to etch rev level F1
Fixes a bus grant problem

BA23-A
ECO BA23-A-MK003
Upgrade to BA23-A rev C1
Power cable replaced with higher capacity cable

ECO BA23-A-MK004
Upgrade to BA23-A rev D1
Connector replaced with higher capacity connector

N030

The following FCOs were provided in session N030, "Communications Hardware & ECOs" by Ed Badger, Perry Sutton, and Brian Williams.

DEBNT
All DEBNTs will be replaced with DEBNAs, rev F
Upgrade kit #EQ-01486-01

DEBNA rev. D
This will be upgraded to DEBNA, rev E
Upgrade kit #EQ-01500-01

Notes: 1) DEBNA rev E and rev F are functionally identical, and differ only in board layout. 2) It was stated in session V070, "VMS Update", by Harriet Cohen that the DEBNT will not be supported effective with VMS V4.6.

Both revisions of the DEBNA also need the following:
New ETdriver: Part #EQ-01500-02 (Good for VMS V4.5 and V4.6)
New Diagnostics: Part #EQ-01500-03

DELUA
M7521 to revision F1
This FCO to be available in the Spring
Fixes:
1) Self Test Problem on 83xx processors
2) Problems with TSM/LAT/LAVc - slowdowns

DEQNA
M7504 to rev K4
Problems:
1) Late Collision may cause data to be altered on receive packet.

DEBET (LANBridge-100)
Upgrade to rev E8
Upgrade kit #EQ-01479-01
Fixes:
1) Overrun of Ethernet Address table in large networks.
2) Forwards Loopback Messages with wrong next address.
3) Supports LAN Monitor

DEMPR
Upgrade to rev C1
Upgrade part #EQ-01491-01 (120volt)
#EQ-01491-02 (240volt)
Fixes:
1) Cable short brings down whole network. Revised unit segments the shorted section from the whole.

DMB32
Upgrade of module T1012 to rev H2
ECO to be issued in late Spring
Fixes:
1) Printer Port Performance
2) Receive Sync Characters

DMZ32
Upgrade of module M8398 to rev H1
Upgrade kit #EQ-01457-01
Fixes:
1) DMA Transaction Timing Problem
2) Split Speed Baud Rate Problem
3) Received Incorrect Character Problem

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Current Field Change Orders

PRO-380 Console BOF

The following information was supplied by Alant Schmidt in the PRO-380 console Birds-Of-Feather session on Thursday. This information applies to the 85x0, 8700 and 8800 processors.

Revision 7 of the PRO console code will go to the SDC in mid-January, and will be available after the normal ramp-up time. Revision 7 fixes most of the outstanding problems, including loss of time on a re-boot.

The following chart was presented showing releases and their relationship to diagnostic releases:

Diagnostic Version	Diagnostic Release Name	Console Version	
22D	22	D	
22E	22	E	
28	28	E	
29	29	F/6.0	
30	30	G/7.0	1/88
31	31	??	Q4/88

LUG News

from respective LUG Newsletters

Meeting topics for February:

St Louis Local User's Group
5:30 pm at the Salad Bowl Restaurant
3949 Lindell Boulevard

System Management and Security (originally scheduled for October)

Spring 1988 System Improvement Request Ballot

Mark Oakley, SIR Coordinator

HOLD IT! DON'T PUT THIS OFF! THE DEADLINE IS APRIL 8! You have an opinion about what is right or wrong with VAX. Here is your chance to influence the directions of future DEC development. The VAX Systems SIG System Improvement Request (SIR) program is an important method for the VAX user community to provide input to Digital. Your opinion is important, and every ballot adds to the influence of the SIR program. We have a tight deadline this time. Please take the time to vote. I really want to hear from you!

On the following pages, you will find the current collection of System Improvement Requests. Please take the time to review these SIR's and assess their effect on your use of VAX's. Then indicate your preferences as described below. THE SIR BALLOT FORM APPEARS IN THE "QUESTIONNAIRE" SECTION OF THIS NEWSLETTER. Also, please fill out the questionnaire portion of the ballot. This information is important to DEC, as it points out which requests are important to a particular segment of the VAX community.

Occasionally there is some confusion about the ballot. You can only vote for the SIR's that are listed below. Please provide your six-digit DECUS membership number. (If you subscribe to the DECUS U.S. CHAPTER SIGs NEWSLETTER, then your membership number is the first six digits of the twelve-digit number on the mailing address.) If you are a non-US DECUS member, please provide your full membership number.

The returns from this ballot will be totalled, and Digital will provide a formal response to the 10 items which receive the most votes. The results and DEC's responses will be given at the VAX SYSTEM SIG SYSTEM IMPROVEMENT REQUESTS session of the Spring 1988 DECUS Symposium in Cincinnati.

Instructions For Voting

The ballot form contains two sections, a "support" section and an "oppose" section. To indicate your support for an SIR, enter its number in the "support" section of the ballot. You may list from zero to fifteen SIR's in this section. To indicate your

opposition to an SIR you consider detrimental, enter its number in the "oppose" section. You may list from zero to five SIR's in this section.

Please return your ballot IMMEDIATELY. To allow time for DEC to respond, BALLOTS RECEIVED AFTER APRIL 8 CANNOT BE COUNTED.

Any ballot not specifying a DECUS membership number will not be counted. Only one ballot per member will be accepted.

Clusters

SIR: S88-1

Abstract: Provide high-speed communication services on a VAXcluster using SCS, not DECnet.

Description: Communication services between VAXcluster nodes is currently limited to DECnet or file sharing schemes. Digital should implement a communications interface (device driver) that uses the System Communication Services (SCS) to provide high speed data transfer between VAXcluster nodes. This would assist individual sites implementing cluster shareable devices.

SIR: S88-2

Abstract: Use a better load balancing scheme when dequeueing jobs from generic batch queues to execution queues.

Description: When dequeueing a job from a generic batch queue VMS tries to minimize the ratio of executing jobs to job limit for all the execution queues. If two CPUs have an equal number of executing jobs, and equal job limit, the job will be dequeued to the first CPU with the minimum ratio. It would be more useful if the job was dequeued, instead, to the processor with the lightest CPU load. A method similar to the LAT scheme for terminal connections is suggested.

Commercial

SIR: S88-3

Abstract: Operators need the capability to deallocate tape drives from users.

Description: Users sometimes allocate tape drives for long periods of time. During this period, the user may not be using the drive. There needs to be a way for the operators to deallocate these drives from the users so that they can be used again.

SIR: S88-4

Abstract: Improve tape label recognition capability.

Description: When processing multi-volume tapes, no assumptions should be made about the label names. In all cases the operator should be prompted for the volume id.

SIR: S88-5

Abstract: Improve batch job functionality by providing job "filtering" into defined classes.

Description: Concepts such as working sets or time limits can be confusing to unsophisticated users. The number of types of batch queues can become unmanageable in a large system. Management needs a capability to filter jobs that are submitted to a small number of generic-type queues into possibly many execution queues. "Characteristics" are not acceptable. Operators need to control execution queues that have "long", "short", or "regular" jobs. Users should not have to specify both a time limit and an appropriate characteristic to have their jobs go into the "short" queue.

SIR: S88-6

Abstract: Provide a "virtual disk" capability.

Description: As disk volumes get larger the adequacy of the disk quota utility diminishes. There needs to be a way to partition the physical or logical volumes and apply quotas to the partitions. Currently, there is public-domain software to provide "virtual disks" or partitions, but it is desirable that DEC provide this capability.

SIR: S88-7

Abstract: Provide identity information about LAT sessions.

Description: System managers must be able to locate the physical terminal on which a particular session took place. This information is useful for trouble-shooting, tracking usage, and monitoring security. VMS accounting should be able to include information about the port number and terminal server name in the accounting record for LAT sessions. If this information could not be included in the accounting, then it would be acceptable to record it elsewhere, perhaps in a log file.

SIR: S88-8

Abstract: Enhance the ALLOCATE services to allow requests to be queued.

Description: Enhance the ALLOCATE services to enable a user to optionally queue the allocation request when all qualifying devices are busy. Device allocation should be handled by a queue manager similar to the VMS V4.0 print queue manager, and the allocation request queues should be made cluster wide to support cluster-visible devices.

User functions should include the ability to specify characteristics required of a generic device, the automatic notification of allocation, the ability to delete an allocation request, the ability to examine the allocation request queue, and the ability to do other interactive processing while waiting for an allocation request to be granted.

Operator functions should include the ability to mark failing devices as unavailable and the ability to force a deallocate. Manager functions should include the ability to define device characteristics and specify physical devices as possessing those characteristics.

Device allocation and deallocation should place records in the accounting file so that charge back accounting can be done for allocated devices.

A mechanism for avoiding deadlocks when multiple devices are allocated should be provided.

Examples:

```
$ ALLOCATE/QUEUED/WAIT TAPE$CLASS:-
    /CHARACTERISTICS=(DENSITY:6250) LOGICAL_TAPE
```

(Queue an allocation request for a tape drive with 6250 bpi capability and wait until the allocation has completed.)

```
$ ALLOCATE/QUEUED/NOWAIT/NOTIFY DISK$CLASS:-
    /CHARACTERISTICS=(RA60) MY_DISK_PACK
```

(Queue an allocation request for an RA60 disk drive and return control to my terminal. Notify me when the allocation has completed.)

```
$ ALLOCATE/NOQUEUED TERMINAL$CLASS:-
    /CHAR=(AUTODIAL,BAUD:1200) DIAL_OUT_MODEM
```

(Allocate a terminal device with a 1200 baud autodial modem but don't queue the request. Give an error if all such devices are allocated.) The queueing capability might be implemented via a symbiont. The queueing capability should also be provided for the MOUNT services.

SIR: S88-9

Abstract: Provide support for simple project accounting.

Description: The Spring 1985 VAX SIR Ballot contained a request for project accounting in VMS. Digital's response was "We also feel that project accounting is very important...We feel that this is a reasonably complex area and, as such, some of the enhancements that we intend to make in this area will appear over time."

Project accounting is something that is desperately needed at large sites. In its simplest form, project accounting should provide a SET PROJECT command that would write a process accounting record, and start recording a new record with a new account string specified by the user. The account string should be verified before these actions take place. The system manager should be allowed to set up a file which specifies which UIC's are permitted to use individual account strings.

Many sites have immediate government or internal security requirements for "one username per user" level of

accountability. DEC should provide this form of project accounting until their full-blown system is available.

SIR: S88-10

Abstract: Enhance BACKUP to provide first and last file names logged for each volume of storage media and an incremental restore capability for a directory structure.

Description: BACKUP should log the first and last file on each volume to assist in choosing tapes for restoration.

Directories or entire directory trees sometimes become unusuable. To aid in recovery, BACKUP should support the following procedure:

1. Delete the structure(s) affected
2. Restore that structure from the last image mode backup
3. Restore the selected structure(s) in incremental mode.

DCL and Utilities

SIR: S88-11

Abstract: The DCL WRITE command needs a method for terminating a write operation without generating a CR/LF sequence.

Description: When using the DCL write statement, there currently is no method to terminate the operation and prevent the CR/LF sequence.

This would be useful when positioning the cursor on the display to a particular location, such as a default response indicator or fixed response location. Any subsequent read operation performed from the terminal would need to properly process any type-ahead text as well as normal response characters not typed ahead.

SIR: S88-12

Abstract: More capabilities for VAX-11 RSX BRU.

Description: VAX-11 BRU would be more convenient to use for interchanging files between RSX systems and VMS systems if VAX-11 BRU were enhanced to know enough of ODS-2 structures to allow access to rooted directories. This feature would permit reading or writing of the rooted portion of the directory tree as if it were the [0,0] directory of the device as BRU sees it.

SIR: S88-13

Abstract: Enhanced command line RECALL capabilities.

Description: The functionality of the command line RECALL facility would be greatly increased if users were able to tailor some features to their specific needs. It would be desirable if these (YES FOLKS we are asking for still more SYSGEN parameters) features could be set for each user. However, a setting for the entire site would be acceptable.

The expansion tailoring would allow sites to set:

1. The size in bytes of the command line recall buffer.

2. The maximum number of commands to be recalled.

3. The size of the DCL command line expansion area.

4. The size of the DCL command input area, to allow larger commands to be passed to user written programs by the foreign command interface processor.

SIR: S88-14

Abstract: Extend DCL TABLES

Description: Many users desire or have the need to modify DCL TABLES to restrict access to certain commands, command options, or add their own or third party software as a DCL command.

Some form of support to facilitate this is needed, even an extra-cost-layered product. A minimal form of support

would be a listing program that would produce readable output to allow the user to:

1. Check conflicts in names.

2. Verify options.

3. Determine if the command exists, when it was added, and if it it was from VMS.

SIR: S88-15

Abstract: DCL status return enhancements.

Description: Programs that are called by DCL should implement some form of expanded status reporting that is testable at the DCL command level. For example, if DIFFERENCES were invoked, some indication in $STATUS if the files were the same or different would permit users to act accordingly. For example:

```
$DIFFERENCE F1.TXT F2.TXT

$IF $STATUS .EQ. DCL$DIF_NONE THEN -
$DELETE F2.TXT;1
```

Some form of documentation would be needed to allow users to write appropriate tests. The return values could be defined either by numeric returns or reserved symbols known to DCL.

SIR: S88-16

Abstract: Enhance SET HOST error reporting.

Description: The DCL trapping of CONTROL_Y within the SET HOST command and the current exit processing of a yes response to the question:

```
Are you repeating CONTROL_Y to abort the
remote session...
```

fails to indicate that the SET HOST connection was aborted. Some indication of failure to successfully log off would aid in processing errors or performing any needed cleanup.

SIR: S88-17

Abstract: Add the ability to run a detached process for a specified user name.

Description: The ability to run a detached process under a specified user name for a suitably privileged user would provide the ability to do this directly. A technique of putting the run command in a command proc and doing a SUBMIT/USER works but may require additional work to get the job to the start of a batch queue or even require the creation of a batch queue.

SIR: S88-18

Abstract: DCL /LOG qualifier is not consistent.

Description: Some commands (Backup, Copy etc.) accept /LOG, others (Print, Submit) use /IDENTIFY to produce documentary output.

These commands should all support the /LOG or some new qualifier, /DOCUMENT for example, that would produce documentary output. This new qualifier would be consistent across all commands and ignored on commands that can produce documentary output such as SHOW TIME.

SIR: S88-19

Abstract: VMS needs a "Control Print Screen" screen command to a file.

Description: In many cases VMS users need to produce a disk file with the transcript of a terminal session. The need for this is to produce documentation for manuals or turn in homework assignments for class.

The SET HOST/LOG does not completely emulate the terminal output, especially when CR/LF output is suppressed to allow the user to respond to a question on the same line. Also if the SET HOST command has been removed for a user this feature becomes non-existent.

Some command such as SET LOGGING TO <filespec> is needed to provide this feature. The UNIX script utility would provide a good model for this. Obviously if the captured file contained graphics escape sequences or other

non-printable characters it would be the users responsibility to handle them. The ability to record escape sequences into a file might also be a useful debugging tool for some users.

SIR: S88-20

Abstract: Enhance sysgen parameter readability.

Description: It would be more useful if SYSGEN were modified to provide a more useful organization of parameters, e.g. memory, terminal, timing, security, VMS mystery, etc.

Sorting the output into alphabetic order would also make finding the parameter value in the listings easier.

SIR: S88-21

Abstract: Mail enhancements.

Description:

1. Allow a user to retract a sent mail message. This could be limited to the last message sent. This would be very useful to retract that nasty undelivered mail message sent to the SYSTEM MANAGER before it is read and you end up with mandatory 32 character one time passwords!

2. Provide a facility to append comments to a received mail message and redistribute it.

3. Provide some form of return receipt when the recipient has read your mail message.

4. Provide a facility to allow users to configure the default printer orientation for printed mail messages. Most mail messages are oriented to portrait mode, not the default landscape mode found on most programmers printers.

5. DEFINE/KEY in mail should support /ERASE in the same way that the DCL DEFINE/KEY does.

SIR: S88-22

Abstract: SET HOST/DTE enhancement for more modems including those made by Digital.

