## UNIVERSITY OF MINNESOTA COMPUTER CENTER
## Deadstart Systems Newsletter

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NOTICE OF CHANGES TO THE SYSTEM

Hesung Byun repaired an obscure bug in MODIFY which caused a mode 1 error if
*UPDATE was the only directive specified.  Hesung also installed a revised
MAINTENANCE subsystem in which the following changes occurred.

a.  Maintenance routines now run under a pass count rather than to time limit.

b.  Individual maintenance routines can now be disabled at deadstart time by
    specifying *MAINTENANCE,XXX,YYY,...,ZZZ.* in the IPRDECK.  The routines XXX,
    YYY and ZZZ will then be disabled.  All maintenance routines will still be
    disabled when *MAINTENANCE.* is specified.

c.  The ECS test routine (EC3) was radically changed and renamed to EC4.

Marisa Riviere repaired a bug in CALLPRG which caused XMIT type file requests from
the 6400 to bomb because of insufficient field length.  The CALLPRG working account
which is used on the Cyber to retrieve files for the 6400 is validated only for a
small amount of CM.  When a MF or FL parameter is specified on the CALLPRG index
entry, CALLPRG checks whether the user is validated for the specified memory.  This
check is now skipped for XMIT requests.

Don Mears corrected a problem in TELEX which could cause a hung port if a user
typed S during logout.

John Strait repaired a timing problem in COPYU which caused some page eject characters to be lost.

Brian Hanson shortened the LINK loader considerably by making the loader statistics code only conditionally assembled. Brian also removed from 1AJ the code which checks whether the LWA of the load exceeds the LWA specified in the LDR call block. This had been a temporary change designed simply to give us some idea of how often this happened.

Bill Sackett installed the following changes.

a.  Bill repaired a bug in TELEX which caused tape mode to be lost when an executing program requests input. This fix is from PSR summary 452.

b.  Bill repaired a bug in CPUMTR where if a memory decrease is requested without the no-reduce override flag in the RFL/MEM request and REDUCE(-) had been previously specified, then the requested memory is returned in the status word instead of the current field length.

c.  Bill repaired a bug in DIS where if a M-display was requested from DIS then a random CM word was getting bashed.

Jeff Drummond installed the following changes.

a.  CATALOG was altered to blank fill its B-display message rather than zero fill. The latter was causing colons to be printed by DSDSIM and by the TELEX B-display feature.

b.  ENQUIRE was corrected to properly display locally added file types.

c.  CPM processing of PACKNAM requests was corrected to avoid bashing the user's family EST ordinal.

d.  PFILES was modified so that PACKNAM,0. and PACKNAM,PN=0. work consistently. Previously, PACKNAM,PN=0. set the packname to nothing while PACKNAM,0. set the packname to 0.

e.  Jeff installed a new common deck COMSPIM which defines all of the PP instruction mnemonics.

PROPOSED CHANGES TO THE SYSTEM

Punch or Not to Punch - by T.W. Lanzatella

The KRONOS operating system allows for default treatment of certain files based on name only, like PUNCH, PLOTS, BINARY, BATCHER and P8. When a job ends, 1CJ searches for files with special file types and releases the file to the proper queue. Long ago (shortly after level 10), we added a new special file name called P9. Any file named P9 lying around at job end would be punched in 029 mode. This works because OBF assigns the punch file type to any file named P9 when it is created. This file name was reserved because we thought CDC had been careless and had forgotten to add the special file name since they had also added a new dispose code, P9, at level 10. On rereading the KRONOS manual and the programs involved, we found that CDC's intentions were clear; they never intended P9 to be a special file name. The dispose code P9 was provided simply as a way of manually overriding the keypunch mode specified in columns 79 and 80 of the job card.

Our implementation of P9 was incomplete in that DISPOSE still does not recognize the special file name P9. If a user attempts to execute DISPOSE(P9), the file P9 will be printed not punched. The user must instead execute DISPOSE(P9=P9) to obtain the intended results (a rather odd construct). I propose that one of two things occur:

a. P9 should be removed as a special file name, i.e., revert to stock CDC.

b. LFM should be modified to recognize P9 as a special file.

