

UNIVERSITY OF MINNESOTA COMPUTER CENTER
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TABLE OF CONTENTS

NOTICE OF CHANGES TO THE SYSTEM.....	1
PROPOSED CHANGES TO THE SYSTEM.....	2
WRITEUP - D. LaLiberte.....	2
EXECUTE ONLY FILE SECURITY - B. Hanson.....	4
PEOPLE AND PROCEDURES.....	4
LAST WEEK'S SYSTEMS GROUP MEETING - T. W. Lanzatella.....	4
SYSTEM STRATEGY MINUTES - T. W. Lanzatella.....	5
CALLPRG AND LIBRARY TAPE NEWS - M. Riviere.....	7
CYBER 74 DUMP ANALYSIS - K. C. Matthews.....	7
6400 DUMP ANALYSIS - R. A. Williams.....	9

NOTICE OF CHANGES TO THE SYSTEM

N. L. Reddy reinstalled all the modifications in the system which cover double density disk implementation as a single modset.

Tim Salo restored the SBSP account file message in lBA. This message is used when a job output file prints on a day other than when the job ran.

Bob Zalusky contributed a final version of LISTVAL. The only change to this version is a restructured main program.

E. J. Mundstock repaired a scheduling problem in BATCHM.

Jeff Drummond repaired a bug in LIST80 which was garbling some data in the COMPASS symbol table listing.

Bill Elliott submitted the following modifications.

- 1) Bill repaired the COST utility to account for MSPRU overflows by using a spare word in the control point area as a MSPRU counter overflow counter.
- 2) Bill fixed a long standing problem in PFILES where an extra blank message was output for RESEX type errors like ILLEGAL USER ACCESS and DEMAND EXCEEDED. This bug caused much confusion to time sharing users.
- 3) COMSEXF was reinstalled with some cosmetic changes.
- 4) Bill fixed a problem in MAGNET which was not updating the express file correctly.

Bob Williams discovered that TELEX field length has been creeping up recently because of a bug in the rotary check. Whenever a user logged in and received the message ROTARY FULL, TELEX logged off the user but forgot to drop the

POT's associated with the session.

Bill Sackett repaired a critical bug in CPUMTR where if a user executed a XJP with negative argument then CPUMTR moded out (mode 1). Bill also installed several critical PSR's from Control Data into CPUMTR. Bill converted the PSR's from NOS to KRONOS. In addition, Bill installed a hook in IRI/IRO for bad rollout files.

Kevin Matthews installed the proposed change to SET and ISF which allows the SYSPROC and KLUDGES suffix to reside in low core (see DSN 2, 18 p3). The CMRDECK entry used to identify the suffix is SID=.

PROPOSED CHANGES TO THE SYSTEM

Proposed Revisions to WRITEUP - by Dan LaLiberte

Reformatting:

WRITEUP will reformat a file designed for timesharing terminal (TT or LC) or lineprinter (LP) to be listed on either according to the following table:

output file type type	TT	LP
TT	--	copy shift
LC	--	copy shift + delete 76 codes
LP	strip carriage control chars and break lines at 72 characters.	--

The file type is indicated in the writeup index entry by including a TT parameter if the file is designed for timesharing terminal output, or a LC parameter if it is a TT file with lower case letters. Otherwise it is assumed to be a lineprinter file.

The printer type may be altered by the user with an optional PT parameter (PT=TT or PT=LP) on the WRITEUP control card. If this parameter is not specified then the printer type is derived from the type of the output file, i.e., if the output file is a timesharing terminal file then the printer type is TT.

Additionally, if the printer type is LP then each writeup file specified starts on a new page. However, subwriteups of indexed writeups only start a new page for the first one in the sequence. Note: An extra top of page will not be given if there is already a top of page in the writeup (on the first line).

Date:

D=yymmdd in the writeup index entry indicates the last modification date for the file.

D=yymmdd on the WRITEUP control card indicates that the user wants information modified only on or after that date.

\$D=yymmdd at the top of a record from an indexed writeup indicates the last modification date for that subwriteup.

If any of the dates are missing then it is assumed to be zero. These dates are used in three ways.

1. When the writeup INDEX is requested, only those entries with mod date on or after the user's date are listed.
2. Each writeup the user requests is only listed if the mod date is on or after the user's date. This applies to indexed writeups when no subwriteups are requested.
3. If subwriteups of an indexed writeup are requested then only those with mod date on or after the users date are listed.

This method of date setting implies the necessity for an easier way for the author of a writeup to change the last mod date in the index entries. This is discussed later.

Local WRITEUP testing:

WRITEUP first tests for a local file called WRITEUP to be used as the writeup index file. To use this facility, however, the user must say: \$WRITEUP, parameters.