Description: The Digital DF224 modem is not compatible with SET HOST/DTE/ DIAL=number. Please provide support for all recent/modern DEC modems. Support for popular third party modems such as HAYES, RACAL-VADIC, etc. would also be desired.

SIR: S88-23

Abstract: Enhance SHOW PROCESS command. Extensions to this command in showing files and subprocesses are needed.

Description: Some form of identification is needed for the SHOW PROCESS command to make tracing subprocess trees easier, possibly of the form SHOW PROCESS/SUBPROCESS/ID=<pid>.

If a user has two processes running in a batch queue or from two terminals, and each process has a subprocess, it is very difficult to determine which subprocess is owned by which parent.

The ability to show the the files that a specified process has open is needed. SHOW DEVICE/FILES on one drive systems with many installed images provides too much output. If this feature could also show the current location within each file, then estimating what portion of a file had been processed by a program would be significantly easier.

SIR: S88-24

Abstract: MOUNT/FOREIGN and uninitialized tapes.

Description: The MOUNT/FOREIGN command will time out and not complete properly on a VIRGIN BLANK tape. Some fix to avoid failing on a blank tape is needed.

SIR: S88-25

Abstract: Enhanced DEFINE/KEY capabilities.

Description: DEFINE/KEY should support control characters and escape sequences; allow multiple input lines to be defined with the extra lines being placed into the type-ahead buffer. For example:

```
$!                                  !Customize keyboard
$DEFINE/KEY KP2 "^E"                !EDT go to end of line
$DEFINE/KEY comma "->DEL"           !EDT delete char at cursor
$!                                  !MULTIPLE INPUTS
$DEFINE/KEY PF4 "^B^H^A:"           !Recall and edit command
$DEFINE/KEY KP3 "MAIL<CR>DIR NEW MAIL"
```

SIR: S88-26

Abstract: A /BELL qualifier is needed for certain DCL commands.

Description: The addition of a /BELL=n qualifier command to DCL to cause the terminal bell to ring N times with a discernable pause would be very useful to draw attention to the terminal when a long running command completes in any fashion.

SIR: S88-27

Abstract: Restore CONTROL_U behavior to pre-V4 status.

Description: The CONTROL_U sequence in V4 fails to provide feedback when the terminal is set /LOCAL_ECHO. This is inconsistent with the other control sequences (^B,^C,^O,^Q,^R,^S,^T,^Y,^Z) all of which provide user feedback. Prior to V4 the U sequence both cleared the terminal input buffer and generated a new line/prompt sequence to the terminal. In V4 only the input buffer is cleared which is the expected behavior if the terminal is set /NOECHO/NOLOCAL_ECHO.

Given that users of V4 and up may now want this behavior, an additional switch such as /OLD_LOCAL_ECHO would be a way to allow a choice in how the terminal should behave.

This request is specifically a request to restore the behavior in /LOCAL_ECHO to what it was prior to V4 and make no changes to the /ECHO and /NOECHO/NOLOCAL_ECHO behavior.

SIR: S88-28

Abstract: Improving VMS define utility.

Description:

1. Almost all DCL commands read from left to right, but the ASSIGN command is right to left. This causes confusion and errors when assigning queues to each other.

2. All features of the ASSIGN command should be provided in the DEFINE command.

3. Since ASSIGN and DEASSIGN exist, DEFINE and UNDEFINE should also exist.

4. In the DCL documentation, related topics should be listed for each command. At least DEFINE could be pointed to DEASSIGN which is not intuitive.

Internals

SIR: S88-29

Abstract: Provide a "wild card" capability in SYS$GETDVI.

Description: It would be very convenient if the SYS$GETDVI system service could return the names of all of the devices on the system.

SIR: S88-30

Abstract: Provide various enhancements to the SYS$GETUAI and SYS$SETUAI system services.

Description: SYS$GETUAI and SYS$SETUAI should be enhanced so that they provide the same functionality as AUTHORIZE. The following capabilities are needed:

1. Support creation and deletion of accounts.

2. Accept unencrypted passwords. Currently, only hashed passwords can be passed to SYS$SETUAI.

3. Provide "wild card" capabilities. It should be possible to return information based on a username "wild card" or uic "wild card".

4. Provide a capability to list unused uic group and member numbers.

These enhancements are of critical importance to academic institutions which manage thousands of accounts and require robust and secure mechanisms.

SIR: S88-31

Abstract: Enhance the display and setting of terminal communication data.

Description: There is a need for the system to explicitly display and set terminal communication data, such as frame size and stop bits. Currently, SYS$QIO calls are needed to select and retrieve this information. The interaction between PASSALL, PASTHRU, PARITY and NOEIGHTBIT should be better documented.

SIR: S88-32

Abstract: Enhance the protection and ownership attributes of directory files for project management.

Description: In a project environment problems occur when users create files in directories that they do not own. It would be useful if all files created assume the same ownership as the directory in which they were created. It would also be useful if the delete specification of the directory protection controlled the deletion of files in the directory.

SIR: S88-33

Abstract: Provide a real-time debugger.

Description: A real-time debugger is needed for those programmers who work in a real-time environment.

SIR: S88-34

Abstract: HSC commands should be able to be issued from DCL command procedures.

Description: It would be useful to be able to issue HSC commands from a DCL procedures to perform backups, run diagnostics, etc. It would also be useful if "callable" HSC routines were provided so that programs could be written to control the HSC.

SIR: S88-35

Abstract: Provide control of the priority of DECnet processes that perform file transfers.

Description: It would be useful if processes that perform transfers of large files across DECnet run at a priority below that of interactive users. This might be controlled by a SYSGEN parameter.

SIR: S88-36

Abstract: Provide descriptive text for files.

Description: A way to associate descriptive text with files is needed. This text would be especially useful when making decisions about which files to delete.

SIR: S88-37

Abstract: READALL should only permit a file to be read.

Description: Currently, the READALL privilege permits file protections to be changed. Users with the READALL privilege should only be allowed to read a file, not change the protection.

SIR: S88-38

Abstract: Images linked on a VMS Version "n+1" system should run on a version "n" system.

Description: Sites that develop and support software products must delay operating system upgrades until their customers have upgraded. If images linked on a version "n+1" system could run on a version "n" system, the upgrade would not have to be delayed.

SIR: S88-39

Abstract: The DYNSWITCH software should preserve terminal settings.

Description: Terminal settings for lines that are used for async-DECnet are altered by the DYNSWITCH image. This image should restore the terminal settings after it finishes with the line.

SIR: S88-40

Abstract: Provide a simple capability to display information on a SMG screen from routines that do not call SMG.

Description: Some sites have large software packages that have been modified to use the new SMG routines. Many of the old error-handling routines still perform "writes" to the screen without using SMG. "Retrofitting" these routines is costly. There needs to be a simple way to cause these routines to write to the screen without disrupting the contents of the screen.

SIR: S88-41

Abstract: Improve the performance of DECnet copies when the source and destination nodes are the same.

Description: Access control strings are sometimes used in COPY commands to bypass directory protections. This operation is inefficient because a FAL process must be created and other of overhead associated with DECnet. DECnet copy operations should be optimized when the source node and end node are the same.

SIR: S88-42

Abstract: An image should be installable as a memory resident routine.

Description: With the significant reduction in memory costs and the general increase in the size of memory configurations, this feature that is available on various the PC system would be very useful in VMS. Response time on image activation could be significantly improved if a process were installable as MEMORY RESIDENT. This type of installation would be site dependant and should be easily removable as well if memory needs change unexpectedly.

Languages, Tools, and Editors

SIR: S88-43

Abstract: Provide /NOWAIT switch for TPU.

Description: If TPU had a /NOWAIT switch that could be set when "DCL" commands were issued to be run by TPU, the user could continue with work in TPU while the "DCL" command continued to run in the subprocess. When the subprocess terminated, TPU would inform the user. A restriction of one "DCL" command running this this mode would be acceptable. It would also be acceptable to have a reserved scrolling region for the message from the "DCL" command to appear.

SIR: S88-44

Abstract: The VAX Macro Assembler should process statements past the ".END" directive.

Description: It would be convenient to store Macro source in a file and delimit subroutines with the ".END" directive. Currently, the assembler terminates the processing of the source file when this directive is discovered.

SIR: S88-45

Abstract: Provide a VAX ADA package for VMS Run-Time Library Routines.

Description: Currently there is no package for the VMS Run-Time Library rountines, Sort/Merge routines, Convert routines, etc. It is very time consuming for a programmer to construct these packages. Digital should provide these packages.

SIR: S88-46

Abstract: Provide line-number support in TPU

Description: TPU should be enhanced to provide line-number support. The following capabilities are needed:

1. A command to "go to" a desired line.
2. A command to return the current line number.
3. A command to sequence a file, similar to the EXIT/SEQUENCE command in EDT.

Security

SIR: S88-47

Abstract: Eliminate the automatic unsolicited ACE on file creation.

Description: When a user holding a rights identifier (with the RESOURCE attribute) creates a file in a directory owned by that rights identifier, an ACE is automatically added to the ACL for the created file. This unsolicited ACE gives the creator UIC full (read, write, execute, delete, and control) access to the file. This design feature was intended to insure that the creator of a file retains access and is used at some sites to set up a scratch area in which users can create temporary files. However, it causes problems for other sites in two ways. First, a number of users and system managers have been confused by the appearance of this unsolicited ACE. Secondly and more importantly, once a user creates a file in a project-owned

directory and gets automatic CONTROL access to the file, it is very hard to revoke that user's access when the user leaves the project. Not only must the system/project manager remove the ACE that gives the user's UIC access to the file, but he must also carefully review the ACL to make sure that the user has not added other ACEs that give him access via other rights identifiers. When a large number of project-owned files are involved, this can become a very cumbersome operation.

It is proposed that the automatic generation of this unsolicited ACE be eliminated and that a new type of default ACE be defined to replace it. This new ACE might take the form (IDENTIFIER=$CREATOR$,OPTIONS=DEFAULT, ACCESS=whatever_is_desired). When placed on a directory that is owned by an identifier with the RESOURCE attribute, this ACE would cause an ACE to be placed on each file created in that directory giving the creator UIC the specified access. This would allow sites that need this feature to request it explicitly without the confusion of an unsolicited ACE, and it would also allow other sites to give users less than complete access to project-owned files.

SIR: S88-48

Abstract: Prevent password reuse by users

Description: The only way to prevent a user from keeping the same password is to require the use of the password generator via the GENPWD flag in the UAF. If users are allowed to change their own passwords, then when the password expires, they may change to a new password and then immediately change back to the old one. A way is desired to prevent users from retaining the same password for long periods of time without setting the GENPWD flag. One way to accomplish this would be to maintain a history of the last "n" passwords and to enforce a minimum password lifetime, so that the user could not quickly cycle back to his old familiar password.

SIR: S88-49

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Abstract: Suppress login failure due to "Error reading command input"

Description: The number of login failures due to "Error reading command input" can be very large on some systems and do not normally indicate a security problem. In many cases they are associated with terminal problems or timeouts. However, the security alarms due to such errors can fill up the security audit log and obscure real security problems in the system. A mechanism is needed to suppress logging of the login failures due to "Error reading command input" while recording other "real" login failures, such as bad username/password or attempt to login from an unauthorized source.

SIR: S88-50

Abstract: Do not update file modification date when changing protections.

Description: When users change file protections, either via ACL's or UIC protection codes, the file system updates the file modification dates. This is done so that BACKUP will save the new protections. While this is a very useful feature, it has several drawbacks--(1) users like to know when they last modified the content of the files, and (2) some source code control systems use the modification date to determine whether a source file has been updated. We need a way to have file protections backed up without losing the important information contained in the file modification date. Perhaps a /BACKUP qualifier is needed for the SET PROTECTION command to allow the user to request that the file modification date be updated.

SIR: S88-51

Abstract: Mechanism needed to file access via a user-defined image.

Description: Non-privileged users sometimes need to give other non-privileged users controlled access to data files through a program. Through this facility any user would be able to control who could access his data files and what kind of access they may have. In the current system, in order to allow another user to add a record to a file, that user must be given WRITE access to that file, which means he could alter existing data or delete records from the

file.

Presently this requires the system manager to install the program with privilege, which is both an administrative nuisance and a security problem, as the privileged image would also have access to other system data files as well as the intended files. This mechanism should be under user control, i.e., the user should be able to determine which images could access a file. For example, the UIC of the image and data file could be required to match before access would be permitted. This feature could be implemented by allowing the system manager to install an image with a particular identifier. Then the user could set up the access control list for that file to permit access by that Identifier. This would be less flexible but would permit a user to allow access from images other than his own, e.g., a data base manager.

SIR: S88-52

Abstract: Security alarm messages to a file.

Description: Add an option to the Access Control Entries (ACE's) that specifies a file into which security alarms for that file/directory are written. This would allow a user to review security alarms for his own files, rather than depending on the system manager to perform the auditing. Of course, security alarms requested by the system manager via the SET AUDIT command should be written to the system-wide security log.

SIR: S88-53

Abstract: ACL class names needed for management of complex ACLs.

Description: ACLs are very flexible, but unfortunately a full ACL description must be stored on each file that is to be protected. Whenever the ACLs need to be changed on a large set of files in several directories, the process is time-consuming and error prone. Also, files restored from a previous backup after the ACLs have been changed revert to their original ACLs. If ACL class names were available, they could be redefined without necessitating a change in the ACLs on the individual files. References to ACL class names could be made via a special type of ACE.

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SIR: S88-54

Abstract: End-to-end encryption of logical connections within DECnet-VAX.

Description: The assumption made by DECnet that all nodes and communications paths are trustworthy is not viable in many environments. End-to-end encryption of the data portion of network packets is required in these environments to assure that evesdropping is fruitless, both in Local Area Networks (broadcast) and Wide Area Networks (multi-hop). This encryption should be implemented so as to be transparent to the application programmer and user, i.e., the mechanism should be located in the NSP (or OSI session) layer. New encryption keys should be generated for each logical connection between cooperating, encryption-capable processors. (Some nodes will not be capable of encryption and should be allowed to participate in the network without performing encryption.) Intermediate nodes should not be required to participate in, or be knowledgeable of, the key distribution/management or the encryption process. The DES algorithm should be utilized in the near term but should be readily replaced as NBS standards change. Provisions should be made for encryption hardware to boost performance where necessary.

SIR: S88-55

Abstract: Support DECnet proxy access for SET HOST command.

Description: When a user logs into a remote host via the SET HOST command and a DECnet proxy exists in the NETUAF on that host, the user should have the option of being automatically logged into that proxy account. This would be extremely helpful to less advanced users who switch frequently between systems. It would also reduce the chances of disclosing user passwords, since they would not be transmitted across the network if the proxy were used. A /PROXY qualifier could be added to the SET HOST command to allow the user to request proxy access.

SIR: S88-56

Abstract: Better control over DECnet remote file access.

Description: The RMS file protection defines WORLD access to include all those outside the owner's group. It would be useful to define several classes of users as follows:

1. All WORLD users on the local node.

2. All users local to this VAXcluster.

3. All users on nodes within this DECnet area.

LOGINOUT currently gives a process the Identifier NETWORK if that process is being created in response to a network request. It would be useful to obtain greater granularity of access control for network processes by having additional identifiers created based up the node, cluster, and area from which the access is being attempted. This capability might possibly be achieved by having the File Access Listener, LOGINOUT, or some other privileged image set up the additional process Identifiers.

SIR: S88-57

Abstract: Enhance COPY to copy ACL's.

Description: The COPY utility does not currently handle ACL's. It should be enhanced to propagate any ACL's from the source file to the destination file. However, there may be many times when a user is copying another user's file in order to modify it for his/her own purpose. It is likely that in such cases the user would not want to propagate ACL's from the original file. Therefore, this capability should be available via an additional qualifier to COPY, e.g., /PROPAGATE.

SIR: S88-58

Abstract: Provide lexical function for getting RIGHTSLIST information

Description: An F$RIGHTS lexical function should be provided to return the list of identifiers held by a user (similar to SYS$FINDHELD). Also, an F$ACCESS should be provided to return a boolean logical value indicating whether access to an object is allowed given an input rights list.

SIR: S88-59

Abstract: Allow a general identifier to be the owner of a process.