## //////////

Proposed Changes to the Systems Group Meeting - by D.W. Mears

Many times I have felt that there are serious problems with the current format of the systems group meeting. We seem to waste much valuable time (40 man hours/hour) having things read to us or quibbling over minute points. We frequently vote on issues not clearly understanding what is involved. My complaint is not with how well Tom and Larry run the meeting but with the format the meeting has evolved into.

If my SGM proposals are accepted we will be sure to, at least, waste time and be confused in a different, if not better, way.

1.  I propose that all attendees of the systems group meeting read the DSN proposals before coming to the systems meeting. Then TWL will no longer have to waste the time of those who have read the proposals by reading them to us.

2.  I propose that TWL not read the proposals verbatim. Before discussion, a very short description (one sentence) should be all that is needed unless the proposal needs clarification or unless specific points require addressing.

3.  I propose that the proposer have the option of chairing the discussion on his proposal since he is the one who is best able to respond to questions and suggestions. If TWL moderates, I feel that all questions and suggestions about a proposal should be directed towards the proposer rather than towards TWL.

4.  I propose placing a time limit on discussion of proposals. If an issue remains unresolved at the end of this time, we should place a list of pros and cons on the blackboard and take a vote. Too often trivial items (WRITEUP or CALLPRG parameters for example) have taken up much more time than they deserve.

5.  I propose not bothering to consider a proposal if the proposer is not present. Recent discussions of "X." and "SSORT" demonstrate the futility of discussing proposals when questions cannot be asked of the proposer.

6.  I propose that more information be placed in the DSN about why a proposal was accepted or rejected. I would like to see all the valid pros and cons for a proposal which were brought up.

7.  I propose that all the valid pros and cons of any point to be voted on be placed on the blackboard. I frequently have trouble remembering all the good and bad points brought up during discussion and I have trouble sorting the valid points from the invalid points. I am sure I am not alone.

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Expanded U-Displays - by D.W. Mears

I would like to write a small program which uses the K-display to give an extend-
ed explanation of the information in the DSD U-display. It would give an ex-
planation of all the fields in the terminal table, it would explain the reentry
queue entry/entries and it would display all the pots in use by the specified
terminal. Hopefully, it could also display some warning messages if the terminal
doesn't look right. This would help me figure out what is wrong with hung ports
more easily and it might help operators and those not familiar with the internals
of TELEX check out hung port problems. The control card is

<center>EXUD(TN)</center>

EXUD stands for explain U-display or extended U-display. TN is the terminal to look
at. The commands "U,ALL", "U,BUSY", "+", "-" would be allowed from the K-display
and would work as they do under the U-display. The characters "(" and ")" would
be used to page the K-display if a single terminal requires more than one page of
information.

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PT Equipment - by D.W. Mears

I would like to create a new equipment "PT" which would stand for the PDP11 for
TELEX. Equipment PT could be used for dumps and loads of the TELEX PDP11 (TT)
when TELEX is up similar to the way PQ is used to dump and load the Varian plotter
PDP11 (VP) when BATCHIO is up. This requires two changes. The PP program PDP must
be changed to recognize equipment PT, and 1TD must be changed to drop the channel
if the PDP11 goes kaput (and then request the channel again when TT is turned back on).

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6676 Emulation Gone Wild - by Don Mears

The 6676 has a switch which selects which lines are 30 cps and which are 10 cps.
I propose emulating this switch in the TELEX PDP11 program. I will define two as-
sembly constants R10CPS and R30CPS. All ports $\leq$ R10CPS will be 10 cps only. All
ports in $\{X | R10CPS < X \leq R30CPS\}$ will be 30 cps only. All ports above R30CPS will re-
main auto baud. In this way we can move users between the 6676 and PDP11 front-end
transparently. Clearly this is a kludge. The correct solution involves putting
the speed thresholds on the SPORT file, changing CPORT to process the speeds and
write them to the PORT file, writing a PP program for 1TD to call during preset to
read these values and changing 1TD to pass the values to the FEP and changing the
FEP to accept these values. I have no intention of doing it correctly.

