UNIVERSITY OF MINNESOTA COMPUTER CENTER
Deadstart Systems Newsletter

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Send all comments, criticisms and contributions to the editor: T. W. Lanzatella
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NOTICE OF CHANGES TO THE SYSTEM

NOS 460 Changes

Don Mears repaired a small error in the random pattern section of the T=* test in LKT. Additionally, Don repaired an error in the report generated by QMOVE wherein the user number field was not appearing correctly.

KRONOS Changes

Jeff Drummond contributed changes necessary for TRANSIT to use the DDP to transfer data to or from the 6400 instead of ECS. Changes were made to programs TRANSIT and COMPSEA and modset TRNMOD. New programs DDP and COMSDDP were added.

Steve Collins supplied a new version of XEDIT 3.0.31. I inadvertently forgot to include a version which he supplied last month. Tim Hoffmann repaired several character set problems in SIMTALK.

NOS 485 Changes

Kevin Matthews corrected a minor problem in the report generated by DUMPPF. Kevin also changed SET so that no PMS bits are recovered after an L3 recovery deadstart. Previously, random PMS bits were recovered. This is an interim solution until SET can be studied to determine what, in general, is or is not recovered after an L3 recovery.

Don Mears contributed the following changes.

1) Programs QMOVE and LKT were changed as above.

2) Code was added to TELEX to fix a possible hung port situation.

3) Program DSP was repaired to allow a deferred route of an empty file.

4) The OVJ call in the QFM SUBMIT function was reinstated. The call had been removed and subsequently caused TRANSIT to fail; when, I do not know.

5) SBSL accounting messages for start of plot were repaired.

Tim Hoffmann installed the following changes.

1) Modset DELAYQ was corrected so that PO will now function correctly.

2) Several new ENABLE/DISABLE functions will now be indicated in the E,P-display.

3) Tim installed his proposed change to SUBMIT which causes a dayfile message whenever the user's permanent file DAYFILE exceeds 100 PRUs.

4) The CPUMTR RSB function was corrected to perform better address checking when reading the control point area. The system crashed twice recently due to a bug in this area.

5) Tim converted our local changes to STIMULA.

Jeff Drummond installed a new version of EXAMINE with unspecified but numerous changes. One change is that record length on the EXAMINE report is now given in characters rather than words. Most other changes were in the nature of documentation changes. Jeff also contributed a new version of program DTIME which now conforms to CTIME in its output format.

Brad Blasing repaired the ENQUIRE OP=L option to work right. Brad also installed a new and final version of USERS. This new version has an E,U-display (similar to the old DSD E,U-display which was not retained due to space problems in DSD). Additionally, Brad altered CCL, the Cyber Control Language, by adding a FILE (lfn,SIZE) function--a proposed feature.

PROPOSED CHANGES TO THE SYSTEM

8/12 ASCII in XEDIT - by Mike Frisch

This is not a normal proposal for consideration by the systems group. Instead it describes some plans for changes to XEDIT that we may or may not see used at UCC.

To give some background, CDC recently decided to adopt the 8-bits-in-12 character set for ASCII characters rather than the NOS 6 and 12 bit character set. This will start appearing in NOS at release 6 which is scheduled for the second half of 1980. There will be I/O drivers and an 8/12 version of UPDATE in that release. (MODIFY is no longer being improved in any way by CDC.) To my knowledge, CDC will not have an 8/12 version of their EDIT program although they may have an 8/12 line editor that works with numbered lines.

Within the VIM user group, we are trying to convince CDC to add full ASCII into FTN5. I have also asked our M77 profile to do the same for M77. Before these projects can be done, there must be a complete text editor that can handle the 8/12 form in Fortran programs and data files. Thus, I have been working with Mike Skow, Bob Williams and Steve Collins to make sure there is a version of XEDIT that allows 8/12 ASCII. The idea is to be able to "resell" XEDIT to CDC. We "sold" it once but for only a limited time period which has expired. CDC users will get the complete text editor they need, and so will we if we ever go to release 6. Also, John Strait's COPYCH program has translations involving the 8/12 form so files can be converted when we need to do so. In the end, the whole 8/12 ASCII case rests on an 8/12 version of XEDIT.

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Procedures for Dumping and Reloading Unused CALLPRG Files - by M. Riviere

I would like to implement some automatic procedures that will control the flow of CALLPRG packages between disk packs and magnetic tapes. The main purpose of these procedures is to determine where a CALLPRG package file should be placed (disk pack or magnetic tape) and then to place and maintain the file in its right location.