Description: It should be possible to make a general identifier the owner of a process (in place of a UIC), so that (1) owner access will be granted via the protection mask to objects owned by that identifier and (2) RMS scratch files will be owned by that identifier and charged against its disk quota.

SIR: S88-60

Abstract: Allow security alarm ACE to be bypassed by certain users.

Description: Presently, security alarm ACEs "float" to the top of an ACL. If many users are accessing a file, it may be desirable to alarm accesses by certain "casual" users, while not generating alarms for the "regular" users of the file. This would prevent the large number of "normal" security alarms generated by the regular users from obscuring the alarms generated by other "casual" users of the file; otherwise, the interesting security alarms by the casual users might be overlooked in the large volume of "normal" security alarms.

System Management

SIR: S88-61

Abstract: Print form setup and reset modules exactly as requested.

Description: The form setup module and printer reset module feature of VMS V4.x print queues, provides a powerful and flexible means of controlling modern printers (especially laser printers). However, many third-party printers use setup strings that are not valid ANSI escape sequences. The VMS and LAT symbionts add a formfeed after these strings which results in a blank page between each file in a print job. This formfeed is not necessary and definitely not wanted. Implementing this change would cause the

modules to react consistently regardless of the sequences embedded in them.

SIR: S88-62

Abstract: Provide BACKUP with the ability to dismount tapes and deallocate tape drives as soon as possible.

Description: BACKUP should have the ability to dismount and deallocate tape drives as soon as it is finished using them (and before it exits). Currently, after a large image BACKUP using the /RECORD qualifier, the tape remains mounted and the tape drive allocated until the recording pass is complete (this can take twenty minutes on a full RA81). At a facility where tape drive use is high, it is unacceptable (and frustrating) to require a tape drive to be allocated longer than is necessary. As higher density disk drives become available, this problem will become more acute.

SIR: S88-63

Abstract: Add a bell character (control-G) to BACKUP messages which require user action.

Description: When BACKUP is run interactively a message requiring a user to respond can easily go unnoticed. Adding a bell character (control-G) to those messages would be beneficial.

SIR: S88-64

Abstract: Provide the ability to limit the number of simultaneous interactive logins by a single user.

Description: Users can tie up more than their fair share of system resources by logging in at multiple terminals. System managers need a way to control this on a per-user basis. With the increasing use of terminal servers this problem will become more serious as users will not necessarily be limited by physical access to only a single terminal.

SIR: S88-65

Abstract: Provide a mechanism for distributed management of UAF parameters.

Description: In a large installation with many users there is a large burden on a single person to manage the UAF. For example, the system manager might require users who have forgotten their password to present themselves physically before he will give them a new one. In a large installation with a geographically dispersed community, this may not be feasible. A method for allowing certain users to have control over the UAF records of other users, but not all users, is required. Something as flexible as assigning ACLs to allow this function would be preferable, but it would be acceptable to implement it via UIC security and GROUP/WORLD privileges.

SIR: S88-66

Abstract: Provide the ability to specify the working set quota and extent of specific images via the INSTALL program.

Description: Even though working set values are specified on a process specific basis, they are actually more image specific. It would be more efficient to give users smaller working set values and let specific images which need more memory, be allowed it via the INSTALL program. This will allow the system manager to have greater control over system performance.

SIR: S88-67

Abstract: Provide the ability to specify the priority of specific images via the INSTALL program.

Description: There are programs on any system which would use the CPU more efficiently if they were to automatically be run at a specific priority. For example, response time is improved if word processor software is run at a priority greater of five (rather than the "normal" priority of four). Allowing the system manager to use the INSTALL program to force programs to run at specific priorities would allow each installation to tailor their operating environment for their given job mix.

SIR: S88-68

Abstract: Support installation of multiple versions of layered products (such as languages) on the same machine.

Description: While Digital tries very hard to avoid problems, updates are not always perfect. It would be beneficial to allow some users to use a new version of a layered product while others might stay on the older version. If a bug is found in the new version, the affected users can fall back to the previous version. Datatrieve offers this capability but many other products do not. Multiple version installations should be addressed, and hopefully supported and documented, for all layered products.

SIR: S88-69

Abstract: Standalone BACKUP should be supported on a greater variety of devices.

Description: It would be convenient if Standalone BACKUP could be booted from RX02 and tape drive units. RX02 drives are faster than RX01 drives, can hold two floppies, and can operate at double density. Standalone BACKUP would boot much faster from the RX02.

Currently, Standalone BACKUP can be booted from the TK50 and TU58. It seems that this capability could be extended to other non-random access devices (TU78, TU81, etc.). Such a capability might be an attractive alternative to the TU58 and other slow devices.

SIR: S88-70

Abstract: Enhance BACKUP to provide additional attributes for output files.

Description: BACKUP should provide the same qualifiers that are available on the SET FILE command (e.g. /PROTECTION, /ACL, etc.). Such qualifiers would facilitate the restoration of files.

Anaheim VAXnotes Excerpts - VMS

NOTE

Any authorship indicated in these entries is considerably less certain than other Pageswapper material. Attribution to any individual should be taken with a grain of salt.

Note 6.0 Can the banner page auto-sizing be disabled? 15 replies
"" 17 lines 8-DEC-1987 10:51

Does any know of a patch to the Print Symbiont that will disable the automatic resizing of the banner pages (Flag, Burst, Trailer) when printing?

All-in-1 recommends using the ALL-IN-1 form for printing with WPS+ which has a width of 132 and a length of 255. This causes the print info (Username, filename), when automatically centered, to be lost on the right hand side (especially if your Username is extremely short). Also, the Flag page will be printed over multiple pages, wasting a disgusting amount of paper on our LN03s, because of the extra long page size.

Don Mozdzen GMF Robotics 2000 S. Adams Rd. Auburn Hills, MI 48057 (313) 377-7416

Note 6.6 Can the banner page auto-sizing be disabled? 6 of 15
"Jack Patteeuw, Ford Motor Co." 9 lines 8-DEC-1987 17:12
-< E Z !! >-

Forget what ALL-IN-1 asks for !

Set the width and length of the form to something that is reasonable and then, tell the form /NOWRAP/NOTRUNCATE, tell the queue /DEFAULT=NOFEED and use a setup module to set the LN03 margins to the max. This works fine on my system !!

P.S. If the printer is on a terminal port make certain to:

```
SET TERMINAL/PERMANENT/SCOPE/NOWRAP
```

```
================================================================
Note 6.8  Can the banner page auto-sizing be disabled?   8 of 15
"Frank J. Nagy, VAX Guru&Wizard"     26 lines   9-DEC-1987 09:46
          -< Setup forms and mix in a bit of DECnet >-
----------------------------------------------------------------
```

<See Note 6.6>

Yep, that's what I did. I set the printer width and line length and the forms width and line length to reasonable values (66 lines and 132 columns) and then defined the form as /NOWRAP/NOTRUNCATE and everything worked well. Since this was not the default form, I then changed the printer tables of the word processing product (Mass-11 from MEC) to use DECnet task-to-task communications to a command procedure which:

- deciphered SYS$NET to determine the network object name being invoked. This was used to select the output print queue.
- create an empty file of the appropriate characteristics using CREATE/FDL (from examining a file made by Mass-11, I determined what was needed here).
- APPENDed SYS$NET to this empty file.
- PRINTed the file to the selected (by network object name) file with appropriate PRINT qualifiers.

This command procedure was placed in SYS$SYSTEM (just for spite) and, using NCP, installed under about a dozen different DECnet object names. Worked like a charm - and is still working merrily away today!


```
================================================================
Note 6.9  Can the banner page auto-sizing be disabled?   9 of 15
"John Osudar"                        5 lines   9-DEC-1987 09:49
                        -< I like it >-
----------------------------------------------------------------
```

RE: < Note 6.8 by VAXFAM::FNAGY "Frank J. Nagy, VAX Guru&Wizard" >

-< Setup forms and mix in a bit of DECnet >-

Impressive! (Now I REALLY believe the "title" that follows your name! :-)

```
================================================================
Note 9.1              Terminal printer ports              1 of 7
"Frank J. Nagy, VAX Guru&Wizard"     4 lines   9-DEC-1987 09:51
              -< TRMPRINT - SIG tape program >-
----------------------------------------------------------------
```

There is a program on the VAX SIG tapes (within the past 2 years or so) called TRMPRINT which allows a user to print a file on the printer attached to his terminal. We have used it to very good effect.

```
================================================================
Note 10.7             Digital care to respond             7 of 7
""                                  11 lines  11-DEC-1987 11:05
       -< We are listening. Thanks for the feedback. >-
----------------------------------------------------------------
```

We (Digital) are aware of the issues which have been raised over SPRs, including those in the Pageswapper system notes file. We have several ongoing projects in place which are designed to address these issues. When our plans are finalized, we intend to communicate them to the user community in an appropriate manner.

Thank you for your continuing interest and feedback concerning SPRs.

Bob Bowman
Technical Development Consultant
VAX/VMS Service Delivery Group - CSC/CS (SPR Processing Team)

```
================================================================
Note 16.0   8800 time incorrect after some reboots.    6 replies
"Jeff Blaalid, Rockwell Int"         22 lines   9-DEC-1987 14:53
----------------------------------------------------------------
```

We have a VAXcluster of an 8800 and a 780 with one HSC50.

Sometimes when the 8800 reboots it comes up with the incorrect system time (usually in the future) and this really screws things up!!!!!!!!!

The last example of this was we shutdown the 8800 and 780 with the re-boot option.

When the 780 came back everything was ok but the 8800 time was set to 5-aug-1988. The actual date was the 7-dec-1987.

I talked to my field service people and they stated that with V4.6 VMS and V5.0 of the console this problem should be corrected.. I guess not - we have been at V4.6 for 4 months and V5.0 since the 8800 was installed (April, 1987).

Any suggestions?????

Jeff Blaalid Rockwell International Newport Beach, CA 92660

```
================================================================
Note 16.1     8800 time incorrect after some reboots.      1 of 6
""                                    5 lines   9-DEC-1987 17:27
                -< Do a set time from the PRO >-
----------------------------------------------------------------
```

We have had similar problems with our 8700. I think the problem is that the PRO console maintains its own clock which seems to be the one that is used when the system boots. It doesn't seem that this clock is updated by the SET TIME VMS command. I haven't noticed this problem reoccur since i set the time on the console from the PROs DCL.


```
================================================================
Note 16.2     8800 time incorrect after some reboots.      2 of 6
""                                   13 lines   9-DEC-1987 17:46
     -< Also experienced incorrect system time on reboot >-
----------------------------------------------------------------
```

I have had same problem on a cluster with 2 8650s and 1 8700. After a power failure, the 1 8650 came back up with a date 4 months in the future and the other 2 machines came back (warm-restarted) with the correct time. Our operators then rebooted all 3 machines and got all the times wrong! I certainly had a mess when I came in that morning. I can't remember if that was before or after I upgraded from V4.5 to V4.6. I have not had the problem on normal reboots since then but one time startup did prompt for system time and I have no idea why. Sorry, I don't have a solution, but I am interested in one as well. Ken Riggleman Eli Lilly Indianapolis, IN 46285

```
================================================================
Note 16.3     8800 time incorrect after some reboots.      3 of 6
"Alan B. Hunt, Powertrain, Ford Motor"4 lines   9-DEC-1987 17:47
                      -< known problem >-
----------------------------------------------------------------
```

The previous comment is true. We have the problem. VMS engineering is aware of the problem and is still trying to come up with a fix. V6 of the console software does not fix it. Unclear if V7 will fix it. Resetting the pro time is about it for a work around.

```
================================================================
Note 16.4     8800 time incorrect after some reboots.      4 of 6
"Yin Cheung"                          2 lines  10-DEC-1987 10:13
                    -< Same problem here >-
----------------------------------------------------------------
```

We ran into the same problem on our 8700. We were told that this is caused by a bug in the PRO console software.

```
================================================================
Note 16.5     8800 time incorrect after some reboots.     5 of 6
"Jeff Blaalid, Rockwell Int"          5 lines  10-DEC-1987 11:40
                      -< Reply to 16.1 >-
----------------------------------------------------------------
```

Re: 16.1

The PRO's time is correct -- I looked into that right away.

Jeff Blaalid

```
================================================================
Note 16.6     8800 time incorrect after some reboots.     6 of 6
"Pete Sivia, Dow Chemical"           51 lines  11-DEC-1987 11:42
        -< Yes: clock and a problem and there's a fix >-
----------------------------------------------------------------
```

There was a BOF this morning on the wonders (and severe agony) of using the PRO 380 as a console device. Lots of problems that they admit to (for which I am very grateful) and they are at least working on solutions. Now if only their info could get out into the field a bit faster...

Anyway, time problem: Yep, there is a problem by which the simulated 32-bit register that they create on the PRO 380 to handle the time that was issued from the VAX is corrupted. So you wind up with weird times. Suggested fix was to have your field service folks contact Product Support (CSSE) in Lawrence, Mass. and ask for:

"V5.0 PRO 380 CONSOLE WITH R/O TODR"

This implements a read-only time of day register and what it does is to tell the PRO to ignore whatever the VAX tries to send to the simulated 32-bit register on the PRO. So, it sounds like the VAX will always ask for the time upon boot which is preferable to trying to stop all the batch jobs that kick off because the clock was set to the future....

Note that the PRO 380 software will actually say "V5.0 with R/O TODR" on the banner. Field Service has to ask internally for it. You might also be able to get a command file that executes some magic commands that can tell you if the PRO 380 32-bit simulated register is corrupted. Note that setting time from the VAX has something like a 20% chance of corrupting this

register and you won't know about it until you try to reboot the 85xx/87xx/88xx machine.

The actual fix for this problem is more than likely not until Rev. 7 of the code which we might see in the April '88 timeframe.

While on the PRO 380 fun and games, Alant suggested that:

- Ignore Rev. 6 of the PRO 380 console software.

- Get at least to Rev. 5 (also known as E) which as been available for some time.

- When Rev. 7 comes out, put it in ASAP.

Pete Sivia
Dow Chemical
258 Bldg.
Midland, MI 48667
(517/636-6656)

```
================================================================
Note 24.0       <<< VMS Microfiche Listings >>>        7 replies
""                                    17 lines  10-DEC-1987 11:49
----------------------------------------------------------------
```

If you have not noticed, VMS Microfiche listings are now a separate service. In order to receive Microfiche, you must contact software services and (1) sign a license (costs ...); and (2) sign a support contract to receive updates (costs less than $20 per month). This changed with V4.4, so you may not have noticed this yet. There was mention of this in the cover letter for V4.4, but DEC has not really publicized this. If you want to keep receiving fiche, YOU have to do something.

If in addition you would like to have the LISTINGS available on a CDROM, please send a letter to:

Mike Jordan
c/o VMS Internals Working Group
Box 1063
New York City, NY 10008

```
================================================================
Note 25.0              diskquota bugs fixed?              2 replies
"Alan B. Hunt, Powertrain, Ford Motor"14 lines  10-DEC-1987 14:06
----------------------------------------------------------------
```

Two questions on the file system if any developers are out there listening.

1. In a cluster when diskquota is changed for a user on machine A it can be reset to its original value if one of the other machines go down first. The cashes on the machines do not appear to be updated on the other machines by DISKQUOTA. We found that going to each machine in the cluster and doing a SHOW QUOTA updates the caches. We have had some upset management over this thinking we were playing games.

2. Ever since V4.0 there has been a diskquota leakage problem which requires a ANALYZE/DISK/REPAIR or REBUILD in DISKQUOTA. Any word on fixes?

```
================================================================
Note 25.1              diskquota bugs fixed?              1 of 2
""                                    5 lines  10-DEC-1987 14:15
----------------------------------------------------------------
```

Working on it.

Sorry for the inconvenience.

Keith Walls - file system project leader.

```
================================================================
Note 27.0     CONVERT has interesting bug (v4.6)      No replies
""                                   24 lines  10-DEC-1987 15:40
----------------------------------------------------------------
```

I came across an interesting CONVERT bug last week. Has anyone heard this one before?

If you do a CONVERT/FAST/CREATE to merge two (in my case) sequential files into an ISAM file with multiple keys and variable length records.