///////////

PDP Record Type - by D.W. Mears

I would like to define a new record type - PDP. PDP=7300 appears to be the
next free record number before the U of M "DUMP" record type. This would allow
PDP11 binaries to be CATALOGed and GTRed (and perhaps even placed on the deadstart
tape).

At some time in the future the following changes should be made:

1. PAL (or its replacement) and DUMPPDP should generate binaries with 7700 and 7300 tables.

2. LOADPDP should recognize the 7700 and 7300 tables and pass the 7700 comment info to the PDP11 being loaded to be printed on the PDP TTY.

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PDP11's Are Computers Too - by D.W. Mears

I would like to create a PDPL which would be the OPL of PDP11 programs and common decks. Then, Tom could maintain the PDP11 mods similar to the MPL mods. I would like to send the PDP mods through code review to enforce coding conventions and to keep systems staff up to date as to what is changing with the PDP11's.

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Link Test - by D.W. Mears

Field Engineering needs a link test program which 1) produces hardcopy of any error, 2) will not hang the system even if the link is broken, 3) tests everything, 4) does not require continual access to the console, and 5) works.

To satisfy points 1 and 4, the test will run from TELEX origin if the system is in ENGR mode and the caller has the staff bit set. Ideally, there should be an engineering bit in the access validation word.

To satisfy point 2, the test will do single byte transfers and time out each byte and each function. This will prevent any channel hangs.

To satisfy point 3, there will be an option of doing block transfers via OAM/IAM instructions if the job is system origin. This requires system origin because the operator may have to disconnect the channel if it hangs. The alternative is to use two PP's during the block transfer test. The second one would disconnect the channel if it detected that the first one was hung.

The format of the LNKTEST control card will be:

LNKTEST(params)

| | |
|---|---|
| ME=nnn | nnn=number of memory banks |
| L=lfn | lfn=output file |
| RP=nnn | nnn=number of times tests will be repeated |
| RT=nnn | nnn=number of retries on an error |
| MO=x | x=mode |
| | =0   coded |
| | =1   binary |
| K | Use K-display |
| TL=xxx | xxx=length of transfer |
| A | Abort on errors |
| T=TESTS | TESTS=any combination of: |
| | F=function test |
| | S=single word transfer |
| | B=block transfer |
| | R=BA/WC register test |
| | A=accuracy test (write 3 words, write 2nd word, read 3 words) |

For F and R tests, a small program will be sent to the PDP11, to aid in testing.

FS          Use full speed OAM/IAM on block transfers.

SYSTEM MAINTENANCE:   People and Procedures

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

a.  Larry Liddiard reported that new hubs have been ordered for two nine-track drives (60 and 61).  Larry also reported that the new 512 printer is beyond repair and that a new 512 was swapped in.

b.  The following proposals were rejected or accepted.

1.  Jeff Drummond's proposed changes to COMPASS were only partially accepted. Pass numbers will be displayed on the B-display but further research is needed before we can lower COMPASS' MFL= entry point (see DSN 3, 17 p. 2).

2.  Jeff Drummond's proposal to add a packname parameter to the SUI and SUN commands was rejected as a spurious recreation (see DSN 3, 17 p. 3).

3.  Kevin Matthews' proposals to allow SYSTEM and INITIALIZE to be recognized from the CMRDECK was accepted (see DSN 3, 17 p. 3).

4.  Kevin's proposal to add a NOLOOK command which tells CMS to ignore the specified device was accepted with the following stipulations.  To rescind the effect of the NOLOOK command we shall require a LOOK command and all NOLOOK and LOOK commands should be entered into the error log (see DSN 3, 17 p. 4).

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CALLPRG - Library Tape Changes - by M. Riviere

On September 13, besides the announced modifications a few extra ones took place between Callprg and Library Tape products:

A new version of TSF, the time sharing version of MNF, also using Record Manager, replaced the current one.  The current one became available as past.  Although the versions of the MNF compiler are not identical in both computers, there is only one version of TSF common to both machines.

Andy Mickel made an extensive modification among his Callprg packages.  He added MF parameters to LISP, PASCAL (Fetch), SPRUCE, PSCXREF and SNOBOL.  He removed the now unneeded index entries of LISP (Past), PLAP, SLIP and MIXAL (Future).  Andy also moved the entry for LISPDOC from Callprg to Writeup.

