

UNIVERSITY OF MINNESOTA COMPUTER CENTER  
Deadstart Systems Newsletter

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Send all comments, criticisms and contributions to the editor: T.W. Lanzatella  
University Computer Center, 2520 Broadway Drive, Lauderdale, MN 55113

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NOTICE OF CHANGES TO THE SYSTEM

Marisa Riviere repaired a problem in the VERIFY portion of her paper-saving modification UNPAGE. Part of the modification had been accidentally deleted during the conversion to level 11.

Bob Williams changed the default initial values for several parameters in the MODVAL VALIDUZ file entries. The parameters altered are CS, FS, TT, DS and FC.

Brian Hanson installed his proposed enhancement to LDR which permits loading overlays by name rather than by number alone (see DSN 2, 23 p. 5).

Bob Zalusky repaired a problem in the DSD DIAL command in which the TELEX header message was restored to the system title if a DIAL command was issued to a terminal with output in progress. Bob also installed the following new features.

1. The CATLIST command now allows a PL parameter. This option functions identically with the PL option on all other permanent file commands, i.e., PL=packnam implies UN=LIBRARY and PN=packnam.

2. Program SET was modified to allow an additional parameter on all equipment entries in the CMRDECK which are non-mass storage or non-tape equipment. The additional parameter specifies the value of bits 6-8 of the EST entry. This change was installed to accommodate the EST entry required to specify a PDP-11 which is also a multiplexor (TT).

3. Dayfile message limit and control card limit error processing was altered to provide a 10-line (card) reprieve before aborting the offending job.

Bill Elliott contributed the following modifications.

1. Bill's proposed changes to the CPM VALID function were installed (see DSN 2, 23 p. 3). CPM function 40 (VALID) will recognize 3 flags in the lower 18 bits of the second word of its call block.

<u>BIT</u>	<u>MEANING</u>
0	Do not check password (formerly the only use of the field).
1	Return only the UI or zero, no password check.
2	Do not abort on account closed (COPE clear).

ACCFAM continues to call VALID with this 18 bit field zero, thus no change in account card processing has been introduced.

2. The last vestiges of the FS (file security) parameter were removed from the permanent file commands.

3. The SUN (set user number) command (SYOT only) was altered to call the VALID function with bit 1 set rather than UFM function 3. This function will soon be phased out.

4. Bill repaired an intermittent I/O sequence error in SUBMIT arising when submitting a system origin job.

5. The proposed enhancements to the arithmetic mode error messages were installed (see DSN 2, 23 p. 3).

6. Bill's proposed change to password entry was installed in PFILES, SUBMIT, ACCFAM and MODVAL (see DSN 2, 23 p. 3).

Kevin Matthews repaired a bug in track limit processing which left the pause flag set if a job gets tracks after encountering a track limit.

Prior to level 10, two rollout requests were required to effect a timed event rollout; the first to set the event, the second to cause the rollout. After level 10, only one rollout request was required. Kevin removed a second rollout request from local code in ROLLOUT command processing overlooked during the level 11 conversion.

Readers will have noticed in the previous two Deadstart Systems Newsletters (DSN 2, 22 p. 3 and DSN 2, 23 p. 8) the extensive discussion of usage statistics gleaned from the Account Dayfile. In line with this discussion, Kevin has altered or added several features to the usage statistics code he maintains in the system.

1. System program load message code (ZLSY) is now part of Kevin's PMS modification and can be turned on or off with PMS bit 2. Kevin also repaired this code so that messages are not duplicated (an ancient bug).

2. Code to issue a new Account Dayfile message ZLLF was installed. The ZLLF message will be used to count local file loads (ABS and 0,0 overlays only). This code is also tied to PMS bit 2.

3. Associated with the above two changes, Jim Mundstock changed CALLPRG so that a ZLCP message will not be output for programs not in the system.

Tim Salo provided a new version of the program PDP. New features include:

1. Enhanced error messages.
2. Error messages are displayed on the P-display while the program waits for operator intervention (GO or DROP).
3. Any PDP-11 can be loaded or dumped according to EST ordinal in addition to mnemonic.

Tim also repaired an assembly check in LBA which caused several LBA hangs in the recent past. Additionally, another fraction of the minicomputer terminal protocol was installed into SUPPIO.

N.L. Reddy fixed a bug in SUPPIO which prevents messages issued to 1004 terminals from destroying the current output file.