File A has short records (too short to include the secondary key)

File B has long records (they all include the secondary key)

CONVERT aborts when it tries to build the secondary index, claiming that there are duplicate keys. There aren't, except in the sense that the records from File A aren't long enough. It works if you do it with CONVERT/NOFAST, but that isn't practical in my case (I gave up on the full file after 2 hours).

I found one work around, but it took awhile:

```
$ CONVERT/FAST/CREATE B ISAM

$ CONVERT/MERGE A ISAM
```

Bob Graham Dow Chemical

Anaheim VAXnotes Excerpts - VMS Performance

NOTE

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```
================================================================
Note 1.0                      Welcome!                   No replies
"Anaheim VAX Notes Moderator(s)"      6 lines   6-DEC-1987 18:28
----------------------------------------------------------------
```

Welcome to the VMS Performance conference. Feel free to discuss anything that is related to VMS Performance, including the performance products, relative power, and tuning questions. However, for detailed information on SPM and VPA see the respective conferences. Use DIRECTORY/CONFERENCE command to find conferences on other topics. If you have a question please send mail to the MODERATOR account.

```
================================================================
Note 5.0             how do you tune LAVC?              4 replies
"John Osudar"                        13 lines   8-DEC-1987 09:54
----------------------------------------------------------------
```

We just installed a three-node LAVC a couple of months ago; we did this by adding two VS2000's to our existing 11/785. Since then, our 785's performance has gone from bad to atrocious. The LAVC "documentation", such as it is, provides no tuning information. I can't afford to experiment with a running, fully loaded production system to determine the effects of slight adjustments to MSCP or other SYSGEN/AUTOGEN parameters (although I've attempted to make educated guesses and adjusted some things, apparently with little or no effect.) My question is: does anybody out there have any better LAVC tuning information, whether gained from DEC or through experience? (Incidentally, we are running VMS V4.6/LAVC V1.2, so the "improvements" contained in that software are already present.)


```
================================================================
Note 5.1             how do you tune LAVC?                1 of 4
"Frank J. Nagy, VAX Guru&Wizard"     20 lines   8-DEC-1987 10:27
                  -< LAVC performing quite well >-
----------------------------------------------------------------
```

We are running an LAVC with 2 *core* nodes (MicroVAX-IIs with 16 MB memory, each serves 2 RA81s, one *core* node is the boot member), 2 VAXstation-IIs with local RD53s and 13 MB and 4 color VS2000s with no disks and only 4 MB. The two heaviest used RA81s are the system disk and the primary user disk; these are served by separate core members to split the major disk serving load.

Normal prime time load is for all the workstations to be active and an additional 8-12 people on each *core* member. Activities are classical software development system (editing, word processing, compiling, linking, debugging).

My best guess from MONITOR data is that about 12% of each core member is being consumed (on interrupt stack and in kernel mode) serving the central file system to the remainder of the LAVC (including to the other core member). The upshot is that we have no visible performance penalty with the LAVC.

I'll be discussing this more in a Thursday session, V163 at 1:45 in Marriott Grand Ballroom Salon F.

```
================================================================
Note 5.3             how do you tune LAVC?                3 of 4
""                                   10 lines   8-DEC-1987 14:03
                    -< LAVC on 785 >-
----------------------------------------------------------------
```

reply to note 5.0 by J OSUDAR on tuning LAVC <<<

There are some interesting tuning points on LAVC. I seem to have heard in ROME (87 EURO DECUS) that a MICROVAX-II makes a better boot node than an 8350; and that for some of the Unibus machines, it was a good idea to dedicate the machine as a server; timesharing use not recommended. Not sure where the 785 falls in that recommendation, but you said it was already heavily loaded to begin with. Remember that the MSCP server requires a lot of CPU resource on the BOOT (server) node; that

is how the cluster is implemented. You can't tune away those kind of fundamental design factors.

```
================================================================
Note 5.4              how do you tune LAVC?              4 of 4
"John Osudar"                        24 lines  8-DEC-1987 16:24
             -< want information, not miracles >-
----------------------------------------------------------------
```

You can't tune away those kind of fundamental design factors.

Sure, that's an assumption -- but what I'd like to know is that the MSCP server (and other active LAVC software) is impacting my 785 boot node for legitimate reasons, not because things are mis-tuned. Furthermore, I'd like to be able to adjust things so that the relative "priority" of service is weighted toward the 785. (I've heard mention at several sessions already of future enhancements that will tune the boot node parameters -- e.g. new AUTOGEN feedback stuff -- but the tuning is always for the benefit of satellites, with the negative impact on the boot node. In my situation, the satellites are the LEAST important systems; they are workstations for me and another member of our systems staff, and use their spare cycles to run batch jobs -- the useful work happens on the boot node.) I certainly do NOT expect "miracles" -- I'd simply like to be able to make some informed decisions about how my LAVC is set up. The present LAVC documentation doesn't contain anywhere near enough information for me to understand the effects of the few parameters that can be adjusted. Saying "we have found that setting MSCP_FOOBAR to 998001 generally provides reasonable performance" is NOT enough... I want to know what will happen if I should set MSCP_FOOBAR to a higher (or lower) value; or, conversely, which way I should adjust MSCP_FOOBAR if I want a particular effect on the performance of my (boot node or) satellites.


```
================================================================
Note 9.7          Possible MONITOR improvements.          7 of 17
""                                   23 lines  9-DEC-1987 17:50
            -< document data sampling interface >-
----------------------------------------------------------------
```

One feature I'd like to see would be a documented, callable interface to MONITOR, or more accurately the data collection routines it uses (SPISHR??).

On each VAX in the cluster, I've got a detached monitor process collecting nearly everything every 5 minutes and logging it to a file. The files get closed at midnight and another program reads them and produces a pile of graphs that I give a quick look see in the morning. This works fine for finding some problems, but occasionally the 5 minute interval is way to long to catch some transient problem.

What I'd like to be able to do write my one image which would also sample the data periodically, but be able to change the rate and data sampled when something "interesting" happens. Rather than clutter the MONITOR utility with a bunch of extra code, I rather just "roll my own". Note: this would also let me write my morning graphs directly instead of having to read the MONITOR files.

Bob Graham Dow Chemical PO Box 400 Bldg 2503 Plaquemine LA 70765

```
================================================================
Note 9.8          Possible MONITOR improvements.          8 of 17
"Jamie Hanrahan"                     14 lines 10-DEC-1987 09:20
          -< 'rolling your own' has been discussed >-
----------------------------------------------------------------
```

> What I'd like to be able to do write my one image which would also sample the data periodically, but be able to change the rate and data sampled when something "interesting" happens...

I presented a session here (Anaheim) two years ago on writing your own performance data collection tools (it was in the VAX session notes) and Bruce Ellis presented one this time on Wednesday (also in the session notes). Most of the stuff that MONITOR displays is pretty easy to find in the exec. Rather than using SPISHR I prefer to just grab the stuff myself. That way I'm not limited to what DEC chose to put in SPISHR, and I avoid its overhead (it goes without saying that a monitor

program should have as low an overhead as possible -- Heisenberg's principle, you know).

```
================================================================
Note 9.9          Possible MONITOR improvements.          9 of 17
"Jamie Hanrahan"                        2 lines  10-DEC-1987 09:21
                    -< One more thing... >-
----------------------------------------------------------------
```

The code for the stuff Bruce talked about yesterday will be on the Symposium tape.

Anaheim VAXnotes Excerpts - VMS V5

NOTE

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```
================================================================
Note 3.0       How to deal with RETIRED qualifiers       9 replies
"Jim Fischer / MIVAXLUG Chair"        15 lines   7-DEC-1987 16:26
----------------------------------------------------------------
```

In two sessions today I heard references to 'retired' command qualifiers; where 'retired' is defined as 'still works but not documented'. This will cause problems in the future when we (the experienced system support staff) only remember old qualifier names but not their functionality.

I agree that the 'retired' qualifiers can't just vaporize, but they should continue to be documented. At least in an appendix some where called 'Retired Qualifiers'. I'd even agree that this appendix not document the functionality, but point the reader towards the 'new' qualifiers.

In this way qualifiers (or commands, etc.) can be retired, but not lost.

```
================================================================
Note 3.1       How to deal with RETIRED qualifiers         1 of 9
""                                      3 lines   7-DEC-1987 16:53
                        -< Agreement >-
----------------------------------------------------------------
```

I agree, this goes for anything that is 'retired' from VMS including sys. services, RTL, etc. Another volume in the doc set never killed anyone 8-)

```
================================================================
Note 3.2        How to deal with RETIRED qualifiers        2 of 9
""                                    4 lines   8-DEC-1987 08:33
        -< Try using VERB utility for old qualifiers >-
----------------------------------------------------------------
```

There is a great utility in the DECUS library called VERB that disassembles the DCL CLI table. With it, you can see the definition of all qualifiers that the DCL command language interpreter will pass to the image....

```
================================================================
Note 3.3        How to deal with RETIRED qualifiers        3 of 9
""                                    1 line   8-DEC-1987 10:24
                        -< yes but... >-
----------------------------------------------------------------
```

Re .2, that will tell you what they are but not what they do.

```
================================================================
Note 3.4        How to deal with RETIRED qualifiers        4 of 9
"Scott Bailey"                        8 lines   9-DEC-1987 09:18
                    -< more paranoia >-
----------------------------------------------------------------
```

I'm worried about what happens when retired qualifiers finally die...

If a qualifier is no longer documented, does that mean that down the road in V6 or whatever, DEC doesn't need to tell us that they've finally dropped it? How will we lazy bums with old .COM procedures or whatever remember to get rid of the old stuff?

(Yeah, I recognize we should change them NOW, but...)

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Anaheim VAXnotes Excerpts - VMS V5

```
================================================================
Note 3.5        How to deal with RETIRED qualifiers        5 of 9
"Jack Patteeuw, Ford Motor Co."       4 lines   9-DEC-1987 14:06
              -< Going away  ...  eventually ! >-
----------------------------------------------------------------
```

DEC's stated policy when V4.0 came out was that "retired" system service would go away in the next "major release" (ie. the "unmentionable" one !) I would assume the same for retired qualifiers.

```
================================================================
Note 3.6        How to deal with RETIRED qualifiers        6 of 9
""                                    5 lines  10-DEC-1987 11:05
          -< An obsolete services manual is planned >-
----------------------------------------------------------------
```

Digital is planning to distribute an "Obsolete Services" manual with the next major release of VMS that will document these "retired" system services, DCL commands, and command qualifiers.

-comment from a VMS developer ...

```
================================================================
Note 3.7        How to deal with RETIRED qualifiers        7 of 9
""                                    5 lines  10-DEC-1987 11:28
                          -< good idea >-
----------------------------------------------------------------
```

A nifty idea. Kudos to the person who thought that one up.

David L. Bolthouse
Texas Instruments
(occasional maintainer of somewhat obsolete code)

```
================================================================
Note 5.0              back to the futures              50 replies
"John Osudar"                          22 lines   8-DEC-1987 16:33
----------------------------------------------------------------
```

Just got out of the "DCL futures" session... as usual, it appears that we're getting features that few, if any, of us asked for, but not those that have been requested over and over again. The case in point is MAIL, and in particular, Return Receipts. OK, they added (will add? may add, in a future unmentionable release??? whatever...) /CC to MAIL. Terrific... They "have no plans" to work on Return Receipts. The number of people who want Return Receipt capability seem to outnumber those who actively do NOT want this feature by at least a hundred to one -- and if DEC did it right, they'd make it an optional feature (as they did with /CC) so that those who don't want it can disable it in their own profile, thus removing most of the remaining objections. So why can't we have it? Is it technically impossible (and if so, why -- when many other mail systems provide such a feature)? Is it a marketing decision (if so, it's a bad one -- we WILL NOT spend money on a product to do this, simply because the money we'd have to spend would buy us fifty other features we do NOT need, at a cost that's too high for the feature we want)??? I know all about "callable MAIL", and it's a nice idea -- but you shouldn't rely on callable interfaces and site-specific implementations to supply fundamental features. Any comments, DEC or otherwise?

```
================================================================
Note 5.1              back to the futures               1 of 50
""                                     13 lines   8-DEC-1987 16:53
                      -< my thoughts >-
----------------------------------------------------------------
```

As the one of those opposed to return-receipt-requested, and having had several conversations with DEC reps on this over the past years, allow me to comment. If it is optional at the RECEIVERs end I have no objection to Return Receipt Requests. If not (and this is where I recall digital has a philosophical (not marketing) problem), we are getting closer to BIG BROTHER versus winston smith ("1984").

For all of you that argue, well All-in-1 has it so why not VMS mail, it's true that A1 does support Return Receipt Requests, but the RECIPIENT can turn it off in his/her profile.

If Digital does offer MAIL with Return Receipt Requests and does not implement as above, I will remove mail from my system.

```
================================================================
Note 5.5              back to the futures               5 of 50
"Keith Chadwick, Fermilab"             10 lines   8-DEC-1987 17:08
                      -< What about forwarding ? >-
----------------------------------------------------------------
```

Does anyone know if DEC plans to fix the feature (bug ?) that allows mail forwarding to distribution lists in a future unnamed major release of VMS ?

Example:

```
$ MAIL

SET FORWARD="@LIST.DIS"
```

-Keith Chadwick.

```
================================================================
Note 5.18             back to the futures              18 of 50
""                                     15 lines   9-DEC-1987 12:57
----------------------------------------------------------------
```

MAIL at DEC is heading toward compliance with the international X.400 standards. Return Receipts will be provided when mail is delivered to the user agent. This is just like what happens with postal mail Return Receipts. (If I pick up your mail for you, I sign the Return Receipt; the sender does not know when you read it.)

Depending on the user agent chosen, this may happen when the person actually reads the mail or may happen as soon as mail is presented to the receiving mailbox.

Thus whether a Return Receipts means "I read the mail" or "Your mail was delivered to my mailbox" will be under the control of the recipient (or the recipient's management).

/john

```
================================================================
Note 5.19              back to the futures              19 of 50
""                                   18 lines   9-DEC-1987 12:59
----------------------------------------------------------------
```

The "bug" which allows SET FORWARD to a distribution list has been fixed in a future release. It will not be possible to set forward to more than a single destination.

The reason it was a bug is that it did not work properly with the mail protocol, and could not possibly be made to work.

A sending program would think it was sending to a single recipient, and would thus only wait for a single response. The receiving program could not properly handle the dilemma of whether to send a single response indicating success (if at least one of the recipients did successfully receive the mail) or a single response indicating failure (if at least one of the recipients did not successfully receive the mail). The receiving program did the wrong thing -- it tried to return multiple responses where only one was expected, causing future protocol errors.

/john

```
================================================================
Note 5.30              back to the futures              30 of 50
"Ken Brucker"                        12 lines  10-DEC-1987 09:38
             -< a vote for Return Receipt Requests >-
----------------------------------------------------------------
```

I'm a DEC system manager in a DEC-IBM shop and we have a lot of mail traffic going between the two systems. Even the simplistic IBM facility called 'NOTE' (which is a less versatile mail implementation) has Return Receipt Requests as a feature. I get frequent requests and comments about the VAX's lack of a Return Receipt Requests feature from the IBM user community when they do not receive notification to their mail messages.

I am most definitely for an implementation of Return Receipt Requests, even if the end user had the option to turn it off or the site could turn it off for everyone.


```
================================================================
Note 5.34              back to the futures              34 of 50
""                                   10 lines  10-DEC-1987 10:39
            -< Don't disable multi-forwarding! >-
----------------------------------------------------------------
```

We use this "bug"/feature on our SYSTEM account. We have SYSTEM's mail set to forward automatically to our 3 system managers to allow them to respond in a more timely fashion to user requests sent to SYSTEM. It always seems to forward properly to all 3 accounts.

I'd like to see that part of the functionality remain intact!

Kurt Wampler GE/Intersil

```
================================================================
Note 5.36              back to the futures              36 of 50
""                                    8 lines  10-DEC-1987 11:04
----------------------------------------------------------------
```

We have SYSTEM's mail set to forward automatically to our 3 system managers to allow them to respond in a more timely fashion to user requests sent to SYSTEM. It always seems to forward properly to all 3 accounts.