Bart Johnson changed TEKLIB for a new version that is compatible with the new MNF.

On September 14, MNFCLIB, the MNF function library, was replaced on the Library Tape by a new one.  The one used on September 13 for only one day was the originally scheduled one that was previously available for testing in conjunction with Future,MNF. However, a large addition needed to be implemented in this library in order to include a section equivalent to Michael Frisch's arithmetic section of FORTRAN.  Several incompatibilities on the binaries of that section of FORTRAN and the rest of the MNF libraries made this modification necessary.

On September 15, Andre Bremanis and Steve Nachtsheim installed ACCSTAT as a control card callable Callprg product. ACCSTAT is an accounting statistics program that provides reports to users on their computer usage, cost and funding. There is documentation for ACCSTAT available through Writeup. A proposal for ACCSTAT was included in a previous issue of the DSN.

Also on September 15, I replaced the Future version of FORTRAN by a new one where I made a modification to the CALLPFM routines. This modification avoids the problem of not letting a FORTRAN program use a local file after Save or Append operations take place. This version of FORTRAN will become current on September 22.

Also on September 22, I will be changing the version of FTNMAC (FTN-COMPASS TEXT) by the one that is now available as Fetch.

Also on September 22, Brian Hanson will be modifying the PROCPAC packages in FORTRAN and FT3LIB in the Library Tape and in Future,FORTRAN in Callprg. Brian's modifications consist of a bug fix to LOCFIT and in adapting PROCCPM and PROCLFM to include the changes that took place with file types a few weeks ago.

The next Callprg - Library Tape modifications will be taking place on October 11. Modifications for that date should be requested by noon, September 29.

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The Continuing Saga... - by J.J. Drummond

One of the points raised at the last systems group meeting was that proposals seldom (if ever) deal with how a particular feature will be implemented. My XMIT/SEND proposal (DSN 3, No. 12) was no exception to this deficiency, although it is sometimes rather difficult to know in advance where a particular implementation will lead. In any case, here is the first installment of the implementation notes for the new XMIT/SEND. Feel free to make comments and suggestions but be forewarned that I'll be very defensive.

The first thing to go will be the name. I am tired of calling "it" "The New XMIT/SEND." Henceforth, it will be called "TRANSIT" which is the name of the CPU equivalent to ECSXFER.

TRANSIT, like ECSXFER, will be implemented as a subsystem that's called whenever there's something for it to do. Whereas ECSXFER is a subsystem in queue priority only, TRANSIT will be a full-fledged subsystem for the following reasons:

1. Subsystems can be initiated very quickly and easily. A call to 1DS is all that is required to bring the subsystem up. TRANSIT will be initiated many times per day and the ease and rapidity at which it's done is an important factor. Note that ECSXFER is initiated via a call to SMT which builds a job in the input queue (a very messy business).

2. The necessary interlocks to prevent a subsystem from being brought to two control points simultaneously already exist. Other potential interlock problems are already resolved in the 1DS subsystem initialization mechanism.

Due to lack of space in the SSCL table, the TRANSIT subsystem will take the slot of CYBERLINK.

Next we will consider the task of getting SUBMITted dayfiles returned to their originating user number/machine. Two pieces of information are required by the operating system to do this:

1.  The machine the job was submitted from, and
2.  The user index of the submittee

Additionally, we would like the submitting user to have the capability of specifying that the dayfile not be returned at all, be returned only in the case of a job card error, or always be returned.

The following is a simple flowchart of how this mechanism will work:

1.  Job sumitted by user.

2.  (QFM) – check machine destination, if job intended for this machine, go to Step 5.

3.  (QFM) – place job in intermachine queue.

4.  (TRANSIT) – send job to destination machine, TRANSIT (running on that machine) calls QFM.

5.  (QFM) – place user index and machine origin in system sector and release file to input queue. Note – if the job dayfile is not to be returned, then the user index is zero, if the dayfile is to be returned only in the case of a job card error, then the upper (2**17) bit is set in the user index.

6.  (1AJ) – begin job, place machine origin and submitting user index in control point. If no job card error and upper bit set in submitting user index, then clear that user index.