WRITEUP Control Card:

The WRITEUP control card has the following format:

WRITEUP, names/options.

names: name1, name2, ..., namen
and each name_i is a writeup name
or name=sub1+sub2+...+subm
or name=*
(The last two forms only apply to indexed writeups.)

options: L=output file name
PT= TT or LP
D=yymmdd

WRITEUP Index and Maintenance:

The index should contain a description of what WRITEUP is and how to use it. When listing the index, two formats are possible corresponding to the two printer types. For LP, all information is displayed on one line for each writeup. For TT, the listing is broken into two parts, the first being just the file names and descriptions, and the second containing all the other info.

To help make modifications to the writeup index easier, an interactive program is (will be) available. It allows the user to add, delete, replace, or display entire entries. A user must be validated to use this program. Another feature of this program is to "retain" or "acquire" a writeup file on the YZE6000 user number from or to a local file which the user names.

The interanl format of the index should be suitable for easy use and modification. Thus I suggest the following:

NAME,{IA or DA},{IX if indexed},{TT or LC},D=yyymmdd,{other parameters}.
nnn nnn description...

Where the second card gives the number of pages, width and a description of the writeup in free format.

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EXECUTE ONLY FILE SECURITY IMPROVEMENT - by Brian Hanson

One of the easier ways to examine the contents of an execute only absolute file is to call LDR to load it. If it has several overlays all but the (0,0) overlay may be loaded where you desire and easily examined since the execution bit does not have to be set.

My proposal is simply to require the execute bit to be set for all overlay loads off an execute only file. Thus, if an overlay is loaded, it must be immediately executed otherwise LDR will not load the overlay and will abort the program. This would mean that even if a file was loaded so that it would abort and the main program had `EREXIT` set there is a greater chance that it would destroy part of itself or part of the main program.

Secondly, LDR loads with the new SCPL bit set (sub-control point load bit) would not be able to load (0,0) overlays and get control back, as it can now.

SYSTEM MAINTENANCE: People and Procedures

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

1. Bob Williams spoke about the significant slow down in the system after converting from level 7 to level 11. Overall, the system appears about 20% slower for the following reasons.
 - a) Loader statistics gathering.
 - b) The ITA scheduler overlay was on disk rather than ECS.
 - c) The routine LDC (load compiler), a frequently called program was on disk rather than ECS.
 - d) Permanent file commands are no longer handled by TELEX, rather, they are passed on to the batch system.
 - e) The symbol NROS in PPCOM (number of simultaneous rollouts) was set to a small number, but its meaning was also changed somewhat from level 7 to level 11.
 - f) The disk threshold for system files was 12.5% - now set to 3%.
 - g) PASCAL usage has increased by a factor of 5.
 - h) TELEX FL has increased to 30K. This may be due to a bug.
 - i) CALLPRG issues too many WRITERS.
 - j) ECS PP loads could be more efficient.
 - k) CPUMTR lacks several efficiency modifications.
 - l) We all admitted that the average user may have increased the amount of work he performs on the computer.

2. N. L. Reddy, E. J. Mundstock and S. P. Nachtsheim reviewed the VIM conference. Each has notes if you are interested.
3. Tim Salo's proposed change to the LOADPDP utility was approved (see DSN 2,20 p3) with the stipulation that a message flash on the B display if the operator chooses a non-PDP-11 equipment to load.
4. Kevin Matthews' proposal to enforce direct access permanent file size limits was approved (see DSN 2,20 p3). The range of the limit index in the VALIDUZ file, however was not determined.
5. Steve Nachtsheim's discussion of permanent file security tacitly proposed that we invent a new Access Word bit which validates accounting over to a specified number. We all agreed that such a validation would be handy.
6. L. A. Liddiard pointed out that the COST utility is not correct when the MSPRU counter for a job has overflowed. K. C. Matthews suggested that we take a spare word in the control point area and use it to count overflows.

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SYSTEM STRATEGY COMMITTEE MINUTES - by T. W. Lanzatella

From the meeting on Friday, 76/11/12.

1. R. A. Williams reported that mean time between failures on the 6400 has diminished to less than one day. K. C. Matthews agreed to spend additional time analyzing 6400 deadstart dumps.
2. T. W. Lanzatella reported on a new writeup file which documents changes to the KRONOS 2.1.2 operating system. The writeup is only 60% complete.
3. E. J. Mundstock has nearly completed modifications to CALLPRG which; 1) output messages to 6400 terminal users informing them that a requested file must be retrieved from the CYBER 74 and 2) delete excess WRITER's used for buffer flushing. This last change will improve TELEX response time when a user types an illegal control card.
4. User Services has approved the NODROP control card.
5. We attempted to discuss D. R. Lienke's proposed changes to the FETCH, FUTURE and PAST commands (see DSN 2, 19 p7) along with the use of compilerstrings to identify packages associated with specific products. The proposed format for the FETCH (similarly for PAST and FUTURE) command is:

FETCH(lfn₁=pf_{n1}, ..., lfn_n=pf_n /compilerstring).