This won't work in a network environment, especially if the name which has been forwarded to multiple destinations is in a distribution list. Although all three of the forwarded users may get the mail, others won't.

```
================================================================
Note 5.44              back to the futures              44 of 50
"R. Michael Dupont"                   9 lines  10-DEC-1987 12:54
              -< KEEP THAT MULTI-FORWARDING! >-
----------------------------------------------------------------
```

We also use the multi-forwarding from multiple systems across the network to enable us to track system/network problems. It would not be of any benefit to remove this.

Michael Dupont
EDS
2925 West Minnesota
Indianapolis, IN 46241
317/230-3771

```
================================================================
Note 9.0              V??? SYSMAN UTILITY              9 replies
""                                    6 lines   9-DEC-1987 16:28
----------------------------------------------------------------
```

The SYSMAN utility described in the DCL update session looks great. As I understood the slides, the implication was that if you have OPER privilege, you could run the program. Once running the program, you could grant your self other privileges.

Does this seem right???????????

```
================================================================
Note 9.2              V??? SYSMAN UTILITY               2 of 9
""                                    4 lines   9-DEC-1987 17:13
                       -< RE: SYSMAN >-
----------------------------------------------------------------
```

The impression I got was you need oper to run the Utility, you need additional privileges to do anything that may require an additional privilege (I.E. CMKRNL to do SYSGEN WRITE ACTIVE).

- Awp

```
================================================================
Note 9.3              V??? SYSMAN UTILITY               3 of 9
"John Osudar"                         5 lines   9-DEC-1987 17:23
                         -< right >-
----------------------------------------------------------------
```

Right. You need OPER just to get into SYSMAN. Then you can specify a "profile" containing other privileges -- but, those must be authorized on the local node (if the local node is in the "environment", or authorized for the username in use on non-local nodes. So this does NOT turn OPER into SETPRV!

PAGESWAPPER - February 1988 - Volume 9 Number 7
Anaheim VAXnotes Excerpts - VMS V5

```
================================================================
Note 10.0             SLOW AND NOT-SO-EASY             4 replies
"Steve Graham - Associated Press"     32 lines  10-DEC-1987 10:35
----------------------------------------------------------------
```

Speed Problems ... now that DEC is in the fast lane with terminal servers going to 19.2 kbs, the lowly 50 bps for Baudot has gotten lost somewhere.

Somehow DEC has forgotten that the world at large still deals largely with 50 and 75 bps circuits and the BAUDOT character set. (Just try to get even a 75 bps circuit from the U.K. to Katmandu).

When you try to set a DHV device with SET TERMINAL /SPEED, VMS (4.6) goes off and comes back with nothing. That is to say the port speed hasn't changed, but it didn't tell you that it wasn't working.

(there is no error associated with trying to set a speed that isn't recognized in VMS)

Anyway, we got a patch for 4.6 so we can deal with telegraph-type lines, but hate to think that every time there is an update, we have to supplicate for a patch to fix what is supposed to be working.

DEC also is quick to say they don't support the patch on top of all of that.

Removing 50 bps as a standard speed isn't the right answer either.

Please Mr. Olsen, can you please prove that DEC HAS IT NOW instead of DEC HAD IT THEN and take care of the world at large.

merci, danke and gracias

```
================================================================
Note 10.2              SLOW AND NOT-SO-EASY              2 of 4
"Forrest A. Kenney VMS Development"  36 lines  10-DEC-1987 15:34
          -< Some explanation from the developer >-
----------------------------------------------------------------
```

You are seeing two distinct restrictions here.

When you try to set a DHV device with SET TERMINAL /SPEED, VMS (4.6) goes off and comes back with nothing. That is to say the port speed hasn't changed, but it didn't tell you that it wasn't working.

Certain terminal controllers because of hardware restrictions force their port drivers to prohibit certain baud rates. This is true for the following controllers:

DHV/U-11

DMB32

This does not mean that the controllers cannot support 50 baud just that using 50 baud potentially has undesirable effects on adjacent lines. For more details on this see the hardware manual for these controllers.

(there is no error associated with trying to set a speed that isn't recognized in VMS)

The second problem is a deficiency in the terminal port class architecture. Specifically no mechanism was provided to allow the port to signal that it cannot perform an operation. Compounding this problem is the inability to back out the already committed modifications to the parameters.

The lack of error reporting was an oversight when the interface was designed. At that time nobody expected that controllers would exists that did not do what is asked of them. The part of the problem is potentially correctable. The second part of the problem is more complex and will have to be looked into.

Forrest Kenney VMS Development TTDRIVER

```
================================================================
Note 10.4              SLOW AND NOT-SO-EASY              4 of 4
""                                    30 lines  11-DEC-1987 11:30
                          -< my $0.02 >-
----------------------------------------------------------------
```

Having been involved with the original problem I would like to add a few points.

DHV/U-11

DMB32

This does not mean that the controllers cannot support 50 baud just

that using 50 baud potentially has undesirable effects on adjacent

lines. For more details on this see the hardware manual for these

controllers.

There are two problems here -- bad documentation and unqualified sales force. In this particular instance the DHV was sold to us by DEC as a solution to our problem. After all the sales literature states that the device will support 50 BPS -- you don't get the tech manual until after you buy the unit, and if it is under contract to DEC field service just takes it away with them and you have to beg to get it back. Even when you do get to look at the manual (after parting with your money) it is not at all clear that a problem with speed setting exists from looking at the funny little table they give you. In any case, as noted above, the problem is a deficiency in the VMS driver architecture but I could not find any note of this in the VMS I/O user's manual.

After having DEC sell us a solution to a specific problem and then, after taking your money, telling us that it won't work, we are feeling just a little bit ripped off! That's why we are going with Simpact boards for serial communications from now on.

INPUT/OUTPUT

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Larry Kilgallen, PAGESWAPPER Editor
Box 81, MIT Station
Cambridge, MA 02139-0901
USA

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(617) 262-6830

(in the United States) using a 1200 baud modem and log in with the username PAGESWAPPER.

==========

Note 585.27 Anyone use defrag programs? 27 of 27
"John Burnet" 29 lines 21-DEC-1987 16:56
-< *WARNING* -- Rabbit-7 and BACKUP do *NOT* mix! >-

The following item was posted by Frank Nagy in a DECUServe conference. I hope he doesn't mind my replicating it here.

WARNING - to all users of defragmenter programs...

This week our main VAXcluster went down for nearly 4 days due to the scrozzing (Digital technical term from Fall '87 symposium :-) of the main user file store, a 16 RA81 volume set. What seems to have happened is that Rabbit-7 was run at the same time as an incremental BACKUP. Rabbit-7 had been in use for a while with no ill effects, but the system manager had enough paranoia to not run both Rabbit-7 and BACKUP at the same time. The system manager was away this week and new staff was in place...

My best guess as to what happened is that the incremental BACKUP done with /FAST was remembering the file headers until the /RECORD pass. Now, BACKUP seems to have enough smarts to avoid writing a file header backup out during /RECORD if the file is deleted (for instance) - a change which will modify the file

sequence number or otherwise mark the file header as invalid. BACKUP does *not* assume (it's probably safe to say) that someone might be mucking with the map area behind its back. I'd guess that this is precisely what is going on, that Rabbit-7 is changing just the map area (which is how ODS-2 tells what disk blocks belong to that file) and then BACKUP comes along and writes its saved file header with the old map information all over it!

The problem was first noticed when several users complained that MAIL was failing due to garbaged mail files.

John Burnet
P. O. Box 1838
Evanston, IL 60204
(312) 272-6520 x2118

==========

Note 663.44 Comments on the SPR process 44 of 46
"Bill Mayhew" 31 lines 10-DEC-1987 18:27
-< Yet Another SPR War Story >-

On September 21, 1987 I submitted an SPR on VAX C via DSIN.

Since I hadn't heard anything, I called on Friday, December 4 to get a status report on the SPR.

Since my system is supported out of Atlanta, the information was not readily available to the people at the SPR Administration office in Maynard. I was told it would take some research.

On Monday, December 7, the information was ultimately found through a rather cumbersome process involving the use of, apparently, three separate systems in the SPR Administration office. The first one was necessary to convert the DSIN "sequence number" to a corporate SPR number (my DSIN submission had never resulted in a DSIN mail message with the corporate SPR number, which it's supposed to). The second one involved cross-checking that number to be sure it was the right SPR (i.e. was from my company); and the third, to actually determine its status.

I didn't get much of an answer, except that the problem had been forwarded to Engineering on October 26th. Naturally, I asked about what had happened between September 21 and October 26.

Evidently, a DSIN SPR is forwarded to the SPR people in Maynard, and is then forwarded to the appropriate Customer Support Center, and then (potentially) on to Engineering. In this case, for some reason, the first step took a full four weeks -- the SPR was not received by the folks in Maynard until October 19. The Customer Support Center got it (back?) on the 22nd; it was forwarded to Engineering, as noted, on October 26th.

So far, essentially four days since that conversation with SPR Administration, no additional information on the status of the SPR has been forthcoming, so what's happened since October 26th is a mystery.

Bill Mayhew
Village Systems Workshop Inc
PO Box 642
Natick MA 01760
617-237-0238

==========

Note 663.45 Comments on the SPR process 45 of 46
"Dale E. Coy (505) 667-3270" 18 lines 12-DEC-1987 22:16
-< More grist - but where's the mill? >-

Had an interesting conversation at DECUS with a DEC manager who "ought to know" what the facts are. In the midst of this conversation, he stated that (1) it is the job of the support person at Atlanta or Co. Springs to submit SPRs if the problem (bug) can't be fixed; (2) SPRs from the support specialists get MORE attention than those direct from customers; (3) Since SPRs can be submitted by "anybody", engineering sometimes views customer-submitted SPRs as coming mostly from customers WITHOUT software support contracts.

He seemed most surprised by my comments that the support people are reluctant to submit SPRs and have REPEATEDLY told me that customer-submitted SPRs get more attention.

It belatedly occurs to me that a DECUS presentation on the SPR process might be nice. Wonder what SIG would sponsor it?

DALE E. COY
LOS ALAMOS NATIONAL LAB
PO BOX 1663, MS J957
LOS ALAMOS, NM 87545
505-667-3270

==========

Note 704.8 Digi-Data Gigastore System 8 of 13
"John Osudar" 17 lines 28-NOV-1987 15:30
-< Just got our Gigastore... >-

We just got our Gigastore this week. It took about six weeks or so from order to delivery -- not bad. So far all we've done with it is to install it (no problems) and run some tests. I backed up a 90% full RP07 on our 11/785 system two different ways -- the way DigiData recommends (/NOCRC/GROUP=0) took about 70 to 80 minutes (I missed the exact time it terminated), and wrote 13572 32K-byte blocks, for an effective rate of between 93K and 106K per second, somewhat below the maximum 120K. Doing it with the default CRC and GROUP qualifiers took 112 minutes and wrote 14941 blocks, for an effective rate of just under 73K bytes per second. Not great, but it means that we can fit three almost-full RA81-size disks, or two RA82-size disks, onto a single tape, which is good enough for us.

I am now working on procedures for automating image removal and reinstallation, volume dismount/remount, etc. so that I can set up a procedure to back up our user disks overnight. I'll post further experiences with the Gigastore as they develop.

John Osudar
Argonne National Laboratory
9700 S. Cass Ave.
Bldg. 205 A-051
Argonne, IL 60439-4837
(312) 972-7505

```
================================================================
Note 704.9          Digi-Data Gigastore System          9 of 13
"David Shepperd"                    10 lines  30-NOV-1987 21:56
                          -< 1+1=1.5 >-
----------------------------------------------------------------
```

Arithmetic has never been my best subject. After having run several tapes through the system, I note that we get roughly 1.5Gb per tape. The engineers at Digi-data say, "Well gee, that's what we get on our 780, so it must be working right." Its still a whole lot better than 15 separate 2400' 9 tracks. I wrote a program to just issue QIO's to the unit for several hours and it does run at 120kb/sec with roughly 1% CPU load. BACKUP on a microvax will not get it going much faster than about 75kb/sec even if it is backing up a single 250k contiguous file. Anybody have "fast" streamers that work well with VMS BACKUP?

David Shepperd
Atari Games Inc
675 Sycamore
PO BOX 361110
Milpitas, Ca 95035-1110
(408) 434-1711

```
================================================================
Note 704.10         Digi-Data Gigastore System         10 of 13
"gerson cohen"                      14 lines   2-DEC-1987 08:29
       -< better throughput through better qualifiers! >-
----------------------------------------------------------------
```

I have had some long discussions with the technical people at Digidata regarding the transfer rates and capacity of the Gigastore device. The device is a "true streamer" which is said to keep moving for as much as 10 to 12 sec after last data is received. IT DOES NOT BACKSPACE. Therefore if the computer driving it is slow or busy, the effective transfer rate will drop along with the ultimate amount actually stored. To get around this problem it was emphasized that one must be prepared to use as large a buffer count as possible (5), noCRC (the hardware is claimed to duplicate this function and the MicroVAX calculates this slowly, and no redundancy blocks (GROUP=0). Under these circumstances, the unit is said to run within 10% of its rated capacity and the actual transfer rate will approach the real transfer rate. Now I only wish I had one to try this

all. Even at only 1.5 Gb it's great!

gerson cohen
nih
bldg 2 rm 312
bethesda md 20205
301-496-4295

```
================================================================
Note 704.11         Digi-Data Gigastore System         11 of 13
"Mark Schell"                        8 lines   2-DEC-1987 23:09
                  -< My life depends on... >-
----------------------------------------------------------------
```

Not to bring up an old subject, but I'd NEVER write any backup tape that my business depended on with qualifiers /NOCRC/GROUP=0! I don't care if the tape is guaranteed to have NO errors! There are still too many links to fail between the data on my disk and that tape. And then, of course, there's always the problem of the quality of the video tape!

Mark

Mark Schell
DIGITAL EQUIPMENT CORPORATION
8025 NORTH POINT BLVD
SUITE 100 WEST
WINSTON SALEM NC 27106

```
================================================================
Note 704.12         Digi-Data Gigastore System         12 of 13
"Alan B. Hunt"                       1 line   4-DEC-1987 19:34
                          -< ME TOO! >-
----------------------------------------------------------------
```

I agree with the last comment. Been bit before!

ALAN B. HUNT
26803 BERG RD. #301
SOUTHFIELD, MI 48034

Note 704.13 Digi-Data Gigastore System 13 of 13
"gerson cohen" 7 lines 7-DEC-1987 08:41
-< No offense intended >-

OK! I didn't say one had to use /NOCRC and /NOGROUP. But when we analyse the performance of an I/O device, it is necessary to count ALL data, whether ours or system generated, when determining the actual transfer rates. We also must acknowledge that the Gigastore can write somewhat faster than BACKUP on a MicroVAX can feed it, and that contributes to the apparent lost of throughput and capacity on the tape.

gerson cohen
nih
bldg 2 rm 312
bethesda md 20205
301-496-4295

Note 749.16 VMS 4.6 - where are you? 16 of 18
"john a goulet" 3 lines 26-NOV-1987 19:57
-< no 4.6 yet!! >-

we don't have it yet and its now thanksgiving!!! Have you gotten it yet?? We are near the Augusta, Me plant and they are running 5.0 on some machines in the plant, so where the hell is 4.6???

john a goulet
thomas college
west river road
waterville me 04901
207 873 0771

Note 749.17 VMS 4.6 - where are you? 17 of 18
"Larry Kilgallen" 11 lines 27-NOV-1987 09:57
-< Everyone should have V4.6 by now >-

If you do not have VMS V4.6 and all the accoutrements to which your software services contract entitles you (e.g., some sites order microfiche and extra documentation sets), it is time to complain loudly to your local office. The same goes for MicroVMS V4.6.

This above statement does not imply any suggestion that you should *install* V4.6 at any particular point in time. That is a judgement only you can make based on reports you hear from various DECUS sources and based on your own personal desire for adventure.

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA 02139-0901

Note 749.18 VMS 4.6 - where are you? 18 of 18
"Joe Sewell" 3 lines 9-DEC-1987 10:37
-< Not everybody, unfortunately >-

Only those of us whose DEC salespeople saw fit to include software maintenance in the quote should have V4.6. (Guess who got stuck without one of those blessed little contracts?)