7.  Job runs and completes.

8.  (1CJ) – if job is submit origin and the submitting user index is not zero, then release the dayfile to the intermachine queue.

9.  (TRANSIT) – if file destined for this machine then save/append the user dayfile on the submitting user index or else send the dayfile to the machine the job originated on. Once there, TRANSIT on that machine will save/append the dayfile.

When a job or file is "released to the intermachine queue," the following occurs:

1.  The count of files in the intermachine queue (kept in low core) is incremented by one.

2.  If the job or file is destined for another machine, the appropriate bit in the ECS flag register is set.

Files in the intermachine queue consist of the following:

FNT  42/  job name, 6/ job origin, 6/ type IMFT, 1/S, 5/0
FST   4/ IMID, 2/ MO, 6/ eq, 12/ FT, 18/ UI, 6/ FM, 12/ QP

Symbols used:

S    – Set if system sector contains control information.

-8-

IMID - Intermachine file ID -- specifies if file is input job, dayfile, etc.
MO   - Machine ordinal (0 - 3) that file is to be sent to.
FT   - First track.
UI   - User index for submit dayfiles (upper bit ignored).
FM   - EST ordinal of family.
QP   - Queue priority.

TRANSIT is called to a control point whenever there is traffic to be processed.
1SP performs the following checks to determine if TRANSIT is to be called up:

1.  Checks if TRANSIT is enabled.

2.  Checks if at least one file is in the intermachine queue.  Currently, 1SP calls
    XMT every 8 seconds to perform an FNT search.

3.  Checks if some other machine wants to send something to this machine.  (This is
    done by checking a bit in the ECS flag register which is copied to CM periodically
    by CPUMTR.)

If (1) and (2) or (3), then 1SP calls 1DS to bring TRANSIT to a control point.

Several observations can now be made:

1.  Submit jobs from any machine will be treated indentically and XMOT will no longer
    be required.

2.  Transferring the actual file is the trivial step.

3.  TRANSIT will process submit dayfiles by either saving or appending the file
    directly, or sending it to the appropriate machine.  Thus it processes both
    inter- and intra- machine traffic.

This ends our first discussion of the TRANSIT implementation.

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MECC, CAI Reach Partial Accord - R. A. Williams

Lauderdale - (RAW) - Representatives from the University of Minnesota Computer
Assisted Instruction (CAI) group and the Minnesota Educational Computer Consortium
(MECC) have come up with a compromise plan to facilitate installation of the
Minnesota Instructional Language (MIL) on MECC's new CDC Cyber 73.  MIL, long
available on the University's CDC 6400, is used by students in German, law, and
other courses.  In the coming year much of this work is to be done on the MECC
machine but MECC staff refused to implement the same mechanism as that used on the
6400.

The agreement calls for a TELEX command, *IL*, which will call a program by the same
name that will get the MIL routine specified by parameters on this command and run
it.  Earl Schleske, spokesman for CAI, reluctantly agreed to this solution on the
MECC machine after a lengthy discussion with MECC staff.  He continues to advocate
the current 6400 approach, however.

This method uses a program, similar to *IL*, named *X* which can be called by users
through TELEX with entry of *X.* followed by the parameters specifying an MIL routine.
An error in the TELEX timesharing executive allows this procedure to work and MECC

vowed to correct the error, giving rise to the current controversy. The situation was complicated further when MECC refused to allow *X* on their system unless, in the words of MECC's N. L. Reddy, "UCC [University Computer Center] puts it in theirs, too." The UCC systems group several weeks ago voted to allow *X* on package *CALLPRG*, the pseudo-system residence software device, but Reddy, in an exclusive interview with the DSN, pointed out that this falls short of putting it "on the system."

Bob Williams of UCC, after participating in this "shuttle bus diplomacy," summed up the situation by saying that "the end result is we'll do it one way and they'll do it another." He acknowledged that users of both systems may be bothered by the inconsistent approach but points out that the implementation of automatically called procedure files through the *NOTICE/NOTIFY* mechanism should alleviate some problems.

Still to be resolved are the issues of documentation and future consistency through merging of the two approaches.