- a) E. J. Mundstock objects to the use of the sequence FETCH(lfn=pf_n) since several CALLPRG packages are attached by a name which is different than the name mentioned on the FETCH command. The user would have no way of knowing whether or not the requested file was attached.
- b) We should allow multiple arguments on the FETCH (PAST and FUTURE) command, i.e., FETCH(lfn₁, lfn₂, ..., lfn_n), even though several of the requested files may reside on tape.
- c) The System Strategy Committee is perplexed over the use of compilerstrings.

We decided to delay discussion of this portion of the proposal until D. R. Lienke can be present.

6. Bill Wells was invited to attend this meeting to defend his proposal for a new GAME subsystem (see DSN 2, 10 p9).

a) Bill presented the following justifications for a GAME subsystem:

- 1) The COMBAT file is attached 11,000 times per day. The TANKWAR file is attached 4,000 times per day. The prospect for more interactive games which share files is considerable.
- 2) Each COMBAT execution amounts to five CIO calls, one PFM call and one TLX call. COMBAT also consumes 20K of central memory. Four of the above CIO calls could be eliminated if CPUMTR were able to perform REWINDS.
- 3) The ROLLIN/ROLLOUT activity of COMBAT jobs is particularly debilitating to the system. Up to nine people can play COMBAT at one time. If (say) six users must access the COMBAT file at the same time while the COMBAT file is busy, all six jobs will rollout. When the file is finally released, all six jobs will rollin with only one obtaining the file, the other five rollout. This process continues until each job has accessed the file. Any more than three COMBAT files rolling into central memory at a time forces (at the very least) any PASCAL job out.

b) Bill then laid out the general form of the subsystem.

- 1) The subsystem will run at control point 2 and consist of an executive with several subcontrol points. Each subcontrol point will service all I/O for a specific game.
- 2) Each game will be serviced every eight seconds by loading the game program to a subcontrol point and processing the queued requests.
- 3) Game workspaces will be kept in ECS.
- 4) The idle field length of the subsystem will be about 5K. The maximum field length will be about 30K.
- 5) The subsystem will communicate with TELEX by using the SIC function.

c) N. L. Reddy suggested that one way of dealing with the present ROLLIN/ROLLOUT activity of COMBAT would be to modify 1SJ (the scheduler) so that when several jobs have identical event descriptors only one of the jobs is rolled in rather than all the jobs.

d) K. C. Matthews suggested that a new permanent file mode be invented which would allow several users to have a single file in write (or at least modify) mode.

e) Kevin also suggested that PFM be modified so that when a job attempts to attach a permanent file which is busy then in addition to setting an event descriptor for the retry the queue priority should also be dropped.

- f) The recommendation of the System Strategy Committee is that Bill should continue to develop the subsystem but should not expect that it be installed in the production system without further demonstrating its efficiency and stability.
7. Bill Wells discussed briefly five new directives in NOTICE/NOTIFY which facilitate terminal control for automatically called procedure files.
- a) AUTOBYE - associating AUTOBYE with a NOTIFY procedure will limit the user to only secondary commands once the procedure has completed.
 - b) DISTC - this directive disables terminal interrupt control throughout the entire procedure file. This control is overridden by the regular DISTC, but cannot be cleared by the user.
 - c) NOREC - the user cannot recover.
 - d) PROCFIL - this directive indicates that the procedure file to be called is not on the NOTEFIL but in the users' permanent file catalog.
 - e) TURNOFF - the user cannot login.

We decided that these options were useful and that non-TXOT jobs should not be eligible for automatic procedure file execution.

8. The next meeting is scheduled for Tuesday, 30 November. D. R. Lienke will be invited to attend.

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CALLPRG AND LIBRARY TAPE NEWS - M. Riviere

On November 23, very few changes will be taking place among the Library Tape and the CALLPRG products. B. Hanson will be changing the routine PROCCPN on the PROCPAC sections of FT3LIB on the Library Tape and of FUTURE,FORTRAN in CALLPRG. The change consists of a small modification to the EREXIT macro contained on PROCCPN.