Currently, CALLPRG can handle products that reside as tape files. The tapes that contain this kind of product have to be created with a specific format. The products, residing on the tapes, may also need to be modified and the CALLPRG index entries for these products have to be specifically set up with all the parameters for the specific tape. To move a product from a disk pack to a magnetic tape involves enough inconvenience to make the task impractical for frequent implementation. Usually, products are initially set up as tape or disk files and permanently left as such. No matter this restriction, the actual tapes capability of CALLPRG is very useful for storing large packages of small anticipated usage and it should, of course, be left as such.

This proposal does not concern the products that can be originally eligible as tape resident products, but the ones that, due to any kind of unexpected reason, become unused for a long period of time, after being originally stored as pack files. This proposal concerns mainly the handling of "unused" or "forgotten" CALLPRG files.

I will present here what are my suggested procedures for handling the transition steps required to accomplish an almost automatic transfer of unused or seldomly used CALLPRG products between packs and tapes without requiring any modification to the CALLPRG index or the products.

To clarify the presentation, I will start by defining the three different types of files that will be involved and referenced in the description of the process and in the process itself. I will explain later the need for the different file types and how they will be created and treated.

I will call an "original" CALLPRG file a file that is like any of the CALLPRG account files now. That is, it is a file that simply contains a CALLPRG product. These are files installed and modified through RFM operations by the programmers in charge of them.

I will call a "dump/load" type file a file whose contents is also a CALLPRG package but the file is such that it was obtained by loading it from a file's dump tape. These dump tapes are tapes that contain copies of original CALLPRG files that eventually became unused and once they are dumped they no longer exist in their original form in the pack.

I will call a "submit job" type file a job text file with statements to obtain a dump/load file reloaded from a file's dump tape. This submit job type file will never be eligible to be dumped, no matter how long they may not have been accessed. These submit type files are files serving as a replacement for the original files when the original files are dumped.

The factors to be considered when making decisions about dumping or purging "original" or "dump/load" type files are: file size, usage frequency, and the availability of disk space. These factors, however, do not have the same weight for all types of files. The action to be taken with an unused file will neither be the same for original type files as for the dump/load types.

A larger interval of time tolerance should be given to an unused original file than to a load/dump type. Original files are placed on the CALLPRG account number with the initial purpose of making them accessible to users. These files, therefore, should have a first chance to prove that they are indeed accessed.

The dump/load type files are files that became such types because they have not been accessed for a long time. They are, therefore, eventually reloaded back from the tape due to a probably very uncommon user's request.

The dump/load type of files should not be allowed to age on the pack for as long as the original files. These files have already proven to be seldomly used. These files should be purged as soon as they stop being accessed. After all, their contents will remain available on the dump tapes and they can easily be reloaded again.

Now, with the definition of the file types that will be needed in the rest of this proposal already made and some ideas about how those types are going to be used, I will proceed to outline the different faces of my suggested procedures.

1. The CALLPRG account number files that have not been used for a given amount of time will be dumped to magnetic tapes. The files will be dumped by using the DUMPPF utility. (DUMPPF preserves the file's attributes which CALLPRG and RFM need to take into account: user control word, catalog type and mode).

2. The dumped files will be replaced by new files containing the text of jobs to be submitted by CALLPRG to request the reloading of the original files (dump/load types once reloaded). These replacement submit job type files will be considerably smaller than the original ones.

3. CALLPRG will recognize these submit job type files when retrieving them for the user. Upon realizing that the file is of this type, CALLPRG will submit the job and then wait for the files to be available.

4. The files will be loaded from the dump tapes by using the LOADPF utility. The files will be loaded into the CALLPRG working account number. This account number is the one now used to temporarily hold CALLPRG tape files.

5. Initially, the files loaded into the CALLPRG working account number will be purged just as the other files on the same account are. The files in that account are purged at deadstart time or after not being used within one hour. More accurate decisions will be made later, as previously mentioned, about when these files should be purged.

6. RFM operations implemented on submit job type files will convert the files back to an original type file. That is, programmers in charge of products dumped on tapes will be able to remove or modify them on the pack without having to be concerned with the tape version of the products.

7. The newly modified or created files will be treated again as new files, since the creation and last access date would be updated by the modification. These new files will be, eventually, dumped again, as they become eligible according to their size and usage frequency.

8. The dumping procedures will take place once a month or once a quarter, depending on the availability of disk space. The eligibility of an original file to be dumped will initially depend on its size and last usage date. More precise adjustments could be made in the future.

9. The dump tapes will be kept for one year and then be recycled. By the time that a given tape is recycled, the index entries of the products contained on that tape, that may have become lost, if any, should be removed.

Setting up the dumping/loading procedures for CALLPRG files will entail modifications to CALLPRG and RFM and writing some auxilliary maintenance programs.