Joe Sewell
Level Five Research
503 Fifth Avenue
Indialantic, FL 32903
(305)729-9046

```
================================================================
Note 769.8       Directory file internal structure       8 of 10
"Brian Tillman, Smiths Industries."   9 lines   4-DEC-1987 09:40
               -< The conclusion to the story >-
----------------------------------------------------------------
```

Well, we have definitively found that directories whose "Used" sizes exceed 128 blocks are grossly slower that smaller directories. Large directories can take 2.5 times more CPU time and 1000 (yes, one thousand!) times more buffered I/Os to just execute the DIRECTORY command. The reason is probably because RMS's longest I/O is 64K (128 blocks) and it could also be a cache size as mentioned in .6.

Thanks for all your help.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

```
================================================================
Note 769.9       Directory file internal structure       9 of 10
"Larry Kilgallen"                     0 lines   4-DEC-1987 14:03
               -< Was that *buffered* I/O's? >-
----------------------------------------------------------------
```

Larry Kilgallen
Box 81, MIT Station
Cambridge, MA 02139-0901


```
================================================================
Note 769.10      Directory file internal structure      10 of 10
"Brian Tillman, Smiths Industries."   0 lines   7-DEC-1987 12:23
                  -< Yes, Buffered I/Os >-
----------------------------------------------------------------
```

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

```
================================================================
Note 803.1         Central Monitoring of Machines         1 of 3
"John D. Ferriby"                    14 lines  10-DEC-1987 00:28
             -< ETHERnim and NMCC implemented >-
----------------------------------------------------------------
```

We have plans to evaluate DEC's Ethernim and its DECnet monitoring tool.

Some observations --

We are currently using both ETHERnim and NMCC (versions 1.0 and 1.1 respectively) -- both can and willingly consume copious amounts of your system resources, especially NMCC. Be prepared for high processor overhead with ETHERnim, as well as an uncomfortable token-style user interface. As for NMCC, what information you desire to collect and how frequently you want to collect it determines the CPU/IO/Disk space overhead. We have been collecting information at 3 hour intervals over 4 weeks and have consumed approximately 600K+ blocks. [70 nodes]

John D. Ferriby~r
{
2871 Troy Centry
{#2010
Troy, MI 48084
(313) 362-2595

```
================================================================
Note 803.2          Central Monitoring of Machines          2 of 3
"Chris Erskine"                        63 lines  10-DEC-1987 08:16
                      -< Personal views >-
----------------------------------------------------------------
```

What I have seen of DEC's network monitoring and management systems is that they all have far to go. Each system is a standalone system which does not talk to the others. This includes such thing as locations to put location of device, manager ... in the data base. If you get all of the systems, you end up with at least 3 databases containing the manager's name for something like a terminal server. Now have the manager change and look at all of the places you have to update to the new name.

My general feelings for the different items are as follows.

ETHERnim - Will find general addresses and names for some items. Ethernet only. For terminal servers, you have to trace the address back to the node name in lots of places. Does not use all of the information available from the datapackets which it looks at which would help the system. Really gets confusing for VAXmates where DECnet addresses are changing for the same hardware addresses. Must leave the system up at a tube to learn the database. The new version has additional graphics and ability to layout the database but again does not work with the moving DECnet addresses of VAXmates. After all of the work putting the network into graphics, there is not an easy way to get a hard copy of it. Will report all non multicast addresses found on the Ethernet cable but does not help trace or identify non DEC devices or what they may be running.

TSM - Needed to manage the DECserver family of servers but has the local data problem of manager's name .... Could use some features to tell it that there is a replacement server being added. Would be nice to have a command to create a command file from the server's database to allow tracking of changes when I have to test a configuration to get it working.

RBMS - Same comment on local info. Would help allow it to determine it's network and map out the cable plant.

LTM - Uses a bridge to monitor the traffic. This device has been the best DEC product for tracking and finding devices in the network. Will provide performance of the network and type of traffic on the network.

NMCC/DECnet Monitor - Same graphics problem as ETHERnim for output. As John said, uses lots of disk. Expensive when you consider the layered products also required to run it. I have not had a chance to look at the new version as much as John, but it seems to still have some of the confusing conventions for describing the systems etc. After working with NCP, NMCC requires you to change your thinking of the different entities.

Overall, these products are new and still have a ways to go. There are still a lot of work needed to bring them all together and make the consistent in operation and information. DEC used the first releases just to get something to the customer and is still working on defining the management systems. Expect to see all of these change over time and either start talking to each other or to be replaced with a single system which will.

Chris Erskine
23 S Holcomb
Clarkston, MI 48016
(313) 524-8836

```
================================================================
Note 803.3          Central Monitoring of Machines          3 of 3
"Larry Kilgallen"                      12 lines  12-DEC-1987 23:08
            -< Beware of Products You Can't Call >-
----------------------------------------------------------------
```

A user at the Anaheim Symposium this past week (no names because I did not ask permission to quote) said that the various DEC network monitoring tools have NO PROGRAM INTERFACE. Considering that the VMS department at DEC claims to have a policy of trying to make all new programs callable, it seems this is another case of one branch of DEC has heard the message from the user community and others have not.

The user at Anaheim has a network so large that custom programs to monitor the monitors are a requirement, and as of now, the DEC network monitoring tools do not provide any access for site-specific programs.

Larry Kilgallen

Box 81, MIT Station
Cambridge, MA 02139-0901

```
================================================================
Note 833.4                  LAT problems                  4 of 8
"Dale E. Coy (505) 667-3270"          7 lines  25-NOV-1987 00:03
                    -< LTDRIVER problems? >-
----------------------------------------------------------------
```

Is there some confirmation for Terry's comment about the LTDRIVER with 4.6? There is absolutely no information on this problem on DSIN, and nobody at local Field Service knows anything about it (surprise?). We have a LTDRIVER.PATCH (file date 15 July 86) - but is this the patch to apply?

DALE E. COY
LOS ALAMOS NATIONAL LAB
PO BOX 1663, MS J957
LOS ALAMOS, NM 87545
505-667-3270

```
================================================================
Note 833.5                  LAT problems                  5 of 8
"Terry Kennedy"                      20 lines  26-NOV-1987 03:10
                -< Info from local office... >-
----------------------------------------------------------------
```

Is there some confirmation for Terry's comment about the LTDRIVER with 4.6?

All I can tell you is what I was told by my local Software Services people. I suppose that doing an analyze/image might point out which version is newer (by module ID, *not* link date).

Your best bet in the absence of useful confirmation from anyone would be to rename the V4.6 LTDRIVER (as mentioned in .-n) and try the patch tape. If things get better, keep it. Otherwise, revert to the 4.6 driver.

The whole lack of information from DEC on this is a big problem. I saw somewhere that V2.0 of the DS200 load image is in development, and that it may require a new LTDRIVER anyway. It seems that nobody 'owns' LTDRIVER in DEC - VMS says it terminal server products, TSP says it's VMS, etc.

Terry Kennedy
95 Mohawk Trail
Ringwood, N.J. 07456
(201) 435-1890

```
================================================================
Note 833.6                  LAT problems                  6 of 8
"JIM PALMER"                         22 lines  14-DEC-1987 20:23
                    -< DEC has a fix >-
----------------------------------------------------------------
```

There is an official fix in the form of a backup save_Set that contains a newly linked LTDRIVER.EXE and LATSYM.EXE. Also included is a text file describing the fixes.

We obtained ours via DEC field service. The name of the save_set is lat046.bck. There is no FCO link that I know of.

To identify the new images, the .IDENTS are:

```
LTDRIVER.EXE  .IDENT "LAT X7N-14"
LATSYM.EXE    .IDENT "LATSYM V2.1"
```

We had a definite problem with DEC 100's being randomly X'offed for unknown reasons. So far so good with the new image, but I was able to put it up the day after DECUS (SAT) so we haven't much time to test.

JIM PALMER
3 BROOKDALE
IRVINE, CA. 92714-3338
(714) 458-3028

```
================================================================
Note 833.7                    LAT problems                  7 of 8
"George Merriman CCA/NY"            13 lines  16-DEC-1987 23:26
                    -< another problem >-
----------------------------------------------------------------
```

I have been having a problem with LT application ports. It seems that when a port being used to drive a printer from a program that is NOT a symbiont or anything like that has no traffic for the port for a while (hours, maybe) the link to the port drops out, kind of. A SHOW TERM on the LT: port at DCL shows the owner of the device as the process running the program and a SHOW PORT command to LATCP shows an actual port out there. However, the terminal server shows the port as being disconnected. It also seems that QIO's to the port succeed, but nothing comes out the other end (not sure about this). I'm running VMS 4.6, but I'm not using the special LT port QIO functions to make the connections to the port. The program in question seemed to work OK under 4.5. The server is a 200 running BL20C software (or whatever the latest and greatest is). Any ideas?

George Merriman
Cambridge Computer Associates
56 Beaver Street 3rd Floor
New York NY 10004
212-425-5830

```
================================================================
Note 833.8                    LAT problems                  8 of 8
"Seton Droppers, PBS, (703)739-5100" 12 lines  23-DEC-1987 12:53
                  -< A couple thoughts >-
----------------------------------------------------------------
```

Two ideas:

1) Might you have the inactivity logout enabled on the port and that causes the DS200 to go away?

2) I had heard, from DEC, that at least one product's use of LAT ports broke going from 4.5 to 4.6, maybe the QIO interface is needed?

Can anyone else confirm or deny either of these?

Seton

Seton R. Droppers
Public Broadcasting Service
1320 Braddock Place
Alexandria, VA 22314
(703)739-5100

```
================================================================
Note 836.0          Anybody know of NETPATH?          2 replies
"Ken Robinson"                    8 lines  25-NOV-1987 10:02
----------------------------------------------------------------
```

Does anyone know of a DECnet monitoring tool call NETPATH, which supposedly will tell you all the paths from node A to node B on DECnet.

Ken Robinson
Bell Communications Research
444 Hoes Lane, Room 4d449
Piscataway,N.J. 08854
(201)699-8796

```
================================================================
Note 836.1          Anybody know of NETPATH?          1 of 2
"John K. Doyle, Jr."              11 lines   2-DEC-1987 18:30
                -< Perhaps NETMAP instead? >-
----------------------------------------------------------------
```

I haven't seen NETPATH, but there used to be a nice utility called NETMAP. It was very smart. It went out and looked at all the neighboring nodes and then did the same thing over and over from each node's "perspective". It then draw a map of all the adjacencies (NOT physical links) for you. The only problem with it was that people liked it TOO much and ran it A LOT. Finally we had to restrict its use because several people would run it and create NML processes all over the network. I am not sure if it ever made it on to the SIG tapes. When I was working for DEC, distributions WERE available on the Engineering net. You might consider talking to your local SWS people about it.

John K. Doyle, Jr.
Steiner, Levi & Co.

2550 Mercantile Drive Suite C
Rancho Cordova, CA 95670
(916) 638-2600

```
================================================================
Note 836.2            Anybody know of NETPATH?            2 of 2
"Mark Schell"                        7 lines   2-DEC-1987 22:57
                     -< You can have it! >-
----------------------------------------------------------------
```

NETPATH is a tool available from Digital that traces the "path" from one node to another. It used to be an internal use only tool, but is now available from your local Digital Software Services group under the "Network Assets Program".

Mark Schell
DIGITAL EQUIPMENT CORPORATION
8025 NORTH POINT BLVD
SUITE 100 WEST
WINSTON SALEM NC 27106

```
================================================================
Note 837.0                    SQL ???                     1 reply
"MARK SHAFFER"                       7 lines  25-NOV-1987 11:35
----------------------------------------------------------------
```

I have been asked to inquire here about SQL. Anything you can tell me about it is fine. Does it have some connection with Rdb?...

... and so forth.

Thanks,

Mark

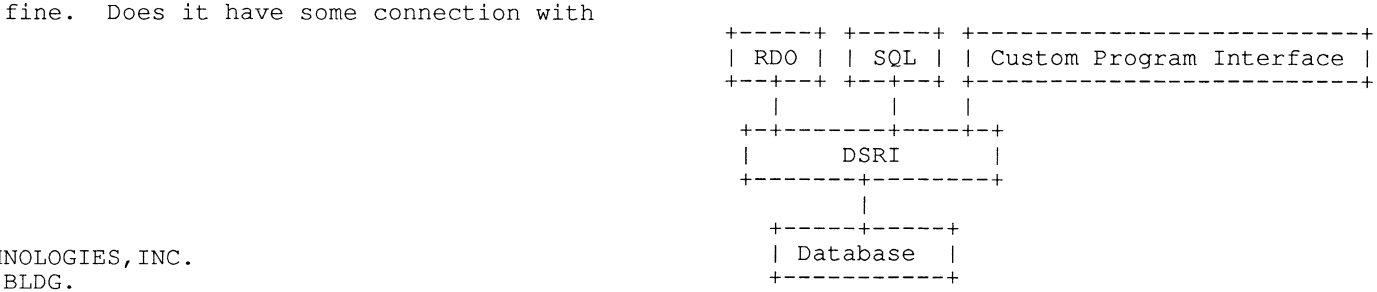
MARK SHAFFER
INFORMATION CONTROL TECHNOLOGIES,INC.
17 POLLY DRUMMOND PROF. BLDG.
SUITE 105
NEWARK, DE 19711
302-366-8211


```
================================================================
Note 837.1                    SQL ???                     1 of 1
"Alan B. Hunt"                       39 lines  25-NOV-1987 12:31
                     -< Where it came from! >-
----------------------------------------------------------------
```

SQL is an interface for developers/end-users to use to manipulate a relational database and it was created by IBM. Over the years it has become a defacto standard for query languages. There is now or soon will be an ANSI Standard for SQL which is different from the IBM version. Most of the database packages being developed today have a SQL interface and in some cases a proprietary interface as well. Obviously portability is the issue.

In the case of Rdb it came out initially with RDO as its proprietary interface but no SQL interface. SQL then became a larger issue and DEC has now developed a SQL interface for Rdb for a "small" fee. It does not fully comply with the ANSI standard the plans are to do so with future releases.

The actual interface to Rdb and other future Digital Relational products is DSRI (Digital Standard Relational Interface). RDO and SQL (as well as the programming interfaces) simply convert a user friendly style of request into calls to DSRI. DSRI is supported by DEC, you can by documentation for it, and it suppose to always be upward compatible. It may be expanded as future needs dictate. A diagram might show:



The Custom Program Interface can be your own or some third party or DEC package which interfaces to Rdb or any future DEC relational product.

ALAN B. HUNT
26803 BERG RD. #301
SOUTHFIELD, MI 48034

Note 839.0 Getting to serial lines on the 8200 8 replies
"G. Del Merritt" 8 lines 25-NOV-1987 16:03

I have an 8200 with a DMZ32 (which I have filled). I am not using the three serial ports that are physically above the console (OPA0) port. How do I get to those? Do they provide modem control like the DMZ? I have looked through my owner's manual, and only have found reference to them in section 10, which talks about the KA820... I'd like to put my modems and LN03 on those ports, so that they don't get perturbed when others than myself play with the connections to the multiplexer!

G. Del Merritt
55 Walkers Brook Drive
Reading, MA 01867

Note 839.1 Getting to serial lines on the 8200 1 of 8
"G. Del Merritt" 4 lines 25-NOV-1987 16:09

Forgot to mention that I think they're probably OPA1, OPA2, and OPA3. problem is that I want to make sure that there is nothing else "special" about them that would preclude my letting dialup users have access to them...

G. Del Merritt
55 Walkers Brook Drive
Reading, MA 01867

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Note 839.2 Getting to serial lines on the 8200 2 of 8
"John Burnet" 22 lines 27-NOV-1987 10:56
-< Here's the scoop (or part of it, anyway) >-

To get to the 8200's three "serial line units" (SLUs), do this (and also put these commands in your SYSTARTUP.COM):

```
$ mcr sysgen
connect slu=1
connect slu=2
connect slu=3
exit
```

The three lines are named TCA0:, TCB0:, and TCC0: (not OPA1/2/3).