Bill Sackett discovered a bug in CIO in which the MS PRU limit in modval was not being enforced correctly. The problem was that CIO failed to include short PRU's and was off by one track in every write in calculating PRU's allocated to a job.

Installing a correction to this problem produced several complaints from MERITSS users who routinely exceeded their MS limit. The correction will be transparent to MIRJE users since all MIRJE users still have MS=77 (unlimited).

H. Byun supplied the code necessary for automatic scheduling of maintenance jobs. This feature was first proposed by N.L. Reddy in DSN 1, 4 p. 4 (June 1975). The package installs a new DSD command ENABLE/DISABLE MAINTENANCE and includes a new overlay for the job scheduler 1SJ. Further changes to the package are forthcoming since the mod is not yet to CODING specifications and several features such as ECS testing and altering scheduler interval are not yet installed.

The operator controls the running of maintenance jobs with the ENABLE/DISABLE MAINTENANCE command. If MAINTENANCE is enabled, one of five routines (MY1, ALX, RAN, CUL or CT3) is run every five minutes. If the resources (memory or control point) are not available, the scheduler waits for five minutes before scheduling again. Each maintenance job runs for 10 seconds and if no hardware problems are found drops out. Maintenance jobs run at CPU priority 2.

#### PROPOSED CHANGES TO THE SYSTEM

Access to the Control Statement File - by B. Zalusky

I would like to once again allow the Attach Control Statement File function to users. CDC removed it in level 10 to combat a bug allowing random disk reads. The fix I would like to invoke is to set the PP Drop files bit whenever someone attaches his control statement file. Currently a 74 ID is placed on the file for use with the CALL command and SETID will not allow action on a library type file. In this way, a user could not prevent it from being returned at the next job step.

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Three Proposals - by B. Elliott

1. I would like to consider the possibility of moving hour update code to MTR thus freeing precious resident area in DSD.

2. I would like to install modset 9CVC021 from Naval Air Defence Systems. This mod changes PFM to allow GET, REPLACE, SAVE and APPEND to use a central memory buffer when selected in the FET of the calling program. The presence of the CM buffer is flagged by setting the sign bit of the IN pointer. When this is done, (IN)=FWA of buffer and (OUT)=length of buffer. This method allows many more PRU's to be transferred (currently, PFM can process only 8 sectors at a time). With a CM buffer of modest size (10K), 100 sectors can be processed at a time reducing the number of channel requests and real time taken to effect the transfer. CM buffers would not be used for execute only files with a GET command.

3. I would like to install modset 9CVC046 from NADS which enables CATLIST to display the amount of free space remaining on a removable pack device in the CATLIST report. This option should be useful to private pack owners who have no way to find this out currently.

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DO RE MI - by R.A. Williams

DO (Kneaded for making bread.)

RE (In regards to.)

MI (Along with MA, parameters on the TELEX RUN and RNH commands and the subject of this proposal.)

The field length TELEX schedules jobs with is quite important as it impacts the users in two highly critical areas. First, an improper field length can lead to frustration and confusion for the novice user and, second, scheduling with high memory requirements causes poor response time and system inefficiencies for all. As in many cases, the two goals are not compatible, and a compromise must be struck. (e.g., If all jobs are scheduled with 55000g, the maximum time-sharing field length, the number that abort for lack of enough core will be minimized, but efficiency and response time are hampered as a result.)

As a result of a combination of local mods and CDC code, the MA and MI parameters on the RUN command work in a mysterious way. MA is equivalenced to the absolute field length this run is to be scheduled with, while MI is equivalenced to the amount of memory to be added to that which is calculated by TELEX for scheduling. The current system compares this number to the previous maximum field length used and schedules the run with the greater of these values. Perhaps an example is in order?

GAME, CHESS	Assume just logged in
RNH, MA=31000	Runs with 31000g
RNH, MA=26000	Runs with 31000g
X, RFL, 20000	Resets field length
RNH, MA=26000	Runs with 26000g
RNH	Runs with 55000g, the calculated value

This brings up the question of how the calculated values are arrived at. For most subsystems, the minimum needed for a simple compilation is added to a multiple of the length of the file. The PASCAL subsystem uses a constant scheduling value of 55000g while EXECUTE runs pose a problem. If relocatable, the file size is not likely to reflect the core requirements as library routines must be added by the system. Absolute program files, ignoring blank common, have a direct relation between length and memory needed.