CALLPRG should be modified, as previously described in order to:

1. Recognize the submit job type files.

2. Attempt to obtain the product from the dump/load type file residing in the working account number.

3. If the dump/load file is not available, submit the job to obtain it.

4. Issue an informative message about the time delay if the user is at a terminal.

5. Wait for the file to be loaded.

6. Retrieve it.

Part of the code for these functions already exists in CALLPRG.

RFM should also be modified for the following functions:

1. Decide which of the original type CALLPRG files should be dumped.

2. Decide which of the dump/load type files should be purged.

3. Process parameters to alter different bits of the user control word of the files in order to mark the files as submit job types or as dump/load types.

4. Show on the RFCAT list what type each file is.

Additional support programs will have to be written to fulfill the extra needs of:

1. Create DUMPF statements to dump the selected original files.

2. Create the submit job text files. (The job should include tape request, LOADPF directives to load the file from the tape, RFM directives to mark the file as dump/load type, etc.).

3. Create PFM statements to replace the original files by the submit types.

4. Create RFM statements to mark the submit job type files as such.

5. Maintain statistics on the usage of the dump/load type files as well as the original ones. (These may be on RFM.)

6. Produce a report on the dumped files that will disappear as the dump tapes became rewritten.

I suggest that this proposal be implemented, in two main steps. One is the dumping/replacing of files and the other is the adjusting of the factors that decide when the files should be removed. The reason for this is that, due to the dependability of CALLPRG files, any unexpected error in the procedures can become quite serious.

I also propose to use a different account number for holding the dump/load type files and not CALLPRG itself. In the future, the accounts could become the same one. The delay for the merging is due to the need for the assurance that everything is working right.

The long-run objective of this proposal is to dynamically allow files to become the types of files that they may need to be (original, submit job type, dump/load type) according to the factors that control their conditions as such.

For the implementation of the first step of this proposal I plan to dump files that are larger than 800 sectors and have not been accessed within the last three months. The size and age of the files to be dumped can be eventually adjusted according to the availability of disk space. Once the old standing "forgotten" files are dumped I expect, keeping size and unused time the same, not more than a dozen files to be dumped every quarter.

If disk space becomes critical, we should make two months or even one month an allowed time for a file to be unaccessed before it is dumped. The number of dumped files will increase considerably, releasing valuable disk space.

I see several points that may be objectionable to this proposal. The first one could be that this is a quite confusing proposal. The whole process is somehow complex and not easy to explain. As I said before when describing the different steps of implementation, I will need some experimentation for each step to completely define all the details, before being able to proceed to the following one.

The second objectionable point is that the dumping and loading routines do not preserve the permit buffers of permitted files. There are very few files of this type on CALLPRG. The file owners can, for the time being, ensure that these files will not be dumped by accessing them within the required time intervals. In the future, by using the 16-word catalog entry, I will be able to use extra bits on the file's user control word to mark some files as "no dump" types.

The third objection is that some products may be lost as the dump tapes become rewritten. I do not think that this is too serious since programmers are currently responsible for backing up the source and the necessary procedures to recreate their own products. To minimize the loss of the products a report of the files that will be lost will be circulated before rewriting the tapes.

In summary, the benefits of the setup are obvious as far as a better utilization of disk space is concerned. We will be able to manage disk space much better and the product's location will be almost unimportant to programmers and users.

SYSTEM MAINTENANCE: People and Procedures

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

The following proposals were rejected or accepted.

1) Jeff Drummond's proposal to link all three mainframes after the 6400 (720) goes to NOS was discussed at length. The 6400 crew expressed some reluctance about any extensive hardware links which would jeopardize the stand alone capability of that system. The idea of common disk will be taken up in more detail by the Bob Williams Committee (see DSN 5, 15, p. 121).

2) Steve Collins' proposal to add 8 lines/inch and page size control capability to COPYSBF was accepted (see DSN 5, 15, p. 122).

3) Tim Hoffmann's proposal to make SUBMIT inform users that a PF named DAYFILE existed was approved with one change. The message will only appear when the file length has reached 100 PRUs (see DSN 5, 15, p. 122).

4) Tim Hoffmann's proposal to deal with the problem where the FETCH type package DEBUG conflicts with hooks in TELEX to invoke a CDC package called DEBUG was rejected. The situation is troublesome, however, and Brad Blasing suggested that we simply change the name of DEBUG (FETCH) to CPDEBUG. All agreed.

5) Tim Hoffmann's proposal to add a utility CHKTRT which checks the integrity of a TRT in the running system was approved in principle but the planned implementation was rejected. Several people felt that an entry point should be added to DSDI and that existing code should be used to read CM ala ANALYZE. Tim is studying the suggested implementation.