You should be aware of a couple of things. First, the maximum baud rate on these lines is 1200. Second, the lines use the same port driver ("OPERATOR") as OPA0, which means that all I/O is done character by character (no SILO or DMA), with an interrupt taken for each character received or transmitted. What this means to your system is that your interrupt-stack time will rise dramatically if you run any terminal-I/O-intensive applications on those lines: screen painting programs, Notes, spreadsheets, etc.

I don't know whether the lines support modem control or not. Anyone else care to comment?

John Burnet
P. O. Box 1838
Evanston, IL 60204
(312) 272-6520 x2118

```
================================================================
Note 839.3      Getting to serial lines on the 8200       3 of 8
"G. Del Merritt"                    3 lines  30-NOV-1987 14:22
                       -< oh well... >-
----------------------------------------------------------------
```

Thanks. For what are these ports intended, since they be so slow? Alternate operator consoles? Output only lines for slow serial printers? Something else to cause questions?

G. Del Merritt
55 Walkers Brook Drive
Reading, MA 01867

```
================================================================
Note 839.4      Getting to serial lines on the 8200       4 of 8
"Jack Patteeuw"                      1 line  30-NOV-1987 17:04
----------------------------------------------------------------
```

These ports DEFINITELY do NOT support modem controls !

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI 48150
313-323-8643

```
================================================================
Note 840.0    Creating Subprocesses with Privilege    No replies
"Offline Submission"                 83 lines  27-NOV-1987 21:14
----------------------------------------------------------------
```

How does one use LIB$SPAWN to create a subprocess with privilege? I want to install an image that spawns a subprocess and have that subprocess inherit the same privileges that its parent is installed with. If I use a command file and turn on the required privilege within the command file it works just fine - but my command is only one DCL command (SHOW PROCESS/CONTINUOUS/ID=somePID) and I would rather not have to write the command file on the fly, invoke it, and then delete it. My reasons for this are mainly security related (another process could tamper with my temporary command file in the middle somewhere).

I want to provide non-privileged users the ability to do a $SHOW PROCESS/CONTINUOUS/ID=whatever

Here is a code sample ... I have installed this program with WORLD privilege but the child doesn't have it.

```
PROGRAM SHPC_PRIV(INPUT,OUTPUT);

TYPE
    $UWORD = [WORD]0..65535;

VAR
    LIB_STAT: INTEGER;
    COMMAND: PACKED ARRAY [1..28]OF CHAR;
    ID, IOSB: UNSIGNED;
    PID: PACKED ARRAY[1..8] OF CHAR;
    LENGTHOF: $UWORD;

[ASYNCHRONOUS,EXTERNAL]PROCEDURE LIB$STOP(
                %IMMED cond_value : INTEGER); EXTERN;

FUNCTION LIB$GET_FOREIGN(
    VAR GET_STR: [CLASS_S] PACKED ARRAY [a..b:INTEGER] OF CHAR;
    USER_PROMPT: [CLASS_S] PACKED ARRAY [c..d:INTEGER] OF CHAR;
    VAR OUT_LEN: $UWORD := %IMMED 0;
    FORCE_PROMPT: INTEGER := %IMMED 0): INTEGER; EXTERN;


[ASYNCHRONOUS,EXTERNAL]FUNCTION LIB$SPAWN(

COMMAND_STRING: [CLASS_S]PACKED ARRAY [$L1..$U1:INTEGER]
                OF CHAR := %IMMED 0;

INPUT_FILE:     [CLASS_S]PACKED ARRAY [$L2..$U2:INTEGER]
                OF CHAR := %IMMED 0;

OUTPUT_FILE:[CLASS_S]PACKED ARRAY [$L3..$U3:INTEGER]
                OF CHAR := %IMMED 0;
    FLAGS: UNSIGNED := %IMMED 0;
    PROCESS_NAME:   [CLASS_S]PACKED ARRAY [$L5..$U5:INTEGER]
                OF CHAR := %IMMED 0;
    VAR PROCESS_ID: UNSIGNED;
    VAR COMPLETION_STATUS: UNSIGNED := %IMMED 0;
    COMPLETION_EFN: UNSIGNED := %IMMED 0;
    COMPLETION_ASTADR: UNSIGNED := %IMMED 0;
    COMPLETION_ASTARG: UNSIGNED := %IMMED 0;
    PROMPT: [CLASS_S]PACKED ARRAY[$L11..$U11:INTEGER]
```

```
                OF CHAR := %IMMED 0;

CLI: [CLASS_S]PACKED ARRAY[$L12..$U12:INTEGER]
                OF CHAR := %IMMED 0
    ): INTEGER; EXTERN;

BEGIN   (* PROGRAM SYS *)
LIB_STAT := LIB$GET_FOREIGN(PID,'_Pid: ',lengthof);
IF NOT ODD (LIB_STAT) THEN

LIB$STOP(LIB_STAT);
COMMAND := 'SHOW PROC/CONTIN/ID=' + PID;
LIB_STAT := LIB$SPAWN(COMMAND_STRING := COMMAND,
                PROCESS_ID := ID,

COMPLETION_STATUS := IOSB
);
IF NOT ODD (LIB_STAT) THEN

LIB$STOP(LIB_STAT);
END.    (* PROGRAM SYS *)
```

Thomas B. Graves
P.O.B. 131
Norton, Ma. 02766-0131

Telephone: (617)-285-4814

August 19, 1987

==========

Note 845.0 Quote without (much) comment 7 replies
"Dale E. Coy (505) 667-3270" 57 lines 2-DEC-1987 20:45

In view of the ongoing discussion of SPRs, I thought the following might be of interest. This just appeared as a FLASH on DSIN (equivalent to the FLASH about installing the important patch). I never heard of an "administrative closure" before.

Title: What Happens After You Submit an SPR Via DSIN

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Date: NOV 1987 Source: Digital Customer Support Center/Colorado Springs

DSIN SPR PROCEDURAL CHANGE:

Customers submitting SPRs through the DIGITAL Software Information Network (DSIN) will receive mail via DSIN informing them of their CORPORATE SPR NUMBER. This number is your official SPR NUMBER and should be used for all activities concerning that particular SPR (i.e., inquiries, additional information, etc.). This mail acknowledges that the information was received and noted by DIGITAL. After the mail has been sent, the SPR will be closed. Please note that this closure is an "administrative closure." A "technical closure" of your SPR will be delivered to you in the form of a "written response" or a "telephone response."

COPIES OF DSIN SPR SUBMITTAL:

An acknowledgment copy of your DSIN submitted SPR is not provided. If you need a copy, please submit your SPR using a hardcopy terminal. OBTAINING INFORMATION ABOUT THE STATUS OF YOUR SPR: For the most accurate information about the current status of your SPR, please call: SPR Administration (617) 493-4722

SPR Administration can reference your SPR by the sequence number you received when you entered the SPR (e.g., C870103112) or they can reference your SPR using the corporate SPR number (e.g.,MST-xxxx).

SUBMITTING ADDITIONAL INFORMATION ABOUT AN SPR:

If you wish to submit additional information about your SPR through DSIN, please do so by entering another SPR. Please be sure to reference the first SPR you entered by sequence number and by corporate SPR number. This will help to assure that the original submittal of the SPR and the additional information SPR are processed together. If the additional information is in listing form or on machine-readable media, you will need to send it to the following address:

SPR Center
Corporate Administrative Services Group
P.O. Box F
Maynard, MA 01754

Again, when sending additional information, please reference the SPR by its sequence number and by the corporate SPR number.

DALE E. COY
LOS ALAMOS NATIONAL LAB
PO BOX 1663, MS J957
LOS ALAMOS, NM 87545
505-667-3270

==========

Note 845.1 Quote without (much) comment 1 of 7
"Bob Hassinger" 17 lines 3-DEC-1987 11:14
-< Why would anyone submit an SPR via DSIN? >-

It is said that an SPR submittal via DSIN is a little faster than the paper submission to Box F. I am told the difference is that the people at Box F in Maynard turn your paper into electronic form and forward it by network to Colorado where it enters more-or-less the same system as SPRs submitted directly on DSIN. The delay for the Box F paper submission is supposed to be no more than a day or two, particularly because of the electronic transmission to CSC.

Given this and the various tracking and administration problems that come with a DSIN submission that are evident in the information in the previous note, is there any real win to doing SPR submissions via DSIN instead of by paper to Box F? The day or two you save is a trivial part of the overall turn around time most of us see.

Bob Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkinton, MA 01748
617-435-9061

==========

Note 845.2 Quote without (much) comment 2 of 7
"Bill Mayhew" 22 lines 3-DEC-1987 11:48
-< Hand-type SPRs? On a typewriter? Heavens forfend! >-

Unfortunately, the human interface for doing SPR submissions is pretty bad. Digital would do well to expend some resources in this area.

The paper forms are a hassle to deal with, if only because one has to find a typewriter, and remember how to use it (!), to submit one. Those of us who long since weaned ourselves of such archaic machines, and/or who have yet to figure out how to correct a typo or rephrase a thought on a 7-part carbonized form, are out of luck. One reasonable solution to this would be for somebody to come up with some kind of program (using TPU, perhaps?) to allow you to create in-house SPRs on-line and print them on some nearby LQP or LA. (I'm not volunteering, I've gotten myself into enough holes, already, this month, and it's only the 3rd... {grin})

The electronic submissions are superior except that there's no way to get a local copy of what you submitted, unless you use SET HOST/LOG or, with Kermit, LOG SESSION..., which isn't _too_ bad. You do need to make the extra step, then, of transcribing the SPR number from Email to your local online or hardcopy, once the number is assigned. What I'd like to see DEC do in this area is to send a complete copy of the SPR submission, _with_ the SPR number, to the submitter's DSIN Email box, rather than sending the number itself.

Bill Mayhew
Village Systems Workshop Inc
PO Box 642
Natick MA 01760
617-237-0238

```
================================================================
Note 845.3          Quote without (much) comment          3 of 7
"Dale E. Coy (505) 667-3270"         19 lines   4-DEC-1987 00:00
                    -< What a dandy idea! >-
----------------------------------------------------------------
```

One reasonable solution to this would be for somebody to come up with some kind of program (using TPU, perhaps?) to allow you to create in-house SPRs on-line and print them on some nearby LQP or ...

Say what you will (and you will), but our ALL-IN-1/WPS-PLUS software came with a built-in SPR template.

What I'd like to see DEC do in this area is to send a complete copy of the SPR submission, _with_ the SPR number, to the submitter's DSIN Email box, rather than sending the number itself.

AMEN! and then provide some decent capability (like Kermit or darned near anything) to allow copying stuff from DSIN to the local system. Did you ever try to capture anything from DSIN (like .0)? - I did it with VAXNet Log, but at least half the file is terminal escape codes and other stuff associated with their "scream" interface.

DALE E. COY
LOS ALAMOS NATIONAL LAB
PO BOX 1663, MS J957
LOS ALAMOS, NM 87545
505-667-3270

```
================================================================
Note 845.4          Quote without (much) comment          4 of 7
"Kevin Angley"                 4 lines   4-DEC-1987 17:23
                    -< Electronic SPR's >-
----------------------------------------------------------------
```

Check out Jim Downward's KMSKIT on almost any VAX SIG DECUS tape. It has an SPR-generator. You just answer a few questions and print out the SPR. You do need to staple it to an SPR form though so it will have a DEC-supplied form number.

Kevin Angley
3301 Terminal Drive

Raleigh, NC 27604
(919) 890-1416

```
================================================================
Note 845.5          Quote without (much) comment          5 of 7
"Bob Hassinger"                11 lines   7-DEC-1987 09:15
 -< Right, we have been using the KMSKIT stuff for years... >-
----------------------------------------------------------------
```

| Check out Jim Downward's KMSKIT on almost any VAX SIG DECUS
| tape.

Right! I think I started using Jim's program around the time we moved from RSX to VMS over five years ago. I know for sure the RSX group had agreed to accept it back then and I know I have never had a VMS SPR done with it rejected so it would seem it is acceptable to the VMS group as well. Since those are two of the largest groups, I would guess use of it is acceptable to DEC in general.

Bob Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkinton, MA 01748
617-435-9061

```
================================================================
Note 845.6          Quote without (much) comment          6 of 7
"Gregg A. Deuchar (408)432-1000"     14 lines   7-DEC-1987 20:03
                -< Easy fix for DSIN problem >-
----------------------------------------------------------------
```

| AMEN! and then provide some decent capability (like Kermit or
| darned near anything) to allow copying stuff from DSIN to the
| local system. Did you ever try to capture anything from DSIN
| (like .0)? - I did it with VAXNet Log, but at least half the
| file is terminal escape codes and other stuff associated with
| their "scream" interface.

The easy way around this problem is to tell DSIN that you are a HARDCOPY terminal. Then all you get is the plain text without the "fancy" graphics. I do the same thing here with a $Set term/device=LA120 command to avoid getting a log file full of escape codes. Now if only ARIS let me set the terminal type...

Gregg Deuchar
P.O. Box 10124
San Jose, CA. 95157
(408) 432-1000

```
================================================================
Note 845.7          Quote without (much) comment          7 of 7
"Dale E. Coy (505) 667-3270"          8 lines   9-DEC-1987 02:03
              -< I can do that - why can't DEC? >-
----------------------------------------------------------------
```

Setting the terminal to hardcopy is a dandy idea, but has its own drawbacks, of course.

The major point revealed by looking in detail at the escape codes is that often 50% of the transmission is "useless" codes (for example, 4 or 5 pure cursor-positioning commands in a row, followed by something useful like erase-to-eol). No wonder it seems slow some times.

DALE E. COY
LOS ALAMOS NATIONAL LAB
PO BOX 1663, MS J957
LOS ALAMOS, NM 87545
505-667-3270

```
================================================================
Note 848.0                Disk capacity                 3 replies
"MICHAEL GRATTAN"                    13 lines   9-DEC-1987 06:51
----------------------------------------------------------------
```

We have a MicroVAX II with a RD53 and a RA81. I use the RD53 as a system disk and my users are on the RA81. My RA81 is about 75% full. How full can I let this drive get? Is there some point at which I will see performance degrade due to an overfull disk?

In the same vein, I'm trying to get my hands on a 2nd RA81. After it's installed, I want to do a backup and restore of the first drive. Is there a suggested method to accomplish this?

I would appreciate any thoughts. (Anyone who replies gets one less lump of coal from you-know-who! ;-))

MICHAEL GRATTAN
FAIRHAVEN CORP.
358 BELLEVILLE AVE.
NEW BEDFORD, MA. 02742
617-993-9981 EXT 106

```
================================================================
Note 848.1                Disk capacity                 1 of 3
"Chris Erskine"                      16 lines   9-DEC-1987 08:50
              -< How fragmented are they? >-
----------------------------------------------------------------
```

A lot of people say 75 to 80 is the limit. A lot of it is dependent on what is being done on the disk. If you are creating and deleting files all of the time, then you may be over the limit now. I the disk is mostly read without much write, then it is dependent on I/O usage. (Sometimes smaller, slower drives are faster than large fast drives.) A good way to tell is how fast does the disk fragment after compressing it.

To compress the disk with a spare drive you can either backup to the second drive and switch address plugs on the drive or backup to the second drive and then back to the first drive. Note that if you switch LAP plugs often, then for tracking of disk problems, you might want to label the drives where they are not related to the address of them.

Chris Erskine
23 S Holcomb
Clarkston, MI 48016
(313) 524-8836

Note 848.2 Disk capacity 2 of 3
"Rytis T. Balciunas" 13 lines 10-DEC-1987 07:08
-< My two cents.. >-

I agree with the 75-80% rule. Our DEC field service person recommended no more than 70%! In any event, your system won't crash if the RA81 gets to these limits...One of our business system's RA81 data disks (has about 300 VERY large files) has been sitting at about 76% for a few months (no time to purge out old data) and I've not noticed major problems due to the amount of space used. This disk gets a great deal of write-activity, with read/write ratio being about 40/60. My problems lie in the lousy design of the data files (business software vendor's ideas, not mine)....I have had disks go to 99% for hours with few MAJOR ills (other than programs going away when they hit 100%!)...