I will be replacing SYSLIB on the Library Tape with a version to which the relocatable versions of the two new common decks, COMCBDS (cycle a buffer through B display) and COMCCDW (convert day of the week) will be added. Also the relocatable version of COMCSYS will be recompiled to generate code for the SYS= entry to issue XJ instructions for system requests if the CEJ option is available. I will also be changing the Fetch type text, RELTEXT, that is associated with SYSLIB.

B. Zalusky's program HASH will be removed from CALLPRG since it is now an entry point in a Deadstart Tape program. The next Library Tape and CALLPRG index modifications will go into production on Tuesday, December 6. Modifications requested up to Thursday, November 26 by noon will be implemented on December 6.

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

Friday, October 29 to Thursday, November 11.

There are several strange things going on. Export hung a couple of times, but these hangs are obvious in the dumps. All the rest are strange dumps for which we have no solution. No solid hardware or software problem has been identified yet. Some things we have noted.

- (1) On several of the dumps, the whole lower bank of PP's seem bad. Each PP is executing something odd. Often it looks as if the wrong word has somehow been read from central memory. The CDC engineers have been unable to find any such problem, however.
- (2) In several of the dumps, it seems as if a PPU which had been executing correctly somehow jumped somewhere else in its code. Most often we suspect this when a PP which should be in its idle loop somehow began executing code. A cause of this could be a bad load of a program from ECS, Central Memory, or the disk.

Friday, 29 October

15:55 (DD-17) There was a CPU monitor error exit. This was caused by junk being stored in one word of the exchange package for the idle program. Also, PP-11, which contained 1SJ, was either bad or its input register had been clobbered - it was executing but no name was in the input register. Word 24 was also zero.

16:41 (DD-20) PP-11 (again)

A copy of IRI was requesting channel 27, the 808 channel. The problem was that channel 27 was already assigned to PP11. It looks like IRI went to read the system sector of a rollout file, but then somehow jumped into the code which requests the channel.

Sunday, 31 October

21:23 (DD-21)

The whole lower bank of PPU's was in bad shape. Word 24 was zero. This one looks like all the lower bank PPU's were reading central memory badly.

Monday, 1 November

18:43 (DD-2)

PP 0 (MTR) was destroyed by what looks like central memory. This may have been the result of a previous attempt at dumping the system. (The dumps are done in PP 0.) Words 75 and 77 through 106 in central memory all contained the packed date and time.

Thursday, 4 November

09:12 (DD-4) PP 30 hung, containing LDR.

It was trying to read a sector (502B PP words) at address 7000. It looks like the sector went to address 7400 instead. This wrapped around the end of memory and then clobbered the PP's direct cells in addresses 0 - 100. No solution to this one.

Friday, 5 November

15:25 (DD-5)

Export hung. The IHS memory was wiped out by other random bytes. Dump given to N. L. Reddy.

Saturday, 6 November

10:43 (DD-6)

The system simply hung. Several PP's looked like they were executing in strange places, including several copies of IMT. KCM and WJE still looking.

Monday, 8 November

18:02 (DD-7)

Export hung. IHS memory clobbered. Dump given to N. L. Reddy.

20:50 (DD-10)

The scopes went blank. No chance to look at the dump yet.

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6400 DUMP ANALYSIS - by R. A. Williams

<u>DATE</u>	<u>DESCRIPTION</u>	<u>TAPE</u>
761103	Someone walked across the floor to the tape unit and and the scopes filled with garbage. Some grounding cables have been tightened but more are inaccessible.	DDT-3
761105	Every key hit under DIS caused garbage on the scopes. DIS was dropped with only a HUNG PP message resulting - no PP was hung. Another DIS was brought up 30 seconds later and the scopes went blank. No clues.	DDT-14
761105	After a recovery from the above problem, the 6676 on channel 3 hung full - this has happened 3 or 4 times in the last few weeks under similar circumstances.	N.A.
761108	A PP supposedly containing TLX (or LOADING TLX) hung disconnected on 844 disk channel 6. The dump shows the PP to be wiped out with FNT and TRT from central memory.	DDT-12
761110	844 disk channel 6 hung as a result of function timeout errors on general status requests. This is likely the hardware problem that appears every 3-4 weeks.	N.A.
761111	An ISF (R=VALIDUZ) was done. Subsequent ISF (P=0) or ISF(E=VALIDUZ) requests aborted with I/O sequence error as VALIDUZ had been left busy (status Z). This happens randomly and used to happen on level 7 as well.	N.A.
761111	CIO hung disconnected on 844 disk channel 6. Investigation showed that the program had jumped into a subroutine, rather than return jumping. (When this dump was taken, it was discovered that the dump program doesn't function the tape unit for density, thus dumping at unit density setting.)	DDT-11
761112	A submit with the S (System Origin) parameter was done from DIS and QFM hung with a function 76 (illegal request).	DDT-10