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CALLPRG AND LIBRARY TAPE NEWS - by M. Riviere

On August 21, Steve Collins modified the Cyber and the 6400 CALLPRG index to introduce a future version of XEDIT. The index modification on the Cybers was implemented on the current and the future index.

Also on August 21, Brad Blasing modified the current Cyber CALLPRG index including an entry for FUTURE,COMPASS. This version of COMPASS is the 485 level of the assembler.

Brad also modified the current and future CALLPRG index on the Cyber and the 6400 index in order to rename the DEBUG package to CPDEBUG. As stated in the last DSN, the name DEBUG could eventually conflict with a new CDC product of identical name. To inform about the change a message with the text: "USE FETCH,CPDEBUG" was added on the index entry for the current debug package. In addition, Brad introduced two fetch type packages, EXTRACT and PREPARE. These packages are tools to be used for CPDEBUG users.

Yvonne Murray provided a new version of UPWRITE. This version has several new modifications and improvements. Specifically, the "HELP" command is working well in this version. The new version of UPWRITE was implemented on the Cybers (current and future systems) and on the 6400.

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Cyber Deadstart Dump Analysis from Monday, 5 August to Sunday, 19 August - by K. C. Matthews

Thursday, 9 August

20:34 (DD-5) Cyber 74
A job hung trying to issue TDAM monitor functions. This function will transfer data to the MAGNET subsystem. MAGNET was in bad shape. MAGNET could not be dropped because dropping MAGNET caused 1AJ to request memory at the MAGNET control point, and the memory request could not be satisfied due to the PP that was originally tied up. A level 3 recovery was needed.

16:47 (DD34) Cyber 172
CPUMTR failed with an arithmetic error mode 1. This was due to an error in the CDC code for the RSB request. Hopefully, the bug is being fixed by the person who made the bad request.

Monday, 13 August

02:12 Cyber 74
The drive for device DN61 broke. DN61 had to be reloaded on Tuesday morning.

Wednesday, 15 August

08:29 Cyber 74
Label errors occurred on equipment 0 and 12 on channel 26. The channel 26 controller was cleared and a level 3 recovery done. This cleared up the problem.

09:30 Cyber 74
CPU diagnostic CU1 had failed several times. At 09:30 the machine was given to the CDC engineers who tracked down an intermittent multiply problem. The machine was up at 12:25.

Thursday, 16 August

14:25 All machines
The power failed briefly several times. All machines went down.

Saturday, 18 August

11:15 Cyber 172
Errors began appearing on one disk. The engineers found a negative voltage fault on the disk. A level 3 deadstart was required.

14:45 (DD-6) Cyber 74
The system hung for no apparent reason. A level 3 recovery cleared it up. The dump is available for any volunteers to look for the problem.

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TELEX and TELEX PDP-11 Crash Analysis (8/6 to 8/19) - by D. W. Mears

8/16 13:51 TELEX aborted when I attempted to unhang a hung port.

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Plotter PDP-11 Crash Analysis (8/3 to 8/19) - by D. W. Mears

The PDP-11 was reloaded once because the plotter went not ready.

The PDP-11 was reloaded once because BATCHIO messages were not being printed on the DECWRITER. Nothing was printing because the PDP-11 was waiting for the operators to finish entering the last partially entered command.

The PDP-11 was reloaded 4 other times for unknown reasons. The dumps show everything was running O.K.

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6400 Deadstart Dump Analysis (5/21 to 8/19) - by R. A. Williams

Date	Description	Tape
790602	The system came up late due to a bad central memory stack.	Fixed
790615	ECS maintenance on the Cyber 74 delayed the start of operations.	Fixed
790616	In two instances, 844 disk unit 3 caused the system to go down when it stopped with an unclearable fault condition.	Fixed
790620	The scopes went blank for unknown reasons.	N.A.
790626	A power failure caused the system to go down.	N.A.
790627	The system came up late since some 844 disk drives that had been moved were not ready to use yet.	Fixed
790713	A bit in the FL was being dropped. The EJT test found the error and the CE's fixed it.	Fixed
790716	ECS went down. This system hang appeared to be related.	N.A.

Date	Description	Tape
790718	ISJ hung for unknown reasons.	DDT-6
790803	The system came up late as changes required to install the DDP port from the 172 took longer than expected.	Fixed
790804	The system came up late due to a power failure.	Fixed
790815	The system went down three times due to a hardware problem with the 7054 on channel 1.	Equipment still down
790816	A broken disk controller, broken 6676 multiplexer, and power failure caused three system aborts.	Equipment still down
790817	The 7054 disk controller on channel 1 hung the system. It had been reinstalled since the problem had apparently been resolved.	Equipment still down