RYTIS T. BALCIUNAS
CALGON CARBON CORPORATION
PO BOX 717
PITTSBURGH PA 15230-0717
(412)787-6784

Note 848.3 Disk capacity 3 of 3
"Jonathan M. Prigot" 11 lines 10-DEC-1987 10:20
-< $.02+$.02=$.04 >-

I think the operant phrase is "...point at which I will see performance degrade due to an overfull disk." Performance on the disk started to degrade when you started using the disk! Every time you use a disk block, the system must keep track of where the unused blocks are. As the disk fills up, the system must devote more of its time to storage allocation. (Of course since VMS caches much of that information, the task isn't as noticeable as with some operating systems.) How much of that time is acceptable is a subjective judgement. On our system, I start noticing a slowdown at about 85-90% of capacity.

Jonathan M. Prigot
W.R. Grace & Company
55 Hayden Avenue

Lexington, MA 02173
617-861-6600 x2148

Note 850.0 VAX 11/750 As a Satellite LAVC Member 1 reply
"Offline Submission" 16 lines 13-DEC-1987 20:48

Digital's official line is that a VAX 11/7XX cannot boot across the Ethernet and so a VAX 11/7XX must be the boot member in an LAVC. However, I have heard rumors that you can boot a VAX 11/7XX over the Ethernet by hand via the console subsystem. Does anyone know which console commands you would use for a VAX 11/750?

Per Hvid
Storno
Midtager 20
2605 Broendby
Denmark

Telephone: 2455544

Date: October 12, 1987

Note 850.1 VAX 11/750 As a Satellite LAVC Member 1 of 1
"JIM PALMER" 13 lines 15-DEC-1987 20:08
-< DEC can do it! >-

We have been wondering about that very same issue. (See notes 741.* and 569.*)

Last week I was able to pose the question to one the VMS developers at the Anaheim DECUS. He says that not only is it possible but they do it internally at DEC all the time!. However the bootstrap mechanism was not his area of expertise and could not pass on the actual mechanics of such.

JIM PALMER
3 BROOKDALE
IRVINE, CA. 92714-3338
(714) 458-3028

```
================================================================
Note 852.0     How to obtain a LAT port name/number      1 reply
"Jack Patteeuw"                       16 lines  15-DEC-1987 08:36
----------------------------------------------------------------
```

From the SYSTEM account on the DECUS cluster :

```
answer: .BLKB   34
        .
        .
        .
        QIOW_S  CHAN=mychannel, -
                FUNC=<IO$_TTY_PORT!IO$_LT_READPORT>, -
                P1=answer,-
                P2=#34
```

The first byte of "answer" is the count for the string contained in the following 16 bytes. The 18th byte is a count for the string contained in the last 16 bytes.

This **WILL** be supported in V5.0 by GETDVI.

Jack Patteeuw
Ford Motor Co.
Electrical and Electronics Division
31630 Wyoming
Livonia, MI 48150
313-323-8643

```
================================================================
Note 852.1     How to obtain a LAT port name/number      1 of 1
"John D. Ferriby"                     10 lines  17-DEC-1987 00:17
         -< Still more info on the LAT subject... >-
----------------------------------------------------------------
```

Can't say I've needed to find it, though it could definitely be a useful feature.

As for the bits and bytes aspect, that info. is kept is the extension to the UCB for the particular LTx device. Of course, SDA only formats as far as UCB$S_LENGTH, but if you were to redefine the symbol to extend further, you will notice the tel-tale information. I have yet to see the definition for the UCB extension for LAT terminal devices, has anyone else?

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John D. Ferriby~r
{
2871 Troy Centry
{#2010
Troy, MI 48084
(313) 362-2595

```
================================================================
Note 855.0        Hook into VMSMAIL send function        1 reply
"Mark Nichols"                          3 lines  16-DEC-1987 18:17
----------------------------------------------------------------
```

Can anyone direct me to a bit of documentation or a code fragment explaining the "undocumented" MAIL> SEND to: XXX% hook in VMSMAIL?

Mark Nichols
Standard Wire and Cable Co.
2345 Alaska Ave.
El Segundo, CA 90245
213 536-0006

```
================================================================
Note 855.1        Hook into VMSMAIL send function         1 of 1
"John Osudar"                           17 lines  16-DEC-1987 19:14
                -< foreign protocol interface >-
----------------------------------------------------------------
```

Look on recent (Spring 1985 or later) VAX Sigtapes for Kevin Carosso's UUCP mail submission; he figured out the "foreign mail protocol" interface, which is otherwise undocumented (except in the MAIL code). Basically, when you use xxx% in front of an address, MAIL looks for the logical name MAIL$PROTOCOL_xxx and if that exists, it uses LIB$FIND_IMAGE_SYMBOL (RTL routine) to map the image into MAIL's address space. If the logical does NOT exist, MAIL looks for the image SYS$SHARE:xxx_MAILSHR.EXE and maps it. (If that's not there either, MAIL gives you an error message and gives up.)

The image that's mapped by MAIL must have a list of entry points defined; Kevin's code documents this list quite well. It's not a trivial task to implement a foreign protocol interface, but it definitely CAN be done -- I've seen several different ones. MAIL also allows delivery in the other direction, using the (undocumented) /PROTOCOL= qualifier on the MAIL command to

initiate delivery.

John Osudar
Argonne National Laboratory
9700 S. Cass Ave.
Bldg. 205 A-051
Argonne, IL 60439-4837
(312) 972-7505

```
================================================================
Note 858.0              Just got SPEARed              10 replies
"G. Del Merritt"                    16 lines  21-DEC-1987 17:54
----------------------------------------------------------------
```

II just had the pleasure (?) of a visit from field service, who happily gave me VAXsim, SPEAR, and a small grey/tan box called a Remote Services Console. Merry Christmas, I suppose. I must admit that I wish they made the RSC rack mountable - maybe I'll move it under the raised floor. Just more clutter on top of the cabinet...

I haven't hooked it up to a modem yet - maybe I will when I get a problem that seems to warrant it. I do have a question about the change that SPEAR wants to SYSTARTUP. Does running WHYBOOT just do what I would hope? i.e., just take a look at the errorlog to see why the system booted? or will it actually affect my system's startup in some way?

By the way, didn't the way the SPEAR KITINSTAL built itself an account kinda' stilted? (and did you go through SPEAR's Instruction feature? amazing!)

G. Del Merritt
55 Walkers Brook Drive
Reading, MA 01867


```
================================================================
Note 858.1              Just got SPEARed              1 of 10
"Brian Tillman, Smiths Industries."   8 lines  22-DEC-1987 10:56
        -< Our SPEAR isn't uncomfortably embedded. >-
----------------------------------------------------------------
```

Our copy of SPEAR was installed by Field Circus, so I don't know what they went through to do so. As far as the SPEAR account, on our cluster it is a very normal non-privileged account. WHYBOOT hasn't changed how our VAXen boot or what happens at startup.

Brian Tillman
Lear Siegler, Inc.
4141 Eastern Ave. MS121
Grand Rapids, MI 49518-8727
(616)241-8425

```
================================================================
Note 858.2              Just got SPEARed              2 of 10
"Jonathan M. Prigot"                 9 lines  22-DEC-1987 15:49
                        -< WHYBOOT-20 >-
----------------------------------------------------------------
```

We have not "bounced" our system since SPEAR was installed on the VAX, but if it is anything like SPEAR on the DECsystem-20, WHYBOOT will prompt the operator as to the reason for the reboot (hardware problem, software problem, power fail, etc.) The reason given is factored into the system uptime calculation. I hope that WHYBOOT is smart enough to time out and continue the system boot if we have a momentary power fail in the middle of the night!

Jonathan M. Prigot
W.R. Grace & Company
55 Hayden Avenue
Lexington, MA 02173
617-861-6600 x2148

==========

Note 858.3 Just got SPEARed 3 of 10
"Bob Hassinger" 8 lines 22-DEC-1987 17:21
-< No problems here... >-

Field Service also recently installed SPEAR on our 750. Just noticed today after a crash I got a series of lines on the console during bootup listing possible reasons for a shutdown and asking for input. When I did not responded it timed out (seemed like 10 or 15 seconds) and everything seemed to carry on as usual.

Bob H

Bob Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkinton, MA 01748
617-435-9061

==========

Note 858.4 Just got SPEARed 4 of 10
"JIM PALMER" 25 lines 23-DEC-1987 18:01
-< Making auto WHYBOOT entry >-

DEC field service has also installed SPEAR on our systems. After DEC left, I did the following:

1) Removed the spear account. (No reason to have it, the FIELD account is just fine for FS to run from).

2) The WHYBOOT program puts a time stamped entry in the system errorlog file. I have a layered product installation standard that I follow for all our machines. When the SPEAR facility is executed, the following code runs.

```
$       assign/user sys$input sys$command
$       run sys$daderoot:[spe]whyboot
SCHED
$
$       exit
```


Thus, we make an entry automatically at reboot time. So far, I have not found making a manual entry a boot time worthwhile.

JIM PALMER
3 BROOKDALE
IRVINE, CA. 92714-3338
(714) 458-3028

==========

Note 858.5 Just got SPEARed 5 of 10
"Jamie Hanrahan" 20 lines 23-DEC-1987 21:26
-< On the first day of Christmas, Field Service gave to me... >-

---

I just had the pleasure (?) of a visit from field service, who happily gave me VAXsim, SPEAR, and a small grey/tan box called a Remote Services Console.

Haven't seen SPEAR or an RSC here yet. But when they came out a few months ago to give us VAXsim, I said, "Leave me the tape in case we need to rebuild the system disk." (We do this sometimes.) They said, "We can't do that; it's DEC's property." I thought, hmm, they can install the software on my system disk but they can't leave me the media they brought it in on. Right. Next they'll tell me that once VAXsim is installed, making a backup copy of my system disk is illegal. I said, "Sorry, but I have to have the original distribution media on the shelf for anything that's on the system disk."

They went away. My system is running quite happily without VAXsim, thank you.

Perhaps this is why we haven't seen SPEAR or an RSC.

Jamie Hanrahan
Simpact Associates
9210 Sky Park Court
San Diego, CA 92123
619-565-1865

```
================================================================
Note 858.6                Just got SPEARed                6 of 10
"Jonathan M. Prigot"                12 lines  24-DEC-1987 09:03
                  -< Uptime calculations >-
----------------------------------------------------------------
```

that I follow for all our machines. When the SPEAR facility is executed, the following code runs.

```
$       assign/user sys$input sys$command
$       run sys$daderoot:[spe]whyboot
SCHED <*****
$
```

Just remember that if all your reboots are shown as due to SCHEDuled shutdown, then they do not count against system downtime. I am sure, however, that if your system does crash, you can manually run WHYBOOT to make the appropriate entry.

Jonathan M. Prigot
W.R. Grace & Company
55 Hayden Avenue
Lexington, MA 02173
617-861-6600 x2148

```
================================================================
Note 858.7                Just got SPEARed                7 of 10
"Kevin Angley"                      22 lines  28-DEC-1987 11:29
                            -< W >-
----------------------------------------------------------------
```

VAXSIM is pretty neat ... it is errorlog at a glance with some automatic notification features. I couldn't live without it on my cluster.

As for not letting you keep the distribution tape, you should at least be able to copy it via OPTIONS G in VMSINSTAL. If they won't sit for that, call third party maintenance in for quote, just to shake 'em up a bit.

As for SPEAR, I have had it for over a year, and it has never done anything useful to my knowledge. As best as I can figure, you can tell it that the system went down at 10:00 and came back up at 11:00, and (miracles of miracles), it will tell you the system was down for an hour. I think it does something else, but I've never seen it help me out any.

Delete the SPEAR account anyway. As previous note said, FIELD works good enough. That is, assuming you have a field account. I don't. These people have real names (even those in Colorado) so they have named accounts (copied from FIELD with individual passwords - ergo, individual responsibility).

Kevin Angley
3301 Terminal Drive
Raleigh, NC 27604
(919) 890-1416

```
================================================================
Note 858.8                Just got SPEARed                8 of 10
"Saul Tannenbaum"                    8 lines  28-DEC-1987 18:36
                  -< Speared, the past tense >-
----------------------------------------------------------------
```

I have SPEAR on my system. A cute toy, but I feel much more comfortable with ANALYZE/ERROR myself. Interestingly enough, SPEAR, while installed, doesn't run anymore. "Why not?," I asked my trusty field service person. "Well," he said, "when we install it, we have to give it an expiration time, for when your Field Service contract expires." Of course, he didn't have the documentation with him on how to extend your expiration date.

Saul Tannenbaum
Tufts University
HNRC
711 Washington Str.
Boston, MA 02111
(617)556-3346

Note 858.9 Just got SPEARed 9 of 10
"Bruce Bowler" 13 lines 29-DEC-1987 08:53
-< Try software services >-

I said, "Leave me the tape in case we need to rebuild the system disk." (We do this some- times.) They said, "We can't do that; it's DEC's property."

Jamie, you might try back-dooring it as it were, VAXsim is an orderable product (Q*060) and once you have the latest version of a product on your system *legitimately* (through field circus is OK), you can put it on your software contract. You get new versions through SDC (faster than trough FS, but not much). Complete DOC sets, media, etc.

Bruce Bowler General Electric

Bruce Bowler
General Electric
1 River Road
Bldg 2 Room 609
Schenectady, NY 12345

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- 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.

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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.

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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)

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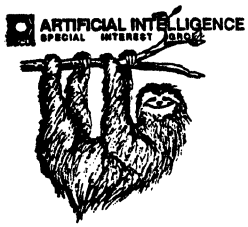

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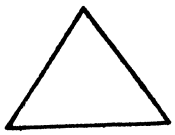

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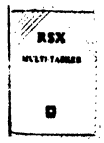

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The purpose of HARD NEWS, the HMS SIG newsletter, is to serve as a forum to share information related to DEC hardware with the members of the SIG. As such, the existence of the newsletter is entirely dependent on your contributions. If you have an HHK item, a better or safer way to do something, product news, a tutorial article of general interest, etc., we would like to publish it in the newsletter. We hope that HARD NEWS will 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 or MCI Mail account 333-1675. You can reach the editor via EasyLink mailbox 62960090 (be sure to say ATTN: or TO: Carmen Wiseman somewhere in the body of 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.

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H M S S I G

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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 U.S. Department of Defense.

Languages & Tools SIG

WISHLIST QUESTIONNAIRE

Name: _____ **Title** _____

Company: _____

Address: _____

_____

_____ **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):

☐ 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

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. _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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:

JUDI MANDL
UCONN HEALTH CENTER
263 FARMINGTON AVENUE, BLDG. #19
FARMINGTON, CT 06032

Title: _____

Message: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Your Name: _____

Address: _____

_____

Telephone: _____

If this is a reply to a previous DATAGRAM, what #? __

Signature: _____ **Date:** ____

Place
Stamp
Here

JUDI MANDL
UCONN HEALTH CENTER
263 FARMINGTON AVENUE, BLDG. #19
FARMINGTON, CT 06032

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

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

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 - February 1988 - Volume 9 Number 7
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 Spring 1988 SIR Ballot

DECUS membership number _____ (six digits)

Our site uses the following VAX cpus (check all that apply)

8700/8800 ____	86nn ____	85nn ____
11/780,11/782,11/785 ____	11/750 ____	83nn/82nn ____
MicroVAX I,II ____	MicroVAX 2000 ____	11/730,11/725 ____
		MicroVAX 3n00 ____

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 April 8.

PAGESWAPPER - February 1988 - Volume 9 Number 7
VAX Systems SIG Spring 1988 SIR Ballot

Tear out or photocopy reverse to vote on SIRs

Mark D. Oakley
Battelle Columbus Division
Room 11-6008
505 King Avenue
Columbus, Ohio 43201-2693
USA

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DEC	P/OS	VAXcluster
DECmail	PDP-11	VAXELN
DECnet	PRO	VAXlab
DECSYSTEM-20	Q-bus	VAXMATE
DECtape	Rdb	VAXsim
HSC50	ReGIS	VAXstation
IAS (et.al)	RSTS	VAX/VMS
J-11	RSX	VMS
KA10 (et.al)	RSX-11M	VT50 (et.al)
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