I propose three specific changes:

1. Lower PASCAL field length scheduling value to 52000g. This has been suggested by the PASCAL people.
2. Compute EXECUTE field lengths assuming them to be absolute files with no blank common. The novice can use MA and MI to determine the proper memory size for their file through trial and error. In the worst case MA=55000 may be used and the loader will reduce before execution, not so for absolute.
3. Fix MA and MI operation so that at each RUN or RNH command the parameters are used absolutely, independently of any previous values. The integrity of the last RFL will be maintained for X, use.

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Please STOP It - by R.A. Williams

Several times, for one reason or another, TELEX has been STOPped in place of MAGNET on the 6400. It is aesthetically displeasing but practically desirable to implement some safeguards in this area.

Many possible solutions of varying degrees of difficulty exist.

1. MAGNET could be changed such that it rolls out or drops when there is no tape activity.
2. The termination command could be unique for each subsystem either by:
  - a. STOP for TELEX, HALT for MAGNET, etc.
  - b. The syntax could be redesigned such that:  
STOP,TELEX.  
STOP,MAGNET.  
should be used.
3. A certain control point number that is very different from 1 could be required for MAGNET.

SYSTEM MAINTENANCE: People and Procedures

Last Week's Systems Group Meeting - by T.W. Lanzatella

1. Larry Liddiard spoke on the results of the recent CYBER bench-marking performed to determine hardware and software bottlenecks in the 6400. A set of notes with conclusions is available from TWL.
2. Larry also described our disk equipment acquisition schedule for the coming years.

January 1977	(3) 844-41
July 1977	(2) 7054-41, (6) 844-41
December 1977	(4) 844-41
July 1978	(2) 7054-41, (4) 844-41

3. The following proposals were accepted, rejected or relegated to the system strategy committee.

- a. Bill Elliott's CPM VALID function proposal was accepted (see DSN 2, 23 p. 3)
- b. Bill's proposal to enhance arithmetic mode error messages (see DSN 2, 23 p. 3) was approved with the following change. Rather than reference the hardware manual, the messages will refer the user to a writeup explaining mode errors. Marisa Riviere will produce this writeup.
- c. Bill Elliott's Secure Password Entry proposal was approved (see DSN 2, 23 p. 3). Someone pointed out that the proposal didn't consider the XMIT/SEND packages. We decided to consider XMIT/SEND separately. We also decided to limit the blanking sequence used by CHARGE to 10 characters.
- d. Bill Wells' NOTICE/NOTIFY proposal for automatically called procedure files was approved (see DSN 2, 23 p. 5). We all felt that there ought to be a way to effect immediate procedure file execution if AUTOBYE is not declared.
- e. Don Mears' proposal to install a P-register sampler (see DSN 2, 23 p. 5) was approved in principle but we could not agree on how use of the utility ought to be charged for. The System Strategy Committee will discuss the topic at their next meeting.
- f. Brian Hanson's proposal to allow LDR to load overlays by name as well as by number (see DSN 2, 23 p. 5) was approved.
- g. Brian's proposal for enhanced LDR error processing (see DSN 2, 23 p. 5) was approved.
- h. Brian's proposal to make LDR observe and enforce the LWA parameter was defeated as potentially non-upward compatible (see DSN 2, 23 p. 5).
- i. Brian's proposed DROP/NODROP File ID was relegated to the next System Strategy Committee meeting (see DSN 2, 23 p. 6).
- j. N.L. Reddy's proposal for a no-reload option on permanent file commands (see DSN 2, 23 p. 6) was defeated. John Strait proposed an alternate method which will be described later.

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#### Testing a Disk Drive - by K.C. Matthews

When one disk drive is down, the system is normally deadstarted with that device in OFF. In KRONOS 2.1.2, however, only removable devices can be OFF. This is why the broken device is declared as removable. On days like this, the CDC engineers often fix the drive during the day. Then they like the system to run its mass storage test on that drive to see if the device does work. A scratch pack (or the engineers' pack) must be initialized as a removable pack, and then the program MST must be run on a file on that pack.

Before a removable pack can be used in our system, its name must be in the file RESEXES which is used by RESEX. RESEXES contains the names of all removable packs so that misspelled pack names (PN=STX for PN=STF) don't go into the queue waiting for a removable pack. One spare packname, "TEST", is always kept in RESEXES. So when a scratch pack is initialized for a mass storage test, it should be given the name TEST.



This is done as follows:

1. Mount the scratch pack on the drive, but do not start it yet.
2. Enter the initialize command from the console. The equipment number for the device which is down is initialized. Be careful! Initializing the wrong equipment is disastrous. Example: If the down drive was called equipment 6, enter  
INITIALIZE,6,AL.
3. If REMOVABLE PACKS are disabled, enter  
ENABLE,REMOVABLE PACKS.
4. Start the drive.
5. Within a minute, CMS will come to a control point and ask for the K display; bring up the K display and enter  
K.PN=TEST,TY=X.  
K.GO

The device initialization takes a few seconds. Then, in the E,M display, TEST should show up as a removable device on the correct equipment.

Then call the procedure TESTMS which will begin a mass storage test on device TEST. The control statements in TESTMS are

```
SUI,377777.  
DEFINE,DISK  
ONSW(3)  
MST(N=70000).
```

This procedure is executed by entering  
X.CALL(U(P=TESTMS))

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CALLPRG and Library Tape News - by M. Riviere

In addition to the modifications already described in the previous DSN the following changes took place among CALLPRG packages:

Mike Frisch introduced a Bessel function package, BESPACk. There are two versions of BESPACk, FETCH (FTN4 compatible) and PAST (FTN 3 compatible). Mike has a rough copy of BESPACk documentation available for anyone who is interested in looking at it.

S. Yen introduced a future version of the on-line SPSS package (SPSSONL) and updated the FUTURE,SPSS package to version 6.5.

I reassigned almost all of Dennis Lienke's files to Kevin Fjelsted since Kevin is now taking Dennis' job. Dennis decided to keep maintaining POLISH and DRESS.

J. Strait added a future version of ARCHIVE where he corrected a bug in incremental dumping.

On the Library Tape, a modification took place to FT3LIB at the request of Mike Frisch. Mike added the plot routines PLOT3D, QKTR32, QKDRCL, QKDARW and QKCH3D. The same additions were made to FUTURE,FORTRAN.

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Cyber 74 Deadstart Dump Analysis - by K.C. Matthews

Friday, 17 December, 1976 - Sunday, 9 January, 1977

Monday, December 20

01:27 There were problems with a PDP-11 link which was broken that day. A PP hung and was dumped to the printer during these problems. We have no record of what was in the PP or who got the dump.

Thursday, December 23

13:30 (DD-15)  
1BA hung at EXPORT's control point. This was the first day of running a new deadstart tape, and 1BA had been changed. After a few more hangs like this, it was determined that 1BA went bad for certain job card errors, and the old version was reinstalled.

Monday, December 27

21:05 (DD-16)  
The scopes blanked. A whole 10000B words from one PP were written into central memory starting at address 57B. We suspect our old PPU problem. There are still some interesting things that might be investigated on this dump by any volunteers.

Tuesday, December 28

13:48 (DD-17)  
1BA hung again.

Wednesday, December 29

22:56 (DD-20)  
1BA hung again. Also, the system was not even up until 11:23 because of a failure in the DD-60 console.

Thursday, December 30

09:10 (DD-21)  
1BA hung again.

Tuesday, January 4

12:03 A Level 0 deadstart was done because 844 drive 5A went bad. It had been powering itself off intermittently.

Wednesday, January 5

09:57 A level zero was performed because drive 5A was solidly down. It had given problems all morning.

Thursday, January 6

11:25 (DD-2)  
Tape channels 33 and 12 hung. They were working on a tape that seemed to be giving problems.



18:22 (DD-3)  
CIO hung at a control point during an UPDATE run. The problem is  
reproducible and is being investigated.

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6400 Dump Analysis - by R.A. Williams

<u>DATE</u>	<u>DESCRIPTION</u>	<u>TAPE</u>
761228	A chair touched the console and CIO hung for unknown reasons, possible ground problem.	DDT-11
761229	The scopes went blank because the CPU had exchanged to word 0 for unknown reasons.	DDT-10
770106	TELEX was dropped in place of MAGNET when keyboard problems made data entry difficult.	N.A.
770106	The scopes went blank and a PP with ITO in it hung on a drop PP monitor function at the same time. A chair may have touched the console as well.	DDT-7